

1) General Information

a) From Web to Field: Kyuso Farmers embrace ICTs for Pests Management

b) Key words: Pests Control, Information and Communication Technologies (ICTs), non-chemicals, Farmers Resource Centre, focal farmers, Indigenous knowledge, open knowledge network, partnerships, OISAT Info.

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g) Implementation period – May 2005 to July 2006

h) Project cost 14,000 euro

2) Summary of the Innovative experience

This paper highlights a one-year pilot project initiated in 2005 that involves use of information accessed using ICTs to control and manage pests and diseases in Kenya using non- chemical alternative methods. The project was innovatively implemented by fostering partnerships that involved International agencies, regional networks, government departments, local Ngos, Community Based Organisations (CBOs) and farmer groups.

The innovation address the challenges small-scale farmers face in achieving increased food production in a sustainable manner while conserving the natural resource base.

The innovation also unveils successes and efforts made in bridging the digital divide in terms of community access to Agricultural information resources.

In 2004, Pesticide Action Network Germany (PAN German) developed and launched an online information service for non-chemical pest control in the tropics, OISAT Info (www.oisat.org) targeting trainers, extension workers and farmers.

OISAT Info offers practical information on preventive and curative methods and how to minimise pest damage in a safer, affordable, effective and ecologically sound way. The main aim is to increase food production at household level while reducing the use of synthetic chemical pesticides that are hazardous to human, water resources and the environment.

ALIN-EA partnered with PAN-Germany, PELUM, Kenya, the Ministry of Agriculture Mwingi District and Kyuso farming community to pilot and prepare large-scale dissemination of OISAT Info among smallholder farmers, Agricultural training and extension networks in Africa. Through the Pilot Project, a 'Farmers Resource Centre' (FRC) was established at Kyuso.



Powered by solar energy, farmers access OISAT info from CD ROM and Internet using the GPRS technology and other information resources from the resource centre. The OISAT info has been used widely on pigeon peas, maize, green grams, cowpeas and mango seedlings. The common pests are apion beetles, aphids, white flies, white grub, stalk borers and termites. The plants commonly used in pest management and are locally available are neem, chillies, finger euphorbia, papaw, custard apple and onions. Wood ash and chili is also commonly used for controlling stalk borers.

To enhance sharing of local knowledge and Agricultural practices widely, ALIN-EA installed the Open Knowledge Network (OKN) software. The OKN is an offline communications channel that offers an excellent information management system for

local content generation and easy retrieval and dissemination to wider audiences, using appropriate and complimentary ICTs like the worldspace technology, rural radio etc.

The project is highly valued by the local farming community, extension team and neighboring educational institutions. Some of the results and impact include: Farmers, extension staff, teachers, students and local leaders accessing appropriate, practical and up to date info resources from the FRC. The local farmers control and manage pests cheaply reducing costs of production and producing more healthy food. In addition, there is an increased farmer and extension team capacity on use of appropriate ICTs and improved communication skills. There is increased team spirit and confidence among farmers, NGOs, government departments in use of alternative pest control methods and exchange of indigenous knowledge.

3) Background and Justification

The Kyuso Farming community

Kyuso division is in Mwingi district, Eastern Province of Kenya. Located a distance of about 60km from Mwingi town, Kyuso is a semi-arid region and generally hilly with many rock outcrops and plenty of indigenous shrubs and vegetation. The predominant Akamba community practice crop farming and livestock keeping. Some of the crops commonly grown include green grams, cowpeas, sorghum, maize, cotton and fruit trees that include mangoes, papaws and passion fruits. Farmers in this area face the challenge of achieving increases in food production in a cost effective manner while at the same time conserving the natural resource base. One of the major problems farmers complain about during a cropping season is control and management of pests and diseases that damage the crops. Conventionally, many farmers believe that the only solution is to spray chemical pesticides. However, these chemicals are expensive and are known to have effects on human, water resources, and the environment.

Kyuso farmers were chosen for the pilot because of the strongly established Farmer Field Schools (FFS) network by the Ministry of Agriculture. In addition, the division lack adequate extension staffs, lacks an information referral point, farmers lack general information on production systems and are ill-equipped with crop protection information yet they are quite innovative and use Indigenous and Traditional Knowledge (ITK).

In most developing countries, extension agents face the challenge of helping small-scale farmers achieve increased food production. Due to increasing awareness on the effects of chemical pesticides, there is a growing demand for affordable information on ecological pest management and non-chemical crop protection approaches and techniques that leave no scar on the environment.

The main issues involved in starting this pilot project were:

- PAN Germany researching and establishing the OISAT Info website www.oisat.org this website offers information on crop pests' management in the tropics.
- Creating awareness among Agricultural stakeholders about the OISAT Info initiative and developing institutional and farming community partnerships.
- Fund raising by partner institutions.
- Project implementation – This involved identification of farmers to participate in the programme, setting up a Farmers Resource Centre and equipping it with appropriate ICTs, capacity building for farmers on ICTs, pests identification, experimentation and validation, farmer experience sharing forums, documentation of local knowledge etc.

4) DESCRIPTION AND IMPLEMENTATION PROCESS

The OISAT pilot project in Kenya 'From Web to Field to Web' is an initiative of PAN Germany. The project is part of PAN Germany's medium-term concept of extending and studying success factors to introduction of OISAT Info to agricultural training, extension services and networks. The lead implementation organization in Kenya is Participatory Ecological Land Use Management (PELUM-Kenya). The other four implementing organizations include the Arid Lands Information Network-Eastern Africa (ALIN-EA), in collaboration with the Ministry of Agriculture, Mwingi district, Sustainable Agriculture and Community Development Programme (SACDEP) Kenya in Muranga district, The Kenya Institute of Organic Farming (KIOF) in Maragua district and Sustainable Agriculture Community Research Extension Development (SACRED Africa) in Bungoma district. The one-year pilot project started in May 2005 and was funded by PAN Germany and Bread for the World.

What is OISAT Info?

OISAT Info is a web-based practical guide for trainers, extension workers and farmers on how to minimize pest damage in a safer, affordable, effective and ecologically sound way. Information provided via the website, www.oisat.org, provides tips on how to lower the cost of production based on recommended pests, diseases and weeds control methods. Its structure is based on the cropping season of the major crops indicating key pests for each growth stage and plant part. The OISAT Info details preventive and curative methods of managing pests with the main goal of reducing synthetic pesticides. The information is presented in form of illustrations, photographs and clear advice together with a glossary of technical terms. Situation specific information can be downloaded and compiled into training materials, which can also be translated into local languages for an effective transfer of the information to farmers. The OISAT Info database has been developed in consultation with an international experts group.

Pilot Objectives

The overall purpose of the pilot was to prepare the large-scale dissemination of OISAT Info among smallholder farmers, agricultural training and extension networks in developing countries.

Identification of farmers

As a starting point, seven farmers were identified to participate in the pilot project as focal farmers for closer monitoring of OISAT Info use by the extension staff. The seven farmers were chosen using set criteria that included, innovativeness, one growing diverse crops, literacy level, willingness to apply OISAT Info and to train and share experiences with other community farmers enhancing diffusion of information widely. The participating farmers include five women and two men.

Establishment of Info supermarket

A Farmers Resource Centre commonly referred to as Kyuso Community Information Supermarket was established at the divisional offices of the ministry of Agriculture. The centre is equipped with various appropriate Information and Communication Technologies (ICTs). These include a computer, several CD-ROMS, 3 compendiums on forestry, crop protection and animal health, Worldspace Radio and an adapter card, printer and a mobile phone. Farmers access information from OISAT CDROM and other CD-ROMS with various development technologies and experiences.

The centre is powered by solar energy and communities are able to access Internet using the GPRS technology. A local farmer trained in Information Technology skills Mr. Julius Matei works as a Farmers Resource Centre Assistant (FRCA). His role is to train farmers on use of ICTs and help download information, repackage OISAT info into local language and disseminate to farmers. The Ministry of Agriculture Crops Extension Officer, Mr. Antony Kavisi and the Farmer Field Schools (FFS) co-coordinator, Mr. Bii offers technical support to seven Focal Farmers (FF) and other Community Farmers (CF) with interest in pest management using OISAT Info.



Mr. Matei training other farmers at Kyuso FRC

Effective from February 2006, ALIN-EA has attached to the centre a trained Community Information Volunteer (CIV) Ms Tabitha Mbinya, to help document local knowledge and disseminate development information widely via the Open Knowledge Network (OKN). The OKN is an off-line information sharing system that involves collecting local knowledge and disseminating using flexible ICT tools.

Sharing Knowledge via Farmer's forums

To ensure that focal farmers share their experiences and knowledge with community farmers, leaders, extension team, teachers' etc. Farmers' forums were organized at intervals. The first forum focused on the seven focal farmers and the extension team to introduce the pilot project, expectations and OISAT info validation process. During this forum, farmers acknowledged that they lack appropriate info on pest control methods; hence, OISAT Info had come at the right time. In most cases, they use chemicals or ITK of which they are not sure about the mixture rates, preparation methods and residue effects. The second and third forums focused on sharing OISAT Info as applied by the farmers and their experiences on what has worked or failed and on which crops.

Empowering Communities with Knowledge

As part of capacity building for farmers and the extension team, the project organized a pest identification workshop where farmers and the extension team shared various experiences and practically went out in the field to identify some of the pests. Using a magnifying lens, some of the smallest pests were identified and discussions held on the best methods to control them.

In addition, an Information and Communications Technology (ICT) workshop was conducted for the farmers, extension staff and ALIN-EA members to be acquainted with the new technologies for accessing information. A total of 25 participants attended the workshop. During the workshop, participants were exposed to the operations of a computer, accessing info using CD-ROMS, and they also did an information mapping exercise to understand and learn local information access and communication systems within a remote set up. This exercise gave a benchmark for future assessment of ICTs as tools in the context of community access to information.

As a way to integrate more documentation of local knowledge, ALIN-EA incorporated a training component on using the OKN and installed the appropriate software and equipment. The OKN is a human network that collects, shares and disseminates local knowledge to a wider audience using flexible ICTs. 27 participants who included farmers, ALIN-EA members, extension staff and local leaders, attended the workshop. The members formed the *Kyuso Focal Group* and also elected a coordinating committee to oversee networking activities. The Community Information Volunteer with assistance of farmers and extension team documents and shares the OKN content.

Project Results

The Info Supermarket gaining popularity

Since its establishment in August 2005, the Information Supermarket has been busy with farmers, teachers, students and extension staff visiting to access information on various development issues. The centre is most popular to farmers who seek agricultural information on how to improve their production systems. So far, more than 1,350 visitors have been recorded. The centre gets busier during rainy seasons. Twelve farmers capacities to access OISAT Info has been increased. According to Mr. Matei, the farmers have been practicing how to use the computer regularly; hence, they are improving with time and are able to access information from CD ROMs.

"When I first saw the computer at the Kyuso Info Supermarket, I was amazed at what it was. At first I didn't want to touch it! However, with encouragement from Mr. Matei, I was able to learn how it operates. For a period of 2 months learning IT skills, I'm now able to write and key in my reports timely and send to my supervisor within the department of Adult Education at Mwingi. I can also access information from CD ROMs, print and use it at my home. I'm now encouraging and training other farmers to learn IT skills" these sentiments are expressed from Mrs. Agnes Mughli who doubles as an adult class teacher and a Focal Farmer within the OISAT project.

The center has grown beyond offering OISAT Info only to other development, appropriate and practical technologies downloaded from different CD ROMS provided by ALIN-EA, AGROMISA and from other sources.

Among the many visitors to the centre are 60 students and 4 tutors from Kyuso polytechnic, who got information on controlling aphids, white flies and grasshoppers on kales and tomatoes. Other visitors include Kyuso fruit growers self help group and Kakongoo FFS who sent four representatives to the centre.

"Mr. David Mutua, a science teacher at Kyuso boys secondary school learnt about the resource centre and OISAT Info when he asked Mr. Kavisi, the MOA Extension Officer for materials that the school could use in this years Science Congress. He was referred to the Kyuso Info supermarket where he accessed information on haymaking, how to make the blackstone and how to make soap using local materials that was downloaded from the Baobab CD-ROM.

The Science Club students, with guidance from Mr. Mutua, used the information to make some exhibits for the Science Congress. Due to the simple technologies and innovativeness of the information, the school scooped 1st position during the district secondary schools science congress and proceeded to the Provincial level."

Information open day a success

An Information Open Day was organized at the Kyuso Info Supermarket during the launch of the centre on 7th April 2006. The Open Day was meant to create more awareness about the information resources available and the new ICTs in use at the centre. The DO1, Mwingi district, Mr. Mohammed, who encouraged the farmers to utilize the available information resources to develop themselves crowned the occasion. In attendance were more than 150 farmers and representatives from other organizations including the District Agricultural Officer, the Mwingi District Drought Monitoring Officer and many other guests. The Focal Farmers had an opportunity to exhibit and demonstrate how they access OISAT Info and use it to make diverse formulations.

Farmers' field validation and experiences

Most of the district experienced a severe and prolonged drought when the rains failed during the season ending November/December 2005 and the April May 2006. This led to crop failure. Despite the drought, the farmers were quite enthusiastic and undertook some field validation of OISAT Info and here are their experiences.

The experience of Maureen Mueni

Maureen's farm is situated at Kimangao village about 15kms from Kyuso town. She is a member of the FFS network where she has acquired a lot of farming skills that include seed selection, poultry, etc. The farmer has set aside an OISAT plot measuring 75m by 75m and had planted **maize** and **cowpeas** among other crops. The cowpeas were attacked mildly by **apion beetles** in their flowering stage. Though she admitted to have made a mistake in the use of OISAT info by mixing **neem and chilli** formulation instead of using each individually, they worked. The apion beetle reduced slowly after application of the solution.

Another pest controlled was the **stalk borer** in maize. She used sieved ash and put it in the affected crops funnels. After a few days she noted that the pest had been eliminated. Given that this was her first time to make the pest formulations, she found the methods to be some how cumbersome as the availability of materials limits its use. Maureen got the neem leaves and the chillies from a neighbour. She reckons that the methods used are cheaper and easy to make since local resources are used in making the formulations.

The case of Grace Ndeti using chillies and aloe

Grace planted 1kg of cowpeas in her farm. **White flies, apion beetle and aphids** attacked the crop. She tried **neem** formulation and only the white flies reduced. She then applied chillies on the apion beetles and they reduced but not all. While preparing the chillies, she had to soak in water hence this caused some irritations to her skin.

The papaya formulation also didn't work and instead attracted big flies. She decided to try some ITK she had heard from neighbours. This involved crushing 4 large sized bulbed (Should use spring onions) onions and soak them in 2 liters of water for 4 days. Sieve the mixture, dilute with 8 liters of water and spray on the affected crops. The apion beetles disappeared completely and she harvested 21kgs!

On the control of **termites**, she used aloe that worked on trees but when she used on the granary posts it was not effective. Ash and chili was also used effectively in 2 weeks old maize, which had been attacked by **stalk borers**. Termites proved to be very destructive on mango trees and she poured 10kg of ash in holes she had dug round the mango trees.

This was done around two months ago and is still to apply another round, as it seems to be working. Once she had tried on the OISAT plot and it worked she extended the application to the whole farm. She plans to continue using the OISAT Info in future since it's economical.

Mr. Julius Mwonga's experiences using neem

This focal farmer, also doubles as the FRCA. He assisted a neighbour to apply OISAT Info after his **cowpeas** crops had been attacked by **aphids** and greatly by **apion beetles**. Mr. Mwonga showed his neighbour how to prepare the formulation and also its application in the field. They pounded 2kg of neem leaves and soaked in 4 liters of water in a pot covered tightly with a piece of cloth. After 3 days, they diluted 1 liter of the solution to 9 liters of water and sprayed on a small piece of farm.

The aphids completely disappeared but a few apion beetles persisted. The crop, which was in the poding stage, was re sprayed with the same formulation but 1 liter of the solution was diluted with 5 liters of water. After two days, the apion beetle completely disappeared and she applied on the whole farm. The farmer tried to control **termites** on his farm. He pounded branches of finger euphorbia and put in 10 liters of water, then covered the container for six hours.

The solution was then sieved and poured at the base of the trees (just like watering) and since then he has not applied again as it was effective. He then tried the solution on granary posts and it worked quite effectively. Julius has also come up with a way to control ticks and heal wounds on cattle. He uses the barks of Kitungati tree Comiphora family), which he boils in water and leaves to cool. The barks are then sieved and the soapy solution, which is thick, is applied on cattle using a piece of cloth. The ticks disappear after a day but appear after 10 days. The barks must be from a tree that is not too old.

Mr. Maluki Muneeni- Controls termites innovatively

Mr. Maluki's farm is situated about four kms from Kyuso market. He used the sticky trap learnt during a previous workshop to check the occurrence of pests and identified



Mr. Maluki displaying the sticky traps on his farm

apion beetle and aphids. He went ahead and prepared the neem formulation which he soaked for 3 days then diluted 2 liters of the same with 8 liters of water. The cowpeas, which were in the flowering stage, had a reduction in aphids after 4 days but the apion beetle persisted. This prompted him to apply the formulation after a week and the aphids were eradicated and a reduction in apion beetle noted. Lack of rainfall discouraged him from reapplication.

Mango trees in his orchard were attacked by the **powdery mildew**. He got papaya leaves and soaked them in a jug and added 1 cup of water. He soaked overnight then sieved the solution, diluted it with 6 liters of water and sprayed. He has since re sprayed 4 times and his efforts are bearing fruit as one eight-year mango tree which had not bore any fruits now has fruits.

The farmer has also used finger euphorbia in the control of termites. Do you know that human urine controls termites? Well, Mr. Maluki used to urinate on trees as he worked on his farm (not a laughing matter) and noted that the trees he had continuously

urinated on were resistant to termites. He now uses urine from his family to apply on the trees though the limitation is the quantity.

“Daktari” (herbalists) as he is fondly referred to by the locals, was approached by a neighboring farmer to help him control apion beetle in cowpeas. He mixed chilies, neem, and tobacco. They were pounded and soaked in a tightly covered pot with water and kept in a shade away from sunlight for 2 days. On the third day, the mixture which had a very strong smell was sieved and sprayed on the crops though it can also be poured round the farm to discourage pests from invading it owing to its strong smell.

Agnes Mughl uses neem for multi-purpose

Agnes is one of the OISAT focal farmers Agnes is one of the OISAT focal farmers who doubles also as an adult educator and a farmer innovator. She is a role model and an influential person in her village that is about 8 km from Kyuso market. She practices mixed farming and has plenty of different fruit trees that include papaws, mangoes and many others. She has also planted trees and shrubs that include neem and aloe. Since she started applying OISAT Info on her farm, she confesses that her yields have

increased tremendously and her experiences are highlighted below.

The bean pod borer attacked her beans in the maturation stage and she used the neem formulation and sprayed on the pests and it was effective. Her cowpeas and pigeon peas were infested by aphids, leaf miners and thrips. The neem formulation was sprayed with success. The pigeon peas during maturation stage were attacked by stinkbugs. To control this, she prepared the custard apple leaf extract then sprayed on the plants and was quite effective.

In maize, white grub attacked the sown seeds as well as roots and neem was used in their control. The corn stalk borer also attacked the leaves and she used wood ash and pepper, which was effective. She also noted that there were locusts and corn weevils, which she eradicated by spraying neem formulation. Agnes has an alternative method of controlling aphids. She applies ghee on leaves attacked by the pests, which in turn attract ants that feed on the aphids.

Challenges

A project of this magnitude cannot run without some challenges. Some of these include:

Prolonged droughts. Mwingi district is among those areas that have experienced severe prolonged drought as a result of insufficient rains during the last two seasons. Due to reliance on rain-fed crop production, the farmers were frustrated since they could not apply OISAT Info for a complete season.

Poor safaricom network at the Information supermarket. As part of using appropriate ICT technologies, the center has GPRS equipment for accessing direct Internet using the safaricom network. However, at the supermarket the network keeps fluctuating hence has minimized direct access of OISAT Info from the Internet. One has to travel 60 km to get full network!

Unavailability of pest control materials. Some farmers have lacked access to local raw materials for making appropriate formulations for pests' control. For example some farmers do not have aloe and neem trees within their farms hence they have to borrow from neighbours. To overcome this, farmers are being encouraged to plant trees and shrubs with medicinal properties on their own farms.

Poor infrastructure. In Kyuso, the rural communications infrastructure is very poor. This reduces access to the Info supermarket by the farmers who are farther away from the supermarket.

Short pilot time frame. In addition, the time frame for the pilot project was quite short given that the project started in the middle of a season. This necessitated extension of the pilot phase.

Emerging pests. Some pests were identified by farmers and have no known knowledge of controlling them. A good example is a beetle called in local language '*Ngetani*' that is destructive to mangoes and other crops like cassava etc. Ngetani cuts the stem of the plants completely just like a saw!

Making formulations take time. Some farmers are impatient and don't wait for the formulations to mature as per the recommendations. They want a quick preparation and immediate results hence they apply prematurely leading to the formulations being ineffective.

Information Repackaging and publications

1) Articles and publications

- Articles published in *Baobab* journal include:
 - '*Information for Non-chemical Pest Management in Africa*' was published in BAOBAB issue no. 41 of August 2004.
 - '*Termite Control without chemicals*' appeared in issue no. 43 of April 2005.
 - The third article was also in issue no. 43 and was titled '*OISAT: Pilot project takes off in Kenya*'. This basically highlighted the pilot project partners, activities and how BAOBAB readers can participate. Articles two and three above were also circulated within the Open Knowledge Network (OKN) framework following a request from an Agricultural staff based in Zimbabwe.
 - An 8-page pullout was published in Baobab issue 46 – OISAT Info – The Kyuso farmers' experiences.
 - The Kyuso open day and launch was covered by the STANDARD Newspaper one of the leading dailies in Kenya on 18th April 06 - *Pests information available online.*

2) Radio Programmes

In collaboration with Agricultural Information Centre, the Kyuso 4th farmers' forum was featured in the national channel KBC radio, SIKIO LA MKULIMA '*The farmers Ear*'. This programme helped to spread OISAT news nationally for many farmers listen to get

farming tips. There was also overwhelming feedback from local communities and more visitors went to the centre for info.

Replicability

This project can easily be replicated in other areas ranging from local, national to regional level. Already the ministry of Agriculture in collaboration with the NALEP is planning to scale up the efforts in other regions. The project can also be scaled up through other farmer training and extension programmes, educational institutions and other related government arms and networks. However, it's important to study the lessons learnt and also to apply the recommendations below for up scaling the project.

Impact and Sustainability

The impact of the project was felt at various levels ranging from staffs involved to farmers' local community and Institutions. Some of these include:

- Improved staff capacities - ICTs, pests' management and networking opportunities.
- Increased farmers capacities - pest management, ICTs and doc. of local knowledge.
- The FRC acquired appropriate equipment – solar, ICTs etc making staff work easier.
- Access to rich and practical database of crop pests' management info.
- Increased collaboration and confidence in implementation of joint projects among international agencies, NGOs, government and communities.
- Farmers spending less money to produce healthy food.
- OISAT Info is environment friendly – Bees are spared!
- Increased human capacity at the divisional level – FRCA and community volunteer

In order to sustain the project at the community level, the community has elected a *focal group* committee that coordinates the FRC activities. The center charges for typing services, mobile phone charging and also offers IT skills trainings to youth at a fee. The committee is exploring other income generating activities. It's worth noting that NALEP has allocated a small budget for equipment maintenance.

At national and regional level, there is need for funding to undertake more capacity building workshops and info exchange to spread the OISAT info and involve more actors. There is also need for further funding to run the project for at least two years to gain more experiences and for communities to validate more info.

Lessons learned

- Management of crop pests by farmers need to be planned for right from the planting time especially through use of preventive measures. Farmers need to understand the common pests and the crop stage when they attack and apply curative means immediately.

- OISAT info is practical, easy to use and cheap. The info can be applied by farmers to effectively control pests that attack their crops in the field. This in turn reduces use of hazardous pesticides hence producing healthy food.
- Use of appropriate ICTs can avail critical information to communities who need it to improve their livelihoods. The Kyuso info supermarket is highly acknowledged by local communities who throng the center to acquire info on various development issues.
- The Community Info supermarket is serving a wider community in provision of appropriate information. This includes farmers, extension staff, teachers, local leaders; students etc... whose info needs are quite varied.
- The use of a language that is culturally appropriate was critical in successful implementation of the project. Use of a locally trained farmer in IT skills was advantageous in that communities are able to get translated info from one of their own.
- Choosing farmers who play other roles in society enables info flow and diffusion speedily in villages through farmer-to-farmer extension.
- Incorporation of OISAT info into schools offers an opportunity for young farmers to learn pest management at an early period and this knowledge can be transferred to their parents at home.
- Provision of appropriate repackaged info with good back up and support from extension team can help improve community livelihoods.
- At the network level, implementation of OISAT Info was yet another opportunity to research and disseminate info using appropriate technologies that enhance community development. The network continues to share experiences from the pilot to its regional membership. The implementing staffs capacities on pest management and use of ICTs to access updated development information has increased tremendously.
- The successful implementation of the pilot project was as a result of good team spirit and partnerships by implementing organizations, involvement of farmers right from the planning stage and the interest shown by the farming community to try new ideas. Indeed the project fitted well within the established Farmer Field Schools (FFS) networks.
- Farmers are more confident in use of OISAT Info and sharing openly other ITK technologies given the encouragement and awareness created from the pilot project. During the farmers' forums, farmers discuss other development issues beyond OISAT that affect them locally.

Future plans

- The project has incorporated the OKN system to strengthen local info sharing among farmers and from other regions on diverse development issues. This will strengthen the OISAT initiatives and encourage local communities to contribute and share knowledge more quickly and freely. In addition, the Kyuso Info supermarket will maintain a database of local knowledge and information that is easy to access by the communities.

- There is need for more research on emerging pests like *Ngetani* to avail appropriate information on their control.
- The project will focus on documentation of more innovative pest management practices by farmers and give feedback for inclusion in OISAT Info.
- As the project progresses, more farmers will be ICT compliant hence can access any info on markets, trading etc.
- A farmers committee is in place and will involve more farmers in the management of the Info supermarket for sustainability and to acquire more appropriate information resources from other like-minded sources and partners.
- Scale up the Kyuso experience to more farmers in the district by placing notice boards at strategic market places. The project staffs are willing to offer technical support to other districts with interest in setting up a similar Info supermarket.
- Involve schools to form Young farmers clubs (YFC) to use the available Info from the supermarket as learning tools and to understand farming in a more holistic way.