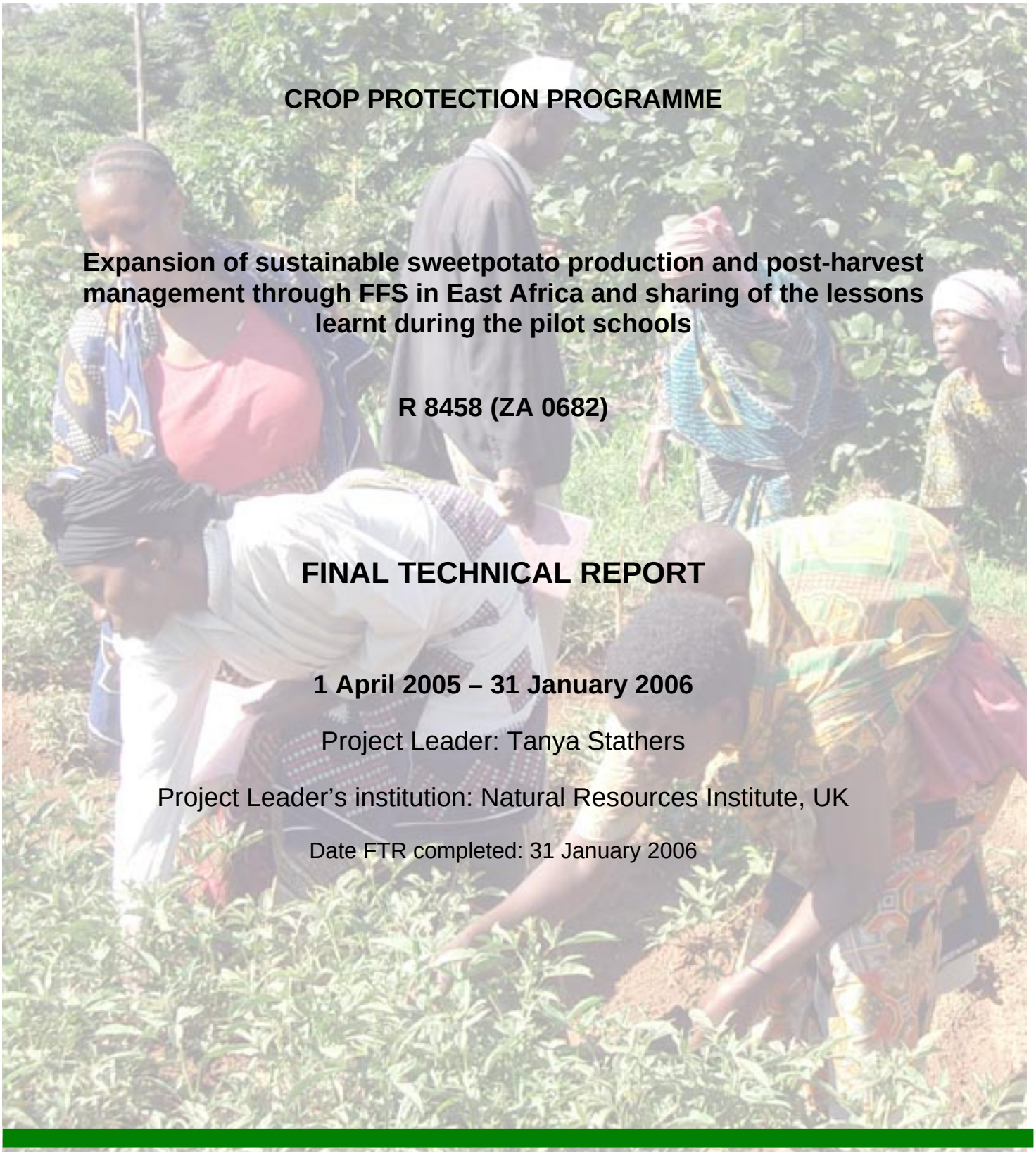

CROP PROTECTION PROGRAMME

Expansion of sustainable sweetpotato production and post-harvest management through FFS in East Africa and sharing of the lessons learnt during the pilot schools

R 8458 (ZA 0682)

FINAL TECHNICAL REPORT

1 April 2005 – 31 January 2006

Project Leader: Tanya Stathers

Project Leader's institution: Natural Resources Institute, UK

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Project R8458 Final Technical Report

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Acronyms and Abbreviations

AESA	Agro-ecosystem analysis
AEZ	Agro-Ecological Zone
ARI	Agricultural Research Institutes
ASARECA	Association for Strengthening Agricultural Research in Eastern & Central Africa
CAN	Calcium Ammonium Nitrate
CBO	Community Based Organisation
CIP	International Potato Center
COARD	Client-Oriented Agricultural Research and Dissemination Project
CPP	Crop Protection Program
CRS	Catholic Relief Services
DALEO	District Agriculture and Livestock Extension Officer (Kenya)
DFID	UK Department for International Development
EAFSRE	East African Farming Systems Research and Extension Network
ECOWAS	Economic Community of West African States
EF	extension facilitators
FAAB	Farming as a business
FAO	Food and Agriculture Organisation of the United Nations (UN)
FF	farmer facilitators
FFS	farmer field school
FTC	Farmer Training Centre
GIPMF	Global IPM Facility
GTZ	German Technical Support
ICM	integrated crop management
IFAD	International Fund for Agricultural Development
INIBAP	International Network for the Improvement of Banana
IPM	integrated pest management
IPPM	integrated pest and production management
ISTRC	International Society for Tropical Root Crops
KAEMP	Kagera Agricultural and Environmental Management Programme
KARI	Kenyan Agricultural Research Institute
LRA	Lord's Resistance Army
M&E	monitoring and evaluation
NAADS	National Agricultural Advisory Service
NAARI	Namulonge Agriculture and Animal Productions Research Institute
NARI	National Agricultural Research Institutes
NARO	National Agricultural Research Organisation (Uganda)
NGO	Non Governmental Organisation
NRI	Natural Resources Institute
OFSP	orange fleshed sweetpotato
OPEC	Organisation of Petroleum Exporting Countries
PA	Project Assistant
PM&E	participatory monitoring and evaluation
PRA	Participatory rural appraisal
PRAPACE	Programme Régional de l'Amélioration de la Culture de la Pomme de Terre et de la Patate Douce en Afrique Central et de l'Est (Regional programme for the improvement of potato and sweetpotato cultivation in Central and East Africa)
RNRRS	Renewable Natural Resources Research System
SADC	Southern African Development Community
SARRNET	Southern African Regional Rootcrop Network
SOCADIDO	Soroti Catholic Diocese Development Organisation
SP	sweetpotato
SSA	Sub-Saharan Africa
TOT	training of trainers
UNICEF	United Nations Children's Fund
USAID	United States of America International Development
VITAA	Vitamin A for Africa Partnership

Executive Summary

Rapid multiplication beds, Asilang FFS, Uganda

The '*Expansion of sustainable sweetpotato production and post-harvest management through FFS in East Africa and sharing of the lessons learnt during the pilot schools*' project began in April 2005 and followed on from project R8167 when DFID decided to extend its RNRRS research programmes for a further year. The project was funded by the Crop Protection Programme for a ten-month period and a total value of £68,399.

The project purpose was specifically to increase the returns from sweetpotato enterprise through enhancing East African smallholders' capacity in sustainable production and post-harvest management. The project aimed to expand the sweetpotato farmer field school activities developed during the pilot project more widely in the region and synthesise the important lessons learnt about the farmer field school process for the benefit of other stakeholders involved.

This collaborative project was led by Tanya Stathers of the Natural Resources Institute, for the International Potato Centre (CIP). The full time project assistant Max Olupot was based in Soroti, Uganda and supported by Sam Namanda and Regina Kapinga of CIP Kampala. The other core team members were Godrick Khisa and Thomas Julianus of the FAO Global IPM Facility in Kenya and Tanzania respectively, Robert Mwanga of the Ugandan National Agricultural Research Organisation and Dennis Ndamugoba of Bukoba district extension, Tanzania.

The two project outputs were:

Ouput 1. *Location-specific sweetpotato integrated pest and production management (IPPM) farmer field schools (FFS) promoted to other areas where sweetpotato plays an important role in livelihoods.*

Output 2. *Synthesis of lessons learnt from the pilot sweetpotato IPM FFS shared.*

More than 1000 farmers participated in 37 sweetpotato IPPM FFS in North East and Eastern Uganda, Western Kenya and North Western Tanzania, the training course, materials and facilitators developed during the pilot project were used. Two booklets on sweetpotato pests and diseases and sweetpotato processing and recipes were developed, and field tested and improved by farmers during the season. A revolving loan system for graduate sweetpotato IPPM FFS groups was developed and following the submission of proposals four groups were selected to receive US$300 to help them continue with sweetpotato activities as a group, all four groups wanted to use the funds for large scale commercial sweetpotato farming and processing. Many organisations have shown interest in supporting related sweetpotato activities and their progress in initiating these was monitored and supported. A paper capturing key aspects of the process and problems surrounding the 55 sweetpotato FFS supported by the current and parent projects, synthesising and documenting some of lessons learnt, solutions devised and remaining issues was drafted in an attempt to reduce their impact for others in the future. The paper focuses on the key issues of: facilitation; experimentation; groups; costs and operations; donor/ visitor attraction; and post FFS.

Role play, Majiliwa FFS, Kenya

The project's outputs have already contributed to the chain of realisation of the project's goal which is stated as livelihoods of poor people improved through sustainably enhanced production and productivity of RNR systems, by: empowering farmers through the discovery learning process of FFS to not only grow a better quality sweetpotato crop, but also to produce a range of products and develop marketing strategies for vines, fresh roots, dried sweetpotato chips and a range of cooked products that have enhanced both the incomes and nutrition of those involved; building the capacity of both farmers and extensionists to become skilled facilitators and train their colleagues and clients; developing supporting information materials for farmers; providing start up loans for graduate FFS groups to take their fledgling entrepreneurial skills to the market; and sharing lessons learnt about the problems to help others avoid them and to stimulate critical discussion of the FFS process.

Background

This project was developed based on the findings of the earlier 'Promotion of sustainable sweetpotato production and post-harvest management through farmer field schools in East Africa' project (R8167), which ran from April 2002 – March 2005 funded by the DFID Crop Protection Programme (CPP).

Several factors, including: lack of planting materials; shortage of high yielding, early maturing, drought tolerant, high dry matter and high beta-carotene content varieties; sweetpotato weevils (particularly in the drier areas); sweetpotato viruses (particularly in the wetter areas); low soil fertility; lack of markets and/or market information; short shelf life of fresh roots after harvest; and limited processing opportunities cause considerable reductions to sweetpotato production. The problem begins at the beginning of the planting season, as the prolonged dry season is frequently followed by a shortage of planting material. As a result, planting is often delayed and there is little opportunity to select cleaner younger vine parts for planting. This has implications for both pest and disease build up through infested planting materials. Few early-maturing sweetpotato varieties exist in East Africa, and as a result of the delayed planting the crop usually matures after the end of the rains and the soil around the roots dries out and cracks providing easy access to the roots for *Cylas* weevils. While external weevil damage to roots can affect their quality and value, internal damage can lead to complete loss. Many farmers practice piecemeal harvesting removing the larger exposed roots for household consumption as required, but when weevil populations build up, farmers tend to harvest the remaining crop. As a result, in areas where sweetpotato is not processed into chips, flour, crisps, mandazis, chapattis or stored as fresh roots or dried chips, a glut develops as most local farmers tend to harvest around the same time.

Despite the array of factors that still impede sweetpotato yields in the region, great progress has been made over the past years. Through regional breeding programs a considerable number of varieties with high yielding potential and adapted to low input conditions and broad environments in Africa have been developed. SPN/O, a variety selected in Uganda, Kenya and Tanzania is one such example and is now grown throughout East, Central and Southern Africa under a diverse range of local names. At the same time the varieties have been tested for resistance against major pests and diseases. The introductions in different countries have been supported by vigorous multiplication schemes and enabled evaluation of new germplasm in the national breeding trials. There have been a number of pilot projects with rural women's groups that have successfully marketed products with sweetpotato as a major ingredient. There has also been much progress in the improvement of the quality of flour produced by farmers using simple technologies. Research efforts to introduce sweetpotato utilisation into bakery and flour milling companies have also yielded promising results.

The immediate challenge is to ensure that improved varieties that have been generated together with improved production and post-harvest technologies, and nutritional information reach a wider section of the farming community. This problem has been aggravated by programs that support research and development in independent disciplines; while it is the same crop that is affected by all these constraints.

Project R8167, started by looking at the numerous but isolated bits of research on sweetpotato that had been supported over the years but which ignored the fact that farmers rarely face only one constraint, and that the various constraints are often interrelated. Examples of some of the important crop management practices from research projects, traditional knowledge systems and other projects which could be integrated by farmers included: sanitation; land preparation; nutrient management, rapid multiplication of planting material; selection of clean planting material; use of different varieties; mulching; pest monitoring; roguing of virus infected plants; hilling up; harvest timing; processing options, product diversification, and farmer marketing strategies.

Project R8167 brought together as wide a range of research findings as possible and promoted sustainable sweetpotato production and post-harvest management through farmer field schools (FFS) in W. Kenya and N.E. Uganda. The experiential learning approach taken by the FFS provided farmers with a deeper understanding of crop ecology and observational, analytical and problem solving skills. This helped farmers evaluate the importance and applicability of their existing and innovative practices and their adaptation to suit their own specific farm conditions. When project R8167 was formulated, it was hoped that N.W. Tanzania could be one of the target areas, however CPP budget limits at the time prevented this. Despite this, linkages developed within the project enabled the training of extension facilitators from N.W. Tanzania and FAO funds were used to support four sweetpotato IPPM field schools. There was huge demand from farmers and extension systems who participated in these FFS for further training opportunities to enable the facilitation of more SP IPPM FFS, and particularly more farmer run FFS as has already begun to happen in Kenya and Uganda through the pilot FFS. The future of FFS in the region lies in the hands of these skilled farmer facilitators who are not only trusted by their colleague farmers but are also highly experienced and committed and this current project (R8458) asked for further support to build the competence of these farmer facilitators. The FFS graduates had specifically requested that the project develop field leaflets on sweetpotato pests and diseases and processing and recipes based on the information in the SP IPPM FFS facilitators manual but which were targeted to farmers and translated to Kiswahili and Ateso for use in the field and at home.

As project R8167 evolved cohesive farmer groups developed through the collective learning activities, their exposure to economic analysis and value adding processes lead to an increased awareness of their rights and the development of small enterprise groups. In Soroti FFS graduate groups divided themselves into sweetpotato producer and processor groups and not only linked to millers such as Maganjo processors in Kampala but on finding they had seriously overproduced for their potential market they entrepreneurially developed and tested different sweetpotato flours for use in local products such as porridge and Atap (bread), which have become popular locally and are helping feed the numerous internally displaced persons in feeding camps around Soroti.

As with any process there were problems surrounding the sweetpotato IPPM FFS, and the project has learnt from these lessons and devised solutions to reduce their impact or prevent them reoccurring in the future. The literature surrounding FFS is notable for its lack of criticism and failure to discuss common problems associated with FFS. The issues faced by project R8167 were not specific to sweetpotato FFS and the compiling and sharing of this information during project R8458 will help others involved in funding/ facilitating/ participating in or monitoring FFS to avoid repeating these mistakes.

Project R8458 aimed to add value to other initiatives several of which are listed in Table 1.

Table 1. Examples of initiatives which project R8458 attempted to add value to

- R8167 - Promotion of sustainable sweetpotato production and post-harvest management through farmer field schools in East Africa.
- FAOs IPPM FFS programme for East Africa
- CIP-ICMs core funded activities on sweetpotato variety evaluations through FFS
- NAADS funded activities on empowering farmers in decision making and resource allocations in implementing Plan for Modernization of Agriculture (PMA)
- SOCADIDOs technology transfer activities in the Eastern Region of Uganda
- VITAA and Harvest Plus activities in East Africa (funded by CIP, Bill and Melinda Gates Foundation, DFID, GTZ, OPEC, USAID Africa Bureau, PRAPACE and SARRNET)
- CIP-GTZ funded 'Large scale dissemination of sweetpotato in East & Central Africa'
- DFID funded collaborative projects on the development of sweetpotato pest and disease management technologies in East Africa (R6115, R6769, R7492)
- DFID funded work on understanding of attitudes and practices in sweetpotato crop and pest management in Uganda (B0111)
- GTZ funded IPM project in Shinyanga region, Tanzania

- Agricultural Technology Transfer funded activities in Zanzibar and Tanzania
- McKnight funded sweetpotato project in Uganda, covering nutritional, disease management and technology dissemination aspects
- McKnight funded project in Kenya (Kisii and Kabeta districts) which focuses on germplasm collection and technology dissemination including FFS for which they will utilise our manual and methodologies
- Uptake and impact of CPP research outputs in Kenya (R8299) which has been using the SP IPPM FFS manual and approach developed in R8167
- NARO/DFID funded Client Orientated Agricultural Research and Development (COARD) project in N.E. Uganda

Project Purpose

The project purpose was specifically to increase the returns from sweetpotato enterprise through enhancing East African smallholders' capacity in sustainable production and post-harvest management. The project aimed to expand the sweetpotato IPPM FFS approach throughout East Africa and build on and share the lessons learnt about the FFS process.

This specific project purpose feeds into the more general purpose given by the Crop Protection Programme of promoting strategies to reduce the impact of pests in herbaceous crops in Forest Agriculture systems in order to improve the livelihoods of poor people.

Research Activities & Outputs

The following paragraphs provide a detailed description of the: project outputs and progress made in achieving them against the objectively verifiable indicators given in the logical framework; and project activities associated with each of the project outputs and the progress made in achieving them.

Ouput 1. Location-specific sweetpotato integrated pest and production management (IPPM) farmer field schools (FFS) promoted to other areas where sweetpotato plays an important role in livelihoods.

OVI 1. The SP IPPM FFS curriculum and materials developed during project R8176 are promoted to a geographically wider area where sweetpotato is important (N.W. Tanzania, Kenya & Uganda) and a further 800 SP IPPM FFS graduates exist by Jan 2006. Four SP IPPM FFS graduate farmer groups are given the initial support needed to take their entrepreneurial skills to the market place. Progress on the scaling out opportunities identified is monitored.

The SP IPPM FFS curriculum and materials were promoted to a wider geographical area within East Africa. More than 1000 farmers participated in 37 SP IPPM FFS which the project ran this year. A diagrammatic overview of the expansion of project's the SP IPPM FFS activities in Western Kenya and North Eastern Uganda where the pilot activities had started in 2002 is provided in Figure 1 (see end of report). Through direct project support field schools are being run in Soroti, Busia and Kumi districts in NE Uganda, in Busia, Bungoma, Kakamega, Butere Mumias and Kisumu district in W Kenya, and in Bukoba district in NW Tanzania. These sweetpotato FFS participants have accessed and trialled: new varieties; different pest and disease management strategies; different planting methods; ways of preserving planting materials during the dry season and then rapidly multiplying them in time for planting and sale. They have learnt how to process their sweetpotato roots and leaves into a wide range of different recipes and developed a greater understanding of the relationship between food, nutrition and disease through the promotion and introduction of beta-carotene containing orange fleshed sweet potato varieties, and in addition have learnt about quality drying of sweetpotato chips for sale to factories and millers. They have also been exposed to economic analysis, and developed the skills needed to work together in a cohesive group over a whole season. Through the field schools the groups have organised special sessions on other topics that they wanted to be more informed about such as: HIV awareness, prevention and care; malaria prevention and treatment; and family planning.

500 copies of the Manual for Sweetpotato IPPM Farmer Field Schools in sub-Saharan Africa which was developed during the parent project were printed and distributed to individuals and organisations in more than 21 countries. A further 600 copies of the manual were printed using funds from GTZ and McKnight. Very few written materials exist to support field school facilitators, this manual covers both the technical and facilitation issues, and although written specifically for sweetpotato can be used more generally for informing farmer field schools focusing on other themes, e.g. it has been used in

Bangladesh to help inform trainers about farmer field schools prior to their developing of a local poultry FFS curriculum. It is also important as a training tool for graduates and national extension staff. It will be incorporated on to the FFS website www.farmerfieldschool.net so that it remains easily accessible post project.

A further technical sweetpotato training of master trainers course was run at Namulonge in May for 17 master trainers working directly with the project and a further 17 participants funded by other organisations e.g. World Vision, Africa Now who having learnt about the Sweetpotato IPPM FFS approach during the parent project were keen to incorporate it into their own activities, and welcomed the opportunity to join this course. Two sweetpotato IPPM FFS farmer facilitator training courses were run (one in Western Kenya and one in North Eastern Uganda). A cadre of 19 extension staff facilitators and 26 farmer facilitators of sweetpotato IPPM FFS now exist in East Africa, this will have had direct impact on the capacity of both the extension systems and communities in the project areas.

Proposals for large scale commercial sweetpotato production and processing were received from eight SP IPPM FFS groups who had graduated during the last three years. The four SP IPPM FFS graduate farmer groups selected (Khasunire FFS, Undugu FFS, Abari Gentie FFS and Abuket FFS) each received a US$300 loan. It was felt to be important that further support was given to cohesive graduate groups to help them develop their fledgling entrepreneurial skills and take their products to the market place and to promote the SP IPPM FFS approach developed during R8167. Many graduates in Soroti, have been managing to earn large incomes through rapidly multiplying specific varieties and supplying the vines to other projects particularly those involved in resettlement of the internally displaced people in Northern Uganda.

In response to the farmer demand during the parent project for field guides based on the sweetpotato pest and disease and processing and recipes sections of the facilitators' manual, two draft farmer booklets were developed by the project team. These were then field tested by the current 37 sweetpotato FFS groups during the pre and post-harvest season. Their comments are now being incorporated to produce much improved final versions of the booklets which will be translated to Swahili and Ateso and printed for use by sweetpotato IPPM FFS participants.

Support has been given to the farmer facilitators network that they established in Soroti district.

World Vision, Africa Now, REFSO, the McKnight Foundation and the CIP/GTZ mass dissemination of sweetpotato planting materials project have been using the sweetpotato FFS training and approaches developed during the parent project to expand their sweetpotato activities in Gulu and Kitgum districts of Uganda, Vihiga and other districts in Kenya, Burundi, Sudan and Tanzania. The Kakamega FFS Network in W. Kenya has identified sweetpotato as a crop to scale up for marketing and most of their members have now planted the crop.

Activity 1.1 Planning and preparation of SP IPPM FFS for 2005/06 season by end April 05. SP IPPM FFS conducted from June – Dec 2005. [*Note in order to facilitate project management, most of the Activities in the logical framework were divided into sub activities (a,b,c & d) which are reported on below].*

OVI 1.1 Project team are satisfied all necessary arrangements have been made for SP IPPM FFS 2005/06 by end April 2005. Training of trainers (17 master trainers trained at Namulonge, 20 farmer facilitators trained by master trainers in country in local languages) are completed by June 2005 and trainers feel the facilitation and technical skills they have acquired are valuable. 800 farmers from N.W. Tanzania (6 Extn. Facilitated FFS), W. Kenya (10 EF FFS, 6 FF FFS) and N.E Uganda (8 EF FFS, 4 FF FFS) are satisfied that their involvement in the SP IPPM FFS has given them the potential to increase their returns from sweetpotato production by Jan 2006.

Activity 1.1a Planning and preparation of SP IPPM FFS for 2005/06 season by end April 05.

The project team discussed and finalised the operational details of the 2005/06 SP IPPM FFS during the Soroti Stakeholder workshop in March 2005 and through further electronic sharing of ideas. The number of districts involved in Kenya were increased from three to five (Butere Mumias, Kisumu, Bungoma, Kakamega and Busia) and in Uganda from one to three (Busia, Kumi and Soroti), in Tanzania six schools in six different divisions of Bukoba district were planned. Links with other

organisations keen to integrate sweetpotato IPPM FFS approach and activities into their own programmes meant that even wider geographical coverage occured in Kenya and Uganda (see activity 1.4). The extension and farmer facilitators for the project's planned 34 SP IPPM FFS (which became 37 due to the squeezing in of an additional three schools in W. Kenya) were identified. Dates and details for the master trainers (extension staff facilitators) sweetpotato IPPM technical course at Namulonge ARI, and the in-country farmer facilitators' sweetpotato IPPM FFS training course were agreed on.

An in-country planning meeting involving all the extension facilitators and district FFS coordinators was held in Kenya on 13 June 2005. The meeting reviewed and refined the Workplan and implementation modalities for the season long SP IPPM FFS.

The CVs of six applicants for the position of project assistant were evaluated in April and three were interviewed by the project team in early May. Max Olupot was subsequently offered the position and managed to attend the master trainers course at Namulonge as part of his induction. During the period between submitting the proposal for this project in August 2004 and feedback on it from CPP, Sam Namanda, the original project assistant with project R8167 decided to take up an opportunity on the GTZ/CIP funded mass dissemination of sweetpotato planting material project, but was fortunately still able to spend some time on project activities and to help familiarise Max Olupot with the activities.

Activity 1.1b Training of trainers (TOT) for 17 master trainers at Namulonge, Uganda in May 05.

In April TOT master trainers SP IPPM FFS course programme and invitation letters were sent out to the 17 named extension staff whose attendance was to be supported by the project. Due to awareness raising during the March 2005 stakeholders' workshop in Soroti other organisations (World Vision, Africa Now and GTZ/CIP) supported the attendance of an additional 17 participants.

Training of trainers technical sweetpotato course participants

The TOT master trainers technical SP IPPM course ran from 9-14th May 2005 using a range of different specialist trainers to cover the different subjects, and including a field trip to a local farmer in Luwero district in Uganda and a two day – practical training at Kawanda ARI to cover the post-harvest aspects. The course using both theory and practical covered – sweetpotato variety development including orange fleshed sweetpotato, conventional breeding and tissue culture; agronomy (rapid multiplication, planting methods, plant density, weed control, mineral nutrition, compost/manure application, weed control); sweetpotato disease and pest management; experimental design and data collection; facilitation and communication skills; planning of the SP IPPM FFS; farming as a business; post-harvest processing and sweetpotato product development. This is now the third time the project team has run this course, which is evaluated each time and improvements made based on participants comments. A full report on the training course is available (Mwanga and Namanda, 2005)

Activity 1.1c Master trainers conduct training for 20 farmer facilitators in their own countries using local languages by mid June 2005.

During the Namulonge TOT the master trainers discussed and planned the in-country TOT they would subsequently run for the farmer facilitators.

In Kenya, the farmer facilitators TOT SP IPPM course ran from 19-25th June 2005 at Mabanga FTC in Bungoma district with 12 farmer participants (who were FFS graduates), three of the master trainers (Ruth Apondi, George Otando and John Inganga) facilitated the course under the supervision of Godrick Khisa, the country coordinator. Topics covered during the training included: overview of the Sweetpotato IPPM FFS programme; FFS-IPPM concept; introduction to sweetpotato; sweetpotato agronomy (theory and practical); sweetpotato disease management (theory and practical); sweetpotato pest management (theory and practical); experimental design and data collection; post harvest management (theory and practical); facilitation skills and record keeping; entrepreneurship; product development (theory and practical). In addition a one-day field trip to KARI Kakamega was organised where the participants were exposed to the sweetpotato research activities happening in the country and to product development (utilisation) aspects. During the last day a participatory discussion on plans for Sweetpotato IPPM FFS Implementation was held, and an evaluation of the training course undertaken. The training course was closed and certificates were presented by the Bungoma district livestock production officer on behalf of the provincial Director of Agriculture. A full report on the training course is available (Khisa, 2005).

In Uganda, the farmer facilitators TOT SP IPPM course ran from 14-20th June 2005, at Space Net Guest House & Restaurant in Soroti town. Eight farmer participants (7 male and 1 female FFS graduates) attended this training facilitated by Sam Namanda (former project Assistant), Max Olupot (project assistant), Francis J Okello, Faustine Anyumel and Stephen J Wandera extension staff facilitators from Kumi, Soroti and Busia districts, respectively. The training workshop was officially opened by the Local Council Five Soroti District Chairman in the company of DAOs and Secretaries of production for the Soroti and Kumi districts. Dr Guy Blomme (Assistant Regional Co-ordinator INIBAP) also attended as he was interested in learning more about the FFS approach in order to use it in their banana disease management activities. The topics covered both theoretically and practically during the training included: introduction to the FFS approach and concept; sweetpotato agronomy; sweetpotato pests and diseases; planning for IPPM FFS season; experimental design, data collection and analysis; communication/ facilitation skills; harvesting; storage; post-harvest processing and utilisation of sweetpotato; farming as a business (FAAB) with sub topics of simple record keeping, finance management in groups, entrepreneurship skills, personal development and business planning. Participants explained that having participated in a season long SP IPPM FFS they already had significant knowledge of many sweetpotato recipes and specifically wanted to learn about new ones such as sweetpotato jam, a nutritionist was invited to lead this session. The participants evaluated the workshop. During the closing ceremony the chairman of the district tender board, Engineer Opio G, on behalf of the Resident District Commissioner handed over a new SP IPPM FFS bicycle to each the farmer facilitators. It had been previously discussed and agreed with the facilitators that each facilitator would contribute 50% of the total cost from their facilitation allowances; the remaining 50% was paid by the FFS group's fund. This decision was made to help ease facilitator's transport problems to their respective schools. A full report on the training course is available (Olupot, 2005).

Kyere farmer facilitators in Soroti district established themselves as an association and hired an office, following this initiative the project supported them by giving them $150 which they used for purchase of furniture and office materials. This office has enabled the farmer facilitators to increase their cohesiveness and enables others to locate them easily and involve them in discussions on sweetpotato activities in the district, and there are plans in place for this office to develop into the FFS farmers' network office for Soroti district.

Opening the Kyere farmer facilitators association office, Soroti, Uganda

Activity 1.1d SP IPPM FFS conducted from June – Dec 2005

Study plot, Kakuja FFS, Uganda

More than 1000 farmers from W. Kenya, NE Uganda and NW Tanzania have participated in 37 SP IPPM FFS during the current project (see Figure 1). The initial FFS activities (group formation, sharing and shaping of expectations, site location, problem identification and prioritisation, experimental design) began immediately following the facilitators training courses detailed in 1.1b&c above. By mid September all the FFS in Uganda and Kenya had planted their sweetpotato study plots, those in Tanzania were planted later during October and November due to prolonged dry season they experienced. In addition to the study plots most of the groups also planted a commercial plot usually using the current market favourite variety in order to generate additional funds for group activities through sale of the fresh roots or processed products. Key issues participants wanted to focus on in their study plots included:

- new high yielding short maturity period, marketable varieties (a CIP researcher helped some of the FFS set up variety evaluation trials of 8-17 new varieties which they successfully evaluated), all schools had a budget to help with the purchasing of planting materials of new varieties such as Ejumula from other farmer groups, research institutes etc;
- planting methods (e.g. mounds, ridges, flat beds, number of vines, length of vines, use of oxen for producing ridges);
- timely access to planting materials;
- soil fertility practices (e.g. farm yard manure, green manure, CAN);
- pest and disease control (e.g. hilling-up, roguing, barrier crops);
- mole rat control;
- marketing skills;
- nutritional aspects of sweetpotato;
- processing and sale of sweetpotato chips and other products such as flour, mandazis, juice and soap.

The project assistant, Max Olupot, from a base in Soroti in NE Uganda was able to easily visit all the groups in Uganda regularly, and after the follow-up field visit undertaken by Tanya Stathers (project leader), Sam Namanda (ex project assistant) and himself managed to regularly visit the FFS schools in Western Kenya. He also managed to join Thomas Julianus and Dennis Ndamugoba in October in NW Tanzania in time to help the FFS groups develop their experimental designs for their study plots based on their priority problems and then helped some of the groups plant their plots and visited them subsequently to learn about their progress.

A group dynamics activity, Malela FFS, Kenya

During the follow up visit from 17-27th August, 24 of the 31 schools in W. Kenya and NE Uganda were visited by Tanya, Sam and Max. Although farmers involvement in and enthusiasm for the trials appeared genuine, the similarity between so many of the FFS experiments at different schools suggested that the experiments were introduced by the facilitators as opposed to developed collaboratively by the farmers and facilitators in response to farmers key sweetpotato constraints, which was disappointing given the intensive training of these facilitators over a number of years by both this project and the FAO programme, and the inclusion of sessions on simple experimental design in the technical TOT courses. This issue was openly

discussed with the facilitators and the FFS participants which will hopefully increase their understanding that future activities in the FFS must be driven by the participants not the facilitators. The FAO IFAD funded phase II has responded to these concerns by confirming that they are planning master trainer refresher courses (Western Kenya 29 January to 11 February 2006 at Mabanga FTC) which will focus on the theory behind the FFS approach. However without constant check ups and support and the removal from the system of those facilitators not interested in building farmers capacity to learn through discovery (which is starting to happen in Kenya) the FFS are in danger of becoming just a training and visit group extension exercise resulting in little chance of farmer empowerment or sustainability. This project is fortunate in having a project assistant whose role is primarily to support the FFS groups, and after the findings of this follow-up visit efforts to regularly visit the different FFS to help ensure learning was happening through farmer discovery as opposed to through top-down lecturing by facilitators prior to them disappearing to leave the farmers to labour on the study plot was intensified. This problem is not specific to these sweetpotato FFS, but like many common problems faced by FFS is unfortunately rarely openly discussed. A full report of the follow up visit is available (Stathers et al, 2005), which describes the study and commercial plots of all the 24 FFS groups visited and discusses the above and many other operational issues so key to the success of FFS.

It had been intended that each facilitator would be given a copy of the 'Manual for sweetpotato IPPM Farmer Fields Schools in sub-Saharan Africa' (developed iteratively over three years with a wide range of stakeholder during R8167) at the start of the TOT and that they would then use to support both the FFS process and the technical issues raised during the season. Unfortunately due to errors introduced by the printers, these manuals only reached the facilitators in mid September 2005, although most of them had access to an earlier draft of the manual, this may have added to the facilitation problems experienced.

In addition to the season long fields schools participants also organised field days, exchange visits and attended product development workshops, these along with a summary of the groups' evaluations of the sweetpotato FFS are briefly described below.

Field days

In Kenya, 18 sweetpotato FFS field days have already occurred or will shortly do so

- Bungoma District: Nalusaka FFS, 17/01/06 attendance 117 (M37 F80); Kulabusia FFS, 18/01/06; Siritanyi FFS planned 19/01/06; Mabusi planned 24/01/06
- Kakamega District: Majaliwa FFS, 10/11/05; Eburangasi FFS, 9/12/06 attendance 192 (M72 F 120); Namwekholio FFS, 19/01/06; Imani FFS planned 25/01/06; Esumeiya Upendo FFS, planned 27/01/06
- Busia District: Siodakha siri mumbako FFS, 13/01/06; Alungoli FFS, 16/01/06 attendance 113 (M44 F69); Mayoya FFS, 18/01/06; Ndalo FFS, 30/01/06; Sikoma ushirika 24/01/06
- Butere Mumias district: Mazingira FFS planned 31/01/06; Furaha Kilimo FFS, planned 2/02/06
- Kisumu District: Malela FFS, 15/12/05; Kilengo FFS, planned 1/02/06

In Uganda, four of the field schools in Soroti (Kakuja, Ocam, Odapaeta, Aitaritoi Asilang) combined their field day on the 11/01/06 and invited the two other schools (Asikei and Agaja) from Northern Soroti to come as observers, over 600 farmers (FFS participants, NAADS groups and others) and other stakeholders (researchers, district agricultural office, local politicians) attended and enjoyed the demonstrations on rapid vine multiplication, processing of chips using the motorised chipper, making of doughnuts, crackies, chapattis, jam; and soil pit roasting of roots.

Processing workshops

In Kenya, a one day sweetpotato processing and utilisation training was conducted in all the 19 FFS with the main objective of increasing family/group income through sale of sweetpotato products. Topics covered included: nutritional value of sweetpotato; sweetpotato products e.g weaning foods, baked products, deep/shallow fried products, vegetables, mashed products, boiled products; importance of processing sweetpotato. Sweetpotato juice and crackies were very popular with all the groups. One FFS group has opened a shop on the local market purely to sell sweetpotato products.

In Uganda a product standardisation workshop was held in Kyere farmer facilitators office in Soroti on 21/12/05, attended by 12 farmers and 12 facilitators from the 12 current sweetpotato FFS of Uganda, 6 graduates from previous Ugandan FFS, 2 facilitators from Busia Uganda, NAADS coordinator Kyere, Soroti district nutritionist, district agricultural extension officer and the area MP of Serere county (Mr Charles Peter Koluo). The workshop was held because some groups were having problems producing some of the products to a standard that could be sold while other groups were succeeding. The products focused on included: half cake, cake, crackies and juice. Adapaeta FFS now takes their products to one stall in a small trading centre, Kakuja FFS sell doughnuts at a nearby trading centre, Abuket FFS (a graduate FFS) serve sweetpotato products to customers.

Exchange visits

Each FFS group had a budget of ~US$150 which they could use for exchange visits, it was left to the groups to decide whether they all wanted to travel locally or whether they would send a few ambassadors to visit schools in one of the other countries, depending on their decisions the project assistant then helped them coordinate and organise their trips.

Oxen made ridges at Omatakipi FFS, Uganda

26 Kenyan participants (21 farmers, 2 farmer facilitators, 3 extension staff representatives from the 19 Kenyan sweetpotato FFS) visited Soroti and Kumi districts in Uganda from 6-8 December 2005. participated. Odapaeta FFS, Omatakipi FFS and Kyere farmer facilitators' office were visited. In Odapaeta the farmers demonstrated rapid vine multiplication, making of products, and provided a tour of their variety trial which was still in the field. At the Kyere farmer facilitators' office, the visiting Kenyans participated in making products, crackies, chapattis and doughnuts. There was also a sharing of experiences about activities in Uganda and Kenya and discussion on market opportunities for sweetpotato. At Omatakipi FFS in Kumi district, they visited the learning plots and saw the ridges made by oxen and then made sweetpotato juice. Video coverage of the visit was made.

The Ugandan farmers from the Busia FFS (20 farmers, 2 extension facilitators and the project assistant) visited Kenya on 16-17/12/06. Starting with the FFS network office in Kakamega where they were given a briefing on how the network was formed and what they were doing e.g. provision of market price information to farmers on a daily basis, linking of farmers to traders in Nairobi, loaning of manually operated sweetpotato chippers. They then visited Majiliwa learning plots, rapid multiplication site and then participated in product making of mshenye, juice and mandazis. The next day they visited Busia Farmers Training Centre where the in-charge demonstrated how to make bagia and explanations of the processing stages and machinery which could be used to produce the different types of sweetpotato and cassava flour. There was plenty of opportunity for discussion and sharing of experiences. At Alungoli YG FFS in Busia, the rapid multiplication and learning plots were visited and a demonstration of how to make compost manure using the pit method, then the vegetable plots were visited followed by open discussion. In the afternoon Undugu FFS who had graduated in 2003 was

visited who displayed a variety of sweetpotato products and shared their experience on how to sustain graduate FFS groups. Undugu FFS (2002-03) have opened a shop on their local market where they are specifically selling sweetpotato products to the community under the brand name of Undugu FFS group.

The two Kumi FFS (Aguya and Omatakipi) visited Kakuja FFS in Soroti on 19/12/06, they went through the learning, rapid multiplication and variety evaluation plots and also visited the two commercial plots which were of Ejumula, Kakamega and Tanzania varieties. There was discussion with chairman of the sweetpotato traders who happens to be a member of Omatakipi about marketing of fresh roots. They then made porridge, mandazis, juice etc. They then visited the facilitators' office where demonstrations on half cake and doughnuts were done.

Group evaluations

Although most of the sweetpotato FFS have not yet finished the season, group evaluations of seven of them have been conducted in order to feed into this report. During the group evaluation exercise the project assistant asked each participant to give their scoring of and opinion about three issues: benefits/usefulness of what was learned in the FFS; satisfaction with the learning process; and applicability of what was learned for their own farming practices. The information collected is summarised in Table 2.

Table 2. Summary of the Sweetpotato FFS group evaluation process completed by 7 FFS groups who had participated in the 2005/2006 season

	Positive comments	**Negative comments**
Benefits / usefulness of what you have learned in the sweetpotato FFS?	• Most of us farmers are able to identify and differentiate between pest insects and beneficial insects in the field. • We can also identify diseased plants and can do roguing of the infected ones, with clear view that they are a source of infection to other plants. • We know how to select clean vines for planting. • We have accessed new varieties of sweetpotato especially the orange fleshed ones like Ejumula, SPK004. • We have gained knowledge about mole rat trapping which has been a big problem • There are increased sweetpotato yields in farmers' fields due to proper management that the farmers can now practice. • We have learnt how to ridge using oxen especially in Eastern Uganda where the soils are sandy loams (light soils) • We know how to make different sweetpotato products like; doughnuts, mandazis, jam, juice, half cakes, crackies, crisps and other local products e.g. Emangoro in Soroti (mixture of boiled sweetpotato and boiled cowpeas) –it was mentioned that this has made weddings more affordable for farmers as they can now produce the wedding foods themselves. • We have learnt how to do rapid vine multiplication, to ensure availability of vines through out the year, for planting. • We have generated household incomes from the sale of sweetpotato as roots, vines and other products. • Underground storage of roots, has prolonged the use of fresh sweetpotato roots after harvest • Through exchange visits farmers have been exposed to new ideas, practices done by other farmers. • Planting of one vine per hole serves as a way of economising scarce vines. So some can be sold to other farmers for generation of money. • The variety evaluation experiment set by researchers in the schools has reinforced/supported farmers' knowledge in the production and management of sweetpotato. • Visitors both from within and without have shared experiences on sweetpotato FFS with participants'. • FFS learning has helped to reorganise groups that were collapsing, through constant sharing and group building.	• Drought affected the crop • Time was too short, we needed to learn for two seasons • Illiteracy reduced our ability to keep records • Booklets were in English so we couldn't read them • We can't make all the sweetpotato products • Lack of processing equipment

	• Farmers can teach other farmers in the community about sweetpotato. • Discovered that sweetpotato needs to be planted 100m away from the garden previously planted with Sweetpotato (last season) to help reduce pest damage, and that crop rotation is important • Community now benefiting as farmers start to practice what they have learnt back in their own fields. • We can do an economic analysis prior to sale to estimate what we should receive. • We have learnt to chip sweetpotato using a machine and how to dry the chips on raised racks to maintain quality. • We can now make compost manure which is cheaper but with balanced plant nutrients, and can do top dressing of this manure. • The vitamin A in the OFSP can improve eye sight and reduce the vulnerability of individuals falling sick. • Got to know about the energy saving stove and the fireless cooker, this saves the environment from degradation.	
Learning process of the sweetpotato FFS?	• Funds were managed by the farmers themselves, giving us extra strength in financial management, we can now operate a bank account. Funding was done openly. • Practical learning (seeing, touching, practising), enabled those who could not read and write to participate actively • AESA was enjoyed by most groups as it was practical and farmers could discover new things on sweetpotato by themselves. It was often conducted in the morning. • Time schedule for the school activities suited the farmers other programs. • Sensitisation of the groups was done before implementation of the project activities to ensure that farmers had good understanding. • Regularity of the facilitators in the schools acted as a boost to farmers learning. • In some schools facilitators acted as guides not teachers, hence the approach of the FFS. • Monitoring by the core team made the farmers and the facilitators very active. • The system involved many stake holders that have supported the project. • Stationery materials were made available • Languages used were understandable • Exchange visits was very interesting as new ideas were learnt from other groups and experiences shared • Like learning as a group as opposed to individually and this has given our group a strong bond. Sub groups made learning very easy • Frequency of visitors to the school gave good confidence to the farmers • How to reduce poverty in the households was well handled e.g. use of early maturing varieties • Facilitator was free with the learners during the interaction • The facilitation method has made us knowledgeable and we can now share what we have learnt with others in our community • Fleixibility of the programme was good so that special topics like making of the fireless cooker and livestock feed making could be covered • Good that the process went from planting material all the way through to value addition and farming as a business	• Absenteeism • Language barrier prevented the learners from gaining faster • Some people dodge garden work • Lack of transparency re accountability of the school finances • Time management by some few members was not good • Poor time management can give women problems regarding their domestic work • Low interest level of some members • Process was good but market for sweetpotato roots still remains a challenge • Illiteracy particularly among us old people means we tend to forget a lot • No T-shirts for participants
Applicability of what was learnt in the SP FFS to	• Use of oxen for ridging has been very interesting to the farmers, so the enthusiasm to try is high • Enough knowledge on sweetpotato production, was learnt by the farmers	• Oxen are lacking • Some farmers can not cope with the physical work it needs a lot of

your own farming practices?	• We can make food products from sweetpotato, and have sold them in the nearby primary school • Sweetpotato is becoming an income earner as opposed to a mere food crop, so even men are now interested in growing this crop. Money from sweetpotato is used to pay school fees in some homes • Availability of improved varieties of sweetpotato, farmers have started planting Ejumula, SPK004 and Kemp 10 at their own homesteads. • Other special topics learnt in the school like the use of the fireless cooker has been adopted in Kenya. • Compost manure making is done in most schools in Kenya, and integration of vegetable growing in the SP FF. • Scarcity of vines has encouraged farmers to engage in vine conservation in their groups. Rapid multiplication can be practices at individual farms so that we won't have to wait for volunteer vines. Some farmers have already greatly benefited from the sale of vines. • Some of the participants ready to be facilitators and teach other farmers about sweetpotato in the future • AESA was very practical, although cumbersome it helps farmers to do the right things. • We can do all the farming practices on our farmers without the facilitators guidance • Storage of fresh roots at individual house holds, in a bid to have fresh roots for consumption at house hold level. • Understand about nutritive value of orange fleshed sweetpotato and can select varieties by flesh colour. • Schools can now make racks for drying of chips to make Amukeke (manually sliced sweetpotato). • Registration with other non governmental organisations, for the sustainability of the school's activities. • Farmers can now manage sweetpotato experiments and collect data.	energy • Absenteeism means some farmers have incomplete learning, and reduces the concentration in school • Lack of tools, e.g. ox-plough • Inadequate personal funds for implementation of some of these practices • Lack of access/ linkages to information and markets • Fear of unsustained markets for sweetpotato roots • Personal problems like sick children mean women have to miss school • How to store and package products to prolong shelf-life is not very practical in some places

Vine sales

Many of the graduate and current FFS groups sold large quantities of orange fleshed sweetpotato vines to various organisations e.g. TEDO (Teso Development Organisation, Church of Uganda) purchased 110 bags of orange fleshed sweetpotato vines from the FFS of Kyere and Katete in November, each bag was sold at USh7000 giving a total of USh770,000 (USD$430). These vines were taken to the refugee camps, for the refugees to grow around the camps, with both a nutritional and food security focus. The Agricultural Productivity Enhancement Programme (APEP) based in Kampala bought 1354 bags of orange fleshed sweetpotato vines (Ejumula and Kakamega varieties) worth USh13.5 million from Abuket FFS for distribution to internally displaced people in Northern Uganda in July. Abuket FFS organised the collection of these vines from the other FFS groups. World Vision assisted by CIP purchased 170 bags of orange-fleshed sweetpotato vines from Soroti District FFS for rapid multiplication and conservation for displaced persons in Gulu, Kitgum and Lira districts in Northern Uganda. Vines are also being sold at a local level.

Activity 1.2 Develop two visual farmer focused booklets from the FFS manual sections on pests and diseases and on processing and recipes that are for FFS participants as opposed to facilitators.

> OVI 1.2 Two draft farmer leaflets developed by end October 2005, for field testing with FFS groups (Oct – Dec) and translation into Swahili, Ateso and Luganda, finalisation by end of December 2005.

Activity 1.2a Develop two draft visual farmer focused booklets from the FFS manual sections on pests and diseases and on processing and recipes that are for FFS participants as opposed to facilitators.

Activity 1.2b Field testing and refining of farmer focused booklets.

Activity 1.2c Translation of farmer focused booklets into Kiswahili, Ateso and Luganda

1.2a, b & c. The first electronic drafts of the two farmer focused booklets (based on the FFS manual sections) on a) pests and diseases and on b) processing and recipes were circulated by the project leader in early June 2005. Comments from the SP IPPM FFS project team and the SP virus project team were incorporated by end August 2005.

The second draft (in English) was given to the 37 SP IPPM FFS (5 copies per FFS) in September to enable the farmers to field test it during the relevant crop cycle stage and to suggest ways of improving it before a final version is produced and translated into Kiswahili (in Bukoba by the FFS team) and Ateso (in Soroti by the project assistant) and then printed. During the follow up visit in August 2005 this was discussed with the participants of 24 of the FFS, who were very keen to help field test and improve these booklets. Comments on the pest and disease booklet have been collected from fourteen of the FFS groups in Kenya and Uganda by the project assistant, a few of the groups have sent in comments on the processing and recipes booklet, but most are still testing it or haven't yet harvested their sweetpotato so don't yet feel in a position to comment on it. The comments on the pest and disease booklet focused on the layout of the booklet, requests for even more pictures, highlighting of key issues, recipes of local pesticides they have used, improved pictures on virus affected plants.

A third booklet on sweetpotato vine multiplication which will form part of the same series is concurrently being produced under the GTZ funded mass dissemination of planting material project.

Printing quotes have been obtained from QC printers in Kampala, ~£1/ copy for 500 copies but the different languages and booklets may make it difficult to print as many copies of each in the range of languages that we had anticipated with the current budget. Unfortunately this activity will not be completed until after the end of the project, when all farmers' comments have been collected and incorporated and translations have been done to produce the final drafts.

Activity 1.3 Development and implementation of small loan/ grant system for SP IPPM FFS farmer graduate groups to access through basic proposals to help sustain the enthusiasm the groups feel upon graduating and enable them to set up some of their schemes (e.g. groups want to process SP chips, multiply and sell vines, produce and market SP food products)

> OVI 1.3 Guidelines for SP IPPM FFS farmer graduate group proposal development, finalised by end April 2005. Farmer group proposals received by mid June 2005. Decisions made, successful groups (max. 4) informed and funds released by mid July 2005. Progress report submitted by mid January 2006. Plans for transfer of repaid loans to FFS networks in Kenya and Uganda finalised by end Jan 2006.

Activity 1.3a Project team to design & share guidelines for the loan proposal and repayment strategy with SP IPPM FFS graduate groups by end April.

The project team designed guidelines and an application form for the loan proposal and repayment strategy with SP IPPM FFS graduate groups based on the DFID/NARO COARD proposal application forms. These were circulated to graduate groups in May 2005.

Activity 1.3b FFS graduate groups to complete and submit proposals including details of their repayment strategies by mid June 2005.

Eight FFS graduate groups completed and submitted proposals to the project team by end of July 2005.

Activity 1.3c Sharing of proposals amongst the project team, and decision making on which to fund and funds released to FFS graduate groups by mid July 2005.

The eight submitted proposals were circulated shared amongst the project team, and a decision on which four to fund was made by end August (it should be noted that all the proposals were very similar, all proposed using the loan for larger scale commercial sweetpotato farming and processing activities). The four graduate FFS proposals selected were from Khasunire FFS and Undugu FFS in Kenya and Abari Gentie FFS and Abuket FFS in Uganda. Methods for ensuring that the funds were sent directly to the FFS groups as opposed to via facilitators were devised and followed. The delayed receipt of funds from CPP seriously affected this activity as well as others.

Activity 1.3d Project assistant to monitor FFS graduate groups progress.

All the funded groups have been implementing activities as planned and three of them have started repaying the loan. Khasunire FFS, Undugu FFS and Abari Gentie FFS have already submitted their first instalment of KSh5,800, KSh7,000 and USh103,000 respectively as per their repayment plan. Abuket FFS in Soroti has not yet repaid any of their loan.

In Kenya, the next repayment instalment is due next month (February), the FAO programme is currently in the process of strengthening and training the FFS network officials on fund management. Once these trainings are through and the groups have cleared the repayments then the funds will be handed over to them for management. The Ugandan FFS network should be officially starting once the IFAD Phase II programme gets off the ground, and the Kyere farmer facilitators association is perceived as the start of this network, when it is strengthened and the groups have repaid their loans, the funds will be handed over to the network for future administration.

Activity 1.4 Scaling up opportunities identified during the first phase of this project (R8167) are monitored and supported by the project team.

> OVI 1.4 Those scaling up opportunities prioritised during the planning and evaluation and stakeholder workshop of project R8167 are monitored and reported on regularly in project evaluation reports during 2005.

Seventeen additional participants joined the master trainers TOT on technical SP IPPM FFS issues at Namulonge in May 2005. The additional participants were supported by WorldVision/CIP (9 participants), Africa Now (6 through DAO Vihiga), and CIP/GTZ (2).

The World Vision facilitators are supporting sweetpotato activities in Gulu and Kitgum districts of N Uganda around the refugee camps where those who were displaced by the LRA insurgence activities are staying. World Vision are promoting orange fleshed sweetpotato to help address nutritional issues in the internally displaced peoples camps in Tuburu sub-county in Soroti. They have been purchasing the vines from the graduate FFS groups.

REFSO are also supporting SP IPPM FFS in three districts in Kenya following their contact with the first phase of this project. An additional three SP IPPM FFS in Vihiga district, Kenya have been supported by Africa Now. The McKnight Foundation funded project in Kenya and Tanzania trained and established additional sweetpotato FFS groups in Central Tanzania and; Western and Central Provinces of Kenya. These groups visited those in South Western Kenya and North Western Tanzania.

The Soroti district nutrionist, Mrs Ekemu, who has been involved with the project since its conception in 2000, is training internally displaced people in the camps in Katine and Atiriri, Soroti on the use of sweetpotato for enhanced nutrition, orange fleshed sweetpotato varieties together with dark green leafy vegetables, she has been using the FFS approach in her work.

The district director of health services in Soroti, is keen to ensure that the village based health workers address the vitamin A deficiencies in children through the promotion of the use of orange fleshed sweetpotato and is planning to link this to the FFS activities on producing healthy sweetpotato and learning how to make different products at household level for the children.

Harvest Plus held a meeting on sweetpotato market linkages in Mukono, Uganda and some farmers from the FFS were invited to share their experiences on marketing with the traders, in an attempt to try and ensure all parts of the market are better informed and linked.

Dr Areke, Director of Serere (SAARI) during the recent FFS field day in Soroti encouraged FFS farmer groups to put together proposals for on-farm research, to be submitted to National Agricultural

Research Systems (NAARS), this was directly as a result of having witnessed their capacity in designing, conducting and evaluating on-farm trials.

Uganda Oil and Seed Processing Association (UOSPA) through contact with some of the sweetpotato FFS participants have adopted the FFS approach to promote the production and processing of sunflower and soyabean. The use of sunflower oil instead of hydrogenated fats (such as blue band) has nutritional advantages and can be substituted in the sweetpotato products being produced.

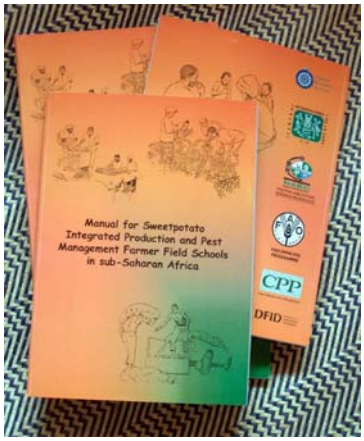
NAADS seems to take every opportunity to promote the FFS work being done by the project in Soroti district e.g. taking NAADS evaluation teams to the projects FFS groups, taking video and media teams to the FFS groups. While the relationship between the project and NAADS is very good, it is still a source of frustration to the farmer facilitators that they are not able to apply for any of the NAADS technology development funds to provide training services to other farmers because they don't have the required academic qualifications, although on the ground their experience is clearly recognised and valued. This is in contrast to NAADS Busia district, where additional investment in sweetpotato production and market linkages is being actively supported by NAADS.

INIBAP were interested in the SP IPPM FFS approach and they visited some of the field schools in Uganda, attended the farmer facilitators TOT and had a short meeting with the project team in August 2005. Their interest was specifically in terms of farmer validation of a banana disease management strategy, and after discussion it was suggested that given that FFS is about farmers as opposed to researchers setting the study agenda and that they weren't interested in developing a holistic curriculum but just the disease management aspects, then a farmer managed trials approach might be more appropriate.

More than 500 copies of the SP IPPM FFS manual have been dispersed to individuals in more than 24 countries. An additional 600 copies were also printed by other projects using GTZ/CIP and McKnight funds.

Robert Mwanga gave a presentation about East African experiences on the promotion of orange-fleshed sweetpotato to combat vitamin A, at a workshop in Burkina Faso organised by Hellen Keller International (HKI) in September 2005. Copies of the manual were distributed to several of the participants, those from Senegal, Burkina Faso and Mali indicated how keen they were to start using it.

The ex project assistant, Mr Sam Namanda, is now working on the CIP/GTZ funded mass dissemination of sweetpotato planting materials project, he has been conducting farmer trainings in Sudan and Burundi using the FFS approach and learning materials.



Copies of the SP IPPM FFS manual

Output 2. Synthesis of lessons learnt from the pilot sweetpotato IPM FFS shared.

OVI 2. Lessons learnt that are key to successful FFS (not only of SP or even crops) are documented by the project team and shared with at least 100 other FFS stakeholders by Jan 2006.

A draft paper on the lessons learnt from the pilot SP IPPM FFS activities has been developed by Tanya Stathers and Sam Namanda. It still requires substantial work before it can be finalised which will happen after the end of the project and it will then be shared with other FFS stakeholders. The abstract of the draft paper is below.

Abstract - During a four year period the authors were involved in organising and supporting 55 sweetpotato farmer field schools in North Eastern and Eastern Uganda, Western Kenya and North West Tanzania. An action research approach was taken and on-going reflection by the wide range of stakeholders involved was encouraged. This article is an attempt to capture interesting aspects of the process and the problems surrounding these sweetpotato farmer field schools and to synthesise and document some of lessons learnt, solutions devised and remaining issues in an attempt to reduce their impact for others in the future. It focuses on: facilitation; experimentation; groups; costs and operations; donor/ visitor attraction; and post farmer field school. Until recently the literature surrounding farmer field schools was notable for its lack of critical analysis and failure to openly discuss many of the common problems associated with farmer field schools. The issues described

are not specific to sweetpotato farmer field schools and it is hoped that the open sharing of this information will help others involved in supporting/ funding/ facilitating/ participating in or monitoring farmer field schools.

Activity 2.1 Write up of "Synthesis of lessons learnt from the pilot sweetpotato IPPM FFS" to share with other FFS stakeholders

OVI 2.1 Project team have produced electronic 1st draft by July 2005 and final version by October 2005. Dissemination strategy developed by May 2005 and followed by Jan 2006.

Activity 2.1a Write up of "Synthesis of lessons learnt from the pilot sweetpotato IPPM FFS" to share with other FFS stakeholders. Compilation and sharing of list of lessons learnt from the pilot sweetpotato IPPM FFS among the project team.

An electronic list of issues that might be included in the paper was started in August 2004 and then further developed.

2.1b Development of first draft of paper by July 2005.

An intensive literature review was undertaken during October 2005 and building on this the first draft of the paper was developed by the project leader in early December 2005. Staff changes within the project team, and demanding work/ travel schedules have contributed to the delay in this activity, however it is now well underway, and will also incorporate lessons from the current projects experiences as a result of the delay.

2.1c Development of dissemination strategy to ensure wide sharing with stakeholders.

2.1d Development of final version by October 2005

Due to the limited progress on this activity no dissemination strategy has yet been developed, however the budget for it is still safe and we are working towards ensuring it is a high quality paper.

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Contribution of Outputs to developmental impact

The project's outputs have already contributed to the chain of realisation of the project's goal which is stated as livelihoods of poor people improved through sustainably enhanced production and productivity of RNR systems, by:

- demonstrating that farmers in NE Uganda, W Kenya and NW Tanzania are keen to be involved in sweetpotato IPPM FFS and can use what they learn through the FFS to improve their livelihoods in numerous ways including:
  - improved household nutrition as a result of growing, using and understanding about sweetpotato varieties with high vitamin A content that can help to address the serious vitamin A deficiency amongst young children and mothers in SSA,
  - sustaining the health of HIV positive individuals for whom Vitamin A also plays an important nutritional role;
  - producing more sweetpotato using the techniques they have learnt in the FFS;
  - trialling different practices using the skills they have learnt for experimenting with different methods;
  - making more informed decisions as a result of understanding how to base economic decisions on evidence they collect about their own activities;
  - selling products they have made from sweetpotato such as mandazis (doughnuts), chapattis, juice, soap etc to help increase income opportunities and to encourage children to eat more OFSP;
  - linking to factories and setting up village level quality processing units that function as profit making businesses;
  - preserving planting material through the dry season and then rapidly multiplying it prior to the onset of the rains, in order to: improve the health of the crop grown through selection and use of disease and pest free healthy planting material; earn income by selling planting material of popular sweetpotato varieties to other farmers at the onset of the rains so that they too can try and avoid delayed planting; act as locally available source of planting material of new varieties; act as a high quality source of planting material for NGO and other programmes involved in disaster relief operations to enable refugees to plant healthy crops either around the temporary camps or when they return to their villages;
  - producing, trialling, refining and donating sweetpotato composite flour to internally displaced feeding camps around Soroti, following the LRA insurgence;
  - increasing their self esteem;
  - reducing their domestic disputes and the risks associated with them as a result of women having: more control over household food security; more opportunity to produce a range of foods that attract their partners home instead of heading to drinking points; their own income opportunities from selling sweetpotato products; access to soap to help them keep their homes, selves and clothes clean (Gamalengo women processors group, pers. comms).
- using the sweetpotato field school learning curriculum, regional sweetpotato IPPM technical training of trainers course, and the manual for sweetpotato IPPM FFS in sub-Saharan Africa produced through extension field testing during project R8167;
- printing and distributing 500 copies of the Manual for sweetpotato IPPM farmer field schools in sub-Saharan Africa to individuals in more than 24 countries and attracting support for the combined printing of an additional 600 copies of the manual by GTZ/CIP and McKnight foundation. ;
- developing and running in-country local language sweetpotato IPPM farmer facilitators training courses in Kenya and Uganda;
- supporting and running a further 37 SP IPPM FFS in N.E. Uganda (12), W. Kenya (19) and N.W. Tanzania (6), 27 of which were extension facilitated and 10 of which were farmer facilitated;
- supporting the training of 17 master trainers (extension staff) and 20 farmer facilitators in SP IPPM FFS TOT technical courses, plus those farmer facilitators that will graduate from the above 37 SP IPPM FFS;
- supporting the participation of >1000 East African farmers in SP IPPM FFS

- developing in response to strong farmer demand field booklets on sweetpotato pests and diseases and processing and recipes based on the information in the manual but which have been adapted by farmers for their own use and will be translated to Kiswahili and Ateso before printing.
- developing and implementing a small loan/ grant system for SP IPPM FFS farmer graduate groups to access small loans of US$300 through basic written proposals to help sustain the enthusiasm the groups feel upon graduating and enable them to set up some of their schemes (e.g. groups want to process SP chips, multiply and sell vines, produce and market SP food products and often need start up capital);
- monitoring and supporting the progress of the scaling up opportunities identified with other organisations (who are using their funding to implement linked activities);
- collating and writing up a synthesis of lessons learnt from the pilot SP IPPM FFS to share with other FFS stakeholders
- involving local government players in promoting the sweetpotato IPPM FFS approach amongst their constituencies and in lobbying for funds to support further activities, and in linking the work to national level policy makers and local level programmes such as school feeding programmes, and home based nutrition training;

Follow up action recommended includes:

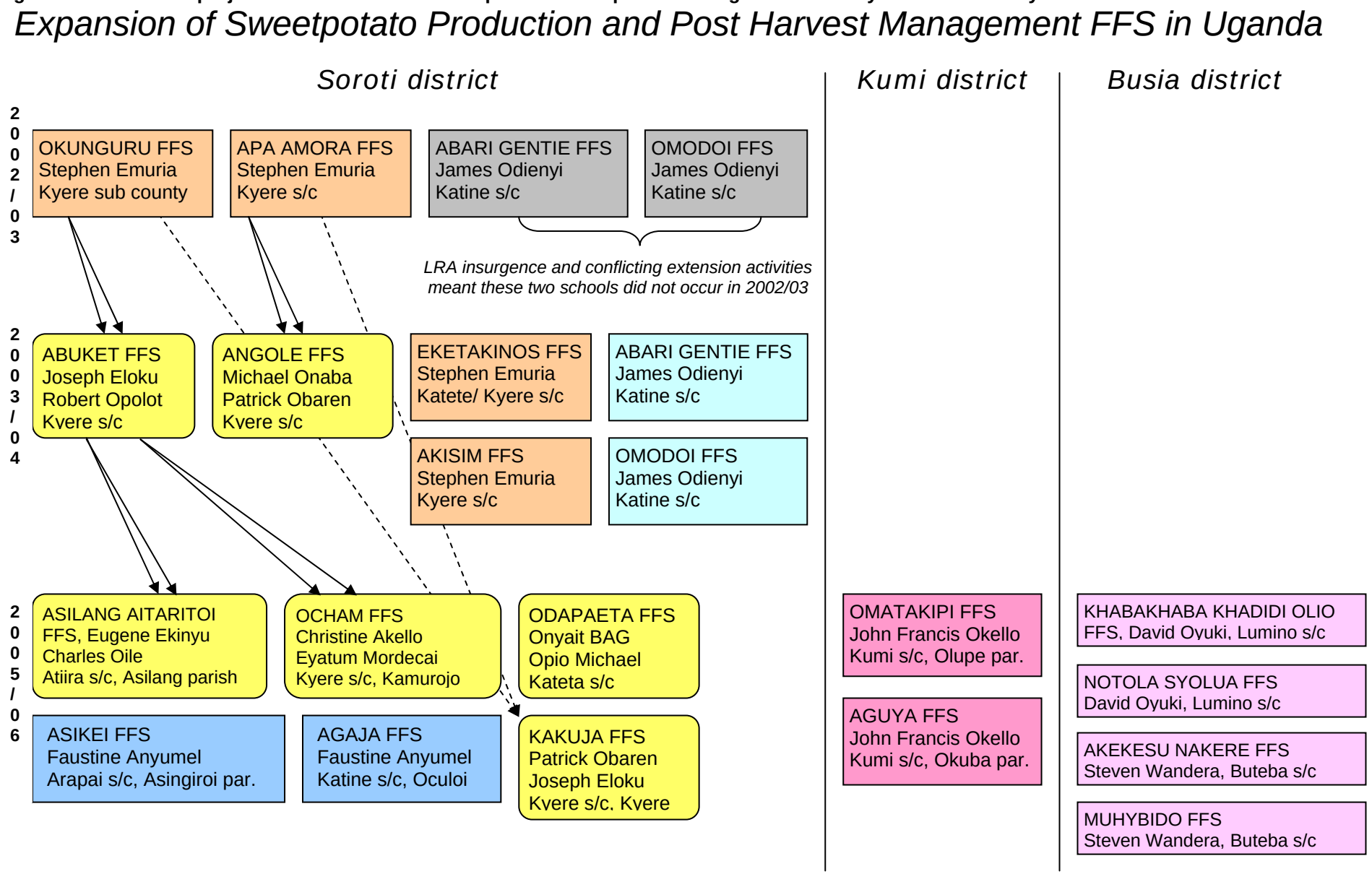
- Research into the impact of FFS (not only those FFS specific to sweetpotato) on communities over time, follow up of how farmers use the skills they obtained in experimentation, negotiation, group formation, pest management, processing etc over time, what are the spin off activities here and how do FFS impact on the poorest/ marginalised members of a community (who are not usually included in FFS which tend to be formed through participant volunteering). Because we are currently at a point where national governments are needing to make decisions on whether to support this expensive extension approach they need to have evidence based information of its value/ impact in order to so, they need a greater understanding of whether people are benefiting and if so, which people. Very little critical analysis of the FFS approach has occurred globally infact it has often been promoted in an almost evangelical manner, with little critical reflection. In SE Asia where it has been active for >20 years, the findings of two review/ impact studies published last year question whether any farmer to farmer learning is actually happening and whether it is a cost effective extension method. Although FFS have only been introduced into SSA much more recently, it is important that they are critically reviewed so their value can be compared with other approaches.
- Continued promotion of the SP IPPM FFS training manual, which is written in such a way as to be appropriate throughout sub-Saharan Africa. The FFS approach which is readily accessible to new comers through the introductory sections and later chapters of the manual could be used anywhere in the world, with all kinds of groups of people on all kinds of topics, including poultry, soil fertility management, other crops etc.
- Follow up of spin off activities by other organisations to see the growing potential of this work
- Support for sharing of lesson learning on improving and maintaining the motivation of FFS facilitators over time, between different FFS programmes
- Support for further training of master trainers in SP IPPM FFS using the Namulonge based TOT course, and for continued support of farmer facilitated FFS in the project areas particularly in NW Tanzania where there has been only one year of project support to date.
- Development of a pre and post-harvest FFS maize management manual (linked to project R8422)

Biometricians Signature

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

Signature: (see email discussion with Dr Frances Kimmins, as despite numerous attempts to contact Dr Nabasirye for the last 3 weeks, she has not replied)
Name (typed): Margaret Nabasirye
Position: Biometrician, Makerere University, Kampala
Date:

Figure 1. Overview of project R8167 and R8458 sweetpotato FFS expansion in Uganda and Kenya over the last 4 years



Expansion of Sweetpotato Production and Post Harvest Management FFS in Kenya

(excluding the 2 new FFS in each of Butere Mumias and Kisumu districts)