CROP PROTECTION PROGRAMME

Developing Crop Protection Research promotional strategies for semi-arid East Africa (Kenya and Tanzania)

R 8349 (ZA 0601)

FINAL TECHNICAL REPORT

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CONTENTS

List of Acronyms

General

CBO Community Based Organisation
CIAT International Centre for Tropical Agriculture
CPP Crop Protection Programme
CP Crop Protection
DFID Department for International Development
DANIDA Danish International Development Agency
FFS Farmer Field School
GDP Gross Domestic Product
IPM Integrated Pest Management
M&E Monitoring and Evaluation
NGO Non-Governmental Organisations
PM&E Participatory Monitoring and Evaluation
T&V Training and Visit (extension system)

Applying to Kenya

ATIRI Agricultural Technology and Information Response Initiative ()
CDK Catholic Diocese of Kitui (Development Programme)
C-MAD Community Mobilisation for Desertification
CRAC Centre Research Advisory Committee
KARI Kenya Agricultural Research Institute
KAPP Kenya Agricultural Productivity Project
NALEP National Agricultural and Livestock Extension Project
RELO Research Extension Liaison Officer
DFSTs District farming systems teams
RREACs Regional Research and Extension Advisory Committees
PCPB Pesticide Control Products Board
MOA Ministry of Agriculture

Applying to Tanzania

ACS Annual Conference of Stakeholders
AMSDP Agricultural Marketing System Development Programme
ARI Agricultural Research Institute (Ilonga)
ASDS Agricultural Sector Development Strategy
ASDP Agricultural Sector Development Programme
ASLM Agricultural Sector Lead Ministries
ASPS Agricultural Sector Programmes Support
ASSP Agricultural Services Support Programme
DADPs District Agricultural Development Plans
DRD Division of Research and Development
IPR Internal program reviews
INADES Institut Africain pour le Développement Economique et Social
LGAs Local Government Authorities
NAEP II National Agriculture Extension project phase two
NALERP National Agriculture and Livestock Extension Rehabilitation Programme
NARLP National Agriculture and Livestock Research Programme
NSC National Steering Committee
PADEP Participatory Agricultural Development and Empowerment Project
PIDP Participatory Irrigation Development Programme

PRSP Poverty Reduction Strategy Paper
RFSP Rural Financial Services Programme
LPRI Livestock and Poultry Research Institute (Mpwapwa)
RALDO Regional agricultural and livestock development office
TARP II Tanzania agricultural research project phase two
TDV 2025 Tanzania Development Vision 2025
VAEOs Village agricultural extension officers
ZARF Zonal Agricultural research funds
ZEC Zonal executive committees
ZRELO Zonal Research Extension Liaison Officer
ZTC Zonal technical committees

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1.0 EXECUTIVE SUMMARY

1.1 People living in semi-arid sub-Saharan Africa are amongst the most resource-poor (most fall below the poverty data line) and challenged by their environment. A major feature of this environment being relatively low and unreliable rainfall. The vast majority of households depend on crop production (directly or indirectly) as their main livelihood source, although through choice or necessity pursuing diverse livelihood strategies. Most of the crops grown are key to food security but of low market value, infrastructure (e.g. roads) is relatively weak and this contributes to the generally low level of private sector service provision. While crop protection issues can be major production constraints, the financial returns to improvements in crop protection are more limited and risks are greater when compared with higher value crops in higher potential area with good market access. Public extension (at times working with local NGOs) is still the main service provider but, for a variety or reasons, traditionally has struggled with its limited personnel to provide a quality service to disparate populations.

Recent policy research has identified the food crop sector as offering, in the medium to longer term, the largest potential return to investment in research and development in Africa[1]. In the context of generating returns from existing research investments, a major challenge identified by this project was how to empower local agricultural service providers to access and process existing crop protection information and products to better meet farmers' needs. This project has used information and products generated through the DFID's Crop Protection Programme and elsewhere with potential to bolster the household food security and incomes of small holders. The approach has been to improve access to crop protection knowledge, through trying out various approaches and tools within pilot learning sites. This has been done through an action-learning approach to ultimately identify better promotional and communication strategies for small-holders in semi-arid East Africa. With a view to sustainability, and in the context of de-centralisation and reform of agricultural service provision, we have built on existing organizations, institutional mechanisms and initiatives.

1.2 At the start of the project in November 2003, three inter-agency teams were formed to facilitate a comparison of experiences and organisational lesson learning. The Central Tanzania team was co-ordinated by an NGO, INADES Formation Tanzania, and other stakeholders involved were public extension at various levels, farmers and public research. The Eastern and SW. Kenya teams were coordinated by two Kenya Agricultural Research Institute Centres (Katumani and Kisii) who worked with public extension at various levels, NGO extension providers and farmers (including "para-extensionists"). This report documents activities up to March 2005, and is interim in that the activities documented here were extended up to January 2006 under a new project, R8428.

1.3 Findings to date are summarised under the four output areas addressed through an action-learning approach:-

- Methods for updating demand for CP outputs and sustaining feedback documented and assessed,

[1] See Hazel, P. "Changing Views about Agriculture's Contribution to Pro-poor Growth in Low Income Countries" who argues convincingly that "small farm development offers an efficient and pro-poor option for agricultural development during the early stages of the economic transformation". Hazel provides evidence of private sector failure in Africa and the need for significant further public investment in research and extension, along with a concerted effort by government, NGOs and the private sector (www.passlivelihoods.org.uk/.../files/WED%20LIVELIHOODS%20RETREAT/Agricultural%20Approach_Peter%20Hazell.doc).

- Approaches for improving stakeholders' access to Crop protection research outputs identified,
- Methods for delivery of crop protection research outputs to uptake pathways and farmers piloted, and
- Lesson learning and policy implications documented

Under each project output the emerging lessons are summarised in italics.

1.4 Updating demand and feedback In the context that previous crop protection research demand identification exercises had been undertaken in the sites, this output reviewed existing mechanisms for updating demand and gathering feedback on the performance of crop protection research products. In Kenya the focus was on advisory committees established in 1994 under a joint memorandum of understanding between research and extension. These were found to be reasonably effective mechanisms for updating CP demand for major issues, but had provided very limited feedback on CP technology performance and had failed to attract consistent representation of farmers, NGOs and agribusiness. Measures to improve the performance of these committees were identified including; a) widening the range of stakeholders, improving the continuity of representation, b) revised reporting formats for extension, c) adjusting the programming of meetings and securing consistent funding. In Tanzania, the evolution of efforts and mechanisms to link public research, extension and farmers, improving the communications between them, was documented. This was done to set the baseline for against which to asses the early stages of implementing a de-centralised extension service model as part of ongoing political de-centralisation. The development of a participatory monitoring and evaluation (PM&E) system as part of zonal and district communication strategies was identified as a potentially key intervention for improving demand and feedback mechanisms at various levels. The project facilitated the design of PM&E, linking farmers with the zonal agricultural communication office through district council extension services.

In all three sites the use of participatory learning approaches (e.g. collaborative on-farm trials, farmer field schools and group based demonstrations) to adapt and disseminate CP information were found to effectively stimulate demand for the new CP research products. Such approaches were also effective for getting feedback when combined with training and capacity building in CP.

Emerging Lessons Relating to Updating Demand and Feedback

- *Not all CP information demanded requires further CP research, hence the need for mechanisms that enable clear differentiation between demand for CP research and the demand for CP information by farmers,*
- *In Kenya the centre research advisory committees have performed as a reasonably effective mechanism for bringing CP issues faced by farmers in the mandate districts to the attention of researchers,*
- *In both Kenya and Tanzania the current institutional mechanisms for feedback on the uptake and performance of CP research outputs are very weak – reducing the potential for CP research to be responsive.*
- *Where this project has undertaken CP interactive training (in pests and disease identification and management) of extension providers and farmers, this has resulted in increased capacity to provide feedback and generate demand.*
- *Decentralisation of services presents further opportunities and challenges to improve demand identification and feedback mechanisms – these will need to be addressed*

through a thoughtful "learning-oriented" approach to implementing emerging policies in Tanzania and Kenya.

1.5 Improving access to CP information The project design drew upon stakeholders' (extension providers, farmers, researchers) expressed views that relevant CP information was difficult to access. This view challenged a simplistic model of "demand-driven" research and extension services; as an extensionist commented in a stakeholder workshop "you (researchers) need to stimulate demand, how will we know what is available if we are not informed, and how will we know how to use it if we are not empowered?"[2] Farmer's and extension provider's actual and preferred sources of CP information were explored. Farmers' main sources cited were other farmers, public extension, and (in some locations) para-extension. Information from public extension, stockists and newspapers was seen as more reliable by farmers, compared to other alternatives. Both farmers and extension service providers preferred face-to-face interactive information sources, such as field schools, demonstrations and training sessions.

While preferred, these sources of information are currently accessible to only a minority of the extension provider and farming populations in semi-arid areas. The current incentives to stimulate improved exchange of information between key stakeholders are limited. Information providers (public research, public extension, NGO extension and private stockists) tend to be reactive rather than proactive. Most CP information comes from national and international sources (e.g. chemical companies, national agriculture information centres). Initiatives identified through the project to improve local access and stimulate demand for CP information within a decentralised setting included; a catalogue of CP products for drier areas of SW Kenya, a training of trainers CP manual for semi-arid eastern Kenya, Swahili CP posters, leaflets and radio broadcasts for central Tanzania. In Central Tanzania, the development of zonal and district communication strategies provided a framework for exploring how district extension staff and the Zonal Communication Office access information and ideas for improvement. The analysis thus far suggests that factors encouraging dynamic information seeking and exchange need to be further explored if a pluralistic and decentralised extension model is to be effective.

Quality assurance in relation to the development of training information and products remains an issue. The preliminary feedback on the quality of locally produced information products is very encouraging, and the process of producing these materials locally has been empowering for the research and extension staff involved.

Emerging Lessons Relating to Access to CP information

- *Both extension providers and farmers prefer face to face, oral communication. This makes accessing CP information costly in terms of time, and difficult because people with the required knowledge are few and not very accessible.*

- *Alternative access mechanisms (e.g. radio, pamphlets, posters, literature) create awareness but access to these is also limited by literacy, availability and access to radios.*

[2] *Sorghum Pest Project Dissemination, Review & Validation Workshop –13-14 March 2003 –Garden Hotel, Machakos – Workshop Report R7572*

- *Incentives for extension service providers to access new information (including CP information) are limited. A key question which this project raised is what conditions and factors encourage dynamic information seeking?*

- *Incentives for researchers to market their information and re-package it for service providers are also very limited. This project has shown how researchers and extensionists, working together in a decentralised context, can be facilitated to re-package existing research information (from a wide range of sources) to improve access by extension providers.*

- *Widening access to information through re-packaging of existing information raises issues relating to quality control, acknowledgement of sources, and intellectual property rights which will need to be addressed in the future.*

1.6 Piloting communication and uptake pathways and methods. This output addressed the question, "which types of pathway and method are effective for fostering uptake of new CP knowledge by frontline extension workers and farmers?" In each of the sites a range of pathways and methods have been tried with the aim of evaluating their strengths, weaknesses and (where possible) their cost-effectiveness. The farmers targeted have been the regular service users of the various pathways piloted. The majority are small-holders living in semi-arid areas relying on ox or hand hoe cultivation producing for their own consumption and in some cases marketing their surplus. However, in areas where the extension approach has been enterprise oriented there has been a focus on producer groups with an interest in a cash enterprise such as tomatoes and onions. In each case the technologies being disseminated were based on an analysis of potential demand and opportunity following consultation at various levels. In Kenya the focus has been on comparing public extension and NGO para-extension pathways using "best-bet" face to face extension methods; e.g. farmer field schools, demonstrations, barazas, teaching of existing groups and farmer to farmer extension. In Tanzania, a range of communication tools were used in the implementation of the zonal and district communication strategies. The strengths, weaknesses and ways of improving these various communication tools, ranging from electronic and print media (radio, video, posters and leaflets) to face to face methods (demonstrations, field days and seminars), have been assessed with farmers. From one season of piloting the indicative results in Kenya are that all of the piloted face to face methods used are effective in terms of farmer learning and application of knowledge. The costs of each method and pathway differ. The most interactive methods seem most effective for more complex types of information. Use of para-extensionists (volunteers selected by the local community trained in CP) is cost-effective in terms of reaching and training farmers who would otherwise not be reached.

Lessons on effective communication to farmers

- *Stakeholders have clear views, based on their experience and values, on what pathways and methods for dissemination are more effective and sustainable. Evidencing effectiveness is a challenging task, but one which the project has identified as necessary for guiding policy implementation.*
- *Preliminary findings from Tanzania support the use of a combination of awareness raising and practical training methods for effective dissemination of CP information,*
- *In Kenya early findings suggest the use of community based "para-extensionists" as a promising cost-effective pathway for CP information, and the use of interactive training methods for more complex technologies,*

- *Those involved in communication/dissemination need to be empowered to evaluate their own approaches - developing indicators of effectiveness. This means enabling/empowering stakeholders at different levels to select indicators that are meaningful to them.*

1.7 Lesson learning and policy implications Developing a fully inclusive learning process in three sites around a complex set of outputs within 16 months was ambitious. In the early stages many of the stakeholders did not appreciate the centrality of monitoring and evaluation (M&E) to the lesson-learning process. While the idea of participatory monitoring and evaluation (PM&E) has appealed to all, it has taken everyone time to appreciate what is involved in implementing this effectively, and that incorporating PM&E at community level is very ambitious in a project of short duration. Much of the focus on lesson learning (as distinct from technology dissemination) has been at the "meso" (district and region) rather than community level. This has been through stakeholder review workshops involving sharing of experiences, participatory documentation and analysis. The results from such workshops indicate that each stakeholder group will identify different types of lesson, depending on their interest and perspective – raising the question "who is lesson learning for?".

National level policy makers were invited to the review workshops, but they were unable attend due to conflicting schedules. Through visits to national offices and production of short fliers and progress reports, dialogue was initiated with important national programme initiatives in agriculture; the Kenya Agricultural Productivity Project (KAPP) in Kenya and the Agricultural Sector Development Programme (ASDP) in Tanzania. Initial responses from the programme managers have been encouraging. Areas where findings from this project could usefully inform these larger agricultural service reform programmes were identified. For example, KAPP plans to assess various extension approaches in order to inform extension reform, which is the focus of output 3. KAPP is also looking to re-orient research towards achieving greater developmental impact. Outputs 1, 2 and 3 of this project address important mechanisms in the current uptake pathways through which research can increase its impact in semi-arid areas. In Tanzania ASDP programme management supported the opportunity to pilot agricultural communication approaches that would be compatible with the emerging institutional arrangements and farmer focus of ASDP component projects, and learn lessons about this. The ASDP coordinator encouraged the project team to work through the Central Zone district councils as an entry point to influencing ASDP/ASSP implementation elsewhere.

The 9 month extension, taking the project to the end of 2006 will provide time to improve the quality of lesson learning around promotional and communication strategies, strengthen links with policy players, and deepen learning about undertaking monitoring and evaluation in this type of project. The expectation is that the participating agencies in Kenya and Tanzania will use the lessons learnt from both phases to scale-out effective communication in semi-arid areas beyond 2006. It is also likely that action research will need to continue, and that some of the issues thrown up by this project will require further in-depth research to produce the type of evidence needed to underpin policy proposed changes. This includes further research into; a) practical methodologies for assessing the cost-effectiveness of alternative extension and communication approaches and methods, b) developing a workable model for participatory M&E in the context of decentralised pluralistic extension services, c) partnership models for accelerating the rate of CP related technology development and adaptation for semi-arid small-holder systems, and d) knowledge management in the context of reform towards pluralistic research and extension providers, including public-private partnerships.

Lessons about lesson learning

- *In a multi-stakeholder project operating at different levels, mechanisms are required to stimulate reflection at all levels. If lesson learning is focused at the project apex, with a view to informing national policy, lessons will tend to be arrived at using reductionist analytical frameworks and perspectives – raising the question "lessons and lesson learning for who?"*
- *Related to this, the varying roles and stakes of organisations within the project has influenced their commitment to the lesson learning process. An important lesson is that well motivated people ie WHO are critical to the success of any methods used ie HOW. The overall approach to service provision needs to take this into account. The evaluation tools and approaches which are needed should not only be owned and applied by, but ultimately should be aiming to empower, the stakeholders involved. However, with increasing empowerment there needs to be increasing accountability.*
- *The current policy emphasis on pluralism of research and extension service provision implies both a need and an opportunity to strengthen a learning culture within the stakeholder organisations – this project provides some early examples of efforts to do this.*
- *Developing a dialogue between lesson learning at field/site level and development and application of policy at national level has been a challenge within this project. This raises questions such as "to what extent can a small action-research project feed into national policy development and implementation" and "how easy is the alternative, of embedding lesson learning into large national projects/programmes?".*

2. BACKGROUND

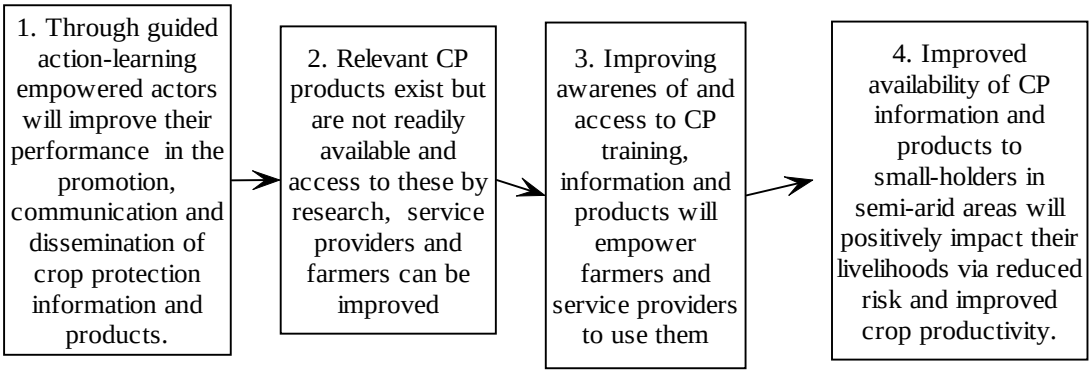
Underpinning assumptions

The semi-arid areas of many sub-Saharan African countries comprise a significant resource, subject to continuous inward settlement from both higher potential and more arid pastoral areas. For the inhabitants, both newer settlers and longer-term residents, crop production forms the primary livelihood activity. Semi-arid cropping systems are generally extensive yet intensifying, with lower levels of purchased inputs compared to higher potential areas, and with high inter-seasonal variability in productivity and risk. A wide range of pests, notably stemborers, *Striga*, smut and leaf diseases in cereals, insect pests in legumes and vegetables, pests in cotton and pests in stored grain further constrain stable levels of production and income. In consequence crop protection (CP) issues including pre and post-harvest crop pests, weeds and diseases are a problem of increasing importance, affecting the vulnerability of poorer households farming in a risky environment.

Agricultural research institutions in East Africa, often working in partnership with advanced and international research institutions and with public extension in the on-farm research sites, have developed and validated with farmers a range of pest management technologies to reduce risk and vulnerability. Communicating knowledge on CP and promoting validated research outputs is challenging in semi-arid areas because institutions, input supply and markets are less well developed than in areas with higher agricultural potential. The private sector is poorly developed in these areas, and public sector extension is generally weak and under-resourced, particularly with respect to CP issues.

This project is underpinned by four linked premises (Figure 1).

FIGURE 1: PREMISES UNDERPINNING THIS CP PROMOTION PROJECT

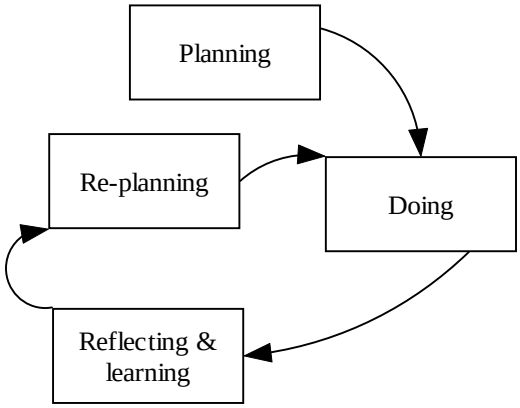


The first premise is that a project with a strong process element would facilitate the key actors (i.e. research, linkage agents, public and non-public extension providers, private sector, farmer representatives) to engage in "action-learning" during the implementation, assessment and documentation of the activities. Secondly, relevant CP information and products do exist, but knowledge of many of these are not readily available to farmers and service providers. This is due to a complex of factors including; limited promotional activities by researchers, low capacity for sourcing and interpreting relevant information, under funding of extension services, poor targeting, limited use of "non-traditional" knowledge delivery systems such as farmer networks, groups, lead farmers, mass media and the private sector. Thirdly, consultations which informed project design suggested low levels of scientific

knowledge and awareness of crop pests and their management among both agricultural service providers and the farming population. The assumption was that improving awareness of and access to relevant CP training, information and products would empower both farmers and their service providers, leading to increased application of the available knowledge. The fourth premise is that improved availability of CP information, training and products to small-holders in semi-arid areas will have a positive impact on their livelihoods. This will be by reducing the risk of crop losses and improving both food security and the profitability of crop enterprises.

Action-learning involves cycles of; i) planning, ii) doing, iii) reflecting and iv) re-planning (Figure 2).

Figure 2: Action Learning Process



It was assumed that action-learning would improve the key actors' capacity and performance in the promotion, communication and dissemination of CP information and products. This in turn would result in more general improvements in the capacity and performance of the involved agencies.

Demand for the project

Dissemination strategies were first discussed at a cluster meeting for the CPP Semi-arid production systems held in 2002. Thinking was developed further through a commissioned review of promotional opportunities for CP research outputs in semi-arid East Africa (Lamboll et al, 2003). This review endorsed the focus of the CP research previously commissioned by the CPP for the semi-arid cluster of projects, particularly in terms of addressing household vulnerability linked to food security and nutrition through research funded on sorghum and groundnuts. The review also identified opportunities for drawing on the CPP research results funded in other research clusters, such as the work on vegetable IPM and cotton, to address emerging opportunities for impacting livelihoods through the promotion and application of CP research.

The project addressed a gap in previous programme development. In 2000 CPP funded studies and a major workshop that identified the paucity of research into the relative effectiveness of promotional uptake pathways for CP research (Hainsworth and Eden-Green, 2000). However, none of the studies commissioned covered semi-arid areas, as the focus

was on "higher potential" cropping systems[3]. The workshop identified a number of key factors which influence the uptake and adoption of CP technology on the front cover of the publication. These included aspects of the technology itself (e.g. profitability and relevance to farmers' needs), the macro environment (national policy). Also identified were institutional aspects relating to the supply side including:-

- Accessibility of research output/technology,
- Availability of relevant information,
- Effectiveness of research and extension
- Research-extension linkages, and
- Extension training

Prior to this project, three projects focusing on sorghum CP (R7518 Management of Sorghum Smut, R7572 Insect Pests of Africa Sorghum and R7504 Integrated Control of Striga in East Africa) were recently completed in East Africa. In March 2003, four stakeholder workshops were held in different semi-arid regions of Kenya and Tanzania in order to share the findings from these projects and assess demand for these. Stakeholders represented public extension, NGOs involved in agriculture, private sector agribusiness and researchers involved with crop projection. The four workshops confirmed a demand for the main project outputs and also for other CP research outputs, confirming the need for a broader promotional project with a CP focus[4]. The main constraints to up scaling and promoting of CP research results were identified by stakeholders as:-

- Inadequate mechanisms for feedback to research by agencies involved in agricultural training and dissemination activities in semi-arid areas,
- Very limited access by these service providing agencies to the results of research,
- Use of un-validated and/or inappropriate methods for the dissemination of CP information
- Limited networks and forums for the exchange of information between the main stakeholders (private sector, public extension, NGOs and public research),

These constraints were explored further in meetings with stakeholders held during June 2003. These meetings also furthered an analysis of the institutional and policy context in the target countries undertaken as part of project design, through which the project purpose and objectives were developed. The institutional and policy context in Kenya and Tanzania are further elaborated in Appendix 1.

[3] In addition, two cross-cutting papers presented at the workshop signalled the need for closer scrutiny and understanding of the institutional mechanisms relating to promotion and uptake. One paper concluded that *"institutional innovation itself needs to be recognised as an important and valid (if difficult) research subject and output. Both the institutional environment and the institutional arrangements need to be investigated as researchable constraints, and the scope and means for innovation and change in these investigated. Investments may be required to develop and disseminate more equitable and efficient institutional innovations. The various stakeholders themselves must themselves consider and negotiate how existing institutions may evolve and change for mutual benefit. Bringing institutional change into research in this way presents a challenging agenda, but it should not be ignored" (Dorward, et al 2000 p 103).* The other paper emphasised the need to examine both the supply side (promotion, dissemination and delivery) and the demand side (uptake and adoption) (Garforth and Norrish, 2000).

[4] At the design stage it was anticipated that this project would also draw on outputs from other CPP projects within the semi-arid cluster, including R7606 [grain mould], R7428 [bush crickets], R7445 , R8105 [rosette resistance], R8194 [green manure], R8197[cotton IPM], R7966 [Army worm], and also other research clusters (e.g. IPM work on vegetables).

3. PROJECT PURPOSE

In the project log-frame the overall purpose stated is *"Promotion of strategies to reduce the impact of pests and stabilise yields in semi-arid cereal-based cropping systems, for benefit of poor people."* This is consistent with the overall CPP programme purpose. More specifically, the project centred around;

1) mobilising key stakeholders around the task of understanding institutional and communication related constraints to the promotion and uptake of CP technologies in semi-arid areas of East Africa,

2) addressing these constraints through identified promotional and communicational opportunities of a sustainable nature, and

3) using an action-learning approach to engage key stakeholders and encourage them to reflect on and evaluate aspects of their previous and ongoing institutional arrangements and professional practice relating to the promotion and communication of CP information.

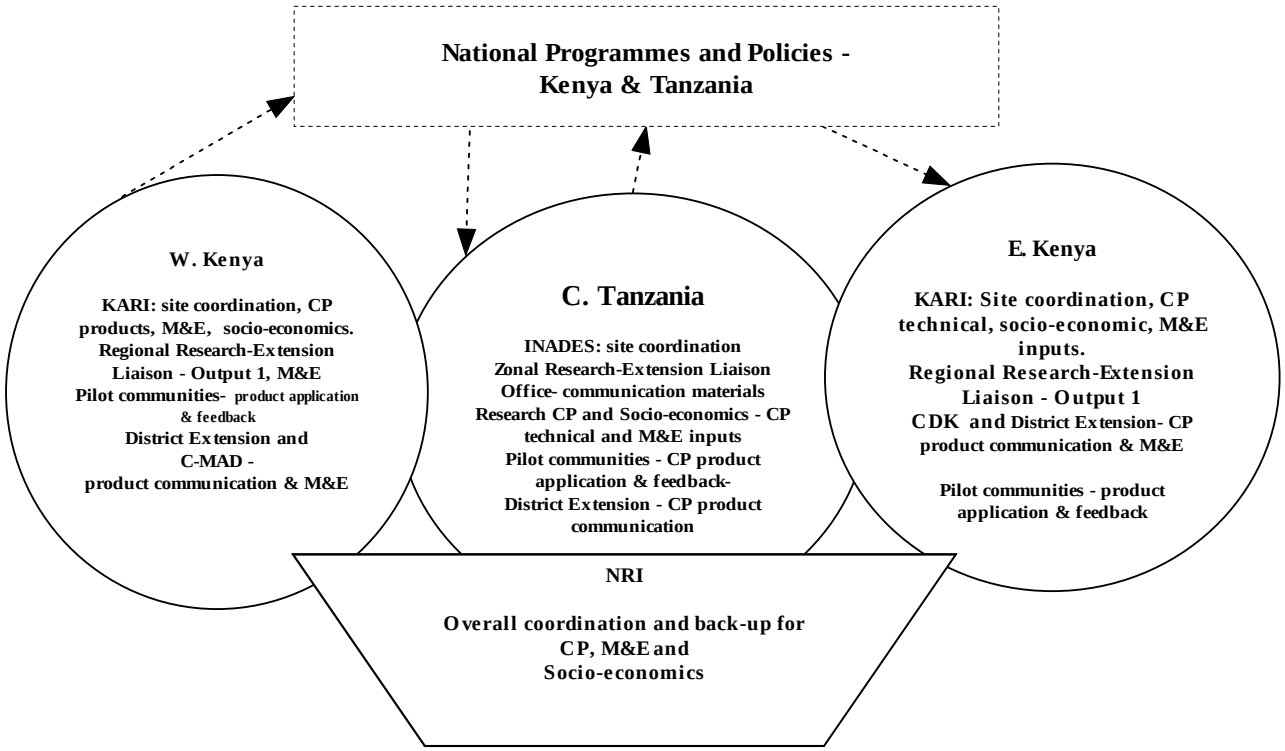
4. RESEARCH ACTIVITIES

The action-research process produced, in each site, three related but distinct activity plans and strategies for promotion/communication of CP research outputs. In each site the planned activities have been implemented and the process and results recorded and evaluated by the main stakeholders involved. Hence the site plans and activities reported are outputs from the project process, as is the documentation of the action-learning process with a view to identifying "the lessons" in each site. This section of the report includes a brief overview of the approach used and a summary of progress with activities undertaken in each country. A fuller narrative of the activities undertaken under each output across the three sites is contained in appendix 2. More detail of the activities undertaken is embedded in the outputs section (5.0) and further elaborated in appendices 3a, 3b, 3c and 3d.

Overview of the Project approach

The project set out to promote CP research outputs validated through on-farm research in East Africa (funded by CPP and other sources). The "best-bet" CP research outputs were identified during the process of stakeholder consultation during project design and inception meetings, when it was found that most of the relevant agricultural service providers were not aware of them. Other relevant CP research outputs were inventorised during the course of the project. In the interests of sustainability and lesson learning, the focus was on reviewing and strengthening existing institutions and programmes (public and private) operating in the target areas of Kenya and Tanzania. With a view to sustainability, the temptation to set up new promotional channels and experiment with novel dissemination mechanisms was resisted. Three sites, each with a multi-stakeholder team, were involved.

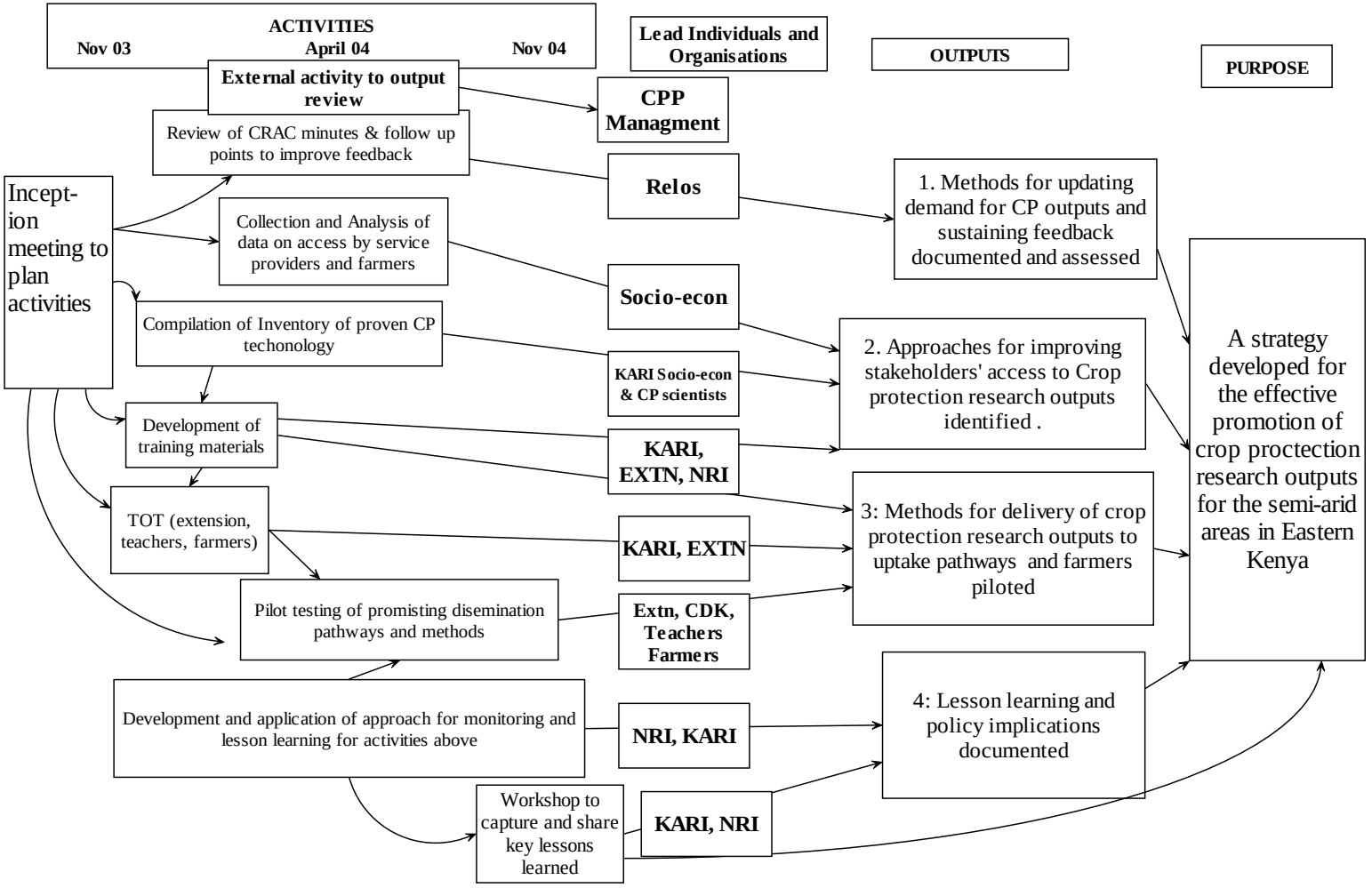
Figure 3: Project Sites, Main Actors and Roles



In Central Tanzania, (Dodoma and Singida regions) INADES Formation Tanzania facilitated key players to develop a zonal and district communication strategies, focusing on three pilot districts, Dodoma Rural, Kongwa and Singida Rural. In Kenya KARI worked in Eastern and SW. Kenya with local partners to develop a promotional strategy for CP information and products. In semi-arid East of Kenya, KARI Katumani coordinated on pilot activities in Mwingi and Kitui Districts, while in the West KARI Kisii did the same in the drier Victoria Lakeshore areas of Homa Bay and Rachuonya Districts. The strategies developed in each site varied, with the purpose of linking these into evolving and de-decentralising national strategies for research and extension.

Figure 4 maps the promotional strategy development design for Eastern Kenya, situated within the project time-frame, and indicating the main individuals and institutions responsible. A similar promotional strategy was followed in SW Kenya, while in Central Tanzania each district extension team developed its CP communication strategy, linked to a zonal CP communication strategy.

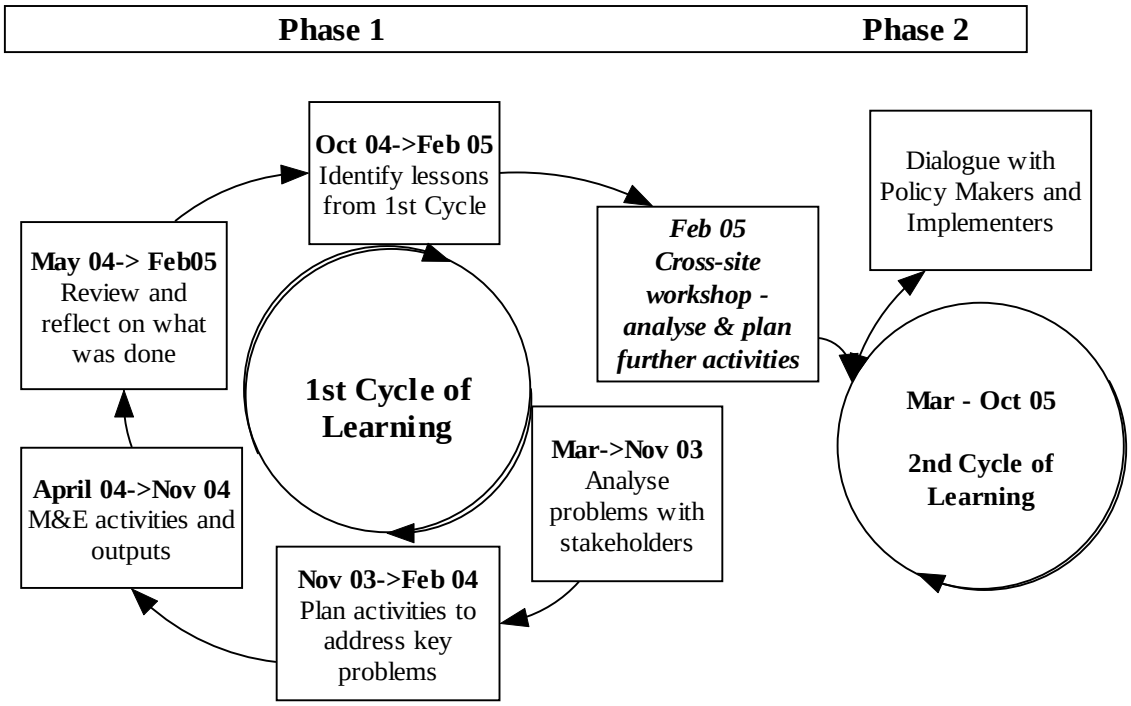
Figure 4: PLANNING A PROMOTIONAL STRATEGY FOR CROP PROTECTION RESEARCH OUTPUTS IN SEMI-ARID EASTERN KENYA MAPPING APPROACH FROM ACTIVITY TO OUTPUTS AND PURPOSE



External mid-term review

An external mid-term review was a condition in the project contract. This was undertaken in May 2004, nearly 7 months into the project, after stakeholder planning and when field activities were underway in all sites. Hence while the review came up with a wide range of recommendations, there was limited scope for changing the planned activities within the life of the project in response to the review findings. The external review endorsed the overall approach, suggesting geographical expansion and some adjustment in the focus of communication and dissemination activities towards greater use of mass media (radio), and more focus on capacity building and monitoring and evaluation activities. The recommendations were made shortly after it was known that funding of the CPP programme might be extended for a further year, pending revision of DFID's research strategy. The external review recommendations, together with the ideas of the three site teams, were used to shape a 9 month follow-on "phase 2" project (R8428). As a result the proposed dissemination of findings to policy makers was deferred to the end of the follow-on project, and a cross-site workshop was held instead, enabling the three teams to meet for the first time to share experiences from the first cycle of lesson learning, as depicted in Figure 5.

Figure 5: Learning Cycles in Phases 1 & 2 of the Project



Stakeholder consultation

Activities to address the four project outputs were identified through stakeholder consultation in each of the three sites. Meetings with stakeholders to develop an outline project log frame (outputs and activities) and to agree responsibilities took place in Kenya and Tanzania during late June 2003. The activities planned for each site differed, and were designed to address the output area in a way the stakeholders at each site thought would be feasible with the resources and time available (16 months overall, with about 6 months for field implementation covering one agricultural season). It was never the intention that the contribution of the three sites to each output should be either identical, or equal in weight. Rather the project design fostered the emergence of local strategies to address an over-riding purpose: to promote lesson learning about how Crop Protection promotional and communication strategies may be made more effective for the benefit of small-holders in semi-arid areas of Kenya and Tanzania.

Progress with implementation of the planned activities is summarised in table format below, while a narrative of activity implementation can be found in Appendix 2.

4.1 Output 1: Activities Summary: Methods for updating demand for CP outputs and sustaining feedback documented and assessed.

Activities	Progress in Two Countries	
	Kenya	**Tanzania**
1.1 Planning meetings	Workshops, surveys, planning meetings with participation of all stakeholders in all three sites (November, December 2003 and February 2004)	
1.2 Review of methods for on-going validation of demand	CRAC and REAC minutes have been analysed in both sites; strengths and weaknesses have been identified; strategies are being formulated to address the weaknesses	*Zone:* Internal Programme Review Zonal Technical Committee Zonal Executive Committee Visits by ZRELO's office to districts *Districts* Review of methods is needed
1.3 Analysis of stakeholder feedback incentives	Limited formal analysis of incentives, but in review poor circulation of minutes of meetings and poor follow-up on CP issues raised were identified as dis-incentives to providing feedback	Motivation for feedback to districts from target groups influenced by: • Frequent follow-up • Proper targeting • Interest of target groups • Material gains Motivation for feedback from research organisations to other service providers needs to be further explored.
1.4 Test feedback methods	Feedback improved via monitoring of uptake pathways e.g. comparisons of field visits, FFS, field days etc.; Lessons discussed in October 04 workshop in W. Kenya	Participatory monitoring and evaluation systems in place Lessons learnt in October 04 workshop

4.2 Output 2: Approaches for improving stakeholders' access to CP research outputs identified.

Activities	Summary Progress in Two Countries	
	Kenya	**Tanzania:**
2.1 Stakeholder characterization	Workshops and meetings held to identify stakeholders, their interests and activities	
2.2 Review of existing methods for accessing CP information	Postal surveys of stakeholders Workshops to review and improve methods.	District consultation meetings Workshops held to review improve methods
2.3 Inventory and catalogue of available CP research info.	Draft document of available crop protection information developed by KARI in W. Kenya;	*Not applicable to Tanzanian process*
2.4 Facilitate districts to improve access to CP information through the ASDP	*Not applicable to Kenyan process*	Pilot district communication strategies On-going contact with districts
2.5 Review of CP information supply against demand	Report to be prepared analysing information on supply and demand	*Not applicable to Tanzanian process*
2.6 Distribution of catalogue and inventory materials	To be done when a final version of the catalogue has been produced	*Not applicable to Tanzanian process*

4.3 Output 3: Methods for delivery of CP research outputs to uptake pathways and farmers piloted

Activities	Progress in Two Countries	
	Kenya	**Tanzania**
3.1 Analysis of uptake pathways	Workshops to describe and review pathways and dissemination methods– strengths and weakness; Analysis through pilot activities	Surveys of how farmers and service providers are accessing information Workshops to review improve methods; On-going analysis through pilot activities
3.2 Matching uptake pathways and promotional methods with CP technologies	KARI promotional opportunities identified include management of pests (e.g. stemborer, storage pests), diseases (e.g. smut) of sorghum, maize and vegetables	Zonal and district communication strategies including management of pests (e.g. stemborer, storage pests, onion pests), diseases (e.g. smut, onion and tomato diseases) and weeds (e.g. Striga) of sorghum, maize and vegetables
3.3 Development and production of communication/ training materials	Communication and training materials produced e.g. manuals in E. Kenya and W. Kenya	Communication materials have been developed and distributed to extension offices and farmers; A series of radio programmes has been aired, Field days and demonstrations; A video series is being developed
3.4 Pilot dissemination of technologies to farmers	Tools tested, promoted in pilot sites through Farmer Field Schools, farmer to farmer approach, Para-extension approach, Focal Area Approach and conventional extension approach (demonstrations, barazas etc.)	Central zone communication strategy, 3 pilot district strategies are being implemented

4.4 Output 4: Lesson learning and policy implications documented

Activities	Progress in Two Countries	
	Kenya	**Tanzania**
1. Develop an M&E system of promotion process	W.Kenya: two scientists have been trained in M&E skills; some indicators are already being used in initial monitoring activities E.Kenya: training still under discussion – need for training emphasized. Monitoring and assessment Tools developed	A PM&E system is being piloted
2. Project review workshops	W.Kenya – October 2004 E. Kenya – October 2004	Tanzania – Singida, October 2004
3. Workshop to identify key lessons learnt and policy implications	Originally planned for February 2004, but postponed after news that project is extended. Cross-site lesson learning workshop held in Naivasha Feb 28th to 2nd March to share experiences and identify cross-cutting lessons and issues.	

The cross-site lesson sharing workshop was held in Naivasha Kenya in late February 2005. This was the first opportunity for the three site teams to meet and share their experiences. Presentations by each team were made under each of the project outputs, and these were followed by group discussions. This provided a basis to synthesise the progress with lesson learning across the three sites, as reflected in the following sections.

5. PROJECT OUTPUTS

The specific outputs of the project are:-

1. Methods for updating demand for CP outputs and sustaining feedback documented and assessed,
2. Approaches for improving stakeholders' access to Crop protection research outputs identified,
3. Methods for delivery of crop protection research outputs to uptake pathways and farmers piloted,
4. Lesson learning and policy implications documented.

As explained earlier, rather than replicate the same activities across three sites, the project design fostered and encouraged the emergence of local implemented and documented strategies to address an over-riding purpose: to promote lesson learning about how CP promotional and communication strategies may be made more effective for the benefit of small-holders in semi-arid areas. With regard to this overarching purpose, the specific contribution of the activities at each site to the four outputs of the project are summarised below. **The outputs are reported using edited extracts from various site reports. This is to provide an accurate reflection of the nature and quality of the learning within the site teams as the project progressed.** Fuller details of the activities and outputs are documented in appendixes 3a, 3b, 3c and 3d, and in the project publications, dissemination outputs and reports listed in Section 7.

Site narratives under the output headings are followed by reflections on "working assumptions" relating to each output. These assumptions are not from the original log-frame, but derived from emerging understandings, stimulated by the action research process and further reading. This project is about understanding and improving the institutional context for the uptake and application of CP research in semi-arid environments which are "institutionally challenged"[5]. Hence these working assumptions relate to key aspects of the evolving national research and extension systems within Tanzania and Kenya as described in appendix 1, and are informed by some of the literature on pro-poor agricultural reform.

5.1 OUTPUT 1: METHODS FOR UPDATING DEMAND FOR CP OUTPUTS AND SUSTAINING FEEDBACK DOCUMENTED AND ASSESSED

In all sites the need for public research, extension, other service providers and farmers to link more effectively has been recognised for over a decade. Some mechanisms have been put in place to promote better linkages. In both countries, government funded research institutes now have geographical mandate areas within which they address the main researchable problems facing farmers. Most previous effort has been on improving research-extension-farmer linkages within the mandate areas of the public research institutes[6].

[5] Other higher potential areas also face major institutional challenges, but the assumption is that in these areas the prospects for private and public sector service development are better due to historical factors and more favourable conditions (e.g. better infrastructure, higher population densities, more developed markets, higher concentrations of qualified staff etc.).

[6] In Kenya each KARI institute has a number of districts which it services, referred to as "mandate districts". These have been reviewed recently in line with capacity and increased decentralisation. In Tanzania, for agricultural research purposes, the country has been divided in to seven zones, with Public Research Institutes primarily serving one particular zone, each being made up of a number of districts. In both countries the geographical mandates also combine with national commodity mandates in many of the research institutes. Many of the scientists in public research institutes also have significant links with regional and international research programmes and organisations.

Kenya Context

In Kenya the focus on research-extension linkage was largely through a joint memorandum between KARI and the Ministry of Agriculture which was signed in 1994. The memorandum outlined a number of mechanisms and joint activities to improve research-extension linkages. These included:-

- The establishment of the post of research extension liaison officer to cover the mandate region of the designated regional research centres,
- Centre Research Advisory Committees (CRACs) for joint planning, priority setting and reporting.
- District Farming Systems Teams – comprised of specialists from research and extension tasked to undertake diagnostic surveys to identify researchable constraints, and plan joint on-farm trials.
- Joint field days to promote new technologies and joint field visits to monitor progress with trials and demonstrations,

Of the above mechanisms, the first two have been the most consistently implemented and supported in the past decade. This was largely because funding for joint field activities was very sporadic and limited. More decentralised, mechanisms for updating demand and providing feedback have been devised as part of the reorientation of public extension through the National Agriculture and Livestock Extension Programme (NALEP) initiated in 2000, which aimed to "strengthen extension pluralism", reinforce "collaborative forums" and encourage "market-oriented interventions" (NALEP, 2004). None of the linkage mechanisms put in place had a specific technical focus, but covered agricultural broadly, from a farming systems perspective.

In the two Kenya sites, the review focused specifically on the effectiveness of generic mechanisms for addressing crop protection issues. Rather than review all mechanisms in depth, the main focus was on the mechanism which had been used the most consistently during the past decade - centre research advisory committees.
These reviews began early in the life of the project. The early findings and recommendations were presented in the February 04 Stakeholder planning workshop and the May 04 external review meeting, and again at the November 04 lesson stakeholder learning workshops, providing a basis for affirming the recommendations of the reviewers.

5.1.1 Eastern Kenya – Review of Katumani Centre Research Advisory Committee (CRAC) – 1994-2003

In Eastern Kenya both public research and public extension have nominated officers to perform a linkage function. The review of the work KARI Katumani Centre Research Advisory Committee (CRAC) minutes was undertaken jointly. The Research Extension Liaison Officer (RELO) appointed by the Ministry of Agriculture had been involved in the setting up and running of the CRAC in 1994, and reviewed 5 years of its work. The research officer appointed by KARI reviewed the other 5 years of CRAC operations.

Review Methodology

The review involved collection of CRAC reports (1995-2003), content summary and analysis of these, and reflection on personal experiences in the participation and managing of the CRAC. In analysis the focus was on assessing the pattern of stakeholder participation, the CRAC effectiveness in updating demand on CP issues, and research response to the CP issues raised. A summary of the review is presented below.

CRAC Objectives and membership

CRAC was established to provide guidance on, review and approve regional research and extension activities. It was also expected to discuss budgets and expenditure for joint activities and recommend them for approval at the national level. The membership included representatives from Kenya Agricultural Research Institute, Ministry of Agriculture, Ministry of Livestock & Fisheries Development, Non Governmental Organizations (NGOs), Community Based Organizations (CBOs),
farmer representatives and co-opted members.

Stakeholder representation and participation in CRAC

The meetings involved a large group, and the numbers did not decline over time, indicating that there was a sustained interest the meeting (appendix 3a, Table 3.1). The main stakeholders represented were public research and public extension officers in all meetings, with researchers (55%) comprising the largest group in all of the meetings and extension officer the second largest (28%). There was consistency, in that in 80% of the cases, the same research and extension officers participated in the CRAC meetings over this period. Geographical representation was also achieved in that all five mandate districts of KARI-Katumani, (Kajiado, Kitui, Machakos, Makueni and Mwingi) were represented in all the meetings. Representation of other stakeholders was much less consistent over time. Farmer representation (9%) was intended to ensure that both extension and research activities are geared towards addressing their problems. However, according to the minutes and memory of meetings farmer representatives contributed very little to the discussions. NGO representation (6%) was low, but they were represented in most meetings. Their main contribution was in terms of explaining their areas of operation, and in seeking possible areas of collaboration with research. In two of the meetings there was significant representation from other research organisations, suggesting that this was a specific arrangement by invitation. Most of the Crop Protection problems were reported by extension staff.

Effectiveness in updating demand on CP issues

Content analysis of the minutes suggested that a very high proportion (from 40-60%) of the issues raised during CRAC were related to CP. The frequency was higher when there were major pest and disease outbreaks during the preceding cropping seasons. In most cases crop protection issues were raised by extension staff, but in some cases by farmers also. The main issues related to pests and diseases, fake and adulterated chemicals and the high cost of agricultural inputs. The reporting of problems varied in terms of specificity. Often “pests and diseases” in general were reported as a major constraint in crop production, while in other meetings specific pests and diseases were mentioned (appendix 3a,Table 3.2).

Updating of demand was assisted by a baseline survey carried out between 1995 and 1996 within the semi-arid lowland districts in the KARI-Katumani mandate region. The results were presented to the CRAC and gave an indication of the major crop protection issues.

Response to the CP issues raised.

Following the report from the 1995 baseline survey, the crop protection research team initiated projects to address the identified problems. Approximately 20% of CP issues raised during CRAC were identified as needing more research, since most other issues were being addressed by on-going CP research. Researchers response to the researchable issues raised and actions suggested through the CRAC included:

- Development of resistant varieties and availability of seeds and planting materials,
- Integrated Pest and Disease Management strategies
- Research on ITK methods, their efficacy and integration with modern pest control methods.
- Documentation and dissemination of ITK methods.
- Development of more effective control methods of termites, vertebrate pests (birds, squirrels, porcupines) and storage pests (particularly LGB).
- Crop Protection information/technology dissemination (through on-farm trials, demonstrations, brochures and farmer training).
- Assessment of the economics of crop protection in subsistence farming.

In general researchers responded to the CP issues raised by providing information on how to address them. In some cases this was through the distribution of literature which were based on the results of earlier research undertaken (Table 1)

Table 1: Leaflets on CP technologies provided to extension agents and farmers during CRAC meetings.

Title of leaflet	Number distributed			Total
	1999	2000	2001	
Sunning & sieving, a simple method to reduce storage losses in beans	2	30	-	32
Cultural Control of chafer grubs in maize	-	31	-	31
Control the bean stem maggot	2	30	22	54
Control of stalk borer in maize crops	2	31	-	33
Control charcoal rot in beans	-	31	-	31
Kill maize stalk borer with pepper and wood ash mixture	47	41	-	88
Weed control in mixed crops of maize & beans	45	52	-	97
Control whiteflies in citrus	36	-	-	36
Do not give your maize away. Control pests in your store.	23	-	-	23
Why store your grains in airtight containers	-	-	51	51

In a number of cases the response from research to the issues raised was limited. The main limiting factors were lack of funding to support the research issues, lack of relevant technical CP information to give easy guidance on some topics, and the lack of resources with which to undertake appropriate training on a significant scale.

Emerging lessons and recommendations

The CRAC provided an effective and consistent mechanism for public research and extension officers to meet annually, share information and constructively raise and discuss CP research and information issues (along with other important technical issues). CRAC plays an important role in guiding and approving regional research and extension activities, including CP activities. CRAC is also a vital mechanism for enhancing interaction and links between research, extension agents and farmers.

Representation and effective participation by other stakeholders such as farmers, NGOs, CBOs, other researcher organisations was far less satisfactory. The private sector did not participate in CRAC. Other limitations of the CRAC with respect to CP include:-

- Limited follow up action and feedback in following meetings on the CP issues raised in previous meetings,
- Non-flexibility in the utilization of research funds to address emerging CP issues needing immediate action

- Recurrence of certain CP issues (e.g. LGB) – perhaps due to the time required to develop appropriate control measures
- Limited input by CRAC into priority setting of research and extension activities (perhaps due to the limited time available and because priority setting and funding are at times de-linked)
- In some cases policy support is needed for the implementation of recommendations by the CRAC to enhance adoption of CP technologies

Suggested ways to improve CRAC:

- Review the CRAC objectives to give it a clearer role in the priority setting of research and extension activities.
- Fuller Institutionalization of CRAC into KARI and the Ministries of Agriculture and Livestock to ensure its sustainability.
- Use CRAC as a forum for feedback based on the monitoring of technology adoption and implementation of research and extension activities.
- In this respect there is need to review and improve the current extension reporting format to ensure adequate feedback is provided to CRAC.
- CRAC membership is too large and dominated by research and extension staff. Membership should be reduced from 60 to 40, with a wider representation.
- Farmer representation (18-20 per meeting) should be based on gender & major production systems.
- CRAC meeting agenda should include review of the actions recommended in the previous year.

Other improvements:

- Alternative mechanisms should be identified and strengthened to identify farmers' demands and provide feedback on CP technologies.
- For CP issues requiring policy interventions, feedback mechanisms should be developed.

Next steps:

- Present review report in the next CRAC meeting at KARI Katumani (2005),
- Review and improve the current reporting format for extension reports to CRAC
- For CP issues requiring policy interventions develop feedback mechanisms

5.1.2 SW. Kenya – Review of KARI Kisii RREAC

In SW. Kenya, prior to the formation of the "Regional Research Extension Advisory Committees" (RREACs) in 1993, farmers were not involved in the priority setting of researchable problems. Joint activities identified were:-

i) Jointly diagnose problems along with farmer participation
ii) Jointly formulate intervention agenda for the purpose of solving the identified problems. If the problems were extension or research oriented then RREAC was to address them.
iii) Jointly implement the identified activities,
iv) Jointly evaluate the impact of the intervention
v) Jointly monitor intervention
vi) Jointly report on problem diagnosis, formulation intervention, implementation and evaluation.

The farming systems approach was adopted to strengthen Research-Extension-farmer linkage and interaction. The suggested agenda for RREAC meetings was as follows:

- Confirmation of minutes of previous meeting and matters arising

- Reports from districts (extension)
- Reports from researchers (on going programmes)
- Reports from farmer representatives
- Reports from NGOS
- New research proposals
- AOB

While the intention was for farmers to participate in the RREACs, the actual attendance and participation of farmers declined from 0-2 farmers in the first few years, to none at all from 1997 (Table 2). Participation by NGOs was more consistent after the first year. The most consistent attendance was from public research and extension officers. The latter were mainly district representatives from the Dept of Agriculture. District representation from livestock and veterinary departments declined markedly, largely because the meetings focused mainly on crop issues. In contrast to the Eastern Kenya CRAC which met annually from the start, the RREAC started off meeting quarterly in 1994, and gradually shifted to annual meetings by 1997 up to 2001. There was no meeting in 2002, one in 2003, which was the last RREAC meeting to date.

Table 2: Frequency of Meetings and Attendance at KARI Kisii RREAC – 1994-2003

Year	Date of meetings	Total attendance	ROS	Ext.	NGOs	Farmer	Other Research
1994	11.1.94 19.4.94 14.7.94 15.8.94 (special REAC) 18.10.94	42 33 29 11 28	18 18 17 1 14	24 13 11 5 12	0 0 0 5 0	0 2 1 0 2	
1995	25.1.95 19.4.95 17.10.95	Xx 36 43	Xx 16 20	Xx 18 20	Xx 0 2	Xx 2 1	
1996	24.1.96 25.4.96	43 59	15 27	23 25	2 4	2 2	1 ICIPE 1 ICIPE
1997	16-17.9.97	65	21	39	5	0	1 ICIPE
1998	18-19.11.98	58	18	35	5	0	
2000	22-23.11.2000	38	18	17	3	0	
2001	15-16.11.2001	28	10	18	0	0	
2003	2-3. 4.2003	46	20	24	2	0	

Effectiveness in updating demand on CP issues

Content analysis of the minutes suggested that a very high proportion of the issues raised related to CP, as was the case in Eastern Kenya,. The main CP issues related to pests and diseases, fake and adulterated chemicals and the high cost of agricultural inputs. Specificity in reporting CP problems was an issue. For example, in the RREAC of January 1995, extension officers were requested to be specific in their reporting, rather than just talk of "pests and diseases" in general terms (Table 3).

Table 3: Crop Protection Issues Raised in Kisii RREAC Meetings –

CP Issues - & when raised in RREAC	Related Research Intervention – progress
Striga weed – Oct 94 – 6 districts	Some tolerant sorghum varieties mentioned as well as catch-crops in 1994. ICIPE invited and attended 3 RREACs – 1996-97 to explain "push-pull" technology..
Maize streak virus –July & Oct 94 9 Districts	Tolerant varieties were identified for testing and trials were started in ???ADD DATES – not completed due to lack of funds
Beanfly Jan, April, July, Oct 94 - ?? Districts	Resistant varieties were acquired from KARI Thika National Horticulture in 1994, and screened for bulking and eventual distribution to farmers which began in .?? ADD DATE
Cassava mealybug Jan, April, July, Oct 94 and Jan 95	Resistant varieties acquired from KARI Mtwapa/IITA by mid 1994 and tried on- farm through a joint programme of trials by late 1994/early 1995
Banana -, Panama disease Jan 95 – Homa Bay	Research confirmed this problem plus weevil/s nematodes, sigatoka and leafspot had been identified in earlier PRA. No solution offered at the time. Later, ..ADD DATE Tissue culture bananas clean planting materials were developed and tested.
Head smut in maize Jan 95- Kericho	No response in meeting, but later proposal presented in ?? ADD DATE but funding not available
Greening disease in citrus Homa Bay	Proposal but funding not available
Groundnut rosette Homa Bay	Resistant varieties tested and disseminated –

In addition to CP issues raised in the RREAC meetings, issues were also identified during PRAs undertaken. These PRAs were undertaken in 1994 as part of a KARI/DFID adaptive research programme, and from 2001 as part of the NALEP focal area approach (appendix 3a, Table 3.3).

Response to the CP issues raised.

In most cases there was a response by research to CP issues raised in the RREACs. In some cases relevant ongoing research was known to the researchers present who made the relevant contacts and sourced promising solutions (e.g. the cases of beanfly resistant bean varieties, mosaic resistant cassava varieties and striga control measures). In other cases, promising solutions came to their notice later (e.g. tissue culture bananas that had resistance). In other cases, researchers developed proposals to address CP problems raised. Delays in getting funding for these proposals led to a delay in response. There were also issues raised that were regarded as not requiring specific research interventions including:-

- Fake chemicals: Because of the thinness of staff of PCPB on the ground, MOA staff are supposed to notify PCPB on such issues for them to prosecute

- High cost chemicals: IPM and organically and locally produced chemicals are suggested

When CP issues are raised, the minutes suggest that feedback from research to extension is mostly verbal. Technical literature is rarely provided and occasional follow-up is made through field visits

Emerging recommendations

- The reports from extension, farmers and NGOs should highlight successes with technologies being disseminated (as feedback) and production constraints.
- The reporting format for extension and NGOS is not adequate to capture information on the adoption of crop protection by farmers, the demand for CP information and researchable CP areas.
- The session on "matters arising from minutes of previous meeting" could be used to address the follow-up on issues raised in previous meetings. Minutes suggest this section was not accorded the importance it deserves.
- RREAC is not the only mechanism for research to update demand for CP information. Other mechanisms include research- extension workshops, collaborative meetings, District Agricultural Committee meetings, field days and demonstrations
- Participation in these meetings requires funding, coordination and commitment. The RELO, by mandate, is best placed follow up feedback to extension, research and farmers.
- RREAC meetings have been starting very late (e.g. 1200 noon) and this starting time should improve.
- Minutes of previous meetings should be sent to various stakeholders two weeks before the next meeting.

5.1.3 Tanzania Context for updating demand and feedback

In Tanzania, during the past decade government research and extension services were spearheaded mainly by two programmes under the Ministry of Agriculture. These were the National Agriculture and Livestock Research Programme (NARLP) and National Agriculture and Livestock Extension Rehabilitation Programme (NALERP) (1990-1995 and 1992 - 1996 respectively). Research was coordinated by national coordinators according to commodity programmes. Each zone had a Farming Systems Research (FSR) Unit which aimed to promote the FSR approach including improved identification of and response to farmers' needs. Extension service was coordinated by the regional agricultural and livestock development office (RALDO). The extension approach was primarily Training and Visit (T&V) focusing on contact farmers. Farmers' problems were presented to research by extension primarily through subject matter specialists at bimonthly workshops (BMW) organized by the regional agriculture and livestock extension office (RALDO). A number of weaknesses affecting research and extension systems were identified. These included the long chain of information flow between research and farmers. (Research ↔BMW ↔MTS ↔Farmer) and the fact that contact farmers were generally not passing the new technologies and information to other farmers.

The National Agriculture Extension project phase two (NAEP II) and Tanzania agricultural research project phase two (TARP II) were executed between (1996-2002 and 1996-2004

respectively). During this period there were significant changes[7] affecting the research and development system:

- Participatory approaches have been promoted and at least partially used
- The Zonal Research and Extension Liaison office (ZRELO) was established at zonal research centres (seven across the country)
- Decentralization of government took place, with the district (rather than region) becoming the key level of implementation and Extension was placed under the Ministry for Local Government authority.
- The number of extension and research staff was reduced through redundancy and a freeze on new employment, with the result that one extension worker served an increasingly large number of farmers.
- Research –extension linkages was further strengthened by internal programme reviews (IPR), Zonal technical committees (ZTC) and zonal executive committees (ZEC) where extensionists and farmers participated.
- Farmer exchange visits and quarterly workshops were organized by the ZRELO and attended by both researchers and extension staff.
- Zonal Agricultural research funds (ZARF) were initiated iby stakeholders during this period.
- NAEP II promoted a farmer groups approach while research emphasis was promotion of already developed technologies.
- More recently the promotion of the farmer field school (FFS) approach.

Under the ASDP, the districts and the zones are now regarded as the key levels in agricultural research and development. In Tanzania, therefore, the focus was on piloting communication strategies in the context of this de-centralized framework.

It is worth pointing out that the different institutional and policy contexts in Kenya and Tanzania influenced the approach used. In Kenya the CRACs were seen as established structures which could not be radically changed through a project, but influenced through an analysis of their past performance. Hence in Kenya the performance of an existing "best-bet" strategy for improving feedback and demand identification was reviewed, and recommendations made for its improvement. In Tanzania, zonal and district communication strategies were developed as part of an opportunity toinfluence the implementation of a major new agricultural strategy (ASDP) . The communication strategies built on existing elements, but also included new components relating to feedback and demand identification. The strategies themselves were therefore pilot improvements building on existing organizations. The de-centralising political context in Tanzania facilitated a different emphasis and approach to learning and bringing about institutional change.

Central Tanzania Site Approach

In Central Tanzania, to address output 1, we identified how different stakeholders assessed the demand for their CP information, training and products and what were the incentives for these same stakeholders to provide feedback to others. We initially focused on key organizations under the ASDP – the ZRELO's office and district extension. An account of the stakeholder analysis undertaken with respect to existing demand identification and feedback mechanisms is contained in Appendix 3a.

Incentives and motivation to provide feedback

During consultations with stakeholders through visits to districts and the workshop in Dodoma in February 2004, an initial attempt was made to explore the issue of incentives or motivation

[7] The transition from one phase to the next was not entirely distinct, with a number of changes already being piloted in zones during the earlier phase

to provide feedback . Consultations in Singida resulted in the following comments regarding farmers feedback. Feedback is influenced by:-

- Frequent follow–up and discussions with the target group.
- Proper targeting: failure of proper targeting of technology users results in poor or no feedback.
- Interest: providing a technology that touches on the interests of the target group motivates the users to provide feed back.
- Interest is also determined by material gains. Technology for commercial crops e.g. horticultural crops, sesame and maize etc., is likely to give feed back as compared to non-commercial crops.
- Failure of a given technology
- Presence of strong farmer groups.
- Presence of cash crop e.g. currently Moringa, sunflower in Singida.
- Emergency: a sudden need for technology by farmers e.g. in case of pest outbreaks.

Assessing farmer demand and getting feedback on CP Needs: Experience with the Zonal and pilot district communication strategies

Under the proposed ASDP agricultural research and development system, the districts will be driving the agenda. Working with three pilot districts we facilitated the development of district communication strategies which then helped to formulate the zonal communication strategy. As the beginning of the 2004 crop season was imminent, the initial identification of CP needs was informed by district extension staff without any needs assessment exercises being carried out at that time. The district extension staff had identified these needs through village extension officers reports, personal field observations, farmers' complaints and, in one case, PRAs. The Kongwa Crop Protection Subject Matter Specialist (SMS) pointed out that there was no recent quantitative information on the effects of pests, diseases and weeds and suggested that there was a need to establish a common pest assessment procedure.

An essential component of the pilot district communication strategies is feedback of demand for services from the farming community to district level. To assess this, farmers and village agricultural extension officers (VAEOs) were asked to use their experiences from 2004 to prioritise topics about which they would like to receive further knowledge in 2005. Six VAEOs (1 from Singida, 1 from Dodoma and 4 from Kongwa) highlighted the need to focus on increasing farmer access to *Striga* tolerant sorghum cultivars and to knowledge on use of agro-chemicals and botanicals for pest control. They confirmed the need for information on sorghum smut, *Striga* and cereal stemborers and also indicated a demand for training on two additional yield-limiting constraints – termites and elegant grasshoppers (*Zonocerus elegans*).

The number of responses from farmer discussions groups varied from 1 (8 groups) to 2 (7 groups) to 3 (7 groups). However, some responses were very broad and encompassed a number of topics (e.g. "pest and disease control in field and store"), while others were very specific (e.g. "Elegant grasshopper control on cassava"). The topics were not prioritized within the groups, but each topic appears to be of sufficient importance that members of the group want more information on how to deal with it. Top priorities for farmers in all districts were control of cereal stemborers (reported by 7 out of 11 of the women discussions groups and 5 out of 11 of the men's), sorghum covered kernal smut and storage pests, especially LGB (Table 4). Demand was also high for knowledge on the use of botanicals for field crop and storage pest control. Eight new topics, not currently covered by pilot communication strategies, were also identified. Elegant grasshoppers and legume aphids appear to be a problem in Kongwa. Each district team considered how to respond to these new demands, demonstrating the dynamic nature of communication strategies and the need for a flexible approach. The content

of 2004 strategies was decided on through a rapid consultation process largely at district level. This subsequent more in depth analysis directly involving farmers provides a more confident assessment of demand. The change in the subject matter of the zonal and district communication strategies is further elaborated in appendix 3a, Tables 3.4 and 3.5. Post-harvest issues, such as marketing, are emerging as the process of consultation strengthens through this project.

Table 4: Priority crop protection topics identified by farmer discussion groups in Dodoma Rural (D), Kongwa (K) and Singida Rural (S) Districts

Topic	Districts	Women Groups (N=11)	Men Groups (N =11)
Existing topics in district strategies			
Cereal stemborers	All	7	5
Sorghum smut	All	6	1
Striga control in sorghum and maize	D, S	4	3
LGB, storage pests and use of botanicals	All	4	3
Botanicals for field pests	S, K	3	1
Onion pest control	S	0	1
Strengthening PM&E	S	0	2
Newtopics			
Elegant grasshoppers	K	1	3
Legume aphid control	K	2	0
Maize smut	K	1	0
Pests and diseases in sunflower	S	0	1
Weed control with ox drawn implements	D	0	1
Nematode control in tomato	K	0	1
Termites	K	0	1
Biological pest control	S	1	0

Note: N refers to the number of groups

Output 1: -Some lessons emerging in Central Zone Tanzania

- If communication issues originate from farmers the content is much more likely to be considered and taken-up by farmers.
- Demand for new technologies can increase through raised awareness (e.g. demand for Striga resistant sorghum variety, Wahi has increased after radio programmes).
- It appears that a zonal strategy is emerging that consists of a set of “service activities” responsive to district strategies.
- Participatory Monitoring and Evaluation (PM&E) indicators were developed at different levels from farmer group to zone, but current actual feedback is through a diversity of means (e.g. letters from farmers in response to radio programme, or farmers asking district extension officers for more information on onion management).

5.1. 4 Reflection on working assumptions

Output 1: Working Assumptions on Updating Demand and Feedback

1.1 To "stay in business" and remain credible (as individuals and organisations) agricultural service providers (this includes both public and private research, extension, input suppliers) will need a good understanding of what the demands/needs of their service users are and what their service users think about their services and products.

1.2 Government agencies, in moving away from direct service provision (particularly of extension and input supply), have an important role in co-ordinating events and processes that encourage "demand" orientation by service providers and foster relevant feedback to improve the quality of services.

1.3 Left to its own devices "the free market" will not, in the short term, deliver the range of needed CP services to producers in semi-arid areas. There is a continued need for frameworks, mechanisms and initiatives which strengthen communication and feedback between the range of actors involved in agricultural (including crop protection) service provision and working towards similar broad developmental objectives.

Reflections

1.1 The need for "demand-driven" services is strongly advocated by many donors and policy statements. Formal mechanisms (generally various committees) have been used in both Kenya and Tanzania to assess demand. In Kenya, they appear to have been reasonably effective in identifying CP research issues. In Central Tanzania, these committees ceased to function once the major World Bank funded research and extension projects came to an end. Moreover, a high value on gathering service-user feedback on services and products provided has not been evidenced during our interaction with public research and extension services. Both government and NGO programmes are more used to reporting against targets to account for funds received, rather than reporting on service quality. This could be because there is very little competition in (research and extension) service provision for the semi-arid areas[8]. Hence, based on evidence elsewhere of private sector failure and the shortcomings of command driven public sector and parastatal services[9], there is a major need to foster an environment in which public and private sector providers develop a culture of identifying and responding to demand. There opportunities to identify and build on informal processes which show promise.

1.2 Public extension services are constantly undergoing external review, resulting in changing roles of public extension in the light of ongoing reforms. The process of decentralization presents major opportunities for empowerment of local service providers and responding to local demand. However, few formal mechanisms are in place to monitor service quality from both public and private sector agencies. Moreover, while quality may be an issue, the patchy coverage of existing services in semi-arid areas suggests that scaling up service coverage should be the first priority.

[8] Although this has not been examined in this study, project R8220 also found that even private sector agricultural service organizations operating in the high potential areas of the S. Highlands of Tanzania have generally invested very little in market research.

[9] Dorward, A., Kydd, J.and Poulton, C. (1998) *Smallholder cash crop production under market* liberalisation; A new institutional economics perspective. Wallingford Oxford: CAB

1.3 This project has provided a short-term operational framework for strengthened communication between the main actors providing extension services in the pilot areas, through various workshops, meetings and joint monitoring activities. In both countries existing mechanisms for strengthened communication and linkages have been identified. In Kenya the project has reviewed an established communication mechanism – identifying weaknesses, including poor participation by producers, NGOs and the private sector and recommending improvements. In Tanzania communication strategies are being developed by the project with key public sector agencies and this is regarded as a valuable contribution in lesson learning about demand issues in decentralised agricultural services. Yet much more remains to be done, particularly in terms of including the various private sector producer representatives (farmer organisations and input suppliers) in communication processes.

5.2 OUTPUT 2: APPROACHES FOR IMPROVING STAKEHOLDERS' ACCESS TO CROP PROTECTION RESEARCH OUTPUTS IDENTIFIED

5.2.1 Eastern Kenya Team - Progress on Access Issues

In eastern Kenya the team looked at access at farmer level, and later at the level of extension divisions using a postal questionnaire. The results from the farmer level study are presented here, as the results from the other survey were still being processed at the time of writing this report, and will be reported under phase 2 of the project.

Farmer access to CP Information in Mwingi District

A rapid survey of farmer access to CP information in Mwingi District was undertaken by front-line extensionists (public, NGO and "para-extension" workers) during their farmer training sessions with groups of farmers[10].

Results

Men and women reported similar information sources, but men were slightly more likely to use newspapers and agrovets, while women are more likely to use farmer field schools (Table 5). The very high percentage of farmers reporting para-extensionist services provided through the food security programme of the Catholic Diocese of Kitui was an effect of the context for collecting the data. A very low proportion of farmers reported using the media, such as radio and newspapers, while only 10% reported using leaflets or posters. Other farmers and friends were reported as an important source of information, as were government extension staff in the areas where they operate.

[10] This sample was covered areas reached by either public or NGO extension pathways used in the pilot dissemination activities. Within areas covered, the sample included farmers who attended training sessions, self-help groups and meetings (barazas). Undertaking a free-standing household survey using random sampling was prohibitive in terms of cost and not compatible with an action-research approach.

Table 5 Farmers reports on how they currently Access Crop Protection Information in Mwingi District, – In order of frequency mentioned.

Sources of advice on Crop Protection	***% Women report using*** **No.= 1,228**	***% Men report using*** **No.=538**	***Total*** **No.=1,766**
	%	%	%
Para-extension workers	75	63	74
Other farmers and friends	54	49	54
Govt extension staff	16	17	17
Leaflets or posters	10	10	10
NGO extension staff	8	9	9
Field Days	9	7	9
Farmer Field schools	8	4	6
Radio	5	6	6
Agrovets/ Traders	2	8	4
Other source – Seed bulkers	2	3	3
Newspapers	1	4	2
Schools via children[11]	0	0	0

Reliability and accessibility of sources

The same farmer groups were asked to assess the reliability and accessibility of the sources of CP information which they listed as using. The findings clearly line up with current extension policy in terms of supporting a diversity of extension service provision, in that the 24 groups had different perceptions as to which information sources were more reliable and accessible. At the same time, they also show that many of the services regarded are reliable in terms of the quality of information, are not very accessible. The four main reliable sources identified were; government extension, agrovets, para-extension workers and farmer field schools. Newspapers were seen as a reliable secondary source, presumable based on some experience that newspapers generally have a high quality of information. In terms of accessibility, only para-extension, government extension (and to some extent field days) were significant. This indicates a gap between reliability and accessibility of information sources. The high reliability but low accessibility rating for agrovets and newspapers (the "reliability-accessibility gap"), indicates that the private sector is not performing well in terms of providing access to CP advice in the rural areas of Mwingi (Table 6). It also reflects an opportunity for the private sector to improve its coverage. Primary schools were hardly mentioned as information sources, but one group did see them as reliable sources. The reason is probably that primary schools are not usually involved in agricultural extension activities, although a previous CPP project in Mwingi did use drama competitions as a dissemination medium. This was based on the potential for using other local institutions for dissemination, given the limited coverage of public extension services in semi-arid areas. It is probably related to this that one group mentioned schools as a reliable source.

[11] A few farmers did mention schools, but this was less than 1% hence not reported as a figure.

Table 6: Comparison of farmer group perceptions of the Reliability and Accessibility of Sources for Crop Protection Information in Mwingi District – In order of frequency mentioned (No.= 24 trainee groups totalling 1,766 farmers)

	Most reliable source	**Second most reliable source**	**Most accessible source**	**Second most accessible source**	***Reliability-Accessibility Gap*****
Government Extension	6	2	7	7	*+6*
Para-extension	5	1	12	1	*+7*
Agrovets/ Traders	8	1	1	1	***-7***
Farmer Field Schools	3	3	1	1	***-4***
Newspapers	0	7	0	0	***-7***
NGO extension	1	2	0	3	*0*
Field Days	0	0	3	3	*+6*
Other farmers	0	0	0	3	*+3*
Radios	0	1	0	0	***-1***
Schools through children	0	1	0	0	***-1***
No response/opinion	1	6	0	5	
TOTAL	**23**	**18**	**24**	**19**	

*** The gap is the total of the first and second most reliable source, subtracted from the total of the first and second most accessible information source. A minus score suggests that these sources were seen as not accessible, even though they were perceived as reliable.*

Payment for CP information services

Asked if they would pay for CP information, half the trainee groups said they would pay, while one said they would not pay, and another asked "how much". Others did not address this question. For those indicating they would pay the price they suggested varied a lot:-

CP leaflet - Ksh 2-150
CP training - Ksh 30-300
Farm visit - Ksh 20-300

For the other half of the trainee groups, the trainers recording did not report what the farmers said about payment, except in one case when the farmers asked "how much would it cost?" In a good number of cases the para-extensionists did not complete this part of the questionnaire. Possibly they felt embarrassed to ask this question from their trainees, who do not usually pay for the training provided.

Measures tried to improve access

An inventory of the available technologies to address CP issues in the main crops grown in semi-arid areas was compiled. This was distributed to district stakeholders attending a workshop. At the same workshop during group-work participants from three stakeholder categories (public extension, public research and NGOs) undertook an analysis of existing extension systems and approaches. All three stakeholder groups and identified interactive learning approaches as the most useful, along with the production of more accessible technical CP information for use by farmer trainers and relevant training of trainers events.

The production of CP information for use by farmer trainers was piloted through a Training of Trainers (TOT) event. The event had clear objectives (see Box 1).

Box 1 Mwingi 2004 C.P. ToT Workshop Objectives

- *Provide all participants with a common understanding of the project,*
- *Effectively impart knowledge on three selected technologies to all participants, without bias to their level of education/ background,*
- *Provide training materials, a pack, to trainees that will be their basic resource to inform their dissemination activities,*
- *Develop and agree on the plans for how this knowledge will be disseminated to farmers and how the effectiveness of the dissemination approach used will be monitored and assessed.*

The workshop also documented the participants' expectations with regard to the training, which as summarised in Box 2 were more wide ranging than the training content delivered. The list of expectations illustrates both the demand for a broad range of technical information relating to crop protect and other areas (e.g. crop utilisation) from extension providers in semi-arid areas, as well as a need for training aids, knowledge on how to train farmers and clear plans for applying the training.

Box 2– Mwingi 2004 CP ToT Workshop Trainee Expectations

1. *Adequate knowledge on grain preservation*
2. *To know what really causes damage on field and food crops*
3. *Adequate training aids to help train other farmers*
4. *Adequate training knowledge*
5. *To know different utilisation options of various food crops grown in semi-arid areas*
6. *Control of pests without using chemicals*
7. *New technologies (from research) for controlling pests*
8. *To know the time when pests damage their crops*
9. *After the training, whom will the trainers train and what will they train on?*
10. *Pest resistant varieties (from research)*
11. *Weed control (particularly "Kavoryo", a notorious weed around Kyuso)*

At the end of the workshop the expectations were re-visited to guage the extent to which they were met. Participants felt that 80% of their expectations had been met. The gaps were technical topics not included such as details of pest tolerant varieties, and utilisation methods for drought tolerant crops.

The TOT workshop was linked to production of a training of trainers manual addressing three selected CP technologies; control of cover kernel smut, improved seed and grain storage, and stem borer control. A draft of the manual was produced and distributed at the workshop to a sample of people involved in front-line extension work with farmers. Copies were also sent to some researchers. Feedback was obtained from the three categories of trainee (farmer para-extensionists, teachers and public extensionists) and used to further improve the manual. The technical content of the manual and training is summarised in Box 3.

Box 3– Eastern Kenya ToT CP Manual Contents

Introduction
TOPIC 1: Improved Stover Management Practice to Reduce Stem Borer Damage in Sorghum and Maize Production in Semi-Arid Eastern Kenya (SAEK)
TOPIC 2: Sustainable Control of Covered Kernel Smut and Other Sorghum Smuts
TOPIC 3 (A): Effective Food Grain and Seed Storage
TOPIC 3 (B): Seed Dressing

On the last day of the training, each trainee prepared an outline action plan of how they would use the training (Table 7). The draft action plans for farmer training were further developed, and the process whereby these were implemented and evaluated is covered below in Section 5.3.1.

Table 7: Example of an Action/ work-plan

What: (Topic/ Title of activity)	**When:** Time during the year	**Where:** Activity location	**By Whom:** Who will be responsible	**Duration:** How long will it take (Days/ weeks/ months	**Resources:** What will it take/ require - facilitation	**Remarks:** Assumptions/ Comments
Demonstration on improved stover management practice	8th, 16th and 26th February 2004	Kakuyu FFS	Mr. Kubora	3 x 1 day visits	KShs.500/= for lunch x 3 lunches = KShs.1,500/=	To utilise the current season's stover for demos.

Looking at access to resistant varieties from a farmers' angle, a follow-up survey was undertaken by a public extension worker which assessed the extent to which a participatory on-farm screening of pest tolerant sorghum varieties (under project R7572) had provided access/uptake by other farmers (See Appendix 3b)

5.2.2 SW. Kenya: Progress on Access Issues

In SW Kenya, the main focus was on a stakeholder access from the perspective of various types of service providers, ranging from community level organisations such as self-help groups, to CBOs, NGOs, public extension and other research organisations operating in the area. A farmer level survey on access was not undertaken, as the participatory planning and monitoring process by the stakeholder representatives did not include this activity.

Highlights from stakeholder access survey

Objectives

A postal survey was undertaken to review and analyze mechanisms in place for assessing demand and access, identifying barriers to access and gather suggestions for improvement for accessing CP information. This was seen as a cost-effective option to gather information in advance of the first stakeholder planning workshop. Out of about 60 questionnaires sent out, responses were received from 47. The following stakeholder groups responded: public extension (25), self-help groups (10), community based organizations- including self-help groups adult education(16), NGOs (3), the private sector (1) and non KARI researchers (3). These groups provided the sources of access to crop protection information at the start of the project (Table 8). The results indicate that the stakeholders differ very much in terms of their current sources, both in range and in which sources they can access. While the system of access is not completely closed, there is a clear dependence by CBOs on the other stakeholders, and by public extension on the private sector and research leaflets.

Table 8: SW Kenya Current Sources for accessing CP research results or information (% of respondents in each category indicating source)

	Public Extension No =25	CBOs etc. No =16	NGOs, Private Sector, Research No =7
Leaflets/pamphlets	70%		
Agri-business stockists	57%		57%
Workshops/seminars			
NGOs		44%	43%
Researchers		35%	100%
Public extension		77%	71%
Farmers ITK			43%

Table 9: Assessment of CP Information Sources by Stakeholders in SW. Kenya: Usefulness, Quality and Availability of main sources (Scores: 1= High, 2=Medium, 3=Low)

Extension (District and Divisions) Main Sources of CP Information – No=25	Availability Av. score	Usefulness Av. Score	Quality Av. Score	Quality-Availability Gap**	Usefulness - Availability Gap**
Demonstrations	2.0	1.0	1.0	**1.0**	**1.0**
KARI/Research	2.3	1.0	1.1	**1.2**	**1.3**
Stockists	1.8	1.2	1.8	0.0	0.6
Agro-chemical companies	2.1	1.1	1.3	0.9	**1.0**
Workshops/Training courses	2.9	1.1	1.3	**1.6**	**1.8**
Books	1.9	1.3	1.7	0.1	0.6
Field day	2.5	1.0	1.0	**1.5**	**1.5**
Agric Ext. Office	1.7	1.2	1.6	0.1	0.5
Leaflet/Pamphlets	2.8	1.3	1.4	**1.5**	**1.5**
Magazines	2.8	1.4	1.4	**1.4**	**1.4**
NGO	2.2	1.6	1.6	0.6	0.6
ASK Show	2.7	1.7	1.7	**1.0**	**1.0**
Farmers	1.7	2.3	2.7	-1.0	-0.7
Media (radio or newspaper)	2.0	1.8	2.2	-0.2	0.2
Chiefs Barazas	3.0	3.0	3.0	0.0	0.0
AVERAGES	**2.3**	**1.5**	**1.6**		

*** The gap is the average score for availability and for quality, subtracted from the average score fore availability. A positive score of more than one is taken to indicate that the source is in relatively high demand, but the supply is limited, while a minus score indicates the supply is relatively good.*

The gap analysis results (Table 9 figures in bold in the two right-hand columns) indicate the perceived shortfall between supply and demand (as expressed by the quality-availability and usefulness-availability gaps) for various CP information access mechanisms. The biggest felt need from public extension is for workshops and training courses, followed by events such as field days, appropriate literature and interaction with research. This analysis informed the choice of activities to improve access below (Section 5.3.2)

Barriers to Access

The following were listed as the main barriers to accessing CP information by the respondents:-

- Poor availability of reading materials/literature
- Few opportunities to attend fora – trainings, workshops, seminars, field days, demonstrations
- Information available is often out-dated, impractical, lacking in enough detail.
- Difficulties in understanding the information available due to language barriers and use of over-technical terms,
- Lack of effective communication mechanisms to facilitate acquiring information from the sources
- Lack of resources with which to access information (e.g. via travel, phone, internet etc)

Suggestions for improving access to CP information

- User friendly language in publications

- Improved coordination of all stakeholders and linkages with other institutions in the uptake pathways
- Avail more literature/information to rural areas.
- Provide more CP training opportunities
- Involve department of adult education in dissemination to improve farmer access

The survey on access did not explore aspects of cost-sharing or incentives with regard to improving access to CP information. At present the norm is that farmers are not given any allowance for attending field day and day workshops, but often expect to be given lunch if the meeting is prolonged and has been organised by public organisations. Where the meetings are less formal and organised by farmers, they often make their own lunch arrangements. Salaried employees of public extension research or NGOs usually claim lunch allowances for attending which are paid when this has been included in the budget.

Measures the project tried to improve access

Attention was given to addressing access constraints through an CP information gathering and synthesis exercise. A range of organisations and individuals involved in research within Western and other parts of Kenya were contacted and visited, and through this an inventory of available and relevant CP technologies for the drier areas was compiled (see Appendix 3b). Only "locally proven technologies" were documented.

Catalogue

The inventory was further developed into a "catalogue", the aim of which was to raise awareness of available technologies; how they work, their potential benefits and where further information could be obtained. A one page description of each technology was developed, including a photograph where possible (see example in Box 4).

Box 4 Entry in Crop Protection Technology Catalogue for Drier Areas of SW. Kenya

Title of the technology
Stem borer incidence in sorghum intercropped with maize and cowpea tested in Kenya

How it works
Intercropping minimizes insect populations by increasing the diversity of an agro-ecosystem. Intercropping also reduces the succession and build-up of insect pests in cereals

Which crops it can be applied to
Maize, Beans, Sorghum, Cow pea

Where it has been tried and adopted farmers
Kenya: Mbita, Rongo, Lambwe Valley

Observed benefits
Intercropping has been practiced by farmers for along time hence can fit in their farming systems. Food diversity as a source of food security is accomplished. Reduced insect infestation guarantees higher yields

Any risks or costs
Failure of the legume due to other factors may lead to reduced yields

Where further information can be obtained

ICRISAT. Omolo E. O. 1985. Stem borer incidence in sorghum intercropped with maize and cowpea tested in Kenya. Sorghum and millets improvement in Eastern Africa. Proceedings of the fourth Regional workshop on sorghum and millet improvement in East Africa 22nd -26th July 1985.

Other measures that were tried out to improve access included a training of trainers workshop, field days, and production and distribution of "easier to read" technical materials (including pamphlets in local languages). A similar training of trainers event was held to that in Eastern Kenya, but covering different technologies, and with a wider technical focus, including the basic principles of integrated pest management (see Box 5). At the end of the training, learning by participants was evaluated against a knowledge test set at the beginning for the trainees.

Box 5– Content of 2004 ToT Workshop Programme SW. Kenya

Topic 1: Management of Tomato Production

Topic 2: Sorghum Bicolour (L) Moench

Topic 3: Insect Pests, Damage and Control on Crops

Topic 4: Introduction to Biological Control on Crops

Topic 5: Plant Pathology

Topic 6: Diagnosis of plant diseases

Topic 7: Important Diseases of Major Crops in S. W. Kenya and their Control

From this training of trainers, front-line extensionists from selected dissemination pathways were tasked to train farmers as elaborated below (Section 5.3.2). Materials produced included a training of trainers manual which contained the materials used for training and colour photographs for identification, along with leaflets on specific topics.

5.2.3 Central Tanzania: Progress in Understanding Access

Who are the stakeholders?

The Central Zone research centre is at Livestock Production Research Institute Mpwapwa, which is essentially focusing on livestock research, with some crop-based research taking place at Hombolo and Makatuporo nearer Dodoma town. Ilonga Agricultural Research Institute (Eastern Zone) is relatively close and has lead responsibility for grain legumes, sorghum and pearl millet research programmes. In line with the Local Government Reform Programme and the Public Sector reform Programme, the Ministry's extension service has been reduced and substantially decentralized. Regional Offices for Dodoma and Singida regions now have a co ordinating/ advisory/ monitoring role and the District Offices (nine in the Central Zone) have an implementation role working to the District Councils. The Plant Health Services (formerly Crop Protection Division - has responsibility for aspects of plant quarantine (including the new Plant Protection Act) and pest outbreaks (e.g. Quelea and Armyworm) and has been promoting IPM (with support from the Tanzania German IPM project 1992-2003). It has five zonal centres across the country, including Central zone based in Dodoma. National and international non-governmental organizations (NGOs) and community-based organizations (CBOs) have become of increasing importance in Tanzania. As well as being involved in direct relief and

development, a number of NGOs are moving to a rights-based approach and lobbying government on behalf of vulnerable groups. A number of NGOs are involved in agriculture in the Central Zone including: CARITAS, Lutheran church, World Vision, INADES Formation Tanzania and Diocese of the Church of Tanganyika (DCT). Many of these NGOs have been involved in improving farmer access to information, training and products, particularly seed. The private sector is generally more active in more favourable areas and/or with crops that have an input or output market. In Central Zone traded crops (e.g.maize) are comparatively few and vary depending on the rainfall in any given year e.g.maize.

How are stakeholders currently accessing CP information?

Farmers – Baseline survey

Introduction In February 2004 a baseline survey was conducted in five out of sixteen villages in the three pilot districts (Singida rural, Dodoma rural and Kongwa). The survey focused on what farmers do, how they do it, why they do it and sources of information or technology. Target crops were sorghum, maize, onion and tomatoes. Ten households were selected from each village, and using a stratified sampling approach five of which were purposively selected female respondents. Physical observations and household visits were done to triangulate information. Open ended questionnaire were administered. Following the individual interviews, a focused group discussion was held in five of the six villages and a matrix ranking exercise was carried out of the sources of information according to criteria identified by participants.

Results

Sources of information/technologies - sources reported by farmers included: Agricultural extension officers; Parents, Various Seminars, NGOs (eg. NPA, Sasakawa G2000); Workshops; Innovative (nodal) farmers; Farmer groups; Other farmers; Traders; Neighboring tribes; Schools e.g. primary schools under ICRISAT- project; Radio programmes; Visiting Researchers.

Ranking of information pathways – farmer groups' sources of information and their priority were ranked differently by farmer groups in five villages. In Mudida and Merya villages (Singida) extension workers and parents were ranked first or second by all four farmer focus groups. In Buigiri and Zanka villages extension workers were ranked first by all four farmer focus groups, with other farmers, an NGO and seminars being ranked second. In Mlanje (Kongwa) a farmers' group and extension worker were ranked first and extension worker and parents second.

Gender differences - women had fewer sources of information compared to men across the villages. Women did not indicate radio as a source of information.

Criteria for assessing information sources as perceived by respondent farmers – the criteria which were mentioned most frequently by the farmer focus groups were: Reliability of information from the source (7 responses out of 10 groups), Knowledge level of the source of information (7 responses); Vicinity of information source (6 responses); Level of education of information source (5 responses); Cost of information (5 responses) and ease of information transfer (5 responses)..

Conclusions – the above information is drawn from the farmer focus group discussions which are themselves based on individual interviews. However, the individual interviews, which have provided some rich material, need further analysis and will be reported more fully in the FTR of the future phase. This will particularly help to distinguish between information sources which are informing current practices and perceived preferred information sources. From the

focus group discussions extension workers though few in number, are generally ranked highly as sources of information. This should be regarded as a source of encouragement to public extension. However, it should be stressed that the survey was carried out where the project is operating and all these villages have extension workers, whereas many others do not. Informal systems are clearly very important involving, for example, parents to children. Women had fewer sources of information than men and radio was not indicated by women due to timing of programmes and access to radios.

All stakeholders

Consultations and workshops with stakeholders provided indicative information about stakeholders' access to CP information as summarised in Tables 10, 11 and 12.

Table 10: Stakeholders' roles or activities and requirements in crop pest management

Farmers	Extensionist	Researchers	NGOs
Roles/ activities • Agriculture production	• To deliver technical advice to farmers	• To release resistant seeds to pest and diseases. • To make and recommend chemicals to control pest and diseases	• Enable farmers produce and make good storage of seeds and crop produce.
Requirements • Knowledge on control of pest and diseases • Correct dosage on application of chemicals • Chemicals for controlling pest and diseases • Improved seeds of onions maize and sorghum • Tools and equipment for controlling pest and diseases	• Tools and equipment: • Transport • Extension packages • Facilitation • Training of trainer and studies • Communication tools website and internet	• To get information on the existence of crop pest and diseases. • Identify resistant crop varieties • Facilitating the release of resistant crop varieties	• Audio-visual aids and training tools, e.g. booklets, leaflets, reports. • Means of transport • Experts. • Farmers (groups) • Tools and implements. • Communication with other stakeholders. • Crop storage structures. • Linking farmers with other institutions and with farmer groups

Source: Stakeholder workshop Dodoma February 2004

Table 11: Stakeholders' sources of information on crop pest management

Farmers	Public Extensionists	Researchers	NGOs
Existing • Extension staff • Researchers • Farmer to farmer • Leaflets, Radio, News letters such as "mkulima wa kisasa".	• Weather forecast • Plant protection division • Farmers • Village and ward executive officers • Researchers/ extensionists • Crop protection division	• Research survey of farmers • Mass media such as radio • Extensionist from GOs and NGOs • Different research reports on control of pest and diseases	• From farmers • From booklets and newspapers. • Workshops, meetings and seminars. • News media.
New • Researchers/ extensionists • Meetings • Workshops.	• Extension staff • Researchers • Farmer to farmer • Leaflets, Radio, News letters such as "mkulima wa kisasa". • Workshops/seminars. • Websites/internet	• Research survey of farmers • various newsletters • Different research reports • Workshops/seminar/meetings • Newsletters • Websites/internet • Study tours/short training courses Study visit to other research centres.	• From Government leaders' through news media. • New published agricultural research findings. • Website • Meteorological department through the radio. • Research meetings and conferences

Source: Stakeholder workshop Dodoma February 2004

Table 12: Examples of sources of information, forms of information and linkage mechanism in pilot districts

District	Source of information on CP	Forms of information	Mechanism of linking with source of information
Kongwa	Farmers	Local knowledge	Extension – Farmer groups grass root approach
	MAFS	Books;Newsletters; workshops exchange visits	*Ukulima wa kisasa* newsletter at cost recovery basis.
	INADES	Workshops exchange visits	Participatory trials through farmer groups e.g. (Umoja group)
	Agrochemical stockiest	Information on chemical use on the containers	No clear mechanism reported
Dodoma Rural	Farmers	Local knowledge	Farmer groups Extension visits
	NGOs + CBOs	Cassava disease posters r	Joint planning *Nane Name* agricultural shows.
	MAFS	Books and booklets	Through ASPS project
	RESEARCH (ARI Ilonga)	Resistant varieties (e.g. Wahi and Hakika)	On form trials Quarterly workshops Visits
	ICRISAT – SMIP	Drought tolerant crop varieties	On farm trials
Singida Rural	Research – Kibaha Sugar research	Currently on biological control	Training sessions, e.g. on biological control at Kibaha Sugar research centre
	Research – ARI Ilonga	Striga control leaf blight	Letters, telephone, fax to research centres Research visits to extension sites. Extension visits to research especially during NARLEP.
	MAFS (Zonal Communication Centre – Central zone)	Various issues	Meeting at various levels. Zonal research meetings, e.g. IPR ,ZTC and ZEC. Newsletter such as 'Ukulima wa Kisasa'(or modern farming)
	Farmer – Local knowledge	Stalk borers control using "sand"	
	LAMP – Singida	Leaflets on various issues Cropping calendar	

Source: Stakeholder consultation survey 2004

Findings from the consultation visits to Kongwa, Dodoma and Singida districts.

Farmer - Extension – Research

- There are weak research-extension linkages e.g. research findings are not transformed into farmer/user-friendly forms.
- Research results remains in the hands of researchers while farmer experiences remains within local communities
- Some research findings may be lost due to policy shifts, institutional re-organization, staff changes, inadequate skills and poor facilitation.
- Extension has no culture of requesting available technologies from research.
- There is a lack of trust and mutual partnership in executing activities e.g. on-farm trials.
- Lack of financial support for extensionists to participate in on-farm trials

•Noted weaknesses on *Ukulima wa Kisasa* newsletter (produced by MAFS) -
Copies pile up in extension offices. No one is bothering to take them to farmers.
Few copies reach the district extension office. Low demand for the newsletter
Price seems to be high. Issues reach districts very late and content doesn't coincide with the cropping calendar.

Farmer local knowledge experiences - in all districts farmers have a lot of experiences in using botanicals and other techniques in CP these include: Muhunungu tree (ash); Neem tree; Msakambaka tree (leaves); Livestock urine; Sand; Ashes from chaffs of sunflower, sesame, animal droppings.
However, the challenge remains validation by researchers.

Access to computers and the internet
A significant issue for the ZRELO's office is lack of access to the internet at LPRI Mpwapwa. Currently, staff generally have to travel to Dodoma town to use internet services. Fortunately, a mobile phone network has recently extended to Mpwapwa town. Hopefully, access to the internet will be addressed in the not too distant future. There are limited facilities for activities such as desk top publishing, with the ZCO using either his own or personal contacts much of time, There would be considerable advantages to making more appropriate equipment available in terms of e.g. savings in time, quality of products and allowing the use of appropriate software e.g. for video editing..

Improving access through the development of district communication strategies
To address the issue of access to CP information, training and products, the project facilitated the development of CP communication strategies in three pilot districts.

Output 2 -Some lessons emerging in Central Zone Tanzania
- Farmers reported the government extension service and their parents as the most important sources of information, but this was in villages with extension staff.
- Access to information varies considerably both between sites and within sites(e.g. women have limited control of radios in the household)
- Relations between stakeholders e.g. levels of trust, degree of mutual respect are emerging as important factors influencing access to information and how people learn.
- There has been little incentive (or resources) in previous systems for service providers (particularly in the public sector) to access new information
- Quality assurance with respect to "technical content" of the communication processes is a major issue.
- There is a need for on-going capacity building, this includes enhancing stakeholders' capacity to access new information. However, as noted above incentives also need to be in place to encourage the seeking out of such information.

5.2.4 Reflections on working assumptions

Output 2: Working Assumptions on Access to CP Information and Products

2.1 In the small-holder agricultural sector in East Africa the trend is towards increasing pluralism in agricultural research and extension services and a much more liberalised input supply situation. In order to remain viable and compete (in many instances for external donor aid or in-country national or local treasury funds), service providers will need access to high quality and relevant information and products.

2.2 Likewise, to compete within an increasingly globalised economy, farmers too need access to quality information and products, which they may seek from a variety of sources.

2.3 At both levels (service providers and farmers) some players are more advantaged than others in terms of access.

2.4 Poverty focused policies guiding use of public funding to enhance access to CP services may in the short and medium term seek to "level the playing field" or target disadvantaged categories (e.g. women, "poorer farmers") and areas (e.g. remote, semi-arid).

2.5 Strategies to address poverty may shift in focus; away from household food security towards income generation as a pathway out of poverty. This has implications for the type of CP information that might be needed – e.g. more emphasis on cash crops and commercialisation of "subsistence" crops.

2.6 Changing livelihood strategies and opportunities may also render farmers more willing to pay for access to CP information and advice. Under the scenario of increasing commercialisation of agriculture in semi-arid areas there will be more opportunities in the short to medium term for public-private partnerships to widen access to CP services.

2.7 There may also be more need in the medium to longer term for improved regulation, quality control and definition of intellectual property rights so that there are incentives for availing information of a higher quality while ensuring that access to information is not unduly restricted.

2.8 A useful starting point is to understand the current situation regarding access to CP information and products, and then seek ways to improve both quality of CP information and access to it.

Reflections

2.1 The analysis of the current access situation in the three sites was helpful in devising ways to improve access, although not all of the weakness identified could be addressed by the project.

2.2 The focus on access was based on an assumption that service providers actively seek out new information and products. However, most service providers have operated in a responsive mode and are generally not planning strategically. There a number of reasons for this including:1) having historically played the role of conduits for development programmes or commercial products; 2) the operating culture has not generally rewarded a pro-active approach; 3) in some cases service providers have limited specialist technical capacity in CP – hence they have limited awareness of their needs in terms of access to high quality CP information and products.

2.3 Farmers too have limited technical CP awareness. Farmers do seek CP information from a variety of sources and hold views about the reliability of the sources they use,

2.4 The more advantaged service providers are those who collaborate with CP research and those who have good connections with the commercial companies and access to the internet and other forums. More advantaged producers are the literate and geographically mobile. Those who stay in areas used as on-farm research sites and included in development programmes with a technical content are also advantaged. While current policies emphasise participation and group approaches, the emphasis also placed on focal areas, enterprises and common interest groups could lead to further marginalisation of the poorer producers in the context of extension coverage. There is however limited evidence on this.

2.5 The trend in the project pilot areas does suggest increasing interest by farmers and development agencies on income generating crops, and the project has been able to respond to these interests using information from various sources, including other CPP projects and other DFID funded initiatives. The CPP promotional material on vegetable production has been particularly useful.

2.6 There appears to be relatively little communication and sharing of CP information and approaches within the region and the project has identified the potential for greater exchange of dissemination products within the region. For example a Swahili pamphlet developed by the project for tomato growers in central Tanzania is being successfully used by a CABI-led dissemination project in Kenya.

2.7 In Kenya, farmers have expressed willingness to pay something towards extension services. While the potential for public-private partnerships may exist, the project did not set out to develop these, and both parties seem to be quite wary of each other. New models and ideas are needed for public-private collaboration. Developing mutual respect and trust is a long-term task and little may be achieved in this area through projects of a short duration.

2.8 The project site teams have found it relatively easy, given resources, to access a range of useful technical information from which to prepare locally produced training and dissemination materials. The teams have used their own knowledge and gained knowledge through informal contacts and visits to other researchers working in publicly funded institutes. Much of the information that was used is not in the “public domain” (i.e. easily accessed by the public). Intellectual property rights have not yet emerged as an issue, but could do so in future.

5.3 OUTPUT 3: METHODS FOR DELIVERY OF CROP PROTECTION RESEARCH OUTPUTS TO UPTAKE PATHWAYS AND FARMERS PILOTED

5.3.1 Eastern Kenya – progress on piloting methods and uptake pathways

On the basis of the discussion and analysis of existing dissemination mechanisms during stakeholder meetings, a limited number of pathways and mechanisms for delivering information to farmers were identified for pilot testing. In view of the urgency of starting activities before the cropping season ended, the pathways tested in Eastern Kenya were identified before the farmer access survey was undertaken. In Eastern Kenya the three uptake pathways identified for piloting, based on a review of what had been tried in the past, were:-

1. Front-line Public Extension
2. An NGO (CDK) extension programme using its own and para-extension staff,
3. Local primary schools

A description of each pathway as described by the agency representatives is elaborated in appendix 3c. Primary school dramas were included so that a novel idea developed by a previous CPP project and used in Kenya and Tanzania (R7518) could be formally evaluated against alternative mechanisms. A training of trainers (TOT) approach was used to target the three pathways (see 5.2. above). The decision was to target training those having a "front-line" function, i.e. in direct contact with the local community[12]. However, in order to generate wider understanding and support for the piloting exercise, their administrative and technical supervisors were also included in the training.

As part of the TOT course, the frontline staff were requested to prepare action plans for using the training, and this included the methods they would use to organise farmers and to communicate with them. The mechanisms for communicating with farmers as described by the participating stakeholder extension providers are summarised in appendix 3c.

Use of CP Training by Three Pathway Organisations

Use by the three pathway organisations of the CP training provided as at October 2004 is summarise in Table 1 below. All three pathways did use the training provided to train farmers, and that all presented plans of how they would use the training. In interpreting Table 1, it should be noted that the trained government extension and para-extension had a free hand to use the training in any way they wished, but were only given basic funding (for trainer transport, lunch and basic training aids) if they produced a training plan. The primary school teachers were expected to use the training mainly to participate in the drama competition, for which funds were provided. It was expected that primary schools would have fewer training

[12] An alternative would have been to train extension specialists at a higher administrative level (for example District Crops Officers in public extension), on the understanding that they would have in turn trained staff further down the administrative chain. This option was rejected for two reasons. Firstly, given the limited time for the project there was need to train front-line staff if the effects of dissemination mechanisms on farmers' behaviour was to be assessed. Secondly, stakeholders, based on past experience, felt that training of the higher level staff was risky because a) they had a poor past record in training the staff they support, and b) they are removed from the farmer's situation and therefore less likely to be able to assess the technical validity and relevance of the training provided for local farmers. This decision was, moreover, broadly consistent with the shift in public extension policy under NALEP which re-focuses decision making about technical content and resource allocation from the district level to the divisional level.

events, as they have a full curriculum to follow. The main aim was for them to use drama competitions as an existing promising method which had been tried before in the area. The other two pathways had agricultural extension as their core activity, and were expected to make comparatively more use of the training provided.

Table 13: Comparison Of Use Of TOT By Main Pathway Categories*: Action plans, Trainings Reported, Farmers Trained (as at Oct 2004).

	No. Trained	No. Submitting Action plans	No. Filing Reports	Av. No. of trainings reported	Av. No. of Farmers Trained per trainer
NGO (Para-extensionists)*	13	11	8	3.5	256
Public Front-Line Extensionists	9	7	4	3.6	71
Primary Schools Teachers	4	4	-	0.25	45

** All the data on the NGO pathway relates to use of training by community based para-extensionists as the 3 NGO extensionists trained had not submitted farmer training reports at the time of data analysis.*

Further analysis of the use of training provided, and associated costs is given in Table 14. The range data on number of trainings reported suggest differences within pathways in terms of use of the training, but not much difference between NGO and public extension. Data also suggest that the NGO para-extensions as a group are more varied than the public extension workers in terms of their ability to reach numbers of farmers during training, while the public extension are more varied in terms of the time taken to provide training. Costs increase as one moves from NGO to public extension and from public extension to Primary schools. This relates mainly to the differing logistical demands of each of the pathways, and also different entitlement to field allowances by the various people involved in the pilot activities. The higher costs relating to primary schools needs to be understood in the context of further exploring the potential of a pathway that has been used very little. This activity was supervised directly by a researcher, with input from senior education officers, and includes the costs of producing a video of the plays produced. Use of video documentation was encouraged through interaction during the external review visit, as part of widening the range of communication tools used in each project site. The involvement of senior education officers was a way of increasing awareness at district level of the idea of using primary schools in extension work. Researcher supervision costs are not included in relation to the other pathways.

Table 14: Comparison of Use of ToT by Main Categories of Trainer: Range of Trainings Reported, Farmers Trained, Trainer Hours Spent and Money Costs (as at Oct 04)

	Range of No. of trainings reported	Range in No. of Farmers Trained per session	Range in Trainer Hours spent per session (including planning and mobilisation sessions)	Range in cash cost per session
NGO Para-extensionists	2-8 trainings	15-400 farmers	2 - 4 hours	Ksh515 – 920
Public Front-Line Extensionists	2-8 trainings	10-53 farmers	1 - 6 hours	Ksh 790 -1,455
Primary School Teachers	1-2 trainings	34-160 farmers	2.5 – 27 hours	Ksh 900 -36,000

In terms of use of the technical training provided, as reflected in the topics chosen for training sessions, there was not a great difference between public extension and NGO extension (Table 15). Public extension were more likely to focus on grain and seed handling and storage, which they saw as a priority at the time the training was done in terms of food security for the coming months. Primary schools did not include cover kernal smut because they had already covered in previous drama competitions.

Table 15: Comparison of Use of Feb 2004 TOT by Main Categories of Trainer: Use of Four Training Topics – No. of Training Sessions in Each Topic (as at Oct 04)

	Improved Stover Management	Cover Kernel Smut Control	Grain handling and storage	Seed selection and storage	TOTAL
NGO Para-extensionists	5	2	5	2	14
Public Front-Line Extensionists	6	4	11	6	27
Primary School Teachers	2	0	2	0	4
TOTAL	**13**	**6**	**18**	**8**	**45**

Comparison of Mechanisms Used

All five of the dissemination mechanisms were used, but not all pathways used all mechanisms (Table 16). The primary school teachers trained only used drama competitions, and none of the other pathways used drama. The public extension did not use existing self-help groups as such, although extension managed farmer field schools are mostly formed around self-help groups. On this basis, the use of group based methods was the most popular of the options. While one para-extensionist had massive success in using barazas (accounting for more than half of all farmers reached), this experience was not shared by other para-extensionists or public front line extensionists. The recording of information about methods used also raised issues about the difference between the methods. For example, in terms of method some of the demonstrations undertaken by para-extensionists were similar to the training of self-help groups. This high-lighted the need for more precise descriptions of methods used as part of the planning and reporting of dissemination activities in the pilot areas.

Table 16: Comparison of Use of Training Mechanisms by Main Categories of Trainer (as at Oct 2004)

	Demonstration	Farmer Field school	Baraza	Established Group	School Drama
Para-extensionists	6	1	8	14	0
Public Front-Line Extensionists	2	12	3	0	0
Teachers	0	0	0	0	4
TOTAL	**8**	**13**	**11**	**14**	**4**

Reflection by front-line practitioner's on dissemination mechanisms

At the end of the first learning cycle, a small lesson-learning workshop was organised involving a sample of the frontline staff from public extension and the NGO para-extensionists. Public extension staff and para-extensionists met to discuss their experiences in small groups. Each group selected as case studies for discussion training events that did not go as well as the trainers had expected with the aim of identifying lessons – "what they would do differently next time". They then discussed the strengths and weaknesses of the methods they used, and identified the main lessons.

The outputs from the group discussions, together with an evaluative report on the primary school drama competitions are included in Appendix 3c. The main lessons emerging are summarised below.

Practitioner comparative assessment of extension methods

Participants at the lesson learning workshop assessed the comparative performance of the four selected dissemination methods based on the analysis of the strengths and weaknesses of each method, followed by a scoring system using expert opinion. This based on 25 performance indicator questions (see Table 3.7, Appendix 3c) which related to aspects of each method such as social inclusiveness, numbers reached, flexibility, aspects of cost, empowerment, awareness raising, dialogue and access to outside expertise. Each participant, with the benefit of two days of intensive discussion about the methods being piloted, was asked to state their level of agreement or disagreement with positive statements regarding each of the methods. They were allowed to indicate if they did not either agree or disagree with the statements, but very few responses used this option. The responses were then converted to scores for each question, which were averaged, and the total scores from each respondent were also averaged, giving an overall performance score. It should be pointed out that the results in no way reflect a "final verdict" on the relative effectiveness of the methods, but rather a first attempt to quantify aspects of performance which elsewhere are described mainly using qualitative measures.

With respect to social inclusiveness, reaching large numbers, flexibility and cost, none of the methods score very highly – implying that with the type of CP information covered by the project, reaching large numbers of marginalised farmers at a low cost will remain a challenge (Table 17). With regard to features such as empowerment, awareness raising, follow up potential, quality of dialogue and access to outside expertise there are more clear differences between barazas and the other three methods.

Table 17 Assessment of the Effectiveness for Crop Protection Dissemination of four Extension Methods – by Practitioner Opinion in Semi-arid Eastern Kenya (average scores out of maximum score of 5)

Measures Of Effectiveness	**FFS** *Av. Score*	**Baraza** *Av. Score*	**Demo** *Av. Score*	**Existing Group** *Av. Score*
Farmers' awareness raised	4.3	2.9	4.9	4.4
Farmers and front-line staff empowered	4.2	2.4	4.2	3.9
Less costly and simple	3.7	1.8	3.2	3.7
Follow-up potential	4.3	1.7	4.4	4.1
Socially Inclusive	3.3	2.9	3.6	3.1
Quality of dialogue,	4.2	2.0	4.0	4.1
Flexible and responsive	3.7	2.5	3.2	3.9
Empowers to share knowledge,	4.3	2.6	4.3	3.8
Reaches large numbers of farmers	2.6	3.1	3.7	2.8
Access to outside expertise	4.2	2.3	2.3	3.2
Better than other approaches	4.0	1.9	3.8	2.9
TOTAL of Average Scores	**42.8**	**26.1**	**41.6**	**39.9**

5.3.2 SW. Kenya – progress on piloting methods and uptake pathways

Stakeholder Survey – views on dissemination mechanisms

In SW. Kenya, the pilot testing of dissemination mechanisms was based on an initial assessment of these methods via the stakeholder survey. The results are summarized in Appendix 3c. In summary, the survey indicated that while stakeholders differ in their reliance on various mechanisms, they broadly agree that are the more effective methods for dissemination CP information are: group approaches, on farm research and farmer to farmer extension

Respondents identified the following strengths of preferred approaches:-

- Field days - provides a fora for interaction between farmers and other stakeholders
- Trainings - information passed through trainings is first hand and of high quality.
- Group approaches - encourages sharing of information in the target area

Planning Piloting of Dissemination Pathways

At the first main stakeholder workshop a decision was taken to initiate a pilot learning approach to dissemination using three pathways. Each pathway combined a service providing organisation with a preferred approach for dissemination CP information as follows:-

- KARI run farmer field schools (following the FAO methodology),

- Public Extension run Focal Area Approach (following the methodology of the NALEP project), and

- NGO run (C-MAD) farmer to farmer extension approach using community resource persons/volunteers.

Representatives from each pathway spent two days developing their plans and budgets for the pilot dissemination activities. The plans were implemented and the coordinators of each stakeholder group undertook joint field monitoring activities during the cropping season. At the end of the season, the stakeholder groups met together at a workshop where they reported on progress, spent time in groupwork documenting what that had done, and then undertook preliminary evaluation of the effectiveness of the three pathways. The results of this participatory documentation and learning activity relating to the three pathways, including a description of each pathway used, are summarized in Appendix 3c.

Qualitative Assessment of the Three Pathways in SW. Kenya

Following the sharing of experiences, each group undertook a strengths, weaknesses and gap analysis, and identified a way forward in terms of what might be done differently next time and in the coming season if resources were available (details in Appendix 3c). The groups also identified the following lessons, and what they would do differently.

KARI - FFS Approach

Lessons about the process

- Identification and mobilization should be done early and participatory- 2 weeks before initiation of FFS
- Participatory monitoring and evaluation with all stakeholders
- The process should cover one full year for effectiveness
- Clear documentation procedure should be prepared for all activities
- Clear handing over process at the end to enhance sustainability
- Steps wise monitoring and evaluation is important.
- Modification is necessary in some steps

What we would we do differently:-

- Follow an ideal FFS concept, procedure & steps
- Involvement of all stakeholders
- Strengthening baseline survey at the beginning
- Participatory choice of test crops
- Develop exit strategies for project sustainability before the end of the project
- Monitoring and evaluation in each step, and proper documentation
- Introduce adult literacy and resource centre at Bwaga and add more reading materials at Maguje community learning resource Centre

Public Extension: Focal Area Approach

Lessons about the process

* Identification and mobilization should be done early and participatory-
* Participatory monitoring and evaluation with all stakeholders
* The process should cover one full year for effectiveness
* Clear documentation procedure should be prepared for all activities
* Clear handing over process at the end to enhance sustainability

How would we do it differently next time

-Concentrate on C.I.G.S
- Involvement of all stakeholders
- Broad based survey (BBS) at the beginning
- Strengthening PM & E
- Demand–driven individual farmer approach
- Participatory choice of test crops

C-MAD Farmer To Farmer

Lessons about the process followed:-

- Need to sensitize farmers on cultural issues before project implementation
- Need to provide inputs timely for better results
- Need to-train farmers on Integrated pest management (IPM) on CP
- Need to look into how to sustain the community resource persons (CORPs)
- Need for continuous update of CORPs' technical knowledge
- Willingness of farmers to adopt the crop protection technology
- Good collaboration with the partners KARI/MoA, including sharing of resources, conducting joint field days
- Farmers are participating well in CP activities, good attendance during CP field days
- Working with common interest groups (CIGs) seem to work best because of common interest in CP
- Exchange visits increase more of other fellow farmers adopting CP activities

What we would do differently next time:-

- Develop monitoring indicators. Framework
- Develop exit strategies for project sustainability before the end of the project

Comparison of the Three Pathways based on scoring

At the end of the lesson-learning workshop the three stakeholder groups met to assess the relative performance of the three pathways piloted using the same 25 performance indicator questions that were used to assess dissemination mechanisms in E. Kenya (Table 3.10 Appendix 3c). Responses to each question were debated and agreed in a stakeholder group, in contrast to the approach in E Kenya when individual responses were used. There was broad congruence between the three stakeholder groups on the relative performance of the three pathways, each of which received a similar overall rating. There was also congruence between the three groups on the performance of the methods on most of the indicators.

However, there were differences between the groups regarding the following statements:-

"Bringing in external specialists to assist with crop protection issues is easy"
"Logistics are not a big challenge"
"There is good follow-up after the training"
"Time is not wasted but is used well and the time of training is organised to suit farmers"
"A large number of farmers will have their awareness and knowledge of CP increased"
"The approach is affordable and can continue even when extension provider budgets are limited"
"Differences within the community or between resource persons are unlikely to affect the training"

These differences can be explained largely in terms of who is (and feels) more in control of dissemination extension resources. Hence the researcher group were more inclined to agree with the above statements than the other two groups, perhaps because they are more able to mobilize resources to get into the field.

Assessment of initial impact

After the end of the season of pilot dissemination, a follow up survey was undertaken covering 108 household respondents. This included 32 who had participated in farmer field schools (FFS), 37 who had participated in focal area approach (FAA), and 39 who participated in the farmer to farmer (FF) approach. The aim of this survey was to assess, through information provided by beneficiaries, the performance of the three pathways and the initial impact of the training and information delivered through them. A full summary of results is presented in Appendix 3c.

Who participated

The data suggests FFS attracted more younger farmers compared with FF. This could reflect differences in literacy related to age. With regard to gender, FFS and FAA participants were 65% and 69% male respectively, while with FF the sex ratio was balanced. This may reflect a policy of the NGO using FF to achieve gender balance in participation. The gender of the FFS trainers was mainly female, while the FAA trainers tended to be male – suggesting that the gender of the trainer was not a major barrier to participation. Combining gender, age and household status, the data suggests that FFS tended to involve a disproportionate number of younger male household heads while FAA involved more older female household heads. There was little difference in literacy between farmers participating FAA and FFS, but FF farmers had a higher level of literacy – which may be influenced by the farmer selection process operating in this pathway.

Performance on training delivery, style, content and follow-up

All three pathways performed well in terms of farmer perceptions of the clarity of the training provided. FFS scored higher on topics with a specific CP content, while FF scored high on the topics relating to crop husbandry, and soil conservation. The stronger performance of FF on these topics could be related to previous training on these topics, and also to the one to one training approach used in FF. Pesticide handling and calibration came out as the least well understood topic for all three pathways.

On follow-up, FFS did not enable any follow-up of farmers trained, while the other approaches did. The FFS providers researchers based a long way from the pilot sites, making follow-up more difficult, whereas the other providers (public extension and an NGO) had a strong field presence. It should also be noted that the FFS methodology emphasises 'graduation' signalling closure whereas with the other approaches there is an expectation of follow-up

Farmer responses show that all three pathways put a strong emphasis on practical training approaches. The FFS also had a strong theoretical content. Regarding tools that aided understanding, demonstrations came out strongly in all pathways, while for FFS and to some extent FF, theory was seen as helpful. For FAA responses indicate more use of visual aids and charts, perhaps in place of theory.

Initial impact

All three pathways did well in terms of farmers assessment of their own competency in the technology covered after the training. This was also reflected in the very high proportion of farmers reporting using the technologies in all of the pathways. In terms of willingness to

practice the technologies in future, FFS and FAA farmers reporting willingness to practice a larger number of the technologies compared with FF farmers.

In summary the quantitative assessment of the performance of the three pathways suggest that all three were effective in terms of dissemination of CP information to farmers, and in encouraging uptake of these technologies. FFS appears to have out-performed the other pathways in terms of the number of technologies covered which farmers are willing to practice. This needs to be weighed against the comparative costs of the using the three pathways, and the number of farmers reached by each pathway. The intention is to gather more data on the cost effectiveness of these pathways in the second cycle of learning.

5.3.1 Central Tanzania – progress in piloting communication strategies

The working premise was that strategies for empowering stakeholders at zonal, district and village/farmer group level would both improve their access to CP information and improve the way they are able to provide information to others. Through improved communication strategies, CP research outputs would, over time, become increasingly relevant to farmers and other service providers in terms of both the technical content and the method of delivery.

Development of zonal and district CP communication strategies

The aim was to improve agricultural communication strategies to meet farmers' crop protection needs. Key players were the Central Zone ZRELO's office, Dodoma Rural, Knogwa and Singida Rural district extension service and 35 farmer groups in 16 villages in the three pilot districts. The core project implementation team, comprising crop production or protection staff from each district, the Zonal Research Extension Liaison Officer, the Zonal Communication Officer, DRD researchers, INADES Formation, Tanzania (in-country lead organisation) and Natural Resources Institute, UK met at an inception workshop from 18th to 20th November 2003 to develop an action plan. This was followed by orientation meetings in each district at which the objectives and project philosophy were discussed with District Executive directors and staff of the office of the District Agriculture and Livestock Development Officer. Subsequently consultations were undertaken with extension staff and farmer groups to characterise existing communication channels and farmers needs in crop protection. Extension staff in each district developed a draft communication strategy focusing on priority farmer crop protection needs. This included a programme of on-farm demonstrations undertaken with farmer groups. At zonal level, the communication officer initiated activities to develop communication tools, initially information leaflets, in response to farmers' and other stakeholders' needs. A stakeholder workshop was held at CCT Conference Hall, Dodoma from February 3rd to 4th 2004 to review and consolidate information collected during the district consultations, to review progress with project activities to date, to further develop district and zonal communication strategies and to reflect on the implications of emerging lessons for the sustainability of enhanced communication. Following this workshop a range of activities were implemented according to zonal and district strategies. Following the implementation of the above strategies, a workshop was held on October 5th – 7th 2004 in Singida. The workshop comprised two days of reviewing and sharing lessons and a half day field visit to Mudida ward to meet with farmer groups and observe farmer participatory trials (evaluating botanicals and industrial pesticides for the control of storage pests) which were part of the Singida district strategy.

Stakeholders' methods for dissemination to farmers at the start

The first stakeholder workshop identified how stakeholders were training or making information available to others (Table 18). During consultations it was reported that District extension staff were active on migratory pests such as army worms, red locust, quelea quelea birds and lovebirds. The management of migratory pests was organised at national level e.g.

chemicals, aircraft hire, while extension staff were frontline workers in distributing and offering advice on the use. District crop protection plans were reported to be in place but faced with inadequate funding for implementation.

Table 18: Stakeholders' methods for training or giving information to farmers and others

Farmers	Extensionist	Researchers	NGOs
The methods includes sharing and exchanging ideas among farmer groups and in meetings as well as demonstration plots	Methods and strategies used includes • Giving information directly with support of leaflets, posters, videos • Use farmer gathering such as workshops/seminar/meetings	**(a) Farmers** • ZTC and ZEC • Meetings/Workshops/Seminar • Leaflets • Agricultural shows • Trials • Radio programmes **(b) Extensionist** • ZTC and ZEC • Research reports • Research results • Agricultural shows • Trials • Newsletters/Leaflets • Redio/TV **(c) Experts and international companies** • Newsletters/Leaflets • Research reports • Websites/internet • Meetings/Workshops/seminars • Exchange visits	• Through meetings • Meetings with farmers. • Sharing reports on our activities. • Farmers' shows. • Writing booklets and leaflets. • Informal meetings

Source: Stakeholder workshop Dodoma February 2004

District communication strategies

In year 1 (2003/2004) strategies were developed through the process described above. The district communication strategies are summarized in Table 3.30 in Appendix 3c. District strategies focused on relatively few crop protection issues as follows: Singida Rural (Storage pests targeting Larger Grain Borer; pests and diseases of onion); Kongwa (Maize stalkborer; Tomato pests and diseases; Smut control and Striga control); Dodoma Rural (Smut control and Striga control). They include activities which are aiming to: Validate demand (e.g. Documenting farmers, VAEO and Extension officers experiences); Raise awareness (e.g. Meetings with farmers, village leaders and district leaders, radio programmes); Strengthen/form organizations (e.g. Seminars for farmer group formation/ strengthening); Facilitate training/learning (e.g. Prepared topics, Video, Leaflets, Flip charts, Demonstration/ learning plots, farmer participatory trials) and Wider promotion (e.g. Radio programmes, Farmer field days, Field visits, Meetings).

Zonal communication strategy

Under the process of decentralization the ZRELO's office role is in the process of change. The changing role has received some impetus through this project as outlined in Table 19. The full strategy is shown the Singida Stakeholder workshop report.

Table 19: Changing role of the Central Zone ZRELO's office with increasing decentralization.

Stage in communication process	Before	After
1) Collection of information to address the CP need	Passively receiving information from HQS	Actively seeking information from stakeholders e.g. from Tropical Pesticide Research Institute, Arusha, Plant Health Services Central Zone,
2) Choosing the communication tools to be used	Limited choice – receiving tools from Ministry HQ	Consulting farmers and other stakeholders
3) Preparation of the communication tools	HQ preparation	Zonal preparation
4) Multiplication of communication tools	Multiplication at HQ - - no decision making	Choice of service provider e.g. printers
5) Dissemination	Materials provided by HQ very limited and decided by HQ	Wider choice of tools and approaches used based on stakeholder consultations
6) P M and E	Lack of systematic approach and not participatory	Piloted PM& E system at group, village, district and zonal level

Source: Central Zone ZRELO's office

Villages/ Farmer groups

In year 1 (2003-04), the project worked with 35 farmers groups (Table 20). Mean group size is 11 members, but they range from 4 to 33 members. These groups have a total membership of 390 farmers, of which 167 (43%) are women.

Assessment of communication tools and approaches

At the end of the first season, an assessment of the communication tools and approaches was undertaken. Eleven of the 35 farmer groups were visited, with women and men interviewed separately. A full summary of the results is in Appendix 3c. This followed a baseline study of the extent to which group members actually had access to communication tools and learning opportunities provided through the district strategies was undertaken in December 2004 (see Mwanga et al, 2005).

The assessment found that the leaflets were available to the majority of participants. Some titles were also displayed on village notice boards although these were more likely to be used by men. A high proportion of group members participated in "supervised" interactive events comprising training sessions, demonstrations and field days at which government extension or research staff were usually present. On average, a higher proportion of women than men from a group participated in these events. Attendance at field days was patchy, due to poor organisation and notification. Video shows were attended by fewer women than men. Up to three-quarters of participants listened to radio broadcasts on Radio Tanzania funded by the project, although somewhat fewer women than men reported hearing programmes.

Data from Singida district suggests that farmers are particularly interested in demonstrations and referring to leaflets. Considerably less farmers reported listening to agricultural programmes on radio compared to viewing demonstrations or attending field days. Thus farmer to farmer interaction backed-up with appropriate learning materials has an important role to play in district communication strategies.

The most important lessons across the districts and villages were about identification of pests and disease and knowledge on the proper use of agrochemical and locally available botanical based pesticides.

Table 20 : Gender balance in farmer groups and the CP issues addressed

Village	Group	Women	Men	CP needs addressed
Dodoma Rural District				
Zanka	Kula Kwa Jasho	8	6	Multiplication of Wahi sorghum;
	Uvumilivu	4	10	Sorghum kernel smut control;
Buigiri	Wahi	6	9	*Striga* control;
	Pato	5	10	Use of pesticides; LGB control
Mlowa-barabarani	Tumaini	4	6	Multiplication of Wahi sorghum; Proper use of pesticides;
	Ukombozi	5	5	LGB control
	Muungano	7	3	
Handali	Juhudi	5	7	Sorghum kernel smut control;
	Maarifa	3	10	*Striga* control; Use of pesticides
Msanga	Mpirigazi	2	8	Multiplication of Wahi sorghum; Use of pesticides; LGB control
Chalinze	Dira	12	18	Sorghum kernel smut control;
	Luseko	6	4	*Striga* control;
	Tuamke	4	6	Proper use of pesticides;
	Mwangaza	3	7	LGB control
	Jitegemee	5	5	
Kongwa District				
Makoka	Wana wa nuru	22	9	Stem borer control
Mlanje	Nguvu kazi			Stem borer control
Norini	Umoja	12	8	Stem borer control
Sagara	Two primary schools			*Striga* control via resistant seed
Mtanana	-	8	4	*Striga* control vis resistant seed
Laikala	One primary school			*Striga* control via resistant seed
Chamkoroma	Jitegemee	6	27	Tomato pests and diseases
Singida Rural District				
Mudida	Ujamaa	2	3	LGB control using chemicals and botanicals
	Kibaoni	3	2	(Indigenous knowledge)
	Nduu	1	3	
	Muhimbili	1	3	
	Muhogo	2	3	
	Mpakani	1	3	
	Mrama	2	2	
Merya	Nguvukazi	3	6	Pests and diseases of onions
	Ukombozi	2	6	
	Jishughulishe	4	6	
	Malwe	3	6	
	Motomoto	4	6	
Mughanga	Mapinduzi	3	3	LGB control using chemicals and botanicals
	Umoja	3	3	(Indigenous knowledge)

	Kujihami	3	3
	Juhudi	3	3

An assessment of how farmers used tools at each stage is shown schematically in Table 21. Radio, video and posters proved most useful for creating awareness of new ideas. Detailed learning occurred particularly at training sessions or by viewing demonstrations. Farmer interaction at field days, demonstrations and training sessions was also valuable for answering questions so that ideas could be adapted for individual situations.

Table 21: The Role of tools in stages of the communication process.

STAGE / TOOL	Awareness	Detailed learning	Clarification / adaptation
Leaflets	X	XX	
Poster	XX	X	
Seminar / training		X XX	XXX
Demos	X	XXX	XXX
Radio	XXXX	X	
Video	XXX	XX	
Field days	X	X	XXX
Notice board	XX	X	
Note books		XX	XX

Key:

= No contribution **XXXX** **= Major contribution**

Farmers were able to provide an overall ranking of the usefulness of each tool. More importantly, they were able to determine the individual strengths and weaknesses of the tools, to provide a basis for future improvement (see analysis in Appendix 3c).

Leaflets raise awareness of crop protection issues and also provide a reference material for the community to return to. They are not interactive so can not assist farmers to deepen understanding, nor are they accessible to the illiterate.

Training sessions, observation of demonstrations and participation at field days provide a forum for interaction and sharing of experiences. Learning by doing, with and from other farmers, is particularly important. The general feeling is that there are too few training sessions or field days. Demonstration plots and locations for farmer field days were often too distant from the village. Farmers would prefer larger and permanent demonstration plots.

Village notice boards are a good place to keep posters or leaflets that create awareness and for involving the community in monitoring and evaluation. However location is an issue as not all the community will visit village offices where the project has initially placed the boards.

Video shows and radio programmes can reach many people, create awareness and provide examples of real situations. However no “question and answer” are possible and the topics covered have been relatively limited to date. There has been inappropriate scheduling on Radio Tanzania at a time when women are still busy with household tasks. Younger people prefer to listen to FM stations that provide music and entertainment.

Posters on *Striga* biology and control were distributed to a few villages. They were highly rated for raising awareness and groups requested more to be prepared on a greater range of topics. Record books had been distributed for use in M and E. A few groups mentioned these as being useful for reference but recognised that few may have access to the books.

Suggested modifications to learning tools and communication approaches

Analysis of the feedback suggests modifications to improve each of the learning tools and communication approaches as summarised in Appendix 3c. Recommended changes for the 2005 season at village, district and zonal levels were:

Village:

- More discussion led by VAEO when leaflets or posters are distributed
- More poster topics
- More training sessions – improve timing, planning, organisations
- More field days, involve district leaders and policy makers
- Better access to notice boards and notebooks
- Set up community demonstration plots

District

- More capacity to train trainers, particularly VAEO
- Lobby for and identify local government funds for communication activities

Zonal

- Design more posters
- Modify leaflets
- Lobby Radio Tanzania to broadcast agricultural programmes at 20:00 to 21:00
- Target research information flow
- Enhance feedback
- Source funding from central government to add value to research findings by greater emphasis on dissemination.

Communication of CP information to farmers - Some lessons emerging

- Improving access to knowledge does not end in the transfer from one point to another; it is a process including sharing and learning by various actors
- Realistic partnerships among the main stakeholders are key to efficiency in meeting communication needs of farmers.
- There is need to target particular groups (e.g. youth and women) in agricultural communication
- Resources need to be attracted from within and outside the zone and districts
- Communication tools/ approaches (e.g. demonstration/ learning activities, posters, farmers exchange visits, farmer groups, leaflets, radio programmes, videos) are more likely to be successful if developed in partnership with farmers and other stakeholders.
- Importance of local content – e.g. farmers voice in radio programmes
- There are an increasing number of radio stations and to attract an audience programmes need to be attractive and adaptable.
- There is a developing culture of women listening to radio.
- Communication needs are strongly influenced by the market value and demand for the product. For successful communication marketing and markets need to be addressed

5.3.4 Reflection on working assumptions on Output 3

Output 3: Working Assumption

3.1 In the small-holder agricultural sector in East Africa the dissemination of most CP information produced through public funding is also subsidised through the public funds for which extension service providers are accountable. This is either through public extension services, or through NGOs and/or private sector organisations contracted to provide services by the custodians of public funds (governments/donors).

3.2 To improve accountability and planning, and to promote good professional practice within service provider organisations involved in dissemination of technical information at various levels (i.e. national, district, sub-district, community/village etc) more understanding and consensus is required in terms of what is "good practice" and what is "cost-effective". This does not necessarily mean identifying "the best" practice, but providing "harder" evidence of approaches that work and the costs involved.

3.3 Identifying good practice and evidencing effectiveness would involve the development of relatively simple tools and frameworks which professionals can use to plan and evaluate interventions based on an understanding of the strengths, weaknesses and resource implications of the various options available, and bearing in mind the variable needs and preferences of the clients.

Reflections

3.1 The partner extension service providers involved in the pilot CP dissemination activities in all three sites were all public and NGO agencies funded largely through public means, and used to disseminate technical information and products produced largely through publicly funded research. There were no private extension providers contracted through public funds operating in the pilot sites. However, the project identified and engaged with community extension providers, mostly volunteers, supported by NGO programmes. These volunteers were largely accountable to their communities who provided them with various types of support, in addition to being accountable to the supporting NGOs. Hence when thinking about accountability, this drew the projects attention to looking not only at accountability to major funding agencies, but also to local communities. This has implications for the manner in which the effectiveness of extension services and approaches are assessed.

3.2 At the start, each of the extension providers had their own history of using and developing extension approaches, mostly through donor funded projects which had built capacity in particular extension approaches. When planning the CP dissemination activities, the extension providers used this history to achieve a measure of agreement about core components needed, and which approaches would be more suitable for their areas. The extension providers willingly became involved in the pilot activities, understanding that approaches and methods would be compared. Apart from sharing views and experiences in meetings, the extension providers did not have established methods for comparing the relative effectiveness of extension methods and approaches. The project provided an opportunity for them to think further how this might be done. However, in the first round of action research not all the extension providers fully engaged with this opportunity. The reasons for variable and limited engagement are not fully known, but possibly include pressure of other work, a history and culture of reporting against targets (rather than reporting learning), and limited involvement in the more externally driven evaluation activities (which attempted more "objective" assessments of performance).

3.3 Evaluation tools were developed during the course of the project with which to try and measure the initial impact of the dissemination activities overall, and also assess the relative effectiveness of the extension pathways, approaches, and communication methods and tools used. The tools developed varied between the sites and some were more fully developed and applied than others. This early experience suggests that there is much more to be learned in terms of identifying simple evaluation frameworks and tools that meet a range of needs, including those that can be "owned" and applied by the beneficiaries. In Tanzania, the significant investment in building a multi-agency team which could explore together ways of improving communication relating to crop protection appears to have created a significant level of ownership of the process. Much of the credit for this goes to the management skills of the in-country co-ordinating organization (INADES Formation Tanzania).

5.4 OUTPUT 4: LESSON LEARNING AND POLICY IMPLICATIONS DOCUMENTED.

Output 4 was intended to give due emphasis within the project; a) to developing M&E frameworks for documenting and assessing the pilot activities being undertaken under outputs 1, 2 and 3, and b) to ensuring that the key lessons from the project fed into the policy process at relevant levels in the two countries involved (and perhaps the research and development policies of funding agencies such as DFID).

The approach and challenges to developing frameworks for undertaking M&E in each of the three sites, were introduced in section 4.4.1 above. The process of lesson learning about communication and dissemination effectiveness within the three sites has been documented under output 3 above. This exampled how the various stakeholders were involved in implementation, monitoring, documentation and review of progress and lessons. The process of engaging with policy makers has not yet been described. This will be covered briefly for each site, and then an overview of the M&E approaches and frameworks used will be presented. Section 6 looks more directly at developmental impact and the way forward in terms of future research issues.

5.4.1 Eastern Kenya

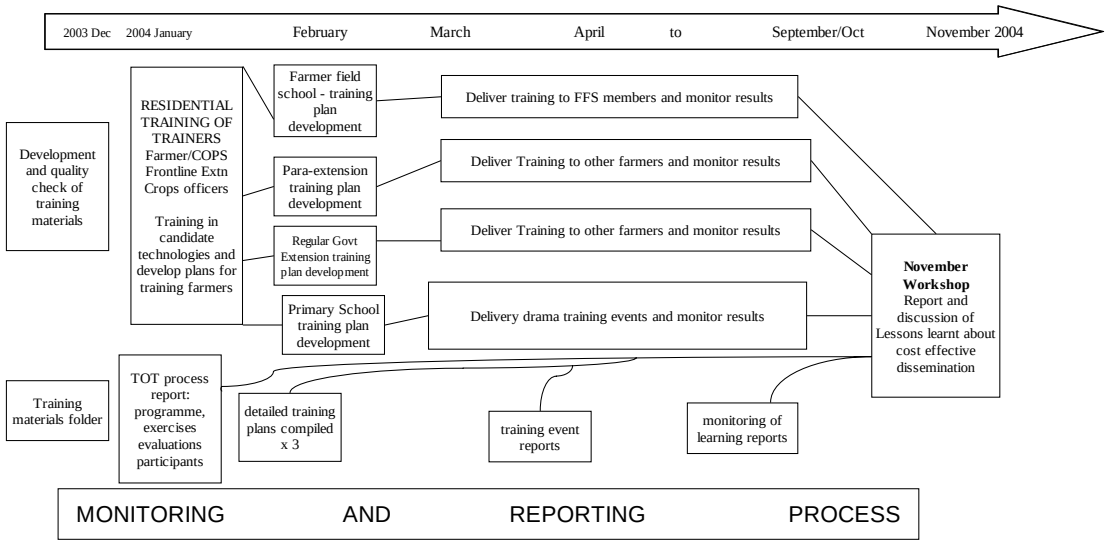
Designing an M&E framework

The framework developed for Eastern Kenya focused mainly on developing a conceptual framework and tools for monitoring the training of trainers activity and comparing the relative effectiveness of the dissemination pathways piloted. The framework developed and applied in E. Kenya is summarised in Appendix 3d. The approach used was formal, and based on a results chain relating to the promotion of research results. The working assumptions or steps were:-

a. relevant CP research information would be packaged by technical specialists who would train front-line extension staff, and equip them with training materials
b. The front line extensionists trained would plan and implement farmer training in selected technologies, and record baseline information on costs and other aspects as part of the process
c. A sample of the trained farmers would be followed up to evaluate the results from the training in terms of improved knowledge, attitudes and practices.
d. Results from the evaluation would inform future activities, including policy implementation.

These are represented in Figure 6

Figure 6 Output 3: Promotional pilot pathway stages - Semi-Arid Eastern Kenya



Review of the performance of the three pathways and related methods in E. Kenya was undertaken in two stages. Firstly, a small workshop involving front-line extensionists (public and para-extensionists) was convened to enable documentation and reflection on what had been done. This workshop used a similar framework to the larger stakeholder workshop held in SW. Kenya (see Appendix 3d). Secondly, in order to provide harder data on uptake, a follow-up survey of a sample of farmers who had been trained through the pilot pathways was undertaken using a structured questionnaire which captured changes in knowledge, attitudes and practices (see Appendix 3d).

Engaging with Policy Players

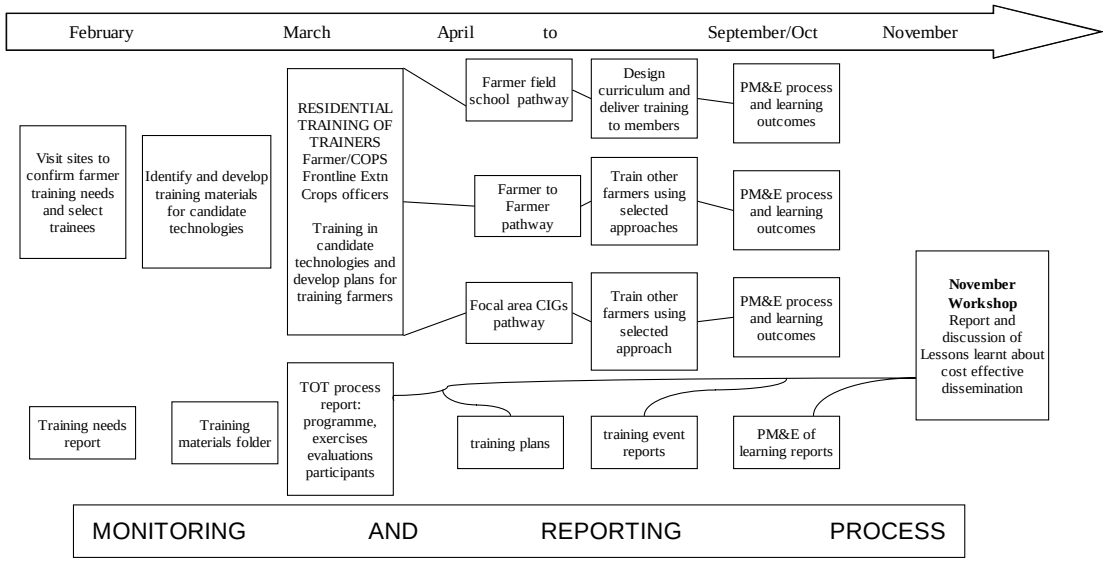
In E. Kenya policy players were taken to include those with managerial responsibilities within the public research and extension agencies, within NGOs and also donor advisors involved with reform of the agricultural sector. The public extension and NGO managers operating at district level were invited to participate in the TOT events, in the monitoring and evaluation of the field activities, and in the review workshops. In addition courtesy calls were made to their offices to explain the purpose of the project, and update them on progress. Visits were made to the offices of public sector managers at the national headquarters for agricultural extension, to the KARI head-quarters and to DFID livelihoods advisors. Briefing documents were prepared for these visits. The managers responded positively and verbally expressed appreciation for the information provided. During these visits the links between this project and a large forthcoming initiative to re-vitalise agricultural research and extension, Kenya Agricultural Productivity Project (KAPP) were discussed. KAPP, which has a coordination unit within KARI, had identified pilot districts for the extension activities, but the two districts covered by this project (Mwingi and Kitui) were not selected as KAPP pilots. It was agreed that if this project was extended, the operations would move to the nearest KAPP pilot district, Makueni, this forming a direct link with a new policy initiative. The extension and NGO managers from Makueni were therefore invited and attended the summative phase one lesson learning workshop, where it was agreed to dovetail the next phase of this project with the KAPP pilot activities. In the 2nd phase of the project, the intention is to contact the various policy players to get their feedback on the information provided so far in terms of its clarity and usefulness.

5.4.2 SW. Kenya

PM&E Framework

The approach to monitoring and evaluation was discussed at the first stakeholder workshop, where in principle the need for monitoring and reporting at key stages of the pilot dissemination activities as summarised in Figure 7 was agreed.

Figure 7 Output 3: Identification of cost-effective dissemination pathways/methods - Western Kenya



Several M&E experiences were shared by the agencies represented, and a paper on M&E was commissioned from a local specialist which provided a useful introduction to key concepts and principles. The approaches described by the agencies represented were directed towards the monitoring of activities to report on project outputs, rather than towards lesson learning. The KARI stakeholder representatives shared their future involvement with a project which looked specifically at improving monitoring and evaluation practice within research. This project used participatory principles based on outcome mapping and results based management. It was agreed that the training in this Participatory Monitoring and Evaluation (PM&E) project, scheduled for mid-2004, could inform the design of monitoring in the CP project. This training was held in September 2004, and the first step of the training involved bringing together various stakeholders from this and other research projects to develop a provisional results framework. Participatory approaches were used to build the framework within a workshop setting where farmers and frontline extension were represented. The next step proposed was to take this to the field situation and further develop and apply it with the participating communities. However, due to delays with funding from the linked project this step was not taken.

Monitoring and evaluation of the pilot dissemination activities in SW. Kenya was achieved through joint monitoring visits. These were undertaken at weekly or fortnightly intervals during the growing season, and enabled the team to address technical issues raised by farmers. They responded to demands for information and products, and in the process extended the technical focus of the pilot activities within the first season. As part of qualitative evaluation and lesson-leaning, each pilot pathway prepared a brief presentation for the October 04 lesson learning workshop. An example such a presentation from one of the public extension teams using Focal Area approach is in Box 6. The headings used were; constraints, suggested improvements, achievements and lessons learned.

BOX 6 Focal Area Approach- Homa Bay District) – Achune – Rangwe division

***Technologies*: Tomatoes, Kales, sorghum and later bananas**

Constraints

- **Low level of production with high cost of production**
- **Low levels of literacy. This forced trainers to undertake training in local language**
- **Negative attitude (clanism) if venue was in A clan B will not attend. Not possible to get central place as this could have been outside practicing farms**
- **Unreliable rainfall**
- **Inadequate facilitation especially transport was uneconomical to pick and drop by KARI .**
- **During trainings, most participants were old men but observed that practicing was by young men**
- **Poor crop diversification - is a dry area so mainly sorghum is grown**

Suggested Improvements

- **Use simplified training materials, coupled with practicals**
- **Increase crop diversification some farmers demand for banana from KARI Kisii**
- **Proper training on safe use of pesticides.**
- **Develop a package for CP products**
- **All project activities should be implemented on time**
- **Involve 4K club members, youths and young farmers to attend the training**

Achievements

- **Semi literacy and keen farmers during the trainings are practicing the CP technology**
- **Sorghum varieties introduced are being planted in single rows - a new practice**
- **Demos on farmers' field gave higher yields than before**
- **Over 200 banana suckers were planted in the area**

Lessons learnt

- **With education, knowledge gained was felt to be useful**
- **Team monitoring visits made work easier. All arising aspects were addressed due to the multidisciplinary team**
- **Literature given are being used by both farmers and extension officers as reference materials**
- **Planning and implementation should be done early**

Presentations at the lesson learning workshop under these headings raised further questions from other participants regarding details of the extension approaches used. To address these questions a framework for capturing in more detail the methods used in the three pathways. This framework looked at the philosophy underpinning the approach used, the steps followed, details of implementation (including some of the key costs), results achieved, and issues faced (see Appendix 3d). As the final stage of addressing this framework, pathway teams undertook a summary analysis of the approach they used which looked at; strengths and weaknesses, gaps, lessons learned and the way forward under high and low funding scenarios which were presented in plenary. The sharing of information between the implementers of the three pathways provided a basis for scoring the performance of the pathways against indicator questions, as detailed in section 5.3.2 above.

Lesson learning

With regard to lesson learning as a process during the project, the October 04 workshop in Kisii made it clear that different stakeholders would learn different lessons. For examples, the lessons identified by the front line staff and farmers, related mainly to the technical CP issues, and to issues relating to the logistical organisation of extension activities. Lessons identified by

the KARI and other staff involved in monitoring implementation related to such things as the value of teamwork, and the importance of planning. Further reflection by another group of researchers and extension middle managers identified issues relating to monitoring and evaluation. This does raise two further related questions; 1) who is the lesson learning for, and 2) should lessons be synthesised (and if so how)?

While these questions were not debated at length, there was a general feeling that to convince policy makers more "hard" data on the effectiveness of the pilot pathways would be needed. To address this perceived need, a follow-up survey of participating farmers was undertaken. This was done jointly by KARI staff, extension staff and C-MAD. As in E. Kenya, this was based on uptake by farmers using the knowledge, attitudes and practices (KAP) framework.

Engaging with Policy Makers

In SW. Kenya a similar definition of policy players was adopted to E. Kenya. The public extension and NGO managers operating at district level were invited to participate in the first stakeholder workshop and to nominate staff for the TOT events and the monitoring and evaluation of the field activities. They were also invited to the October 2004 review workshop. Courtesy calls were made to their offices to explain the purpose of the project. The Director of KARI Kisii was involved in chairing all the meetings relating to the design, planning and progress review of activities for the W. Kenya site, ensuring a strong link with policy implementation within the regional agricultural research programme. Relatively early in the project, contact was established with the KAPP coordination unit, which had send out a team to visit potential pilot districts where KARI Kisii staff had been operating Farmer Field Schools. Through this link invitations were extended to the KAPP coordinator to visit the project sites and attend the October 04 review workshop. However this was not possible due to clash with other activities. However, it transpired that the KAPP pilot district of Homa Bay coincidently was the main site for this project, thus forming a direct link with a major agricultural policy initiative. The KAPP manager and DFID advisors were invited to come for a day to the Naivasha cross-site workshop held in March 2005, but were unable to attend.

5.4.3 Central Tanzania

The main aims under this output were:-

1) Setting up of M&E system and adequate documentation of activities and experiences across all levels from village to zone,

2) Informing policy formulation and implementation, and

3) Lesson learning on improving communication strategies at the pilot districts and zonal levels

1) Setting up of pilot Participatory Monitoring and Evaluation (PM and E) system

The project working paper (Mwanga and Tungaraza 2004) points out that in most participatory development programmes, there is still a wide gap between theory, expectation and outcomes from Participatory Monitoring and Evaluation (PM&E). To address this issue, the project aimed to identify approaches and tools for on-going participatory monitoring &evaluation of the agricultural communication process and derive lessons to inform policy implementation

In the process of PM&E beneficiary assessment is the main approach. Currently there is so much emphasis on PM&E because of the issue of sustainability of the process. PM&E potentially offers:

- Improved resource use efficiency,
- Empowerment of stakeholders by involving them in the process,
- Facilitation of programme management,
- Ownership by stakeholders,
- Capacity building and
- A learning process and access to information.

Under conventional M&E beneficiaries are consulted for data extraction; a top down approach with experts at the centre of the process. PM&E should be open to learning by all stakeholders involved and allow creativity in the process of implementation and monitoring. Any positive ideas contributing to programme achievement should be taken on board. However, it has to be recognised that even PM&E is "top down" at the outset being a set of external concepts brought into the extension/farming community by the project. The real difficulty is to achieve stakeholder "buy in" of the need for this process and to demonstrate real value from following it through on an iterative basis.

The status of M&E at district and village level before the programme

In all three pilot districts there is an officer responsible for M&E (DSM-Statistics) but they have been used as statistics officers. Their involvement in programmes was limited to data extraction and compilation. As a result there was no systematic, transparent, effective monitoring and evaluation structure for programmes apart from evaluation by donors.

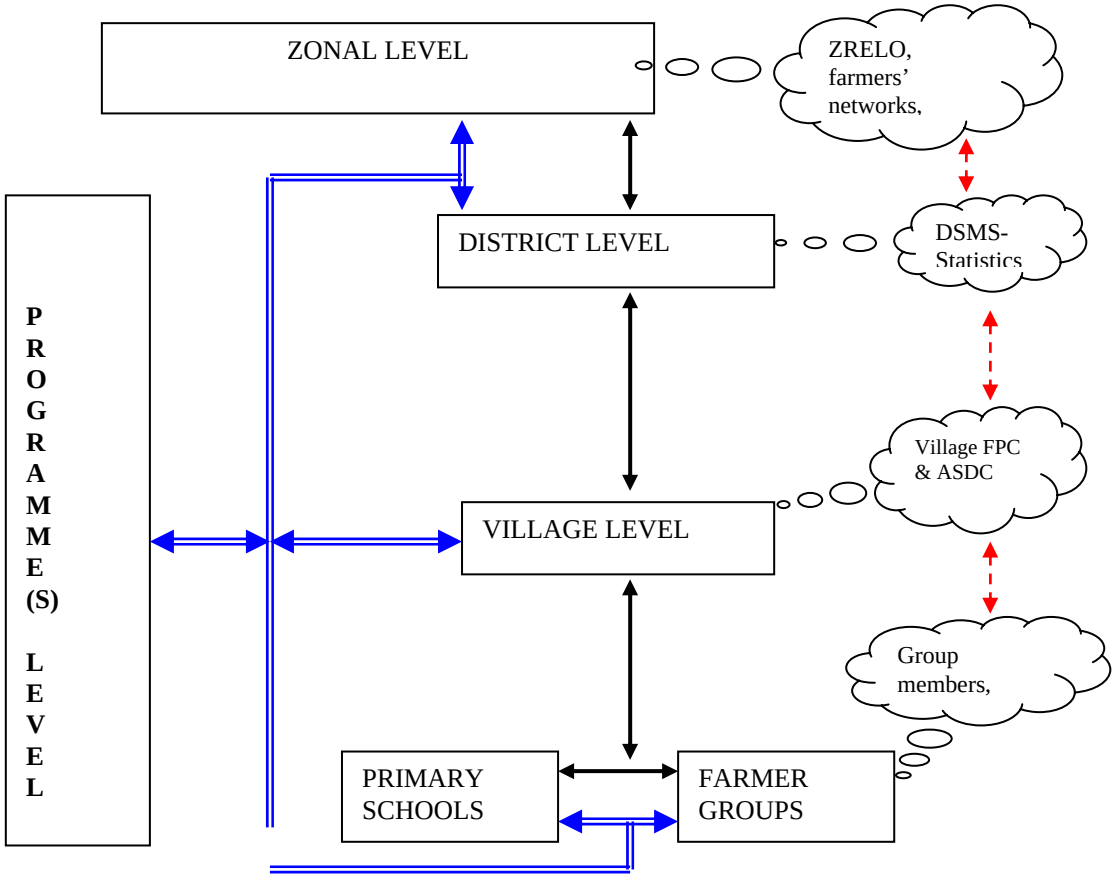
At village level there are different village committees responsible for village governance. Two committees are actively involved in programme implementation. These were Planning and finance committee (PFC), Agriculture and Social Development Committee (ASDC). PFC was mostly involved in budgeting of village programmes but did little monitoring and evaluation of the budgeted programmes. After discussion and explanation of the importance of PM&E at all levels of programme, in the majority of villages it was agreed that PFC would be responsible for monitoring and evaluating the programme activities. Two villages opted for ASDC. Within the villages there are different development farmer groups. Some donor funded programmes opted to work directly with these groups. Some programmes work with primary schools and health centres. It was agreed that the farmer groups and primary schools would form the first stage of the PM&E structure.

M&E tools e.g. systematic data recording; retrieval and display were missing at all levels. It was not easy to access data in a systematic way, and neither was the community in position to gauge the achievement and impact of the past programmes in the study villages. This is because they had no pre-determined indicators.

M&E structure for CP programme

Figure 8 shows the pilot participatory monitoring and evaluation structure in the CPP programme. The dotted line shows the reporting order while the filled line shows the M&E hierarchical structure for information and technology flow. The grass root farmers groups, village committee, district and the zone have been in the process of setting indicators to gauge the achievements of their expectations from the programme.

Figure 8: PM&E structure for CP programme in semi arid central Tanzania



Key: Information/technology pathway:
PM&E feed back pathway:
Lesson learning pathway:

Set-up of PM&E in the pilot area

Under PM&E three main activities were accomplished:-

i). Introducing and describing the programmes' objectives to stakeholders (pilot village governments, farmer groups, primary schools). This was cemented by distribution of the radio-broadcasting programme and programme flier.

ii.) Setting up the M&E system by mainstreaming the DSMS-Statistics in the programme. The DSMS- statistics received an overview of PM&E and were involved in practical session in the pilot villages. Facilitation teams did capacity building in the participating villages for a day. The village governments and farmers groups responsible for PM&E were able to identify crude monitoring indicators for the CP programme. Having acquired the necessary skills in setting up the PM&E, DSMS-statistics were then responsible to cover the remaining villages and routine backstopping to village governments and farmer groups.

iii.) Distribution of PM&E Materials: In order to ensure thorough activity follow-up, data collection and documentation, each farmer group, primary school, village committee responsible for M&E, DSMS-statistics and village extension workers received the necessary

PM&E materials namely: notebook/counter books, pens, programme flier, and radio programme. In addition, pilot villages received a square notice board measuring 122cm by 122 cm and 500 pins as dissemination tool for technologies and documentation of resources. In order to accomplish the whole essence of participation, it was advised that the programme supplied the initial materials to backup community initiatives but it is the role of community and farmer groups to replenish the materials on a sustainable basis.

PM&E Indicators

PM&E indicators are instruments to measure the change, they are signs that what was planned has been achieved. Under PM&E these were identified at different levels of operation; zone, district and village.

The zone and the three pilot Districts took time to establish PM&E indicators to gauge the project achievement at district level. The zone indicators identified were qualitative in nature and focused on empowerment, lesson learning and capacity building:-

- Increased effectiveness in delivery of information and technologies among the crop protection stakeholders,
- Increased creativity among the stakeholders in addressing crop protection issues
- Greater appreciation of the value of communication tools used to deliver Crop Protection messages by beneficiaries
- Increased ability of the stakeholders to work in multidisciplinary and cross cultural team

These indicators were further discussed after the Singida stakeholder workshop. Possible indicators were identified for the Zone, Districts and Villages (see Appendix 3d). Mwanga and Tungaraza (2004) conclude that "the districts and communities have the concept of PM&E indicators ... however, the indicators are still too many to accomplish in the short run, and some look over ambitious". They suggest that there is a need for strengthening the district and communities in order to scale down to a few and specific, measurable, achievable, realist and time bound (SMART) indicators.

M&E Data recording and documentation

All the groups and village committees in the five villages where M&E structure has been established were facilitated on how to document data in their ledgers, but no strict guidelines were imposed. Extension workers were required to accord the necessary support to the community. Notice boards were installed at the village offices at a convenient place for all village members to access displayed information.

The way forward

It require significant time and for farmers to conceive the PM&E concepts, to establish SMART indicators and perform actual monitoring and evaluation. There is need for capacity building on PM&E and frequent follow up of farmers groups. PM&E is becoming of increasing importance in national agricultural programmes (e.g. in PADEP). Lessons learnt in this project may be able to make a useful contribution to these initiatives under the ASDP framework.

2. Interacting with policy makers

The following section is drawn from Lameck and Katunzi's presentation at the Naivasha workshop 2005

Why is it important to interact and influence policy makers?

- Tanzania has de-centralised agricultural service provision under the Local Government Reform Programme, placing greater responsibilities at district level.

- There is a need to develop dialogue between lesson learning at field/site level and those implementing and formulating policy at higher levels.
- Lessons drawn should be drawn to inform and influence on-going policy making & planning within the districts (DADPs) and zonal levels.
- Ensure sustainability, up-scaling and support beyond project life.
- Eventually, contribute to ASDP by developing sustainable zonal and pilot district communication strategies focusing on CP issues and wider lesson learning.

How has the project attempted to interact with and influence policy makers?
- District consultations.
- Stakeholders workshops.
- Meetings with ASDP Co-ordination Unit for exploring possible linkages between CPP & ASDP.
- Mainstreaming district CPP strategies into district planning.
- Accessing and reading important literature and documents eg. ASDS, ASDP, PADEP etc.

Strengths/Achievements
- Recognition and commitment by some districts in supporting CP activities, eg. Preparing CP plans in some districts, on-farm seed production included in DADPs in Dodoma rural.
- Possibility of districts accessing funds for CP activities through DADPs.
- Relevance of CPP to ASSP & PADEP (under ASDP) – improving agricultural service provision based on district plans.

Limitations/Constraints
- ASDP is not yet fully operational.
- Limited capacity of ZRELO to undertake advocacy.
- Resource constraints in the districts have in the past curtailed CP plans.
- Limited coverage for visibility.
- Farmers organisations (networks) are not well organised and lacks capacity for advocacy.

Challenges
- Developing effective dialogue with policy makers from lower to higher levels.
- How to align/link with other programmes feeding into ASDP such as PADEP, AMSDP, PIDP, etc.
- Identifying opportunities for aligning with ASDP through DADPs in CPP target districts.
- ZRELO explore more about DADPs and identify opportunities for linkage.

Conclusion
- More efforts are needed to use lessons learnt for informing/influencing policy formulation and implementation process at the district and national levels eg. by influencing district priority setting.
- We need to continue building and strengthening linkages with local policy makers (eg. District councillors).
- Stronger links with ASDP and its component projects need to be forged, and areas for complimenting and exchange of information & experiences explored.
- Capacity of the ZRELO office to take the lead in mainstreaming CP into policy making needs to be enhanced.
- More linkages need to be forged for up-scaling and developmental impact beyond project life.

Output 4: Lesson learning and influencing policy markers
- Methods are needed for service providers, policy makers etc to recognise and respect ideas/opinions of others e.g. farmer knowledge and practices
- The value of building novel strategic partnerships, in this case an NGO with an explicit aim of enhancing farmer empowerment working with public sector research and extension organizations

- Change involves stakeholders “learning how to learn”
- Groups and networks facilitate interaction which enhances common understanding
- Communication is central to institutional change
- Communication specialists have key role to play in two way flow of information between farmers and other stakeholders
- Participatory M & E can be a key element of joint learning - need to increase stakeholder participation (e.g. farmers, policy makers) in P.M&E of the programme to make the activities sustainable.
- We need to know the minimum information needs (what and who needs to know) to inform decision making at each level of strategies i.e. from farmers to zone.
- Economics of communication - who should pay?
- Importance of local decision makers - councillors decide on budgets!
- District and zonal staff have identified a potential advocacy role for the ZRELO to build capacity in the zone
- Challenge in semi-arid areas to involve private sector.

5.4.4 Towards a cross-site framework for M&E

At the cross-site workshop in Naivasha, the three site teams shared their experiences with M&E. This was followed by a presentation by an M&E specialist sharing their experience from India, and outlining some of the key principles to achieving effective M&E. Following this, towards the end of the meeting, a group exercise looked at development of cross-site M&E framework for second cycle of learning work plans. 5 areas for the development of cross-site indicators were identified as 1) Lesson learning, 2) Dissemination/communication methods, 3) Management, 4) Coordination and 5) Products. The groups put forward their ideas relating to these areas, some lessons, and ideas for the future (see Appendix 3d). This was very much a first attempt to have a discussion about a common framework, and hence the group did not get to the stage of developing common indicators and ways of measuring these.

5.4.5 Reflections on Working Assumptions

Working Assumptions- Output 4

4.1 Lesson learning to inform policy depends upon evidence, including information gathered through monitoring and evaluation (M&E) for information gathering, analysis and reporting.

4.2 Monitoring and evaluation (M&E) within public research and extension organisations (and NGOs?) is generally not well understood, developed or institutionalised. M&E has tended to be imposed by funders, to be project oriented, and as a result not very effective for organisational learning. Public funds are involved and hence there is need to balance the accountability element of M&E on the one hand, with the organisational learning element on the other.

4.3 Without effective organisational learning, the long-term sustainability of key national institutions such as public research and extension is under threat because they become reactive and defensive, instead of making the changes needed to adapt to their changing external environment.

4.4 *Engaging with policy players is necessary for these institutions to sustain public sector support, including support for needed reforms. Policy players include key decision makers who influence the allocation of public resources and the procedures and regulations under which public (and also non-public) service providers operate.*

4.5 *Policy players also include those involved in implementing the new policies, able to provide feedback on how implementation is progressing and how the policies are impacting on their service delivery capacity and performance.*

4.6 *Research and extension service providers also have to give account for the public monies received – hence the emphasis on impact – but attribution problems make impact studies problematic in terms of the credibility of their conclusions. More workable alternatives are 1) results based management frameworks (that address intermediate results within the results or impact chain) or 2) outcome monitoring (focuses on changes in behaviour, suiting lesson learning and currently being piloted in some research institutions).*

Reflections

4.1 While agricultural research and extension policy could be informed by structured M&E approaches geared to lesson learning, in practice anecdotal evidence suggests that a major influence to policy appears to stem from the received wisdom of a relatively small group of development advisors and public sector managers with clear and strong views on strategic direction. While this received wisdom may be based on extensive experience, it is not clear to what extent the new policy directions are clearly "evidence-based". Discussions with some research and extension managers and advisors suggested that they would be interested in the results from this project. Less clear was to what extent such advisors and managers are able to access a wider body of evidence which they can weigh to guide their thinking and decision making.

4.2 The experience of interacting with public research institutes and public and NGO extension providers confirms both an awareness of M&E as a topic of current concern, and at the same time that M&E systems are generally not well developed within the participating organisations at site level. The extension providers (public and NGO) have been mainly accustomed to M&E geared to accountability and targets, rather than lesson learning. Acceptance by the site teams of the importance of M&E for lesson learning is still emerging. There was interest among practitioners in having their capacity built in M&E, and some recognition of the potential role that M&E could play in their organisations.

4.3 The importance of learning for organisational survival and growth was not fully explored with the various stakeholders. Most of the team members represented well established agencies which are providing services with limited competition from other agencies. However, the NRI team members are aware of this and feel that some of the core site team members are also, perhaps reflecting the impact of recent histories within organisations[13]. Recently "performance contracts" have been introduced within KARI, r

4.4 At the level (meso) the project is operating, the importance of engaging with policy players to ensure organisational survival was not strongly articulated by all of the site teams. For example in Kenya there is a feeling that the meso level is not well informed about how new national programmes and policies will operate. Hence there is a clear acknowledgement that key decisions are made at national level which affect the operations and funding of the research and extension services, but some feeling of lack of influence on many major decisions.

4.5 At the same time, during workshop discussions, project stakeholders were able to see themselves as part of the policy and decision making process, and did see themselves as in a position to provide feedback to their managers about the implications of the project for implementation of new programmes and policy initiatives.

4.6 Stakeholders were aware of the need to demonstrate the impact of their services. However, they were not able to clearly see how to do this, hence their expressed need for a better understanding and capacity in M&E. Members of the Western Kenya team are working with outcome mapping as part of collaboration with another project developing M&E options for NARS. In the Tanzania site the main researcher is interested in developing participatory M&E systems in the context de-centralised services.

[13] After the first draft of this report was completed, "performance contracts" were introduced to KARI employees, as part of wider reform in the public services.

6.0 Contribution of Outputs to developmental impact

The project outputs have contributed to development. The direct contribution has been in terms of the benefits from the CP technical knowledge and products availed to communities and other agencies. The indirect contribution has been through the capacity developed in the collaborating agencies involved. A further contribution has been in terms of developing an evidence base for reviewing existing policies and institutional mechanisms in the agricultural research and extension systems operating in the semi-arid areas of Kenya and Tanzania.

Figure 10 RESULTS CHAINS OF DEVELOPMENTAL IMPACT: DIRECT AND INDIRECT

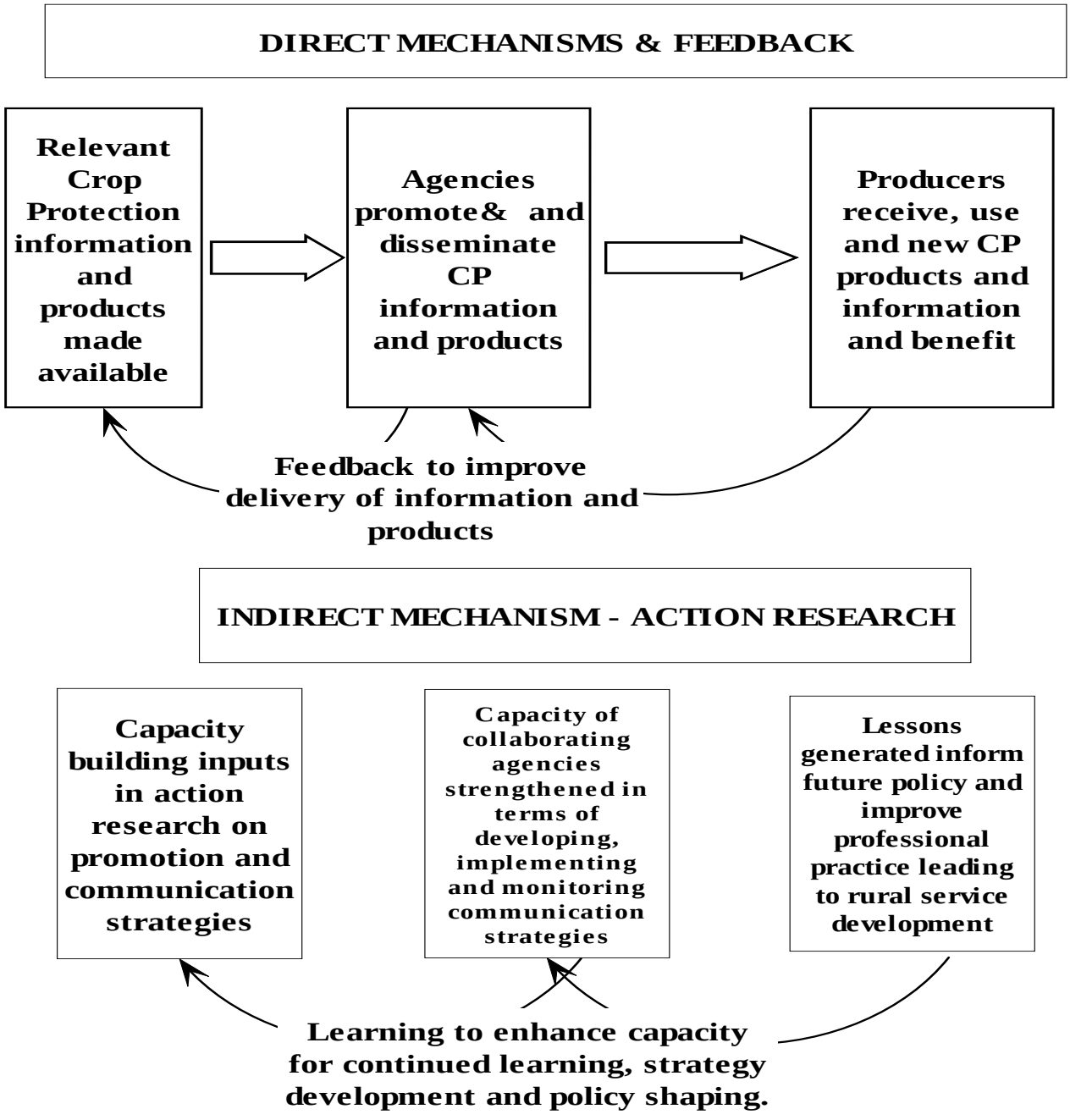


Table 22 below summaries the main contributions under each output in the project sites, and more generically.

Table 22: Contributions of Project Outputs 1,2, 3 and 4 to Development in the Project Areas

<table>
<tr><td colspan="2">Output 1: Methods for updating demand for CP outputs and sustaining feedback documented and assessed</td></tr>
<tr><td>Eastern and South West Kenya</td><td>Central Tanzania</td></tr>
<tr><td>Improvements to CRAC operations agreed.
KARI Headquarters interest in the review findings, CRAC's future as an institution has been strengthened in Eastern Kenya</td><td>Mechanism for assessing demand for CP information established as part of PM&E framework for Zonal and District Communication Strategies.</td></tr>
<tr><td colspan="2">All sites: Strengthened capacity to analyse effectiveness of existing demand and feedback systems relating to CP information and products and design system improvements.</td></tr>
<tr><td colspan="2">Output 2: Approaches for improving stakeholders' access to Crop protection research outputs identified</td></tr>
<tr><td>Eastern and South West Kenya</td><td>Central Tanzania</td></tr>
<tr><td>Extension providers in 4 districts have better access to relevant CP information and products.
2 research institutes have a better understanding of the CP information access issues and preferences among their service users.
In S.W. Kenya extension providers in 12 districts have raised awareness of relevant CP products available and how to access these.</td><td>District and Zonal communication strategies designed and tested, resulting in extension providers in 3 districts and farmer groups in ## villages have better access to relevant CP information and products.
Zonal research and extension have better understanding of CP information preferences and access issues</td></tr>
<tr><td colspan="2">All sites: Strengthened capacity of core site teams to analyse CP information access patterns and preferences at various levels and to design and pilot test strategies and products for improving information access.</td></tr>
<tr><td colspan="2">Output 3: Methods for delivery of crop protection research outputs to uptake pathways and farmers piloted</td></tr>
<tr><td>Eastern and South West Kenya</td><td>Central Tanzania</td></tr>
<tr><td>Core team capacity developed in creation and delivery training of trainer courses and materials.
Front line extension capacity to train farmers in CP developed.
As for Eastern Kenya</td><td>District and Zonal communication strategies tested, resulting in extension providers in 3 districts and farmer groups in ## villages have better access to relevant CP information and products.</td></tr>
<tr><td colspan="2">All sites: Strengthened capacity of core site teams and partners to deliver CP information and products to farmers
Strengthened capacity of participating farmers in pilot areas to apply CP information to their production practices.</td></tr>
<tr><td colspan="2">Output 4: Lesson learning and policy implications documented</td></tr>
<tr><td>Eastern and South West Kenya</td><td>Central Tanzania</td></tr>
<tr><td>Raised awareness among stakeholders of the importance of CP to livelihoods and the
Projects' relevance to new research and extension programmes.</td><td>Raised demand at Zonal, District and village levels for CP information, and raised capacity at village level to participate in the monitoring of outcomes.</td></tr>
<tr><td colspan="2">All sites: Strengthened capacity at various levels to design and apply M&E tools relating to lesson learning, and engage in to reflect on progress made on the promotion and dissemination of CP information in the context of evolving innovation systems.</td></tr>
</table>

A key element of this second phase will be greater strategic engagement with policy makers and implementers at local and national level in Kenya and Tanzania. The project has been working with and strengthening the existing institutions (public sector research institutes, government extension services, NGO extension programmes) and their mechanisms (for feedback, information access, training, information and product dissemination, monitoring and lesson learning) and these will comprise the main uptake and promotional pathways post 2005. The main contribution to development impact will be the lessons generated, further evidence gathered, and the potential impact of these on future policy and investments in agricultural research and development targeting semi-arid areas. The policy and institutional lessons identified will strengthen these institutions and further guide donor policies and funding. In Tanzania this will be through strengthened implementation of the Agricultural Sector Development Programme (ADSP). In Kenya the Kenya Agricultural Productivity Project (KAPP) will be the main uptake pathway. This has been addressed by re-focusing activities in phase two specifically on the KAPP pilot districts. As the main lessons identified from this first round of lesson learning were incorporated in the executive summary, the final section identifies some issues and questions that could be addressed in the future.

Questions begging further research

The first phase of implementing this project has served to highlight a number of questions around the strengthening and reform of national agricultural research and extension systems. Most of these questions are too large to be addressed in the very limited time available before the CPP programme ends. Some issues that require more in-depth research in the future are summarised below under the projects output headings.

Mechanisms for updating demand and providing feedback on research products

1. How can farmer/service provider demand for quality technical information on crop protection and demand for particular areas of crop protection research be better integrated?

2. How can existing mechanisms (formal and informal) for identifying both types of demand be further improved?

3. How can the stimulation of demand and feedback through participatory learning approaches be undertaken at scale cost-effectively?

4. How can ongoing capacity building in crop protection (e.g. pest and disease identification) be delivered in the context of de-centralisation (who needs training and by whom, on what and how? Who decides on training needs?)

Improving access to crop protection research outputs and information

5. What methods and media do best improve access to information by the range of key stake holders?

6. Related to this, what can be done to address the frustrations expressed by researchers at the limited use of their reports, and by extension providers and farmers at the difficulty in accessing quality information?

7. *What conditions and what factors encourage dynamic information seeking?*

8. What incentives can be put in place to support researchers in marketing and packaging the information they have for various users?

9. What happens when/if markets for information are developed – how will issues of intellectual property rights on information coming out of research funded from the public purse be regulated?

10. How do relations (e.g. trust, mutual respect) between stakeholders influence communication, access to information and how people learn?

Learning about effective communication of crop protection information to farmers

11. What mechanisms can cost-effectively assure the quality of information provided to farmers?

12. How can the cost-effectiveness of various favoured dissemination tools and approaches best be compared and measured?

Monitoring and Evaluation for lesson learning, organisational development and evidence based policy

13*. How can consensus on a minimal M&E framework for dissemination and communication strategies be reached– what needs to be known, when, how, by whom, why? What should be the use of information generated?*

14. How can the effect of organisational roles on commitment to lesson learning be analysed and addressed constructively?

15. How can action research projects like this one connect more effectively with the policy process – through what mechanisms?

16. What is an appropriate time frame for "action-research" projects of this type, and to what extent can they incorporate a capacity building element to develop more responsive service organisations?

8.0 DOCUMENTATION & DISSEMINATION PRODUCTS

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Biometricians Signature

The projects named biometrician must sign off the Final Technical Report before it is submitted to CPP. This can either be done by the projects named biometrician signing in the space provided below, or by a letter or email from the named biometrician accompanying the Final Technical Report submitted to CPP. (Please note that NR International reserves the right to retain the final quarter's payment pending NR International's receipt and approval of the Final Technical Report, duly signed by the project's biometrician)

NOT APPLICABLE

I confirm that the biometric issues have been adequately addressed in the Final Technical Report:

Signature:	SEE EMAIL ATTACHED
Name (typed):	Flavia Jollife
Position:	Biometrician, University of Greenwich
Date:	14.10.2005

List of Acronyms

General
CBO Community Based Organisation
CIAT International Centre for Tropical Agriculture
CPP Crop Protection Programme
CP Crop Protection
DFID Department for International Development
DANIDA Danish International Development Agency
FFS Farmer Field School
GDP Gross Domestic Product
IPM Integrated Pest Management
M&E Monitoring and Evaluation
NGO Non-Governmental Organisations
PM&E Participatory Monitoring and Evaluation
T&V Training and Visit (extension system)

Applying to Kenya
ATIRI Agricultural Technology and Information Response Initiative
CAP Community Action Plan
CDK Catholic Diocese of Kitui (Development Programme)
CIG Common Interest Group (for extension)
C-MAD Community Mobilisation for Desertification
CORP Community Resource Person
CRAC Centre Research Advisory Committee
FAA Focal Area Approach (extension approach)
FADC Focal Area Development Committee
FF Farmer to farmer (extension approach)
FSAP Farm Specific Action Plan
KARI Kenya Agricultural Research Institute
KAPP Kenya Agricultural Productivity Project
NALEP National Agricultural and Livestock Extension Project
RELO Research Extension Liaison Officer
DFSTs District farming systems teams
RREACs Regional Research Extension Advisory Committees
PCPB Pesticide Control Products Board
MOA Ministry of Agriculture

Applying to Tanzania

ACS Annual Conference of Stakeholders
AMSDP Agricultural Marketing System Development Programme
ARI Agricultural Research Institute (Ilonga)
ASDS Agricultural Sector Development Strategy
ASDP Agricultural Sector Development Programme
ASLM Agricultural Sector Lead Ministries
ASPS Agricultural Sector Programmes Support
ASSP Agricultural Services Support Programme
DADPs District Agricultural Development Plans
DRD Division of Research and Development
IPR Internal program reviews

INADES Institut Africain pour le Développement Economique et Social
LGAs Local Government Authorities
NAEP II National Agriculture Extension project phase two
NALERP National Agriculture and Livestock Extension Rehabilitation Programme
NARLP National Agriculture and Livestock Research Programme
NSC National Steering Committee
PADEP Participatory Agricultural Development and Empowerment Project
PIDP Participatory Irrigation Development Programme
PRSP Poverty Reduction Strategy Paper
RFSP Rural Financial Services Programme
LPRI Livestock and Poultry Research Institute (Mpwapwa)
RALDO Regional agricultural and livestock development office
TARP II Tanzania agricultural research project phase two
TDV 2025 Tanzania Development Vision 2025
VAEOs Village agricultural extension officers
ZARF Zonal Agricultural research funds
ZEC Zonal executive committees
ZRELO Zonal Research Extension Liaison Officer
ZTC Zonal technical committees

Appendix 1 : Policy and Institutional Contexts for Kenya and Tanzania

Kenya Policy and Institutional Context

The Government of Kenya (GOK) has consistently placed agricultural development at the centre of its strategy for economic growth (GOK, 2002). At the start of the project, the recently formed government under the National Alliance for Reconstruction and Change (NARC) had prioritised the agricultural sector, in particular emphasising stronger links between agriculture to industry in order to generate employment and add value to agricultural products. The implications were greater attention to the quality aspects of agricultural products, and the likelihood of increasing participation by the private sector in input (seed of required varieties) distribution and CP products and advice.

While greater attention is on the promotion of cash crops, district self-sufficiency in staple food is still regarded as important due to the costs of food relief (GOK, op cit). In the semi-arid areas of Eastern Kenya, drought recovery campaigns are opportunities for distributing seed of drought and pest tolerant crops and varieties (Kavoi and Sutherland, 2002). These campaigns have been linked to significant improvements to soil and water conservation, resulting in less risky growing conditions, increased yield reliability and hence more incentives for CP. At the same time, an improved micro-environment for pest and disease carryover has raised the profile of CP issues with farmers.

NGOs and government extension operating in the semi-arid areas of Kenya have shifted their programme focus to keep pace with developments in policy and farmers' livelihood strategies. During the 1990s they focused mainly on food relief and food security as priorities. While still acknowledging the importance of food security, they are giving more attention to income earning crops, particularly horticultural crops. This shift of focus is linked to changing livelihood strategies; cash income earning opportunities through seasonal migration to urban areas and plantations and through permanent employment in the formal sector have declined, resulting in increased demands from farmers on how to grow and protect higher value horticultural crops (tomatoes, green vegetables, grafted mangos, water melons etc).

Agricultural Service provision

There has been a very gradual trend towards decentralisation and integration of rural services over the past two decades. The district focus for rural development began in the 1980s under cross-sectoral District Development Committees. Kenya's Agricultural Sector Investment Program (ASIP), supported by donors has aimed to further improve sectoral integration through integrated extension services and modernisation of rural service delivery. Across all sectors there has been a shift towards promoting a demand driven approach to service delivery. The National Agricultural and Livestock Extension Programme (NALEP) supported by the World Bank and SIDA started in late 2001, using the "shifting focal area approach (FAA)" (NALEP, 2004). At divisional level, a location is selected for which a one year programme of integrated extension is developed based on needs identified in a PRA. New focal areas are selected each financial year (in August), hence the term "shifting". In each NALEP district an extension officer is assigned to link with research. Researchers are invited to participate in the district level stakeholder meetings, and provide training inputs on specific technologies requested. The expectation is that researchers and NGOs involved will participate using their own programme funds; extension playing a co-ordinating role. This has led to research being unable to participate in some meetings due to lack of funds assigned to this function (see section 5.1). While the Livestock Department has been taken out of the Ministry of Agriculture and joined with Fisheries as a result of restructuring under the NARC government, the focal area approach is continuing.

Research-extension linkages

Efforts to strengthen and formalise links between agricultural research and extension began in 1994 when the office of Research Extension Liaison Officer (RELO) was established. District farming systems teams (DFSTs) were set up to undertake diagnostic surveys and other joint activities under the guidance of research extension liaison officers. Regional Research Extension Advisory Committees (RREACs) were established at each Kenya Agricultural Research Institute (KARI) centre with a mandate for specific districts in order to involve extension staff and farmer representatives in research planning and reporting. In 2002, KARI was brought back into the Ministry of Agriculture and Rural Development and a "Research-Extension Liaison Division" established. While these initiatives are reported to have improved linkages, finance for meetings and joint activities has been a constant limitation. Thus in Kitui District, where DANIDA has pledged 20 years of support to agricultural development, the DFSTs have been revived, but in many other districts they are not functional due to lack of funds. The March 03 workshops (see section 1) reported that during large RREAC meetings the time for in-depth discussion is limited, and that often the wrong farmer and extension representatives attend (i.e. those without detailed knowledge of local farming constraints). They suggested that technically focused forums would be more useful for fostering the promotion of research outputs.

While KARI has produced documentation of much of its research outputs, this has been largely on an ad hoc, project by project basis. For the mandate regions of the two centres targeted by this project there was no available catalogue or inventory of available technology through which stakeholders could scan to identify products meeting specific local needs. At the start of this project the main mechanism for accessing information from research was through word of mouth personal contact, or attendance of meetings.

Partner capabilities

Stakeholders in the project design meetings identified interactive group based methods as the most effective (compared to leaflets, public meetings, mass media, extension-led demonstrations) for getting sustainable uptake of “knowledge rich” technology. The project partners (KARI researchers, government extension, NGOs and farmers) were assessed to have the capabilities to undertake pilot testing and evaluation of CP dissemination methods. There was a question mark against the capabilities and interest of private sector players to engage with this project.

Outreach by research

KARI undertakes the bulk of applied and adaptive agricultural research in Kenya. Its centres are assigned regional mandates comprising a number of surrounding districts in which its researchers are expected to undertake adaptive research in collaboration with government extension and NGOs. At both Kisii and Katumani researchers have considerable experience of working on-farm together with front line extension staff. One of KARI's strategic objectives is "To disseminate knowledge and technologies and to catalyse the process of outreach and adoption of agricultural technologies". The Agricultural Technology and Information Response Initiative (ATIRI) is a KARI outreach programme which seeks to empower CBOs/farmer groups in demanding and acquiring technology and information from its centres.

KARI Katumani Seed Unit has worked effectively with NGOs and area based development programmes to produce and disseminate the seeds of dryland crop varieties which the commercial seed sector was unable to deliver. With support from the Agribusiness Development Support Project (USAID), KARI has recently set up its own seed unit at Katumani. In Western Kenya KARI Kisii links with NGOs to promote new varieties through local seed bulking and dissemination, but does not have a seed unit.

In both Kenya sites KARI have given less attention to promoting CP knowledge, including knowledge relating to seed hygene. KARI Kisii has worked through extension and CBOs to established farmer

field schools for the promotion of more complex technologies (mainly those relating to soil fertility management) in the higher potential areas, but not in the drier areas. KARI Kisii also has a strong CP training capability and is working on ways to scale up dissemination of knowledge intensive technologies through farmer to farmer visits.

Government extension approach and capability

In all four Kenya target districts for the project (Homa Bay, Rachuonya, Mwingi and Kitui) district and frontline extension staff have experience in using interactive extension methods, including Farmer Field Schools in Eastern Kenya. In Eastern Kenya public extension works in close collaboration with the agricultural programmes of the NGOs in their respective districts, who frequently engage their services because they lack their own specialist agricultural expertise. Extension's role is increasing recognised to be a facilitatory one, working in an empowering way with farmer groups and supporting and guiding NGO and private sector efforts. Nevertheless in areas where there are no NGO programmes and stockists do not provide advice, government extension is the sole provider. In all four districts some extension staff had experience of undertaking adaptive research under the guidance of KARI scientists. Public extension participated in project implementation in three of the four districts. In Kitui District they sent an officer for the training of trainers course, but he did not develop an action plan for training farmers.

Partner NGO extension approach, capability and involvement

In Eastern Kenya one NGO was identified as the main partner. The Catholic Diocese of Kitui (CDK) operates its development programme through an extensive network of parish based self-help development groups covering Mwingi and Kitui Districts. It has long experience of working with these groups, has undertaken variety trials, and sees CP as an important component in its food security programme. The FAO farmer field school programme, Kitui, covers the same districts and is managed by government extension. In Western Kenya, two NGOs operate agricultural programmes in Homa Bay and Rachuonya Districts, CARE and C-MAD. CARE Kenya uses a livelihoods approach and operates a food security programme which has recently been re-focused on income generating activities. C-MAD has been operating for over five years and works through village development committees. Both NGOs had experience with running adaptive trials in collaboration with KARI, and both were involved informal experimentation and training in the use of botanical pesticides. CARE did not participate during implementation, as although invited it did not attend the inception and stakeholders meetings when plans were made in detail.

Farmer extension capability

Farmers are increasingly being involved, in a more formal way, in extension activities. Cross visits have been tried in all three target districts. KARI Kisii has found these to be effective in promoting uptake of technology (e.g. soil fertility management of indigenous vegetables) that has proved hard to disseminate using more conventional extension approaches. In Homa Bay District there is at least one farmer who is contracted in by CBOs and NGOs to train other farmers. In Mwingi and Kitui Districts, the leaders of established Farmer Field Schools have been contracted to equip and train newly formed FFs. CDK has identified community resource persons whom it sent for training in CP provided under output 2 of the project.

Tanzania: Policy and institutional context

Agriculture is the dominant sector in the Tanzanian economy, currently contributing more than 50% of the GDP; it is the largest foreign exchange earner, supports livelihoods of more than 80 per cent of Tanzanians living in rural areas, and provides most of the food consumed in the country. The sector has a key role in achieving the Poverty Reduction Strategy (PRSP) and the Tanzania Development Vision 2025 (TDV 2025), whose set targets require an annual growth in the agricultural sector of 8% and more, whereas in recent years agricultural GDP has grown less than 4 % per year.

Agricultural support services in Tanzania include: *Public sector research* (Ministry of Agriculture and Food Security, MAFS) - all seven Division of Research and Development (DRD) zones have semi-arid areas and the DRD is promoting a client-oriented approach (COR) to research; *Public sector extension* - the Ministry's extension service has been reduced and substantially decentralized, under the direction of District Councils, with current policy including participatory approaches, strengthening of farmer groups and initiatives for credit, input supply and output marketing, new approaches to quality of services and greater role for the private sector. *NGOs and CBOs* have become increasingly important and a number are involved in agriculture support, including farmer empowerment activities, training and improving input supply, particularly seed. *The private sector* is most active in more favourable areas and/or with crops that have an input or output market. These include cotton and other traded crops eg maize, rice, chickpeas and groundnuts.

The Agricultural Sector Development Strategy (ASDS) and Programme (ASDP)

The Government of Tanzania's Agricultural Sector Development Strategy –ASDS (URT 2001a) aims to provide a single sector-wide policy, institutional and expenditure framework for agriculture that is led by the government. The ASDS arose in response to the Poverty Reduction Strategy Paper and aims to create an enabling environment that is conducive to improvement of agricultural productivity, in order to improve farm incomes and reduce rural poverty. The ASDS identified 5 strategic issues that need to be addressed:

- Strengthening of the institutional framework
- Creating a favourable environment for commercial activities
- Public and private roles in improving support services
- Strengthening marketing efficiency for inputs and outputs
- Mainstreaming planning for agricultural development in other sectors

The Agricultural Sector Development Programme (ASDP) is the means for implementing the ASDS. It provides the Government, through the Agricultural Sector Lead Ministries (ASLM) with a sector-wide framework for overseeing the institutional reforms and investment priorities. The ASDP has three sub programmes and specific components at national and district levels:

A: Agricultural Investment and Implementation at District and Field level

- Investment and Implementation through DADPs and DDPs
- Policy and Regulatory Framework supporting an enabling environment for Local Government Authorities (LGAs)
- Research, Advisory and Technical Services and Training
- Private Sector Development, Marketing and Agricultural Finance
- Cross-Cutting and Cross-sectoral Issues

B: Agricultural Sector Support at the National Level)

- Policy, Regulatory and Institutional Framework
- Research, Advisory and Technical Services and Training
- Private Sector Development, Market and Agricultural Finance

C: Cross-cutting and cross-sectoral issues at National level

- Cross cutting issues- e.g. HIV/AIDS, gender, environment and good governance etc
- Cross-sectoral issues, e.g. Education, civil services, financial sector reform, land legislation, energy, water, rural infrastructure, etc.

Implementation of the ASDP

ASDP formulation and implementation are overseen through broad task forces and thematic working groups and investment-specific formulation teams as well as associated Government and Development partner-supported projects/ programmes such as PADEP, AMSDP, DADPs

A draft Concept Note has been prepared drawing on the findings of the TF-3 on Agricultural Services and outlines a possible Government programme to support agricultural services reforms and operations within the framework of the ASDS and ASDP. TF-3 is of central importance to project R8349, because it has examined and made recommendations on–Agricultural Research, Extension, Farmer Empowerment and Organization, Information and Communication. In line with ASDP, the proposed programme advocates a fundamental change in approaches and institutions both at district and national levels, with a shift in focus from central supply-driven programmes to a decentralized demand-driven system. For this to happen the following needs have been identified:

- Farmers empowered with knowledge and enhanced decision-making skills;
- Farmers have effective representation and financial control over the type of public services provided
- Farmers determine priorities in research
- Extension officers evolve to facilitators/ knowledge-brokers/advisers on demand
- Private sector play greater role in service provision;
- Provision of agricultural services devolved to the lowest levels (district and wards), commensurate with cost effectiveness (subsidiary);
- Activities recognize and build on existing capacities of farmers and farmer groups.

These proposals are being developed into a five year project – the Agricultural Services Support Programme (ASSP) – which is expected to start in mid-2005 with funding from IFAD and the World Bank. R8349 therefore had the opportunity to pilot and learn lessons about agricultural communication approaches that would be compatible with the emerging institutional arrangements and farmer focus of ASDP component projects.

Associated Programmes/Projects

A number of other major on-going agricultural development programmes/projects should be coordinating with the ASDP such as:

Agricultural Marketing System Development Programme (AMSDP) **-** aims to address constraints to the effective operation of agricultural marketing systems and assisting small-scale producers to acquire the capacity and interest to participate on favourable terms in the open market (IFAD funded);

Participatory Agricultural Development and Empowerment Project (PADEP) **-** seeks to raise farm incomes and reduce food insecurity of, participating communities through the implementation of small agricultural development sub-projects that are planned and managed by the community and farmer groups (World Bank funded).

District Agricultural Development Plans **–** these should form the basis of all agricultural support activities at the district level, but currently they appear to funding the establishment of small infrastructural projects eg small dams, cattle dips and training centres. Dynamic communication strategies will be essential to DADPs keeping abreast of farmer needs and delivering appropriate knowledge to support farmer adoption of profitable technologies.

Other programmes include the Agricultural Sector Programmes Support (ASPS); the Rural Financial Services Programme (RFSP) Participatory Irrigation Development Programme (PIDP);.

Coordination of ASDP

A wide range of actors have an interest in the ASDP and a number of bodies oversee the programme. These include:
National Steering Committee (NSC), responsible for the overall coordination and policy making of ASDP is composed of senior officials of concerned GOT ministries
Annual Conference of Stakeholders (ACS) gathers a wider audience than the ASAC and allows representatives of all stakeholders in the sector to be informed of, and express their views on the ASDP implementation progress.

The ASDP Secretariat's overall objective is to facilitate coordination and collaboration among ASDP stakeholders to ensure their awareness of the ASDP goals. It coordinates ASDP implementation; facilitates mobilization of resources; enhances stakeholder involvement in ASDP implementation; facilitates budgeting and financing process; monitors and evaluates ASDP; and commission and supervise sector related studies.

Partnerships and project identification

While the ASDP secretariat has the role of co-ordinating a series of project initiatives, this is taking place in the context of a far-reaching process of decentralisation in Tanzania. To be consistent with government policy, two aspects of the programme should therefore be fundamental. It is envisaged that development initiatives will in future be designed and implemented at district level as part of District Agricultural Development Plans (DADPs). Funds from central government and donors will be channelled to District councils to support projects identified at community level and planned within a District Agricultural Plan process. Budgets will be under the control of district councils who have had responsibility for agricultural extension for some time. Secondly there should be increasing effort to make use of both public and private sources of funds and to connect with the private sector with a view to increased commercialisation of agriculture. Efficient and robust communication will be critical to the successful empowerment of farmers in these initiatives. Mechanisms are needed to ensure farmer's voices are heard in setting district priorities and to ensure that knowledge of technologies and markets reaches producers.

There were a number of possible partners with which CPP could work in semi-arid Tanzania for promotion and further research. More strategically, there was an opportunity for CPP to align itself with the ASDP initiative by enabling development of agricultural communication strategies in Central zone. This provided an opportunity to address longer-term institutional/ process issues, as well as achieving shorter term more tangible aspects of uptake.

Stakeholder workshops had identified opportunities for scaling up the promotion of CPP research outputs (e.g. *Striga* and Smut management in sorghum) while at the same time supporting broader institutional change to strengthen client-oriented agricultural research to enhance uptake in Tanzania. Each agricultural zone has a Zonal Research Extension Liaison Officer (ZRELO). Recognising that ZRELOs' offices are currently understaffed, the MAFS DRD Medium Term Plan (MTP) and later the ASSP proposal (as part of the ASDP) recommend an increase in staff and resources to ensure efficient functioning of this component. Promotion of outputs from zonal research will be strengthened by changes recommended by the MTP and now to be implemented with funds from the ASSP. The ZRELO's office provided a CPP project focus for the development of a communication strategy involving public sector research extension agencies, NGOs and the private sector. To provide efficient, flexible and cost-effective project management, the NGO INADES Formation was identified to lead a coalition of partners (agricultural extension staff from Dodoma Rural, Kongwa and Singida District councils, the Central Zone Research and Extension Liaison Office (ZRELO), LPRI Mpwapwa and ARI Ilonga) and facilitate the development of an improved zonal communication strategy driven by pilot district strategies. Another important factor was that one of the INADES Formation Tanzania trainers who will be co-ordinating the Tanzanian

component of this project was a member of one of the working group under task force III on Extension Technological Delivery.

Linking the project into policy implementation

ASDP has a stated aim of empowering farmers and other stakeholders (e.g. district extension and the ZRELO's office), but this requires new relationships to be developed and improved communication will be key. This action research initiative is working with a range of agricultural service providers, who in various ways are adapting to change and new ways of thinking about their roles and the institutional environment. Improving agricultural communication requires significant financial resources. However, as identified by participants in this initiative, commitment, accountability and incentives are also vitally important elements in improving efficiency and effectiveness of service provision in general, and communication strategies in particular. The DADPs and the ASSP should provide opportunities for lessons leant to be incorporated into future district and zonal initiatives.

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Appendix 2: Narrative of Progress with Planned Activities in 3 project sites - Against Outputs

The main project activities undertaken are described below under the four output headings.

Output 1: Methods for updating demand for CP outputs and sustaining feedback documented and assessed.

1.1 Planning/inception meetings (all sites)

Site inception meetings, held in November 2003 involved all the collaborating institutions and mapped out the details of the activities to be covered in each site in order to achieve the anticipated output. In Tanzania, given the size of the area covered and current de-centralisation processes, following the inception meeting at zonal level in Dodoma, subsequent meetings were held with three district teams. In Eastern and Western Kenya the inception meetings were followed up by visits to the offices of stakeholders at district level to enlist their participation in the stakeholder meeting.

1.2 Review of methods for ongoing validation of demand for CP research

The approach to this activity varied across the three sites. In the two Kenya sites there was more focus on reviewing the efficacy and past peformance of established formal mechanisms for linking research and extension in order to improve the demand orientation of research, particularly the advisory committees established under the 1995 Joint Memorandum between KARI and the Ministry of Agriculture. The respective research extension liaison officers (RELOs) on the site teams were assigned to analyse the minutes of the Advisory Committees at which proposals by researchers were scrutinised by extension and farmer representatives, and at which agricultural problems were reported to researchers. The results were presented at the stakeholder planning and lesson learning workshops, and also to the external review team. In Tanzania, the site team focused on the newer and more de-centralised framework, using the project as an opportunity to mobilise the Zonal and District level mechanisms in order to assess demand for crop protection information. This analysis was elaborated in the stakeholder planning workshop as part of the design of zonal and district communication strategies, and revisited in the October 04 stakeholder lesson learning workshop as part of the revision of communication strategies in preparation for the second cycle of lesson learning.

1.3 Analysis of stakeholder feedback incentives

The initial plan was for this to be undertaken through consultations and discussions at the first stakeholder planning workshops held in early February 2004. In all cases it proved quite difficult to undertake this analysis in a participatory way, as most of the time was spend in communication and fostering an understanding of the project, and in the collaborative development of implementation plans for the first season of fieldwork. Ideas on incentives were familiar to the project design team, being rooted in more recent conceptual developments in public services in Western economies. However project partners, particularly those below national level in what are essentially controlled institutions, were unfamiliar with this debate and its relevance.

The project has struggled with finding an adequate methodology to assess this aspect, although some insights have been gained from discussion during stakeholder workshops of feedback mechanisms and the general culture of reporting in the collaborating organisations. In addition, through observations and lessons derived under outputs 2 and 3, some insights into the constraints to providing feedback, as well as ways of improving feedback on CP issues, have been identified.

1.4 Test feedback methods to link farmers, dissemination agencies and research

This activity was closely linked to 1.2 (validation/update of demand for CP products and information). In Kenya the expectation was that the research extension liaison officers in each site would explore options for improving feedback from farmers through dissemination agencies to research. The reviews undertaken of the advisory committees in both Eastern and Western Kenya incorporated a review of the feedback efficacy of these committees. It was hoped that the committees would meet during the first cycle of learning, but they did not due to lack of funding from the KARI research-extension liaison budget at head-quarters and as a consequence this aspect was not monitored. In Western Kenya alternative fora for feedback were monitored according to invitations and opportunities to piggy-back attendance of meetings. In addition, in W. Kenya a system of joint monitoring of the pilot dissemination sites provided a feedback mechanism which was judged by the stakeholders involved to be effective. In E. Kenya the monitoring and assessment of the pilot dissemination activities also functioned to some extent as a feedback mechanism. In Tanzania this activity was addressed largely through the development of a PM&E system to be tested in the three pilot districts working with the Central Zone ZRELO's (See 2.4 and 4.1).

Output 2: Approaches for improving stakeholders' access to CP research outputs identified.

2.1 Stakeholder mapping and characterisation

The project included this activity as a means of for better understanding the institutional context for CP promotion and communication, and for identifying potential constraints and opportunities. This activity was briefly visited during the November 03 inception meetings, as a basis for identifying who would participate in the stakeholder planning meetings of Feb 04. During the planning meetings, in the face of the need to quickly mobilise a range of stakeholders to ensure that activities got quickly underway, further in-depth stakeholder analysis was not undertaken. While the results would have been useful and informative, there were also certain risks attached (i.e. an open debate about the specific interests, threats, and fears of the stakeholders present may not have been conducive to ageing a consensus for action within a time-limited workshop). Nevertheless, the group-work undertaken during the October 04 lesson learning workshops in Tanzania and Western Kenya, and during the cross-site workshop of February 05, provided some insights into stakeholder perceptions, strengths and concerns. It is expected that this aspect may be further explored as part of the follow-on project.

2.2 Review of existing methods stakeholders use for accessing CP information and identification of the barriers to access.

In all three sites, surveys were undertaken in order to improve understanding of the way key stakeholders gain access to CP information. In W. Kenya questionnaires

were sent to all stakeholders invited to the first stakeholder workshop (researchers, public extension, NGO extension, private sector, CBO farmer representatives, adult education). The results were analysed and presented during the workshop. In E. Kenya, the farmers and extension staff trained undertook a survey of the CP information access practices and preferences of over 2000 farmers attending their training events. In addition, questionnaire surveys of the access issues affecting farmers and extension providers were also conducted. In C.Tanzania, consultations were carried out with service providers in the three pilot districts and the results presented in the February 04 workshop. A baseline survey was carried out with farmer groups aiming to identify how farmers are currently accessing information.

2.3 Inventory and catalogue of available CP research information

This activity was undertaken to a more advanced stage in Western Kenya, where researchers undertook information gathering visits to a large number of other research centres and NGOs and on the basis of this compiled an inventory which was then developed into a catalogue of available products, including some ITK products tested by local NGOs. This catalogue was shared with a range of stakeholders. In E. Kenya an initial inventory of CP information was developed, but this has not been developed further, in part due to limited CP expertise available for this task at KARI Katumani. In Central Tanzania, this was not a planned activity

2.4 Facilitate selected districts to develop approach to improving stakeholder access to CP information within framework of ASDP action plan

This was undertaken in C. Tanzania in the context of ongoing decentralisation of services. CP communication strategies were developed in each of Singida Rural, Kongwa and Dodoma Rural districts. These strategies comprised: CP need, the Communication need; Existing/ emerging communication tools, Activities; Monitoring Evaluation; Who was responsible and indicators of achievement. These strategies were implemented in 2003/2004 and then reviewed through various activities e.g. Singida stakeholders' workshop in October 2004; PM and E activities and assessment of communication tools and approaches in late 2004. These various review mechanisms led to revised strategies that were initiated for the 2004/ 2005 season. Targeted interactions with district officers and officials in meetings, workshops and on a personal basis are part of the strategy to engage with the district hierarchies and contribute to their planning processes.

2.5 Review of CP information supply against demand

This activity was to be undertaken in Kenya as a formal exercise, using information generated during the various workshops and as part of compiling the inventory. While information on what technology was available, along with information on the technical constraints, the formal analysis was not undertaken due to limited time. This may be re-visited during the follow-on project.

2.6 Distribution of catalogue/inventory materials

The catalogue produced by the W. Kenya site team was distributed to local stakeholders during October 04, and again to the other sites at the Feb 05 cross-site

workshop. The response was encouraging, with a general feeling that all three sites should produce a similar document, time and resources permitting.

Output 3: Methods for delivery of CP research outputs to uptake pathways and farmers piloted

3.1 Mapping and analysis of uptake pathways with stakeholders

Outline mapping of the main uptake pathways for CP information was undertaken during the inception meetings in all sites. Further analysis of these pathways, their strengths and weaknesses was undertaken at the Feb 04 stakeholder workshops and again at the October 04 site lesson learning workshops. The mapping exercises also served to inform the monitoring plans in the three sites (see activity 4.1)

3.2 Matching promising uptake pathways and promotion methods with available CP technology

The inception and stakeholder workshops at each site proved to be effective mechanisms for reaching agreement among the main stakeholders which communication and promotional pathways and tools would be used, and for which types of information and products. In Kenya, the main pathways were selected for the pilot districts based on the local situation and resources available, with a different technical focus related to the CP information needs and opportunities available. In Central Tanzania, zonal and district level (x3) communication strategies defined clearly which pathways and methods would be used for which CP information topics.

3.3 Development and Production of communication/training materials

For the technologies selected under 3.2, at each of the 3 sites the available CP information was developed into communication and training materials. In the two Kenya sites, the main emphasis was on the local production of training materials which were used in Training of Trainers workshops held for those involved in farmer training in the pilot districts. Information materials were also handed out at these workshops and also later during field days held in Western Kenya. In Central Tanzania, more emphasis was placed on developing district communication strategies to identify he communication materials at Zonal level, and then using the district communication strategies as a means of delivering the materials produced, alongside other elements of the district strategies e.g. training, participatory learning activities (e.g. comparing industrial pesticide and botanicals for control of stemborers and larger gain borers) and demonstration provided. Good use was made of the existing materials from CPP research outputs in all sites, including outputs from the vegetable cluster developed in Zimbabwe which were used in W Kenya and Central Tanzania.

3.4 Pilot Dissemination of selected technologies to farmers via chosen agencies and methods

The stakeholder planning meetings involved local extension service providers who sat down to design CP dissemination activities. In Kenya the design included an explicit effort to compare the efficacy of different available approaches to dissemination (e.g. Farmer Field Schools, Existing Farmer Groups, para-extension agents, primary schools, and other newer and older public extension methods). These were compared using the technical inputs provided through the training of trainers workshops. The aim of comparison was to facilitate learning about which

approaches are more appropriate for which types of CP message. The results were monitored and assessed (see 4.1). In Central Tanzania the focus was on building on the on-going process of de-centralization and empowering players at every level through improved access to CP information training, information and products. The key levels were the zone (the ZRELO's office and researchers), the district (districts extension staff) and village (village extension staff, primary school teachers) and farmer groups (women and men). Opportunities for lesson learning are provided by project partners comparing before and after; between districts and between different communication approaches and tools used.

Output 4: Lesson learning and policy implications documented

4.1 Develop a monitoring and evaluation system of the promotion process

At the three project sites the teams worked towards developing a monitoring and evaluation system. As noted by the external review team, this proved to be a more time-consuming and challenging task than at first envisaged, and high-lighted the need for further capacity building activities in M&E and PM&E. The project team did not have the resources available to undertake specific capacity building and training in this area. However, in W. Kenya, the project linked up with another initiative being implemented by CIAT which was looking at strengthening M&E within national research systems. The site team participate in a training workshop and the project was used together with others as a case study for developing a results based monitoring framework. Unfortunately, due to funding delays in the other project, this was not done in time to test out the framework during the first cycle of learning, and the framework developed was not complete at the time of reporting. As a stop-gap measure, a household survey of participating households was undertaken during December 04. The results were analysed and reported at the cross-site workshop under output 3.

In E Kenya, a more "traditional" approach to M&E was used, providing baseline data as well as monitoring data which could be used to assess farming learning and uptake of the technologies covered by the TOT. The framework used is discussed under section 5.4 and detailed in Appendix 3d. In both Kenya sites, a follow-up survey was undertaken and the preliminary analysis is reported in section 5.3. In C. Tanzania a participatory monitoring and evaluation (PM&E) system based on the zonal and district strategies was initiated by the Zonal Information Officer working with the District Subject Matter Specialists for Statistics in the pilot districts (Dodoma Rural, Kongwa and Singida Rural) and pilot villages. Indicators of achievement were identified by participants at farmer group, village, district and zonal level. The challenges in developing this system are providing ample opportunities for lesson learning.

4.2 Project review workshops

Project lesson learning workshops were held in all three sites during October 2004 and reports produced (see reports). In W Kenya a wide range of stakeholders were represented, and worked together to document the activities undertaken under output 3, as well as a qualitative assessment of the relative performance of the three selected dissemination pathways. In Eastern Kenya a smaller group of stakeholders undertook a similar exercise. In Central Tanzania over 60 participants

representing a wide range of stakeholders reviewed project activities in Singida in October 2004.

The analysis undertaken and lessons generated at these workshops were input into the publication of a progress report published in *Agren Newsletter No. 51*, and in a summary handout of lessons prepared for Kenya policy makers. These were shared and further discussed at the March 2005 cross-site workshop (4.3 below)

4.3 Workshop to identify key lessons and policy implications for sustaining and further strengthening of the promotional strategy

At the end of the project the intention was for the three site teams to meet, share experiences perhaps borrow ideas from each other for the future, and then share lessons with policy makers. The mid-term project review recommended that a meeting of the three site teams to share progress should be done earlier. However, this activity was not budgeted and so was not possible. When the decision by CPP management to fund a continuation of the activities under a new project was known, a decision was taken to replace the regional summative workshop with a cross-site lesson sharing workshop. This was held in Naivasha Kenya in from 27th February to 5th March 2005. For the first time the three site teams were able to meet up with each other and share their experiences. Presentations were made under each of the project outputs, and these were followed by group discussions. This provided a basis to synthesise the progress with lesson learning across the three sites, and some of the results are reflected in the next section of the report under outputs. A full report on this workshop is available.

Appendix 3a: Further Details on Output 1 in three project sites

This appendix contains a number of the more detailed project outputs referred to in the main report. They have been extracted from various project reports produced with the teams in each of the three sites. Further details are contained in the original reports listed.

5.1.1 Eastern Kenya – Review of Katumani Centre Research Advisory Committee – 1994-2003

Table 3.1: Participation in KARI Katumani Annual CRAC meetings 1995-2003.

Dates	***Institutions represented***		
	Institution	***% Representation***	***Total Number of attendees per meeting***
1995 3-4 Oct.	KARI MoA Farmers	53 35 13	40
1996 10-11 Sept.	KARI MoA Farmers NGO	40 38 14 4	51
1997 9-11 Sept.	KARI MoA Farmers NGO	53 35 10 2	60
1998 8-10 Sept	KARI MoA Farmers	73 22 5	49
1999 21-23 Sept	KARI MoA Farmers NGO ORI	50 15 8 13 14	52
2000 17-19 Oct	KARI MoA Farmers NGO	53 25 10 12	59
2001 18-20 Sept	KARI MoA Farmers NGO	45 32 9 14	46
2002 24-26 Sept	KARI MoA Farmers NGO ORI	71 15 4 6 4	55
2003 26-27 June	KARI MoA Farmers NGO	54 37 6 3	69

Table 3.2: Major Pests and Diseases, Research interventions and CRAC recommendations

YEAR	EXTENSION ISSUES		RESEARCH INTERVENTIONS PROPOSED		CRAC RECOMMENDATION
	PESTS	DISEASES	PESTS	DISEASES	
1995	Cassava Green mites Cassava mealy bugs Cassava Scales Porcupines Squirrels Pod sucking bugs in P/pea		Resistance/Tolerance breeding Biological control ***T.Aripo*** Tolerance breeding Repellant (Hairiness) Chemical control None None Integrated Pest management		CRAC as a forum has not been making joint recommendations on CP issues but individual scientists have produced extension leaflets, pamphlets and posters on control methods for major pests and diseases
1996		Citrus greening disease		Development of clean planting material using tissue culture technology	
1997	Aphid Birds Termites	Cassava Mosaic virus Citrus greening disease	Chemical sprays None	Use of clean planting materials Mosaic resistant materials Biological control (Vector) Chemical-regent Development of clean planting material using tissue culture technology	
1998		Citrus greening disease Cassava mosaic virus		Development of clean planting material using tissue culture technology Development of resistant cassava varieties Biological control of vector (white	

				flies)	
1999	Larger grain borer in maize		Research on host plant resistance on-going Research on efficacy of chemical currently in use on-going		
2000	Pod sucking bugs in pulses		Bean charcoal rot IPM control strategies	Development of resistant varieties	
2001	Cowpea parasitic weed			Research on control methods on-going	
2002	Sweet potato weevil	Covered kernel smut-sorghum		Cultural control-Rotations Clean seed selection; Resistance breeding	
2003	Larger grain borer Sorghum stem borers		Research on host plant resistance on-going Research on efficacy of chemical currently in use on-going Research on host plant resistance on-going Development of biopesticides		

Table 3.3: Crop Protection Issues Raised in PRAs conducted in Dry Areas of Western Kenya

CP Issues - & when raised in PRA	Related Research Intervention – progress
Late blight in tomatoes 1994 KARI led PRA	Tengeru disease resistant variety from Tanzania introduced
Early blight in tomatoes 1994 KARI led PRA	Tengeru disease resistant variety from Tanzania introduced
Finger millet blast	Resistant varieties introduced
Spider mite	Proposal written awaiting funding
Locusts/grasshoppers Homa Bay, Focal Area PRA	No research intervention reported
Army worm Homa Bay, Focal Area PRA	No research intervention reported

5.1.3 Central Tanzania – Stakeholder Analysis

Who are the stakeholders?

The Central Zone centre is at LPRI Mpwapwa, which is essentially focusing on livestock research, with some crop-based research taking place at Hombolo and Makatuporo nearer Dodoma town. Ilonga ARI (Eastern Zone) is relatively close and has lead responsibility for grain legumes, sorghum and pearl millet research programmes. Prior to adoption of zonal mandates for research institutes, Hombolo played an important role as a sub-station for the sorghum and millet research programme based at Ilonga. In line with the Local Government Reform Programme and the Public Sector reform Programme, the Ministry's extension service has been reduced and substantially decentralized. Regional Offices for Dodoma and Singida regions now have a co ordinating/ advisory/ monitoring role and the District Offices (nine in the Central Zone) have an implementation role working to the District Councils. The Plant Health Services (formerly Crop Protection Division - has responsibility for aspects of plant quarantine (including the new Plant Protection Act) and pest outbreaks (e.g. Quelea and Armyworm) and has been promoting IPM (with support from the Tanzania German IPM project 1992-2003). It has five zonal centres across the country, including Central zone based in Dodoma. National and international non-governmental organizations (NGOs) and community-based organizations (CBOs) have become of increasing importance in Tanzania. As well as being involved in direct relief and development, a number of NGOs are moving to a rights-based approach and lobbying government on behalf of vulnerable groups. A number of NGOs are involved in agriculture in the Central Zone including: CARITAS, Lutheran church, World Vision, INADES Formation Tanzania and Diocese of the Church of Tanganyika (DCT). Many of these NGOs have been involved in improving farmer access to information, training and products, particularly seed. The private sector is generally more active in more favourable areas and/or with crops that have an input or output market. In Central Zone traded crops (e.g. maize) are comparatively few and vary depending on the rainfall in any given year e.g. maize.

What are the methods for updating demand for CP and sustaining feedback?
It is important to recognize that there are formal and informal links between different players.

Zonal level

The Central Zone ZRELOs office (currently comprising a three man team of the ZRELO, the Zonal Communication Officer (ZCO) and an assistant) was established in October 2000 and has the overall aim of providing a two way link between research, extension and farmers The original and main reason for this linkage was to allow scientific knowledge to reach farmers in an understandable and useful way. Most of the information relates crop production and storage, rather than markets. Farmers' knowledge is included in information sources, including understanding farmers needs and farmer criteria for varieties. To some extent information from farmers can pass via ZRELO to research at Internal Programme Reviews IPRs (e.g. weed and water management). Previously ZRELO was limited to promote "research based" knowledge but since being involved in the FAO LINKS project the ZRELO felt that there was a role for his office to promote farmer knowledge[1]

Who are ultimate target groups (beneficiaries, recipients of information) of ZRELOs office?
Is it rural community of farmers or farming families or is it the group of intermediate service providers? To what extent are, and should, particular groups be targeted e.g. women, poorer farmers/ faming families, elder or younger people? To what extent are different approaches needed to each different groups? According to ZRELO, the ultimate target should be farmers but due to the magnitude[2] of this group, assistance and co-operation is needed from other providers who no doubt also have their own targets.

Who owns and what drives the ZRELOs office?

The ZRELO's office was officially set up by the Ministry of Agriculture and Livestock Development. Following a split of the Ministry, it is now owned by MAFS and MWL (Ministry of Water and Livestock) with salary paid by MAFS who provide direction. Is there a sense of ownership beyond MAFS however? In past all staff was under the Ministry of Agriculture so there was one line of command. Then local government took over supervision of extension although salaries paid by MAFS. Indeed all staff of all ministries at district level fall under district councils. ZRELO is part of central government ministries of MAFS and MWL and in that role can facilitate communication between central ministry and decentralised district local authorities ZRELO has no management responsibility for district level staff and officially has to work through RAAs and DEDs as first points of contact.

How is the ZRELO's office assessing demand from other stakeholders?

Meetings

- Annual Internal Programme Review (IPR), for research planning and results. Members include mainly Zonal (± 10) and DRD HQ (2) researchers. Researchers (±

[1] . One example was a district office knowing of an early maturing sorghum land race (Mkiatolwa) in Iramba which one farmer found to perform well and to be palatable. District office asked ZCO to assist in promotion. Farmer was interviewed and radio programme led to others adopting i.e. approaching the farmer and acquiring seed. Some farmers even went from Shinyanga to collect the seed.

[2] According to the 2002 Population Census there are a total of 594,000 households in Central Zone and for most agriculture is an important component of their livelihood strategies

5) from other zones are also invited depending on issues to be discussed. ZRELO attends as part of the Zonal research team. There is one representative from each DALDO office, two regional research advisors and about three farmers. Representation by NGOs changes from year to year depending on the venue e.g. only one NGO was present at last IPR in Singida.

- Zonal Technical Committee (ZTC) meeting aims to rectify outcomes from IPR to produce an annual plan for presentation to the ZEC. Members include farmers (should be one from each district but usually 3-4), zonal (3-4) and outside researchers (3-4), district councils, 5 NGOs, 2 RRAs and 9 DALDOs office.
- Zonal Executive Committee (ZEC) will agree protocols from ZTC and approver budget and may prioritise work programme. It can reject proposals. Under chairman of Regional Administrative secretary. Members include 3 zonal researchers (director, research co-ordinator and ZRELO) representative from DRD HQ, 2 farmers from each region, 5 DALDO (in rotation) NGOs (including INADES); 2 RAS, policy makers (Regional Administrative Secretaries from Dodoma and Singida). An MP from Dodma tends to be present.
- Zonal Quarterly workshops provide a forum for field staff to air problems from the field and provide feedback on technologies to research. Includes $\pm$ 5 zonal researchers, 2 farmers, 6 NGOs, DALDOs and subject matter specialists (5 per district), 2 RRA, Regional Co-operative Officer. Last meeting was in March 2002 and it has been suspended due to a lack of funds. Previously funded by TARP2 (ends 06/04) and NAEP2 (ends 12/03 but World Bank funding ended 12/02).

Proposals to review the ZQWs with funding from District Councils. But funding has not become available so ZRELO is waiting for outcome of design of new research and extension funding arrangements (ASDP). District councils meet formally so it has been proposed that they should invite researchers and this has happened in some districts, Districts contribute to Zonal Research Funds so district councils may summon researchers to discuss on-going work.

***Visits**:* ZRELO has funds (from MAFS) to travel to districts.

- ZRELO has annual schedule of visits to undertake when funds become available. The aim is to identify problems from districts and to discuss with district extension. Also undertakes monitoring of progress of pilot initiatives of village level projects identified and developed by districts using MAFS NAEP2 funds e.g. oxenisation in Singida, input loans in Dodoma, seed production in Manyoni, cattle dips in Dodoam rural, FFS in Kongwa. Development activities but some inputs come from research such as seeds. This initiative is continuing as there is a revolving fund handling the loans.
- Visits also provide an opportunity to liaise with NGOs and to develop collaboration. One outcome has been to make a video in 2000 with INADES on environmental conservation

Is there an M and E process in place for ZRELO?

At the beginning of the project there was no formal system. There is a plan to look at performance of ZRELO nationally, and not just at Central Zone level. Central Zone ZCO formed an informal group to evaluate the tools such as leaflets they produce. NGOs, extension and researchers are involved but do not meet as a committee due to lack of a budget. A survey[3] was undertaken in Singida of preferences for types of information and

[3] Mika Job David and Nyamungumi Penzi (2001) Research report on services provided through Radio-Central Zone on farm programme and other communication/ information channels. URT, Information Services-Central Zone, Dodoma, Tanazania.

how information channels may be improved. For information resources there was no monitoring of what happens to information disseminated by ZRELO

The role of projects

Over recent years the Tanzania ARIs have negotiated research projects directly with donors or obtained issue specific funding from TARP. In many cases projects have undertaken RRA or PRA activity to ensure client orientation and farmer relevance of subsequent research activities. Effectively donor funded projects have engaged farmer groups to learn about specific farmer problems so feed-back has gone direct from farmers to researchers. This type of feedback works well for the limited time a project is funded, but has made only limited use of district and zonal structures in extension. It has however been successful in focusing research on some key CP problems including *Striga* and sorghum smut.

District level

District Councils Extension service

There are a range of activities taking place at district level which provide information about demand for CP information and products. In general this information does not appear to be managed systematically unless there is a project or programme being implemented. For example, in Singida district the LAMP project has carried out a series of PRAs between 2000 and 2002. Stalkborer was identified as a problem through this process. The World Bank funded PADEP project (also in Singida) has facilitated the district and ward facilitation teams to carry out PRAs and formulate projects with farmer groups. However, there is no formal system by which farmer demand is communicated to district level other than reports made by Village Extension Officers at monthly meetings.

In future District Agricultural Development Plans, informed through demand-led processes should drive the ASDP process. Currently, however, the outcome of these plans mainly appears to be small scale infrastructure projects (see below)..

Table 3.4 District Agricultural Development Plans (DADEPs) in CPP pilot districts

Singida	Kongwa	Dodoma
How was demand identified?		
PRAs by a number of agencies including LAMP, CARITAS and TASEF. Development of community action plans	Identification of demand from farmers in on-going projects e.g. Draught animal power project (DAP).	PRA,s by TASEF, MAFS and district team
Current activities		
Rehabilitation of irrigation schemes Charcoal dam construction Rehabilitation of Oxenisation Training Centre Rehabilitation of cattle dips Distribution of drought resistant cultivars	• Charcoal dam construction • Promotion of use of DAP and distribution of tools and DAP	• Charcoal dam construction • Promotion and distribution of DAP tools • Rehabilitation of cattle dips
Funding: World Bank through MAFS		

Informal systems

Information about demand for CP information and products is being collected by agencies outside the formal government system. One example is a project involving INADES Formation Tanzania (IFTz) which carried out a study of farmers' indigenous knowledge/practices and these have been documented including booklets on field and storage pest management (INADES 1997a, 1997b, 1999a,1999b). Some of this information is also available on a website (http://www.tanzaniagateway.org). This identified a clear demand for more research on the application of botanicals for pest management. However, research organizations are not currently responding to this demand.

Table 3.5 Crop protection and related needs in district communication strategies in Year 1 and Year 2 – Central Tanzania

Year 1 (2003/2004)	Year 2 (2004/2005)
Dodoma Rural district	
Prevention and control of Striga and smut Information on control & prevention	Effective prevention and control of pest and diseases (*Striga* and smut in sorghum)
	Promotion of Hakika and Wahi sorghum
	Control of storage pests of grains
	Sorghum processing
Kongwa district	
Tomato pests and diseases Control To gain knowledge on pest and disease of tomatoes Proper and timely use of chemicals	Tomato disease and pest control
	Improving tomato market opportunities
Prevent and control smut disease	Control of sorghum smut
Prevent and control the weed Striga	Control of *Striga* in sorghum Control of *Striga* in maize
To prevent and control the stalkborer To Increase yield	Control of stalkborer
Singida Rural district	
Controlling pests and diseases of onion Proper and timely use of Agrochemicals Increased demand for Agrochemicals as result of increase awareness	Control of pests and diseases of onions Timely and proper use of agrochemicals and indigenous knowledge;
	Improving market situation
	Knowledge of "mkeki" and its control
Control of Larger Grain Borer Proper harvesting procedure Orientation and mobilization Agrochemicals and Indigenous knowledge Low purchasing power of Agrochemicals to farmers Proper and timely application of pesticides	Control of storage pests Timely and proper use of agrochemicals and indigenous knowledge; LGB biology
	Control of Striga and smut on sorghum Knowledge on control of Striga and smut on sorghum

Table 3.6 Crop protection and related needs in zonal communication strategy in Year 1 and Year 2

Farmer CP and associated need	Communication need Year 1	Communication need Year 2
Control of storage pests	Procedures for controlling storage pests that take into account: Safe use of agro-chemicals Appropriate to all farmers e.g. poorer and richer; women and men	Procedures for controlling storage pests that take into account: Safe use of agro-chemicals Appropriate to all farmers e.g. poorer and richer; women and men Plus Life Cycle of storage pests Proper use of neem to control storage pests
Onion pests and diseases	Information on improved control of onion pests and diseases	Information on improved control of onion pests and diseases Plus *Nkeki* control
Marketing of onions	Not identified/ addressed	Improving ways of marketing onions
Smut and striga control	Improving control of smut and Striga	Improving control of smut and Striga on Sorghum
Striga on maize		Improving control of Striga on maize
Sorghum processing		Improving sorghum processing
Seed multiplication	Improving knowledge of seed multiplication	Improving knowledge of seed multiplication
Stalkborer control	Improved management of stalkborer	Improved management of stalkborer
Tomato pests and diseases	Improved management of tomato pests and diseases	Improved management of tomato pests and diseases Plus White fly control info Elegant grasshopper control info Plus How to make & use solar dryer
PM & E	Initiate system	Make follow-up

Appendix 3b: Further Details on Output 1 in three project sites

5.3.2 E Kenya

Using Participatory Variety Selection Trials as a farmer Access/Uptake Mechanism For Pest Tolerant Sorghum Varieties

Mugo, C.

Background

Farmers from six sites in Mwingi district participated in sorghum variety selection trials over 4 growing seasons, from, Oct.2000 to April 2002

A mother baby trial design was used. At each site 10 farmers were selected, one with a "Mother trial" of all 14 new varieties and nine more (baby trials) each with six of the new varieties

In the on-farm trials, the focus was on overall performance with relatively more attention to insect pest tolerance than other aspects of performance. Participatory evaluations were conducted at the end of each season using a range of methods

Participatory Variety Evaluation Methods Used Across Four Seasons

Season	Evaluation Methods
Nov.2002	Matrix ranking by 2 farmer panels (combined), scoring by stakeholder workshop participant
April 2001	End of season discussions with panels, listing good and bad points of each variety
Nov 2001	Panels, Listing good and bad points, scoring against criteria, ranking criteria, voting for best eight varieties
April 2002	Panels, Listing good and bad points, scoring against criteria voting for best varieties.

Participatory Variety Evaluation: Results

Variety Name	*#Say Tried it*	*#Still Growing it*	*Trial Farmer uptake*	*Av Acreage planted*	*Food Given as*	*Cash or Seed Given*	*#Trial Farmers*
KARI MTAMA 1	20	16	80%	0.55	16	1	15
Gadam **	17	12	71%	0.46	9	0	9
PGRCE216	12	9	75%	1.22	7	4	5
SEREDO**	9	8	89%	1.01	6	6	6
IESV92165	6	1	17%	0.20	1	0	0
KSV1	6	4	67%	0.15	1	2	1
MACIA	6	4	67%	0.21	2	0	1
SUDAN 142	6	2	33%	0.23	1	0	1
IESV92098	5	2	40%	0.07	2	0	1
SDS1948-3	5	1	20%	-	-	-	0
IESV 23509	4	1	25%	1.00	1	0	1
IS15127	4	1	25%	1.00	1	0	0
KAT 412	4	1	25%	-	-	-	0
MAHUBE	4	2	50%	0.25	2	1	1
ZSV3	4	1	25%	0.50	1	9	1

** Used as check variety in trial
++ Elite varieties introduced before the mother –baby trials

Comments

- The " elite" varieties introduced prior to the mother-baby trials were mentioned more often than the varieties first introduced in these trials
- After at least 4 seasons of growing them, except for IESV92165 and SDS1948-3, everyone of the new varieties had been taken up by at least 25% of the farmers reporting that they had tried them
- For 5 of the 14 varieties, farmers were growing more than .5 of an acre
- A further 5 varieties farmers were growing between. 2 and .5 of an acre, suggesting that farmers are ready to take up a wide range of new varieties
- This reflects the range of climatic and soil conditions, as well as food and market preferences

3.5.2 SW Kenya

Overview of Catalogue of CP Technologies For Semi Arid Areas Of S.W. Kenya

M. Makelo & M. Nyangwara

Introduction

Most crop protection technologies available in research institutions are not accessed by end users due to lack of appropriate channels of information. This catalogue aims at availing these technologies for use by end users in semi-arid areas of western Kenya.

Methodology

- Stakeholders meeting
- Identified institutions to visit
- Checklist developed on kind of information to collect
- Pathologist, 2 entomologists
- Libraries, Individual scientists,
- Format:

- Title of the technology
- Short description of how it works
- Which crops it can be applied
- Where it has already been tested and adopted by farmers
- Observed benefits
- Any risks or costs
- Comments on availability
- Where further information can be obtained

Institution listed:
KARI-Kibos, Cotton, Kakamega, Thika, Mwea,ICRAF, ICIPE, ICRISAT, KESREF

KARI KIBOS-Inventory of crop protection technologies.
- Striga control and improved farm productivity using crop rotation
- Long-term effects of fertility and hand weeding on striga in maize
- Suppression of striga on maize with intercrops
- Catch-cropping with Sudan grass- an option to control striga in subsistence agriculture.

KIBOS COTTON-Inventory or crop protection technologies
- Insecticidal screening trial on cotton variety KSA 81M
- Cotton variety (KSA 81m) suitable for Nyanza Province of Kenya
- How to grow cotton for better yield and hence high income.

KARI-Kakamega inventory or crop protection technologies
- Farmer-participatory testing of banana IPM options for sustainable banana production in western Kenya.
- Evaluation of maize cultivars for ear rot resistance
- Effect of fertility levels on maize ear rot incidence.
- Integrated *striga* control in maize in western Kenya through use of *striga* tolerant varieties and soil fertility improvement.
- Accelerated multiplication and distribution of improved healthy planting materials of cassava varieties in western Kenya.

ICRISAT. Inventory of crop protection technologies
- Control of seed and seedling diseases of sorghum using fungicides-metalaxyl, carboxins, oxycarboxins.
- Cultural and biological control of stalk and root rots of sorghum.
- Agronomic evaluation of Rosette- resistant groundnut varieties.
- Stem borer incidence in sorghum intercropped with maize and cowpea tested in Kenya.
- The reaction of cereals to *Striga asiatica* and *Striga hermontheca* in Tanzania
- Striga infestation in sorghum and millets relative to cultivars, trap crops and hand weeding
- Sorghum seed dressing against smuts and pythium seedling disease
- Control of the legume pod-borer, Maruca vitrata, using resistant varieties.

ICIPE. Inventory of crop protection technologies
- Development of neem-based pesticides for use in Western Kenya
- Push pull strategies for control of cereal stem borers and striga
- Microbial control of termites
- Use of ITK in controlling cut worms
- Control of termites using castor oil seeds.

ICRAF Inventory of crop protection technologies
- Maize stem borer colonization, establishment and crop damage levels in a maize-leucena agroforestry system in Kenya
- Root-knot nematode problem in sesbania fallows its management in Western Kenya
- Improved fallow management for soil fertility improvement and as false hosts

- Enhanced soil nitrogen through organic (biomass transfer)
- Effect of planted short duration fallow species on Striga infestation and maize yield.

CARE-Homabay. Inventory of crop protection technologies

- Use of tolerant cassava varieties to control Cassava Mosaic Virus
- Banana hot water treatment for control of nematodes and weevils
- Use of Sudan grass as a catch crop to control striga
- Striga control by intercropping maize or sorghum with trap crops
- Control of banana weevils in plantation.

- *KARI-Kisii Inventory or crop protection technologies*
  Evaluation of sorghum varieties for tolerance to key insect pests in Western Kenya.
- Manipulation of planting date and maturity period of sorghum to reduce damage by key insect pests of sorghum in Western Kenya
- Managing carry-over of stem borer in crop residues
- Development of an integrated pest management strategy for bean stem maggot control in South Western Kenya.
- Effect of some cultural practices on sweet potato pest incidence and yield performance.
- Reducing risk for smallholder farmers in Oyuer and Kabondo sites through improved tolerant maize varieties to manage witchweed, *Striga hermontheca*.
- Reducing risk of smallholder farmers through improved varieties of cassava
- Green manuring to improve soil fertility and reduce *striga* weed infestation in smallholder farms in south Nyanza, Kenya
- Scaling up bean varieties tolerant to bean stem maggots and root rots
- Tengeru 97 is resistant to bacterial wilt of tomato.
- Alternative dessert banana varieties for soils infested with Panama disease
- On-farm screening test for weevil (*Cylas spp*) resistance among various sweet potato cultivars in Kenya.
- Screening of tolerant cassava varieties against Cassava green mites and Cassava mosaic virus and multiplication of healthy planting materials at Kisii RRC
- Beware of panama disease caused by *Fusarium oxysporum* f.sp. *cubense* in Kenya
- Use of furadan for control of banana nematodes.

Catalogue Format

Striga weed
Insect pets
Weevils
Termites
Cutworms
Nematodes
Plant diseases (fungal/viral/bacterial)
ITK
General information

Constraints

- Time for information gathering was too short
- In most institutions, documentation of research results was poor
- Funds were inadequate hence hurried through
- Personalising of information- no officer, no information

Way forward

Updating of this catalogue will be a continuous process.

Appendix 3c: Further Details on Output 3 in three project sites

5.3.1 Eastern Kenya

Common Mechanisms for communicating with farmers described by the participating stakeholder extension providers

Government (GoK) Extension Methods *(described by T. Utungo)*

- Barazas - big gathering of people usually convened through Provincial Administration (Local chiefs/Assistant chiefs) to pass a wide range of information
- Use of existing groups as a mechanism of dissemination
- Demonstrations - Activities conducted together with the participants to show how a certain technology is conducted & or the results of conducting the technology
- Field days – farmers are convened to see/learn the results of conducting method demonstration/ research outputs. A wide range of general information is covered
- Residential Training and Workshops
- Exposure/ educational tours
- Farm Visits
- Farmer Field Schools (GoK supported – see more detailed description below)

Extension-managed FFS *–(described by C. Mugo),*

Extension managed FFS is one of the pathways piloted in the promotion and uptake project in SAEK (Mwingi)

An extension –managed farmers field school is a community based field study programme involving a group of farmers (15-35 members) facilitated by an extension staff (the FFS-facilitator). The members of the group meet regularly (usually weekly) for at least two growing seasons to experiment with different farming technologies (either indigenous or research outputs) in a study field in order to make informed decisions on what is best for them (referred to as participatory technology development). The FFS provides an opportunity for farmers to learn together using practical hands-on methods based on discovery learning. The methods emphasize observation, small group discussions, presentation to a larger group, analysis and collective decision-making.

FFS aim at empowering farmers in decision making and to stimulate local innovation for sustainable agriculture. It has proved to be an effective method of disseminating new and indigenous technologies.

Strengths

1.. Easy to accommodate other methods such on-farm trials, demonstrations, field days
2. Regular schedule of meetings – makes for easy follow-up
3. Known membership-makes planning easy
4. Easy to mobilize
5. A long enough effective learning period- two cropping seasons.
6. Farmers learn by doing (discovery based learning) not easy for them to forget.
7. Farmers identify what they want to learn in relation to their farming problems
8. Empowers farmers to share knowledge
9. Provides access to outside expertise
10..Approach makes good use of time

Weaknesses
1. Reaches few farmers
2. Could be difficult to sustain after graduation.

Primary School Drama Competitions (described by C. Mugo)

Inter-primary schools drama competitions featuring four primary schools were held at Katse primary school in Katse location Mumoni division, on 28th July 2004.

Two schools, (Katse and Kanzinwa) acted a role-play on effective food grains and seed storage with emphasis on control of the larger grain borer. The other two schools (Kamathitu and Mbangwani) acted a role-play on Improved Stover Management as an option to reduced stem-borer build up between cropping seasons.

The local communities (farmers) were invited to attend the drama competition. A total of 133 farmers attended the occasions (44 men and 89 women). Three independent judges (from KARI, local education office and from District Agricultural Extension Office) were involved in judging the participating schools by awarding marks using score sheets (having rules and criteria for awarding marks).

The winners and runners-up were awarded price money of Kshs 2,500/= and Kshs 2,000/= respectively.

E. Kenya – Outputs from Groupwork in Lesson-learning workshop

Case Study: – M. Self-help Group –

Topic: *Effective Food Grain Storage*
Trainer: Para-extensionist (male)

Challenges faced and solution used

Mobilisation of farmers - Sort assistance from group chairperson
Difficult for farmers to conceptualise ideas presented – Need for Repetition
Some farmers came late, - Just waited, and others got impatient and left early

Lessons

People require a long enough period of time to understand new ideas
Need for collaboration with other leaders during any training event
Need for flexible plans – if you rigidly stick to plans you will be embarrassed
Farmers like to stick to an agreed calendar – times should not be altered once agreed

What we would do differently

Seek assistance of provincial administration and MOA extension officers in mobilisation
Allocation of more time to the training activity
Incorporate more groups for learning and increase the numbers being trained

Case Study: T. Farmer Field School

Topic: *Effective Food Grain Storage*
Trainer: Divisional Extension worker

Challenges faced and solutions used
Poor attendance due to timing and farming calendar – no solution as provincial Administration were involved but another meeting took priority on the day.
Difficulty for farmers to conceptualise key ideas – used group discussion which worked well
Farmers had pre-conceived ideas e.g. Greater Grain Borer has no chemical control – decided to have an experiment - with and without treatment.
Adherence to traditional practices such as storing cowpea in pods – used brainstorming session and demonstration. Farmers explained to trainers that the grain traders advise against dusting.

Lessons
People require a longer time period to understand new ideas
New technology takes time to get adopted
Mass media messages are not always tailored to effectively help farmers, e.g. the Makueni GGB problem was reported on the radio in an unhelpful way at the time of this training.
A lot of grain is lost during traditional storage practices

What we would do differently
Timely planning of training events to fit farming calendar
Continuous training, follow-up and back-stopping – rather than single event
Expertise required for mass media dissemination, to avoid wrong messages being given
More results demonstrations will help reduce loss
Following the groups schedule of meetings – fit into their calendar, not impose own

Case Study: Baraza at M.

Topic: on Cover Kernal Smut control
Trainer: Para-extensionist (female)

Challenges and solutions tried
Timeliness as participants arrived at different times from 10 to 12 am – delayed the starting time from 9 to 10am and started with the general aspects before getting to the specific issues and main content.
Repetition of questions by participants and answers by the trainer so not able to cover the subject fully – involved participants in answering the questions, especially those who came earlier.
Participants had other expectations such as provision of chemicals – explained the objective was to pass information only.
No sorghum crop in the field so no infested specimens available – no solution
Very large number of people 340 for one trainer – no solution
Some of the participants said they had no interest in sorghum production – took the opportunity to popularise sorghum as a drought tolerant crop.

Lessons
Necessary to involve other relevant speakers in a Baraza, eg. Someone from public

health and livestock, so can give other speakers time while waiting for people to arrive
Delay starting time until have an adequate number of people
Involvement of other participants in giving answers enhances participatory learning
Adequate publicity with clear objectives of the baraza
The trainer needs to prepare adequately through sourcing and using appropriate training materials – look for pamphlets, photos in training manuals.

What we would do differently
Try holding the baraza in the afternoon rather than morning,
Plan the activity when an existing sorghum crop in the field, or where there is a ratoon crop
Would invite other facilitators (other farmers or local extension), looking at other aspects of sorghum production
Prepare more training materials, visuals, even a song or poem on sorghum.

Case: Demonstration at I. Village

Trainer; *Paraextensionist (female)****,***

Topic: *Control of Cover Kernal Smut via seed selection*

Challenges and solutions
No sorghum at the right stage grain filling due to the poor season and also short project period – instead of doing a demonstration, explained the processes involved.

Lessons
Workplan should be flexible
Best season for this would be short rains season – but could use ratoon crop for the next season

Do differently next time
If repeated in the same season, would look for a ratoon crop
Would also do demonstration in a different season

Analysis of Strengths and Weakness of Training Mechanisms

At the front-line lesson-learning workshop, the same working groups also undertook an analysis of the strengths and weakness of the four dissemination mechanisms discussed: farmer field schools, use of existing groups, barazas and demonstrations.

FARMER FIELD SCHOOLS AS A MECHANISM FOR DISSEMINATION	
STRENGTHS # 7	WEAKNESSES #4
1. Cohesive membership 2. Regular schedule of meetings 3. Known membership number – makes planning easier 4. Easy for cost sharing because they have their own training materials already 5. Easy to mobilise 6. Easy follow-ups 7. Easy to accommodate some other methods with such as field days, demonstrations etc.	1. Represents only a small fraction of the community 2. Membership variation is sharp in terms of age, literacy, gender (few men) etc 3. Packed programme of activities with existing agreed time=table so may be rigid 4. Could be difficult to sustain after graduation, but this varies, some are strong and others weak – as started from outside

USE OF EXISTING GROUPS AS A MECHANISM FOR DISSEMINATION	
STRENGTHS # 6	WEAKNESSES #3
1. Cohesive with leadership 2. Number of members is known 3. Easy to mobilise via group leader 4. Schedule of meetings and site is clear 5. Easy to make follow-ups 6. May be more sustainable than an existing group- because formed locally	1. Have pre-determined objectives when formed which may not be in line with yours 2. Membership is diverse in terms of age and literacy levels – makes learning more difficult 3. Represents only a small fraction of the larger community – such as a catchment

BARAZAS AS A MECHANISM FOR DISSEMINATION	
STRENGTHS # 3	WEAKNESSES #6
1. Can reach a large number of farmers 2. Cheap to conduct 3. Can use an already organised gathering to pass message	1. Time not adequate to cover topic 2. Numbers may be so large making for difficult communication – being heard, repeating questions 3. Low level of participation by many can start dozing 4. Difficult to follow-up and get feedback 5. Possibility of poor attendance 6. Many person hours wasted, long waiting period and a lot of people involved in organising?

DEMONSTRATIONS AS A MECHANISM FOR DISSEMINATION	
STRENGTHS #7	WEAKNESSES #4
1. Practical nature makes it easier for people to understand 2. The topic is well covered 3. Focused and easy to understand 4. Can come up with an action plan and make follow-ups 5. Active participation, as in most cases the farmers are involved 6. Enhances adoptions, enables sharing of the technology such as seeds and chemicals 7. Can be combined with a field day to reach many people	1. May be season linked, and not held off-season 2. Attendance may be a problem due to social factors, such as the location 3. Might be infra-structure and topography problem – as a fixed venue in case of rivers flooding. 4. Expensive for materials and providing meals

Follow-up on School Drama Competitions (C. Mugo)

At the frontline lesson learning workshop, it was agreed that there was also need to assess what was achieved by the school drama competition. It was agreed that this would be done through follow-up visits and interviews of teachers and pupils by an extension staff member. His report is summarised below.

Dates of follow-up: 23rd and 24th November 2004

Objective

To conduct discussions with participating teachers and pupils in the following areas

1 content of the crop protection information/technology addressed in the role play
-Previous knowledge on the crop protection information
-Whether the information/message was simple/difficult to understand and synthesize into a role play/dramatised session
-Time required for preparation-teachers & pupils

2. Future outlook-would pupils and teachers be willing to participate in such an activity in future. Why?
-Good points
-Bad points
3. Teachers/pupils opinions on effectiveness of the methodology (school drama competitions) in disseminating crop protection to farmers
4. Suggestions for improvement.
5. Prize money-how was it utilized?

Feed back/General remarks from pupils and teachers

1. **Content of the crop protection information/technology addressed in the school role plays/drama.**

(a) Improved Stover management to reduce stem borer build up and carry over between cropping seasons comments (general)

-Teachers and pupils did not have previous knowledge on the information on improved stover management in reducing stem borer build up.

-The information on improved Stover Management was quite simple and easy to understand

-25 minutes allocated for presentation of the role-play on this technology was enough as the topic/content wasn't too broad.

-Time for preparation (both teachers and pupils) wasn't too long as the message/content was easy to understand and dramatic since the practice of cutting and spreading stover soon after harvest was not a new practice in the area.

(b) Effective food grain and seed storage (control of storage pests with emphasis on the larger grain borer)

- Previous knowledge on the technology- Teachers and most pupils had some knowledge on control of storage pests mainly by application of storage grain dusts, but lacked some details.

-though information on control of storage pests was simple and easy to understand, the topic was too broad, hence some details had to be left out in the plays e.g. Actual demonstration on application of grain dusts

-25mins allocated for presentation of the role-play on this technology was not adequate

-Preparation time was quite long developing the play from the content and preparing the pupils to perform the play including the relevant information on storage pests.

2. Strengths and weakness of the methodology (participant pupils & teachers opinions)

Strengths

i. It's enjoyable-audience can be kept alert and attentive for a long period
ii. A lot of information can be passed over to the audience within a short time
iii. Reaches many farmers
iv. Participating pupils also gain knowledge on the subject/information addressed in the plays
v. The message is simple and easy to understand and the local language is used.
vi. Participating pupils and schools are highly motivated by the prizes awarded.

Weaknesses

i. A lot of time is used during development of the play and practising
ii. There is a lot of interference during preparation by other school activities e.g sports, music festivals, term dates
iii. Sometimes, the message can be distorted thus misleading the audience
iv. Effective time for passing the intended message is quite short (25min)

Lessons learnt

1 Schools calendar of activities can interfere with planning of the drama completions leading to inappropriate timing of the activity in relation to the cropping calendar.
2. Message/information to be addressed should be short, simple and easy for the pupils to understand and minimise distortion of the information
3. It can be expensive to organise and conduct the drama competitions

4. Sometimes the acting children strain to shout to be heard due to the noisy environment

Suggestions for improvement /Recommendations

1. Address one crop protection technology per school drama competitions. Farmers are adults, they would like to learn quickly. More than one technology per drama session means that a lot of information will be passed within a short time, therefore reducing effectiveness of the methodology.
2. Encourage schools to conduct drama sessions within individual schools so as to minimize interference from the other schools' programmes, and reduce costs.

Practitioner summary evaluation of each method

Practitioners assessed the comparative performance of the four selected dissemination methods using a list of questions which they could respond by; agreeing strongly (score 5), agreeing (score 4), disagreeing (score 2), disagreeing strongly (score 1). A questionnaire was handed out and each participant who had been involved in the strengths and weaknesses analysis and case studies of the four methods completed it (see Appendix 3d. Eight people completed the questionnaire (see Appendix 3d, p. 16); 5 public extensionists, 2 farmer para-extensionists and one researcher.

Looking at the overall performance of the four methods using the 25 performance indicator questions, it is clear that barazas did not perform as well as the other three methods, which achieved similar scores (Table 3.7). If the various aspects of performance implied by the 25 questions are separated, then it the differences between the other four methods is clearer. With respect to aspects such as social inclusiveness, reaching large numbers, flexibility and cost, none of the methods score very highly – implying that with the type of CP information covered by the project, reaching large numbers of marginalised farmers at a low cost will remain a challenge (Table 3.7). With regard to features such as empowerment, awareness raising, follow up potential, quality of dialogue and access to outside expertise there are more clear differences between barazas and the other three methods.

Table 3.7 Comparison of the Performance of Four Dissemination Methods using Expert Opinion (5 public extension staff, 2 farmer para-extensionists and 1 Researcher) from Semi-Arid Eastern Kenya – Average scores per method for each criteria, and overall average – where 5 is the best and 1 is the worst.

	FFS	Baraza	Demo	Group
1. Effective for raising farmers' awareness of and interest in Crop Protection	4.3	2.9	4.9	4.4
2. Effective for building the capacity of field extension workers to address Crop Protection	4.1	3.0	4.2	3.1
3.Effective for building the capacity of farmers to help each other with Crop Protection	4.7	2.3	4.7	4.0
4.Any farmer can easily participate, whether old or young, man or woman, rich or poor	3.4	3.1	3.6	2.9
5. Logistics are not a big challenge	2.1	1.6	2.0	3.1
6. Bringing in external specialists to assist with crop protection issues is easy	4.2	2.3	2.3	3.2
7. It is easy for farmers who are not very literate to understand and get further information.	4.2	2.4	4.5	4.0
8.Farmers enjoy it and feel they are valued and respected during the process.	3.9	2.7	4.4	4.3

9.There is good follow-up after the training	3.8	1.1	4.5	4.4
10. Farmers feel empowered to continue addressing crop protection issues on their own with minimal help.	4.3	1.5	3.9	3.7
11. There is flexibility, new demands and issues can be addressed quite easily	3.7	2.5	3.2	3.9
12. Farmers are not likely to drop out or be excluded from joining in.	2.6	3.1	2.9	1.9
13. There is frequent feedback and honesty - farmers will say what they really think about advice given	3.9	1.7	3.4	4.1
14. After the training farmers really want to try out the crop protection advice on their own farms	4.5	2.8	4.6	4.0
15. After the training farmers will really want to tell other farmers about what they have learned	4.2	2.6	3.8	4.2
16.Time is not wasted but is used well and the time of training is organised to suit farmers	4.9	1.7	3.9	3.8
17. Differences within the community or between resource persons are unlikely to affect the training	3.0	2.8	3.6	3.8
18. The information and practical demonstration provided is enough to enable farmers to apply it confidently.	4.0	2.2	4.6	3.9
19. A large number of farmers will have their awareness and knowledge of CP increased	2.6	3.1	3.7	2.8
20. The results of the training are well monitored and lessons used to improve the training	4.8	2.2	4.3	3.8
21. Farmers' views are carefully listened to	4.8	1.6	4.3	4.0
22. Farmers will benefit from applying the advice because it is within their means and relevant to them	4.1	2.9	3.7	3.9
23. The approach makes good use of time and money	4.3	1.5	4.3	3.6
24. This approach is better than other approaches tried	4.0	1.9	3.8	2.9
25. The approach is affordable and can continue even when extension provider budgets are limited	3.6	2.5	2.6	4.4
AVERAGE SCORE	**3.9**	**2.3**	**3.8**	**3.7**

Comparing the three points of view of public extension practitioners, para-extensionists and the researcher on the four methods, although the number of opinions were few, does suggest some differences of perspective, Table 3.8. For example, extension rated more highly the two methods, FFS and demonstrations, which are methods they use regularly and have greatest control over. Farmers rated use of existing groups highest, a mechanism they organise themselves, followed by FFS which they also organise to a large extent. The researcher rated demonstration highest, perhaps reflecting a confidence in the practical demonstration of a technical message without the social organisation of an FFS or self-help group.

Table 3.8 Views on the Cost-Effectiveness of Four Dissemination Methods – Comparing Expert Opinion Of Extension, Farmers and a Researcher from Semi-Arid Eastern Kenya (scores are averages where 5 is the best and 1 is the worst)

	FFS Farmer Field School	**Baraza**	**Demon-stration**	**Use of Existing Group**
Rating by Extension – adjusted average	4.1	2.4	3.6	3.4
Rating by Farmers – adjusted average	3.9	2.4	3.8	4.1
Rating by Researcher – adjusted average s	3.7	2.3	4.0	3.6
OVERALL RATING – adjusted average	**3.9**	**2.3**	**3.8**	**3.7**

5.3.2 South-Western Kenya

Stakeholder Survey – views on dissemination mechanisms

In W Kenya, the pilot testing of dissemination mechanisms was based on an initial assessment of these methods via the stakeholder survey. The results are summarized in Appendix 3c. In summary, the survey indicated that while stakeholders differ in the reliance on various mechanisms, they also broadly agree what are the more effective methods for dissemination CP information.

In W. Kenya the stakeholder survey identified existing approaches for dissemination of CP information used by the main stakeholder groups (Table 3.9), those approaches which are seen to work better and some strengths and weaknesses.

Table 3.9 W. Kenya Stakeholder reported channels used for dissemination of CP information reported (% reporting use of various channels)

	Public Extension Stakeholders *No. =27*	*CBOs and farmer extensionist Stakeholders No. =16*	*Agribusiness, NGOs & Researcher Stakeholders No. =7*
Field days	87%	71%	100%
Public meetings/barazas	91%	47%	100%
Agricultural extension (NALEP Focal Area Approach)	61%	0%	0%
Farmer research groups and other committees	78%	53%	100%

Approaches identified that work better
Respondents suggested that dissemination approaches that "work best" were; group approaches, on farm research and farmer to farmer extension

Advantages or strengths of existing approaches
Respondents identified the following strengths:-

- Field days - provides a fora for interaction between farmers and other stakeholders
- Trainings - information passed through trainings is first hand and of high quality.
- Group approaches - encourages sharing of information in the target area

Stakeholder planning and review of Pilot Dissemination Pathways

The results of the stakeholder survey were shared and discussed at the first main stakeholder workshop, during which a decision was taken to initiate a pilot learning approach to dissemination using three pathways. At the end of the workshop, representatives from each of the pathways spent two days developing their plans and budgets for the pilot dissemination activities. The plans were implemented and the coordinators of each stakeholder group undertook joint monitoring activities during the cropping season. At the end of the season, the stakeholder groups met together at a workshop where they reported on progress, spent time in groupwork documenting what that had done, and then undertook preliminary evaluation of the effectiveness of the three pathways. The results of this participatory documentation and learning activity are summarized below.

Descriptions of three dissemination pathways piloted

Based on the analysis by stakeholders of the existing pathways for the dissemination of CP information, three were selected for piloting in two districts. The following brief descriptions of each pathway were provided by representatives of each of the three organisations involved: KARI, Dept of Extension and an NGO (C-MAD).

KARI Farmer Field School (FFS) Approach (M. Makelo)

Definition
It is a participatory extension approach, which gives farmers opportunity to make a choice in methods of production through discovery based learning by doing. This is based on the commonly cited finding that people remember 20% of what they hear, 40% of what they see and 80% of what they discover themselves

Objectives
- Empower farmers with knowledge and skills to make them experts in their own fields
- Sharpen farmers' ability to make critical and informed decisions that make their farming profitable and sustainable
- Sensitise farmers in new ways of thinking and problem solving
- Help farmers learn to organise themselves and their community

Principles and features
- Grow a healthy crop or raise a healthy animal
- Observe it in the farm regularly
- Understand biological agents, agro-ecosystem analysis and conserve predators and parasites.

- Make farmers experts in their field
- Field – Primary learning resource
- Experience – farmers basis for learning
- Decision making – guides the process
- training – covers entire growing season
- Advocates use of non-formal education
- Technically need a strong facilitator
- Every learner is a potential trainer
- Study group size – 25-30
- Field school site is in the community
- Group dynamics are important

Steps in conducting FFS

- Ground working
- Training of facilitators
- Establish FFS and its meetings
- Role of facilitators
- Role of host teams
- Role of participants
- Field days
- Graduation - Awarding of certificates
- Farmer run FFS
- Follow ups

Strengths of FFS approach

- Farmers are enskilled on technical knowledge on CP
- Empowerment of farmers to implement CP activities on their own
- Active farmers and extension trainers
- Criteria for farmer selection in place to participate in CP project
- Trickle down effect on CP in place

Weaknesses of FFS

- Lack of reporting format to track progress on farmer to farmer extension in the FFS
- Low literacy level of farmers and advanced age of some participants hindered their participation
- Lack of training materials and inputs made the training more difficult
- The process can be expensive especially when Researcher led

CMAD "farmer to farmer" para-extension (*C. Onyango)*

Historical Background

Community Mobilization Against Desertification (C-MAD) established in 1995 in Western Kenya and focused on following key areas:-

- Sustainable agricultural technologies
- Participatory approaches
- Food security and nutrition technologies
- Principles of Farmer to Farmer Approach
- One cluster leader per five cluster farmers
- Experience sharing with neighbour farmers
- Farmer (Community Owned Resource Person - CORP) willing to train and visit neighbour farmers

Development of Approaches

Some approaches used by CMAD have developed and changed over time
Some of the approaches used by C-MAD: -

- Model farm approach
- Cluster leader-cluster farmer approach
- Village approach
- Locational approach

Objectives of farmer to farmer approach
To empower farmers to own the project to enable address identified problems affecting their livelihoods
To create awareness and change behaviour and attitude of other farmers towards farming as a business and not for subsistence only
To create awareness in other farmers through sharing skills and knowledge to address their shared problems
To strengthen community owned resource persons (CORPS) within the targeted areas for sustainability

Steps in Farmer to Farmer Approach
Basic surveys
Consultative/ planning meeting at divisional and location levels to identify targeted sites
PRA surveys to identify community problems and possible solutions
Implementation
Farmer recruitment
Training workshops
Establishment of demonstration plots
Field days
Follow up visits
Report writing
Exit strategy meetings

Lessons Learnt in Farmer to Farmer Approach
A need to look into how to sustain the CORPs
Need for continuous update of CORPs' technical knowledge
Willingness of farmers to adopt the crop protection technology
Good collaboration with the partners KARI/MoA, including sharing of resources, conducting joint field days
Farmers are participating well in CP activities, good attendance during CP field days
Working with C.I.Gs seem to work best because of common interest in CP
Exchange visits increase more of other fellow farmers adopting CP activities

Dept of Extension Focal Area Approach (***C. Okungu)***

Introduction
The approach is borrowed from the catchment approach of the National Soil and Water Conservation Programme (NSWCP)

The Process

Focal area identification
-Participatory
-Conducted at various forums e.g. sub Divisional Development Committee

Stakeholder mobilization

-Identification and inventorization
-Institution building for improved networking,
-Team building

Community mobilization
-Awareness creation
-Initiate "owning" of the whole process

Preliminary visits
- Familiarization
- Baseline date collection (bench mark)

Participatory Rural Appraisal (PRA)
- Analyse date and situations to understand problems and draw community Action plan (CAP)
- Stages involved
    - Team building
    - Data collection
    - Problem identification
    - Problem analysis and CAP formation
    - Final baraza –Focal Area Development Committee (FADC) election
    - FADC is then trained for 3 days
    - Common Interest Groups CIGS are formed during PRA

Implementation of field activities is at three (3) levels
i) Organized groups e.g. CIGS
ii) Individual farmers- " nurse-doctor model > FSAP
iii) Communal actions joint efforts

Follow-up visits
Both for individual farmers (Field Extension Workers) and CIGS (Subject Matter Specialists)

Reports and documentation
- Generated at all levels from mobilization to FSAP
- Few invited weekly reports
- Other documents include maps and minutes of meetings

Handing over
- Public baraza is held
- Participatory evaluation done

Areas for further intervention identified

Qualitative Assessment of the Three Pathways in W Kenya

At the second stakeholder workshop, results from using the three pathways were presented by each stakeholder group, so that the other groups present and additional stakeholders were able to understand and start to form ideas and judgments with respect to each pathway. Following the sharing of experiences, each group undertook a gap analysis with the following results.

Gap analysis of three pathways

STRENGTH OF FFS APPROACH

- Skilled farmers on technical knowledge on CP
- Empowerment of farmers to implement CP activities on their own
- Active farmers and extension trainers
- Criteria for farmers selection in place to participate in CP project
- "Trickle down" effect on CP in place

WEAKNESS

- Lack of reporting format to track progress on farmer to farmer extension in the FFS
- Low literacy level of farmers and advanced age of some participants neighbourhood
- Lack of training materials and CP inputs

6b Main Gaps

(i) Knowledge gap:

- Knowledge on organic pest/disease and management.
- Handout given out for farmer to farmer to farmer extension should have been translated into local language for easy understanding.
- Limited time did not allow to cover CP issues adequately during trainings

2. **Attitude Gap**

- Sensitization on cost sharing was not done, thus leads to free hand out attitude.
- Cultural attitudes toward planting of CP sorghum crop

Practice Gap

- Low implementation due to CP high requirement in inputs (ie fertilizers and chemicals which were not provided to the farmers trained by all farmer field school
- Late provision of Farm inputs by the project monitoring indicators

6b(ii) Develop monitoring indicator. Framework

- Inputs for the farmers trained in FFS could have been provided for effective implementation
  Sensitize farmers on cultural issue before the project implementation

(b) Main

(i) What has not been done that should have been done
(ii) Proper ground working
(iii) PM & E
(iv) Exit strategies

(ii) What we should know
Participatory monitoring evaluation

From Gaps

(i) Lessons about the process

- Identification and mobilization should be done early and participatory- 2 weeks before initiation of FFS
- Participatory monitoring and evaluation with all stakeholders
- The process should cover one full year for effectiveness
- Clear documentation procedure should be prepared for all activities
- Clear handing over process at the end to enhance sustainability

(iii) How would we do it differently?
Follow an ideal FFS concept, procedure & steps
-Involvement of all stakeholders
-Strengthening baseline survey at the beginning
-Participatory choice of test crops

6d. (i) Develop exit strategies for project sustainability before the end of the project

6d. (ii) Develop project operational plan 2005

(d) Way forward

- maintain the few demonstration farmer
- strengthen the knowledge gained through training
- contrive assessing the adoption
- follow up visits on FFS graduates

(ii) High case

- Initiate new FFS (farmer, extension & RO led)
- Follow up visits to both old and new FFS
- Bridge the gaps identified so far
- PM & E in old/new FFS for assessment of the outcomes/results/indicators

Group 1
Summary Analysis
a) Strengths

1. Adequate visits
2. Active participation
3. Good facilitation
4. High quality presentation by extensionist and farmer trainers
5. Farmer confidence boosted
6. Leadership skills for farmers is improved
7. Facilitators ability to handle farmers request on various crops needs
8. Cost effective
9. More people reached within a short time

a) Weaknesses

1. Irregular attendance
2. Late Arrival by the facilitators
3. Communication barriers (local languages)
4. Poor feeder roads
5. High cost of inputs e.g. chemicals
6. Late delivering of inputs of chemicals
7. Low literacy level

I. b). Gaps

1. No monitoring and evaluation
2. poor documentation of the process
3. No identification of new farmer trainers

c) Lessons Learnt

1. Steps wise monitoring and evaluation is important.
2. Modification is necessary in some steps

II. Monitoring and evaluation in each step, and proper documentation

D. Low case

1. There will be minimal activities undertaken at the sites

II. High case

1. Initiate farmer run and extension/research led schools (classical models.)
2. Make follow-ups to old schools.
3. Introduce adult literacy and resource center at Bwaga and add more reacting materials at Maguje community learning resource Centre

FARMER TO FARMER SUMMARY GAP ANALYSIS

STRENGTH

- Skilled farmers on technical knowledge on CP
- Empowerment of farmers to implement CP activities on their own
- Active CORPS (Community Resource persons)
- Criteria for farmers selection in place to participate in CP project
- "Trickle down" effect on CP in place
-

WEAKNESS

- Lack of reporting format to track progress on farmer to farmer extension
- Low literacy level of farmers
- Lack of training materials and CP inputs

6b Main Gaps

(i) Knowledge gap:

- Knowledge on organic pest/disease and management.
- Handout given out for farmer to farmer to farmer extension should have been translated into local language for easy understanding.
- Limited time did not allow to cover CP issues adequately during trainings

2. **Attitude Gap**

- Sensitization on cost shaving was not done, thus leads to free hand out attitude.
- Cultural attitudes toward planting of CP sorghum crop

Practice Gap

- Low implementation due to CP required inputs (ie fertilizers and chemicals which were not provided to the farmers trained by the CORPS

- Late provision of Farm inputs by the project monitoring Indicators was not developed for farmers.

6b(ii)

- Inputs for the farmers trained by CORPS could have been provided for effective implementation

  Sensitize farmers on cultural issue before the project implementation

Lessons about the process followed:-

- Need to sensitize farmers on cultural issues before project implementation
- Need to provide inputs timely for better results
- Need to-train farmers on Integrated pest management (IPM) on CP

6c (ii) Develop monitoring indicator. Framework.

6d. (i) Develop exit strategies for project sustainability before the end of the project

6d. (ii) Develop project operational plan 2005

Table 3.10: W. Kenya Evaluation of performance of Dissemination Pathways at Lesson Learning Workshop – Kisii October 2004 by farmers, extension providers and researchers

PERFORMANCE INDICATORS (based on questions contained in questionnaire, Appendix 3d, p 16)	FARMER REPS			EXTEN. PROVIDERS			KARI RESEARCHERS		
	FFS	FAA	FtoF	FFS	FAA	FtoF	FFS	FAA	FtoF
1. Effective for raising farmers' awareness of and interest in Crop Protection	5	4	4	4	4	4	5	4	4
2. Effective for building the capacity of field extension workers to address Crop Protection	4	4	4	4	5	3	4	5	4
3.Effective for building the capacity of farmers to help each other with Crop Protection	5	4	4	4	5	3	4	5	4
4.Any farmer can easily participate, whether old or young, man or woman, rich or poor	4	4	4	5	5	5	5	5	5
5. Logistics are not a big challenge	2	2	2	2	2	4	4	4	5
6. Bringing in external specialists to assist with crop protection issues is easy	1	1	1	5	4	4	5	5	3
7. It is easy for farmers who are not very literate to understand and get further information.	4	4	4	4	3	4	4	3	3
8.Farmers enjoy it and feel they are valued and respected during the process.	4	4	4	5	4	4	4	4	5
9.There is good follow-up after the training	2	1	4	2	4	4	1	5	2
10. Farmers feel empowered to continue addressing crop protection issues on their own with minimal help.	3	3	3	5	4	4	4	4	4
11. There is flexibility, new demands and issues can be addressed quite easily	4	4	4	4	4	4	2	4	3
12. Farmers are not likely to drop out or be excluded from joining in.	5	5	5	2	2	4	2	2	2
13. There is frequent feedback and honesty - farmers will say what they really think about advice given	4	4	4	4	4	4	2	2	2
14. After the training farmers really want to try out the crop protection advice on their own farms	5	5	5	5	4	4	4	4	4
15. After the training farmers will really want to tell other farmers about what they have learned	5	5	5	4	4	4	4	2	3
16.Time is not wasted but is used well and the time of training is organised to suit farmers	4	4	4	5	4	4	2	2	2
17. Differences within the community or between resource persons are unlikely to affect the training	4	4	4	2	2	1	2	1	2
18. The information and practical demonstration provided is enough to enable farmers to apply it confidently.	3	3	3	4	4	4	5	4	5
19. A large number of farmers will have their awareness and knowledge of CP increased	4	4	4	2	4	2	4	5	3
20. The results of the training are well monitored and lessons used to improve the training	4	4	4	4	4	4	4	4	5
21. Farmers' views are carefully listened to	4	4	4	4	4	2	5	4	4
22. Farmers will benefit from applying the advice because it is within their means and relevant to them	4	4	4	4	4	4	5	5	5
23. The approach makes good use of time and money	2	2	2	2	4	4	3	3	3
24. This approach is better than other approaches tried	5	4	5	3	3	3	4	4	5
25. The approach is affordable and can continue even when extension provider budgets are limited	1	2	4	2	4	5	1	4	5
Average scores**	3.7	3.6	3.9	3.7	3.8	3.8	3.7	3.8	3.5

** Rounded average for each pathway where 5 is the highest possible score and 1 the lowest possible score for the statement in question.

Quantitative assessment of pathways

Gor Achuodho

Introduction

The pathways were tested in two districts (Rachuonyo and Homa Bay), with 3 pilot sites in each district for testing Farmer Field Schools (FFS), Focal Area Approach (FAA) and Farmer to Farmer (FF). A formal survey was conducted using structured questionnaire. Data was coded and entered on Excel Spreadsheet and quantitative analysis done by SPSS.
Sample size N=108 household respondents
FFS, N= 32
FAA, N=37
FF,N=39

Results

The data suggests differences between the three pathways in terms of the socio-economic mix of farmers involved (Table 3.11). In terms of age, FFS attracted more younger farmers compared with FF. Regarding gender, there was a contrast between FFS who were 65% male and FAA who were 69% female, while with FF the sex ratio was balanced. This is interesting because the gender of the FFS trainers was mainly female, while the FAA trainers tended to be male – suggesting that in this case the gender of the trainer was not a major barrier to farmer participation. Combining gender, age and household status, the pattern suggests that FFS tended to involve a disproportionate number of younger male household heads while FAA involved more older female household heads. In terms of literacy, there was little difference between FAA and FFS, while FF farmers mostly had a higher level of literacy. This suggests that participation in farmer to farmer extension approaches is related to education – which may also be influenced by the farmer selection process operating in this pathway.

Table 3.11 Socio-economic profile of the Sample (all figures are %s)

Age (Yrs)	**FF**	**FAA**	**FFS**
<25	5	-	3
26-35	15	33	34
36-44	15	19	9
45-50	38	42	
>50	26	6	
GENDER			
MALE	51	31	65
FEMALE	49	69	34
Respondent Household Head?			
Yes	67	63	68
No	33	37	32
Literacy			
Illiterate	3	16	16
Primary	6	50	51
Secondary	28	31	32
Tertiary/College	8	3	0

In terms of the technology chosen by farmers participating in the three pathways, the FFS group were more inclined towards tomatoes, a high value crop compared with the other pathways, perhaps a reflection of the fact that there were more younger male household heads involved in this pathway (Table 3.12).

Table 3.12 Test crops used by participating farmers (%)

Test Crop	FF	FAA	FFS
Sorghum	59	43	25
Tomato	39	51	50
Tomato/Sorghum	3	3	22
Tomato/Kales		3	
Kales			3

Most of the participating farmers had received previous CP training by extension staff, and in the case of FF the majority had. This suggests all three pilot pathways mainly targeted the type of farmers who usually participate in extension programmes. In terms of who trained them, the responses suggest that there is already a plurality of farmer training providers in operation which includes public extension, NGOs, public research and the Government adult education programme.

Table 3.13 Training on CP technologies before the project (%)

	FF	FAA	FFS
Trained?			
Yes	100	92	81
No	0	8	19
Who provided the training? (%)			
	C-MAD (85)	MoA (84)	MoA (38)
		KARI/MoA	KARI (31)
		Adult Education	CARE (6)

In terms of the topics covered in previous training, the responses suggest that the respondents understood this question to mean any type of agricultural extension, not just crop protection. Soil conservation, crop husbandry and book-keeping were the main topics.

Table 3.14 Topics covered in previous training

FFS	FAA	FF
Crop husbandry	Book keeping	Crop husbandry
Soil conservation	Soil conservation and Crop husbandry	Soil conservation and Crop husbandry
Book keeping	Soil conservation and Crop protection	

Generally, all the pathways performed well in terms of perceptions of the clarity of the training provided, although there were some differences between the pathways with regard to the topics covered. FFS scored higher than the other pathways with regard to the topics with specific CP content, while FF scored high on the topics relating to crop husbandry, and soil conservation. Pesticide handling and calibration came out as the least well understood topic for all three pathways.

Table 3.15 Level of understand on Topics Trained on (%)

Topics	Well Understood?	FFS	FAA	FF
Crop husbandry and cultural practices	Yes	90	89	97
	No	10	11	3
Soil Conservation and Agronomy	Yes	84	89	93
	No	16	11	7
Pesticide calibration and handling	Yes	89	78	58
	No	19	22	42
Pests/Diseases identification	Yes	78	76	69
	No	22	24	31

The majority of FFS and FF farmers felt that an adequate amount of time was spent on the training, but only half of the FAA farmers felt that the time was adequate (Table 3.16). This suggests public extension performed less well in terms of time management, even though the frequency of the training sessions were highest for the FAA (Table 3.17).

Table 3.16 Training hours whether adequate or not (%)

	FFS	**FAA**	**FF**
Y	69	51	74
N	31	49	26

Table 3.17 Training frequency (Times trained) in a season

FFS	**FAA**	**FF**
15	19	5

Looking at follow-up, it was clear that the FFS did not enable any follow-up of farmers, while the other approaches did this. This is probably because the providers were researchers with limited time and based a long way from the pilot sites.

Table 3.18 Follow-up visits whether carried out (%) and # visits

	FFS	**FAA**	**FF**
Y		100	100
N	100		
Number of visits if any			
	FFS	**FAA**	**FF**
	0	7	5

The participating farmers were asked to report on the training methods and tools used in each pathway (Table 3.19), and on the ones which helped them to understand the topics well (Table 3.20). Farmer reports clearly show that all three pathways put a strong emphasis on practical training approaches, but with the FFS differing in also having a much strong theoretical content. Regarding specific tools that aided understanding, all pathways used a range of tools, with differing emphasis. Demonstrations came out strongly in all pathways, while for FFS and to some extent FF, theory was helpful. FAA made more use of visual aids and charts, perhaps in place of theory, while only the FFS used AgroEcoSystems Analysis (AESA) and field observations.

Table 3.19 Farmer reports on Main Approach used in each pathway (%)

Approaches	FFS	FAA	FF
Practical and Theory	91	27	26
Practical	3	62	74
Practical and Visual Aids		11	
Pictures	6		

Table 3.20 Farmer reports on most effective Tools in making topics well understood (%)

Tools	*FFS*	*FAA*	*FF*
Demonstration	38	49	56
Pictures/Samples	9	3	5
AgroEcoSystems Analysis	31	-	-
Charts	6	22	10
Field observations	13	-	-
Theory	3	8	23
Visits	-	-	3
Visual Aids	-	11	3

In terms of relevancy of the topics covered, the majority of farmers in the three pathways found them relevant – which is consistent with the fact that the same or similar topics were provided in all pathways.

Table 3.21 Relevancy of training topics (%)

	FFS	**FAA**	**FF**
Relevant	100	92	82
Not relevant		8	18

Similarly, all pathways did well in terms of farmers assessment of their own competency in the technology covered after the training (Table 3.22), and this (not surprisingly) was also reflected in the very high proportion of farmers reporting using the technologies in all of the pathways (Table 3.23).

Table 3.22 Competency after training (%)

		FFS	**FAA**	**FF**
Competent	Yes	94	87	95
Not competent	No	6	13	5

Table 3.23 Whether practicing CP technologies after training (%)

	FFS	**FAA**	**FF**
Yes	**88**	**87**	**95**
No	**12**	**13**	**5**

The number of technologies farmers reported using differed somewhat between the three pathways. 73% of FFS farmers reported practicing more than one technologies, compared with 60% of FAA farmers and only 23% of FF farmers. This could be a reflection of the number of technologies covered in individual training sessions attended in the three pathways, as much as the impact of the training on uptake. It is possible that the FF farmer trainers had less time to cover more topics compared to the trainers from research and public extension, and this requires further exploration.

Table 3.24 Number of technologies a farmer reported they practiced (%)

Number	FFS	FAA	FF
None	3	6	5
1 technology	3	33	62
2 technologies	43	24	23
3 technologies	30	36	-

In terms of expressions of willingness to practice the technologies, the picture is very similar, with FFS and FAA farmers reporting willingness to practice a larger number of the technologies compared with FF farmers.

Table 3.25 Willingness to Practice the technologies (%)

Willing to practice, yes or no	FFS	FAA	FF
Yes	97	97	95
No	3	3	5
Number of technologies a farmers is willing to practice (%)			
Number	FFS	FAA	FF
None	0	0	0
1	19	29	61
2	24	12	33
3	58	59	3
4	8	0	3

The type of technology farmers are willing to adopt does vary between the pathways (Table 3.26). However, it is possible that these differences are mainly a reflection of the content of the training provided, and the different socio-economic composition of the respondents, rather than the differences in extension methods. Hence the emphasis by FAA on resistant sorghum varieties compared with the FFS emphasis on tomato varieties is probably due to the gender and age difference of the respondents; older women opting for a food security crop (which can also generate cash through brewing) and younger men going for a pure cash crop.

Data on the land size upon which the farmer is willing to use the new technologies (Table 3.27) suggest that farmers are willing to greatly scale-up with tomato production. However, the responses could also reflect an expectation that the project would provide inputs for such an expansion.

Table 3.26 Technology/Technological component a farmer is willing to practice (% of farmers in sample from each pathway willing to practice)

Technology	**FFS**	**FAA**	**FF**
CHEMICAL			
Spraying	13	3	39
Dithine	31	8	44
Karate	31	54	5
Ridomil	3	11	0
RESISTANT VARIETY			
Cal J (tomato)	41	21	11
Tengeru (tomato)	25	57	13
Gopari (sorghum)	16	5	3
Wagita (sorghum)	6	41	13
Seredo (sorghum)	6	8	0

Table 3.27 Land size a farmer is willing to practice the technologies (Acres)

Technologies	**FFS**	**FAA**	**FF**
Wagita	0.5	1.1	0.8
Tengeru	0.4	0.5	0.8
Karate	0.7	0.5	0.4
Dithane	0.4	0.5	0.8
Ridomil	0.4	0.5	0.8

Farmer perceptions of the costs of the technologies covered were almost identical across all three pathways – all emphasising the financial cost aspect. Perceptions of the benefits were similar in that yield was stressed in all pathways, although FFS farmers also emphasis crop health more, perhaps reflecting the use of a more theoretical training approach.

Table 3.28 Benefit/Costs of CP technologies (%)

Benefits	**FFS**	**FAA**	**FF**
High yield	92	84	82
Control Pests and Disease	44	62	56
Healthy crop	19	8	5
Costs			
Expensive	66	57	68
Seeds not available	3	3	5
Water unavailability	9	5	5

Summary

The results from the quantitative assessment of the performance of the three pathways suggest that all three were effective in terms of dissemination of CP information to farmers, and in encouraging uptake of these technologies. FFS appears to have out-performed the other pathways in terms of the number of technologies covered which farmers are willing to practice. This needs to be weighed against the comparative costs of the using the three pathways, and the number of farmers reached by each pathway. The intention is to gather more data on these aspects in the second cycle of learning.

5.3.3 Central Tanzania

Table 3.29 Summary of pilot district crop protection communication strategies 2003/2004

	Singida Rural		**Kongwa**				**Dodoma Rural**	
CP need	**Control of storage pests targeted LGB**	**Controlling pests diseases of onion**	**Maize stalkborer**	**Tomato pests and diseases**	**Smut control**	**Striga control**	**Smut control**	**Striga control**
Communication need	Proper harvesting procedure Agrochemicals & IK Proper and timely use of pesticides	Proper and timely use of agrochems Increased demand for agrochemicals as result of increase awareness	To prevent and control stalkborer To increase yield	Knowledge on pest & disease of tomatoes Proper and timely use of chemicals	To prevent and control smut	To prevent and control Striga	Information on control & prevention of smut disease	Information on control of *Striga* Sensitization about new Striga tolerant varieties (Wahi and Hakika)
Target groups *(Secondary groups in italics)*	Farmers VAEO Ext staff Farmer groups Village community *Village leaders School teachers Other Farmers DED/ DALDO D Statistics District leaders neighboring leaders*	Farmers VAEO District leaders Farmer groups *Village leaders School teachers Other farmers*	Farmers groups (Training 3 with a total of 74 farmers) *Village leaders Councillors Other farmers*	Farmers group *Village leaders*	Farmer groups *Primary Schools Councilors*	Farmer groups *Primary Schools Councilors*	Farmers groups and other farmers *VEOs village leaders and other farmers*	Farmers groups Primary schools Primary school teachers *VEO, village leaders Other farmers*
Target villages	Mudida Mughanga	Merya	Mkoka Mlanje Norini	Chamkorama	Sagara Laikala Mtanana	Sagara Laikala Mtanana	Zanka, Msanga, Handali, Chalinze, Buigiri and Mlowa Barabarani (265 farmer)s	Zanka, Buigiri and Handali:(3 groups 10 farmers per group)
Communication process and tools								
1. Validate	Farmers, VAEO and Extension	Farmers, VAEO and personal						

demand	officers experiences	experience						
2. Sensitization	Farmers meeting, village leaders and district leaders	Meetings with farmers village leaders and district leaders.Seminars	Meetings of farmers Leaflets Radio progs?	Radio programmes	Leaf lets Farmers group meeting	Leaf lets Farmers group meeting	Seminars – Early December	Meetings
3. Organ formation/ s'thening	Seminars Farmer group formation/ strengthening							Seed multiplication for Demo-plots
4. Training	Leaflets Flip charts Prepared topics Video Demo Plots Radio programme?	Leaflets, Flip charts Prepared topics Video Demo plots Radio progs?	Classroom training using flip charts Demonstration plots Video show (LGB?) Leaflets	Classroom training with flip charts Use of leaflets Radio prog Visitnursery (practical)	Classroom training, Leaflets Demoplot	Classroom training, Leaflets Demoplot	Demo plot Radio programmes Training on seed selection Seed selection in June/July ZRELO, leaflets (smut leaflets) 150 leaflets/ each of 6 villages.	3 seminars in each village: *Striga* booklets, *Striga* manual and posters from Dr. A. Mbwaga. Posters left in villages. 3 teachers also attended.
5. Wider promotion	Farmer field day Field visits Meetings						Field days in May	
Zonal inputs	Leaflets, radio, video PM and E	Leaflets, radio, video PM and E	Leaflets, radio, PM and E	Leaflets, radio, PM & E	Leaflets, radio, PM &E	Leaflets, radioPM &E	Leaflets, radio, PM and E	Leaflets, radio, PM and E

Assessment of communication tools and approaches

At the end of the first season, an assessment of the communication tools and approaches was undertaken.

Farmers access to communication tools

Eleven farmer groups were visited, with women and men interviewed separately in a total of 22 discussion groups. Crop protection issues being addressed by the groups participating in each district are shown in Table 3.29 above. Information about crop and pest management practices has been communicated to the group by district and village level extension staff, complimented by some training sessions by staff from the zone or out of zone research institutes. This allows the project to test a model involving districts to contract in resource persons to contribute to district strategies which should become possible when funds are managed at district level through the Agricultural Sector Development Programme.

A study of the extent to which group members actually had access to communication tools and learning opportunities provided through the district strategies was undertaken in December 2004 (see Mwanga et al 2005) Table 3.30 reports farmer recall of participation with broadly similar patterns for men and women. Not surprisingly, with distribution by the zone and districts through village extension officers or at training sessions and field days, leaflets were available to the majority of participants. Some titles were also displayed on village notice boards although these were more likely to be used by men. A high proportion of group members participated in "supervised" interactive events comprising training sessions, demonstrations and field days at which government extension or research staff were usually present. On average, a higher proportion of women than men from a group participated in these events. We don't whether this was due to lack of information or whether they chose not to participate. Demonstrations, with high participation but low standard error across the 14 groups were the most consistently used sources of knowledge. Attendance at field days was patchy, with a high standard error. Subsequent discussion indicated that this was often due to poor organisation and notification. Video shows were attended by fewer women than men. Up to three-quarters of participants listened to radio programmes prepared as part of the zonal communication strategy, with broadcasts on Radio Tanzania funded by the project. Although somewhat fewer women than men reported hearing programmes, the standard errors of these means are high so this difference must be interpreted with caution.

Table 3.30 Access by farmer group members to communication tools and their ranking as a means of improving understanding of a particular topic. *Access is % (± S.E.) of members who had access to the tool, contribution of tool to improved understanding is the mean group rank on a scale 1 = most useful to 10 = least useful. Data are means for 14 groups in three districts.*

	Women		Men	
Tool	**Access**	**Contribution improved understanding**	**Access**	**Contribution to improved understanding**
Leaflet 1*	99 ± 1		93 ± 4	
Leaflet 2	98 ±2		91 ± 6	
Leaflet 3	92 ± 5	5.1∫	88 ± 5	6.5
Leaflet 4	77 ± 10		83 ± 8	
Demonstrations	98 ± 2	2.5	91 ± 4	2.3

Training	89 ± 6	1.1	82 ±10	2
Notice board	75 ± 11	4.6	89 ± 5	3.9
Radio	68 ± 12	4.7	76 ± 7	5.7
Video	74 ± 8	5.9	92 ± 5	5.7
Field days	65 ± 12	3.9	57 ± 11	4.4

[*] *Each group received four leaflets, from a selection of 12 topics.*

[ʃ] *Average ranking for all four leaflets given to each group*

Table 3.31 Number of beneficiaries from various communication tools, as contacts of group members, in three pilot villages in Singida district.

	Village		
Communication Tool	**Merya**	**Mughanga**	**Mudida**
Leaflet: Control of Onion diseases	252	40	43
Leaflet: Control of pests in onion	263	47	54
Leaflet: Types of storage structures (granaries)	181	179	192
Leaflet: Proper handling of Agrochemicals	197	211	189
Leaflet: LGB Control	102	323	346
Leaflet: Proper Cereal storage	193	239	228
Farmers training	82	69	93
Radio	102	105	138
Video	147	176	99
Farmers field day	154	281	223
Demo Plots	670	430	451
Notice Board	68	71	79

Source: Singida District PM &E profile

Data from Singida district (Table 3.31) lists beneficiaries of different communication tools and approaches in the wider community. For leaflets this data was collected by asking the recipient about the number of other farmers who had gone through the leaflet on a rotational basis. As with the groups this data suggests that farmers are particularly interested in demonstrations and referring to leaflets. Considerably less farmers reported listening to agricultural programmes on radio compared to viewing demonstrations or attending field days. This evidence shows that farmer to farmer interaction backed-up with appropriate learning materials has an important role to play in district communication strategies.

Contribution of communication tools to learning

Farmers listed up to four important lessons learnt through participation in this programme (Table 3.32). The most important lessons across the districts and villages were about identification of pests and disease and knowledge on the proper use of agrochemical and locally available botanical based pesticides. Interestingly a greater awareness and knowledge of participatory evaluation, monitoring and record keeping was also thought to be important.

Table 3.32: The most important topics about which farmers reported increased knowledge through participation with district programmes. Each farmer was asked to list four topics.

Lesson Learnt	Kongwa	Dodoma	Singida	Total
	No. of times mentioned			
Identification and proper use of agrochemicals and botanicals.	9	6	8	23
Knowledge on identification and control of field and storage pests and disease.	7	4	9	20
Improved capacity on PM & E indicators and record keeping.	8	5	6	19
Strengthening of farmer groups and networks for market promotion.	4	3	4	11
Training on agronomic principles for sustainable production.	4	4	3	11
Post harvest storage and storage facilities.	0	2	2	4

From the forms completed by individual group members it is possible to see how the communication tools and learning opportunities have contributed to farmers increasing their knowledge of crop protection issues. While the process of acquiring knowledge is a continuum, from the data provided by farmers three stages may identified of raised awareness, detailed learning and clarification/ adaptation of knowledge to the individual circumstances. An assessment of how farmers used tools at each stage is shown schematically in Table 3.33 Radio, video and posters proved most useful for creating awareness of new ideas. Detailed learning occurred particularly at training sessions or by viewing demonstrations. Farmer interaction at field days, demonstrations and training sessions was also valuable for answering questions so that ideas could be adapted for individual situations.

Table 3.33: The Role of tools in different stages of the communication process. Based on farmer assessments of how each tool was used to gain agricultural knowledge during participation in group activities.

Tool	Awareness	Detailed learning	Clarification / adaptation
Leaflets	X	XX	
Poster	XX	X	
Seminar / training		X XX	XXX
Demos	X	XXX	XXX
Radio	XXXX	X	
Video	XXX	XX	
Field days	X	X	XXX
Notice board	XX	X	
Note books		XX	XX

= No contribution **XXXX** **= Major contribution**

Perceived usefulness, strengths and weaknesses of individual tools.

Although knowledge is gained and reinforced through use of a range of tools and learning opportunities farmers were able to provide an overall ranking of the usefulness of each. Activities at which there was opportunity to question trainers or to interact with and so share experiences with other farmers were ranked most highly. These were training sessions, demonstration or farmer field days. Village notice boards, an innovation for communication introduced by the project, also proved valuable. These are likely to have been referred to by more than one farmer at a time so providing additional opportunities for discussion of new ideas. Leaflets, video and radio were all ranked as somewhat less useful sources of information/ acquiring knowledge than those allowing interaction with others.

As all the tools tested make contributions to farmer knowledge it is important to determine their individual strengths and weaknesses to provide a basis for future improvement. Each discussion group assessed these during this study.

A major strength of leaflets is that they educate many to raise awareness of crop protection issues (Table 3.34). They also provide a reference material for the community to return to. Major weaknesses are that they are not interactive so can not assist farmers to deepen understanding nor are they accessible to illiterate members of the community. Technical issues of clarity and content were also identified. Key strengths of training sessions, observation of demonstrations and participation at field days are the interaction and sharing of experiences that takes place (Tables 3.35, 3.36 and 3.37). Learning by doing, with and from other farmers, is particularly important. The general feeling is that there are too few training sessions or field days. Demonstration plots and locations for farmer field days were often too distant from the village. A number of organisational issues reduced the value of demonstrations and field days including late provision of inputs, and poor timing or notification of these events. Farmers would prefer to see larger and permanent demonstration plots.

Table 3.34: Strengths and weaknesses of information leaflets: summary of group responses

Strength	*Weakness*
• Clear photographs • Durable paper • Clear language easily understood • Raises awareness of issue • Educative on crop protection options • Provides on-going reference without need to consult extension officer • Educates many	• Not all items are illustrated (e.g. pests or storage structures) • Can be lost • Some names only in English (e.g. pesticides) • Some fonts too small • More information needed on agrochemical use and botanicals • Not interactive to provide answers to questions needing a deeper understanding • Not accessible to illiterate • Not reaching all farmers

Table 3.36: Strengths and weaknesses of training sessions: summary of group responses.

Strength	*Weakness*
• Interactive direct learning; questions and answers possible for deeper understanding • Farmers share experiences	• Too few sessions offered • Long sessions, people get hungry • Some sessions too short

Table 3.37: Strengths and weaknesses of Demonstrations: summary of group responses.

Strength	*Weakness*
• Learning by doing • Produce belongs to owner	• Inputs not always available on time • Individuals lack land for plots • Plots too small; not permanent • Plots can be too distant

Table 3.38: Strengths and weaknesses of Field days: summary of group responses.

Strength	*Weakness*
• For all the community • Farmers share experiences • Interactive, questions and answers • Learning by observation • Entertainment included	• Rarely held; generally once per season • Poorly timed; poor organisation; poor notification; insufficient equipment for demo • Little media coverage • Can be far from village

Village notice boards appear to have considerable potential as they can be seen by many and are a good place to keep posters or leaflets that create awareness (Table 3.39). Notice boards are also perceived as useful for involving the community in monitoring and evaluation. However location is an issue as not all the community will visit village offices where the project has initially placed the boards.

Table 3.39: Strengths and weaknesses of village notice boards: summary of group responses

Strength	*Weakness*
• Easily seen by many • Suitable for posters; create awareness • Central point for keeping reference material for a long time • Involve people in M&E	• Not everyone goes to the village office; not everyone reads notices • Boards too small and too few • Some are illiterate

Video shows and radio programmes can reach many people, create awareness and provide examples of real situations (Table 3.40 and 3.41). However as with leaflets, no "question and answer" are possible with the characters portrayed. The topics covered have been relatively limited to date. The major weakness of radio has been inappropriate scheduling at a time when women in particular are still busy with household tasks. For younger people it is a problem that Radio Tanzania has aired all the radio programmes. They prefer to listen to FM stations that provide music and entertainment.

Table 3.40: Strengths and weaknesses of video shows: summary of group responses

Strength	*Weakness*
• Many farmers can attend; raises awareness • Allows learning from real action and explanation	• Limited number of topics; • Only a few shows; • Limited facilities/video machines; • Small screen • Need to be in Kiswahili, not English

Table 3.41: ***Strengths and weaknesses of radio programmes: summary of group responses***

Strength	**Weakness**
• Reach many people • Raise awareness of issues • Include farmer experiences from other areas • Clear language • People can learn with out need for extension officer • Farmers involved in programme preparation	• Future broadcast schedule not known; • Timing not appropriate especially for women who are often too busy to listen; • Radios not available to all; • Many do not listen to Radio Tanzania – youth prefer FM stations • *No questions and answers* • *Programmes are too short*

Posters were only available on Striga biology and control and consequently were only distributed to a few villages. However they were highly rated for raising awareness and groups requested more to be prepared on a greater range of topics. Record books had been distributed for use in M and E. A few groups mentioned these as being useful for reference but recognised that few may have access to the books.

Implications of findings for further development of communication strategies

Suggested modifications to learning tools and communication approaches

Analysis of the information from farmer group responses and experiences suggests a number of modifications to improve usefulness of each of the learning tools and communication approaches tested by the project since November 2004.

Leaflets

- Clear photos and fonts
- User friendly language
- More detail needed – some could be booklets
- Increase number distributed
- Elaboration of language to reflect where target farmers live
- Add more pictures and include cartoons to address illiteracy

Posters

- More topics should be covered
- Increase distribution

Video shows

- Increase frequency of shows
- Target audiences with relevant topics for time of year
- Early notification
- Use a larger screen in venues that are more conducive to good attendance – religious premises have been used but are not always favoured
- Use Swahili in all videos
- Involve farmer in preparation to reflect the "farmer voice"

Radio

- Greater involvement of farmers in preparation – farmers voice
- Shift broadcast time to between 20.00 and 21:00 hrs
- Increase length to 30 minutes
- Notify farmers about broadcast timetables
- Follow on tasks with group discussions
- Include entertainment i.e. drama and singing – pop music
- Target local issues
- Increase radio ownership? Gender issue of access. Development programmes buy radio for farmer groups.

Training sessions and seminars

- Planning, preparation and notification to be improved; stage at appropriate time of year
- Adopt participatory approach – farmer's voice
- Increase number of sessions
- Involve more experts from district and zone
- Farmer contribution to food, drinks and entertainment
- Adequate reference material
- Increase feed back to district
- Trainer to report back on session

Demonstration plots

- Increase size of plots to 0.5 - 1 acre
- Accessibility, location should be near the centre of the village
- Permanent community plots recommended

Field days

- Increase frequency
- Improve planning and timely notification
- Time carefully in relation to season

Notice boards

- Have to be bigger
- Increase number and distribution across the village and sub villages
- Alternative locations outside offices where every body feels comfortable

Record books for PM&E

- Sensitise group members to become more involved
- Need for group secretary to record every activity

- Examine how to ensure access for all group members

Priority topics for communication strategies in 2005

An essential component of district communication strategies is feedback of demand for services from the farming community to district level. To assess this farmers and village agricultural extension officers (VAEOs) were asked use their experiences from 2004 to prioritise topics about which they would like to receive further knowledge in 2005. See output 1 of this report.

Recommended changes to communication strategies in 2005

At village level

- More discussion led by VAEO when leaflets or posters are distributed
- More poster topics
- More training sessions – improve timing, planning, organisations
- More field days, involve district leaders and policy makers
- Better access to notice boards and notebooks
- Set up community demonstration plots

At District level

- More capacity to train trainers, particularly VAEO
- Lobby for and identify local government funds for communication activities

At Zonal level

- Design more posters
- Modify leaflets
- Lobby Radio Tanzania to broadcast agricultural programmes at 20:00 to 21:00
- Target research information flow
- Enhance feedback
- Source funding from central government to add value to research findings by greater emphasis on dissemination.

Summary of findings from the districts

In addition to the data collected at farmer group meetings specifically to investigate the use and value of the communication process now encouraged through district communication strategies, other more general information was collected by the study team. This and team members perceptions of what had been learnt is summarised below.

Singida Rural District

- Appreciation by stakeholders of the communication tools used particularly video and radio programmes. Evidence of this was the provision of lunch to the project team by the group in Merya village and comments made by village leaders;
- However, there has been low participation of women in use of radio;
- PM&E indicators are in place and are working well compared to other districts. Farmers have used these to measure results i.e. differential performance of crops on participants and non-participants fields have used these. For onions use of knowledge gained during the past season had increased yields from 5-7 to 7-15 bags each of 150 kg;

- The groups are well organised and the district council has adopted the use of notice boards and information leaflets to some other villages. Examples of the 16 leaflets now in use are:
  (i) Magonjwa ya nyanya (Control of Tomato diseases)
  (ii) Panzi kunuka (Control of Elegant Grasshoppers)
  (iii) Matumizi ya zana za nyanda kame (Use of animal drawn implements)
  (iv) Kudhibiti kiduha (*Striga* control)
  (v) Udhibiti wa wadudu wa ghalani (Control of storage pests)

- Video tapes for farmer training have now been made with district funding to extend the use of this form of communication beyond pilot villages;
- Farmer field days have been attended by the District Executive Officer (DED) indicating that the approach is considered as important by district management. Letters of appreciation have been sent from the district to farmer groups.

Kongwa District

- PM&E notice boards have not reached 3 of the target villages so more follow-up is needed to ensure these are in place and used correctly;
- The groups need strengthening. Religious based groups expressed resistance to competition with non-religious groups due to different interests;
- There has been limited use of video shows in the villages visited;
- The groups have been able to compare the performance of different crop protection treatments for control of stalk borer by recording the number of affected cobs and yields.

Dodoma Rural District

- Farmer groups need strengthening;
- Recording of project activities needs to be improved;
- There is overlap in the programmes of some groups. For example one group is multiplying sorghum cultivar Pato and at the same time the *Striga* resistant line Wahi. Farmers have seen the project as promoting cultivars rather than communicating crop protection knowledge.
- Even though broadcast by Radio Tanzania Central Zone, radio programmes have been the least used of the communication tools by farmers. Reasons include inconvenient timing of broadcasts; weak follow-up and a preference among the youth for FM stations.

Cross-cutting issues

- Farmer training via seminars and workshops are considered as the most important communication channels by farmers. There is therefore a high demand for frequent farmer training sessions/seminars. The Ministry of Agriculture's stated policy of moving towards a Farmer Field School approach appears to be in tune with this, but there are major cost implications.
- Other important tools in order of preference are demo plots> farmers field days> video shows> village notice boards and group notebooks>leaflets;
- Performance of communication tools varied between districts, villages, groups and by gender;
- Low literacy was a major constraint to use of leaflets, posters and notice boards;
- Women's use of CPP radio programmes has been restricted due to poor timing, unavailability of radios and time constraints due to specific gender roles in the household;
- A number of the groups are relatively weak with leaders not sure of their roles;
- Relatively few women were interviewed for this study compared to men.

- Participating groups used a number of tools as aids to learning. All the CPP learning tools included in district plans were mentioned by farmers were used with different intensities. Apart from the tools themselves it is important that farmers are working together in an environment that enables learning. Any form of exchange of information through dialogue is considered very important for leaning to take place. Farmers consider that the presence of notice boards, signs or posters at demonstration plots, seminar sessions, and farmer field days all contribute to a positive enabling environment.
- Implications for reaching different target groups are emerging e.g. FM radio is the preferred choice of the youth. However, this area needs much more consideration in the next phase. Cost-effective approaches to improving communication that are applicable to women and men; older and younger as well poorer and richer farmers are needed.

Appendix 3c: Further Details on Output 3 in three project sites

5.4.1 E. Kenya

E. Kenya M&E of EFFECTIVENESS OF DISSEMINATION PATHWAYS – FRAMEWORK

Objectives and assumptions on Impact

Based on discussions during the March 2003 workshop, and subsequent meetings with stakeholders, the general view was that interactive learning (including practical demonstrations) was the most effective basis for imparting and encouraging uptake of CP knowledge and products. Written (e.g. posters and pamphlets) and verbal (e.g. Radio and Barazas) information delivered without interaction and demonstration was seen to raise awareness, but not to be effective for learning and application. Clear written information based on locally validate research (e.g. reports of technical findings from local research centres) was seen to be the starting point for effective dissemination. The intention was to empower the collaborating extension service providers with the necessary technical information to enable dissemination to farmers through designated pathways. A further objective was to learn more about and compare the cost-effectiveness of each of these pathways. The following assumptions were implicit in the selected dissemination design:-

a. Valid technical information on selected topics is available to address some of the important crop protection constraints in the pilot districts, and the expertise needed to process this into training materials was at hand,
b. Residential training of trainers would be an effective mechanism for equipping those who have direct contact with farmers (front-liners) with the training materials, so that they could effectively impart information on selected topics to farmers,
c. The front-liners trained would use the information provided at TOT to train farmers using three pathways (FFS, Demonstrations, Para-extension) at identified sites, record information on the training provided to enable follow-up
d. Farmers trained would absorb the technical information, apply it, evaluate its usefulness and incorporate it into their future farm plans.

Three points of focus, based on the steps within the uptake pathway, were selected for monitoring and for each step an M&E objective, an evaluation outcome, a method and provisional indicators were proposed.

Step 1 - training of trainers (TOT)
Step 2 - use of training by front-liners
Step 3 - effectiveness of training of farmers

Evaluation Step 1: Training of Trainers Process and Materials Framework	
1a. Establishing Baseline	M&E objective: to establish the current level of knowledge on the technical topic/s being covered Evaluation Outcome: an assessment for each category of trainee (i.e. farmer para-extensionists, extension staff and teachers) of what they knew at the start of each topic, Method: Review of the group work outputs relating to each topic

	in the TOT training report? Indicators: By training topic: List of what each category of trainees knew before the imparting of information by TOT trainers.
1b. Evaluation of TOT process:	M&E objective: To assess how the training went in terms of learning and as a process. Evaluation outcome: An assessment of how the training was perceived by trainees. Method: Analysis of evaluation form used to capture their perceptions. Indicators: see parameters on evaluation form – first part of the form.
1c. Evaluation of TOT outcome:	M&E objective: to assess learning by TOT trainees on specific topics Evaluation outcome: An assessment of the level of learning by each participant. Method: a. List key learning points/objectives for each topic covered in TOT b. Compare with learning objectives listed on the individual training plans c. Analysis of gap per participant and category (could score this – e.g. 0=training plan objectives identical to key TOT learning points, 1=training plan objectives quite close to TOT key learning points), 2=training plan learning objectives quite different from TOT key learning points, 3= training plan learning objectives quite different from TOT key learning points, 4=no learning objectives in training plan.) Indicators: Key learning points for each topic
1d. Assessment of training material developed (Technical pack for training farmers)	Evaluation Objective: To assess the quality and relevance of the training material on the selected technical topics. Evaluation outcome – suggestions for improving the materials Evaluators – Trainers being trained. Method: a. Responses on TOT Evaluation form analysed by category of trainee. b. Feedback from trainers after using materials (training report form Q 11)

	Suggested Indicators: (also see forms) CLARITY – How clear is the material to the trainers being trained? COMPLETENESS – How complete is it – does it contain enough information to enable effective training to be planned and implemented? EASE OF USE – How easy was it to use in the field? Trainees SUGGESTIONS FOR IMPROVEMENT

Evaluation Step 2 – Assess Use of Training by TOT Trainees
M&E objective: To establish the extent to which each of the trainees has used the training provided. Outcome: A description of training/dissemination activities planned and implemented by each trainee. Method: Analysis of training plans produced and training reports completed by TOT trainees Indicators: Initial intention: Response to Q 7,8, and 9 on TOT evaluation form Proven intention: Training plan produced by each trainee with budget etc. Reports produced for each training event. Reports from follow-up of farmer training (if local trainers do follow up).

Evaluation of Step 3: effectiveness of training of farmers
M&E objective: to assess the extent of farmer learning (KAP) by each dissemination method. Outcome: evaluation of the farmer learning by each method ***Method: Follow up visits and interviews with a sample of farmers trained at an agreed interval (e.g. 2 months) or intervals (e.g. at 2 months and then at 5 months) after the training – who to do this to be agreed before implementation of farmer training plans.*** Suggestions on sample frame for follow-up of farmers

PATHWAY	METHOD	No of farmers	Sample method
Govt Extension	FFS		
	Focus groups		
	Demonstrations		
	Barazas		
CDK – Para-Extension	Group meetings		
	Demos?		
Primary Schools	Drama		

Options on who does this:-
External person (e.g. core team or DAOs office)
Local person (other extension officers, school teachers etc)
Across divisions – by extension
Trainers to do own evaluation

When planning this need to explain in relation to the principles of doing an experiment, bias etc. **Emphasise to those trained that this is not an evaluation of their training ability, but of effectiveness of the method/pathway.**

"KAP" Knowledge, Attitude, Practice – this is in relation to the training objectives set out in the TOT for each topic,:

Indicators:

KNOWLEDGE GAINED – Question/s relating to learning about the technology

ATTITUDE AFFECTED – Question/s relating to intentions arising from the training, what does the farmer see differently or intend to do with the knowledge

KNOWLEDGE APPLIED – What the farmer has done as a result of the training –
e.g. Told others what she/he learned
Changed practices on the crop in question
Tried to or acquired planting material of a resistant variety

KNOWLEDGE EVALUATED (BENEFITS AND COSTS)
If changed practises, has the farmer evaluated the effects of this change?

QUESTIONNAIRE –
FOLLOW UP ON FARMER TRAINING USING PILOT PATHWAYS

Guiding points:
A. Only use this for farmers who have been trained in one (or two) of the selected technologies through the one of the pilot pathways being tested.
B. For open questions, write a **direct translation** of what the farmer says.
C. For closed questions, circle or tick relevant answer (where more than one response applies, mark all the relevant responses)
D. If a farmer has been trained in two distinct technologies, use another questionnaire form for the second technology.

Farmer Name…… Location……..

Approx Age……..Gender……..Education level……..

Date of meeting…….. Recorder……..

Q1. For this project, which Crop Protection Technology/ies were you trained in, by who, how and when?

1a. TECHNOLOGY	1b. TRAINER	1c. HOW- METHOD	1d. MONTH

Q2 – Before this, had you received any other training in this technology. a) Yes No

b) If yes, what was this?

Bi) TECHNOLOGY	Bii) TRAINER	Biii)HOW- METHOD	Biv)YEAR

Q3 – **For the training received through this project**, please can you answer the following (SEE GUIDANCE NOTE D ABOVE):

3a TECHNOLOGY (name of):
3b: What were the main things you learned during the training?
3c: At the end of the training, how did you plan to use this knowledge?
3d: Did you get any inputs from the project ? Yes No
3e: Did you actually apply the knowledge on your farm? Yes No
3e If No, What were the reasons for not applying it? 3ei) Reason 1 3ei) Reason 2 3eiii) Reason 3
3f. If Yes, and you did apply the knowledge, what did you learn about the benefits and costs/disadvantages? 3fi) Benefit 1

3fii) Benefit 2 3fiii) Benefit 3 3fiv) Cost/disadvantage 1 3fv) Cost/disadvantage 2 3fvi) Cost/disadvantage 3
3g. Did you get any follow-up after the training I)Yes No ii) Comment on follow-up:
3h: What are your future plans for using the knowledge gained? (tick all relevant categories – i.e. more than one if each applies) 3gi) Will not do anything more 3gii) Will use again on a similar scale 3giii) Will use again on a larger scale 3gvi) Will tell others about it 3gv) Other plans (give detail)

Q4. Have any of your neighbours or relatives approached you for advice on the topic you were trained on?

4a) Yes No

4b) If Yes, what have they done with the advice given? (tick all relevant items)

Nothing Don't Know Used it on their own farms

Used it and taught others

Q5. Without being approach or asked, have you made an effort to teach others about what you have learned?

5a) Yes No

5b) If Yes, How did you teach them (method used) ……

5c) And, what have they done with the advice given? (tick relevant items)

Nothing Don't Know Used it on their own farms

Used it on their farms and also taught others

5d) If No – Why not? (tick relevant items – can be more than one)

Too busy Not confident enough They would not listen to me

Other (specify)

Q 6 Other comments about the crop protection training you received:

i) Benefits/Good points
ii) Disadvantages/Bad points
iii) Suggestions for improvement

5.4.2 South-Western Kenya

SUGGESTED FRAMEWORK FOR DESCRIBING AND COMPARING THE DISSEMINATION PATHWAYS AND PROCESS FOLLOWED

This is for guiding the pathway teams in documentation of experiences with the pathways by representatives of each pathway attending the October 04, progress review and lesson learning workshop.

The documentation teams and components:

PATHWAY	TEAM
Farmer Field Schools	KARI trainer, farmer field school representatives, MOA extension resource person/observer.
Focal Area Approach	MOA extension officers, Farmer representatives, KARI resource person/observer
Farmer to Farmer approach	CMAD extension officers, Farmer representatives, KARI resource person/observer

(each team should have a person who was partly "external to the process and main activities – for example members of the joint weekly monitoring team – the role of this

person is to ask questions, remind the team of the need to be accurate and objective in the documentation process).

Proposed Documentation Sections:

1. Background to the pathway/approach

2. Overview of the "ideal model" stages/steps

3. What happened - Overview of the stages/steps actually followed

4. Detailed description of implementation-
   a. technical content, key skills, actors' time-costs, other costs
   b. intended results for each step, challenges faced, assessment of results, lessons learned
   c. monitoring and evaluation plans and progress

5. Summary Analysis - Gaps, emerging lessons and the way forward

1. **Background to the pathway / approach**

Where did the idea for this pathway come from?

When was it first introduced into the pilot area/district?

What support does it have from policy makers (e.g. MOA extension)?

If it is part of a wider development approach, describe this wider context briefly.

If the approach has been modified since it was introduced, briefly mention the modifications and reasons for these,

List the key principles of this approach (i.e. how must it be done if it is to succeed?)

What previous evaluations/reviews of the approach/pathway have been undertaken in the agencies involved, and what were the conclusions?

List the perceived strengths of this pathway before this pilot testing started – in what ways was it considered better than alternatives?

List any perceived weaknesses of this pathway – before the pilot testing started.

2. Overview of the "ideal model" stages/steps[1]
(complete table in the recommended chronological order)

NAME OF STAGE/STEP	MAIN PURPOSE of STEP & TIME-FRAME	KEY ACTORS & IDEAL ROLE OF EACH ACTOR IN EACH STEP
A.		
B.		
C. etc		

[1] List any reference guidelines or documents which describe how the approach is to be done.

3. What was actually done - Overview of the stages/steps actually followed[2]

NAME OF STAGE/STEP/EVENT	Approx. dates and time spent	ACTORS actually involved and roles each played at each step[3]
A		
B		
C. etc		

Reasons for modifying the ideal approach – why we did it differently.

[2] List any available reports written on the activities undertaken – and who has this report.
[3] Note any variation where the roles changed from that expected or planned.

4a. Detailed description of implementation – technical content, key skills, actors' time-costs, other costs[4]

STEP/EVENT	TECHNICAL CONTENT & PURPOSE	KEY SKILLS NEEDED	Resource person TIME	FARMER TIME	Approx cost of transport and per diem – ksh (if any)	Approx. Ksh cost of inputs and materials (if any)
Field day	Tomato crop protection to raise awareness and share information	Communication Facilitation Technical knowledge on CP	3 x 8 hours (including travel and planning)	300 x 5 hours (including travel and waiting)	Vehicle 120 Km @ 30ksh/km Per diem – 3 lunches @ Ksh600	Posters - ?? Flip charts – 200 Marker pens – 200

Note any "cost-saving" measures used, and how well these worked out – can also relate to reasons for modifying the approach.

[4] Time costs should be in "person-hours" actually spent on the task, and this includes time spent travelling to and from the venue for all participants, and time spent waiting for the event to start. For farmers specify approx. number of farmers attending and their average travel and waiting time per step or event – e.g. 25 farmers for 3 hours. Indicate 0 if category did not attend, and if no information indicate "NI".

4b. Detailed description of implementation – intended results for each step, challenges faced, assessment of results, lessons learned

STEP/EVENT	TECHNICAL CONTENT	Intended result from this step	Any challenges faced and coping strategies used	Assessment of Actual results[5]	Lessons learned – what would you do differently next time?
e.g. field day	Tomato Crop Protection	Raise awareness and share results in wider community	Clash of dates	300 attended – 100 women 200 men, a lot of interest shown – women and youth did not participate in discussion	Improve planning when setting date. Develop Strategy including women and youth

4c. Detailed description of pathway implementation – result monitoring and evaluation plans and progress

[5] The agreed opinion of group based on records, observations made and on credible reports from participants

STEP/EVENT & TECHNICAL CONTENT	Expected results[6]	Indicator/s of results[7]	Who is responsible for monitoring?	What M&E has been done so far?	Challenges faced in M&E	What remains to be done on M&E?
e.g. Field day	Raise awareness of at least 200 farmers	Attendance by gender Participation level by gender and age	Supervising extension person	Report of field day	Too busy organising and not enough time to record process	Follow up of a sample of farmers attending field day to measure learning.

[6] Based on 4b above – need to be specific and list the results over which the team has a direct influence and can be held accountable for – more like outputs than impacts.
[7] Use the ideas generated in the Participatory M&E training if relevant – remember to keep the indicators simple – should be measurable and understandable to all participants. Should also have confidence in the causal link between the indicator and the result – i.e. should not be a lot of other factors that might have given rise to or influenced the intended result.

6. Summary Analysis – Gaps remaining, emerging overall lessons and the way forward with this pathway[8].

a. Identify the main strengths and weakness of the approach, **AS IT WAS IMPLEMENTED**, based on the analysis so far in the table format below. In considering strengths and weaknesses you might want to consider some of the following aspects, and identify other key areas :-

- **Feedback**: Frequency and Quality
- **Participation by key actors:** Quality and extent of
- **Learning experience**: Quality of, enjoyability?
- **Accessibility** to farmers – where some types of people excluded by selection criteria or the nature of commitment required, training approach & language used etc.?
- **Empowerment** of farmers and frontline staff through the process followed
- **Flexibility** to respond to local context & farmers needs
- **Cost** and sustainability
- **Teamwork –** bringing different partners together
- **"Reach"or coverage of** farming community – size and location of target group reached

STRENGTH	**WEAKNESS**

b. Identify the main gaps based on the analysis so far – i.e.
i)what has not been done that should have been done, and
ii) what do we not know that we should know in order to make reach clear conclusions about the effectiveness of this pathway,

c. From the gaps identified:-
i) what are the lessons about the process followed –
ii) how would you do it differently if you were to do for another season?

d. What is the way forward under two scenarios:
i) Low case – no extension of the project, or a "no-funds" extension to April 05,
ii) Higher case – extension of project with funds up to December 2005.

[8] This section can be based a lot on the foregoing analysis, but also draw on the various presentations made on Day 2 of this workshop.

BENCHMARKING PATHWAYS THROUGH EXPERT OPINION[9]

Scoring: 5=Strongly agree, 4=Agree, 3=Not sure, 2=Disagree, 1= Strongly disagree,

STATEMENTS ABOUT THE THREE PATHWAYS	Farmer Fld School by KARI	Focal Area Approach by MOA	Farmer to Farmer by CMAD
1. Effective for raising farmers' awareness of and interest in Crop Protection			
2. Effective for building the capacity of field extension workers to address Crop Protection			
3.Effective for building the capacity of farmers to help each other with Crop Protection			
4.Any farmer can easily participate, whether old or young, man or woman, rich or poor			
5. Logistics are not a big challenge			
6. Bringing in external specialists to assist with crop protection issues is easy			
7. It is easy for farmers who are not very literate to understand and get further information.			
8.Farmers enjoy it and feel they are valued and respected during the process.			
9.There is good follow-up after the training			
10. Farmers feel empowered to continue addressing crop protection issues on their own with minimal help.			
11. There is flexibility, new demands and issues can be addressed quite easily			
12. Farmers are not likely to drop out or be excluded from joining in.			
13. There is frequent feedback and honesty - farmers will say what they really think about advice given			
14. After the training farmers really want to try out the crop protection advice on their own farms			
15. After the training farmers will really want to tell other farmers about what they have learned			
16.Time is not wasted but is used well and the time of training is organised to suit farmers			
17. Differences within the community or between resource persons are unlikely to affect the training			
18. The information and practical demonstration provided is enough to enable farmers to apply it confidently.			
19. A large number of farmers will have their awareness and knowledge of CP increased			
20. The results of the training are well monitored and			

[9] This instrument was used in the lesson learning workshop held in SW Kenya in October 2004 and a very similar version used in E. Kenya in a similar workshop. For ease of scoring, presenting the results back for discussion during the workshops, and for the benefit of participants for whom English was their second/third language, only positive statements were used, rather than a mix of positive and negative statements which would normally be preferred for this type of exercise.

lessons used to improve the training			
21. Farmers' views are carefully listened to			
22. Farmers will benefit from applying the advice because it is within their means and relevant to them			
23. The approach makes good use of time and money			
24. This approach is better than other approaches tried			
25. The approach is affordable and can continue even when extension provider budgets are limited			

5.4.3 Central Tanzania

Tables of PM&E Indicators for Zone, Districts and Villages

Proposed new indicators for ZRELO's office

M and E aim	OVI
1) Increase cost effectiveness and efficiency on delivery of CP info and technologies	**1.1Reduction in units costs of communication tools** **1.2 New feedback methods eg letters from radio listeners**
2) Increased s'holder creativity in addressing CP communication	**2.1 At least one novel method for CP communication used at every level ie group, village, district, zone.**
3) Increase awareness of CP info through CP tools	**3.1 Knowledge of farmers in target groups increased with regard to CP based on X specific questions**
4) Empower ZRELO's office to engage with a wider range of stakeholders in communication process	**4.1 Qualitative assessment of ZRELO's office capacity at all stages of communication process before and after (see table below)**

Table XX: PM&E indicators by district

Kongwa	**Dodoma Rural**	**Singida Rural**
Increased number of farmers groups dealing with crop protection from current 4 to 15 by end of the programme	Increased yield for striga tolerant sorghum variety Wahi from the current 4 to 8 bags of 100kg per acre	Increased number leaflet users
Yield increase from 3-5 to 8-10 of 100kg bags of maize per acre	Increased quality of sorghum free from smut	Difference in crop quality Between participants and non participants
Reduced field and storage losses caused by insect pest	Increased area of area planted Wahi variety	Increase in number of listeners of agricultural radio programs
Reduced number food insecure households	Increase in number of farmers growing Wahi in the district	Yield increase from 7-10 to 12-15 bags of 150kg onions

Increased demand for industrial pesticides by farmers	Increased demand for leaflets and radio programs from farmers	Increased farmers demand for agrochemicals
Increased number of farmers using improved striga tolerant varieties Wahi and Hakika		Reduced loss resulting from crop pests
Testing, verification and publication of botanical toxins by researchers		Increased number of farmers using improved agronomical husbandry
Presence of economically sound farmer groups		Increased number of farmers using post harvest storage pesticides
		Reduced storage pest attacks
		Reduced farmers groups complains on effect of large grain borers

Community M&E indicators

Table 2.2: P M&E indicators: -Mkoka village, Kongwa district, Dodoma region

Stakeholder(s)	**M&E indicators**	**Source of data**
Village government (Planning and finance committee)	Incremental maize yield (kg per acre)	1.House hold survey, 2.Extension workers report
	Decline of stalk borers incidence in the village	1.House hold survey, 2.Extension workers report
	Increased number of modern houses at the village	1. House hold survey
	Increased use of agrochemical inputs	1.Stockist sales data
	Decrease in food insecure house holds	1.House hold survey
	Increased number of parents capable of sending their children to secondary and primary schools	1.Village secondary school and primary school data
Wana wa Nuru Group	Maize Yield increment from 5-7 to 8-10 bags per acre (I bag = 100kg)	1.Group member survey data
	Increase in number of group members from current 17 to 35	1.Group records
	Increased on number of farmers sensitized on stalk borer control from 17 to 650 by end programme	1.Group records

Source: M&E survey data 2004

Table 2.3: Short run M&E indicators:-Laikala village, Kongwa district, Dodoma region

Stakeholder(s)	**M&E indicators**	**Source of data**
Village government (Planning and finance committee)	Incremental sorghum yield from three bag (300 kg) to 10 bag (1000 kg) per acre	1.House hold survey, 2.Extension workers report
	Decline on Striga incidence in the village as result Striga control knowledge and use of HAKIKA variety	1.House hold survey, 2.Extension workers report
	Decrease in number of smut cases as a result of smut control knowledge	1. House hold survey
Laikala primary school	Decline in Striga in school farm	1.School farm survey data

	Decline in smut incidence in school farm	1. School farm survey data
	Yield increment from 3bags(300kg) to 5bags(500 kg) of sorghum per acre in sorghum school farm (Pato and Hakika varieties)	1.Crop yield records
Farmer group	Decline in Striga (viseke) incidence in farmers group fields of sorghum	1.Field survey in members plots
	Decline in smut incidence in farmers group fields of sorghum	1.Field survey in members plots
	Yield increment in members fields (Kg per acre)	1.House hold survey-members
	Decrease in sorghum seed dressing cost for members who are using MARSHAL chemical	1.House hold survey-members

Source: M&E survey data 2004

Table 2.4: P M&E indicators:-Msanga village, Dodoma Rural district,

Stakeholder(s)	M&E indicators	Source of data
Village government (Planning and finance committee)	Increase in number of farmers growing HAKIKA and WAHI varieties	1.House hold survey, 2.Extension workers report 3.Farm visits
	Number of farmers who received striga and smut control messages through leaflets, radio, posters, demo plots, video	1.House hold survey, 2.Extension workers report
	Decrease in number of smut cases as a result of smut control knowledge	House hold survey Farm visits
	Decrease in number of Striga cases as a result of Striga control knowledge acquired in the programme	1.House hold survey 2. Farm visits
Farmer group	Yield increment in members fields (Kg of sorghum per acre)	1.House hold survey-members
	Increase in number of farmers acquiring seeds from group members	1. Farmers Group ledger
	Increase in number of farmers acquiring smut and Striga control knowledge through group members outreach scheme	1. Farmers Group ledger
	Number of farmers who visited the demo plots	1.Farmers Group ledger 2. farmers field day

Source: M&E survey data 2004

Table 2.5: M&E indicators:-Mudida village, Singida district, Singida region

Stakeholder(s)	M&E indicators	Source of data
Village government (Agric & social development. committee	Decline on large grain borer effects on stored grain as a result of the programme	Household surveys
	Increment on village income from maize sales levy	Village ledger
	Increment on number of users of agrochemicals for LGB control	Stockists data Village extension worker reports
	Difference between number of farmers applying LGB control practices before and after the programme	Stockists data Village extension worker reports

Mpakani & mduu group	Difference on amount of affected grain (bags/buckets) between participants and non participants	House hold survey
	Number of farmers trained by group members	Group members ledger/ records
MRAMA group	Difference on amount of affected grain (bags/buckets) between participants and non participants	House hold survey
	Number of farmers who learned from group members	Group members ledger/ records
Kibaoni group	Difference on amount of affected grain (bags/buckets) between participants and non participants	House hold survey
	Difference between number of farmers using LGB control before and after the CPP programme	House hold survey
	Differentials in number of farmers using both agrochemicals and botanical pesticide between group and non group members	

Source: M&E survey data 2004

Table 2.6: M&E indicators:-Merya village, Singida district, Singida region

Stakeholder(s)	M&E indicators	Source of data
Increased demand for onion plots to village government		Village government ledger
	Increased village income from onion levy	Village ledger
	Increase on number of improved houses in the village	1. House hold survey
	Number of villagers sensitized by the programme on onion pest control	House hold survey Extension officer reports
	Increase in number of farmers demanding pesticides in the village	Stockists sales records Extension officer reports,
Jishughulishe group	Yield increment (Number of onion bag per acre) for group members)	Group member household survey
	Onion product Quality difference between members and non members	Stock inspection
	Yield differentials between members and non member (bags per acre)	Household survey Contributed onion levy (from village ledgers)
	Differentials in plant health between group members and non members	Farm survey Farmers field day
UKOMBOZI group	Yield difference between group members and non group members (bags per acre)	Household survey Contributed onion levy (from village ledgers)
	Differentials in plant health between group members and non members	Farm survey Farmers field day
Nguvukazi group	Yield increment (number of bags per acre) for group member	Households yield surveys Contributed onion levy (from village ledgers)
	Difference on nursery health between members and non members	Nursery visits
Malwe group	Yield increment for every group members (bags per acre)	Households yield surveys Contributed onion levy (from village ledgers)

	Differentials in plant health between group members and non members	Farm survey Farmers field day
	Difference on nursery health between members and non members	Nursery visits
	Yield difference between group members and non group members (bags per acre)	Household survey Contributed onion levy (from village ledgers)
Motomoto group	Yield difference between group members and non group members (bags per acre)	Household survey Contributed onion levy (from village ledgers)
	Differentials in plant health between group members and non members	Farm survey Farmers field day
	Differentials in utilization of pesticide on onion between group members and non members	Extension officer reports Stockists pesticide sales data

Source: M&E survey data 2004

5.4.4 Cross-Site Workshop

GROUPWORK ON DEVELOPMENT OF CROSS SITE INDICATORS FROM NAIVASHA WORKSHOP

1: LESSON LEARNING

a) Ideas
- Formal mechanism to enhance feedback in the 3 sites (Similar)
- Review of other existing communication methods
- Need for other communication methods
- Experience on M&E across the 3 sites
- Value adding to promote CP
- Need to discover farmers' feeling about various pathways
- Teams need be more gender sensitive
- Presentations based on data analysis
- Ideas about Improving CP communication/promotion shared across site
- Increase both capital & human resources

b) Lessons
- Still some people talk on behalf of farmers –non participatory
- Researchers need to be concerned with the uptake of CP-technologies they developed
- The importance of setting outcome, indicators & how to measure as the successful of the activities to be implemented
- PM & E to should always measure the resource of the activities

c) Suggestions
- Alistair should visit the Tanzania sites
- Need to harmonize communication pathways/tools across sites

2. METHODS
a) Action/experience
- Develop a joint radio programme to benefit Kenya & Tanzania

- Borrow communication strategies from the Tanzania case and implement Western & Eastern Kenya
- Inventorrisation of CP information and products in form of catalogue
- There should be exchange of experts on the subject
- Schools can be used to pass messages
- Feedback mechanisms
  -Post
  -Radio
  -Letters
- Some pathways are more effective than others E.G. FFS
- Focal/catchments extension Approach
- Participatory methods work better

b) Lesson

- Exchange visits
  -Exchange communication materials
- Some methods are more effective
- Research on ITK
- Farmers training and demonstration plots performs the best

c) Suggestion

- Not all promotional opportunities are the same
- Participatory evaluation & monitoring is more effective
- PME works best but not fully in place

3. MANAGEMENT

a) Activity Experience

- Team work more developed in some sites
- Indicator 3
- Significant differences variations in levels of team work across the site
- Team work has led to harmonization of activities
- Team work across sites teams

b) Lessons

- Management practices similar when the focal is the same in a common environment
- Will depend much on each site activities locality etc
- Best decisions are made with hard evidence
- Diff. Styles in Kenya & Tanzania (Research vs NGO)
- Team work produces better results

c) .Suggestions

- Transparency
- Collective responsibility
- Transparent, participatory designing and implementation of a project ensures commitment
- Funds released is the means of improvement management
- There is a need for another workshop to share information access sites –on planning etc
- Involve all stakeholder in decision making/implementation

4. COORDINATION

a) Regular interaction communication co-ordination

- Linkage within the 3 site done regularly (thro' reports etc)
- Coordination is crucial if the system (project) is to function properly across the sites. Its time consuming and requires a lot of sacrifice on the part of the coordinators
- Sharing information by e-mail

- Exchange information through e-mail
- Team leaders essential in coordination of activities
- Common aims and goals but different styles
- Smooth articulation of CPP project activities among stakeholders and other projects
- Multi-institution collaboration and challenges associated with it

b) Lessons

- Ensures effective use of resources
- Assists to share experiences and learning
- Co-ordination leads to better use of resources without duplication

c) Suggestions

- Co-ordination across sites need to be harmonized and practices shared occasionally

5. PRODUCTS

Experience

a)

- M+E NRI None
- A number of similar products across the sites has been produced despite
- Limited resources
- Example we have exchanged product with CABI-implementing CP activified funded by DFID.Central zone –gave CABI leaflets (10 tittles) Central zone got poster from CABI (5 littles) CABI used the information to their site but requested to change same of the pictures and name of the pest. Central zone we copied how co prepare poster
- Sharing of products across sites
  ZCO. Central zone-to go to other sites in Kenya s share experience in productivities on materials
- M&E NRI handbooks papers
- No of lesson learnt
- New lessons
  -Methods
  -Ideas

b) Lessons

- Easier to access products during cross –sites meetings
- Sharing in preparation and use of CP products
- Product shared enhanced knowledge
  -Video
  -Leaflets
  -Posters
  -Reports
  -Radio P.
  -Drama
  CP products
  -Catalogue
- PM&E video
- Presentation copies
- Stationery (Pens, Pocket files)
- Western Kenya and Eastern Kenya ,Tanzania
- Video
- A lot of products generated especially in TZ

c) Suggestions

- More publication needed with variety for different purposes

- Review of project progress
- Corrective action
- Sharing also to include methods of using the products

Available products should be shared across sites