CROP POST HARVEST PROGRAMME

Improving farmers and other stakeholders access to quality information and products for pre and post harvest maize systems management in the Southern Highlands of Tanzania

R8422 (ZB0372)

PROJECT FINAL REPORT

15 February 2005 – 15 January 2006

Core Partners: Uyole Agricultural Research Institute, District Council Agricultural Extension Officers from Mbozi, Mbarali, Iringa and Njombe districts, the ZRELO for the Southern Highlands, and the UK's Natural Resources Institute.

Other Partners: Mbegu Technologies, Highlands Seed Growers Ltd, INADES Tanzania Formation, Farm Input Promoters Africa, DAIPESA and MIICO

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Acronyms and Abbreviations

ADP Mbozi	Agricultural Development Programme Mbozi Trust Fund
AMSDP	Agricultural Marketing Sector Development Programme
ARI	Agricultural Research Institute
ASDP	Agricultural Sector Development Programme
ASPS	Agricultural Sector Programme Support
CPHP	Crop Post Harvest Programme
CPP	Crop Protection Programme
CSC	Council Standing Committee
DADS	District Agricultural Development Strategy
DALDO	District Agricultural and Livestock Development Officer
DC	District Commissioner
DED	District Executive Director
DFID	Department for International Development
DFT	District Facilitation Team
FAO	Food and Agriculture Organisation
FCM	Full Council Meeting
FFS	Farmer Field School
FIPS	Farm Inputs Promoters
ICRA	International Centre for development oriented Research in Agriculture
IFAD	International Fund for Agricultural Development
INADES Tz	Institut Africain pour le Developpment Economique et Social, Tanzania
I, T & P	Information, training and products
LINKS	Local and Indigenous Knowledge Systems
MAFS	Ministry of Agriculture and Food Security.
MATI	Ministry of Agriculture Training Institutes
M&E	Monitoring and Evaluation
MIICO	**M**bozi ADP Trust Fund, **I**leje Rural Development Trust Fund, ADP **I**sangati Trust Fund **Co**nsortium
MP	Member of Parliament
MSc	Master of Science
MSV	Maize Streak Virus
NGDO	Non Governmental Development Organisation
NGO	Non Governmental Organisation
NRI	Natural Resources Institute, UK
PADEP	Participatory Agricultural Development and Empowerment Programme
PHS	Plant Health Services
PRA	Participatory Research Action
PRA	Participatory Rural Appraisal
PS	Permanent Secretary
QDS	Quality Declared Seed
RAA	Regional Agricultural Adviser
RAS	Regional Administrative Secretary
RC	Regional Commissioner
RFSP	Rural Financial Services Programme
SACCOs	Savings and Credit Cooperative
SEAGA	Socio Economic and Gender Analysis Programme
SH	Southern Highlands, Tanzania
SHZ	Southern Highlands Zone
SSA	Sub Saharan Africa
SUA	Sokoine University of Agriculture
SWOT	Strengths, Weaknesses, Oportunities and Threats
TARP II	Tanzanian Agricultural Research Programme Phase II
TASAF	Tanzania Social Action Fund
TEEAL	The Essential Electronic Library
TFA	Tanganyika Farmers Association
TNA	Training Needs Assessment
TOSCI	Tanzania Official Seed Certification Institute
TPRI	Tropical Pesticides Research Institute
UK	United Kingdom
USAID	United States of Agency International Development
VAEO	Village Agricultural Extension Officer
WDC	Ward Development Council
WFT	Ward Facilitation Team
ZRELO	Zonal Research and Extension Liaison Officer

Section A Executive Summary

Improving farmers and others stakeholders access to quality information and products for pre and post harvest maize systems management in the Southern Highlands of Tanzania

There is widespread consensus that increased productivity and associated economic growth is a key element in poverty reduction. The diverse environment of sub-Saharan Africa, among other factors, suggests an Asian-type Green Revolution is unlikely and there is a need for more localised innovations and solutions. The Southern Highlands Zone (SHZ) of Tanzania is a key area of maize production regionally and the majority of the producers are resource poor smallholders. Enhancing agricultural productivity depends on improvements in their management practices. This project explored how to improve farmers and other stakeholders' access to information, training and products for maize systems in the SHZ i.e. considering knowledge/ innovation issues in a broad commodity, but sub-national, context. This is consistent with government of Tanzania's decentralisation policy.

The project (with a sister CPP project) facilitated the building of relationships with a wide range of stakeholders from the public, private commercial, NGO sectors, together with farmers organised in farmer research groups. The projects have worked towards improving communication and finding common ground for improvement. This process has been challenging, transaction costs are high, but there are clear indications of returns to the investment.

Service providers are instrumental in this process of change. The different types of information, training and products for maize systems currently being accessed by different stakeholder groups were explored through single stakeholder group work and ways of improving them identified during an inception workshop. This initiated a participatory learning process with partners.

Key activities included: The validation survey of existing communication methods, pathways, tools and needs was conducted for both stockists and farmers. This further gave light to their needs and areas for improvements, and was a completely novel experience for most stockists consulted; A study of seed fairs and how they offer diverse and unexpected learning opportunities; A survey of stockists which confirmed that service providers closer to farmers are responding to demand by bulk breaking and selling in small packs; Monitoring and evaluation of the farmer research groups which confirmed major benefits to group members, but raised questions about gender balance (3:2 in favour of men), wealth (mostly middle) and wider sharing in their community. An end of project stakeholder workshop provided ideas for the way forward.

Learning tools and approaches have been developed and/ or evaluated using participatory techniques, with the target stakeholders to improve their relevance and utilisation. Important insights have been shared amongst stakeholders about capacity, effectiveness and professional morale; perceptions of policy makers and strategies for engagement. This has formed the basis for future communication and partnerships between stakeholders. There are strong indications, based on stakeholder feedback, that this will contribute towards the exchange of information and enhanced uptake of research innovations (e.g. seed) in the SHZ, with clear potential to benefit the poor.

Section B Identification and design stage

Poverty focus

The first Millennium Development Goal aims to e*radicate extreme poverty and hunger*. There is widespread consensus that increased productivity and associated economic growth is a key element in poverty reduction. This has led to a renewed interest by development agencies in increasing agricultural productivity. However, the diverse agro-ecological environment of sub-Saharan Africa, among other factors, suggests an Asian-type Green Revolution is unlikely and there is a need for more localised innovations and solutions. This project aimed to contribute towards this process through improving farmers and other stakeholders access to quality information, training and products for pre and post-harvest maize systems management in the Southern Highlands of Tanzania.

The project was **enabling** in that it addressed the issue of agricultural service provision which under-pins pro-poor economic growth and food security and has the potential to bring social, environmental and economic benefits for poor people. It was also **inclusive** to the extent that agricultural service provision affects both rich and poor, but from which the poor may benefit equally.

The primary beneficiaries targeted by the project were smallholders in the Southern Highlands of Tanzania. The project targeted both women and men, but it was beyond the scope of this short project to specifically target according to other criteria e.g. wealth and age. Improving smallholder families' access to information, training and products will improve their ability to make decisions towards achieving their goals including increased income and food security. Secondary groups targeted by the project were public and private sector service providers with the aim of learning lessons about improving capacity, effectiveness and morale in order to respond to the needs of a range of stakeholders and ultimately smallholder families.

Importance of the livelihood constraints and how they were identified

Maize is an important food and cash crop in Tanzania. It is regarded as the national staple accounting for up to 60% of dietary calories and 50% of utilisable protein of the majority of the Tanzanian rural population. The Southern Highlands (SH) zone covers 28% of the total land area of Tanzania and accounts for almost 50% of the national maize production. The food security and cash income of many farmers is heavily dependent on the productivity and sustainability of maize-based cropping systems. Although maize plays an essential role in the livelihoods of people in the SH (as well as consumers outside the zone), significant changes in context have been taking place with major implications for peoples' livelihoods. For example, Structural Adjustment Programmes (SAPS) are generally associated with a removal of subsidies and an increase in input prices (e.g. seed and fertiliser), retrenchment in the public sector and an expanded role for the private sector. Farmers appear to have adapted their livelihood strategies in response by e.g. growing a larger area of maize to compensate for a decline in fertilizer use, switching to other crops and reducing the amount of certified seed purchased. This situation is also associated with a lack of trust or confidence held by farmers in input supply companies and many other organisations dealing with input supply. Public sector extension services have been substantially decentralised and are largely under the direction of District Councils. The challenge is to make a contribution towards strengthening the capacity of farmers and agricultural service providers to adapt to these changing circumstances.

Seed is just one of the critical inputs for these farmers' livelihoods and Project R8220 'Improving farmer access to and management of disease resistant maize cultivars in the Southern Highlands of Tanzania' worked together with the DANIDA-funded ASPS community-based seed production activities to help farmers manage and access better quality seed. Most[1] of the maize seed planted in the SH is farmer saved/locally traded seed. An initial situation analysis and subsequent post-harvest survey with rural communities in the SH, highlighted storage constraints such as insects, rats, rotting and mis-use of pesticides and a desire for information that could be used to reduce losses during both seed and grain storage and subsequently increase productivity through planting of better quality farm saved seed, food security and marketing opportunities. Storage trials to enable farmers to experiment with different seed and grain protection methods were set up by host farmers at the maize variety demonstration sites, so that post-harvest as well as pre-harvest characteristics of the varieties could be assessed by the communities.

[1] It has been estimated that 98% of the seed planted for all crops throughout Tanzania is farmer saved/ locally traded - Friis-Hansen E. (1999) Socio-economic dynamics of farmers' management of local plant genetic resources. A framework for analysis with examples from a Tanzania case study. CDR working paper, 99:3.pp53

As project R8220 developed it brought together key stakeholders, analysed and identified ways to improve the seed systems (certified, Quality Declared (QDS) and farmer saved) of the Southern Highlands. Key areas highlighted by these stakeholders included the identification of training needs of the different stakeholders including service providers such as input stockists and distributors (particularly those dealing with seed, fertiliser and storage pesticides), NGOs (e.g. Mbozi ADP Trust Fund, ADP Isangati Trust Fund and Ileje Rural Development Trust Fund) involved in agricultural training of farmer groups and government extension staff involved in training of farmers (see table in section C: 5 of the project proposal). Government extension policy has recently adopted the farmer field school (FFS) approach to facilitate farmer discovery through experiential learning, but many of the extension staff lack access to relevant information to enable them to competently facilitate this innovative learning approach.

The need for inputs to be made available in appropriate sizes and packaging has been clearly identified. In a recent household survey input prices (86 % of households), timely availability of inputs (70%) and appropriateness/quality of inputs (70%) were considered a problem by respondents (REPOA, 2004). A recent article in the Economist (21/8/04) entitled 'Profits and Poverty' argued the case for big business to be more entrepreneurial and to re-engineer products to reflect the economics at the 'Bottom of the Pyramid' including: small unit packages, low margin per unit, high volume. For example, in 2004 the cheapest storage chemical in the largest distributor (TFA) in Njombe was Actellic Super dust, which cost Tsh 1500 and is sufficient for treating two 90kg sacks of maize. Other storage chemicals recently introduced in the Tanzanian market but not so widely known are Shumba Super in a pack for treating 4 sacks and Stocal Super in a bag for treating 2 sacks of grain. Information on use of botanical insecticides is available at ARI Uyole but it has not been widely made available to the smallholder farmers and service providers like the agricultural extension service in a form that could be easily utilised in FFS training. Following the stakeholder workshop to identify opportunities to improve seed systems held in Iringa in July 2003 (Stathers et al, 2004a) several private seed companies (e.g. Tanseed International, Mbegu Technologies Ltd, Fica Seeds and Highland Seed Growers Ltd) showed interest in facilitating access to those maize varieties farmers validated in the village-based demonstrations during R8220. These companies also expressed interest in making seed and possibly other inputs such as fertiliser and pesticides accessible to farmers for testing by packaging it in much smaller, more affordable sizes.

Marketing issues of (green and dry) maize and other locally important crops (e.g. onions, tomatoes and potatoes were also identified as key in a Situation Analysis, and stakeholder surveys under R8220. A recent household survey (REPOA, 2004) identified market prices for cash crops (70% of households), distance to markets/transport costs (59%), and access to market information (59%) as problems for respondents. Government policy (see Agricultural Sector Development Programme (ASDP)) highlights the importance of improving both input and output markets. .

The Agricultural Sector Development Programme (ASDP) has been designed in response to the GOT Poverty Reduction Strategy Paper and aims to implement a single sector-wide policy, institutional and expenditure framework for agriculture. The programme aims to facilitate the creation of an enabling environment that is conducive to improvement of agricultural productivity, in order to improve farm incomes and reduce rural poverty.

The ASDP 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. 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.

The project set out to support this institutional framework. Firstly, to encourage the district extension staff partners in their development of a strategic maize promotion plan for each of their districts and achieving local council support. This had the longer term aim of enhancing the capacity of this knowledge management system for translating farmers' demands into the development of appropriate, validated and targeted information and its subsequent delivery. Secondly, through the ZRELO's office, to facilitate a zonal strategy for the Southern Highlands (an area approximately the size of the UK), which will be driven by the district strategies, strengthen links with the private sector and, monitor and evaluate the process. Thirdly, through gaining a better understanding of agro-input

stockists information, training and product access and needs and their unique role in the maize innovation system, in order to enhance the quality of information they can share with farmers.

Institutional design and associated factors

The Southern Highlands Agricultural Research and Development Centre (ARI Uyole) managed the project. This choice was based on the fact that the Centre has the mandate to undertake agricultural research in the Southern Highlands Zone of Tanzania consisting of Iringa, Mbeya, Rukwa and Ruvuma regions, and hence is strategically placed to bring together different stakeholders. The Centre has experienced staff in agricultural research under various disciplines, who are already collaborating with different stakeholders in the zone as well as international organisations/institutions. The Zonal Research and Extension Liaison Office is based at ARI Uyole. This has the mandate to strengthen links between stakeholders with an interest in agriculture research and development in the S. Highlands. Under the ASDP, it is anticipated that this office will be considerably strengthened. The project worked with a wide range of end-users from the public and private sectors. The process of working with direct project partners is set out below:

The proposal was collaboratively developed by a team who had a history of working together for >2.5 years already on an ongoing project R8220 funded by the Crop Protection Programme and managed by ARI Uyole. The proposed coalition team took time during a project-planning meeting in November 2004, to work together on this proposal (R8220 Planning Meeting Report, 2004). Effective partnerships do not emerge overnight and this team has had time and resources to develop working relationships and discuss their different opinions and iron out some of the initial teething issues and areas of conflict. This has helped to enable it to achieve the proposed outputs during the short time frame available.

ARI Uyole due to the nature of its activities has over time accumulated considerable experience in managing projects with funding from different donors. It therefore has developed considerable capacity both in terms of project management as well as in financial management and reporting.

Collaborative processes- the coalition partners agreed to share responsibilities and ensure transparency in the implementation and management of the project. Regular interactions between the coalition members were held to review the institutional context of the project and to monitor relationships, report on the project process and progress from the different institutional perspectives. Openness and transparency were encouraged using methodologies that involved the participation of all coalition members. The workshops and surveys involved all partners and a communication strategy was devised by the coalition team during the inception workshop and reviewed at the regular meetings above and amended as necessary. Contact details were exchanged to help ensure regular two-way communication between the coalition partners in between face-to-face meetings.

Flexible responses to changing context and needs- flexibility in response to changing context and needs was ensured through open consultation between coalition members and project partners at the different meetings, and through the ongoing monitoring of the relationships. This information was then used by the coalition team to determine whether roles or activities needed re-orientating in case of changed context. This approach needed some flexibility in the budget and contractual arrangements. Information on changes to the proposed roles and plans were shared with the CPHP as appropriate.

Resolving conflicts/ disagreements- the coalition partners agreed to resolve conflicts/ disagreements through, in the first place trying to prevent them happening by fostering an atmosphere of openness between coalition members, particularly in terms of understanding and sharing of individuals' agendas and their motivations, and the use of methods that ensure maximum coalition team participation (and hopefully ownership of) in all decision making. The fact that the coalition has a history of working together and has resolved some previous conflicts helped in resolving any issues.

The working relationship with farmers was mainly through the Farmer Research Groups set up by the sister CPP project. Participants from these groups were consulted as part of the validation process in their villages and in the end of project stakeholder workshop.

The project's working hypothesis was as follows: Agricultural information, tool and products, which have been developed through action research (action/ reflection/ adaptation) with stakeholders, will enhance their utilisation, meet stakeholders' needs and strengthen the organisational capacity of smallholder farmer groups and agricultural service providers in the Southern Highlands of Tanzania.

A survey of project partners towards the end of the project provided feedback and lessons about the influence of the project on partners.

Section C Research Activities

Output 1. Access to agricultural information and materials to facilitate experiential learning on:

maize varieties; fertility management practices; grain and seed storage practices; maize business information; small packets of seed and other inputs

enhanced for farmers managing maize in the Southern Highlands of Tanzania.

Activity 1.1. Inception workshop for coalition team to integrate post and pre-harvest outputs of CPHP and CPP- R8220, and possible successor, projects and to incorporate into activity plans by Feb 2005.

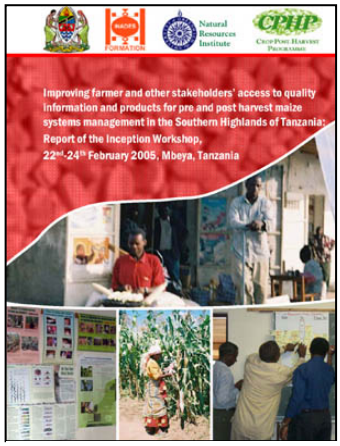
A project inception workshop was successfully held in Mbeya from 22nd -24th February 2005, attended by 28 participants (4 NGOs, 5 district extension, 1 FFS coordinator, 4 agro-input stockists, 2 seed companies; 1 zonal communication officer, 1 zonal research extension and liaison officer; 1 public sector trainer, 2 marketing project, 5 Uyole research, 2 NRI research (3 participants were female)).

The main objectives of the workshop were to:

a) review current approaches by which farmers and other stakeholders access information and products for pre and post harvest maize systems in the Southern Highlands;

b) develop a work plan which will identify approaches and pathways for improving farmers and other stakeholders' access to information and products for the benefit of the resource poor smallholder farmers in the Southern Highlands.

The workshop was opened by Dr Catherine Madata acting on behalf of the Zonal Director for Research and Development for the Southern Highlands. Nine of the participants representing the different stakeholder groups then made presentations about their experience on current approaches by which farmers and other stakeholders access information, training and products for maize in the Southern Highlands. Summaries of these presentations and the lively discussions that occurred after each of them as well a record of all the group work outcomes are given in the inception workshop report (Stathers et al, 2005). The different types of information, training and products for maize systems currently being accessed by different stakeholder groups were explored in more detail through small single stakeholder group work using an analytical framework of what, who, how, scale, strengths, weaknesses/ gaps and ways of improving (described in detail in activity 2.1 below). The trends and factors influencing professional morale amongst different stakeholders were explored, and workplans integrating the CPHP R8422 and the CPP R8406 (Phase II of R8220) project activities were developed through multi-stakeholder group work (see activity 2.1 for details). MPs, Councillors, Regional Commissioners, DCs and Ministry PS, ASLM, MAFS Crop Unit were considered to be some of the key policy actors affecting the maize innovation system in SHZ. District Executive Officers and DALDOs were also an important policy group in their areas. Exploration found that different stakeholders had different reasons for and methods of engagement with policy people. Researchers reported inviting councillors to feedback meetings and involving them in activity planning and implementation. They also reported having influenced some DEDs to provide dissemination funds for various TARP II SUA projects technologies; more active participation by farmers in the FAO LinKS project's research into informal seed systems. The resolutions of research institutes meetings are generally sent to the Ministry headquarter. Internet installation ARI Uyole and the adoption of the farmer field school (FFS) approach as Ministry policy following direct observation by senior extensionists were examples of policy responding to the needs of researchers and farmers. The private sector gave an example of interaction with district level policy makers about 'bulk breaking' in response to farmer complaints about fertilisers only being available in large packs. The NGOs involved policy makers in network meetings and joint activities so as to make use of their influence to enhance target group participation, they also built capacity of their group members to become local level policy makers. Board members and directors of



Inception workshop report

NGOs are often key policy makers. The extension service has direct contact with DCs and DEDs with whom they discuss matters when and as needed. They also link with MAFS on technical matters. A communication strategy for engaging policy makers and documenting of lesson learning was developed.

Small group work: Stockists & Seed Companies

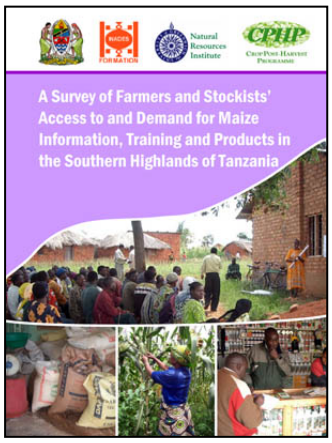
Small group work: NGOs & ZRELO

Morale barometer: Now & 5 years ago

The CPHP call that this projects proposal was submitted to, specified that projects would run from 1st January 2005 to 31st Dec 2005, and so all activities were planned within this timeframe. The contract was not issued by CPHP until mid February (although the issue date was backdated to 15 January 2005), which meant that this activity that had been originally planned for January, was in practice completed at the earliest possible date a week after the contract was issued in February and only because one of the coalition partners (NRI) agreed to temporarily loan ARI Uyole the funds for the workshop. This risk had been listed in the assumptions column of the log frame.

Activity 1.2. Validation survey of existing communication methods, pathways, tools and needs for farmers.

The validation survey of existing communication methods, pathways, tools and needs for both stockists (Activity 2.1) and farmers (Activity 1.2) was carried out between 11th-21st April in Mbozi, Mbarali, Iringa, Njombe and Ileje districts of the Southern Highlands. The validation survey report (Stathers et al, 2006) and Swahili annex provide a detailed record of the findings which are summarised here under the respective activity numbers.



Validation survey report

The aim of this survey was to find out about the current situation as regards farmers' access to maize information, training and products.

In each district two villages were selected for the survey based primarily on where previous project activities on improving farmer access to and management of maize seed (R8220), had set up demonstration plots and worked with farmer research groups. In Iringa district, it was decided to include one village where the farmer field school (FFS) extension approach was already actively being implemented, as this is expected to become an important national extension approach in Tanzania and may have important implications for farmers and other stakeholders' access to quality information and products.

A method based on similar work done in banana farming systems in Uganda (R 7488) was developed and field tested in Mbozi district, and then refined further by 17 project stakeholders during a three day method development workshop. Four teams then left to start the survey in their respective districts.

Interviews with individual farmers. In each village, four farmers were identified by the village executive office, two of these farmers were male and two female, and one of each gender were members of that villages maize variety farmer research group. The survey teams split into pairs and each pair met the farmer they were interviewing at the farmer's field, the entry point for the discussion with these farmers was "We'd like to know how you manage your maize; we'll start off in your field and then find out about your storage". The thinking behind holding the interview in the field and then at the homestead/ post harvest location was that farmers could demonstrate their actual practice as opposed to relating what they thought the survey team might like to hear. The survey team probed as to what happened next, until the crop cycle had been completed.

Mrs Jane Simeon Muhani of Mhaji village demonstrates how she harvests her maize

For each practice the farmer described, they were asked to explain why they did it, and then to share where and how they had learnt about that practice from, and finally to suggest whether the practice could be improved and how. This information was then copied from field notebooks onto flip charts to inform the subsequent gendered group work with farmers. An example of some of the information collected from one farmer in Igagala village, Njombe district is given in Table 1.1 below.

Individual questionnaires completed by farmers. In addition, a written questionnaire was individually completed by each of the larger group of male and female farmers (approx. 50 / village) who were waiting to attend the group meeting. The farmers were asked to describe all their actual practices at each stage of the maize crop cycle, and then were asked about their training and products needs for each stage of the crop cycle.

Table 1.1. What one of the farmers in Igagala village, Njombe district told us about some of his maize management practices

WHAT?	WHY?	SOURCES OF INFORMATION? Who and how?	COULD THIS PRACTICE BE IMPROVED AND HOW?
Plants using ropes (since 1975) with a row spacing of 3 ft	• To ensure lines are equal throughout the field	• Communal Ujamaa field where they did it • Regional commissioners 1978 campaign on how to plant maize • Uyole taught us again	• Training on planting with correct spacing using a plough, we are currently failing
Harvests by peeling back the leaves then removing the cob, standing plant is left in the field as cattle food	• So he only needs to transport the maize cobs home • Once cobs are home they only need shelling	• Traditional practice	
Shells the maize then stores the grains in a kihenge	• To know how much he harvested • If going to treat with pesticides, its easier to mix with shelled grain • When you need the grain as food it is already shelled	• Traditional practice of shelling • Information from the stockist who sold the storage pesticide to him	• By getting training on how to store properly and how to mix storage pesticides etc

Group work with farmers. Men and women were separated for the group work, and the examples of actual practices obtained from the two female farmers were used to inform the women's group and those obtained from the two male farmers were used to inform the men. As the information was reviewed, the group were asked whether there were any additional actual sources of information for the practices that hadn't already been mentioned, and these were then added. Next, all the sources of information they had mentioned, were put across the top row of a table and the group were again asked to indicate whether there were any additional sources of information on maize they could think of. Farmers were then asked to identify the differences between the information sources which were important attributes/

criteria in addressing their maize management (information, training and product) needs. In a few cases a matrix was used to help get the differences between each of the sources.

Farmers then discussed and agreed on the meaning of the scores to be used for each criterion, e.g. for the criterion of availability: always = 5; rarely = 1 (the higher the score given the better). They then scored each of the sources of information against each criterion.

Further probing was used to find out whether there were any specific ideas for improving each of the different sources. It was found to be easiest to start with those that had scored low marks and to look at what the weaknesses with them were and whether these weaknesses could be improved. However suggestions for even those that scored highly were given as to how they could be improved.

The existing sources of information included parents, primary schools, extension workers, research and training institutions, NGOs, communal Ujamaa farm activities, neighbours and friends as well as individuals personal experience. A summary of the actual sources of information mentioned by farmers across the four districts is given in Table 1.2. The communication methods included first hand experience while helping parents etc, talking with neighbours, training, farmer visits, discussions during village meetings, and farmer groups involved in research/extension activities.

The main sources of information were: parents and grandparents; extension; primary school; personal experience; Uyole ARI; neighbours and other farmers; and FFS. For women parents and grandparents are the main source of information. Extension is a more frequently mentioned source for men than women. In Iringa the recently introduced FFS approach was the second most frequent source of information mentioned, and those farmers interviewed were members of extension as opposed to farmer facilitated FFS, so although the farmers have clearly distinguished between the FFS approach and other extension approaches it is still extension officers who are currently the 'who' behind this source of information. Men still appear to access both these sources (FFS and extension) more than women. There were significant differences between districts and it must be remembered that this data was collected from only eight individuals per district and so is just an indicator of sources and not necessarily from a sub-sample of farmers representative of the Southern Highlands.

Table 1.2. Actual sources of information informing male and female farmers' pre and post-harvest maize management practices in four districts of the Southern Highlands of Tanzania

(% of responses)

	Ileje			**Iringa**			**Njombe**			**Mbarali**		
	M	F	All	M	F	All	M	F	All	M	F	All
Parents & grandparents	19	33	26	31	49	42	20	26	23	44	43	44
Extension	43	25	34	13	6	9	28	14	20	26	11	19
Primary school				0	2	1	18	15	17	10	11	10
Pers. experience	17	18	17	3	15	10	6	9	8	2	17	10
Uyole ARI							2	10	6	6	10	8
Neighbours/ farmers	4	2	3	9	11	11	18	15	17	0	4	2
FFS				28	4	14						
Ujamaa fields							2	10	6			
IRDTF	17	18	17									
Available techn.				3	11	8						
Self travel/ exchange				3	0	1	2	0	1			
MATI Igurusi										7	0	3
Friends										4	0	2
Stockists	0	5	3	0	2	1	3	0	1	0	4	2
Ilula FDC				6	0	3						
Introduced techn				3	0	1						
Reg. Comm. 1978							2	0	1			
Radio										1	0	0.4
Total Responses	**53**	**57**	**110**	**47**	**32**	**79**	**65**	**78**	**143**	**84**	**58**	**142**

M= male; F = female farmers

When the farmers' responses were disaggregated by pre and post-harvest activities, (Table 1.3) parents tended to be the most important source of post-harvest information followed by extension, except for those interviewed in Ileje district. Personal experience and information from easily accessible sources such as neighbours and other farmers was mentioned more for post-harvest than for pre-harvest practices. Stockists although a relatively unimportant source of information for these specific farmers, were more important in informing post-harvest as opposed to pre-harvest practices. This tended to be in relation to information about the application of storage grain protectants; the larger grain borer is a serious pest of stored grain in these areas and many farmers use synthetic grain protectants as a result. External interventions such as ARI Uyole, IRDTF, FFS, Ilula FDC, Ujamaa fields tend to be more important sources of information about pre as opposed to post-harvest activities. While in Ileje and Iringa districts extension was mentioned as a more important post-harvest than pre-harvest source of information, in Njombe and Mbarali the opposite was true.

The data was also disaggregated by farmer research group (CPP or FFS) membership, with the exception of Ileje where there were no farmer research groups. Parents were more likely to be cited as a source of information for non research group as opposed to research group members with the exception of Njombe district. ARI Uyole the founder of these CPP research groups was only mentioned by research group members and not mentioned at all by farmers in Iringa. This suggests that information from the research groups activities may not be spreading widely to other farmers within the chosen villages. In Mtandika village, Iringa FFS was a very important source of information for the FFS members but not mentioned by any non members. In all cases research group members mentioned a wider range of sources than non-group members.

Table 1.3. Actual sources of information informing farmers' pre and post-harvest maize management practices in four districts of the Southern Highlands of Tanzania (% of responses)

	Ileje			Iringa			Njombe			Mbarali		
	Pre harvest	Post harvest	All	Pre harvest	Post harvest	All	Pre harvest	Post harvest	All	Pre harvest	Post harvest	All
Parents & grandparents	27	25	26	46	33	42	20	29	23	44	43	44
Extension	33	35	34	2	22	9	22	16	20	19	16	19
Primary school				2	0	1	17	16	17	11	8	10
Pers. experience	13	25	17	10	11	10	6	10	8	8	13	10
Uyole ARI							9	2	6	9	5	8
Neighbours/ farmers	1	5	3	10	11	11	17	16	17	1	6	2
FFS				13	15	14						
Ujamaa fields							7	4	6			
IRDTF	23	8	17									
Available techn.				10	4	8						
Self travel/exchange				2	0	1	0	2	1			
MATI Igurusi										3	4	3
Friends										3	0	2
Stockists	3	3	3	0	4	1	0	4	1	1	4	2
Ilula FDC				4	0	3						
Introduced tech				2	0	1						
Reg. Comm. 1978							1	0	1			
Radio										0	1	0.4
Total Responses	**70**	**40**	**110**	**52**	**27**	**79**	**94**	**49**	**143**	**108**	**34**	**142**

The criteria farmers felt were important for their sources of maize management information and training are given in Table 1.4.

Table 1.4. Farmers views on important criteria for sources of information

• Trust	• Good results/ outcomes
• Expertise	• Use new technologies
• Easy to understand	• Be practical
• Incorporates modern knowledge	• Newness of the information
• Incorporates local knowledge	• Closeness to farmers
• Use of seminars & training	• Incorporates traditional knowledge
• Be creative/ inventive	• Uses adult education approaches
• Build on personal experience	• Demonstration plots
• Good linkages with farmers	• Confidence in the technology
• Frequent/ regular	• Level of education
• Easy to access	• Being shown by demonstration
• Allow discussion/ question asking	• Wider vision

When farmers then scored the different sources of information for each of these criteria it was noticeable that there was a significant difference between the actual sources of information that farmers were currently using to inform their maize management practices and their perceptions of which sources of information were important.

Parents, Primary Schools, Extension staff

actual importance is much greater than perceived

ARI Uyole, Stockists

perceived importance is much greater than actual

Farmers' strategies for improving each of the sources of information were captured and an example of those they suggested for improvement of ARI Uyole as a source of information are given in Table 1.5.

Table 1.5. Farmers' suggestions for how ARI Uyole could improve their performance as a source of information for maize management

• Use demonstrations and demonstration plots
• Ensure farmer research group members train others
• Train through seminars
• Participate in research of traditional knowledge (i.e. use of botanicals)
• Set up a seed shop at Igurusi village
• Produce maize varieties: tolerant to maize streak virus; resistant to drought, with short maturity period and big cobs
• Impart new knowledge and research findings to farmers (i.e. on botanicals)
• Strengthen and increase the frequency of communication between the researchers, farmers groups and extension staff
• Ensure research results are disseminated directly to the farmers
• Increase number of extension workers
• Improve training, transport, soil research

In summary the survey found that:

Farmers **want** sources of information with

high levels of access to external and probably new information

(e.g. ARI Uyole, stockists)

but in their absence are **utilising**

more easily accessible sources

(e.g. parents, neighbours, village extension staff)

Farmers' information, training and products needs in order to improve their maize management that were highlighted in the different districts during the validation survey are summarised in Table 1.6. Table 1.7 contains details of farmers' needs that had been identified previously through the parent project (R8220) and other sources. It is clear from these tables that the validation survey has validated and strengthened the details about those farmers' maize management needs which had been previously identified.

Table 1.6. Summary of farmers' current maize management information, training and product needs highlighted by the validation survey

	Njombe & Iringa districts	Mbarali district	Ileje district
Information needs	• Availability of inputs (when, where) • Safe use of agrochemicals • Which fertilisers to use in maize production • How to store maize properly • How to make compost • How to apply FYM properly • Successful marketing group strategies as examples • New maize varieties and their performance • Validated performance of botanical pesticides for field and storage pest control	• Scientific planting methods • Animal draught technology • Service providers to M&E their service to ensure their use	• Other indigenous knowledge • Access to information on improved maize management practices • Group strengthening • Feedback mechanisms between farmers and service providers
Training needs	• Type, rate of fertiliser to use and how to apply them • Farmer field schools so farmers learn to experiment to solve their own problems • Farmer group formation and/or strengthening • Draught animal use for planting & weeding • Farm level improved seed production • Field demonstrations of new input products • Understanding & using recommended application rates of agro-chemicals • Water management for irrigators • Inclusion of cultural maize management practices in the primary school curriculum • Post harvest technology • Preparation and use of botanicals pre & post harvest • Compost making • Weed technology	• Use of inorganic fertilisers • Understanding on the role of researchers in supporting FFS • Improvement of local knowledge • Interaction opportunities with those with high levels of expertise • Proper use of agrochemicals (type, rate, timing, deficiency symptoms) • Refresher training for extension staff • Pest management (diagnosis, management methods)	• Use of pesticides, fertilisers & seeds (type, rate, timing, deficiency symptoms) • Ox weeding • Accessing new knowledge
Product needs	• New maize varieties • Stalk borer control options/ products • Smaller packages of inputs so are affordable to try	• Timely supply of effective inputs • More ox-drawn equipment • Smaller packages of inputs so are affordable to try	• Improved seed availability • Timely supply of effective inputs • Smaller packages of inputs so are affordable to try

Table 1.7. Maize research outputs demanded by farmers in the Southern Highlands of Tanzania identified during project R8220 activities.

Examples of farmers demands	Source of evidence of demands
• Improved maize seed and other inputs in affordable sized packages to enable farmers to experiment with different products, • Information on new varieties, • Information to help understand the differences between hybrids, OPVs and landraces, • Information on how to improve farmers' own seed and training on seed management • Diagnosis and management options for insect and disease problems, • Information on optimal use of pre and post harvest pesticides (industrial & botanicals (incl. cultivation of botanical pesticides)), • Information on inorganic and organic methods of enhancing soil fertility, • Access to accurate market information and knowledge of improved marketing strategies. • Information on group organization and strengthening	*District Extn. reports; Agricultural Sector Programme Support (ASPS) – Seed Unit Reports; Maize Stakeholder Workshop Report (Stathers et al, 2004a); IPR Reports of ARI-Uyole; Market liberalisation and maize impact report, (Mussei et al, 2003); Marketing of improved maize seed, (Mbogollo et al., 2002); Situation Analysis Report, (Anon, 2003); SUA MSc thesis on Maize Seed Systems in the S. Highlands, (Nickson, 2004); Farmer seminar reports 2003/4 (Baruanni, 2004), Project R8220 M& E reports; REPOA, 2004; Radio Audience Research Report (SRS, 2004)*

Activity 1.3 Development and testing of existing and novel communication methods, pathways and tools addressing farmers' needs as validated in activity 1.2.

In response to the validation of farmers maize management information, training and product needs a strategy was developed by the field teams to address some of these needs, through: amending and further field testing of existing tools. A summarised version of the strategy for addressing both farmers and stockists needs is shown in Table 1.8 (it should be remembered that other stakeholders needs were also studied but that because of the projects logical framework design they are reported on in detail in the Research Activities under Output 2 of this report).

Table 1.8. Summarised strategy for addressing farmers (F) and stockists (S) maize management information, training and product needs

	Information		**Training**		**Products**		**What**	**How**
	F	S	F	S	F	S		
Leaflets	X	X	X				use of inputs varieties pre harvest post harvest Existing leaflets: (Matumizi, Kanuni, Maize Doctor, MSV, Storage, Safe use of pesticides)	Feedback from focus group stockists at stakeholder workshop Feedback from existing farmer groups (overlap between the information and training) Leaflets used as a source of information and used as training tools in the FFS
Posters	X	X					Use of inputs: Private/ public poster for varieties UH615 and UH6303 for farmers and stockists Pre & post-harvest management	
Demo and field days	X	X	X				Use of inputs, Varieties, Pre harvest post harvest management Variety demos in 4 districts (CPP)	Invite farmers and stockists to them. Stockist feedback at stakeholder workshop CPHP M&E exercise to coincide with the field days
Radio	X						Feedback on radio programmes that are going to be produced, post harvest programmes, e.g. storage, Marketing group success stories Varieties, Pre harvest post harvest management	Feedback from CPP and DADS groups

FFS			X				Use of inputs Discussion with FFS farmers on learning tools	ZRELO to check what priority areas are for the different FFS areas to identify the maize areas.
Exchange visits	X		X				Use of inputs Marketing success stories	Tool developed by PH Innovations project in Central Zone to be shared and used here too
Seed fairs					X		Varieties	Copy of the organisers report from the seed fair Evaluation interviews with farmers and other stakeholders, analysed data to feed into the stakeholders workshop for sharing, verification and further analysis
Directory of stake-holders							Contact details of stakeholders	ZRELO developing this. Feedback from focus group, stockists in 5 districts
Short course/ seminar & certification				X			Safe use of agro-inputs	Short course trainee feedback through an evaluation form Evaluation form to be prepared (strengths/ weaknesses and how to improve) and decision made on how it will be given out
Small packs						X	Existing small pack activities	Market research survey and FIPS
Primary school plots							Use of inputs Competition with children to develop materials/ ways to teach other children about maize production	

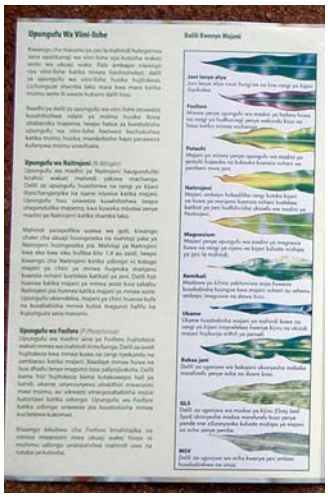
Due to the very short life span of the project, project partners selected a few of these communication pathways, methods and tools to work on with both farmers and stockists. Those worked on with farmers included:

1. Four Swahili maize management leaflets of which earlier drafts were developed during the parent R8220 project
   a) Kanuni za kilimo bora cha mahindi – Steps to better maize management
   b) Matumizi ya mbolea katika kilimo bora cha mahindi – Fertiliser use in improved maize farming
   c) Ugonjwa wa milia kwenye mahindi – Maize Streak Virus disease
   d) Kuwa daktari wa mahindi yako – Be your own maize doctor
2. An evaluation of three seed fairs
3. An evaluation of the farmer research group maize variety demonstration village trials and the farmer research group process
4. Preliminary stakeholders meeting on onion marketing to inform the development of a subsequent radio programme on marketing success stories

Maize management leaflets

Printed copies of three of these leaflets (1a-c above) had been developed, and during the validation survey in April 2005, 20 copies of each of three of them were distributed to each of the 10 villages visited. It was decided that in order to get meaningful comments for improvement of the leaflets the farmers needed to use them over a period of time (it was unfortunate that due to the project time frame they could not be

delivered to the farmers in Nov/Dec during the land preparation period). Feedback on ways of improving the leaflets was obtained from farmers and extensionists during the November 2005 stakeholder workshop where additional copies of the leaflets were also distributed to the wide range of stakeholders attending the workshop.



The Be Your Own Maize Doctor leaflet which aims to help readers (stockists, extensionists, NGO staff, farmers) differentiate and understand the issues of nutrient deficiency and disease symptoms in maize crops using detailed leaf, cob, root and whole plant drawings, was finalised in October and printed copies distributed at the stakeholder workshop. Draft hard copies were discussed with stockists during the validation survey in April 2005 (see Activity 2.2 for details).

Seed fair evaluations

A survey was carried out during three seed fairs in the Southern Highlands of Tanzania from August –September 2005. The intention of the survey was to learn more about how farmers and other stakeholders learn and how they would like to learn in order to help improve service provision of information, training and products to these different stakeholder groups. The findings of this survey will be combined with findings from work with a range of stakeholder groups evaluating: leaflets; radio programmes; product demand from stockists; varieties; and where farmers' actual practices were learnt from.

Participants attending the seed fair were stopped randomly (see Table 1.9) and asked three questions:

1. What were the three most IMPORTANT things you learnt or got at the seed fair?
2. What did you want to learn about?
3. How could the seed fair have been improved?

Table 1.9. Details of the stakeholder groups of seed fair evaluation respondents

Stakeholder group	Number of respondents at each seed fair location			Total number of respondents
	Mbeya	Shinji	Malinzanga	
Farmers – male	15	21	38	**74**
Farmers – female	7	19	15	**41**
Researchers & technicians (ARI Uyole, TACRI, MBIMBA, MAFS Irrigation)	11	0	1	**12**
Extensionists (DALDOs, DEO, Ward & Village extension officers from different districts)	6	2	1	**9**
Trainers (teachers, ward education coordinator, MATI Uyole & Igurusi tutors)	3	2	2	**7**
Local Government (councillor, village chairman, village executive officer)	0	1	2	**3**
NGO, CBO, FBO staff (Caritas, Concern, MIICO, IRDTF, ADP Mbozi, MVIWATA, Pastors)	8	3	1	**12**
Others (Local brewer, traditional seed grower, traders, caterer)	3	1	1	**5**
Journalist	0	0	1	**1**
	53	**49**	**62**	**164**

The responses to these questions were grouped into ten categories based on their general themes (i.e. crops, seed, networking and technology transfer, pest and disease management, soil fertility management, post harvest, processing, irrigation, livestock and other). The number of responses in each of these categories were summarised into bar charts in the seed fair evaluation report (Stathers et al, 2006b) and analysed together with the detailed statements. This data was shared with participants at the November 2005 maize innovation

system stakeholder workshop who digested, analysed and presented highlights from it during a group work session. A summary of the seed fair evaluation findings is given below.

In brief the most important things the male and female farmers at Malinzanga, Mbeya and Shinji learnt about from the seed fair were: crops; seed; pest and disease management; and post harvest and processing. While researchers, technicians, NGOs, CBOs, trainers and local government learnt mainly about networking and technology transfer. Extensionists learnt about soil fertility management, crops and networking and technology transfer. It was clear from the data that the exhibits differed between the three fairs, whilst crops and seed were covered at all fairs, soil fertility management featured more at the Shinji and Mbeya fairs, processing featured more at Malinzanga, and livestock featuring more at the Mbeya seed fair. A very wide range of different crops were included in the fairs (avocado, beans, banana, cassava, groundnut, finger millet, wild fruits, horticultural crops, leeks, livingstone potato, maize, mushrooms, nakukunga (a traditional famine crop), onions, peas, potato, pumpkins, rice, soya, sesame, sunflower, sorghum, sweet potato, taro, watermelon, wheat), and many different varieties were exhibited. The interest in seed came from the different perspectives of: seed production (sorting, selection, soil testing for good production); seed biodiversity/ characteristics (traditional and researcher bred, range of sizes, early maturing, drought tolerance, insect pest tolerant, agro-ecological specificity, seed ownership, risk spreading through diverse seed use); seed storage (traditional methods, storage insect pest resistance of traditional seeds). Much of the interest in pest and disease management featured on the use of botanicals as pre and post harvest insecticides, varietal resistance, pest and disease identification and management. The interest in technology transfer and networking included: the recognition of indigenous knowledge; exchange of ideas and learning; collaboration; farmers as competent experts; role of profitability; training methods; farmers groups and networks; stakeholder mix and attendance; and the forms of information available.

In general the categories that the various stakeholder groups mentioned as having learnt about were the same as the categories they had wanted to learn about. In terms of the seed category farmers had wanted to learn about: biodiversity (seeing different types of seed, traditional seeds especially rare/ disappearing ones, and seed from new or improved crop varieties); seed production (a demonstration of seed productions seed harvesting methods, improved seed selection, use of cover crops in seed production, seed treatment for pest control, seed prices and availability information). One extensionist had additionally wanted to learn about traditional seeds suited to the environment s/he was working in.

Suggestions for ways in which the seed fair could have been improved were classified into the same general ten categories described above with an additional category focusing on organisational aspects which captured most of the non farmers' comments. Within the organisation category there were suggestions related to the: content (widening the range of exhibits, focusing on the themes more, schedule with each day focusing on one theme, ensuring plenty of the exhibits have items for sale, more coordination between similar exhibits, organising a guided tour for farmers, better language/ translation arrangements for those vernacular only (non Swahili) speakers, reduce the non-agricultural activities which distract farmers); more demonstrations/ demonstration plots (to help those unfamiliar with the crop or wanting to learn a skill e.g. how women use oxen ploughs); training (accompanying seminars); more prior publicity; more advanced preparation; wider stakeholder representation (particularly more farmers, individuals from further away as visitors and exhibitors); frequency (organise the seed fairs annually); protocol (wearing of uniforms by farmer groups, improving the calmness); layout (reduce pavilion congestion, ensure closeness of related exhibits, locate food and drink far from exhibits); lengthen (increase the length of the show); funding (government and district councils to support attendance of more farmers, charge an entrance fee so that it can be used to improve the grounds); management (committed committee to oversee the seed fair); costs (food prices too high); grounds (increase size and improve conditions of the pavilions, reduce dust, locate the show ground nearer to more villages (Shinji), increased irrigation water availability); services (include an information centre, internet, stationery & p/copying etc).

In terms of technology transfer and networking improvements were suggested for: collaboration (making the collaboration between farmers and researchers functional, visiting

of farmers by researchers & extensionists, improving feedback to farmers on research findings, research into improving traditional crops, research and extension should make more use of the seed fairs for technology dissemination/ promotion); exchange (seed exchange between farmers, complement fair with farmer exchange visits); content (prior identification of farmers needs to improve targeting of the fair); sales opportunities (seed, oil extraction machines, botanical mixtures); seed bank (should be initiated within the village); training (on grain storage, from researchers & extensionists, targeting youth); information (materials, leaflets should be available at reasonable prices, leaflets should be more pictorial and colourful, information materials should be sold to ensure that those who take them value them, enhance use of videos); demonstrations (exhibition should include demonstration plots); tour (conduct a tour of the show so farmers see new seeds); farmer participation (increase exhibition by farmers); widen stakeholder representation (research institutions from other zones should also participate); communications (information centre, internet should be available at the show grounds).

In terms of seed, suggested improvements included: free samples for testing; seed exchange opportunities between farmers; seed bank initiation; training (seed production, seed selection, fruit tree grafting; techniques for improving seed quality); information on varieties (suitability of various varieties for different agro-ecological areas); collaboration (closer collaboration between farmers and researchers for seed breeding work); requests for displays of more seeds from various crops (maize, sunflower, pumpkin, sorghum, cassava, sweetpotato, vegetables); and sales opportunities.

Farmer research group evaluation

In November 2002, a research project R8220 (funded by the DFID Crop Protection Programme (CPP) and GOT) began aiming to improve farmers' access to and management of disease-resistant maize seed/cultivars in the Southern Highlands. The specific objectives were to:

- Identify disease resistant maize varieties appropriate to farmers' needs
- Develop and promote approaches for improving access to and management of quality seed (traditional and modern types) by farmers
- Facilitate the development of sustainable systems for quality seed supply

In the early stages of the CPP project, farmer groups were established in 4 villages in each of Mbozi, Mbarali, Iringa and Njombe districts. Working with these farmers groups, maize varieties and lines have been evaluated and promoted on 80 farmers' fields. Training needs have been identified with farmers and other stakeholders across the four districts. Farmers expressed demand for information/ training at all stages of the crop cycle. With regard to seed management, demand related to modern (e.g., information on new varieties) and local varieties (e.g. understanding differences between hybrids, OPVs and landraces; how to improve farmers' own seed). Insect and disease management training needs included diagnosis and management information on using both industrial pesticides and botanicals. Soil management featured highly and there was a high demand for information on both inorganic and organic methods of enhancing fertility. Training tools were developed to address diagnosis of disease and soil deficiency symptoms, MSV information, seed management and soil fertility management.

This evaluation planned to assess the communication approaches and tools which were developed, by focusing on the farmer research groups. The specific aims of the evaluation were to:

1) Identify and describe the types of people (e.g. gender, age, wealth) reached by project activities and how representative they are of the wider community.
2) Indicate the extent to which the process has responded to the goals/ needs of different types of farmers
3) Identify and evaluate in detail with a range of farmers:
   a. New information or understanding gained through project activities which can help farmers achieve their goals

b. Which approaches and tools were useful in facilitating access to this new information or understanding
c. Whether or not farmers are using this new information or understanding (If Yes, how and if No, why not).
d. The outcomes (positive or negative) of using this new information or knowledge

4) Facilitate farmer group members and, to the extent possible, other stakeholders (eg Village extension officers) to assess the research process and make suggestions as to how this may be improved in the future.

The evaluation was sub-contracted to a small team of three (Ahaz Mussei, socio-economist ARI Uyole), Mr Mangasin (M&E expert, IFAD ASMDP), Elimpaa Kiranga (ZRELO, Southern Highlands) who conducted the exercise between 29th October – 5th November 2005 in Mbarali and Njombe districts with two farmer research groups in each district (Majenje & Ihahi, Mbarali; Mtwango & Utalingoro, Njombe) who were viewed as the most and least successful groups respectively. The key findings were presented at the Nov 2005 Maize Innovation System Stakeholders Workshop and a full report was prepared (Kiranga et al, 2005) a summary of which can be found below.

Type of people reached by the project activities in the villages
Farmers groups – Farmer selection had been done by the district agricultural extension staff based on the individual farmer's willingness to participate in the project, instead of facilitating farmers with common interests and bonds to form groups.

Gender – The research group farmers are male dominated on a ratio of 3:2.

Age - The majority of the research group members were from 40-70 years (70%) with the remaining being between 30-40 years.

Education - The majority of the research farmers (80%) had completed primary school.

Wealth – The research group members represented the medium wealth class of the community.

Agricultural trainers - In the villages visited, only two of the four had resident agricultural extension staff. Village extension officers were taken on board during project implementation as the link between research and farmers. In the process of implementation, they reported that they lacked well-defined roles.

Stockists/Agricultural input distributors - In the villages visited the number of stockists was limited. For instance at Ihahi and Utalingoro the nearest stockists are located at Chimala (12kms) and Njombe (14kms) respectively. In Majenje there were two stockists who had to serve 620 households equivalent to a ratio of 1:310, while Mtwango had four stockists serving 1164 households a ratio is 1:291.

Process and response to farmers' needs
In the visited villages all research group members have been trained on the required information regarding seed management, insect and disease management and well as soil fertility management. The required knowledge at all stages of crop cycle has been availed to farmers by the project through organised training sessions and field visits. To supplement this training, reference materials were provided in the form of leaflets and handouts (Kanuni za kilimo bora cha mahindi, Ugonjwa wa milia wa mahindi, Matumizi ya Mbolea katika Kilimo cha Mahindi, and Kuwa daktari wa mahindi yako). However, the process had limited provision for participatory monitoring and evaluation (PM&E) for the different stakeholders involved in implementing the project activities.

Identification of new information gained through the project
The discussions with farmers in the villages visited identified their understanding of information gained through project activities which can help them achieve their goals. The approaches and tools have been useful in facilitating access to and use of the new

information; and the outcomes are as shown in Table 1.10. Availability of improved maize seed was still a major need in the four villages.

Table 1.10: New information and approaches/ tools used to achieve goals of farmer research group members in Njombe and Mbarali districts

Village, District	New information/ understanding	Approaches/ tools used to facilitate access	Use of information	Outcomes
Majenje & Ihahi, Mbarali	Seed management	Demo plots, training seminar, exchange visits, leaflets, handout	Plan to produce seeds– QDS	Increase seed demand in village
	Plant spacing	Practical planting in demo plots	Apply spacing of 75x30cm in own fields	Increased yield per unit area
	Post harvest technology	Training seminar, measure moisture content, use of insecticides, farm visits	Apply in maize harvest and storage	Reduced incidences of post harvest losses
Mtwango, Njombe	Quality maize seed	Demo plots, training seminar, exchange visit, study visit, handouts	Use quality seeds in own fields	High demand for quality seeds which exceeds supply
	Use of fertiliser	Demo plots, leaflets, training seminars	Apply at lower rates	Recommended rates not used due to high prices
	Planting methods	Demo plots, leaflets, seminars	Use recommended spacing	Increased yields
Utalingoro, Njombe	Plant spacing	Demo plots, training seminars, handouts, leaflets, study visit	Use recommended spacing	Low yields due to poor soils
	Disease diagnosis	Demo plots, leaflets, training seminar	Use cultural control measures	Able to diagnose disease
	Understanding of hybrid seeds	Demo plots, training seminar	Have knowledge	Limited application of knowledge

Farmers' assessment and suggestions on research process

A Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis was used to facilitate farmers in assessing the research process and suggest areas that need improvement. Farmers' opinion and comments from the four study villages are described in Table 1.11.

Table 1.11. SWOT analysis of the farmer research group process in four villages in the Southern Highlands.

Village, District	Strengths	Weaknesses	Opportunities	Threats
Majenje, Mbarali	• Commitment, solidarity and good relationship between research farmers • Availability of trainers (Extn and Research) • Family members involved in project activities • Existence of collaboration among partners • Stockists and input distributors available in the village	• Poor attendance of some members for project activities • Group do not have binding rules • Promotion strategy not well defined	• Existence of irrigation scheme • Recognised by the village government • Can produce QDS • Other farmers have shown interest to join • Access to market centres (Mbeya, Iringa and Songea) • Access to loans through their SACCOS • Available stockists	• Thieves of QDS
Ihahi, Mbarali	• Existence of research farmers • Solidarity and good relationships among research farmers	• Don't have an extension officer • No stockists and input distributors • Group has no legal status	• Existence of irrigation scheme • Recognised by the village government • Have skills and expertise to produce QDS • Other farmers have shown interest to join	• Rainfall changes can affect irrigation scheme • Privatisation of irrigatable Kapunga farm
Mtwango, Njombe	• Have the knowledge on maize production • Have enough land to grow maize • Existence of research farmers • Recognised by the village government • Solidarity and good relationships amongst research farmers • Availability of trainers (Extn and Research) • Existence of collaboration among partners • Stockists and input distributors available in the village	• No land for group demonstration plot • Long-term plan not shared with farmers	• Existence of stockists and input suppliers in the village • Recognised by the village government • Have knowledge and experience that can facilitate QDS production • Other farmers have shown interest in joining • Research farmers can be stockists • Existence of a SACCOS in the village	• Fake seeds and inputs • Changes in climate may affect the rainfall pattern • Unavailability of promoted seeds
Utalingoro, Njombe	• Existence of research farmers • Solidarity and good relationships among research farmers	• Don't have an extension officer • No stockists and input distributors • Lack confidence to demand information on soil test results	• Existing shop owners can be encouraged to deal with farm inputs • Recognised by the village government • Other farmers have shown interest in joining	• Poor soils in relation to maize production • Rainfall pattern changes • Maize receive second priority in term of income earning crops

Conclusions and recommendations

The project has made significant achievements in facilitating farmers to test maize varieties revealing an overwhelming preference by farmers for UH6303 which they believe will enable them improve their livelihoods. Approaches and tools used by the project have facilitated the farmer research groups to access new information on various aspects of maize production and seed management. As a result of the awareness created, demand for quality seed has increased faster than available supply. For instance at Mtwango village in Njombe district, their requirement for the coming 2005/2006 season is ~1.5 tons of UH6303 against the 500 kg promised through Matanana farm. It was noted that aspects of economic analysis received

little attention during the activities, and given the income earning opportunities of this crop, it would be an area worth investing more farmer training resources in.

- It is recommended that a more participatory research group approach such as FFS is adopted in future, to strengthen farmers' field and management skills through a more discovery learning based approach, this would also help in expansion to other areas as farmer graduates become trainers.
- The research process has not adequately responded to farmers' demands for quality seeds. In the case of villages in Mbarali district, further efforts are needed to support farmer seed production or on-farm multiplication for QDS.
- In Njombe there is a high preference for seeds which are tested and produced in the local environment, efforts should be made to enhance certified seed production through formalised public private partnerships so farmers' can access the seeds of their choice.
- A wider range of tools could be used in future to help impart maize management information to participating and non-participating farmer research group members.
- The learning process and access to information could be enhanced through a more effective feedback mechanism. Participatory planning, implementation and monitoring and evaluation should be adopted in the research process.

Onion marketing/ radio programme

Onion marketing was identified as an issue cross-cutting the S. Highlands and the Central Zone of Tanzania. A marketing survey on onions had been conducted in Singida under a CPP funded project (R 8428) and it was decided to collaborate with this project and DAI PESA (USAID funded programme aiming to strengthen small and medium scale enterprises) to hold a stakeholder workshop in Morogoro in September 2005. The aim of the workshop was to share experiences and identify ways to improve onion marketing systems. Representative farmers from Mbarali district (farmer research group members) and Iringa participated together with farmers from Singida. Other key stakeholders included market traders, government regulators, extensionists and researchers. Following the workshop, farmers visited the main market in Dar es Salaam (Kariakoo) for further discussions with traders and others. This has provided the detailed ground work for a number of radio programmes. It had been anticipated that a radio programme airing success stories of onion growers would be developed in collaboration between the ZCO Central Zone and ZRELO for the SHZ and would then be aired through local radio. From this project's perspective, it had been intended that lessons would be learnt through feedback from farmers on how the radio disseminated information would benefit onion growers. It was envisaged that the onion based radio programme would be adapted to the maize marketing situation in the SHZ. Unfortunately the local radio for the SHZ is not yet operational and hence the radio programme as anticipated had not been prepared. However, the radio programmes are still planned to go ahead, although the opportunities for lesson learning will not be there for this project.

Output 2. Capacity, effectiveness and morale of government and NGO agricultural trainers, and stockists and distributors of agricultural inputs improved as a result of increasing their understanding of the issues and products they deal with and their access to relevant demand-driven information.

Activity 2.1. Validation of information and communication needs of service providers.

During the inception workshop in February 2005, stakeholder groups of: stockists; public sector researchers; public sector trainers; public sector extensionists; seed companies; NGOs; and other researchers described how they currently access maize information, training and products using an analytical framework of what, who, how, scale, strengths, weaknesses/ gaps and ways of improving. This information is summarised in the tables below.

Stockists

A more in depth analysis of stockists current access to information, training and products was conducted during the validation survey in five districts in April 2005 (Table 2.1). It was decided to focus on stockists, as it was felt that public sector extension staff were often the focus of needs assessments while the current practices and needs of stockists who are also key players in the maize innovation system were not as well understood. The stockists were also given eight maize crop management leaflets and asked to look through them and comment on them and rank them in terms of their perceived importance.

Table 2.1. Stockists' perspective on what information, training and products they are currently receiving and how they could be improved (summarised from four districts**).**

	What?	How could it be improved?
Information	Product -availability -characteristics -price -performance	• Regular visits from supply companies • Timely delivery of information • Visit farmers fields to see performance • Training seminars and leaflets on how to use products • Info. on pests & diseases for distribution to clients
Training	Ranged from: -none -on the job training, -reading leaflets and labels, -short seminars, -certificate and diploma courses	• Training on agricultural products and agriculture; accounts and computing; safe use of agro-inputs; regulatory issues • Shop keeper not owner should attend the training • More transparent training by product manufacturers • Provision of booklets and leaflets • Strengthen the information on product labels
Products	Seed Agrochemicals Fertilisers Farm implements	• Make appropriate maize varieties available • Use appropriate package sizes and materials • More timely arrival of inputs, with no imminent expiry • Posters and leaflets should be supplied with products • Demonstrations • Restrict cross border trade of subsidised fertilisers • Improve access to capital through loans • Enforce quality control of pesticides

Information

The main types of information that were reported were about agricultural products e.g. new products coming on the market and their characteristics. This was provided mainly by supply companies. A number of stockists noted the importance of feedback from their customers (both in the form of complaints and recommendations) as a source of information about product performance. Personal experience through testing of seed and other products in their own fields was also mentioned. The Government, Parliament, Regional and District Authorities, and TFC were also mentioned with regard to fertilizers. Mass media (e.g. radio,

newspapers) were also reported as a source of information about new products. The government extension service and research were mentioned by some stockists (who were owned by government extension staff) as providing information about the suitability of varieties for a particular area. In Iringa, Tropical Pesticide Research Institute (TPRI) was mentioned as a source of information about quality pesticides. Strengths included the reliability of the information received from farmers on their needs. Weaknesses included: supply companies not visiting stockists or not making any follow up once they had visited them, the long distance from information sources, delayed/ late information and a lack of information about particular topics e.g. soils. In Ileje district stockists mentioned also receiving information on crop management aspects like time of planting, pest management, soil fertility as well as harvesting, storage and markets. This information was said to be delivered by IRDTF, SASAKAWA and extension agents through seminars, visiting demonstrations and the radio.

Suggested improvements included:

- information being provided earlier,
- improving communication between suppliers and consumers,
- frequent field visits by suppliers,
- accompanying farmers to their fields to see performance of products,
- the provision of written materials (e.g. leaflets) that they could use and distribute to their customers,
- improved means of communication (e.g. fax and email),
- training seminars for stockists particularly on which fertilisers to use where and how, they also wanted to know more about maize streak virus, UH615 seed,
- improved government extension system and linkages with them,
- joint meetings between government officials, extension staff and stockists,
- more frequent inspection of stockists shops for fake products
- increased field monitoring by farmers to enhance their early detection of pests and diseases,
- demonstrations,
- greater promotion of their technologies by ARI Uyole (e.g. newly released varieties)
- radio (e.g. Country FM) to be used in promoting new products.

Training

The amount of training that interviewees had received varied considerably. This ranged from none to on-the-job training from other staff, to short seminars to formal certificate and diploma courses. The content and source of the training similarly varied from none to training on products (e.g. seed, agro-chemical) and draught animal technology from: supply companies; government institutions, e.g. TPRI; IRDTF; TFA; extension workers to short and long courses on agriculture and/ or livestock from MATIs, ARIs and agricultural colleges. In addition to seminars, the stockists mentioned learning though reading leaflets, product labels and the 'Ukulima wa Kisasa/ Modern Farming' bulletin as well as by informally interacting with extension agents and farmers. Weaknesses reported included: limited education level, inadequate number of seminars and participants, product labels not being detailed enough, farmers not seeking information from extension agents on use of pesticides, limited knowledge of accounts, limited knowledge of agricultural products and language. There was a general feeling that training not only increased staff morale and confidence, but also increased sales as customers liked purchasing from shops where they got useful information as well as products. However training was costly, particularly when it involved a one-month stay away and it was suggested that trainings should be held in each zone. There was a worry that trainings run by manufacturers were not transparent enough.

Suggested improvements included:

- the shopkeeper, not the owner should attend training courses,
- stockists should provide funding for training their workers,
- trainings should be run in each zone to keep costs associated with travel and subsistence down,
- training on the safe use of agro-inputs (seed, fertiliser and pesticides including type, content, rates of application of industrial fertilizers),
- training on issues related to regulatory bodies such as TPRI, MAFS

- the government should collaborate with input suppliers to train stockists and their workers,
- seminars and workshops should be conducted more frequently to capture information about new products,
- training in agricultural products,
- training in agriculture,
- training in business entrepreneurship, accounts and computing,
- provision of books and leaflets

Products

The main products stocked for maize management were seed, insecticides (pre and post-harvest), fungicides, fertilisers and hand hoes. Most products were supplied by trading companies, ARI Uyole or other stockists often based at larger centres (e.g. Ileje stockists are typically supplied by stockists from Vwawa, Tunduma and Mbeya), usually on a cash basis. In Ileje seed was also being supplied by small business operators who travelled to Malawi. Many of the stockists interviewed were bulk breaking their fertiliser and selling whatever amounts the customer required using scales, one stockist had already pre-packed fertiliser into 500g and 1kg packs. Another stockist was also bulk breaking 2kg bags of seed and selling amounts required by the customer.

Weaknesses reported included: the inappropriateness of some products, high prices of agro-chemicals, unstable prices and quality of implements such as ploughs, delayed and unpredictable supply, suppliers sending products that were close to expiring, availability of fake products in the market, poor milling quality and storage pest susceptibility of some varieties and lack of credit.

Suggested improvements included:

- making appropriate varieties available (short maturing and drought resistant)
- appropriate pack sizes and improved packaging material (e.g. seed packaging not easily destroyed by rodents and that didn't split easily)
- timely arrival and availability of inputs
- bigger agents making inputs available on credit
- improved access to capital by stockists through availability of soft loans
- better contractual agreements surrounding the subsidised fertiliser
- posters and leaflets should be made available with products to indicate quality and use,
- promotion – representatives/ agents of the input suppliers should promote their new products by using posters and visits
- transport of inputs should be facilitated, and stockists could reduce costs by jointly transporting products
- establishment of demonstrations, input suppliers, stockists and public extension staff should collaboratively conduct field tests of new products
- sale of inputs within villages
- restriction of cross border trade of subsidised fertiliser
- availability of dust formulations of storage pesticides
- enforcement of quality control measures of pesticides, inspectors should make frequent visits

There is clearly a demand from stockists for better access to information, training and products. While stockists were not mentioned as an actual important current source of information for farmers during the validation survey, they are clearly an important source of products, and are perceived by farmers as individuals who might have access to new information. For those farmers who do use the stockists, there is potential to build the capacity of owners and their employees and enhance their ability to respond to farmers' needs. Monitoring and evaluating the outcome of such would provide valuable insights for policy and future interventions.

Stockists are very aware that increased knowledge about a range of maize problems faced by farmers makes them more attractive to customers. All of those visited displayed a keen interest in being better able to access agricultural information and training and to receiving pre packaged information (such as leaflets) on a range of problems faced by farmers even including those not related to products that they sell, so they can build stronger customer

relations through offering potential solutions to farmers wide range of problems. Clearly there is an important relationship between customers' feedback on product, stock ordering and sales and all the stockists we spoke to mentioned how important farmers' information on the performance of different products was to their business strategies. Many of the stockists are also farmers and therefore general maize management information can also be of interest for personal reasons. There is clearly farmer demand for access to small quantities of products either to enable them to test them or because of cash flow issues. Many stockists are responding to this by bulk breaking fertiliser and sometimes seed (see Stockists survey findings in Activity 2.2). Some of those we spoke to said they felt smaller packs would only sell if they were sold at the same unit price as when the product was bulk broken. Stockists were not overly worried by issues of trust and product quality related to bulk breaking.

Stockists preliminary evaluation of maize crop management leaflets

Stockists were able to rank the leaflets on the basis of how useful they found them as stockists. The top three for Mbarali and Ileje districts for instance were *Kanuni bora za kilimo cha mahindi (Steps to better maize management), Matumizi ya mbolea (Fertiliser use) and Hifadhi bora ya nafaka (Improved post-harvest management)* for the former *and Kuwa daktari wa mahindi (Be your own maize doctor)* for the latter district. The leaflets were then left with the stockists for them to use over time to gain a more realistic feel of ways in which the leaflets could be improved (the results of which are described in Activity 2.2).

Table 2.2. Public Sector Researchers' perspective on maize information, training and products they can access and how it could be improved

	What?	How could it be improved?
Information	Outbreaks of pests & diseases Soil related problems Crop quality e.g. taste, milling, yield	• Training • Establish formal information • Strengthen Research – Farmer – Extension linkages e.g. BMWs
Training	Farming systems approach Proposal writing Computer skills	• Make more systematic arrangements • Allocate adequate time • Improve facilities
Products	Scientific equipment Inputs (seed, fertilisers, pesticides) Computers	• Minimise government bureaucracy • Improve communication between researchers and dealers or companies

Table 2.3. NGO staffs' perspective on maize information, training and products they can access and how it could be improved

	What?	How could it be improved?
Information	Prices of maize products Availability of adaptable vars. Quality parameters Disasters Infrastructure needs	• Production of seed should be in a free market • Media should adhere to communities timeframes • Uyole should adopt Participatory Research Action trials • Educational materials • Documenting experiences and practices • Practice participatory infrastructure management
Training	Agronomic practices Promotional strategies Technical advisory services Techniques of seed selection, multiplication and storage	• Publicise user friendly education materials • Constant reflection/ review • Use of multi disciplinary approach
Products	Adaptable varieties	• Conduct PRA

Table 2.4. Public sector extensionists' perspective on maize information, training and products they can access and how it could be improved

	What?	How could it be improved?
Information	Use of improved seed Application of improved cultural practices Proper storage practices Group formation & strengthening	• Adequate funding • Advocacy of FFS • Farmer trainers • Use of publication materials
Training	Importance of using imp. seed Improved cultural practices Proper storage practices Strengthening of existing groups Establishment of cereal banks	• Adequate funding • Use of publication materials
Products		

Table 2.5. Seed companies' perspective on maize information, training and products they can access and how it could be improved

	What?	How could it be improved?
Information	New varieties Chemicals Product performance Seed quality	• Improving communication by both parties • By formalising the systems
Training		
Products	Foundation seed	• System should be formalised and strengthened

Table 2.6. Public sector trainers' perspective on maize information, training and products they can access and how it could be improved

	What?	How could it be improved?
Information	Maize hybrid seed Spacing, fertiliser application, pest control, harvesting, storing, dressing Land preparation	• More information on the advantages of the variety compared with other varieties • Conduct agricultural shows more frequently • Info. on each topic could be given on a separate leaflet • Include use of oxen and tractors in practicals
Training	Nothing since 1988 degrees in Russia	• Study using your own language • Improve facilitators training methodology
Products	Seeds Implements (planters) Chemicals	• Government should provide more funds • Government should reduce bureaucracy

Professional morale

During the inception workshop participants were asked to think about their professional morale now and five years ago, and to score it between 1 and 100 (with 1 = very low morale and 100 = very high morale). They were also asked to give reasons for the score they had given themselves now, and then if there was a difference between the score they gave their morale now and five years ago to explain what the reasons were that influenced this change. Participants did this exercise anonymously and independently, and on the sheet indicated which stakeholder group they belonged to. Each participant also stuck their morale scores on the professional morale barometer (see Figure 2.1). In general professional morale amongst all workshop participants appeared to be higher now than five years ago (see Figure 2.2)). The results of the scores and a preliminary grouping of the factors influencing morale was made (see table 2.7). Within this small group of participants, reasons relating to funding, salary/ other incentives and recognition/ self development were the most frequently reported. However, access to training and, to a lesser extent, information and products were also of some relevance to a number of participants. The information that we have collated could be used to plan a follow-up exercise and/ or a wider survey of stakeholders with an interest in agricultural service provision.

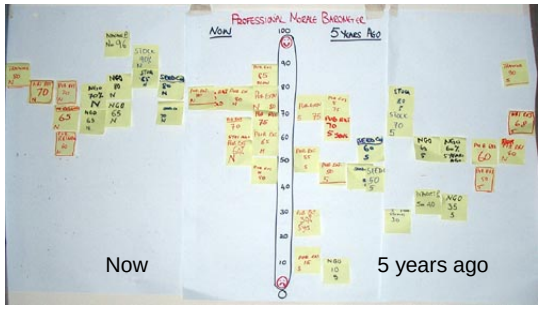


Fig 2.1. Professional morale barometer

Figure 2.2 Changes in different stakeholder groups professional morale between now and 5 years ago

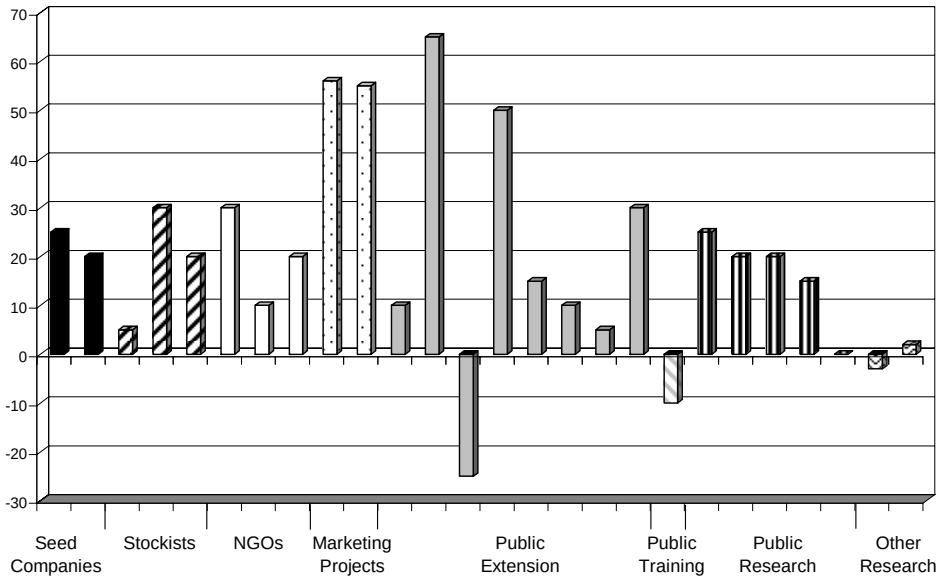


Table 2.7. Summary of reasons for change in professional morale between five years ago and now: number of stakeholders reporting

Stakeholder group	No.	Mean score 5 years ago	Mean score now	Access to information	Access to training	Access to products	Organization/ management	Funding	Salary & other incentives	Recognition and self-development	Interaction/ relationships with others	Other
Seed company	2	55.0	77.5	1	1	0	2	1	1	2	0	0
Stockists	3	63.3	81.7	2	2	1	0	0	1	1	1	1
NGOs	3	51.7	71.7	2	1	1	0	0	0	3	3	2
Public Extension	8	53.1	73.1	0	4	2	2	5	3	1	2	4
Marketing projects	2	25.0	80.5	0	1	0	1	1	0	1	0	0
Public training	1	90	80	0	0	0	0	0	1	1	0	0
Public research	5	48.0	64	1	1	1	1	4	3	0	0	0
Other research	2	68.0	67.5	0	0	0	2	2	2	2	2	1
All	**26**	**-**	**-**	**6**	**10**	**5**	**8**	**13**	**11**	**11**	**8**	**8**

Activity 2.2. Development and testing of communications tools/ methods and pathways for service providers.

This activity was done in combination with Activity 1.3 following the analysis of the information collected during the validation survey and the subsequent strategy (see Table 1.8) developed to address some of the validated farmers and stockists maize information, training and product needs.

Maize management leaflets

Copies of the four main maize management leaflets (see Activity 1.3 for titles) were given to stockists in April during the validation survey in order to learn about their information requirements and to get their comments on how to improve the leaflets.. Stockists were able to rank the maize management leaflets on the basis of how useful they found them as stockists. The top two leaflets for Mbarali, Ileje and Njombe districts were Kanuni bora za kilimo cha mahindi (Steps to better maize management) and Matumizi ya mbolea (Fertiliser use). These choices were followed by Hifadhi bora ya nafaka (Improved post-harvest management) for Mbarali and Kuwa daktari wa mahindi (Be your own maize doctor) for Ileje and Njombe districts. The leaflets were then left with the stockists for them to use over time to gain a more realistic feel of ways in which the leaflets could be improved.

Stockists' survey

Background **-** In Tanzania, in a recent household survey (REPOA, 2004) input prices (86 % of households), timely availability of inputs (70%) and appropriateness/quality of inputs (70%) were considered a problem by respondents. An article in the Economist (21/8/04) entitled 'Profits and Poverty' argued the case for big business to be more entrepreneurial and to re-engineer products to reflect the economics at the 'Bottom of the Pyramid' including: small unit packages, low margin per unit, high volume. The validation survey (Activity 1.2 and 2.1) indicated that some stockists were informally re-packaging inputs or bulk breaking and selling smaller quantities e.g. seed by the teaspoon. In order to gain a clearer picture of the situation, a survey took place to quantify the extent to which stockists were making available inputs in small quantities.

Method **-** In October 2005 a 3 person team from ARI Uyole and FIPS Africa carried out a survey of stockists in the project area of the Southern Highlands. A total of 25 stockists were interviewed in the following districts: Iringa (4 stockists), Njombe (8 stockists), Mbarali (5 stockists) and Mbozi (8 stockists). Names and some contact details of stockists were available from the Maize Seed Stakeholder consultation survey report (Lamboll & Hella, 2004), the Validation Survey draft report and the ZRELO's list of stockists. One day was spent in each district. Detailed information on different types of inputs were recorded on a data collection form.

Findings **-** The tables below provide summary information from the survey data.

Fertiliser - The proportion of stockists selling different types of fertiliser varied from 64% (DAP) to 20% (NPK) of the stockists interviewed (Table 2.8). In the case of all fertiliser types the standard pack size provided by manufacturers was 50kg. With the exception of NPK, at least 75% of those stockists selling fertilisers carried out some form of re-packaging / 'bulk breaking'. This may include fertiliser which had been re-packaged by stockists themselves and inputs sold 'loose' from manufacturers' packets. At least some stockists were selling all fertiliser types in as small as 1 kg units and in the case of four fertiliser types at least some stockists were selling in 0.5 kg units.

Seed - At least 23 (92%) of the stockists interviewed sold maize seed and all of these sold it in 2 kg packs (Table 2.9). However, only 4 (16%) stockists sold seed in 1 kg packs and only one stockist sold a 0.5 kg pack. The minimum pack size for most companies is 2 kg and until very recently ARI Uyole was the only company selling seed in 1 kg packs. A number of stockists reported a demand for 1 kg packs, but only one stockist reported that they were actually re-packing maize seed. This is perhaps not surprising, given that this practice is illegal. Some stockists reported that they sold vegetable seed (e.g. tomatoes, Chinese cabbage) in very small quantities i.e. by the teaspoon (5 grams).

Agro-chemicals -Table 2.9 illustrates the situation for a selection of agro-chemicals. Other than Actellic Super dust, at least a quarter of the stockists selling a particular product reported that they were bulk breaking in order to sell the product in smaller quantities.

Discussion - This rapid survey provides further evidence that stockists are selling inputs in small quantities. The price at which packs are being sold varies considerably and the returns to such activities are not clear from this survey. However, manufacturers could well benefit from carrying out more market research on packet sizes which meet farmers' preferences. Clearly for such a situation to be sustainable manufacturers, stockists and farmers would all need to benefit from making smaller packs more widely available.

Table 2.7. Fertilizer: Number of stockists selling, manufacturers' pack size and retail price, number of stockists selling in smaller units, minimum unit size and price by different types of fertilizer

Type	Number of stockists selling	Manufacturers' pack size (kg)	Stockists' retail price (Tsh)	Number of stockists selling in smaller units	Minimum unit size sold (kg)	Price per unit (Tsh)
CAN	14 (56%*)	50	17,000 - 23,000	11 (79%**)	0.5 1	250-300 500
DAP	16 (64%)	50	14,500 – 29,000	12 (75%)	0.5 1	350 500
NPK	5 (20%)	50	17,200 – 18,000	2 (40%)	1	500
SA	9 (36%)	50	15,500-17,500	8 (89%)	1	350-400
TSP	10 (40%)	50	16,000-19,000	8 (80%)	0.5 1	250-300 450
UREA	12 (48%)	50	14,500 - 23,500	9 (75%)	0.5 1	250 450-500

* Percentage of stockists selling a particular type of fertilizer

** Number of stockists selling in smaller units as a percentage of a total number of stockists selling a particular fertilizer

Table 2.8. Maize Seed: Number and percentage of stockists selling maize seed in different pack sizes

	Pack sizes				
	10 kg	5 kg	2 kg	1 kg	0.5 kg
Number of stockists selling	3	4	23	4	1
Percentage of stockists selling	12	16	92	16	4

Table 2.9. Agro-chemicals: Number of stockists selling, manufacturers' pack size and retail price, number of stockists selling in smaller units, minimum unit size and price by different types of agro-chemical

Type	Number of stockists selling	Manu-facturers' pack size	Stockists' retail price (Tsh)	Number of stockists selling in smaller units	Minimum unit size sold	Price per unit (Tsh)
Gramoxone	10 (40%*)	1 – 5 litres	8,000 – 37,000	3 (30%**)	100 – 500 ml	800- 1200 3,500-6,000?
Round-up	11 (44%)	1 litre	7,500 - 9,000	3 (27%)	50 ml 100 ml 500 ml	500 1000-1200 4000-6000
Thionex	12 (48%)	0.5 1 litre	4,500 – 5,000 8,700 – 10,000	4 (33%)	20 ml 400 ml	100 1000-2000
Actellic (50 EC)	14 (56%)	1 litre	22,000 - 25,000	8 (57%)	20 ml 500 ml	100 2500 -4000
Actellic Super dust	16 (64%)	200 g	1,150 – 1,800	0	NA	NA

* Percentage of stockists selling a particular type of agro-chemical

** Number of stockists selling in smaller units as a percentage of a total number of stockists selling a particular agro-chemical

Directory of stockists

A directory of stockists has been prepared by the ZRELO at ARI Uyole. The list consists of the name of owner/business, address, type of inputs dealt with and area served. For Mbarali this list has 15 names, for Njombe district it has 30 names of which 18 are at Makambako, Mbozi has 21 while Iringa has 9 names and Kilolo has 8. The products they deal with vary from one stockist to another. While some deal in fertilisers and pesticides only others have other inputs like seed, while yet others in addition to selling inputs also have other household goods in their shops. The list though has not been widely circulated yet.

Safe use of agro-inputs training course

It had been hoped to evaluate a stockists training course that was going to be run in August by TPRI on safe use of agro-inputs, in order to learn about ways of improving and targeting this type of training. Unfortunately the course was delayed.

Activity 2.3. Monitoring and evaluation of communication tools in use by service providers.

Monitoring and evaluation of the communication tools in use by service providers cut across most of the projects activities, during the inception workshop an inventory of maize management communication tools accessed by eight different stakeholder groups and their strengths, weaknesses and opportunities for improvement was developed. During the validation survey information on farmers and stockists access to maize management information, training and products was collected along with strengths, weaknesses and opportunities for improvement. Following these exercise a strategy was developed by the project team to further evaluate a select number of communication tools (maize management leaflets, seed fairs, farmer research groups, stockists sales strategies) in order to learn about how to improve them. These activities are described in detail under Activities 1.3, 2.2 and 2.4 in this report.

Activity 2.4. Stakeholders' validation and lesson-learning workshop.

Key coalition members of both projects R8422 and R8406 held a joint workshop planning and design meeting in Dar es Salaam on 28-29th September 2005, prior to this there had been electronic exchanges of draft programmes and invitation lists.

The **Southern Highlands Maize Innovation System Stakeholders Workshop: Improving Understanding and Enhancing Access to Quality Seed and Other Products** was held from 9-10th November, 2005 at VETA Mbeya.

The workshop aims were to a) share the projects' experiences, outputs, lessons and b) to identify policy implications including helping each stakeholder group to identify the way forward. Specifically to involve these stakeholders in: analysing information collected from three seasons of maize variety demonstration plots in four districts of the Southern Highlands; analysing information that has been collected on access to quality pre and post harvest maize information and products; identifying the important lessons that have been learnt and which could be shared; utilising these findings to begin multi-stakeholder brain storming on themes relating to the maize innovation system in the Southern Highlands and developing policy implication trees

The workshop was attended by 57 of the 70 invited stakeholders (5 NGOs, 3 seed companies, 3 stockists, 8 district extension staff, 4 ward/village extension staff, 15 farmer research group members, 8 public sector researchers, 4 other researchers, 1 ZRELO, 3 regional agricultural advisors, 1 TOSCI, 1 DED, and 1 PADEP (9 of whom were female)). Many of the participants had attended the Southern Highlands Maize Seed Stakeholders workshop in Iringa in July 2003 and so were familiar with the projects aims and with each other.

The programme was structured so that on the first day participants would hear a series of grouped presentations prior to informal paired discussion and noting of key issues emerging (which were then pasted on to the wall, and later grouped to capture the important themes emerging from the workshop). The two research projects hosting the workshop were introduced by their respective leaders, Mr Nsemwa and

Dr Lyimo to provide the background to the workshop. Table 2.10 lists the presentations that followed; handout notes of the presentations were given to all participants.

Table 2.10 Titles of presentations given at the Southern Highlands Maize Innovation System Stakeholder Workshop

- Assessing performance and adaptability of improved maize cultivars under farmers' conditions – *Mr Temu*
- Progress towards the development of MSV resistant varieties in the Southern Highlands – *Dr Lyimo*
- Seed certification – *TOSCI Njombe officer*
- Maize agro-biodiversity in the Southern Highlands – *M.M. Mkuchu*
- Zonal Maize Promotion Strategy – *Mr E. Kiranga*

- Farmer Research Group Members experience of access to maize information, training and products *(4 separate 10 min presentations one/ district)*
- District Extension Officers experiences of current and future strategies for extension delivery of maize information, training and products *(4 separate 10 min presentations, one/ district)*
- Private Sector Seed Companies' experiences of current and future strategies for private sector delivery of maize information, training and products *(3 separate presentations: Tanseed International; East African Seed; Highland Seed.)*

- Project's research findings on how different maize stakeholders access maize information, training and products – *Mr Nsemwa*
- Reflections on farmer ownership, understanding and influence on maize project activities – *Mr Kiranga*

In the evening of Day 1 a few participants stayed to review and collate the brainstorming/key issue stickers that pairs had stuck up following the groups of presentations. In stakeholder groups (farmers, stockists, seed companies, researchers, extensionists, NGOs, policy makers), participants then further brainstormed on and discussed key issues, themes and policy implications arising from the presentations and discussions. Each stakeholder group then developed implication trees for each of the key issues, detailing the effect and actions that could be taken by their own stakeholder group to enhance or negate these effects. These implication trees were then shared in plenary.

The main issues emerging from several of the stakeholder groups, causes, implications and solutions are captured in Table 2.11.

Table 2.11. Key maize innovation system issues emerging from several stakeholder groups, their causes, implications and potential solutions

Issue	*No. of groups	Causes	Implications	Solutions
Insufficient seed supply	5	• Low production • Seed shops in town/ urban areas • Limited resources (human, equipment, capital) • Inappropriate seed packaging • Poor market system and/ or distribution	• Fake/ not genuine/ poor quality seed • Accelerated poverty • Food shortages, low income • Continued use of traditional seed • A decline in maize production	• Stockists advise to farmers to purchase inputs in cooperation • Stockists need to be reliable when they sell bulk broken inputs • Producers to use small sized packages • FRGs to produce seed • Facilitate and build capacity of FRGs to produce & market QDS • Facilitate improvement of traditional seed
Inappropriate packaging	4	• Large seed pack size which doesn't consider financial capacity of farmers	• A decline in maize productivity • Farmers not capable of purchasing good quality seed so use traditional seed	• Manage high costs through cooperatives • Buy in bulk cooperatively & bulk break
Seed production at farm level (QDS & PSS)	3	• Low farmer capacity to select and produce seed scientifically • Low status of farmer saved seed	• Use of inferior seed • Low yields • Farmers unable to buy inputs	• Build capacity of farmers to produce, select, process and store seed • Enhance marketing • Combine effort, purchase goo quality seed in bulk and bulk

				break
Training partnership inadequate	3	• Limited resources for multi-stakeholder participation • Lack of platform/ forum that links stakeholders	• Resources are not used properly • Farmers are confused • Low participation of stakeholders • Narrow/ limited knowledge	• Establish collaboration, meet and discuss matters of common interest • Strategic use of limited resources • Encourage culture of information exchange/ sharing
Poor seed distribution	3	• Seed shops are in urban areas/ towns • Poor linkages between stakeholders • Distributors have low capacity	• Good quality certified seed does not reach farmers	• Effective market communication • Partnering to ensure that seed reaches farmers at village level – remote areas.

**No. of groups represents the number of different stakeholder groups who mentioned this as a key issue.*

The afternoon of the second day involved the participants in analysing and interpreting information on a range of topics collected by the projects, four groups worked simultaneously and then presented back to the plenary. The group work was: a) review and interpretation of maize leaflets - farmer representatives, stockists and VAEOs; b) strategies for addressing the policy implications that were raised by the different stakeholder groups – policy makers, DEDs, RAAs, PADEP, TOSCI, Seed Unit; c) review and interpretation of seed fair evaluation data set; d) review and interpretation of stockists survey evaluation data set. A report of the stakeholder workshop is currently being finalised (Gondwe et al, in prep.).

Activity 2.5. Lesson consolidation and policy influencing workshop.

This activity was combined with Activity 2.4 above having taken into consideration the fact that it would be difficult to get the policy makers to attend a workshop due to their commitments with the country's elections. Even then the attendance of the invited policymakers to the Southern Highlands Maize Innovation System Stakeholders Workshop was relatively low. However, the strategies identified for engaging with policy makers in the inception workshop could form the basis for wider engagement.

Additional activity. Survey of Service Providers to get feedback on influence of DFID CPP/DRD and CPHP/DRD Maize projects on improved capacity, effectiveness and morale

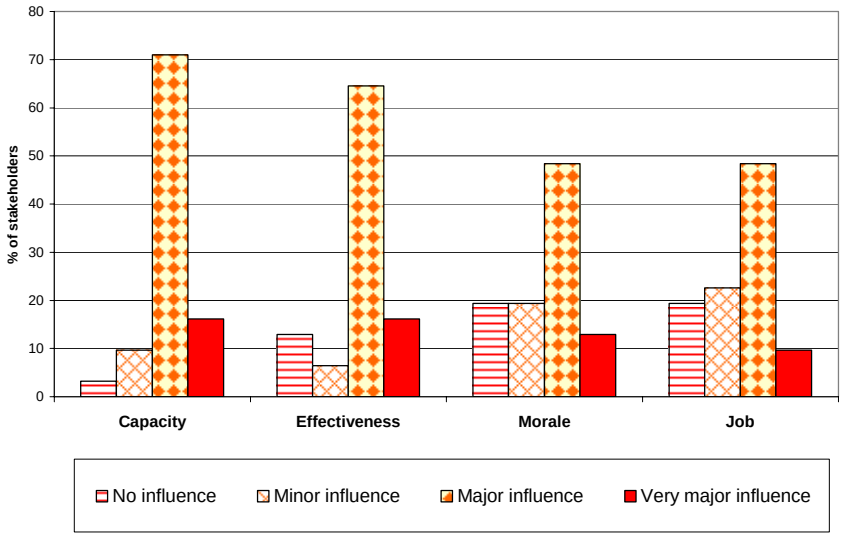
The DFID Crop Post harvest and Crop Protection Programmes have been funding three projects (R8422 and R8406 & R8220) in the S. Highlands of Tanzania aiming to improve maize systems. The parent project R8220 began in November 2002 and ran till March 2005, when project R8406 started for a 10 months period, while project R8422 ran from February 2005 to January 2006. Towards the end of 2005, a survey was carried out to assess the influence of these projects on improved capacity, effectiveness and morale of project participants.

A total of 31 stakeholders were interviewed, including public sector researchers, public sector extensionists, NGOs, seed companies, stockists and farmers. Only 16% of those interviewed were women. This is probably a reasonable reflection of the gender balance of those working on the projects.

Overall, over 80% of stakeholders consulted felt that the projects had had a major or very major influence on their capacity to do their job and providing ideas about how to do their job more effectively (see Figure 2.3). The projects had also had a major or very major influence on the morale of 61% of stakeholders. Over half (58%) of project partners reported that the projects have had a major or very major influence on the way they are doing their jobs. The stakeholders gave detailed reasons about their feelings regards the influence of the project on their capacity, morale, and effectiveness and these are captured in the full report (Lamboll et al, 2006), although some of those given by stockists are summarised in table 3.2.

Influence of projects on improving capacity - in all stakeholders groups, all respondents reported that the projects had been a major or very major influence on their capacity to do their job, with the exception of stockists where the picture was more mixed.

Figure 2.3. Influence of these DFID funded projects on stakeholders, capacity, effectiveness, morale and way of doing their job.



Influence of projects in providing ideas to be more effective in work- stakeholders were asked to describe the influence of the projects in providing ideas about doing their jobs more effectively. Overall, 71% of stakeholders felt that the project had had a major or very major influence. However, the picture was a bit more mixed than the influence on capacity, with one or two stakeholders in the extensionists, stockists and researchers reporting that there had been little or no influence on their effectiveness. Unfortunately, we didn't ask these stakeholders why, but it may have been associated with resources.

Influence of projects on improving professional morale - During the inception workshop of the CPHP project, stakeholders were asked to assess their professional morale on a scale of 1-100, compare with five years ago and give reasons for change. That exercise indicated that morale had generally gone up over the previous five years. In this survey stakeholders were asked whether the DFID projects had influenced their professional morale. The response was generally positive (61% of respondents felt the projects had a very major or major influence on their morale), but perhaps not surprisingly was mixed, with six out of ten stockists and four out ten extensionists feeling there was little or no influence.

Influence of the projects on the way stakeholders do their job - more than half (58%) of the stakeholders consulted reported that the projects have had a major or very major influence on the way they do their job. This was particularly true for farmers, extensionists and the seed company and to a lesser extent, researchers. Stockists were the least influenced in this respect, with seven out of ten reporting there was little or no influence.

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Section D - Outputs

The project had two main outputs. The first focused on understanding and improving farmers' situation and the second targeted service providers. The outcomes in terms of findings etc have been presented in the previous section. In this section the outputs are assessed according to their respective OVIs.

Output 1. Output 1 was as follows:

Access to agricultural information and materials to facilitate experiential learning on: maize varieties; fertility management practices; grain and seed storage practices; maize business information; small packets of seed and other inputs enhanced for farmers managing maize in the Southern Highlands of Tanzania.

A validation survey was undertaken in five districts of the Southern Highlands of Tanzania to validate and expand the understanding of maize farmers' current information, training and product needs building on those that had been identified during the parent project R8220. The approach used in the survey highlighted the wide gap between the actual sources of information informing farmers maize management practices and their perceived 'best' sources of information. Farmers want sources of information with high levels of access to external and probably new information (e.g. ARI Uyole, stockists), but in their absence are utilising more easily accessible sources (e.g. parents, neighbours, village extension staff). Farmers' criteria for assessing sources of information were identified and farmers gave suggestions for how their different sources of information could be improved. Following this survey the project team developed a strategy for refining/developing, testing and promoting learning tools and pathways for maize farmers in the Southern Highlands. The following four Swahili language leaflets (developed during project R8220) were field tested by farmers in Mbozi, Ileje, Njombe, Iringa and Mbarali districts during the field season and refined, they have been widely promoted through sale during the national agricultural show, and to the regional agricultural advisors, district councils, district extension teams and agricultural NGOs, throughout the Southern Highlands. Copies are also being placed on the Ministry of Agriculture and Food Security's website for access by stakeholders.

- Ugonjwa wa Milia kwenye Mahindi (Maize Streak Virus Information Leaflet)
- Kanuni Za Kilimo Bora Cha Mahindi (Agronomic Recommendations for Maize Production)
- Matumizi ya Mbolea Katika Kilimo Bora Cha Mahindi (Fertilizer Practices for Better Maize Production)
- Kuwa Daktari wa Mahindi Yako (Be Your Own Maize Doctor: A guide to diagnose nutrient deficiency and foliar disease symptoms in maize)

In addition, maize variety demonstration plots and the process of farmer research groups (funded by the CPP sister project R8460) were promoted and evaluated and three seed fairs (funded by the FAO LinKS project) were assessed as approaches/ tools for learning. The farmer research groups significantly facilitated farmers in testing and selecting preferred maize varieties, the groups tended to be middle wealth group farmers and male dominated and were formed by extension as opposed to through farmers' natural interests. The members felt they had accessed new information on various aspects of maize production and seed management through their practical involvement in the demonstration plots and seminars. The reviewers recommended a more farmer field school type approach to both strengthen the groups longer term and facilitate a more discovery learning based approach, support for farmer to farmer learning also needed more attention as there was no evidence of non-members having learnt anything.

The seed fair evaluation looked at what different stakeholders had learnt about, wanted to learn about and felt could have been improved. In summary farmers had both wanted to learn and learnt about a wide range of different crops, seed (production, biodiversity, and storage), pest and disease management (use of botanicals as pre and post harvest insecticides, varietal resistance, pest and disease identification and management), and post harvest cereal management and processing (use of botanical pesticides, grain and seed storage, sunflower oil press, rodents, food preparation, packaging and nutritional content). Researchers, NGOs, trainers and local government

were more interested in technology transfer and networking, as were extension with the addition of soil fertility and crop interests. The suggested improvements focused mainly on organisational aspects.

The achievements under output 1 according to the logframe OVI are set out in Table 3.1 below

Table 3.1 Assessment of Output 1 achievements

OVIs	Achievements
1.1 At least 5 learning tools developed and/or promoted in 8 districts in Southern Highlands by end of 2005.	Through inspection of: final versions and earlier drafts of learning tools; feedback obtained during field testing of the tools; project quarterly and final reports, interviews with participating farmer groups, and service providers, the following learning tools were refined and/ or promoted:: • Ugonjwa wa milia kwenye mahindi (Maize streak virus information sheet) • Kanuni Za Kilimo Bora Cha Mahindi. (Agronomic Recommendations for Maize Production) • Matumizi ya Mbolea Katika Kilimo Bora Cha Mahindi (Fertilizer practices for maize production) • Kuwa Daktari wa Mahindi Yako (Be your Own Maize Doctor: A guide to diagnose nutrient deficiency and foliar disease symptoms in maize) In addition, demonstration plots and farmer research groups (funded by the CPP sister project R88460) were promoted and reviewed and seed fairs (funded by the FAO LINKS project) were assessed as approaches/ tools for learning. Validation and/ or promotion of learning tools took place in the following districts: Mbozi, Mbarali, Iringa Municipal, Iringa Rural, Kilolo, Njombe, Ileje, Mufindi. Through the final stakeholder workshop learning tools were disseminated to the Regional Agricultural advisors offices of three (Iringa, Mbeya and Ruvuma) of the four regions in the S. Highlands.
1.2 Existing and novel knowledge pathways for maize production in the Southern Highlands documented by end of 2005.	Through inspection of: validation survey report; project quarterly reports. Interviews with participating farmer groups, and service providers. Existing knowledge pathways were documented through the project Inception Workshop and the 'Validation of Existing Tools, Approaches and Needs' Survey Novel pathways were explored and documented through: Working with stockists; Assessing Seed Fairs; Using Ministry of Agriculture website for access to learning tools e.g. leaflets; Final stakeholder workshop in Mbeya.
1.3 At least 10 FFS groups make use of the learning tools promoted in 4 districts in Southern Highlands by end of 2005	Interviews with the FFS groups. Inspection of quarterly reports. Learning tools (leaflets) were used by 2 FFS groups in Mtandika village, Iringa and leaflets have been requested in districts which are starting their FFS programmes.

Output 2. Output 2 was as follows:

Capacity, effectiveness and morale of government and NGO agricultural trainers, and stockists and distributors of agricultural inputs improved as a result of increasing their understanding of the issues and products they deal with and their access to relevant demand-driven information

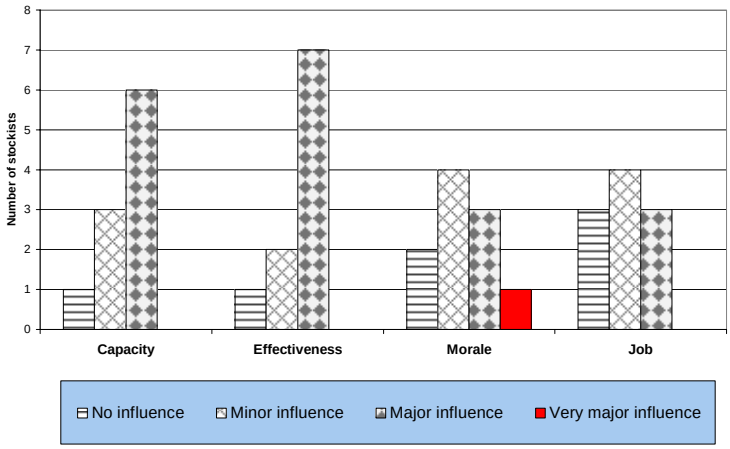
A preliminary analysis of different stakeholders (stockists; public sector researchers; public sector trainers; public sector extensionists; seed companies; NGOs; and other researchers) access to maize information, training and products and ways for improving them was undertaken during the inception workshop.

A more in-depth analysis of stockists was conducted during the validation survey in five districts in April 2005. It was decided to focus on stockists, as it was felt that public sector extension staff were often the focus of needs assessments while the current practices and needs of stockists who are also key players in the maize innovation system were not as well understood. Most of the information mentioned was about access to, availability, quality and prices of products mainly coming from the manufacturers but with feedback from farmers being important, suggested improvements included more demonstrations, better linkages with extension and research. The amount of training interviewees had received varied, ranging from none to diploma courses, the issue of agro-input shops staffed by uninformed and unskilled workers is a serious constraint within the innovation system. Stockists are very aware that increased knowledge about a range of maize problems faced by farmers makes them more attractive to customers. Most of those visited displayed a keen interest in being better able to access agricultural information and training and to receiving pre-packaged information (such as the maize leaflets which they assessed) on a range of problems faced by farmers even including those not related to products that they sell, so they can build stronger customer relations through offering potential solutions to farmers wide range of problems. The main maize management products stocked by stockists were seed, insecticides (pre and post-harvest), fungicides, fertilisers and hand hoes. Suggested improvements focused on more timely supply, field demonstrations, better accompanying instructions, easier access to credit and reduced pack sizes. There is clearly farmer demand for access to small quantities of products either to enable them to test them or because of cash flow issues. Many stockists are responding to this by bulk breaking fertiliser and sometimes seed. A separate survey conducted to look at stockists response to farmers demand for smaller pack sizes found that 75% of stockists selling fertilisers (other then NPK) carried out some form of re-packaging/ bulk breaking. All stockists selling maize seed sold it in 2 kg packs, but only 16% of them sold it in 1 kg packs and only one stockist sold a 0.5 kg pack. The minimum pack size for most companies is 2 kg and until very recently ARI Uyole was the only company selling seed in 1 kg packs. A number of stockists reported a demand for 1 kg packs, but only 1 stockist reported that they were actually re-packing maize seed (an illegal activity). Some stockists reported that they sold vegetable seed (e.g. tomatoes, Chinese cabbage) by the teaspoon (5 grams). 25% stockists reported bulk breaking agro-chemicals in order to sell the product in smaller quantities.

During the inception workshop participants were asked to think about their professional morale now and five years ago, and to score it between 1 and 100 (with 1 = very low morale and 100 = very high morale). They were also asked to give reasons for the score they had given themselves now, and then if there was a difference between the score they gave their morale now and five years ago to explain what the reasons were that influenced this change. In general, professional morale amongst all workshop participants appeared to be higher now than five years ago. Within this small group of participants, reasons relating to funding, salary/ other incentives and recognition/ self development were the most frequently reported. However, access to training and, to a lesser extent, information and products were also of some relevance to a number of participants. A follow-up survey of changes in stakeholders' capacity, effectives and morale was undertaken providing generally positive results and useful insights for future initiatives.

Table 3.2 Assessment of Output 2 achievements

OVIs	Achievements
2.1 Feedback from at least 10 participating service provider organizations from government, NGO and private sectors indicates improved capacity, effectiveness and morale by end of 2005 using triangulation to cross check farmer groups and others opinions of the above.	Service providers: DALDO Mbozi. DALDO Mbarali, DALDO Iringa, DALDO Njombe, S. Highlands ZRELO office, ARI Uyole, IRDO Ileje, ADP Mbozi, TFA Njombe, 10 stockists in Mbozi, Iringa, Njombe and Mbarali districts, Tanseed International, Highland Seed Company, FIPS Africa, NRI. From a survey of 31 stakeholders (5 women) at the end of the project. Overall, over 80% of stakeholders consulted felt that the projects had had a major or very major influence on their capacity to do their job and provided ideas about how to do their job more effectively. The projects had also had a major or very major influence on the morale of 61% of stakeholders. 58% of stakeholders reported that the projects have had a major or very major influence on the way they are doing their jobs (see Figure 2.3 in Section C).

2.2 At least two suppliers in each participating district indicating greater opportunities through better understanding and appropriateness of products by end of 2005.	Inspection of: suppliers' responses to self performance assessment. The service providers survey included 10 stockists, out of which the following indicated a major or very major influence of the projects: Capacity (6); Effectiveness (7); Morale (4) and How they do their job (3) (Figure 3.2) Figure 3.2. Influence of these DFID funded projects on stockists' capacity, morale and way of doing their job.  While the project cannot report total success according to the OVI 2.2. The feedback provided by many stockists in the service providers survey is however positive, For example: **Capacity –** improved communication and relations e.g. with farmers and researchers; improved knowledge of various aspects of seed; leaflets on various aspects (which in at least one case has enhanced seed sales); improved capacity to better manage the available market; enhanced availability of quality products especially when research is sustainable; training on aspects of inputs and seed trading. **Effectiveness –** through enhanced communication with other stakeholders, including other stockists; greater knowledge of demand for and supply of appropriate inputs, particularly seed. **Morale –** through improving knowledge, particularly on use of inputs; collaboration with other stakeholders. **Job –** in future work enhanced awareness of the role of other stakeholders e.g. I've made it my habit to consult experts on issues I do not understand, have learnt to respect farmers' needs and advice from experts; exposure to different sources of inputs means enhanced choice between the variety of inputs on the market. Having participated in the projects am now selling inputs more confidently and the customers have built confidence in me. Provide farmers with more information and advice. However, in general the response from stockists was more mixed than that of other stakeholders. The situation with stockists may be explained by a number of factors. Stockists became more fully involved in the last year of the CPP and the CPHP project which only had a 12 month life. Most stockists are very mobile and often have more than one enterprise and hence were not always able to participate in project activities. Stockists usually have employees who deal with farmers on a day to day basis and hence improving their capacity is important. It is relatively novel for stockists to become involved in a project such as this and we were all learning how to work together to maximise mutual benefits.

Section E - Purpose

The **Project purpose** was:

New knowledge is generated and promoted into how national innovation systems can be mobilised to sustain uptake and adoption of CPH knowledge for the benefit of the poor.

Specifically to provide innovative learning tools and products, to address the pre and post harvest training needs identified by maize seed system stakeholders in the Southern Highlands of Tanzania, using both existing and novel promotion pathways.

The CPHP's indicators are:
Contribution towards evidence-based strategies on how to facilitate the exchange of knowledge/information between suppliers and users documented within >2 regions, and disseminated to intermediary organisations in four regions

Evidence-based insights on how research innovations can be introduced sustainably into local knowledge systems are disseminated to intermediary organisations in 4 regions.

The project has made a significant contribution towards

1) Improved understanding and documentation of how to facilitate exchange of information between suppliers and users and

2) Providing insights on how research innovations can be introduced sustainably into local knowledge systems.

Dissemination, to date, has mainly been through learning by doing by project partners (who include intermediary organisations), sharing of findings at workshops and preparation of internal project reports. Indications of uptake by project partners are provided in section D.

Context
The project has explored how to improve farmers and other stakeholders access to information, training and products for pre and post-harvest maize systems management in the Southern Highlands of Tanzania i.e. we considered information/ knowledge/ innovation issues in a broad commodity, but sub-national, context. This is consistent with government of Tanzania's decentralisation policy. The project has built on the successes and worked with two phases of CPP funded sister project (R8220 and R8406) which began in 2002.

Overall process
This project (with a sister CPP project) facilitated the building of relationships with a wide range of stakeholders from the public, private commercial, NGO sectors, together with farmers organised in farmer research groups. This process was facilitated by an initial stakeholder analysis and wide stakeholder consultations through surveys and workshops. The projects have worked towards improving communication and finding common ground for improving access to information, training and products. This process has been challenging, transaction costs are high, but there are clear indications of returns to the investment.

Enhancing farmers' access to information training and products

Key issues and insights were**:**

- Importance of understanding how farmers are accessing/ have accessed information, training and products which are influencing their current actual practices. This requires the development, application and implementation of methods with key stakeholders to identify farmer's actual sources of information, training and products based on what farmers actually do. This creates the foundations for improvement.
- Farmers' criteria for assessing sources of information and suggestions for how services can be improved to best meet farmers preferences are key. However, from our experience in the S. Highlands many farmers and some service providers were

unused to such questions. To be effective, a free and open atmosphere must be developed to encourage a free flowing dialogue. Farmer groups have the potential to create platforms for mutual learning about improving service provision.

- Farmer groups as an approach for facilitating research and promotion are being widely encouraged. There are clearly major advantages to groups, but it is important to understand which part of the community is represented by the groups and how much interaction there is between group members and others in the community. For example, the farmer research groups we worked with did not have an even gender balance and most appear to be in middle wealth categories.
- Learning tool development with farmers – the process of developing leaflets with appropriate content, style etc was iterative and carried out over a long time. Literacy rates are relatively high in Tanzania (one indication is the very high number of newspapers now in circulation) and the national language Swahili is very widely known. This was a major advantage in terms of only having to produce final materials in one language.
- Although learning tools can be an important aid, the preferred form of learning for most farmers is through personal interaction and 'learning by doing'. The Farmer Field School approach is being promoted in Tanzania and in the one village where we surveyed that FFS was in operation it had already become an important source of learning for some farmers. Scaling up this approach remains a major challenge there is limited evidence of sharing of information with non-FFS participants and approaches are needed to reduce the apparently high costs. Approaches are needed to support and improve the capacity of facilitators, one possibility would be through increased use of the internet, which is now widely available at district level in Tanzania.

Improving capacity, effectiveness and morale of service providers and associated stakeholders

Key issues and insights were

- Complexity of and communication between stakeholders - there are many stakeholders involved in service provision with differing perceptions and interests. It is important to appreciate and, if possible, work with the diversity. This process can have high transaction costs, but service providers working with the project emphasised the major benefits of improved communication and collaboration. Some stockists emphasised the importance of discussing issues with fellow stockists and there appear to be opportunities to enhance this process further to identify mutual benefits such as joint negotiation with supply companies servicing the Southern Highlands.
- Identifying how service providers are accessing/ have accessed information, training and products- this does not appear to have formerly received much serious attention, particularly with regard to the private sector. Similarly, asking stakeholders to share suggestions on how farmers' and service providers' access to maize information, training and products may be improved does not seem to have been a common practice and provided a wide range of ideas which can be built upon through a decentralised process of service provision. For example, many personnel working in stockist's shops have received little or no training, but there was clear demand and understanding that this would bring benefits in terms of attracting and retaining customers. Private sector capacity would be a very useful area for further action research.
- Stakeholders' perceptions of issues, causes, implications and practical solutions to improve innovation system are closely linked to the above. This was explored through a stakeholder workshop in the S. Highlands and has sown the seeds for future initiatives in the zone.
- Policy makers are key suppliers and users of information, but who are the policy makers? Stakeholders' perceptions of policy makers are important. How to engage with policy makers at different levels? Experiences and strategies of a range of public, private and NGO stakeholders were shared and documented.

- Public and private sector organisations at distance from farmers are responding less well to farmer demand than those closer to farmers e.g. stockists are bulk breaking inputs in response to farmer demand.
- Creative approaches to maximising the potential of events - there are opportunities to improve initiatives such as seed fairs beyond their original aim. For example, forums such as seed fairs provide an opportunity to identify what stakeholders would like to learn about. There is a diversity of learning taking place in events such as seed fairs. These include the unexpected as well as the planned. Perceptions of what is useful vary between stakeholders.
- Personal interactions and relationships are important – this emerged clearly over the life of the project.
- Quality assurance - making learning tools etc available in a decentralised system is a long, iterative process with potentially high transaction costs. There are often trade offs between getting something finished and disseminated and developing a 'perfect product'. Creating a 'version1' and distributing with caveats is one option
- Morale and motivation – there has been a lot of previous work on method relating exchange of information and research, but in the context of development, relatively little on the morale and motivation of the people who are key players in the process. In this project we developed a participatory method for 'measuring' and identifying factors influencing professional morale. Financial issues such as funding and finance were of course key, but other factors such as professional recognition, self development and access to training were also important.
- Effectiveness – improving the effectiveness of organisations puts them in a stronger negotiating position. In this project we developed a participatory process to facilitate stakeholders' reflection on and factors determining effectiveness.
- Locally developed innovations e.g. seed - one important way in which research innovations can be introduced sustainably into local knowledge systems is through enhancing capacity effectiveness and morale of LOCAL organizations. For example, it may be the case that for a smaller more localized company it would be economic to produce just 50 tonnes of seed of a particular variety with very specific local requirements. National or international seed companies are very unlikely to do that.

Section F - Goal

The projects outputs have already contributed to the project's goal that national and international crop-post harvest innovation systems respond more effectively to the needs of the poor. The OVI of which is by 2005, a replicable range of different **institutional arrangements** which effectively and sustainably improve access to post-harvest knowledge and/or stimulate post-harvest innovation to **benefit the poor** have been validated in four regions.

The project has worked with **on-going policies and processes** in Tanzania. In common with many countries this includes a process of decentralisation of service provision and strengthening of public-private partnerships. Overall, agricultural related policies and processes appear to be enabling and inclusive, rather than focusing/ targeting the needs of the poor specifically.

Formal and informal institutional arrangements are needed to provide **incentives** for stakeholders in order to improve their own and other stakeholders' access to knowledge and stimulate innovation.

Decentralisation of agricultural service provision – the process of decentralisation is on-going. This project's partners were primarily decentralised agencies i.e. zonal research institute, ZRELO's office, local government extension, commercial enterprises and NGOs based in the Southern Highlands. Together we explored aspects of capacity, effectiveness and morale primarily in relation to access to information, training and products.

Morale was strongly influenced by funding and salaries, but also recognition and self-development and access to training.

Capacity issues are key in the decentralisation process. Service providers need not only technical knowledge and skills, but also a wide range of other needs were identified by project partners e.g. researchers valuing and knowing how to communicate and collaborate with a wide range of stakeholders; extensionists - enhanced capacity to carry out elements of the project cycle e.g. proposal writing and M and E; NGOs - information on national seed policy and participatory seed development process; stockists – improved communication and relations e.g. with farmers and researchers;

Enhancing the effectiveness of service providers e.g. researchers – through use of more inclusive, participatory approaches in different stages of research and development with farmers and other stakeholders; extensionists – through working with farmer groups established by the projects; stockists – through enhanced communication with other stakeholders, including other stockists, greater knowledge of demand for and supply of appropriate inputs, particularly seed. Also farmers e.g. improved farmer group leadership skills and planning skills

Experience elsewhere highlights the importance of systems at the centre functioning effectively for decentralised agencies to be effective.

Infrastructure e.g. ICTs, mobile phones. There need to be incentives in place for stakeholders to access new information, acquire understanding and act on it. The appropriate infrastructure can contribute to a dynamic institutional environment, but systems need to be in place that ensure access and encourage appropriate use. The internet, email, access to computers and mobile phones have been crucial to the development and implementation of this project.

Public-private partnerships – ARI Uyole/ MAFS have developed a partnership with at least one company which is providing resources for the development of new maize varieties. Initially, at least, both these organisations are based in the Southern Highlands and there is clear potential for innovation e.g. new varieties to emerge from this partnership. This has evolved at least partially because of the amended Plant Breeders Rights Act.

Legal frameworks - the Plant Breeders Rights Act in Tanzania has created incentives for breeders and others to develop new varieties, but there is little incentive for any stakeholder to work with farmers to improve the management of their own varieties.

Informal arrangements at local level and linking higher up the supply chain – bulk breaking and re-packaging of products is common and is in response to farmers' demand. In other retail sectors (e.g. shampoo, toothpaste, tea) selling in very small packs is common. This approach allows farmers to try out new products at a very low cost. The case is strong for big business to be more entrepreneurial and to re-engineer products to reflect the economics at the 'Bottom of the Pyramid' including: small unit packages, low margin per unit, high volume. At times, some development agencies appear to be undermining the need for companies to do this e.g. through providing one off contracts for seed for relief programmes.

Some of the specific lessons that came out of the projects different activities are summarised in Table 4.1.

Table 4.1 Lessons to inform goals and purpose

Activity	Lessons
1. Inception meeting	1.1 How stakeholders access to information, training and products could be improved
	1.2 Factors influencing professional morale
	1.3 Stakeholders perceptions of policy makers
	1.4 How to engage with policy makers at different levels
	1.5 How stakeholders are currently accessing information, training and products
2. Validation survey	2.1 Farmers and stockists sources of I, T and P which inform what people actually do.
	2.2 Development of methods to identify farmer's actual sources of I, T and P.

	2.3 Farmers and stockists suggestions for how sources/ services of I, T and P can be improved.
3. Stakeholder workshop	3.1 Stakeholders' perceptions of issues, causes, implications and practical solutions to improve innovation system
	3.2 Development of a method for the above
4. Stockists survey	4.1 Public and private sector organisations at distance from farmers are responding less well to farmer demand than those closer to farmers e.g. Stockists are bulk breaking inputs in response to farmer demand.
5. Seed Fair study	5.1 There are many stakeholders involved in service provision.
	5.2 There are opportunities to improve initiatives such as seed fairs beyond their original aim
	5.3 Forums such as seed fairs provide an opportunity to identify what stakeholders would like to learn about
	5.4 There is a diversity of learning taking place in for a such as seed fairs. These include the unexpected as well as the planned. Perceptions of what is useful vary between stakeholders.
	5.5 Personal interactions are important
6. Stakeholder capacity, effectiveness, morale and functioning survey	6.1 Collaboration with other stakeholders through projects such as this is generally perceived by stakeholders to enhance their professional capacity, effectiveness, morale and functioning
	6.2 Stakeholders perceptions of key factors that improve their professional capacity, effectiveness, morale and functioning
	6.3 Development of a method for learning about the above

Section G Project effectiveness

	Rating
Project Goal	X
Project Purpose	2
Project Outputs 1.	2
2.	3

1= completely achieved; 2= largely achieved; 3=partially achieved; 4=achieved only to a very limited extent; X=too early to judge the extent of achievement (avoid using this rating for purpose and outputs)

Section H – Uptake and Impact

	Uptake and impact	***Sources***
1.Organisational Uptake	Overall, over 80% of stakeholders consulted felt that the projects had had a major or very major influence on their capacity to do their job and provided ideas about how to do their job more effectively (Figure 3.1)) The projects had also had a major or very major influence on the morale of 61% of stakeholders. Over half (58%) of stakeholders reported that the projects have had a major or very major influence on the way they are doing their jobs. . Uptake was mainly by stakeholders working with the project in the S. Highlands of Tanzania including: Public research, Public extension, NGOs, Seed companies; Stockists and Farmer groups	7) Service providers survey
2. End user uptake	At this stage it is probably too early to assess widespread uptake by service providers and farmers not directly associated with the project. Farmers - the final M and E survey suggested that in villages surveyed there was only limited sharing of information beyond farmer research groups. However, leaflets have been bought by farmers e.g. at agricultural shows. Demand for seed is currently greater than supply. Service providers – there was clear demand for materials and ideas promoted in the final stakeholder workshop. E.g. Some district councils are committing funds for the production of further leaflets. These service providers have revealed that their engagement with the project has influenced the way they do their jobs.	2) Validation survey 6) M & E survey 4) Stakeholder workshop report 7) Service providers survey
3. Knowledge	The project has improved awareness and understanding amongst maize system stakeholders in the S. Highlands of: • Farmers and service providers' access to information, training and products • Farmers and service providers suggestions for improving their access to information, training and products • Differences between farmers' perceived/desired and actual sources of information • Stakeholders perceptions of policy makers and strategies for engagement • Factors affecting professional morale The above knowledge is highly significant in terms of a functioning innovation system eg the market significance of the demand for small packs; the need to focus on actual sources of information and/or improve other sources e.g. radio. The process itself is of significance and can be applied elsewhere. In order for the knowledge to be significant in the S. highlands it must be acted upon. We need to ensure we respond e.g. farmers want to learn interactively. Stockists want to be able to offer wider info to customers than just their products.	*1, 2 4, 5,*
4. Institutional	In all stakeholders groups, all respondents reported that the projects had been a major or very major influence on their capacity to do their job, with the exception of stockists where the picture was more mixed. Some of the examples they gave are shared below: Researchers – various elements of research methods eg problem identification, collecting and analysis of data, report writing; valuing and knowing how to communicate and collaborate with a wide range of stakeholders; understanding more about farmers' situation. Extensionists - elements of maize management methods; research methods e.g. on-farm trial; interaction with other stakeholders: enhanced capacity to carry out elements of the project cycle e.g. proposal writing and M & E. NGO - information on improved seed, national seed policy and participatory seed development process. Seed Company - farmers more aware of usage of high quality seed; more response and adoption among farmers on quality seed. Stockists – improved communication and relations e.g. with farmers and researchers; improved knowledge of various aspects of seed; leaflets on various aspects (which in one at least one case has enhanced seed sales); improved capacity to better manage the available market; enhanced availability of quality products especially when research is sustainable; training on aspects of inputs and seed trading. Farmers – improved knowledge and skills for crop management e.g. types of	1, 2, 4, 7

	varieties (e.g. varieties resistant to MSV), fertilizers and pesticides for maize production; learnt through demonstrations/ management of on-farm trials, seminars	
5. Policy	Exploration of stakeholder roles in policy and how policy makers can be engaged; different levels of policy. Provided more awareness and evidence of farmer demand for small packs – now being marketed by one seed company. Method developed for wider stakeholder consultation to inform policy.	*1, 5, 4*
6. Poverty and livelihoods	Farmers capital assets: Human – access to maize knowledge Social – farmer groups and networks Physical – improved access to appropriate and affordable inputs e.g. seed. This may have a direct impact on poorer farming families and/ or contribute to poverty reduction through increased productivity and pro-poor growth. Impact: *Direct*- Over 100 farmers in 20 villages in 5 districts Indirect - Smallholders growing maize in S. Highlands (millions) and potentially elsewhere	6, 4
7. Environment	Project had little or no impact on the environment. Possible examples are raised awareness about e.g. burning of stover, bulk breaking of hazardous products.	2, 3, 5

Key to Sources column see Annex II for full details

1) Inception workshop report (Stathers et al, 2005)
2) Validation survey (Stathers et al, 2006)
3) Seed fair report (Stathers et al, 2006)
4) Stakeholder workshop report (Gondwe et al, 2006)
5) Stockists survey data (Lamboll et al)
6) M & E survey report (Kiranga et al, 2005)
7) Service providers survey report (Lamboll et al, 2006)

Signature Date: 20/01/2006

Core Partners Tanya Stathers and Richard Lamboll, NRI, UK

Managing Partner Lebai Nsemwa, ARI Uyole, Tanzania

ANNEX I Project R8422 Logical Framework

Improving farmer and other stakeholders' access to quality information and products for pre and post harvest maize systems management in the Southern Highlands of Tanzania

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Assumptions
Goal			
National and international crop-post harvest innovation systems respond more effectively to the needs of the poor.	By 2005, a replicable range of different institutional arrangements which effectively and sustainably improve access to post-harvest knowledge and/or stimulate post-harvest innovation to benefit the poor have been validate in four regions.	Project evaluation reports. Regional Coordinators' Annual Reports. CPHP Annual Reports. CPHP Review 2005. Partners' reports.	National and international crop-post harvest systems have the capacity to respond to and integrate an increased range of research outputs during and after programme completion. National and international delivery systems deliver a range of services relevant to poor people in both focus and non-focus countries. Livelihood analysis provides accurate identification of researchable constraints or opportunities that lead to poverty reduction.
Purpose	OVIs	MOV	Assumptions
New knowledge is generated and promoted into how national innovation systems can be mobilised to sustain uptake and adoption of CPH knowledge for the benefit of the poor. Specifically to provide innovative learning tools and products, to address the pre and post harvest training needs identified by maize seed system stakeholders in the Southern Highlands of Tanzania, using both existing and novel promotion pathways.	The project will contribute to the following two indicators: 1. By 2006, evidence-based strategies on how to facilitate the exchange of knowledge/information between suppliers and users documented within >2 regions, and disseminated to intermediary organisations in four regions 3. By 2006, evidence-based insights on how research innovations can be introduced sustainably into local knowledge systems are disseminated to intermediary organisations in 4 regions.	1.1 Record of presentations made and discussions had during policy makers workshop 1.2 & 3.1 Interviews with policy makers and other stakeholders who attended the respective workshops. 1.3 & 3.2 Final project report. 1.4 & 3.3 District Councils' reports.	The Agricultural Sector Development Programme is implemented as is currently envisaged (ie with a strong focus on decentralized agricultural planning and implementation involving public and private sector service providers). Programme and project receive funding on time Capacities of coalition partners and target institutions maintained at least at current levels. Political climate remains stable.

Outputs	OVIs	MOV	Assumptions
1. Access to agricultural information and materials to facilitate *experiential learning on* • *maize varieties,* • *fertility management practices,* • *grain and seed storage practices,* • *maize business information,* • *small packets of seed and other inputs* enhanced for farmers managing maize in the Southern Highlands of Tanzania.	1.4 At least 5 learning tools developed and/or promoted in 8 districts in Southern Highlands by end of 2005. 1.5 Existing and novel knowledge pathways for maize production in the Southern Highlands documented by end of 2005. 1.6 At least 10 FFS groups make use of the learning tools promoted in 4 districts in Southern Highlands by end of 2005	1.1 Inspection of: final versions and earlier drafts of learning tools; feedback obtained during field testing of the tools; project quarterly and final reports. Interviews with participating farmer groups, and service providers. 1.2 Inspection of: validation survey report; project quarterly reports. Interviews with participating farmer groups, and service providers. 1.3 Interviews with the FFS groups. Inspection of quarterly reports.	• Government policies continue to be in favour of increased agricultural productivity and marketing and maize remains an important food and cash crop in the Southern Highlands. • Project funding is timely. • Relationships between coalition partners remain good, and no serious changes in coalition composition occur. • Stable political and economic enabling environment. • Service providers are able to use part of their time for project activities. • Infrastructure and transport maintained at current levels.
2. Capacity, effectiveness and morale of government and NGO agricultural trainers, and stockists and distributors of agricultural inputs improved as a result of increasing their understanding of the issues and products they deal with and their access to relevant demand-driven information.	2.1 Feedback from at least 10 participating service provider organizations from government, NGO and private sectors indicates improved capacity, effectiveness and morale by end of 2005 using triangulation to cross check farmer groups and others opinions of the above. 2.2 At least two suppliers in each participating district indicating greater opportunities through better understanding and appropriateness of products by end of 2005.	2.1 Interviews with participating service providers and local policy makers. Inspection of: service providers' reports; draft and final self performance assessment forms including barometer tools indicating trends and reasons; service providers' responses to self performance assessment cross checked by farmer groups opinions on changes in performance of all service providers. 2.2 Interviews with suppliers and farmers. Inspection of: suppliers' responses to self performance assessment.	

Activities	OVIs	MOV	Assumptions
1.1 Inception workshop for coalition team to integrate post and pre-harvest outputs of CPHP and CPP-R8220, and possible successor, projects and to incorporate into activity plans by Feb 2005.	1.1 Approx. 30 people attend inception workshop in S.Highlands by Feb 2005. Clear activity plans developed integrating the outputs from the different projects, and the coalition members are happy with responsibilities, timeframe, budgets and linkages.	1.1 Inspection of: workshop invitations, participant list and minutes containing the detailed activity plans.	• Funds are disbursed on time. • All coalition members and partners commit resources, mainly time, to monitor and execute the planned activities. • Government policies remain favourable to agricultural development. • Farmers in project area are representative of the farming community in the S. Highlands of Tanzania. • The maize industry continues to be paying and hence use of inputs continues to be acceptable.
1.2 Validation survey of existing communication methods, pathways, tools and needs for farmers.	1.2 Existing communication methods, pathways, tools and needs validated by farmers in project villages by end March 2005.	2.1 Inspection of: validated list of existing communication methods, pathways, tools and needs for farmers and suggested improvements; project quarterly reports.	
1.3 Development and testing of existing and novel communication methods, pathways and tools addressing farmers' needs as validated in activity 1.2.	1.3 At least five experiential learning tools and appropriate communication methods and pathways developed and tested by July 2005 in two villages in each of the four districts in project area.	1.3 Inspection of: draft and final learning tools and notes on changes needed as a result of field testing; feedback on the communication methods and pathways; quarterly reports. Interviews with service providers and farmer groups testing the tools, methods and pathways.	
2.1 Validation of information and communication needs of service providers.	2.1 Existing and suggested novel communication tools/methods for public and private service providers validated by end of March 2005.	2.1 Inspection of: validated list of existing and suggested communication tools/ methods for public and private service providers; project quarterly reports.	• Service providers are willing to cooperate in needs identification/ validation and testing of the tools. • Project funds are disbursed on time. • The printers accomplish their task in time. • Farmer groups involved in FFS willing to cooperate. • All project coalition members, partners and stakeholders commit resources, to monitor and execute the
2.2 Development and testing of communications tools/ methods and pathways for service providers.	2.2 At least 5 printed and/or audio-visual learning and training tools/ methods and pathways developed and tested by July 2005.	2.2 Inspection of: draft and final learning tools and notes on changes needed as a result of field testing; feedback on the communication methods and pathways; quarterly reports. Interviews with service providers testing the tools, methods and pathways.	

2.3 Monitoring and evaluation of communication tools in use by service providers.	2.3 Tools/ methods and pathways developed in activity 2.2 monitored and evaluated by December 2005.	2.3 Inspection of M&E report.	planned activities.
2.4 Stakeholders' validation and lesson-learning workshop.	2.4 Stakeholders (~70 people (cost sharing opportunity with CPP proposed project)) invited to attend Oct. 2005 workshop in S. Highlands. Those attending are satisfied that innovative learning tools and products, to address the pre and post harvest maize training needs in the S. Highlands, using both existing and novel promotion pathways have been developed and relevant lessons discussed.	2.4 Inspection of: workshop presentations; proceedings; quarterly reports.	
2.5 Lesson consolidation and policy influencing workshop.	2.5 Policy makers invited to attend Nov. 2005 workshop in Mbeya. Those attending are satisfied that learning tools and products, to address the pre and post harvest maize training needs in the S. Highlands have been developed and lessons shared, and have begun to plan realistic scaling up strategies which they are committed to.	2.5 Inspection of workshop invitations, participant list, presentations, and proceedings; quarterly reports. Interviews with workshop participants.	
Cross-cutting activities			
A. Coalition team interaction	A. Realistic communication strategy developed in a participatory manner at inception workshop and reviewed and amended as necessary during the writing of each quarterly report.	A. Inspection of: communication strategy; written communication exchanges; suggested changes; quarterly reports.	
B. Project report writing	B. Coalition team satisfied that all workshop, quarterly and final reports have been jointly written and submitted on time.	B. Inspection of draft and final versions of reports, and exchanges between team members. Interviews with coalition team members.	

ANNEX II Project R8422 disseminated outputs

Internal Reports

GONDWE, B., NSEMWA, L.T.H., STATHERS, T., LAMBOLL, R., LYIMO, N., TEMU, A., and GIBSON, R. (in prep.) Southern Highlands Maize Innovation System Stakeholders Workshop: Improving Understanding and Enhancing Access to Quality Seed and Other Products. Report of the stakeholders workshop, 9-10th November, 2005 at VETA Mbeya, Tanzania. DFID project R8422 and R8406. ARI Uyole, Mbeya, Tanzania.

KIRANGA, E.K., MANGASIN, S.H. and MUSSEI, A. N. (2005) An evaluation of maize variety demonstration farmer research group activities in the Southern Highlands of Tanzania. ARI Uyole, Mbeya, Tanzania. pp 11.

LAMBOLL, R., NSEMWA, L.T.H. and STATHERS, T. (in prep.) Survey of changes in agricultural service providers capacity, effectiveness and morale. ARI Uyole, Mbeya, Tanzania.

NSEMWA, L.T.H. (2005) Improving farmer and other stakeholders' access to quality information and products for pre and post harvest maize systems management in the Southern Highlands of Tanzania, Quarter 1 Report. ARI Uyole, Mbeya, Tanzania. pp 6.

NSEMWA, L.T.H. (2005) Improving farmer and other stakeholders' access to quality information and products for pre and post harvest maize systems management in the Southern Highlands of Tanzania, Quarter 2 Report. ARI Uyole, Mbeya, Tanzania. pp 5.

NSEMWA, L.T.H. (2005) Improving farmer and other stakeholders' access to quality information and products for pre and post harvest maize systems management in the Southern Highlands of Tanzania, Quarter 3 Report. ARI Uyole, Mbeya, Tanzania. pp 7.

STATHERS, T., LAMBOLL, R, NSEMWA, L.T.H. and GONDWE, B. (2006) An evaluation of three seed fairs in the Southern Highlands of Tanzania from different stakeholders perspectives. ARI Uyole, Mbeya, Tanzania. pp 40.

STATHERS, T., NSEMWA, L.T.H., GONDWE, B., and LAMBOLL, R. (2006) A survey of farmers and stockists' access to and demand for maize information, training and products in the Southern Highlands of Tanzania. ARI Uyole, Mbeya, Tanzania. pp 150 + ix.

STATHERS, T., NSEMWA, L.T.H., LAMBOLL, R., and LYIMO, N.G. (2005) Improving farmer and other stakeholders' access to quality information and products for pre and post harvest maize systems management in the Southern Highlands of Tanzania: Report of the Inception Workshop, 22nd-24th February 2005, at the Catholic Youth Centre, Mbeya, Tanzania. DFID project R8422. ARI Uyole, Mbeya, Tanzania. pp 48 + xxvi.

Other dissemination of results

STATHERS, T., NSEMWA, L.T.H. and LAMBOLL, R. (2005) Access to maize information, training and products. Powerpoint presentation at the Southern Highlands Maize Innovation Systems Stakeholder Workshop, Mbeya, Tanzania, 9-10 November 2005. [57 participants]

Listing and references to key data sets generated

Data set	Location
R8422 Validation survey field data	Original flip charts and electronic copies of summary tables, and analysed information included in validation survey report with Lebai Nsemwa at ARI Uyole nsemwalth@yahoo.co.uk
R8422 Photographic collections	Electronic copies with Tanya Stathers TStathers@aol.com and Lebai Nsemwa
R8422 Electronic coalition team communications	Electronic copies with Lebai Nsemwa, Tanya Stathers and Richard Lamboll R.I.Lamboll@gre.ac.uk
R8422 Inception workshop data	Original flip charts with Lebai Nsemwa, analysed information included in Inception Workshop report.
R8422 Seed fair evaluation data	Original questionnaires and electronic copies with Lebai Nsemwa, analysed electronic information with Tanya Stathers and included in Seed Fair Evaluation report.
R8422 Stockists survey data	Original survey data and electronic copy with Lebai Nsemwa, analysed electronic data with Richard Lamboll
R8422 Stakeholder capacity survey data	Original survey data and electronic copy with Lebai Nsemwa