

RIU

Participatory learning has something for everyone

Validated RNRRS Output.

A participatory learning process—involving surveys, workshops and trade fairs—has helped to expand farmer information supply in the southern highlands of Tanzania. Location-specific tools—such as Swahili language leaflets on maize management—and increased access to information, training and products has helped to improve the capacity, effectiveness and morale of public and private sector organizations. Farmers from 18 villages benefited directly, improving their capacity to manage their maize cropping systems. In addition, stockists, researchers, extensionists, seed companies and NGOs all perceived benefits from the participatory learning process and its positive influence on their ability to do their job effectively.

Project Ref: **CPH46:**

Topic: **7. Spreading the Word: Knowledge Management & Dissemination**

Lead Organisation: **Uyole Agricultural Research Institute (ARI-Uyole), Tanzania**

Source: **Crop Post Harvest Programme**

Document Contents:

[Description](#), [Validation](#), [Current Situation](#), [Current Promotion](#), [Impacts On Poverty](#), [Environmental Impact](#), [Annex](#),

Description

CPH46

Research into Use

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Geographical regions included:

[Tanzania](#),

Target Audiences for this content:

[Crop farmers](#),

A. Description of the research output(s)

1. *Working title of output or cluster of outputs.*

In addition, you are free to suggest a shorter more imaginative working title/acronym of 20 words or less.

Original title

Improving farmers and others stakeholders access to quality information and products for maize innovation systems in the Southern Highlands of Tanzania

Alternative title

Maize Innovation Systems Opportunities (MISO): Improving access to quality information and products for maize innovation systems

2. *Name of relevant RNRRS Programme(s) commissioning supporting research and also indicate other funding sources, if applicable.*

Crop Post-harvest Programme

3. *Provide relevant R numbers (and/or programme development/dissemination reference numbers covering supporting research) along with the institutional partners (with individual contact persons (if appropriate)) involved in the project activities. As with the question above, this is primarily to allow for the legacy of the RNRRS to be acknowledged during the RIUP activities.*

R8422 (2005-2006) Improving farmers and others stakeholders' access to quality information and products for pre and post harvest maize systems management in the Southern Highlands of Tanzania.

R8406 (2005-2006) Improving farmers' access to and management of disease resistant maize cultivars in the Southern Highlands of Tanzania Phase 2

R8220 (2002 -2005) Improving farmers' access to and management of disease resistant maize cultivars in the Southern Highlands of Tanzania Phase 1.

Core Partners:

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4. Describe the RNRRS output or cluster of outputs being proposed and when was it produced? (**max. 400 words**). This requires a clear and concise description of the output(s) and the problem the output(s) aimed to address. Please incorporate and highlight (in bold) key words that would/could be used to select your output when held in a database.



The diverse environment of sub-Saharan Africa, among other factors, suggests a need for more **localised innovations/ solutions**. The Southern Highlands Zone (SHZ) of Tanzania is a key maize producing area regionally and most producers are resource-poor smallholders. Enhancing productivity depends on improving these farmers' and other **stakeholders' access to information, training and products for pre and post harvest maize systems**. A **participatory learning process** strengthened relationships amongst **public and private sector** stakeholders, including farmers in groups; and an emerging alliance found common ground for improvement. This process has two main outputs. The first focuses on **understanding and improving farmers' situation** and the second targets **service providers through knowledge management**.

1. Enhancing farmers' access to information and materials to facilitate experiential learning

Upungufu Wa Viini-lishe

Kiwango cha mavuno ya zao la mahindi hutegemea sana upatikanaji wa viini-lishe vya kutosha wakati wote wa ukuaji wake. Pote ambapo viwango vya viini-lishe katika mmea havitazitezi, dalili za upungufu wa viini-lishe husika hujitokeza. Tichunguze shamba lako mara kwa mara katika msimu wote ili uweze kubaini dalili hizo.

Baadhi ya dalili za upungufu wa viini-lishe zinaweza kusahihishwa ndani ya msimu husika ikiwa zitabainika mapema. Iwapo hatawa za kurekebisha upungufu wa viini-lishe haziwezi kuchukuliwa katika msimu husika, marekebisha hayo yanaweza kufanywa msimu unafuata.

Upungufu wa Nitrojeni (N-Nitrogen)

Upungufu wa madini ya Nitrojeni huagunduliki kirahidi wakati mahindi yakiwa machanga. Dalili za upungufu huashiriwa na rangi ya kijani iliyochanganyika na njano liochiwa katika majani. Upungufu huu unaweza kusahihishwa iwapo utagundulika mapema, kwa kuweka mbolea zenye madini ya Nitrojeni katika shamba lako.

Mahindi yanapofika usawa wa goti, kiwango chake cha ukuaji huongezeka na mahitaji yake ya Nitrojeni huongezeka pia. Mahitaji ya Nitrojeni kwa eka kwa siku hufikia kilo 1.4 au zaidi. Iwapo kiwango cha Nitrojeni katika udongo ni kidogo majani ya chini ya mmea hugeuka manjano kuanzia nchani kuelekea katikati ya jani. Dalili hizi huenea katika majani ya mmea wote kwa sababu Nitrojeni pia huenea katika majani ya mmea wote. Upungufu ukiendelea, majani ya chini huanza kufa na kusababisha mmea kuroa maguzi hafu na kupunguza sana mavuno.

Upungufu wa Fosforo (P-Phosphorus)

Upungufu wa madini aina ya Fosforo hujitokeza wakati mmea wa mahindi ni machanga. Dalili za awali hujitokeza kwa mmea kuwa na rangi nyekundu na zambarau katika majani. Baadaye mmea huwa na bua dhaliu lenye maguzi tasa yaliyoisakota. Dalili kama hizi hujitokeza kama kutakuwepo hali ya baridi, ukame, au vimevinyeru uliokithiri mwanzoni mwa msimu au vikwazo vinyoyotababisha mizizi kutotawi katika udongo. Upungufu wa Fosforo katika udongo unaweza pia kusababisha mmea kuchelewa kukomaa.

Kiwango kikubwa cha Fosforo kinahitajika na mmea mwanzoni mwa ukuaji wake; hivyo ni

Dalili Kwenye Majani

Jani lenye alya
Jani lenye alya nani fung'oa na lina rangi ya kijani iliyoakolea.

Fosforo
Mmea yenye upungufu wa madini ya fosforo huwa na rangi ya hudhurungi yenye wakundu kiasi na hasa katika mmea machanga.

Potashi
Majani ya mmea yenye upungufu wa madini ya potashi hepaula na kutasik nchania nchani na pembeni mwa jani.

Nitrojeni
Majani ambayo hubadilika rangi kutoka kijani na kuwa ya manjano kuanzia nchani kuelekea katikati ya jani hudhuriaha uliosifu wa madini ya Nitrojeni.

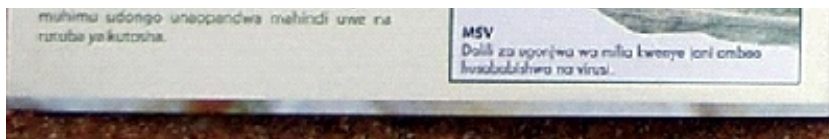
Magnesium
Majani yenye upungufu wa madini ya magnesium huwa na rangi ya njano na kijani kutokota mshipe ya jani la mahindi.

Kemikali
Madawa ya lilimo yakitumiwa anyo hawana kuwababisha kwamba kwa majani nchani au sekema unbuaya imaguwa na dawa hizo.

Ukame
Ukame husababisha majani ya mahindi kuwa na rangi ya kijani inayoelekea kwamba kijivu na ulizidi majani hujikuja mizizi ya pemeli.

Bakaa jani
Dalili za ugonjwa wa bakajani ukionyesha mabaka marefuifu yenye ncha za duara kiasi.

GLS
Dalili za ugonjwa wa madao ya kijivu (Gray Leaf Spot) ukionyesha madao marefuifu kiasi yenye pande nye zilizooyoka lufuata mshipe ya majani na ncha zenye pembe.



Validation of maize farmers' current information, training and product sources and needs in SHZ found farmers want more access to external and new information, but are currently utilising more accessible sources (e. g. parents, neighbours). **Farmers' criteria for assessing and improving sources of information** were shared.

Approaches for learning were reviewed including variety demonstrations, farmer research groups (FRG) and seed fairs. Issues included inclusiveness (eg FRGs were primarily middle wealth group and male dominated) and learning processes (eg potential for more discovery learning).



Learning tools adapted to the locality. Swahili language leaflets [1] were tested by farmers in 5 districts, refined, and promoted through sale at the national agricultural show, and to regional agricultural advisors, district councils, district extensionists and NGOs and posted on the Ministry of Agriculture's website.

2. Improving capacity, effectiveness and morale of public and private sector organizations through increased access to information, training and products

A professional morale barometer was developed as a participatory tool to gauge change and an entry point to identify **factors influencing morale** and how to improve them.

Methods/ tools to improve access to maize information, training and products for different stakeholders (stockists; researchers, trainers, extensionists; seed companies; NGOs) were identified through a participatory analysis.

[1] Be Your Own Maize Doctor: A guide to diagnosis of nutrient deficiency and foliar disease symptoms in maize
Maize Streak Virus Information Leaflet

Agronomic Recommendations for Maize Production
 Fertilizer Practices for Better Maize Production



Input stockists' demand confirmed information/ training to build stronger customer relations. In response to **farmer demand for small quantities of products**, 75% of stockists selling fertilisers engaged in bulk breaking. All stockists selling maize seed sold 2 kg packs, but few 1 kg or less.

A survey of **changes in stakeholders' capacity, effectiveness and morale** revealed that 80% of respondents felt the projects had a major influence on their capacity and provided ideas about doing their job more effectively.

5. *What is the type of output(s) being described here?
 Please tick one or more of the following options.*

Product	Technology	Service	Process or Methodology	Policy	Other Please specify
			X		

6. *What is the main commodity (ies) upon which the output(s) focussed? Could this output be applied to other commodities, if so, please comment*

Maize

Yes, the approach could be applied to other commodities if they are of similar importance to the beneficiaries and if there is a similar context and constraints eg weak service provision, approaches and tools.

Examples of such commodities might include vegetables (particularly tomatoes, onions and cabbages), potatoes and beans and, to a lesser extent, rice

7. What production system(s) does/could the output(s) focus upon?

Please tick one or more of the following options. Leave blank if not applicable

Semi-Arid	High potential	Hillsides	Forest-Agriculture	Peri-urban	Land water	Tropical moist forest	Cross-cutting
X	X	X	X	X			X*

* The project focused on higher potential systems, but the process could be applied in any system

8. What farming system(s) does the output(s) focus upon?

Please tick one or more of the following options (see Annex B for definitions).

Leave blank if not applicable

Smallholder rainfed humid	Irrigated	Wetland rice based	Smallholder rainfed highland	Smallholder rainfed dry/cold	Dualistic	Coastal artisanal fishing
X	X		X			

9. How could value be added to the output or additional constraints faced by poor people addressed by clustering this output with research outputs from other sources (RNRRS and non RNRRS)? (max. 300 words).

Please specify what other outputs your output(s) could be clustered. At this point you should make reference to the circulated list of RNRRS outputs for which proformas are currently being prepared.

1. Improving maize systems productivity Maize is the staple for Tanzania (and through out E. and S. Africa) and increased productivity would enhance the country's and region's food security and improve smallholders' incomes. Improved access to and management of quality seed (R8220, R8406, R8480) offers high potential for substantial yield improvements. However, use of quality seed is unlikely to provide sustainable productivity improvements unless coupled with other approaches. Hence the likely synergy of clustering with FIPS Africa (R8219, R7405) promoting access to appropriate farm inputs and innovative learning protocols; projects R8438, R8297 addressing private sector provision in Kenya; projects R8452/R8215 and R8449/R8212 promoting integrated pest and soil management for lowland maize systems in Tanzania and the Lake Victoria basin; as well as projects R7034/ R8179 on post-harvest protection of grain using diatomaceous earths. Links with associated crop projects implemented in the SHZ should also be explored eg Integrated bean management (R8414). Clustering will achieve mutual benefits in the zone, nationally and the Eastern Africa region.

2. Enhancing income earning opportunities from maize In high potential areas, maize is key for food security, but smallholders also produce for sale/ barter in order to improve their livelihoods. Hence projects which identified approaches to improving farmers' access to markets (eg R8275, R8274, R8498, R8250, R7494) can provide significant added value. A range of non-RNRRS initiatives (eg the Agricultural Marketing Systems Development Programme with IFAD support) are also key.

3. Communication, learning and scaling up processes Further value will be added through clustering these outputs with other initiatives addressing communication, learning and uptake processes and linking field activities with policy (eg R8428, R8349, R7502, R6306, R7412 R8167, R8458, R8179). In Tanzania it will be essential to work with the Agricultural Sector Development Programme and associated projects (eg World Bank funded PADEP and DANIDA funded ASPs).

Validation

B. Validation of the research output(s)

10. **How** were the output(s) validated and **who** validated them?

*Please provide brief description of method(s) used and consider application, replication, adaptation and/or adoption in the context of any partner organisation and user groups involved. In addressing the “who” component detail which group(s) did the validation e.g. end users, intermediary organisation, government department, aid organisation, private company etc... This section should also be used to detail, if applicable, to which social group, gender, income category the validation was applied and any increases in productivity observed during validation (**max. 500 words**).*

The validation process involved the following activities:

1. Inception workshop: Stakeholders reviewed approaches by which farmers and other stakeholders access information, training and products for maize systems in the SH.
2. Validation survey: Farmers' access to and demand for information, training and products for maize management was validated through individual (16 women and 16 men) and group interviews in 8 villages in 4 districts of the Southern Highlands (SH) of Tanzania. The individual farmer responses formed the basis for separate men and women group interviews. Stockists (25 stockists in 4 districts) as end users and intermediary organisations were interviewed individually.
3. Input stockists survey: 25 stockists were again visited in 4 districts to validate the extent to which inputs were being made available in small quantities
4. M and E survey of the farmer research groups. The exercise aimed to identify who had been reached by project activities, the extent to which the process had responded to the needs of different types of farmers, to what extent new information was being put into use and the outcomes and to assess the overall research process (4 research groups in 2 districts).
5. Seed fair evaluation: This aimed to learn more about how farmers and other stakeholders learn in the context of seed fairs (164 interviewees in 3 seed fairs).
6. Service providers survey: 31 stakeholders were interviewed to assess the influence of 2 CPP and 1 CPHP

project on capacity, effectiveness and morale of participants.

7. Maize Innovation System Stakeholder workshop: Project implementation outcomes were presented and outputs reviewed by stakeholder groups (farmer research groups' representatives, stockists, NGOs, government organisations (researchers, district extension service) and seed companies).

The validation process targeted maize growers and intermediary organizations in the SH of Tanzania. The project showed the benefits of inclusive processes for improving access, opportunities for enhancing capacity of public and private (eg stockists) sector service providers to improve farmers' access to information and products, including small packs to enable widespread farmer experimentation and use.

Who	How
Farmers	<ul style="list-style-type: none"> - Validation survey (Method/Activity2) In 4 districts and 8 villages access to and demand for information, training and products; Farmer group interviews with separate women (8) and men (8) groups; Individual interviews 16 women and 16 men - Farmer groups consulted by M and E team assessing project activities M and E of farmer research groups (Activity 4) - Participation in Maize Innovation Systems stakeholder workshop (Activity7)
Stockists	<ul style="list-style-type: none"> - Inception workshop (Activity1) - Validation survey (Activity2) - Participation in Maize Innovation Systems stakeholder workshop (Activity7)
Researchers/scientists	<ul style="list-style-type: none"> - Carried out all validation exercises (Activities 1-7)
District extension services	<ul style="list-style-type: none"> - Inception workshop (Activity1) - On-going CPP and CPHP project activities - Participation in Maize Innovation Systems stakeholder workshop (Activity7)
Seed companies	<ul style="list-style-type: none"> - Inception workshop (Activity1) - Participation in Maize Innovation Systems stakeholder workshop (Activity7)
NGOs	<ul style="list-style-type: none"> - Inception workshop (Activity1) - Validation survey (Activity 2) - Part of M and E team (Activity4) - Participation in Maize Innovation Systems stakeholder workshop (Activity7)

11. **Where and when** have the output(s) been validated?

Please indicate the places(s) and country(ies), any particular social group targeted and also indicate in which production system and farming system, using the options provided in questions 7 and 8 respectively, above (max 300 words).

The project inception and end of project multi-stakeholder workshops were conducted in Mbeya Tanzania, in February and November 2005 respectively.

The validation survey was done in April 2005 in Mhwela and Majenje (Mbarali district), Msia and Chitete (Ileje district), Igagala and Mhaji (Njombe district) and Mangawe and Mtandika (Iringa district) villages. Inputs stockists' were interviewed in Njombe, Makambako, Iringa, Mbarali, and Ileje towns.

The M and E survey was conducted in Majenje and Ihahi villages in Mbarali district and Mtwango and Utalingoro villages in Njombe district between October and November 2005.

The project was implemented primarily in high potential, high and intermediate altitude areas in the Southern Highlands of Tanzania. The farming system is smallholder rainfed highland and to a limited extent irrigated.

The Seed Fair survey, including the National Nanenane Agricultural Show was conducted between August and September 2005 in Shinji village, Ileje district, Malinzanga village, Iringa district and Mbeya city. These villages are in semi arid areas with smallholder rainfed dry farming system. The Nanenane Show was attended by diverse stakeholders from a wide range of production and farming systems.

Activity	Where	When
1. Inception workshop	Mbeya, Tanzania	February 2005
2. Validation survey – farmers and stockists	Ileje, Mbarali, Iringa and Njombe districts, 8 village in S. Highlands	April 2005
3. Input stockists survey	Njombe, Makambako, Iringa, Mbarali, and Ileje towns	October 2005
4. M and E survey	Majenje and Ihahi villages, Mtwango and Utalingoro villages in Mbarali and Njombe districts	October and November 2005
5. Seed fair evaluation	Shinji village, Ileje district and Malinzanga village, Iringa district	August – September 2005
6. Service providers survey	Ileje, Mbarali, Iringa and Njombe ,districts, in S. Highlands	November-December 2005
7. Maize Innovation System Stakeholder workshop	Mbeya	November 2005

Current Situation

C. Current situation

12. **How and by whom** are the outputs currently being used? Please give a brief description (**max. 250 words**).

Who	How
Farmers in groups in 16 villages where project focused	Farmer groups - improved farmer group leadership, planning and working skills Information – at least 4 leaflets on maize management Participation in onion marketing workshop in Morogoro Training – farmers applying knowledge of seed management to produce MSV tolerant OPVs (eg (Staha ST, TNV2 ST, Kilima ST) in Mbarali district Products – Maize varieties UH615, UH6303 in use with improved knowledge and skills for crop management.

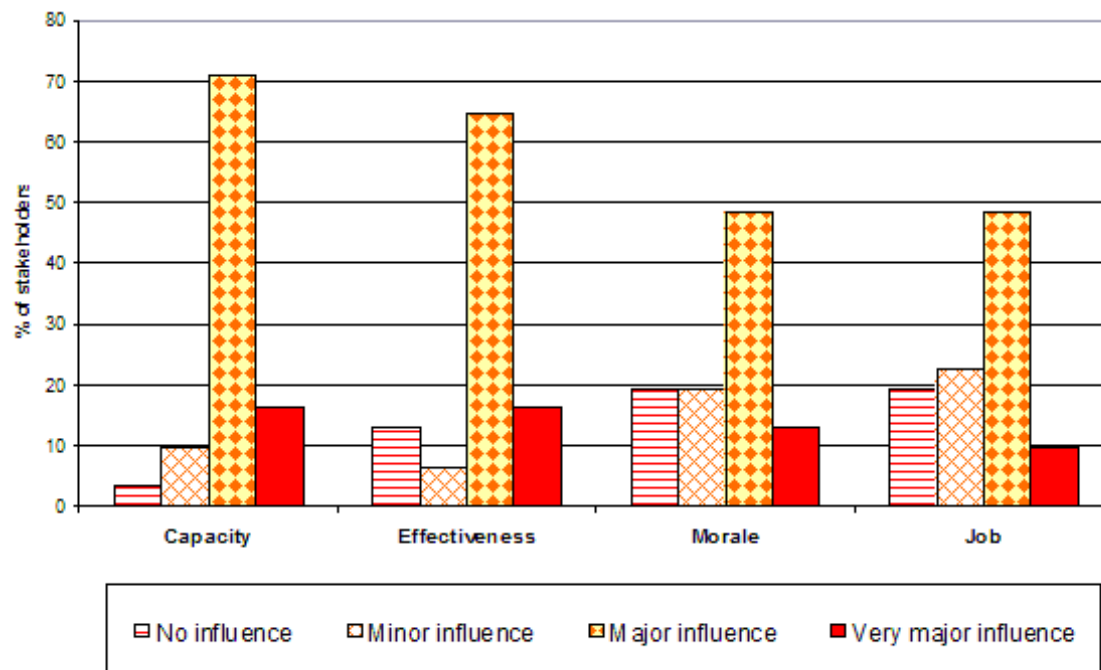
Farmers in SHZ and elsewhere (e.g. Malawi & Zambia)	Information – bought leaflets at the national nanenane agricultural show
Stockists in 5 districts of the SHZ	Enhanced communication with other stakeholders Accessing inputs from a wider range of suppliers Selling more confidently based on enhanced knowledge and providing farmers with more information and advice.
Researchers/scientists in SHZ	Enhanced skills in qualitative data collection and analysis Communicating and collaborating with a wide range of stakeholders Enhanced understanding about farmers' situations
District extension services in 6 districts of the SHZ	Through improved knowledge of maize management eg varieties, diseases; Working with farmer groups established by the projects Interacting more effectively with other stakeholders, research methods, enhanced project proposal writing and M and E skills.
Seed companies	Through friendlier working atmosphere with farmers and other stakeholders in seed industry. Greater awareness and access to information makes communication easier and faster.
NGOs in SHZ	Through increased knowledge of seed development, increased awareness of seed policy and seed security. Better knowledge of improved seed and the participatory seed development process

13. **Where** are the outputs currently being used? As with Question 11 please indicate place(s) and countries where the outputs are being used (**max. 250 words**).

The outputs are currently in use, mainly in S. Highlands of Tanzania, particularly in the 16 CPP project villages of Mbozi, Mbarali, Njombe, and Iringa districts. However, in the course of implementing this project farmers, extension workers and inputs stockists in Ileje and Kilolo participated in the validation exercise and are using the validated leaflets. At the end of project workshop some extension officers from Makete, Kilolo, Songea, Mufindi and Ludewa districts in addition to the farmers, extension workers and inputs stockists from the previously mentioned districts attended and have been issued with various reports from the project. Agricultural stakeholders from neighbouring countries Malawi, Zambia and Kenya have been attending the “Nanenane Agricultural Show” and project workshops and have collected some of the validated leaflets (eg FIPS Africa, CABI ARC)..

A total of 31 stakeholders (including public sector researchers, public sector extensionists, NGOs, seed companies, stockists and farmers) were interviewed. Overall, over 80% of stakeholders consulted felt that the projects had a major influence on their capacity to do their job and provided ideas about how to do their job more effectively (see Figure below). The projects had also had a major influence on the morale of 61% of stakeholders. Over half (58%) of project partners reported that the projects have had a major influence on the way they are doing their jobs. The stakeholders gave detailed reasons about the influence of the project on their capacity, morale, and effectiveness and these are captured in the full report.

Figure 1. Influence of these DFID funded projects on stakeholders' capacity, effectiveness, morale and way of doing their job.



14. What is the scale of current use? Indicating how quickly use was established and whether usage is still spreading (max 250 words).

Locally, the outputs are directly in use in at least 18 villages in 5 districts that participated in projects R8422 and R8220. Indirectly some farmers whose extension staff and/or local NGO staff have participated in one or more projects activities in four more districts in the Southern Highlands of Tanzania are exposed to the outputs.

Nationally, project outputs have been sent to the Ministry of Agriculture, Food Security and Cooperatives. Hence indirectly, other zones in the country have been informed and are using the outputs. Researchers from the Northern, Eastern and Central zones in Tanzania have participated in at least one project activity and have been exposed to the outputs. Leaflets are also available in the MVIWATA, national farmer network resource centre in Morogoro, Tanzania.

Regionally, some project members from Kenya (CABI and FIPS Africa) have at some stage participated in the project and accessed the project outputs, which they are likely to be using.

Globally the project team had members from NRI UK who are working in different countries worldwide hence making use of the outputs of the project in those countries (e.g. Zimbabwe through links with R8179). In addition the project reports and leaflets have been submitted to DFID RNRKS programmes and some of them would be posted in their website thus being available to whoever would find them useful. It may not be easy at that level to monitor the numbers of the users.

15. In your experience what programmes, platforms, policy, institutional structures exist that have assisted with the promotion and/or adoption of the output(s) proposed here and in terms of capacity strengthening what do you see as the key facts of success? (**max 350 words**).

Programmes

Funded by CPHP, making use of materials from project R8220 funded by CPP.

Platforms

Within the SH, the lead organization ARI Uyole is strategically placed as the SH Zonal Agricultural Research Centre. It hosts the office of the Zonal Research and Extension Liaison Officer (ZRELO), linking research with district agricultural extension services (in Mbeya, Rukwa, Ruvuma and Iringa regions) and NGOS (Ileje Rural Development Organization, ADP Mbozi, INADES Formation Tanzania) which provide a promotional platform in the zone. Working with farmer groups provided greater opportunities for farmers to influence the research and promotion process. ARI Uyole also links with input stockists, distributors (Tanganyika Farmers Association and 25 other enterprises) and seed supply companies (Highland Seed Growers).

Policy

The policy environment created opportunities and challenges. Liberalisation of input/ output markets (since late 1980s/ early 1990s) resulted in a wide range of players entering the market, but input use by farmers has declined following the removal of input price subsidies, declining real grain prices and a loss of confidence in seed from seed suppliers. Decentralisation made it easier for actors in the zone to form linkages and partnerships with minimal bureaucracy. Seed policy has been recently reviewed, breeders rights are now recognised which has encouraged hybrid seed development. Production of Quality Declared Seed (QDS) of open pollinated varieties by trained village based farmers is formally recognised, and financially supported by DANIDA ASPS, improving access for farmers in remote areas. Public-private partnerships (eg between breeders and seed companies) are being encouraged by the Tanzania government and donors. Ministry of Agriculture policy supports Farmer Fields Schools, an experiential learning approach.

Infrastructure

ICT eg mobile phones and internet were crucial in facilitating communication between the various actors.

Capacity strengthening

- key factors of success include:
- Strong project management team relationships
- Local ownership of the project
- Advance funds helped ARI Uyole get activities started on time
- Project management used an open and collaborative approach
- Uyole Maize improvement programme had vehicles

and context

- Project addressed current key interests in the development field
- Maize is a key crop
- Agricultural intensification through population pressure created demand.

Current Promotion

D. Current promotion/uptake pathways

16. **Where** is promotion currently taking place? Please indicate for each country specified detail what promotion is taking place, by whom and indicate the scale of current promotion (**max 200 words**).

Materials like leaflets and project reports are being promoted on a small scale to target districts in the S. Highlands and the Ministry of Agriculture Food Security and Cooperatives headquarters in Tanzania. About 50 copies of the project reports have been distributed by ARI Uyole to a wide range of stakeholders in Tanzania. Leaflets and reports are available on the funding programmes and Tanzanian Ministry of Agriculture websites. Radio programmes have been made and arrangements are underway to air them initially through Radio Tanzania nationally, but later at the zone level when the Mbeya station of Radio Tanzania starts working. Papers on several aspects of the projects learning are being jointly written for publication in international newsletters and journals.

17. **What are the current barriers preventing or slowing the adoption of the output(s)?** Cover here institutional issues, those relating to policy, marketing, infrastructure, social exclusion etc. (**max 200 words**).

Barriers	Details
Institutional issues	Limited opportunities for farmer – farmer learning and collective action Inadequate resources for long term field interaction between stakeholders and farmers limits experience of farmers' constraints
Policy	It is illegal to bulk break and repack inputs for sale in small pack sizes to meet farmer demand, so limited debate and information on this critical issue.
Marketing	Inadequate market information particularly at village level. Farmers' marketing problems limit use of technologies
Infrastructure	Weak road system and communication facilities eg computers, internet
Social exclusion	Farmers reached were generally middle wealth rank. Extremely vulnerable excluded from the learning process. Most researchers and extension staff are male, which impacts on female participation at all levels.
Capacity of stakeholders	Stakeholders identified range of capacity strengthening needs eg how to communicate and engage with other stakeholders; how to engage in an experiential learning process.

Nature of process	Action research to develop a learning alliance/ innovation platform is a complex process. It brings about change relatively slowly and requires adequate time for effectiveness.
Morale, motivation incentives	Insufficient emphasis on professional morale and factors influencing it eg salaries/ other incentives, recognition and self development
Roles	Who should lead the process, particularly in decentralized setting? Capacity issues

18. What changes are needed to remove/reduce these barriers to adoption? This section could be used to identify perceived capacity related issues (**max 200 words**).

Barriers	Changes needed
Institutional issues	Farmer organizations strengthened Fora for farmers and other stakeholders to exchange and mutually learn institutionalised.
Policy	Promote policy dialogue re 'Economics at bottom of pyramid'
Marketing	Access to market information needs to be improved; eg increased use of ICT should be promoted up to the village level.
Infrastructure	Wider, more efficient use of ICTs eg mobile phones and internet. Pestnet group- type approach to sharing information (new products, crop management, marketing etc) focus on SHZ; link to FFSs (DADPs). Note: One mobile phone = one bag of maize
Social exclusion	Targeting socially excluded groups
Capacity of stakeholders	Capacity strengthening needs have been identified Strong capacity strengthening component to future inventions
Nature of what is being promoted	An innovation platform for maize in the SHZ is evolving autonomously. Well managed external resources can rapidly enhance this process.
Professional morale	Factors influencing professional morale have been identified. Future interventions should take these factors into account.
Roles	Learn from what has worked elsewhere; eg Clear guidelines; commitment from leaders; clear roles and responsibilities.

+ Experiential learning approaches and tools need to be made accessible.
ICTs hardware, training and appropriate systems
Collaboration between individuals and organizations at all levels

19. What lessons have you learnt about the best ways to get the outputs used by the largest number of poor people? (**max 300 words**).

- Work with on-going policies and processes which, in common with many countries, includes decentralization

of service provision and strengthening of public-private partnerships.

- Working with Farmer Groups reaches a larger number of beneficiaries, but more vulnerable social groups must be targeted.
- Farmers largely prefer to learn through personal interaction and 'learning by doing'. Challenge of how to scale up this approach, ensuring quality of facilitation.
- Learn from beneficiaries and intermediaries about how they access information, training and products and build on those experiences. Some farmers rely on stockists for information on new products. Private sector capacity strengthening is a key area.
- Kiswahili being used by most Tanzanians is a major advantage in production of materials like leaflets in only one language.
- Be creative in improving approaches such as seed fairs and agricultural shows, which are attended by many people.
- Professional morale/ motivation of service providers (influenced by funding and salaries, but also by recognition, self-development and access to training) need more attention from government and donors.
- Systems need to be in place ensuring access and encourage appropriate use of ICTs.
- Locally developed innovations are an important way in which research outputs can be introduced sustainably into local knowledge systems through enhancing capacity and morale of LOCAL organizations.
- Formal and informal institutional arrangements are needed to provide incentives for stakeholders to improve their own and others' access to knowledge and stimulate innovation. Eg little incentive to work with farmers to improve the management of farmer saved seed.
- Capacity issues are key in decentralization. Service providers need more than technical knowledge/ skills
- Big business should be more entrepreneurial and re-engineer products to reflect the economics at the 'Bottom of the Pyramid' including: small unit packages, low margin per unit, high volume.

Impacts On Poverty

E. Impacts on poverty to date

20. Where have impact studies on poverty in relation to this output or cluster of outputs taken place? This should include any formal poverty impact studies (and it is appreciated that these will not be commonplace) and any less formal studies including any poverty mapping-type or monitoring work which allow for some analysis on impact on poverty to be made. Details of any cost-benefit analyses may also be detailed at this point. Please list studies here.

No impact studies on poverty have been undertaken with respect to this project. The following project reports provide some indications of potential implications for impact on poverty

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

LAMBOLL, R., NSEMWA, L.T.H. and STATHERS, T. (2006) Survey of service providers to get feedback on influence of DIFID CPP/CPHP on improved capacity, effectiveness and morale. ARI Uyole, Mbeya, Tanzania.

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

21. Based on the evidence in the studies listed above, for each country detail how the poor have benefited from the application and/or adoption of the output(s) (**max. 500 words**):

- What positive impacts on livelihoods have been recorded and over what time period have these impacts been observed? These impacts should be recorded against the capital assets (human, social, natural, physical and, financial) of the livelihoods framework;
- For whom i.e. which type of person (gender, poverty group (see glossary for definitions) has there been a positive impact;
- Indicate the number of people who have realised a positive impact on their livelihood;
- Using whatever appropriate indicator was used detail what was the average percentage increase recorded

Impacts on poverty

This project only had a 12 month duration and hence there is little direct impact on poverty to date. A small number of farmers i.e. those in farmer research groups and others who participated in various learning activities have benefited directly through improved capacity to manage their maize systems. Those in the research groups also benefited indirectly through an enhanced capacity to influence the maize research and development process. One group from Mbarali district were trained in open pollinated variety seed production and are planning to produce QDS seed to sell to their neighbours. Key indicators which need to be measured include: productivity (labour and capital, as well as land), farmer incomes and food security, equity (who is benefiting?) and sustainability [1].

Indicative impact of outputs on poverty reduction on different groups in Tanzania to date

Poverty grouping	Capital assets Human, Social, Natural, Physical. Financial	Addressing vulnerability	Outcomes	Number of people affected directly
Moderate poor	<p>Process</p> <p>Improved capacity to manage maize systems and lower unit costs of production</p> <p>Enhanced capacity to learn from other stakeholders.</p> <p>Improved access to information and informational materials.</p> <p>Product</p> <p>Improved access to improved maize seed and inputs.</p>	<p><i>Trends</i></p> <p>Increasing population pressure</p> <p>Changing rainfall patterns.</p> <p><i>Seasonality</i></p> <p>Limited cropping season</p>	<p>Increased productivity from 2t/ ha to 5t/ha.</p> <p>Contributing to Food security</p> <p>Improved income</p>	100s

Environmental Impact

H. Environmental impact

24. *What are the direct and indirect environmental benefits related to the output(s) and their outcome(s)? (max 300 words)*

This could include direct benefits from the application of the technology or policy action with local governments or multinational agencies to create environmentally sound policies or programmes. Any supporting and appropriate evidence can be provided in the form of an annex.

How can innovation platforms incorporate environmental issues with respect to maize? It is envisaged that due consideration will be taken to address environmental conservation in the technologies that would be promoted eg. the use of organic and inorganic fertilizers for yield improvement while reversing the trend of nutrient mining in soils continually planted maize without the use of fertilizers; use of smaller areas to produce maximum yields, reduction of losses through pre and post-harvest pest and disease management. In Tanzania, currently there is a move to conserve water sources, some of which have hitherto been the main areas for maize production. Taking this into consideration, the interventions would indirectly be beneficial to the environment. Improved access to information, training and products leads to better and more targeted use of both synthetic and natural inputs, reducing the incidence of environmental contamination through mis and over use.

25. *Are there any adverse environmental impacts related to the output(s) and their outcome(s)? (max 100 words)*

Although there are no intended adverse impacts to the environment related to outputs and outcomes of the project, there is a risk in the event there is misuse or overuse of some inputs like pesticides for instance.

26. *Do the outputs increase the capacity of poor people to cope with the effects of climate change, reduce the risks of natural disasters and increase their resilience? (max 200 words)*

The maize varieties being promoted have been bred under the changing climatic conditions. They are therefore in a way offering an opportunity to increase the capacity of poor people to cope with the effects of climate change. Their earlier maturity characteristic, for instance means they are able to yield better than the landraces under conditions of shortened rain durations. The process of supporting farmers to learn experientially and to experiment with different technologies to see which suits them best will strengthen their ability to cope with change, including climate change.

Annex

Annex**Appendix 1. Acronyms and Abbreviations**

ADP	Mbozi Actions for Development Programmes Mbozi
ARI	Agricultural Research Institute
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ASDP	Agricultural Sector Development Programme
ASPS	Agricultural Sector Programme Support
ASSP	Agricultural Sector Support Programme
CABI ARC	Commonwealth Agricultural Bureau International Africa Regional Centre
CIMMYT	International Maize and Wheat Improvement Centre
CPHP	Crop Post Harvest Programme
CPP	Crop Protection Programme
DADPs	District Agricultural Development Plans
DADS	District Agricultural Development Strategy
DAIPESA	Development Alternatives Inc. Private Enterprise Support Activities
DANIDA	Danish International Development Assistance
DFID	Department for International Development
ECAMAW	East and Central African Maize and Wheat Network
EPTD	Environment and Production Technology Division
FFS	Farmer Field School
FIPS	Africa Farm Inputs Promotions Africa
FRG	Farmer Research Groups
GSI	Good Seed Initiative
ICT	Information Communication Technologies
IFAD	International Fund for Agricultural Development
INADES Tz	Institut Africain pour le Developpment Economique et Social, Tanzania
IITA	International Institute for Tropical Agriculture
KARI	Kenyan Agricultural Research Institute
LINKS	Local and Indigenous Knowledge Systems
MDGs	Millennium Development Goals
M&E	Monitoring and Evaluation
MIICO	M bozi ADP Trust Fund, I leje Rural Development Trust Fund, A DP Isangati Trust Fund C onsortium
MISO	Maize Innovation Systems Opportunities
MVIWATA	Mtandao wa Vikundi vya Wakulima Tanzania (Apex organisation for small-scale farmers' networks)
NGO	Non Governmental Organisation
NRI	Natural Resources Institute, UK
NSIMA	New Seed Initiative for Maize in Africa
OPV	Open Pollinated Varieties
PADEP	Participatory Agricultural Development and Empowerment Programme
QDS	Quality Declared Seed
RIUP	Research Into Use Programme
RNRRS	Renewable Natural Resources Research Strategy
SADC	Southern African Development Community
SH	Southern Highlands, Tanzania
SHZ	Southern Highlands Zone
SSA	Sub Saharan Africa

ST	Streak Tolerant
UH	Uyole Hybrid
UK	United Kingdom
ZRELO	Zonal Research and Extension Liaison Officer

