Responding to diversity

A report on the deliberations of coalition members - MoFA, OICT, CAPSARD, CARD, UDS & NRI (UK) - and associated field staff, during an extended workshop held between 21 - 26 June, 2004, at MoFA and Tampe-Kukuo village, Tamale, Northern Region

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Acronyms and Abbreviations

AAGDS	Accelerated Agricultural Growth and Development Strategy
ADRA	Adventist Development and Relief Agency
AEA	Agricultural Extension Agent
AEDF	Agricultural Extension Development Fund
AgSSIP	Agriculture Services Sector Investment Programme
AEC	Actellic EC
AESD	Agricultural Engineering Services Department
AKIS	Agricultural Knowledge and Information System
APD	Animal Production Department
AS	Actellic Super
CAPSARD	Community Action Programme for Sustainable and Rural Development
CARD	Centre for Agricultural and Rural Development
CBO	Community-based organisation
CIDA	Canadian International Development Agency
CPHP	Crop Post-Harvest Programme
CSD	Crop Services Department
CSIR	Council for Scientific and Industrial Research
DADU	District Agricultural Development Unit
DAES	Directorate of Agricultural Extension Services
DDA	District Director of Agriculture
DDO	District Development Officer
DFID	Department for International Development (UK)
DOC	Department of Cooperatives
DRA	Diversity response approach
DST	Decision support tree
EC	emulsifiable concentrate
FASDEP	Food and Agriculture Sector Development Programme
FBO	Farmer Based Organisation
FBODF	Farmer Based Organisations Development Fund
FSR	Farming systems research
FS	Field staff
GES	Ghana Education Service
GDCA	Ghana Denmark Community Association
GTZ	Deutsche Gesellschaft fur Technische Zusammenarbeit
HH	Household
IPM	Integrated Pest Management
ITDG	Intermediate Technology Development Group
LGB	Large grain borer, *Prostephanus truncatus*
MEST	Ministry of Environment, Science and Technology
MoFA	Ministry of Food and Agriculture
MTADP	Medium Term Agricultural Development Programme
MTR	Mid-term review (of project)
NAEP	National Agricultural Extension Project
NARP	National Agricultural Research Project
NGEDEP	(Technoserve's) Northern Ghana Enterprises Development Program
NGO	Non-governmental organisation
NR	Northern Region
NRI	Natural Resources Institute
OICT	Opportunities Industrialisation Centres, Tamale
Output/s	The changes (e.g. knowledge, practices) to be effected within the project timeframe
PHU	Post Harvest Unit (MoFA)
PPRSD	Plant Protection and Regulatory Services Department
PPMED	Policy, Planning, Monitoring and Evaluation Department

PRSP	Poverty Reduction Strategy Paper
PTD	Participatory technology development
RADU	Regional Agricultural Development Unit
RDA	Regional Director of Agriculture
RDO	Regional Development Officer
RELC	Research Extension Linkage Committee
SARI	Savannah Agricultural Research Institute, Tamale
SMS	Subject Matter Specialist
T&V	Training and Visit
ToT	Training of Trainers
UAES	Unified Agricultural Extension Services
UER	Upper Eastern Region
UDS	University for Development Studies, Nyankpala
VIP	Village Infrastructure Project
WFP	World Food Programme
WIAD	Women in Agricultural Development
World Vision	International NGO with offices in Tamale and Gushegu (Gh)

Executive summary

The Crop Post Harvest Programme's (CPHP's) objectives in commissioning the 'farm storage project[1]' were to effect improvements in the household food security of smallholder farmers in northern Ghana (project purpose), and ultimately to contribute to making national and regional crop-post harvest innovation systems more responsive to the needs of the poor (project goal). These aims partially mirror MoFA's current mission statement, which includes 'addressing the specific needs of farmers, especially the rural poor, in an effort to reduce poverty'. They are also in keeping with the focus of MoFA's new agricultural extension policy, which is 'to ensure equity in the distribution of the benefits from development; to improve rural livelihoods; and to reduce poverty[2]' (MoFA, 2002).

The project was also intended to increase the impact of previous CPHP research findings on grain-store pest management options by improving their accessibility to farmers. This earlier body of research focused on developing technical solutions to specific pest/crop-related problems, and paid less attention to distinguishing between the needs and priorities of different farmers, or to understanding delivery system constraints. Either or both of which could - and do - undermine the developmental impact of good science. Both CPHP, and in principle, MoFA, now support the idea that extension services should be more demand-led and client-focused (MoFA, 2002). Post-harvest (and other) extension service provision however does not as yet significantly embody these principles.

This report documents and elaborates work undertaken by the team - coalition members, field staff, technical and social advisors - during a week in June 2004. Workshop activities were guided by the findings (Appendix IV) of the mid-term review workshop[3], held in March 2004. These included that there had only been limited success in 'mainlining' farmers in the project to date, pointing out that the farmers with whom the project had been working were generally those better able to produce surpluses. Moreover the technology options selected by farmers for testing were those favoured by and tailored to the resources available to these types of farmers. It had therefore been agreed that the project must find ways of working with, and identifying the needs of, the wider diversity of communities and households (HHs) found throughout northern Ghana (i.e. that the 'technical' focus of the decision support tools under development must be subsumed within a broader farmer-centred approach).

The aim of this workshop was to concretise the concept of and need for 'responsiveness' amongst extension service providers, with coalition members and field staff, and to initiate the identification of practical ways to explore farmer diversity. Linkages between primary stakeholders - researchers, extension staff and farmers - and the complexity hidden beneath these compound 'labels' are explored, both in the general case and for the project. Exercises were undertaken to identify the constraints (and opportunities) currently experienced by frontline extension staff, to explore and map the diverse factors and circumstance that influence farmer post-harvest decision-making, and to reflect on the measure of 'fit' of current extension practices. Four main diversity 'arenas' are identified and an analytical framework established: differences between HHs, within HHs, between communities /localities, and stemming from other diverse 'external' factors. The framework should help counter the measure of 'blindness' to the diversity of rural communities, and/or to the needs of more resource-poor individuals and HHs, evidenced in earlier work by the coalition. The implications for service providers and for frontline staff of 'responsiveness' to these 'arenas' were also explored, and potential tools for exploring village-level diversity are discussed.

A brief excursion was made to the village to see if the initial disaggregation tool - 'wealth' ranking - could provide a ready way of developing understanding of village-level diversity. This initial foray will be followed up by a focused exercise to develop the methodology, and produce a 'responsiveness' tool box - a series of practical steps - to enable service providers, with post-harvest interests, to take into account and be responsive to diversity at the community, HH and intra-HH levels.

[1] The full name of the project is: 'Improving household food security by widening the access of small-holder farmers to appropriate grain store pest management'.
[2] "..especially among rural woman, the youth and the physically challenged" (MoFA, 2002).
[3] Reviewing progress: Proceedings of a workshop organised by MoFA in coalition with OICT, CAPSARD, CARD, UDS and NRI (UK) and held on March 17th and 18th, 2004 at MoFA, Tamale, Northern Region.

I. Introduction

Small-scale farmers and agricultural sector policies

Modest economic growth in Ghana throughout the 1990s largely bypassed the poorer North of the country, where the proportion of people in extreme poverty[4] and the depth of their poverty continued to increase. Recent studies have confirmed that poverty and vulnerability are worst amongst HHs tied to food crop production, who are increasingly unable to meet their food security needs during the 'hungry' period and forced to adopt coping strategies (e.g. out-migration by male youths; liquidation of assets, including livestock and personal effects) to offset seasonal strains (ROG, 2000; Kunfaa, 1999). Moreover, improvements to life expectancy, which is deemed to have risen in Ghana as a whole from 57 to 59 between 1993 and 1998, may be under threat from the rising incidence of HIV/AIDS.

The current strategic framework underpinning agricultural development initiatives is provided by the Accelerated Agriculture Growth and Development Strategy[5] (AAGDS) formulated in 1997 by the Ministry of Food and Agriculture (MoFA), and the Food and Agricultural Sector Development Programme (FASDEP), 2001, which derives from the national policy document, Ghana Vision 2020.

AAGDS is underpinned by two basic tenets, namely reliance on the private sector to lead investment and economic growth, and the devolution of significant responsibilities from central government to district assemblies. AAGDS recognises the key role played by small-scale farmers countrywide in meeting the national food needs (and producing the bulk of cocoa for export). The strategy also stresses improvements in "the generation, transfer and dissemination of cost effective technologies that are responsive to the needs of farmers, but which ensure sustainability", and argues for emphasis on food security and rural employment. The delivery vehicle for AAGDS is the Agriculture Services Sector Investment Programme (AgSSIP), which has been developed in parallel with the Ghana Poverty Reduction Strategy Paper (PRSP).

It was during the preparation of the AAGDS and the FASDEP that MoFA recognised the need for national extension services to:

- be pluralistic, demand driven and client focused
- promote accountability in the public sector and be responsive to changing needs
- encourage private sector participation, and
- be consistent with other government policies, including decentralisation of government functions to district assemblies.

MoFA acknowledges that the above aims “call for a new way of visualising, planning and implementing delivery of agricultural extension services” (MoFA, 2002). We believe that initiatives being developed by this project will assist MoFA and other key stakeholders in the delivery of improved agricultural extension services to meet both post-harvest (PH) and other (e.g. crop, livestock) needs within the sector.

The Crop Post-Harvest Programme

The aim of the CPHP in commissioning this and other projects in 2002/03 was to build on and promote the findings of research projects that had been commissioned since the programme’s inception in 1995. This idea was promulgated at a regional workshop in Accra in August 2001 - ‘Towards a Regional Strategy for CPHP’ - at which it was also acknowledged that there was a need for CPHP projects to adopt a stronger client focus. Other weaknesses identified in the existing programme at the regional workshop included the lack of fit of CPHP’s work with national policies, the under-representation of social science inputs, and limited institutional capacity building.

A key move instigated by CPHP to address the latter point was the commissioning of projects that were undertaken by locally led ‘coalitions’, with external advisors providing continuity and additional technical backstopping. The coalition in the case of the ‘farm storage project’ includes public (MoFA) and voluntary sector (CAPSTARD, CARD, OICT) extension service providers with PH interests, plus a

[4] Those unable to meet basic nutritional requirements even if the entire budget is devoted to food. In the North malnutrition is widespread with 30% of under fives stunted and 26% underweight (Kunfaa, 1999).
[5] AAGDS supersedes the sector-wide Medium-Term Agricultural Development Strategy (MTADS).

public sector research agency (UDS), and as such may be said to represents a 'microcosm' of the national PH innovation system. This formulation not only provides significant opportunities for capacity development at the individual and organisational level, but potentially offers insights as to how key local stakeholders with shared PH interests might better integrate their efforts to improve the facilitation of farmer PH decision-making. There is already some evidence that the learning process approach being adopted by this coalition is generating benefits for coalition partners (e.g. additional contract work) that will transcend the project timeframe.

With respect to convergence with national policies, many of the ideas latterly (i.e. against the programme timetable) given prominence by CPHP, also now appear in MoFA's new agricultural extension policy (e.g. demand-driven, client-focused extension services and research; emphasis on farmer empowerment; development of appropriate institutional arrangements; pluralistic, flexible and responsive services) (MoFA, 2002).

Coalition partners

The 'farm storage project' coalition partners (and roles) are:

- Mr Fuseini H Andan, PH Officer, RADU, Tamale (project leader, farmer fieldwork)
- Dr Samuel Addo, Consultant (research co-ordinator)
- Mr Sulemana Stevenson, Director, CAPSARD (farmer field work)
- Mr Solomon K Bariyam, Supervisor, OICT, Tamale (farmer field work)
- Mr Naresh Shukla, CARD (farmer field work)
- Dr Joyce A Bediako, Head of Department, UDS (social science research)
- Dr Rick Hodges, NRI (technical advisor)
- Mr Mike Morris, NRI (social & institutional development advisor)

Project aims: its purpose and output objectives

The longer term objective of the project - its 'purpose' in logframe 'speak' - is to improve the HH food security of smallholder farmers in northern Ghana by improving their access to appropriate grain store pest management options. To realise this aim the project memorandum identifies the following 'output' objectives for realisation within the time frame of the project:

- To develop a portfolio of farmer validated grain pest management options and appropriate training / extension materials (Outputs 1 & 2).
- To develop ideas for an effective promotional strategy (Output 3). Effectiveness here must ultimately be measured in terms of 'scaling-up' - the provision of 'more quality benefits to more people over a wide geographical area more quickly, more equitably and more lastingly' (IIRR, 2000 in Gündel et al., 2001) - and the ability of service providers to sustain the initiative. The following components therefore need to be taken into account:
  - different circumstances and livelihood patterns of rural people (i.e. farmer, HH, and community diversity)
  - organisational strengths (e.g. vision & mission, responsiveness, objectives-led thinking, skilled staff, coverage) and weakness (e.g. top-down approaches, task fixation, de-motivated staff, lack of transport) that facilitate and/or constrain the performance of key service providers and associated research agencies
  - knowledge and lessons already learnt elsewhere on promotional strategies (i.e. we should avoid reinventing the wheel).
- To operationalise the promotional strategy (Outputs 4 & 5). The strategy will involve PH service providers in two main thrusts:
  - responsiveness - developing the competencies of field staff (i.e. approach/attitude, practices, familiarity with tools & technical options) to respond to farmer's requirements, rather than simply leading with technical proposals.
  - amplifying and listening to the farmer's 'voice' - facilitating farmers in the articulation of their needs and in their access to, selection and deployment of suitable pest management technologies.

  This approach is in keeping with the 'guiding principles' behind MoFA's new extension policy, which include: that services will be more demand-driven and client-focused; and that views on the

requirements of the farming community will be obtained involving the community in problem identification, planning, implementation and evaluation of extension services (MoFA, 2002).

In effect there is a continuum of extension approaches between the polar extremes associated with 'supply-led' and 'demand-driven' extension. Presently however in Ghana the rhetoric that lays claim to client-driven initiatives, is in advance of the prevailing, typically top-down and technically focused reality. This project hopes to move the reality forward for PH and related initiatives.

II. Rationale and extended workshop objectives

The need for this workshop was in effect raised by the mid-term review (MTR) workshop[6] held in March 2004. The findings of this earlier workshop - see Appendix IV - which had reviewed project performance against the logframe outputs and respective activities, gave emphasis to the limited success of the project to date in 'mainlining' farmers in its activities. More especially the farmers with whom the project had been working were generally those better able to produce surpluses during a relatively 'poor' season (i.e. more resource-poor HHs were excluded). While the technologies and management options selected by farmers for testing were those favoured by and tailored to the resources available to these less resource-poor types of farmers. It had therefore been agreed that the project must find ways of working with, and identifying the needs of, the wider diversity of communities and HHs found throughout northern Ghana (i.e. that the 'technical' focus of the decision support tools under development must be subsumed within a broader farmer-centred approach).

A number of other items were to be addressed during the extended workshop period (see below), however the main objectives of the workshop were:

- **to concretise the concept of, and need for, 'responsiveness' amongst PH extension service providers, with coalition members and field staff,** and
- **to initiate the identification of practical ways to explore farmer diversity.**

Planning for the extended workshop was undertaken by a sub-group of the coalition (with additional support from Semina Hashmi, of 'Engineers without Borders', Canada), and facilitation was provided by the NRI social and institutional development advisor. A familiar routine was followed to generate issues and agenda items, which were in turn prioritised. Coalition members subsequently assessed progress against the MTR items at the end of the workshop (see Appendix I).

Agenda items identified for discussion:

- Issues relating to reporting to the donor - the Quarterly Report issues (e.g. ensuring report is shared with NRI, flagging opportunities for future (post-project) strategic involvement of CPHP in project-related activities in re-submitted version)
- Coalition process / management issues (e.g. performance of individual members, field staff supervision issues)
- Identification of opportunities for future (post-project) strategic involvement of CPHP and other donors in futures coalition activities.
- Progress on mud silo report (e.g. upgrading of conclusions and recommendations)
- Feedback on Activity 10 (Evaluation by FS of the implementation of the storage options by selected farmer groups using questionnaire survey).
- Development of the decision support tool
- Activity 14 (DST) - developing coherent 'framework' and work plans.
- Activity 15 (FDM) - developing coherent 'framework' and work plans.
- Building on issues and opportunities identified in mid-term review (MTR).
- Progress on the promotion front and on extension materials
- Potential use of Dr Bruno Tran, trainer and former CPHP project leader of cowpea solarisation project.
- Project transport issues

These issues were elaborated and addressed during the week (e.g. a matrix was developed for organising the findings, conclusions and recommendations of the mud-silo report; progress on the issues and opportunities identified in the MTR are reported under Appendix I) but in order not to detract from the main objectives of the workshop, they are only briefly referred to here.

[6] Reviewing progress: Proceedings of a workshop organised by MoFA in coalition with OICT, CAPSARD, CARD, UDS and NRI (UK) and held on March 17th and 18th, 2004 at MoFA, Tamale, Northern Region.

III. Primary post-harvest stakeholders, policies and performance

Researchers, service providers and farmers

Post-harvest (PH) extension is noticeably different from crop production or livestock extension services. In the case of field crops or livestock, field staff can generally get a feel for what is happening from direct observation of the crops or livestock. The same is not true for PH storage practices, which although initially characterised by a series of discrete activities often undertaken in 'public' (e.g. threshing, winnowing, treating), typically culminate in secluded storage (and/or sale) arrangements. Perhaps because PH activities are directly linked to HH food security and survival, and/or to 'profit' and wellbeing, their undertaking tends to be a much more private affair, with quantities and quality of grains stored neither readily disclosed by individuals, nor readily assessable by others. Granaries are typically sealed and/or secluded. Unsurprisingly information on PH issues tends to be scarcer and possibly less reliable, and frontline field staff must work hard to develop trust with individual farmers and HHs if they are to develop a good understanding of the PH situation in a given community.

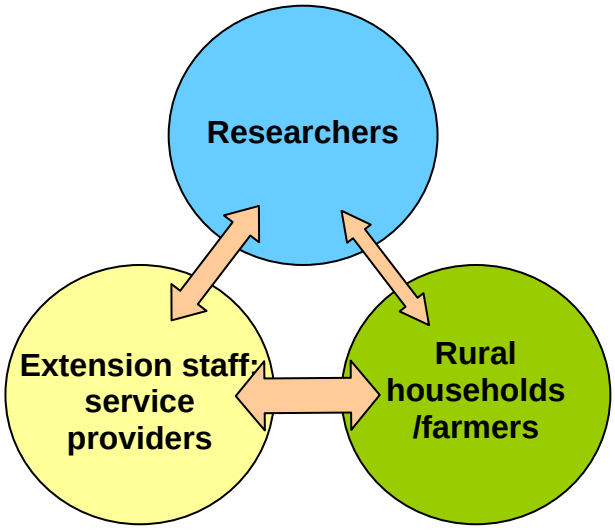


Figure 1. Primary stakeholders in PH extension

Figure 1 presents three groups of 'players' who are, we suggests, primary stakeholders in this project, and in other interventions which seek to increase HH food security through facilitation and improvement of farmer PH decision-making. The individual groups are not homogeneous, nor are they necessarily the only 'primary' stakeholders, as we shall indicate. Not surprisingly the coalition is made up of partners whose predominant roles are those of agricultural-related service provision, research, and/or consultancy - and of course a number of these individuals are also farmers in their own right.

Research stakeholders: Figure 1 indicates that researchers interface directly with both service providers and rural communities. The size of the arrows is intended to convey the relative scale of these interactions, and the arrowheads the direction of information flows. The diagram as drawn 'suggests' that researcher-farmer linkages are the weakest of the three interfaces shown. Moreover the case can be made that while researchers may have some contact with a few farmers, most farmers have little or no direct contact with researchers (i.e. the arrow should be only one way in the direction of the researchers). Table 1 is an attempt to sketch out the interactions at the two interfaces, both at the general level, for which 'HH food security' might be considered the mutual interest, and specifically with respect to the implementation of this PH project.

Information on the general case has been secured from official documents and key informant interviews, and with respect to the project's implementation from coalition members, participating field staff, and the mid-term review (MTR) workshop report. The original research hypothesis for the 'farm storage project' was that 'the livelihoods of subsistence farmers would be improved by the adoption of better grain storage technologies'. While this remains an underpinning rationale for the project, the methodology itself has evolved - as anticipated in the project memorandum - with increasing emphasis being placed on understanding existing PH systems and processes, and on using this learning to inform on-going project design. It is because we have adopted this approach - sometimes referred to as 'action research' - that we choose to include here an exploration of the workings of the coalition and of the more general institutional context. It is only by understanding how key organisational stakeholders (on the one hand, and diverse farmers and farmer groups, on the other) operate, and by exploring the constraints and opportunities within these systems, that the project team can identify potentially workable solutions to PH issues.

Table 1. Public sector research linkages with service providers and farmers in northern Ghana

	Links with service providers	← Research agencies[7] → In northern Ghana generally	Links with rural households
HH food security focus generally	Research Extension Linkage Committees (RELCs) were set up under NAEP and NARP to forge relations between research and extension. They comprise RDAs, SMSs, RDOs, NGOs, farmers' representatives and input suppliers. Cited as having contributed to staff training, guided extension, and made R&D more relevant to farmers' needs; they have not however been able "to respond to the specific needs of the regions and districts[8]" (MoFA, 2002). The RELCs had effectively ceased to operate. Most recently however the FARMER Project has sought to resurrect them.	**Northern Ghana**: The Savannah Agricultural Research Institute (SARI); University for Development Studies (UDS), Nyankpala - both in Tamale. **Accra**: Department of Agricultural Extension, University of Ghana, Legon. **MoFA** technical staff may also undertake adaptive trials in the course of their work (e.g. The PH Unit at MoFA, Tamale, has carried out trials on mud-silos, use of plant materials as grain protectants, solarisation etc., in conjunction with NRI). The **FARMER project**: Farmer Responsive Mechanisms in Extension and Research project - Ghana/Canada cooperation for food security.	SARI has been running farmer field schools and on-farm adaptive trials. UDS is involved in outreach and research programmes in food security, indigenous knowledge, health and community problem solving approaches. DAE (UoG)? MoFA undertakes adaptive trials on crops, livestock and fisheries - including 'solarisation' trials in Kpugi and Wantugu in Gushegu-Karaga districts; plant materials for grain storage in Voggu and Tibung in Tolon-Kumbungu district. RELCs include/d farmers' representatives.
	Links with service providers	**← Research agencies → The project case**	**Links with rural households**
Project post-harvest focus	The coalition comprises public sector (MoFA) and voluntary sector (including consultants) organisations (CAPSARD, CARD, and OICT) engaged in extension, and so ostensibly bridges the research-extension divide. However the mid-term review (MTR) suggested that despite individual members being well connected (i.e. within MoFA, with WFP & CIDA food security initiatives), at the organisational or coalition level the project's aims and processes were not being actively shared with other PH stakeholders, including the Directorate of Agricultural Extension Services (DAES). The project may as yet be better appreciated as an adjunct to income, than as a strategic tool for operationalising parts of MoFA's extension policy and for professional advancement.	**Coalition**: Project research is managed by project leader, Mr F H Andan, the MoFA post-harvest unit (PHU) officer at Tamale, and Dr Sam Addo, the research coordinator. Activities are decided & approved by the management team with coalition members from the NGOs, CAPSARD, CARD & OICT, and the UDS, Nyankpala. With the exception of UDS, the project **does not have** well developed linkages with other in-country research agencies (e.g. SARI; DoAE, UoG). Coalition 'research' expertise is moreover highly **skewed** in favour of the technical rather than social or institutional aspects. **Advisors**: Technical and institutional support is provided by two advisors from the Natural Resources Institute (NRI), UK, which has had a long association with MoFA and the CPHP. NRI staff have attempted to 'facilitate' rather than 'direct' the project, but these roles have tended to merge.	Appendix VI sets out work already undertaken with farmers by coalition members and their field staff. The MTR workshop revealed however that (see Appendix IV): ➢ Need to more rigorously explore community 'diversity' (wealth & well-being status, age and gender, socio-cultural differences, belief and values systems etc). ➢ Project has 'skewed' emphasis on more 'go-ahead' farmers. ➢ Not demand-led: limited 'mainlining' of farmers in project processes to date. ➢ Issue of sustainability, and whether through resource and training inputs we are 'subsidising' a skew selection of farmers, and perhaps in turn consolidating pre-existing inequalities in communities.

Extension service providers: Several agencies offer a range of agricultural extension services. They may be located in the public, voluntary, or private (i.e. for profit) sectors and 'extension' may be their

[7] There are eight semi-autonomous specialist institutions in Ghana involved in agricultural research: Crops Research Institute, Animal Research Institute, Soil Research Institute, Food Research Institute, Water Research Institute, Oil Palm Research Institute, Savannah Agricultural Research Institute, and the Plant Genetic Research Centre.

[8] RELCs are based on the present five agro-ecological zones.

core or a subsidiary business. In the public sector the Directorate of Agricultural Extension Services (DAES), is mandated to "work with the regional and district administrations to ensure that extension services contribute to an effective and efficient way towards the social and economic development of Ghana" (see Table 2). MoFA's 'vision' is that of a demand-driven service in a decentralised system, which would be "established through partnership between government and the private sector[9]" (MoFA, 2002).

MoFA has set out nine basic policy objectives for realising this vision 'in the short to medium term' (see Appendix V). These cover: farmer-driven extension; empowerment of farmers through farmer based organisations (FBOs); promotion of best agricultural practice; efficient and cost-effective publicly funded services; the broadening of extension services delivery; development of appropriate institutional structures at national, regional and district levels; implementation of an effective monitoring and evaluation system (involving major stakeholders); broad based human resources development programme; and, responsiveness to the emerging issues of the HIV/AIDS pandemic, environmental degradation and poverty reduction.

While none of the policies differentiate between pre- and post-harvest extension, the objectives of this PH project are in accord with many of these policies (e.g. farmer-driven PH extension, efficient and effective PH extension services, national PH innovation systems more responsive to the needs of the poor [project goal]). Our experience however confirms that only limited progress has been made to date, and the thrust of this particular workshop is about developing an approach - a 'delivery strategy' - and the necessary tools, that will enable PH extension services to be more responsive to the needs, capabilities and resources of different rural HHs.

Table 2. Coalition member mission statements

	Member	Mission statement
Public and voluntary sector extension service providers	**MoFA / DAES**	MoFA will work with the regional and district administrations to ensure that extension services contribute in an effective and efficient way towards the social and economic development of Ghana through: ➢ Addressing the specific needs of farmers, especially the rural poor, in an effort to reduce poverty ➢ Ensuring that farmers adopt environmentally sustainable methods ➢ Raising agricultural productivity, and ➢ Creating an enabling environment for private sector participation in the funding and delivery of extension services
	CAPSARD	CAPSARD seeks to purposefully promote sustainable agriculture and rural development through participatory action and empowerment, with special focus on women and disadvantaged groups, aimed at integrated human development among beneficiary communities in Northern Ghana.
	CARD	CARD is a Ghanaian, financial NGO with a mission to improve household food security and overall living standard of poor communities in Northern Ghana through the Rural Grain Banking programme. The programme emphasises working with the resource poor productive communities in a participatory manner, and assists them with inputs and advanced support services required for improved production, storage, processing and marketing of food grains.
	OICT	OICT Mission: To help people help themselves to improve their livelihoods by promoting training and services and fostering partnerships with communities and other agencies. OICT Vision: To be a leader committed to empowering the poor and vulnerable through the provision of sustainable self-help initiatives in the Northern regions of Ghana.
Public sector research agencies	***UDS***	*1. Promoting equitable and sustainable socio-economic transformation of communities through practical oriented community based problem-solving gender-sensitive and interactive research, teaching, learning and outreach programmes;* *2. Providing higher education to all persons suitable qualified and capable of benefiting from it;* *3. Positioning itself as a national asset in the facilitation of life-long learning; and* *4. Developing its information and communication technologies infrastructure as the driving force for: the education of more people more rapidly, and the improvement of efficiency, and academic quality in order to advance community and national development.*
	NRI	*To provide distinctive, high quality and relevant research, consultancy, training and advice in support of sustainable development, economic growth and poverty reduction.*

[9] MoFA's definition of the private sector in this context includes NGOs - and presumably faith organisations, unions etc.

MOFA itself has identified and outlines a number of delivery strategies against each of its nine new extension policies. In addition to MoFA the coalition as already indicated comprises a number of voluntary sector organisations (CAPSTARD, CARD, OICT). The core coalition team involves personnel based in Tamale, but earlier project work with farmers (e.g. technical training on storage options, farmer validation) inevitably involved the respective field staff of these organisations. While the project provides a common purpose[10] - "to improve the household food security of smallholder farmers in northern Ghana by widening their access to appropriate grain store pest management options" - which members of the coalition will or should have 'bought into', their respective organisations also have their own mission objectives. Staff awareness of organisational aims[11], the clarity of strategies (and availability of resources) for realising these aims, and the capabilities of staff to operationalise the strategies, will all determine the effectiveness of an organisation.

The mission statements of the project service providers set out in Table 2, have much in common. All make reference to poor, vulnerable or disadvantaged groups (CAPSARD also singles out women, as too does the wider literature of MoFA), and variously aspire to reducing poverty, improving HH security and livelihoods, increasing productivity, and empowering farmers. Sustainability is also picked out in two of the statements. Moreover additional literature about these organisations confirms significant overlapping of intentions. CARD makes reference to 'resource-poor productive communities', a phrase that was elaborated by CARD's director during the proceedings. CARD deliberately seeks out more productive farmers to work with, believing not only that this is the quickest route to improving the production, storage, processing and marketing of food grains, but also that such farmers provide the best example for others to emulate. Project thinking however suggests that where HH circumstances and livelihood resources (e.g. human capital, social capital, natural capital etc.) are significantly different, as is not infrequently the case, successful 'emulation' by those with significantly fewer resources may not always be possible. Nor indeed, given that such HHs will have different priorities, necessarily desirable.

The interface with rural communities, households and farmers: The remaining 'primary stakeholder' group presented in Figure 1 is rural households - the farmers themselves. As already stated, farmers and the farming community are not homogeneous, nor, fortunately, do they only rely on extension service providers or researchers to secure information on which to base their PH decision-making. Farmers are known to use various information-networks, including relations, other farmers, farmer based organisations, traders etc, in addition to extension service providers. Many farmers however, have no or limited contact with credit or financial institutions, which may impede or prohibit the adoption of effective but costly recommendations.

The thrust of this particular workshop is about exploring farmer diversity and concretising the concept of 'responsiveness' with coalition members - rather than actually seeking ways to induce farmer 'demand' (albeit ultimately the two are not readily separated). These proceedings report how workshop participants identified and notionally mapped the potential for diversity both within and between HHs, as well as between communities, and subsequently facilitated villagers in exercises ('wealth' ranking) to elaborate HH diversity within their community. The former activities took the form of developing a common framework of understanding; a necessary starting point as earlier work by the coalition had suggested a measure of 'blindness' to the diversity of rural communities, and/or to the needs of more resource-poor individuals and HHs. The village based work was a 'learning by doing' exercise intended to consolidate the acknowledged diversity within rural communities and (re-) introduce participants to a

Box 1. Main roles of Agricultural Extension Agents (AEAs)

- Assisting farmers in the application and adoption of appropriate technologies.
- Compiling data.
- Identifying and establishing contact with farmer groups.
- Preparing route maps, work calendars and visiting schedules.
- Assisting farmers to identify problems and advising on solutions.
- Arranging and participating in on-farm adaptive trials (OFATs).
- Assisting farmers to establish mini-demonstrations, arranging field days etc.
- Identifying and forecasting pest/disease outbreaks.
- Educating farmers in farm management.
- Collaborating with other partners.

Source: MoFA (2002)

[10] Beyond its purpose the project goal is that "national and regional crop-post harvest innovation systems respond more effectively to the needs of the poor".
[11] At the workshop, in most if not all cases, coalition members were far from 'word perfect' on their respective organisational mission statements.

'tool' for developing understanding about that diversity.

This section, which builds on the findings of the MTR workshop and a series of exchanges held before and during this workshop, contrasts the new approaches to agricultural extension alluded to in the above mission statements, with the current experiences of project staff in PH extension. New thinking emphasises 'farmer-first' approaches in which services are to be 'demand-led'. Amongst other things these approaches require that service providers give emphasis to the 'empowerment' of farmers, acknowledge that farmers secure information from multiple sources, and anticipate greater private sector involvement in extension delivery and funding.

The main roles of agricultural extension agents (AEAs) according to MoFA are set out in Box 1. The team's experience is that many extension practices remain effectively 'top-down' (i.e. the provision of information as deemed by service providers to meet the needs of farmers), and 'monolithic', (i.e. failing to take account of the different needs, resources and capabilities within farming communities).

The approach adopted by extension staff in assisting farmers with respect to the adoption of appropriate PH (and other) technologies, for example, has too often been a 'one-size fits all' approach. This tendency appears to stem from the failure of extension services to take community and HH diversity into account when seeking to assist farmers. 'Contact' farmers and other groups who agricultural extension agents (AEAs) select to work with, generally come from more go-ahead and/or less resource-poor sections of the community. The problems experienced by these contact farmers may not be the same as those experienced or prioritised by other farmers; and even when they are the same, the proposed solutions are not necessarily equally accessible or affordable for all groups.

Figure 2 represents extension provision in which both the approach and messages may be said to be 'monolithic'. Community diversity is represented by the 'wavy' boundary, in which only some farmers make contact with the service provider - the uppermost box. Other farmers and HHs are not in direct contact with the service provider. The extension 'agenda' is effectively set by the service provider who is offering a 'one-size fits all' technology, rather than first establishing the needs, capabilities and resources of different farmers or HHs. The technologies in question are often well suited to the needs of 'contact' and other progressive farmers, who are the main points of reference for the AEAs and typically invited to notify others in the community about future extension meetings. Under some circumstances the 'contact' farmers (or farmers groups) may not only act as early adopters, but also effectively 'stimulate' the up-take of the technology by fellow farmers. Too often however the technology may not meet the needs of other farmers, or may require resources that they do not have (e.g. mud silos may be beyond the requirements of some HHs or individuals, synthetic pesticide may be too costly, polythene for solarisation may be unavailable), in which case wider dissemination (trickle-down) will not take place.

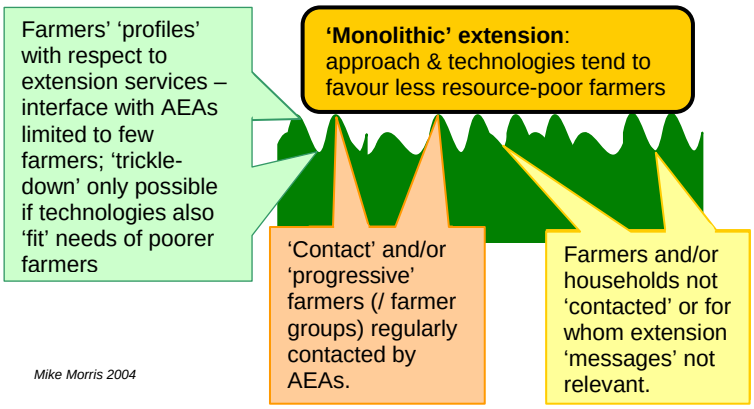


Figure 2. Extension-farmer interface

IV. Group work: Reflecting on experience

The group work, unless otherwise stated, was undertaken by three groups of approximately 6 people each, selected to include a mix of all types of participants (e.g. field-based staff, Tamale based-staff, and researchers - 'maximum mix' groups). Appendix II lists the workshop participants and their roles.

Research project activities: Constraints and opportunities identified by field staff

The first group exercise undertaken by the participants - but directed particularly at the field staff (i.e. others were invited to play a more facilitatory role) - was to reflect on the earlier project initiated activities undertaken with farmers, and to identify what they considered to be the constraints and/or

opportunities associated with carrying out these activities. Individual field staff may well be aware of the 'diversity' within rural communities, but the systems within which they are working (may or) may not encourage or allow for working responses to diversity. This exercise was intended to identify the sets of constraints (and/or opportunities) imposed by existing systems' (as opposed to individual's) limitations. Before one can address or offset such constraints (or build on opportunities) one first needs to identify and categorise them. The results of this exercise are presented in Table 3.

Table 3. Operational constraints and opportunities identified by field staff

Activities undertaken (amalgamated)	Group 1: constraints & opportunities	Group 2: constraints & opportunities	Group 3: constraints & opportunities
➢ Trained in project objectives - by coalition ➢ Given action plan - by coalition ➢ Identification of communities ➢ Called general meeting with farmers ➢ Sensitised farmers about project ➢ Called for interested farmers to come forward ➢ Held separate meetings with interested farmers ➢ Administered group questionnaire ➢ Administered HH questionnaire - production levels - socio-economic activities ➢ Identified existing storage structures in community - identified problems ➢ Informed participating farmers of various storage options ➢ Trained participating farmers on good storage practices ➢ Another meeting called at harvesting ➢ Grouped participating farmers according to storage options ➢ Trained farmers on 'solarisation' and insecticide use (e.g. Actellic Super EC liquid) ➢ Carried out experimentation/ trials with 10 interested farmers in each operational area ➢	**Problems**: ➢ Women (6 had expressed interest) unable to participate in trials due to insufficient grain **Storage phase**: ➢ Actellic Super EC used by all but in different storage 'structures' ➢ Losses observed in the 2 sack storage trials during 2nd sampling/visit ➢ Interviewed affected farmers ➢ Recommended 'solarisation' or re-treatment with insecticide ➢ 5 farmers had consumed grain in trials by third sampling/visit ➢ 50+ participants present during evaluation of trial **Good**: ➢ Good participation / motivation ➢ Good initial balance between women (6) and men (9) ➢ 'Good: 'Self selection' of farmers ➢ Good: Organised group purchase of insecticide ➢ Good: Farmers - not extension staff - chose storage options ➢ Good training **Bad**: ➢ Bad: Access to materials (polythene & insecticide) was poor ➢ Bad: Loss of females ➢ Bad: Inadequate supervision of trials by AEAs / supervisors ➢ Bad: Farmers wonder about benefits from field activities of project	**Constraints**: ➢ Production levels determined involvement & storage options ➢ Shortage of food ➢ Farmer cooperation - Farmers were not prepared because there were no 'incentives' - Non-participating farmers felt ignored - Presence of incentives ➢ Availability, accessibility, & affordability of pesticides – should project AEAs provide? ➢ More farmers wanted to join **Strengths**: ➢ After initial introduction there was an increase in interest ➢ (But after selection there was a decrease in interest - weakness) ➢ Community selected participating groups. **Training**: ➢ Lack of being clear between extension and research – training needed ➢ Distribution of resources between the coalition deemed unfair (coalition member) ➢ Inadequate information flows (re data collection) between field supervisors and AEAs	**Management Problems**: ➢ Communication between supervisors & field staff e.g. technical issues don't reach field staff ➢ Because of coalition problems project leaders unable to give on the spot instructions ➢ Finance for field work always comes at the end of the quarter when activities are over ➢ Delays in input supply from management **Problems with Farmers**: ➢ Farmer wants field inputs instead of advice ➢ Experimentation delay ➢ Farmers can't meet cost of pesticide ➢ Poorest farmers withdrew ➢ Farmers' storage pattern incompatible with project calendar ➢ Farmer participation low due to low acreages ➢ Farmers consumed produce before time (to manage funerals, outdooring of babies etc) ➢ Inadequate farmer options **Field staff problems**: ➢ Due to poor cordiality between supervisors and field staff, field staff unwilling to approach supervisors ➢ Too long absence of supervisor cost the effectiveness of field activities ➢ Due to poor maintenance of motorbikes and failure of project to supply spare parts, cost the efficiency of field work ➢ Due to poor nature of roads certain places cannot be reached during the rainy season.

Discussion:

The constraints identified in Table 3 may be characterised according to whether they stem from poor design of the activities, from the 'external' environment, or from the management or implementation of the fieldwork, as shown below:

Constraint association	Example constraints
Activity/(project) design	poor match with farmers' resources e.g. cash/credit constraints, cost of synthetic pesticides, polythene
	despite wider initial interest low involvement of farmers, particularly women, and poorer farmers who withdrew
	storage technology trials only relevant to those few farmers with surpluses
	issues about 'incentives' for farmers, discontent amongst non-participants
	farmer wants field inputs rather than advice
External 'environment'	poor availability of or access to materials e.g. synthetic pesticides, polythene
	poor infrastructure, some places inaccessible during the rains
Management / implementation of fieldwork	Financial issues, including timing of payments
	Poorly maintained motorbikes
	Poor communication between supervisors and field staff about the purpose of the trials, and differentiation between extension and research
	Poor cordiality between supervisors and field staff
	Farmers not adequately prepared
	Delays in 'input' supply from management

The distinction may not always be clear: 'farmers not adequately prepared' is an implementation issue, but might also have been expected to be covered under design. All three types of constraint may provide 'learning opportunities' for the coalition, but many of the constraints associated with management and implementation are generic i.e. 'features' of existing delivery systems. While some of the constraints will be beyond the realm of the project to address (e.g. poor infrastructure), many others invite critical examination (e.g. of difficulties in accessing and availing pesticides) and creative solutions (e.g. organisation of group purchase of insecticide). We would expect the current work to help address many of the constraints associated with activity design. The opportunities or strengths identified all interestingly relate to the participation of farmers (e.g. farmer involvement generally, farmer selection of technologies).

Factors influencing farmer post-harvest decision-making

In the second group work session participants were invited to identify any factors or different circumstances that might influence farmers' PH decision-making.

The combined results are presented in Figure 3 and Table 4. Figure 3 focuses on factors that may be considered to 'define' HHs – composition, resources, livelihood activities, outcomes (e.g. production levels). In addition HH decision-making will also reflect characteristics associated with the local community (e.g. socio-cultural factors) and locality (e.g. infrastructure, agro-ecological environment), and the

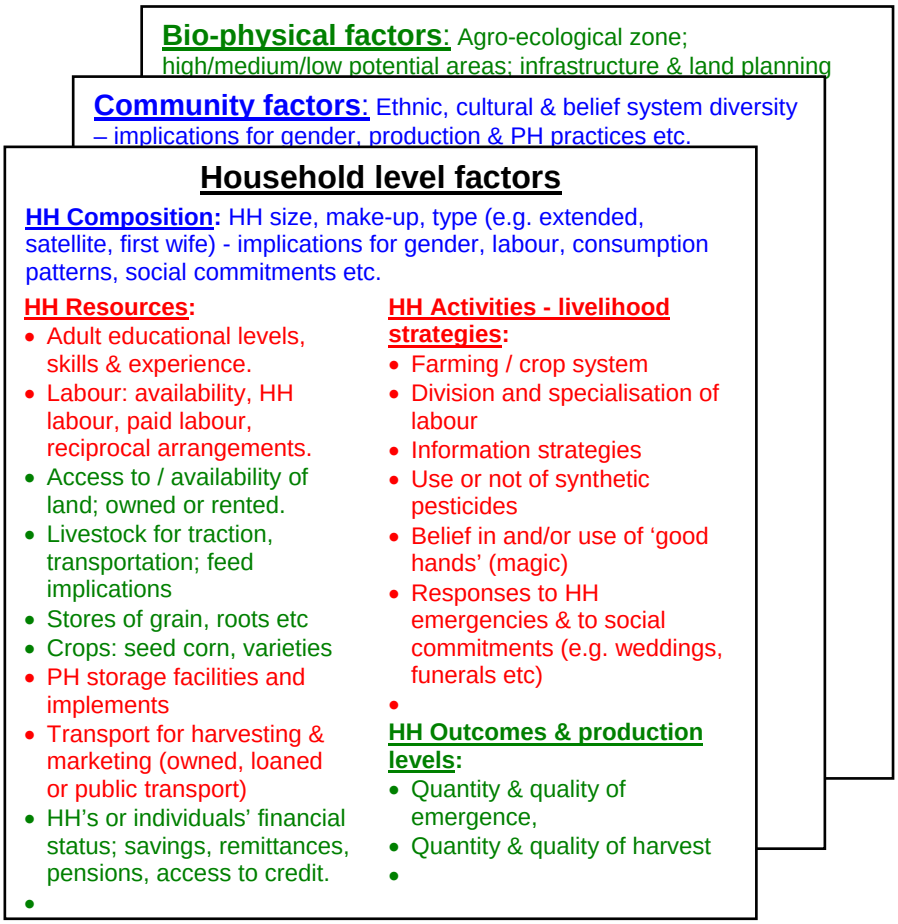


Figure 3. Household and community 'factors' influencing farmer PH decision-making identified in group work

diagram shows the HH 'nested' within these broader parameters.

During the subsequent visit to Tampe-Kukuo village, which is on the outskirts of Tamale, we learnt that land availability for farming was considerably restricted due to increasing urban development. So much so that women were no longer able to farm in their own right. This example of a particular community / bio-physical environment had not been captured in the group exercise.

Table 4 includes those additional 'external' factors that stem from arenas outside the three HH related domains (i.e. locality, community, HH), although infrastructure, services and resources held in common might equally be included under 'communities' in Figure 3. 'External' factors include climatic factors, nature and incidence of pests, market factors, services and interventions, and government related factors. Table 4 could perhaps be presented as a further encircling 'arena' in Figure 3, albeit the relationship between say market prices or government policies and the HH is not as clearly 'physically' defined as locality or community. The organising principle used here is in line with that used in sustainable livelihood frameworks (see the livelihoods cycle diagram in Appendix III).

It is worth noting that while further study of intra-HH differences would undoubtedly reveal gender issues, gender implications will occur in all the diversity 'arenas', and needs to be at the forefront of all PH considerations (i.e. gender is a cross-cutting issue). Irrespective of regional, ethnic and cultural variations, women play a key role in the PH sector - a point that is often omitted in the design and 'matching' of PH technology options. At the community level, for example, village infrastructure (e.g. drinking water locations, distances to markets & credit organisations, existence and accessibility of education and health facilities, nature of public transport) will have differential impacts on women, children and men. Given that women and children may undertake a substantial part of the work of transportation (including bringing the harvest in, marketing) many of these impacts will be particularly enervating and time consuming for them.

Table 4. External 'factors' influencing farmer PH decision-making identified in group work

Climatic & other Natural phenomena

- Poor & erratic rainfall
  - Effect levels & quality of production
  - Influence pest incidence
  - Effect harvest & consumption patterns
  - Influence moisture content, incidence of mould etc.
- Drought & floods
- Bush fires / natural disasters

Pests & diseases

- Levels of pest infestation (outbreaks & epidemics)
- Different types of pests

Conflicts – conflict over resources, civil unrest

Infrastructure

- Accessibility of markets
- Transport networks & operating systems
- Communication channels

Market factors

- Input prices
- Availability of inputs (e.g. pesticides, polythene)
- Produce prices & movements over time
- Labour markets
- Types & distribution of markets
- Proximity of markets
- Food imports

Services & interventions

- Extension services & activities (State, voluntary, private)
- NGO & other interventions (e.g. projects, food aid)
- Education & awareness raising programmes
- Credit facilities

Government factors

- Policies & programmes (e.g. MTADP, FASDEP, AAGDS, NAEP, Decentralisation)
- Subsidies etc

Analytical framework: The various factors - community/HH related and 'external' - identified as influencing PH decision-making in Figure 3 and Table 4 are re-presented in Figure 4, only this time using a livelihoods framework to better differentiate their respective 'paths' of influence. In addition to factors (both HH related and 'external') that influence or impact PH decision-making directly, there are other, 'secondary' factors whose influence is effected indirectly via the HH livelihood cycle.

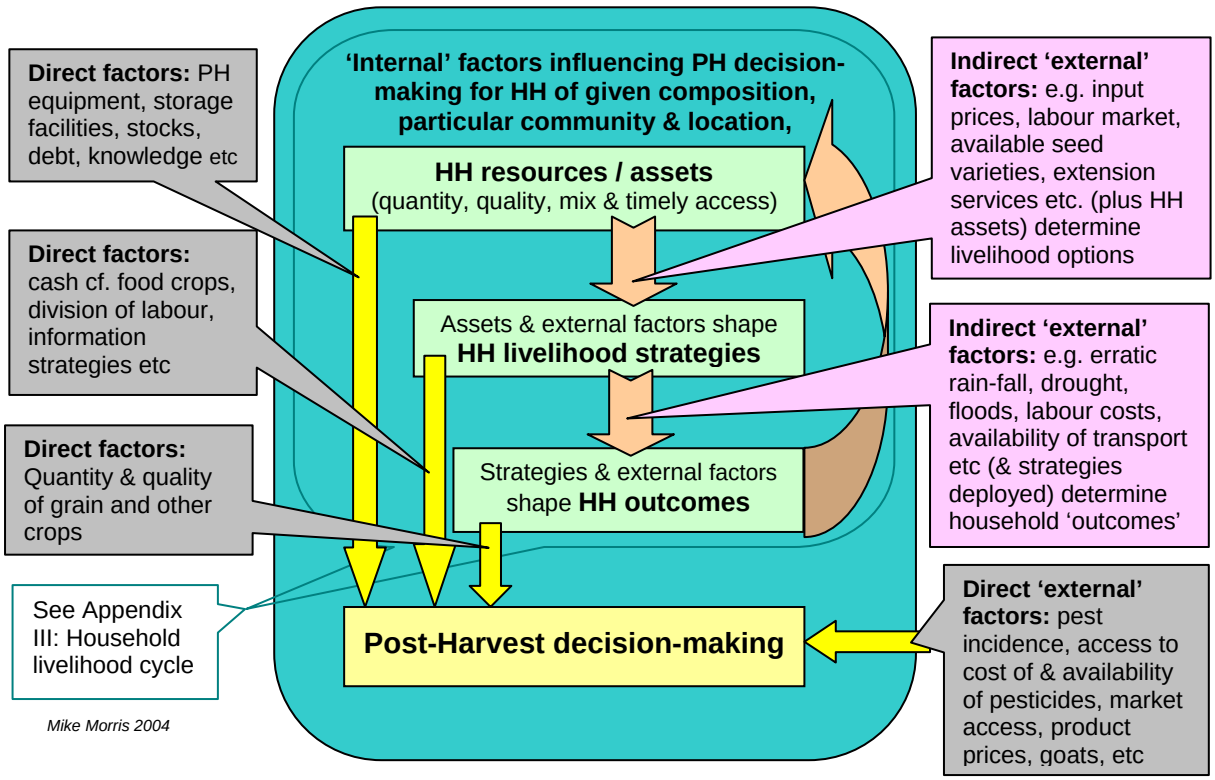
Direct influences stemming from HH assets, strategies and outcomes, are represented by the three vertical arrows on the left, together with the direct influences stemming from 'external' factors, represented by the horizontal arrow on the bottom right. Other factors play a role in determining – constraining or facilitating – what livelihood strategies may be undertaken based on available HH resources, and similarly the outcomes (e.g. production levels) resulting from the deployed strategies. These are represented by the two central located vertical arrows and associated explanations in the top two right hand boxes. Some external factors will also influence the conversion of HH outcomes

into HH resources, as indicated by the upwardly sweeping arrow on the right. Part of the harvest – an 'outcome' – may be sold to purchase new equipment – a physical resource – but the amount will be determined by their respective prices (i.e. on an external factor). The representation of HH (or individual) livelihoods in this way – assets, strategies and outcomes - with external factors mediating the unfolding series is based on a 'sustainable livelihoods framework' (see Appendix III).

Figure 4 attempts to capture or represent all possible situations. It is important however to appreciate that farmers and HHs, even in the same community, have different resource bases – different quantities, qualities and mixes of assets – with timeliness of access also differing (e.g. those who borrow, as opposed to own, oxen to bring home the harvest, will have to wait longer). Different HH resources imply different post-harvest decisions. Farmers with cash (or assets that can be liquidated – sold for cash) for example, may consider purchasing synthetic pesticides. Those without such assets are not in a position to make such purchases. In good years many farmers may have a surplus to their food security requirements. Better-off farmers with good storage facilities (e.g. mud silos) can plan to treat their grain with synthetic pesticides and wait until the price goes up before selling the surplus. Poorer farms may not only be without adequate storage facilities but also be required to sell their surplus sooner, at a low price, to meet HH debts, medical bills, etc.

Given different resources, the livelihood options available to HHs also diverge, as too will the outcomes of these options or 'strategies'. Farmers able to grow both cash and food crops will make different PH decisions to those HHs who are locked into food crop production only. The former will be able to afford better storage facilities, the latter may have to rely on traditional treatments to disinfest poorer storage facilities. At the community level there may be different 'division of labour' patterns (e.g. by sex, age, status) associated with PH activities; in this context for example, female-headed HHs may be required to call upon male relatives or children to undertake tasks culturally undertaken by men (e.g. loading mud silos).

Figure 4. The 'play' of factors influencing household post-harvest decision-making



If PH extension services are to be 'responsive' in nature, then we need to develop a suitable methodology - the 'responsiveness' tool box - for identifying and taking into account the existing diversity at community, HH, and intra-HH levels (implicit in the above). When this is achieved we should then be in a position to systematically develop our understanding of the complexity of factors that influence PH decision-making under different circumstances, and to ensure appropriate

responsiveness for different HHs. This work is being planned and will we hope be accommodated in the coming months.

Exploring the 'fit' of existing extension practice

The third group exercise required field staff to critically reflect on the 'fit' of extension practices or technologies to the needs of farmers. Table 5 reproduces the 'flip charts', largely unedited, which the groups generated during the exercise on the basis of recent experiences. It appears that the groups were more comfortable with reproducing the rationale and dissemination plan for the practice or technology, and less comfortable with critically assessing its match to farmers needs. This could of course be reflecting misunderstanding on the point of the exercise, poor facilitation, and/or one exercise too many in a hectic schedule etc. Experience however lends weight to the probability that it is also picking up on weaknesses in service providers' familiarity (and/or capabilities to work) with the client-base, and on inadequate monitoring or impact assessment systems.

Table 5. Group assessment of recent extension exercises

1. Farmer-based organisation & mud silos

Aim: food security - "every HH entitled to mud silo"

Community selection: determined by operational areas - *who overseas that certain areas aren't left out or favoured?*

Farmer selection: 'interested' farmers step forward - *no general awareness training or sensitisation took place.*

Conditionality: interested farmers instructed to procure materials (e.g. anthill clay,binding grass, stones, water)

Fabrication: ADRA trained artisans brought in build mud silos - *some farmers keen to learn about construction, and some informal instruction took place*.

Use of mud silo: OIC field staff visited after construction to train farmers in treatment of grain with ASD before storage.

2. Appropriate use of Pesticides

Aim: train farmers to use chemicals safely and avoid food poisoning; and to protect their commodities.

Communities: Small-scale farmers in all 13 Districts in NR.

Benefits:

- farmers use appropriate storage insecticides
- proper disposal of storage containers
- right dosage or concentration applied
- farmers know where to get chemical (MoFA recognised agents)
- use of indigenous botanicals

Problems:

- larger farmers also use chemicals?
- containers used by people/children for water
- 'chemicals' not always culturally acceptable
- excessive 'chemical' use can lead to environmental pollution
- not all farmers can use chemicals (e.g. too costly, availability issues, lack knowledge/skills)

3. 'Participatory technology development' (PTD) grain storage demos.

Assumptions: Farmers would volunteer information on their storage problems and internal decision-making factors due to 'participatory' nature of process; farmers would be willing to adopt emerging recommendations.

Things taken into consideration: length of storage; quality of harvest; cost of treatment - affordability

Strengths:

- good attendance
- good participation

Weakness:

- community diversity not represented
- poor gender representation
- poor recall of participants

4. Farmer group animation

Community entry:

- Visit & introduce yourself to opinion leaders
- Book appointment so that whole community can be made aware of event

Activities:

- present 'mission' - helping farmers help themselves - at meeting (50+ expected)
- participatory listing and prioritisation of farmers' problems (*but how will the different priorities between HHs and individuals be caught?*)
- Includes post-harvest losses

(This) 'pilot' project:

- sensitise them to pilot project
- questionnaires
- selection of participants
- options presented to farmers
  - farmers trial options
  - other farmers 'experiment

Knowledge about particular technologies and their potential benefits would appear to be clearly understood, as evidenced by the 'appropriate use of pesticide' example here, and by earlier exchanges. There would also appear to be reasonable understanding of community 'entry-point' protocols, as evidenced by the 'farmer group animation' example, and earlier discussion. As presented however, the technologies (e.g. mud silos, synthetic pesticide use) appear to 'determine' the selection of the farmers or farmer types, and no clear evidence (beyond reference to operational

domains - 13 districts, small-holders) is presented (nor criticisms offered) that suggest outreach initiatives are inclusive or having impact. The 'participatory technology development', as elaborated by its proponent, and which could have demonstrated 'inclusion', appeared to be 'one-off' and as yet in a very early stage of development.

Taking diversity into account

In the fourth group exercise participants were first asked to indicate, with explanations, whether service providers should take into account the various sets of factors and circumstances associated with different diversity arenas (e.g. between communities/localities, between HHs, within HHs, other 'external' factors) and identified as influencing farmer PH decision-making. Where the answer was yes, they were further invited to comment on the implications for: service providers in terms of the management of 'knowledge information', approaches, resource allocation, human resources development, operational issues etc; and at the farmer interface level, for extension tools and practices (Table 6).

With respect to the community, HH, and individual diversity arenas, the working groups were unanimous that different circumstances should be taken into account. At the general level it is suggested that this would 'optimise our interactions with farmers', and specifically provide us with a 'better understanding of (different HHs') livelihoods' and a more 'balanced' picture of the situation within HHs. Taking differences associated with external factors into account was also generally endorsed, albeit one group expressed some reservations about 'subsidies' and 'loans'.

The focus of MoFA's new agricultural extension policy (MoFA, 2002) - ensuring equity, improving rural livelihoods, and reducing poverty especially among rural woman, the youth and the physically challenged - also provides convincing arguments for exploring diversity. In the absence of any mechanisms for gauging diversity however, it is difficult to see how 'equity' considerations can be put in place. Similarly, without an informed awareness of poverty, at community, HH or intra-HH levels, implementing (and assessing the impact of) poverty reduction strategies becomes a nonsense. Moreover for those NGOs whose mission statements cite poor and vulnerable groups - all those in the coalition - exploring diversity should presumably be a pre-requisite.

Implications identified for service providers who seek to take diversity into account, include (or imply): need for making this explicit in organisational mission statements; need for greater understanding (of diversity, and in terms of trained staff; relevant organisational capacity (human resources, hardware, funds); and 'advocacy' with donors and international agencies. As the 'policy' element is already in place (according to the mission statements), then presumably the problems lie with the strategy for developing understanding, or with management and/or the subsequent delivery of extension. In line with the discussion of group work I, which suggested that institutional constraints were associated with: 'project' design; the 'external' environment; or management and/or implementation issues; and given that favourable policy exists, it would seem that the 'lack of understanding' stems from limitations at the 'design' level. Whatever other constraints there may be, service providers need a 'methodology', a **step-by-step design for developing a 'responsive' understanding of rural diversity at all its levels**.

The further question about implications at the interface of frontline extension staff and farmers was framed in terms of 'extension practices and tools'. Some contributions mirror the implications at the organisational level (e.g. field staff need to understand diversity, need to be trained - specifically on gender), with some suggestions on the 'qualities' or training that would facilitate staff in these roles (e.g. secondary level education, respect/observe customs, live with community). Some contributions go beyond the immediate implications for frontline field staff, and focus on 'programme' implications (e.g. draw conclusion on type of advice, 'packaging' of extension ideas for 'fit').

Feedback on this exercise was accompanied by a discussion of the sorts of tools that might usefully be deployed to explore and develop understanding of diversity, and a follow-up exercise on this theme was added to the workshop agenda (see Table 7). **The challenge however is not simply that of hitting upon means and tools to recognise 'diversity' - extracting it like juice from an orange - but rather that of learning from farmers; working with them in a responsive way, so that we develop an understanding of diversity while learning from them about their respective priorities.** To do this effectively will involve field staff in taking off their more familiar top-down, advisory caps, and donning a more modest attitude - not always easy. Interactions would be with more diverse groups of farmers than would probably normally be the case for many field staff.

Table 6. Diversity 'arenas': implications for PH service providers and frontline staff

Different circumstances influencing farmer/HH decision-making	Should these different circumstances be taken account, and why?	Implications for service providers	Implications for extension practices & tools
Should these different circumstances be taken account of in principle?	Yes – to optimise our interactions with farmers. Yes.	Look at all farmers' problems. Deeper understanding of difference required → policy(/strategy?) for taking difference into account. Mission statement to be explicit in acknowledging difference.	Extension staff need to be trained in identifying all farmers' circumstances. Conduct diversity study: ➢ Questionnaire ➢ Focus group discussions With appropriate gender sensitivity
Differences between communities/localities – ethnic, cultural & belief systems and their implications for gender, production, & PH practices; environmental differences. Include 'political' differences.	Yes – communities are very diverse. People are very sensitive to these issues. Very important – may have gender & age implications. 'Money' gravitates to Accra & Kumasi. Youths move to urban centres. Yes	Training of FS should take into account the diversity issue. Regular 'backstopping' on the diversity issue. Flexibility needed – bureaucracy can get in the way. Need knowledgeable staff or give staff training. 'Interchange' staff between areas. Lobby central government & international donors. Deeper understanding of difference required → policy(/strategy?) for taking difference into account. Mission statement to be explicit in acknowledging difference.	FS should be conversant with community issues. FS living with communities. Need to follow local customs; greet traditional rulers, assemblymen, and chairman. Need to respect people's faith. Village level workers need secondary level education. Environmental differences suggest different storage structures & practices. ➢ Culture questions (HH level) ➢ Environmental issues - more community based (i.e. mapping).
Differences between HHs – composition, type, resources, livelihood strategies, livelihood outcomes (e.g. production levels).	Yes – for better understanding of their livelihoods. Yes. Yes important.	Train FS on livelihood issues. Deeper understanding of difference required → policy for taking difference into account. Mission statement to be explicit in acknowledging difference. Target larger HHs (not everyone agreed) Target dedicated/serious/committed farmers. Targeting will depend on agency's 'mission' statement (and mandate) Resource implications - time, logistics, staff. Train FS: in-house; contract training	FS trained to identify various wealth groups / classes / categories. ➢ Questionnaires/interviews with HHs. ➢ Composition, resources, livelihood activities, production level questions → After analysis, ranking, form conclusions on the type of advice. "Dedicated farmers" could include resource-poor farmers/HHs who are serious. Time needs to be spent in community (meetings). Explore previous records. Identify different types of HHs (by resource base, activities, production). Home and farm visits. 'Packaging' of extension ideas to fit intra-HH differences.

Intra-HH differences – gender, age, activity specialisation	Yes – balanced / different views from all groups / players. Yes important. Yes.	Training on gender issues Take into consideration the capabilities of gender. Specific statement on gender (within policy). Training for field staff "There are more women (than men) in Upper East" Cultural & faith differences may restrict women's roles.	Training FS on gender issues ➢ Age structure, gender related questions. ➢ Marital status questions. Need to work through husbands, 'magazia'. Female FS working with female focus groups. 'Packaging' of extension ideas to fit intra-HH differences.
'External' factors – climate & other natural phenomena, pests & diseases, conflicts, infrastructure, market factors, services & interventions, government policies & incentives	Yes – they are unavoidable. (Provision of incentives, loans: No, terms not favourable) Yes important. Yes.	Training on early warning signals / indices for pests, climate hazards, markets. Re government policies, incentives, infrastructure etc: liase with other stakeholders. Focus services where needed. Climate/seasonality: ➢ Strategic implications for planning ➢ Resources needed in advance ➢ Contingency planning (if flood.. if drought) Pests: ➢ Contingency planning (pest outbreaks) ➢ Good communications with villages, and with food crop development projects Markets: ➢ Need to facilitate access to credit (ADB) ➢ Micro-finance aspects ➢ OIC 'project credit inventory', grain banking ➢ Analyse existing demands ➢ Training Infrastructure: ➢ access to markets Government policies: ➢ Need to link up with District Assemblies for policy making & implementation	Emphases on training in risk warning systems (RWS). Communication between stakeholders. Climate/seasonality: ➢ Planning activities to fit farmer's timetable Pests: ➢ Pheromone traps - early warning system ➢ Identify specific groups, FBOs. Markets: ➢ Financial management training for farmer groups ➢ Credit given for seed, fertilizer, and ploughing services ➢ Improvement in SUSU practices ➢ Need for information on market trends, intelligence Infrastructure: ➢ Need for good storage facilities ➢ Form groups for bush fire volunteers

Table 7. Potential tools for assessing diversity

Diversity 'arenas'	Potential tools for taking diversity into account
Differences between HHs (composition, resources, livelihood activities, outcomes and/or production levels).	➢ 'Wealth' (well-being, poverty) ranking to 'disaggregate' community ➢ Livelihood diagrams ➢ Asset surveys and resource mapping, including soil and vegetation surveys and inventories of the quality of housing stock, water supply, and sanitation systems ➢ Seasonal calendars of asset availability and quality ➢ Seasonal calendars of production, employment and income ➢ Inventory and ranking of income and expenditure ➢ Social network and Venn diagrams ➢ Questionnaire interviews & analysis ➢ FS trained to recognise existing wealth groups, classes, categories ➢ Use of secondary data (from all sectors) ➢ Focus groups ('wealth' ranked & gendered) for prioritisation exercises ➢ Gender analyses ➢ Timelines to identify change/innovation in HH PH systems, and associated information sources
Intra-HH diversity (division of labour, specialisation, gender, age, adult/children etc)	➢ Seasonal calendars to distinguish different PH roles & responsibilities ➢ Cropping calendars ➢ Gender analysis ➢ Daily routine charts
Differences between communities / localities (socio-economic, ethnic cultural, political, eco-logical, infrastructural, bio-physical environment)	➢ Key informant interviews ➢ Literature review, secondary data ➢ Asset surveys and resource mapping, including inventories of infrastructure & public utilities, quality of housing stock, water supply, and sanitation systems ➢ Narratives or institutional histories from key informants (including traditional rules, tenure law and practice, and/or markets) ➢ Well-being ranking of social groups, communities or populations in regions (at different moments in recent history) ➢ Social mapping ➢ Study of historical aerial photographs and remote sensing images and data, with a particular focus on environmental change ➢ Mapping of migration patterns
Other 'External' factors	➢ Pheromone traps - early warning system ➢ Market inventories and commodity price tracking (MoFA) ➢ Study of meteorological and demographic data ➢ Secondary data generally ➢ Environmental checklist

As Table 7 suggests, there is no shortage of potential tools for exploring and assessing levels of diversity. Our task however is about developing 'responsiveness' amongst service providers and frontline extension staff - responsiveness to farmers; and ultimately about facilitating farmers in the articulation of their needs and in their PH decision-making. Without this clarity of purpose - or in the wrong hands, or with the wrong attitude - the use of many of these tools (with respect to communities and HHs) may simply be 'extractive'. We are not simply looking to assess diversity *per se*, but rather seeking to **learn from farmers how diversity effects them**, **in order to be able to better facilitate their PH decision-making**. It was after all through an exploration of the different factors and circumstances that might influence farmer decision-making that we first arrived at 'diversity', and came to acknowledge its importance. Section VI describes how we are planning to take this work forward.

V. Tampe-Kukuo: voices from the village

The design of the workshop was around two main thrusts: the first of concretising the concept of and need for 'responsiveness' amongst PH extension service providers, with the participating coalition members and field staff; and the second of initiating the identification of practical ways to explore farmer diversity. We have explored project staff's ideas of diversity, identified diversity arenas, plus undertaken group work 4 - Table 6 - which suggests that there is strong agreement on the need for service providers (and others) to take diversity into account. To consolidate progress on this aim and ensure the second objective was also addressed, it was always anticipated that we would spend some time in the village. And to this end Tampe-Kukuo had been selected and given advance warning.

Having espoused the virtue of learning from farmers, but warned of the risks of being 'extractive' in our work with farmers, our intentions in going to the village on this occasion were somewhat one-sided. Following earlier deliberations, 'wealth ranking' (about which much criticism can be made) looked to be a suitable option to explore as a mechanism for initially disaggregating the community (see Box 2). Most coalition members and field staff have however very little, if any, experience in its use. It was decided therefore that we would demonstrate the potential of wealth ranking to the participants.

Box 2. Why 'Wealth' Ranking? Finding out about wealth and incomes within a community is difficult. People are often not willing to provide information on incomes. Questionnaires across the whole community are very time-consuming and can still miss important factors affecting wealth. Community group approaches can miss the poorest people, who often have low levels of involvement in community affairs and may be less likely to express their opinions in discussions.

The concept of wealth ranking is based on using local knowledge about people's levels of wealth. Local people who live and work in the same village and who can observe others over a long time period may be a better judge of levels of wealth than an outsider. Also, in all societies, the local people have their own concepts of wealth, which are not only dependent on cash income.

In a wealth ranking exercise, key informants from the local communities rank their fellow villagers into wealth categories. The informants decide on their own definitions of wealth and wealth categories. The wealth ranking exercise therefore helps to bring out the complexities and realities of wealth and poverty, rather than using definitions predetermined by researchers.

(Source: Jeffries, D., Warburton, H., Oppong-Nkrumah, K., Fredua Antoh, E)

To do this we leant upon the hospitality of a number of villagers at Tampe Kukuo, a village on the outskirts of Tamale. The exercise as undertaken was far from perfect. The workshop participants operated again in 3 groups, undertaking 3 separate 'exercises'. Selection of key informants was determined by those (locals) available and willing (with a significant skew in favour of males), and the techniques adopted by the 3 visiting groups differed significantly, according to the respective experience - or inexperience - of the 'demonstrators'. Table 8 combines some of the 'wealth' indicators identified by one of the key informant groups, classified according to HH resources, livelihood activities and outcomes. Another group of 'key informants' included reference to people's 'disposition' (e.g. sincerity, unselfishness, ready to help, does not show off) amongst their indicators.

Table 8. Farmer identified indicators of 'wealth/poverty'

Resources / assets	Livelihood & social activities	Production & outcome levels
Size of compound (m) Acreage (m) Ownership of livestock (m) Afford or not fertiliser (m) Nature of roof (tin sheets vs. tin sheet & grass vs. grass only) (m) Horse (outside chiefs palace) (f) No of calabashes that women can afford for processing (f) Furnishing of women's room (presence of cupboard, bowls etc or not) (f) Purchase or not of synthetic pesticides (m)	Ploughing with livestock (m) Use of fertiliser or not (m) PH transportation (hiring of tractors vs. head carrying) Means of transport (own motorbike vs borrow motorbike) (f) Number of wives (m) Children's completion or not of senior secondary school (m) Communal labour (f) Making a trip to Mecca (f) Youth do or do not offer their labour for hire outside HH (m) Youth do or do not go to school (m) Hiring of tractors vs. manual land preparation (m) Use of synthetic pesticides (m) Treatment (or not) determined by yields (m)	Processing of shear nut butter, groundnuts, rice (f) Yield levels that do or do not allow storage to take advantage of rising market prices (m)

(m) & (f) signify sex of individuals who initially offered information

After some discussion the villagers who identified the 'wealth/poverty' indicators in Table 8, suggested that the community could be considered to fall into 4 separate groups: at opposite ends, the most well off and the least well off; and in between two 'middle' groups. The debate mostly focused on establishing that there were two distinct groups occupying the 'middle' ground. The resources, activities and livelihood outcomes associated with each of these groups are presented in Table 9. The villagers estimated the proportions of households falling into each group as follows: 16 percent in the

best off group; 11 percent in the 'upper' middle group; 27 percent in the 'lower' middle group; and 46 percent in the least well off group. This was effected by a 'weighting' exercise using shear nuts.

Table 9. Outcome of 'wealth/poverty' ranking exercise by one group of villagers

	Best-off group	'Upper' middle group	'Lower' middle group	Least well-off group
Resources	Large compound, 15-20 rooms (more people) Owns >30 acres Owns cattle/livestock (~20), and plough. Have kanbons, jute sacks, pupuri (cylindrical baskets), mud-silos for storage.	Compound with 6-8 rooms Owns ~20 acres Owns cattle/livestock (6-10), and plough. Have kanbons, jute sacks and pupuri for storage.	Compound with 6-8 rooms Owns ~5-6 acres Owns cattle/livestock (~6), and plough; in bad years may be without livestock. Have kanbons, jute sacks and pupuri for storage.	Compound with 3-4 rooms - thatched. Owns 1-2 acres, but may rent it out to others No cattle or plough owned; a few might occasionally hire. Have pupuri and 'fertiliser' sacks for storage.
Activities	Grow maize, rice, yams, cowpea, groundnuts, sorghum, millet & trees. Hires/uses tractor. Hire labour for land preparation, weeding & rice harvest. Hire vehicle to transport. Women process shear nuts (4 calabashes) Men are also traders - buy & sell groundnut oil. Sell part of harvest. Use Actellic to treat grain.	Grow most crops (e.g. maize, rice, yams, cowpea, groundnuts, sorghum, millet & trees). Hires tractor. Women process shear nuts (3 calabashes). Can afford to hire labour for weeding & harvesting. Use Actellic to treat grain.	Grow most crops (e.g. maize, rice, yams, cowpea, groundnuts, sorghum, millet & trees). Women process shear nuts (2 calabashes). Can afford to hire some labour. Hire out cattle. Some will use Actellic to treat grain.	Grow maize and groundnuts - use minimal inputs. No processing undertaken by women. Cannot afford to hire labour - but rather work for others. Sell shortly after harvest to pay for e.g. treatment for sick child. Clothes to attend funeral. Never use synthetic pesticides.
'Outcomes'	Self sufficient in normal & bad years. In very bad years may be forced to sell cattle, because of large HH sizes. Produce 25-40 bags of maize. All can afford to send their children to JSS and SSS.	Self sufficient in normal years, but not all in 'bad' years when will purchase grain (~1 month). May also sell livestock. Produce 20-25 bags of maize. All can afford to send their to JSS; only some can afford SSS.	Self sufficient in normal years, but not all in 'bad' years when some will purchase grain (~2 months). May also sell sheep and/or goats. Produce 10-15 bags of maize. All can afford to send their to JSS; only some can afford SSS.	Self sufficient in 'good' year, but not necessarily in 'normal' year. Will sell poultry to buy maize in small quantities. May hire out their labour, and or pick shea nuts for immediate sale. Produce 1½-3 bags of maize. All send their children to JSS, but beyond that is unlikely.
Composition / Disposition	Multiple HHs with 3-4 wives.	Multiple HHs with 2 wives.	Multiple HHs with 2 wives.	One wife only.
	Asked about 'lazy' farmers, the participating farmers divided into two camps, seemingly in keeping with their own 'status'. Wealthier farmers were quick to suggest that 'lazy' farmers were typically found amongst the least well-off group. Members of this group however suggested that there were 'lazy' farmers amongst the younger members of the large, better-off groups. This line of enquiry was prompted by various assertions made by some coalition members on 'lazy' farmers during the design phase for the workshop.			

Farmers at Tampe-Kukuo engaged in 'wealth/poverty' ranking exercises.

On later reviewing the experiences in the village it was agreed that the 'wealth/poverty' ranking exercises had revealed credible measures of diversity between different HHs. Moreover, despite limitations in their implementation, the exercises had been both interesting and relatively easy to facilitate. Time constraints and reluctance to further trespass on the villagers' good nature - the process had effectively been extractive (i.e. for our benefit only) - meant that the trialling of tools to further explore inter- and intra-household diversity (e.g. seasonal calendars, timelines) had been postponed.

VI. Developing a 'responsiveness' tool box

Planning has since gone ahead for further development of this 'diversity response approach' (DRA), and Mr Osman Abdul-Rahman of the Ghana Denmark Community Association (GDCA) has been commissioned to facilitate a village-based workshop with coalition members and field staff in October 2004. Its objective will to develop a methodology - a series of practical steps - that will enable extension organisations, with post-harvest interests, and their staff, to take into account and be responsive to, diversity generally, and HH and intra-HH diversity in particular.

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Appendix I. Activity progress assessment

The following table summarises the coalitions' assessment of progress (June 2004) on issues and opportunities identified during the March 2004 mid-term review workshop. It was discussed in plenary with comments volunteered and discussed and activity progress voted on. Assessment of individual activities were unanimous.

	Activities	**Comment**	
1.	Need for monitoring & evaluation of Activities		
	Activity 5: Mud-silo recommendations	Still outstanding	✗
	Activity 10:		
	Data collection	OICT lagging	✔
	Field visits for comparison		✔
	Analysis of data		✗
	Upgrade decision-support-tool (DST)		✗
	Activities 6 & 7:		
	Consult coalition on available material		✔
	Preparation of storage leaflets for Fs & As		✗
	'Storage options' for curriculum development		✗
	Test of curriculum materials		✗
	Activity 4:		
	Collect climate & LGB data		✔
	Institute system		✗
	Extend predictions		✗
	Activity 14:	Postponed	
	Activity 15:		
	Training in FDM		✔
2.	Exploring community diversity	Beginning to be addressed	✔
3.	Skewed emphasis on more go-ahead farmers	Beginning to be addressed	✔
4.	Limited 'mainlining' of farmers in project processes to date	Beginning to be addressed	✔
5.	'Subsidisation' of technologies & sustainability issues	Beginning to be addressed	✔
6.	Coverage & replicability	Project PH activities	✗
		Project aims	✔
7.	Seasonality issues	Taken this idea on board	✔
8.	'Decision support tree' tool predominantly based on 'technical' factors	Substantial movement - poised to achieve	✔ ✔
9.	Terminology and definitions (and jargon?)	Thorny issue: definition offered on 'technology'	✔
10.	Building on existing good practice	Using experience of NGO staff on techn.	
		Using specific knowledge	✔
		Building on farmer good practice	✗
		Building on organisational good practice	
11.	MoFA and institutional issues	District Directors of Agriculture now aware of project	✔
		Project leader reports to Reg. Directorate	✔
12.	Promotional opportunities		✗
13.	Lesson learning from workshop design	Design & implementation of this workshop relatively smooth	✔

Appendix II. Workshop participants

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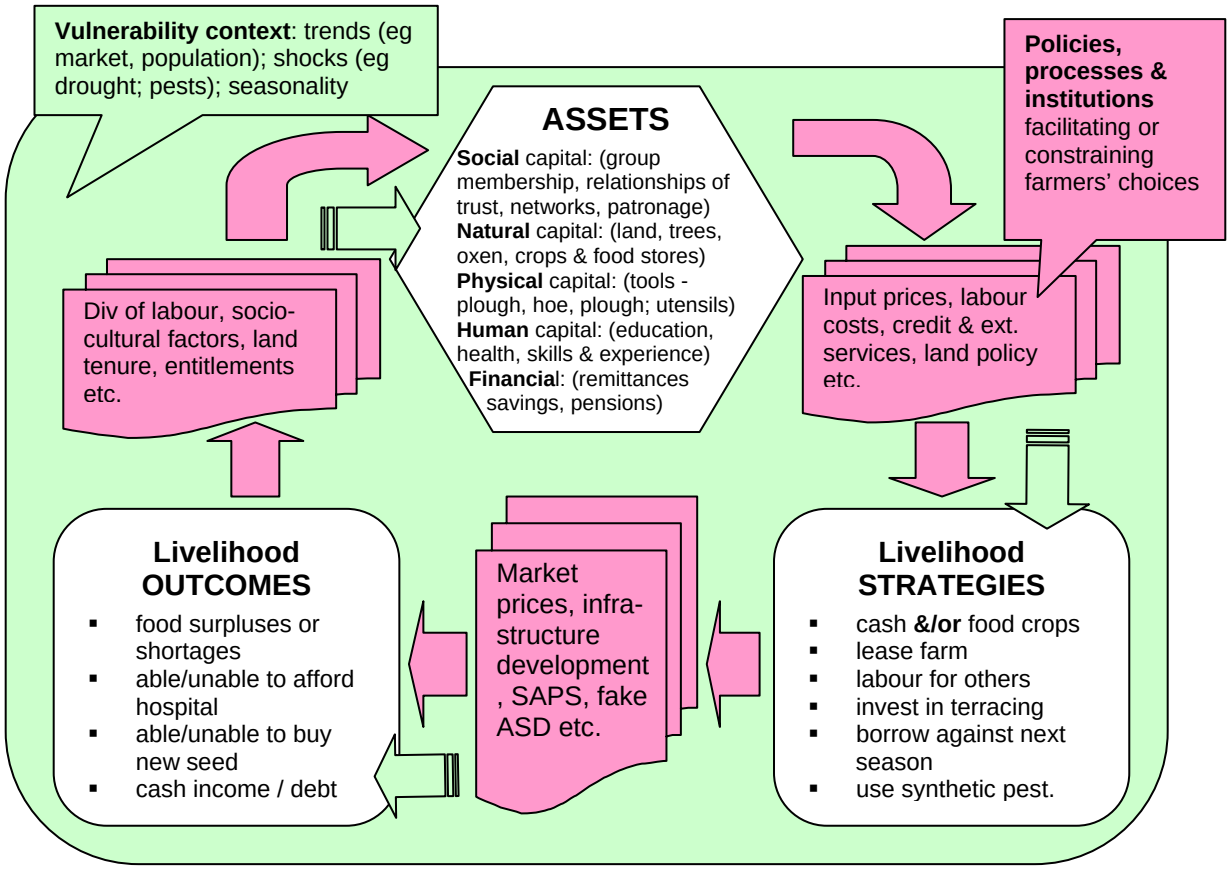
Appendix III. Household livelihood cycle



Mike Morris, 2003

Appendix IV. Key findings from review workshop

➢ Need to build in evaluation (& monitoring) mechanism into all activities.	Otherwise how do we know if we have achieved the desired outcome (or are on course)?
➢ Need to more rigorously explore community 'diversity' (wealth and well-being status, age and gender, socio-cultural differences, belief and values systems etc).	Farmer post-harvest decision-making is influenced by a range of factors, many of which relate to the farmer's or household's resource base (assets) and livelihood options, and to the external factors that mediate their livelihoods (e.g. weather, prices, bye-laws, decentralisation of services, lack of credit facilities etc). Output 1 refers to "farmers' different sets of circumstances"; Output 5 refers to management options "appropriate to their (respective) needs and resources".
➢ Project has 'skewed' emphasis on more 'go-ahead' farmers.	The involvement of farmers in the project to date has been skewed in various ways, and for various reasons - including the fact that the poor harvest meant that many farmers had little or no grain to store and were not then considered for the trials. The present identification and selection of farmers by field staff (based on 'contact' farmers, 'volunteer' farmers, and/or more successful or opportunistic farmers) may tend to emphasise technologies, aspects of scale etc better suited to these particular farmers, and exclude options relevant to less dynamic or well off farmers.
➢ Limited 'mainlining' of farmers in project processes to date.	Need for parallel event (to review workshop) for farmers to inform and educate us. Outputs 4 (service provision - response) and 5 (farmers 'demands' voiced and met) also represent these two sides.
➢ Issues relating to the 'subsidisation' of technologies	Issue of sustainability, and whether through resource and training inputs we are 'subsidising' a skew selection of farmers, and perhaps in turn consolidating pre-existing inequalities in communities.
➢ Coverage issues	Several references made to coverage in the context of having impact - see promotion.
➢ Seasonality issues	Arose because of perceived shortcomings in project activities due to external factors (e.g. drought) in the farmer's environment.
➢ 'Decision support tree' tool predominantly based on 'technical' factors.	Need to broaden DST tool to incorporate 'social' factors, thus pick up on diversity issues and have broader applicability and relevance.
➢ Unclear what meaning people give to key words like 'technology' and 'practice'.	Project documents refer to technologies, practices, management options, treatments etc, but the intended meaning is often unclear. Given these ambiguities can we be sure that we correctly interpret and understand what farmers are telling us?
➢ Build on 'good practice' already existing between organisational stakeholders.	Use the OICT/MoFA 'model' for sharing and developing training materials to accomplish project activities (e.g. production of extension materials, training modules, curriculum development material, promotional material etc)
➢ Institutional issues relating to MoFA	Strong feelings were expressed by MoFA staff on a number of issues. The project should emphasise its potential to help MoFA deliver against its 'mandate'; mainline the positive aspects of MoFA as far as possible, while avoiding the negative aspects.
➢ Promotional opportunities (see group work for detailed ideas)	➢ Use existing promotional structures: requires better understanding - 'analysis' - of existing organisations, identification of key posts and people etc (e.g. stakeholder analysis) ➢ Mainline MoFA in promotion. Project/PH unit must not operate in parallel with MoFA ➢ Develop collaboration with other players (e.g. other NGOs, unit committees etc)
➢ Opportunity to learn lessons on workshop design	➢ Need more preparation time (period of 1 week, 4 days minimum) ➢ Need for committed design team for these '4' days work. ➢ Group work needs to be 'designed' by whole team and pre-tested ➢ Participants have to be selected in line with the workshop objectives - not simply the 'usual suspects', 'paid' attendees etc.

Appendix V. Agricultural extension policy objectives and strategies (MoFA, 2002)

The new extension policy is based on nine objectives. These objectives and the strategies for achieving them in the short to medium term have been spelt out below.

1. MoFA will promote farmer-driven extension and research to ensure that services provided are relevant to farmers' needs. The strategies to be adopted are:
   - strengthening linkages among farmers, extension workers and researchers;
   - involving clients in the planning and evaluation of extension activities;
   - establishing functional RELCs at the zonal and regional levels; and
   - encouraging the RELCs to source funds from the private sector including farmers, farmer organisations and other institutions to support research activity.
2. MoFA will empower farmers through the formation and development of FBOs including marketing and agro-processing associations and co-operatives in collaboration with the Department of Co-operatives. This objective will be achieved through:
   - the establishment of an institutional framework for FBO devlopment;
   - collaboration with other agencies in facilitating the formation, sustenance and management of new FBOs;
   - strengthening the capacity of all FBOs particularly in leadership and managerial skills; and
   - the provision of appropriate information on credit, land acquisition and marketing, among others.
3. MoFA will promote the best agricultural practices. The strategies to be used are:
   - collating, documenting and assessing existing technologies (from research institutions and indigenous practices);
   - ensuring strong research-extension-farmer linkages;
   - ensuring the participation of all stakeholders in technology generation, adaptation and dissemination; and
   - ensuring human resource development at all levels.
4. MoFA will improve on the efficiency and cost effectiveness of publicly funded extension services. Options for improving on these include:
   - the provision of a clear definition of target beneficiaries, types of publicly funded extension services they should expect to receive and the cost of providing those services;
   - placing more emphasis on working with farmer groups;
   - encouraging private sector participation in extension delivery and funding;
   - exploring the possibility of cost sharing (where a proportion of the cost of a service is charged to the user of that service); and
   - supporting the setting up of an Agricultural Extension Development Fund to promote private participation in extension.
5. MoFA will broaden extension services delivery. The strategies to be adopted to achieve this include:
   - reviewing various extension approaches with the view to assessing their suitability;
   - developing and maintaining links with local and international organisations to identify the most appropriate approaches;
   - suporting the development of various approaches in collaboration with private sector providers;
   - encouraging a range of organisations/agencies including NGOs, private sector companies and public organisations to provide extension services;
   - elaborating extension indicators and quality standards to guide service providers;
   - ensuring that activities of all service providers are properly co-ordinated and monitored for maximum effectiveness;
   - training all staff as well asother service providers in the use of alternative extension approaches; and
   - disseminating information on appropriate approaches to all extension service providers.
6. MoFA will ensure that appropriate institutional structures are developed at all implementational levels to operate the new agricultural extension policy. MoFA will therefore make more

operational the roles and responsibilities of staff at the various levels (national, regional, and districts) as defined by the decentralisation policy. To achieve these, MoFA will:

- revise its decentralisation handbook to ensure that all categories of staff are adequately informed about their responsibilities; enhance human resource capacity at the district levels;
- monitor extension activities at the district level to ensure conformity with national extension policy;
- ensure that thre is financial decentralisation; and
- ensure that all service providers are well informed on the provision of the new extension policy.

7. MoFA will implement an effective monitoring and evaluation system for agricultural extension services. The strategies include:
   - the development and implementation of an extension M&E system based on the MTEF framework by involving major stakeholders in the planning, monitoring and evaluation of extension activities;
   - linking M&E systems at the different levels (national, regional and districts);
   - undertaking a baseline survey of the present performance of the agricultural extension system; and
   - developing capacity of staff in M&E activities.
8. MoFA will undertake a broad based human resource development programme by ensuring continuous capacity building of agricultural development workers. This objective will be achieved through:
   - enhancing career development through in-service training, upgrading of professional skills and development of managerial skills;
   - training of agricultural extension workers (public and private) in areas of group formation and dynamics, gender issues, programme planning and appropriate extension methods to enable them to work more effectively with farmers/farmer groups; and
   - re-orientation of the curricula of agricultural training colleges and universities to take into account the devlopment of skills for the private sector, NGOs, FBOs and CBOs that will be engaged in extension services delivery. Areas top be considered will include group formation, principles of financing and credit administration and marketing. The curricula will also address emerging topical issues such as health, gender in agriculture and the environment.
9. The national agricultural extension system will respond to the emerging issues of HIV/AIDS pandemic, environmental degradation and poverty reduction. Extension efforts will also focus on the area of gender, equity and client empowerment as they relate to sustainable agricultural production. To achieve this objective, MoFA will:
   - develop and implement activities that will respond to the national poverty reduction efforts;
   - collaborate with relevant MDAs (e.g. Health, Education, Social Welfare) to fight the HIV/AIDS pandemic;
   - develop extension activities to focus on the relationship among natural resource management, poverty reduction, increased food supply and income;
   - ensure equity in agricultural services delivery by making these accessible to vulnerable groups including women, the youth and the physically challenged; and
   - promote environmentally friendly agricultural production activities.

From: MoFA (2002), Agricultural Extension Policy. Directorate of Agricultural Extension Services, Ministry of Food and Agriculture, June 2003 booklet, Accra. 26 pp.

Appendix VI. Work undertaken with farmers by coalition members

Activity 3: Holding of stakeholder meetings in target areas by field staff.

Activity 8: Provision of training in grain storage options to identified farmer groups and collection of information on current storage technology and problems by field staff.

Activity 9: Assistance in the implementation of improved storage options with selected farmers/farmer group by field staff.

OICT

OICT is one of the coalition partners implementing the CPHP funded 'farm storage project' in the Northern Region of Ghana. OICT is undertaking its work in 6 communities in Gushegu/Karaga district. The communities are Nyensung, Shelanyili, Tindang, Nangunkpang, Sammang and Sampemo.

Activity 3: Holding of stakeholder meetings in the target areas by field staff

Stakeholder meetings were held in all six communities with collaborating farmer groups (over 60 farmers in total). These meetings were preceded by the selection and sensitisation exercise. During these meetings issues relating to existing farmer storage practices and problems were discussed, and data was collected on these subjects. The 'decision support tree' (DST) was also discussed. Among the numerous farmer storage practices discussed, were the following: kunchuns, mud silos, jute sacks, poly sacks, kambong, and even on the bare floor. 'Substances used included: wood ash, sand, pepper, tree leaves and grasses, phostoxin, and even DDT; use was also made of the 'good hand' concept. From these discussions with farmers it was estimated that Postharvest losses were in the range of 20-30%. This was done by getting farmers to think of dividing their sacks into 10 parts and then estimating how many sections would turn bad during the storage. Thus is the way the farmers estimated the losses.

Farmers identified the mud silo concept and the use of Actellic (liquid/dust) as those grain treatments that they wished to develop understanding on and use in the promotion.

Activity 8: Provision of training in grain storage options to farmers and collecting information on current storage technologies and problems by field staff

The farmer training spanned a period of 4 months during which the selected farmers were taken through a series of topics. OICT's mandate is close to what this project seeks to do so it was easy to marry elements of our programme into the training. These included: understanding the PH system, good storage practices, targeted grain treatment, solarisation, use of the DST for maize and cowpea, and use of insecticide treatments. In all 60 farmers from the six communities benefited from the training inputs. And 42 of them are now collaborating in our sample collecting exercise, which is aimed at evaluating the various storage options (Nyensung - 4; Shelanyili - 4; Tindang - 10; Nangunkpang - 10; Samang - 9; Sampemo - 5)

Activity 9: Implementation of the improved storage options with selected farmers and farmer groups assisted by field staff

Staff helped the selected households / farmers to implement 'technologies' of their choice - they made the choice, and we guided their use of the particular technology. The technologies chosen were:

- Use of mud silos for grain storage
- Use of Actellic liquid/dust

With support from PH unit of MoFA we have now trained 54 farmers in building mud silos for themselves. Difficulties associated with the storage options have been discussed, and include:

- High cost of Actellic (price ¢50,000 too much for many farmers to afford)
- Unavailability of storage chemicals at the right time
- Imitation - fake - storage chemicals (but sometimes failure is due to non use of correct dosages and/or poor application)
- Lack of water for mud silo construction
- Infiltration into the market of chemicals without labels or brand names - active ingredient unknown
- High cost of jute and poly sacks

Fumigation chemicals bought by some farmers are not effective, The reason is unclear - is it fake or out of date? Some mud silos had collapsed. Traditional areas for mud silos locate them inside, but in the introduced areas they are built in front of houses. This not only reduces the period when they can be built but makes them vulnerable to erosion and damage from stock.

OICT has just begun the evaluation of the selected storage options (Activity 11).

CAPSARD

CAPSARD, one of the coalition partners in the Farm Storage Project, is working in Savelugu-Nanton District. The three project activities (3, 8 & 9) were undertaken from January 2003 to March 2004.

Activity 3: Holding of stakeholder meetings in the target areas by field staff

Three (3) field officers from CAPSARD participated in the initial training workshop on the implementation of the project in March 2003. Two (2) of them were however assigned to three (3) communities each. They undertook Stakeholder Meetings in the six (6) communities, but selected four out of the six communities for implementation of the project. The four communities selected had demonstrated higher interest and commitment to the implementation of the project. These are Tindang, Guno, Chehi-yaplasi, and Gbumgbum, in Savelugu-Nanton District.

Under the supervision of CAPSARD Co-ordinator, the field staff conducted stakeholder meetings in the four selected communities.

Quarterly reports contained the details of the activity and have been submitted to the Coalition Office.

Activity 8: Provision of training in grain storage options to farmers and collecting information on current storage technologies and problems by field staff

CAPSARD field staff received training from the Coalition and proceeded to train farmers in grain storage options in the four selected communities. Training was organised with the supervision of the CAPSARD co-ordinator. The training was successful as farmers were enthusiastic about the project. In all, 85 farmers were trained in the various storage options, but finally 49 were selected to participate in the project.

A questionnaire/checklist was administered by the two field staff and submitted to the Coalition for subsequent analysis. The results of the survey are available from the Coalition office.

Farmers were assisted to discuss their grain storage ‘decision support trees’ and this was reported to have been exciting but tiring. Farmers initially wondered why the particular questions were being asked; to which the analogy of presenting symptoms to a doctor before a diagnosis can be given, was used. Training given to identify pests. Storage options were explained to them and training was developed in line with the options identified during their ‘decision support tree’ discussion. Details of the ‘decision support trees’ developed by farmers are available at the Coalition office. Samples of insects were taken. Farmers’ description alone of insects had led to mis-identifications; *Tribolium*, locally known as ‘zogbgla’ which translates as ‘big head’, was wrongly confused with LGB.

Farmers’ calendars were developed with the assistance of the two field officers. It took some time to get this sub-activity done because of farmers’ difficulties in sequencing exactly what their activities are, and also for the time constraints because farmers were busy harvesting at that time due to the extended rainfall experienced this year. A return field trip was required.

Activity 9: Implementation of the improved storage options with selected farmers and farmer groups assisted by field staff

In December 2003, the 49 participating farmers selected the storage options of their choice and they were trained in the respective techniques of implementing them. The chosen options were the use of Actellic Super, ‘non-treatment’ (or ‘good hands’) and solarisation. They were trained in the use of Actellic Super and solarisation. But no training was given for ‘non-treatment’ since they chose to dry, clean and store their produce without any further treatment.

After the training, the 49 farmers chose their respective storage structures, crops to be stored, and the treatments to be used. Information collected from 49 farmers from the four target communities in mid-February has been submitted to the Coalition office but a brief summary is presented below. Additional information collected from farmers included the quantity of produce stored, the rate of withdrawal from the store, and reasons or purpose for withdrawal (e.g. for food needs, cash for other needs).

1. Storage Structures Used:

The following were used by farmers in storing their farm produce:
Most Common: Jute sacks, **Common:** Kambong and **Less Common:** Mud Silos.

2. Crops Stored:

Three (3) main crops were stored by participating farmers. These are: Cowpea, Maize, Bambara nuts.
Major crops: Maize, followed by Cowpea, and by Bambara beans.

3. Treatments Given:

The three (3) main treatments used by farmers are:
Treatment with Actellic Super, Non-treatment ('good hands'), and Solarisation.

4. Samples Collected and Submitted

Samples have been collected from Tindang (10 farmers), Guno (12 farmers), Gbumgbum (13 farmers), Chehi-yapalsi (10 farmers). The collection of samples could not start until after December 2003 as there was a delay in harvesting due to the extended rainfall experienced in 2003. Samples were collected, from the 49 participating farmers, in the Mid-January, and Mid-February 2004 and submitted to the Coalition Office.

Conclusions

The implementation of the project by CAPSARD has been vigorously undertaken with the participating farmers. Continuous monitoring of the grain stores together with the collection of samples were undertaken and are still on-going.

Some farmers, however, made some suggestions and requests, as presented below:

- Assistance for the acquisition of storage chemicals - prices too high or products not available.
- Requests for mud silo technology - farmers who were not interested at the beginning of the earlier promotional programme have since become interested.
- Requests for support to purchase own solarisation equipment - plastic sheeting.
- Requests for 'inventory credit' for extended storage - (IFAD).

Field visits last week indicated an increasing damage level of stored produce, especially in cowpea and maize.

MoFA Post-harvest unit

Activity 3: Holding of stakeholder meetings in the target areas by field staff

This activity comprised:

- Collect data on existing practise and storage problems
- Identify technical options relevant to the needs of target groups
- Plan promotion of selected technologies with target group
- Engage farmers in the development of a decision-support tree.

The districts, specific communities, and numbers of participating farmers are set out in Table 1.

Table 1. Districts, communities and numbers of participating farmers (MoFA)

District	Community	No. of participating farmers
Saboba/Chereponi	Gbenjag	14
	Gbangbanpong	15
Savelugu/Nanton	Moglaa	15
	Gushie	14
Gushegu/Karaga	Kpugi	15
TOTALS	5	76

Activity 8: Provision of training in grain storage options to farmers and collecting information on current storage technologies and problems by field staff

- Field staff working with households in identified communities to offer training in storage technologies they prefer.
- Field staff collecting survey information on the participating households at as baseline

Topics that farmers were trained in:

- Good storage practice

- Insecticide treatment
- Plant materials for grain storage
- Solarisation
- 'Decision support tree' for maize and/or cowpea

Activity 9: Implementation of the improved storage options with selected farmers and farmer groups assisted by field staff

- Field staff working direct with selected households to enable them to implement chosen storage technology
- Field staff recording the difficulties experienced by farmers in implementing the methods, this information will be used as feedback to improve extension material and promotion methods

The numbers of farmers involved in the implementation phase was as set out in Table 2.

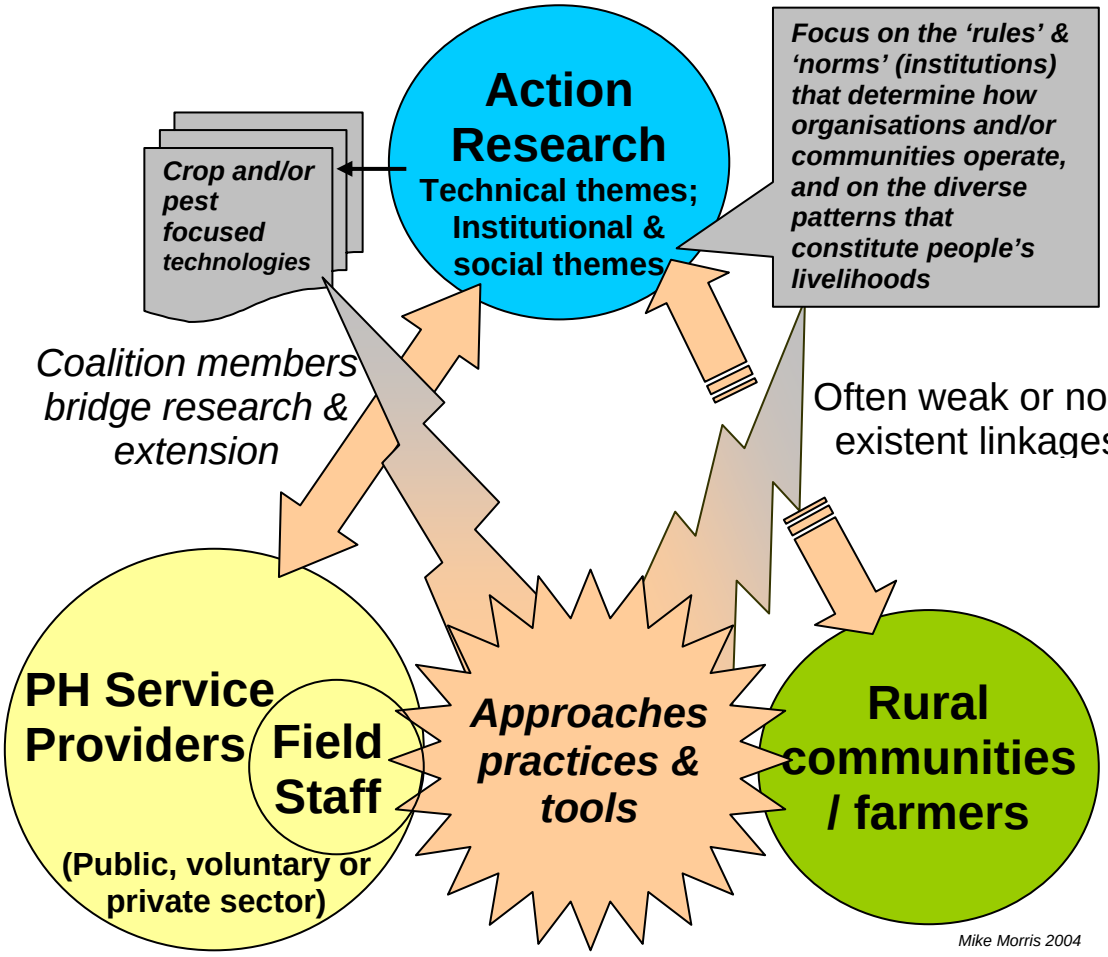
Table 2. Participating farmers engaged in implementation of improved storage options

District	Community	No. of participating farmers
Saboba/Chereponi	Gbenjag	15
	Gbangbanpong	6
Savelugu/Nanton	Moglaa	10
	Gushie	15
Gushegu/Karaga	Kpugi	9
TOTALS	5	55

Farmers were selected after study of the baseline questionnaire survey. Numbers reduced from 73 to 55 farmers. The survey work also listed use of 'magic hands'.

From: MORRIS, M., HODGES, R., ANDAN, F.H., ADDO, S., BEDIAKO, J. and BARIYAM, S. (2004) Reviewing progress: Proceedings of a workshop organised by MoFA in coalition with OICT, CAPSARD, CARD, UDS and NRI (UK) and held on March 17th and 18th, 2004, at MoFA, Tamale, Northern Region. Ministry of Food and Agriculture, Tamale, Ghana. 37 pp.

A Diversity 'Responsiveness' Tool Box



Potential audiences for a report on the workshop proceedings include participants - coalition members and field staff - 'opinion leaders' in RADU, DADU and MoFA centrally and other key Ghana-based organisations (e.g. Department of Agricultural Extension, University of Ghana; Savannah Agricultural Research Institute, Tamale; University for Development Studies, Nyankpala; WFP; CIDA), together with the CPHP. This may suggest two documents - one for participants in the 3-day workshop, a second for 'opinion leaders'. Given limited resources and time, and the nature of the institutional constraints identified during the process, initial efforts are focused on tailoring this document to informing those in a position to influence or bring about change in the current extension services, whether public, voluntary or private sector.