

R E P O R T

July 2006

# Mobile Plant Clinics in Uganda

*Global Plant Clinic  
United Kingdom*



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**Plant Health Services Initiative 2003 – 2007**

*Healthy Plants for Healthy People*

MAAIF ✕ GLOBAL PLANT CLINIC

# CONTENTS

Summary.....	2
Action Points For Clinic .....	3
1. Proceedings of the course .....	4
1.1 Writing for Farmers .....	4
Introduction.....	4
Course Outline .....	5
Validation: Farmer peer review .....	6
List of flyers .....	7
Sample fact sheets.....	7
2. Support and Monitoring .....	8
2.1 An answer for kiwotoka .....	8
Recommendations .....	11
2.2 When are you coming back to Nkokonjeru? .....	12
2.3 Not laughing anymore in Soroti.....	15
Recommendations .....	16
3. Proceedings of the course in Kenya .....	18
3.1 Going Public and Writing for Farmers.....	18
Introduction.....	18
List of fact sheets .....	18
Sample fact sheets.....	19
Course Outline .....	20
Going Public.....	21
3.2 A bird in the hand is worth more when vaccinated.....	21
3.3 Osama bin weevil .....	23
4. Annex .....	25
4.1 Sixteen fact sheets for Uganda and Kenya.....	25

# Summary

We held a two day training course for 12 people, who wrote and validated 12 new fact sheets, using farmer peer review.

We made three follow-up visits to 'kick start' the mobile plant clinics. In the Kawete market, in Namungalwe, Iganga District, SG 2000 (an NGO) held a plant clinic, attended by over 35 people. We talked about holding regular clinics, which they will need to coordinate with the Ministry. In Nkokonjeru, Mukono, 17 people brought 41 queries to a mobile plant clinic held with Caritas, and the regional director expressed a keen interest in continuing. In Soroti the NGO Socadido and the district plant protection officer. We received about 50 queries. The director of Socadido also showed interest in continuing the clinics. All three of these clinics were held with MAAIF. Teddy Asio of MAAIF/Entebbe attended the writing course and the three clinics. She is a capable administrator, and she showed a commitment to supporting the clinics in the future.

In Kitale, Kenya, we gave a two-day course on Going Public and technical writing for a popular audience. Nearly 40 people attended, and they Went Public with four messages, and wrote four excellent fact sheets.

# Action Points For Clinics

## 1. General

- a. Mobile plant clinics need to be run on a regular basis
- b. MAAIF needs to release funds to facilitate the running of clinics in a timely manner
- c. Banners and posters are required for each clinic to advertise its presence
- d. Run clinics on a regular basis

## 2. Running of clinics

- a. Some of the clinics were a little over staffed. Unless clinics are really busy, try having just a couple of people present.
- b. funds need to be made available for fuel to enable clinic operators to attend
- c. funds for lunch for clinic operators (provided when activities are from 9.00 – 12.00+)
- d. Consider recommending controls measures other than pesticides. Note that this may not always be appropriate or possible.

## 3. Send samples

- a. If you are unsure what the problem is, arrange to take a sample or make a field visit
- b. Don't be afraid to say you don't know. Tell the farmer that you will find out the information and report back to him.

## 4. Advertise

- a. Don't mobilise, publicise. It is not necessary to mobilise people for the clinic. Publicise the event and people will turn up if they are interested.
- b. Advertise clinics on notice board at entrance to market. Say when next clinic will be run.
- c. Radio can be very effective for advertising clinics and should be used when possible.

# 1. Proceedings of the course

## 1.1 Writing for Farmers

### INTRODUCTION

This was an accelerated, two-day version of a three-day course which Eric Boa and Jeff Bentley gave in June in Nicaragua (based on a five-day course we gave in 2005 in Bolivia). This was the first time we had farmers attending the course (three of the twelve people). We had a mix of people with a primary education one with a Ph.D., and several in between. They all wrote and validated a fact sheet, on a good mix of topics.

There is much written material for farmers. Some of it is excellent and some is terrible. We use a clear writing style, and sharp photos, but two things make our fact sheets different. We emphasize:

**The snowman model.** Instead of starting with information that may confuse farmers (e.g. the scientific name of the causal organism), use the snowman model:

*head* (identifying the problem)

*middle* (background information that explains *why* the control strategy will work) and the

*fat part* (how to manage the pest).

**Farmer peer review.** Take a draft of the fact sheet to the field. Ask farmers to read it, comment on it, and explain it. See if there was anything they did not agree with or did not understand. Edit the fact sheet to take their comments on board.

## COURSE OUTLINE

We used a mix of presentations (slide shows), classroom exercises and field exercises.

C-1	Personal data	Each person filled in a short questionnaire about their background
P-1	Introduction	Explained that each participant would write a fact sheet
P-2	Snowman	How to organize a fact sheet in three parts
C-2	Pick topics	Each participant chose a topic for a fact sheet
C-3	Writing an outline	Each person wrote an outline of their fact sheet, using the snowman model
C-4	Critique outline	In four groups of three people, the participants made constructive criticisms on each outline
P-3	Few words, short words	Prose style for popular technical literature
C-5	First draft	Each participant wrote a draft of their fact sheet in pen and paper
P-4	More than a clic	How to take and select photos
F-1	Treasure hunt of photos	Working in four groups, everyone practiced taking photos of seven topics (e.g. an insect, a bird, a person jumping)
C-6	Photo contest	Judging and commenting on the photos from F-1
C-7	Editing prose	Each person had a one-on-one interview with JB to review editorial changes in their prose (run simultaneously with C-5)
C-8	Layout flyers, add photos	About half of the participants took original photos to include. There were many crops on the Mukono agricultural station, which made it easy to find the right subjects
P-5	Farmer peer review	How to validate written material with farmers
F-2	Farmer peer review	Each participant asked at least one farmer to read their flyer and comment on it. Most reviewers were local people, but four participants met a bus-load of farmers from another area, who were visiting the station, and they were happy to read and discuss the fact sheets
C-9	Final edit	Editing the prose, taking into account the farmer peer review. Each participant took home a hard copy of their fact sheet, printed on high-quality photo paper

Note: **C** = Classroom exercise. **P** = presentation. **F** = field exercise

## VALIDATION: FARMER PEER REVIEW

*“Farmers said it was sooooo good. They requested copies.”*

Edward Sekitoleko

Most participants came back with positive comments. Farmers liked the flyers, liked the clear way they were written “these are the words we use everyday,” and were interested in the topics for their own sake. It is not necessary to add jokes or dialogue to make the messages appealing; pests and diseases are important enough on their own that farmers want to read about them. After we got back from validating the flyers, the participants began to see how powerful writing could be. Gilbert Sebutare said “You just write a fact sheet about every disease you know. You bind it, and then you just wheet, wheet, wheet” (imitates with his hand a person handing something out to many people).

Franco Tumuramye had a thoughtful pamphlet on chemical control of storage pests (e.g. weevils) in maize. It is an important topic, because weevils, especially some species recently introduced from Central America, cause extreme damage. Chemical control with aluminium phosphide (and a contained space) can be effective, but dangerous. People should not have to choose between death by starvation and death by poisoning, so it is important to explain the chemical control so that people realize the precautions they have to take, but without being completely scared off of the technology.

Franco met with a group of farmers touring the station. As he watched them read his flyer with intense interest, there was no doubt that the topic was high on their agenda. They all grew maize, and they said that if they sold it at harvest, the price was low. But if they waited even a month to sell it, the weevils would have eaten all the grain, and turned it to ‘flour.’

Later, Franco made a few changes to his flyer. Because the farmers had not quite understood where to put the tablets of aluminium phosphide, Franco made it even clearer that the tablets had to be put on top of the bags (and then covered with a plastic sheet). The chemical must not touch the grain. A simple change or two may make all the difference in making a paper understandable.

## LIST OF FLYERS

1	Banana nematodes	EDWARD SEKITOLEKO
2	Tomato wilt or kiwotoka	KASULE JOHN
3	Potato wilt	GILBERT SEBUTARE
4	Correct planting of carrots	LYDIA DDUMBA
5	Pigeon pea storage pests	RUTH KAGGWA
6	Maize weevil in storage	FRANCOE TUMURAMYE
7	Good groundnut seed	FLAVIA KABEERE
8	Cultural control of cowpea aphids	HENRY OPOLOT
9	Banana weevil	ALEX MUSISI
10	Striga weed in sorghum	ASIO TEDDY
11	Banana bacterial wilt	JANE NAKAZIINGA
12	Banana slim and kiwotoka	DENNIS YIGA

## SAMPLE FACT SHEETS

Good groundnut seed	7
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**Problem**  
Many farmers complain about poor germination of groundnut seeds, especially of the variety Igola. Fields planted with recently harvested seed or those stored for some time have gaps or bare spaces without seedlings.

**Background**  
Groundnut seeds are difficult to store. They lose strength quickly because they have a lot of oil. Igola is an oily variety. Farmers' methods of harvesting and drying groundnuts, especially in Central Uganda, often leave the seeds too moist. Moist seeds breathe too rapidly, which depletes seed energy, needed for germination. Moisture also allows the seed to be spoiled (luxumba) or to rot.

**Recommendation**  
Groundnut seeds should be harvested when the nuts are mature, that is, when the shells are hard. Mature seeds dry fast. In humid areas, like Central Uganda, pods should be plucked from the plants immediately after uprooting. However, in dry areas such as Eastern Uganda, uprooted plants can be spread in the field to dry.  
When pods are plucked fresh, they should not be kept in the bag overnight. When groundnuts are kept in the bag too long, they heat up, breathe too rapidly, and mould attacks them. The pods should be dried by spreading them out sparsely on a dry compound. To check whether they are dry, pods should make a loud noise when the shell is squeezed at the beak end. And the seed should not be very soft. The naked seed should be hard enough to make a cracking noise when you bite it.  
Dry seeds should be stored in shells in a dry, cool store or house, free from rats, and on a raised platform, to keep them dry.  
Seeds should be stored for not more than 12 months (two planting seasons).

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Banana slim and kiwotoka	12
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**Banana Bacterial Wilt**  
Banana bacterial wilt disease, commonly known as banana slim, is a new disease in Uganda, and it is easy to confuse with banana Fusarium wilt, which is also called kiwotoka.

**Slim for bananas vs. kiwotoka**  
Both diseases cause yellow leaves. The difference is that with slim disease, the leaves look burnt, then turn dull yellow. With kiwotoka the leaves turn deep yellow evenly, with some brown or black spots, or sometimes streaks. The leaves of slim die suddenly, sometimes starting with the youngest, while Kiwotoka leaves die slowly, beginning with the oldest leaf.

When you cut a stem infected by the slim, a liquid which looks like pus flows from the cut. Kiwotoka does not have this liquid, but may have a fish smell. With slim, the banana's male bud, or empumpumpu, dries and eventually dies. With kiwotoka, the whole bunch fails to grow and so there is no empumpumpu to observe. Observe the ripening of the fingers in a cluster. With slim, the bunch ripens unevenly, and prematurely. With kiwotoka, the plant steadily dies.

Slim is caused by bacteria, and kiwotoka is caused by a fungus called Fusarium. Both bacteria and Fusarium fungus are living things, but too small to see with the naked eye.

**Control**  
There are different ways to manage the two diseases. Slim can be prevented by twisting off the male bud, which is often where the bacteria enter the plant. Do not cut it off, since bacteria may be carried on the panga. Rather, twist off the empumpumpu with a forked stick. If the banana plant has slim, destroy the plant and bury it, to prevent nearby plants from getting the disease. Always plant clean suckers, from plantations which you know are healthy.  
For Fusarium, or kiwotoka, it is also important to remove diseased plants, and to plant healthy suckers.

Both diseases can be contained with proper cultural control practices that ensure the garden is clean of weeds, broken stems, excess suckers and no pests.

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## 2. Support and Monitoring

### 2.1 An answer for kiwotoka

Jeff Bentley and Rob Reeder

Global Plant Clinic

July 2006

“My tomato plants are dying,” Lawrence Balinire said, “they have *kiwotoka*,” which means ‘wilt’ in the Lushogo language. Mr. Balinire brought two tomato plants to the mobile clinic in the Kawete Market, in Namung'alwe, Iganga District. The Saturday market was thronging with rural people, selling goats and buying everything from snacks to soap at the small stalls. Mr. Balinire's tomato sample was excellent: two whole plants, with the roots still in the soil, neatly wrapped in plastic.

“The tomatoes wilt when they are still growing, and if they grow at all, the wilt does not stop until they die,” Mr. Balinire said. He has had this problem for 20 years, and was visibly frustrated. The symptoms looked a lot like bacterial wilt, but many organisms (including the fungi *Fusarium* and *Phytophthora*) cause tomatoes to wilt. Diagnosis is all about eliminating causes<sup>1</sup>. We thought it was not a virus, because there was no mosaic nor yellow flecking of the leaves and Mr. Balinire had planted expensive seed, imported from Kenya by a reputable company. The disease should have been virus-free. He brought a small seed catalogue to show us that he had planted Eden, Onyx and Roma varieties, and they all got *kiwotoka*, which suggested a cause in the local environment.

“There were no insects in roots,” Mr. Balinire said. So that eliminated grubs. The roots system was large and looked healthy with no galls that might indicate nematode infection.



A mobile plant clinic opens in the Kawete Market, Uganda



You don't need a microscope. Rob Reeder tests for bacteria with a drinking glass and water

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<sup>1</sup> Thanks to Eric Boa for this insight.

Most farmers experiment, and Mr. Balinire was no exception. He had fertilized part of his field with compost manure, and part with chemical manure. But the tomatoes wilted on both sides. He had also sprayed fungicide, and insecticide to his field, which suggested that the wilt was not caused by fungus.

Rob suggested doing the flow test, and bought a small drinking glass from a nearby stall. He filled the glass with water, and cut some sections of stalk with a pen knife. In a few minutes the grey, bacterial ooze was draining out of the stalks into the water. Rob explained that this simple test shows that the plant is filled with bacteria. You don't need a microscope to see them.

There was only one problem. The field had been fallow for 50 years, so the soil should not have had the bacteria that cause bacterial wilt. "This field shouldn't have bacterial wilt," Jeff said.

"But it does," Rob said.

The field was flat, and had not been irrigated, which means the bacteria probably did not wash in. It is a bit of a mystery why this field should have such a large amount of bacteria. The bacteria that causes tomato wilt has a wide host range including some weed species so may have persisted in this way. But by doing a simple test and listening to the farmer we had learned a lot about the problem, and we thought we had at least part of an answer: the tomatoes had bacterial wilt, even if they should not have.

We suggested crop rotation, but Mr. Balinire reminded us he had already done that. Rob suggested growing maize. Mr. Balinire explained that maize was not going to help him, because he could not earn enough money from half an acre of maize. He needed to grow vegetables to sell, or he wouldn't survive. We looked at the seed catalogue he had, and suggested he try another crop next time, one not in the tomato (*Solanaceae*) family, for example he could plant onions, or melons, or cucumbers. Mr. Balinire liked that idea. Later he held up the glass and explained the flow test to some other farmers. He seemed satisfied with his answer for *kinotoka*.



Mr. Balinire observes the bacteria in the glass of water



Lawrence Balinire explains flow test to visitors at the clinic

## Other problems

The clinic staff thoughtfully brought samples of some of the common problems in the area, and laid them out on the table. This was very helpful, especially for farmers who had not brought samples. Lukatu Waiswa picked up the striga weed on the table. He said he had problems with this in his millet. David Kazungu, the plant doctor from SG 2000, advised him to practice crop rotation, and to uproot and burn the weed from his garden.

Mr. Waiswa said his bananas were rotting, and David Kazungu recognized the symptoms as banana bacterial wilt. “Do not transplant any sucker from an affected crop. And the affected plant must be destroyed and buried underground. Care should be taken with the knife. (After using it to work on a diseased banana plant) put it in fire before using it anywhere else.”

The problems were quite varied. One man had maggots spoiling his eggplant. Another, Lukutu Mazafali, had coffee wilt. The leaves were shrivelling and drying completely. Mr. Kuzungu recommended clean planting material, from healthy nurseries, and cutting down diseased coffee trees and destroying them.

Lukutu Mazafali also had sweet potatoes which were not yielding. It is difficult to make a diagnosis from such a general symptom, but Mr. Kuzungu correctly recognized that the problem was not likely to be due to insects, and cautioned the farmer not to try spraying insecticides for it.

Alice Nabirye had maize, stunted by the parasitic striga weed. Her crop was not yielding at all. She had a pained expression on her face. Losing her crop was an obvious disaster for her. Again, having the striga on the table helped her describe problem, and the plant clinic was able to give her some advice which would at least help her deal with striga weed next time. She also had groundnut, which was stunted, and David Kazungu said it sounded like rosette virus. He recommended watching for the first sign of aphids, which vector the virus, and controlling the aphids.

Nicholas Kyeyego also had coffee wilt, and his cabbages were turning yellow. He uprooted them and found grubs. Grubs are a common problem, and there has been a lot of work on them in Central America. In the future, we can probably adapt some of the simple control technologies for Africa.

In just three hours, thirty five smallholder farmers brought 56 queries to the mobile plant clinic; they had a good range of problems: insects and diseases, crops to eat and crops to sell, perennials, grains and vegetables.



It helps to have a few samples of common problems at the plant clinic, that way farmers can spot problems they have at home, like parasitic striga weed



Alice Nabirye waits to talk to the plant doctor. Losing one's whole maize crop can be as serious as an illness in the family



## Recommendations

**Use less staff.** In the future, it may not be necessary to have six staff members at every clinic. Unless the clinics are really busy, try having just a couple.

**Don't mobilise, publicise.** It is not necessary to mobilise people for the clinic. Instead of inviting collaborating farmers to come, simply publicise the event, so that people can come use the clinic if they want to.

**Listen more.** Spend a little more time listening to farmers. What they tell us often provides as much information as examining the plant sample.

**Send samples.** Mr. Dhikusoka, the acting district agricultural officer for Iganga, kindly offered to accept plant samples from the clinic. This is a good opportunity to learn more. No one knows everything. If you are unsure what the problem is, ask the farmer to bring a sample. If you still do not recognise the problem then do not be afraid to say "I don't know what your problem is, but I will find out and give you an answer next time." Then take a sample to the district agricultural officer for an identification. Try to submit a few samples after every session with the clinic. .

**Sharpen your tools.** Some of the recommendations for farmers could be a little more specific. Always recommend twisting off the male bud to prevent banana bacterial wilt. Also, crop rotation will not always control grubs, since they are generalists. The ones that eat roots, eat the roots of many plant species.

But as long as you listen carefully, send in samples, and learn, the mobile plant clinic's answers to farmers' problems will improve with time.



Sharpening tools

## 2.2 *When are you coming back to Nkokonjeru?*

Jeff Bentley and Rob Reeder

Global Plant Clinic

July 2006

The people we'd met on our recent course, Gilbert Sebutare, John Kasule, Jane Nakaziinga, Lydia Ddumba, Alex Musisi and Dennis Yiga, set up the plant



clinic banner at the spot between the market and the taxi stand. They had already arranged some simple tables and chairs. Two elderly women were waiting on a bench to talk to the plant doctors. Gilbert placed some plant samples on the table for reference, people attending the clinic added to them and soon the table was covered with plants.

Bulandi Kyakenwa brought in seven queries, the most we'd ever seen one person bring. Her cassava leaves were yellowing, which Rob quickly identified as virus, and recommended trying resistant varieties. She had coffee wilt, very common in the area, which Gilbert and Alex identified, and banana bacterial wilt. She had pumpkin rot, but the sample was too rotten to identify. She also described some problems with insects on jackfruit and falling fruit on avocado. Smallholders all over the tropical world complain of falling avocado fruit; a demand is going unmet. Bulandi had elephant grass with odd, white globs on it. It looked like thrips or other small insects. She said it prevents the grass from growing. Rob took a sample, which is important. Nobody knows everything. Taking a sample helps you to learn more.



Several people had problems with banana wilt. Alex patiently explained to each one the importance of twisting off the *mpumumpu* (the Luganda word for male bud of banana plant). More people had coffee wilt, and there was a disease of *nakati* (a type of nightshade, *Solanum aethiopicum*), a plant which Rob and Jeff had never seen before. Sometimes foreign experts are not much help after all. Fred W. described an insect on his eggplant (brown, with a brown head and a curved body), which is probably a coleopteran larva, although we would have to see it to tell. He said it enters the stem and then comes up to the leaves and walks around on them. He may be right, or he may be seeing two completely different insects, and confusing them. Local knowledge takes a while to understand.

Vincent Ntuluma had banana weevil and ‘banana slim’ (bacterial wilt). Alex took out the flyers which he and his colleagues wrote earlier that week, and used them to explain control solutions to the elderly farmer.

Lesa Kafeero described aphids in his cabbage, small insects in large groups, which do not move or fly, covering the undersides of his cabbage. Jeff explained how to make soapy water (a technique from the Innova Project in Bolivia). Lesa asked how much soap to use, and he paid attention carefully.

Father Althy Kafeero was also paying attention. He is the regional director of Caritas, and had stopped by earlier to welcome us as we arrived, but then he stayed for the whole clinic. When we arrived he said that the plant clinic was important. Before Father Althy was in Caritas, he was the parish priest here for six years, and people would show him failing crops and ask “What do I do Father? What do I do?” Sick plants can be a household crisis for poor people.

Vincent has maggots in his papaya and Jeff tells him about covering the fruits with paper bags, explaining that the maggots are laid by a fly that looks like a wasp. It has a long tail (ovipositor) and lays its eggs in the fruit. Jeff adds that maggoty fruit should be buried to kill the insects. Jeff was talking about the papaya fruit fly, *Toxotrypana curvicauda*. Nice try, but actually, that fly is only recorded in the Americas. Vincent probably had the oriental fruit fly (*Bactrocera dorsalis*). Fortunately, the ecology of the two flies is similar enough that the recommendations for the papaya fruit fly will also work for the oriental fruit fly. We all make mistakes. The important thing is to keep learning.



Dennis Yiga uses a flyer to help explain banana slim to Vincent Ntuluma



Soapy water may help Lesa Kafeero's aphid problem. People appreciate safe, simple ideas that work

Ulalia Nalongo was waiting patiently with seven queries. Besides several common problems, like banana wilt, which were easy for the clinic staff to answer, she had tomatoes, killed at first flowering. We explained that we could not tell without seeing a sample, but many things can cause tomatoes to wilt. We recommended trying a different seed, assuming that the disease is seed-born, and that the new seed is clean. New seed would also help if it was of a resistant variety. We also recommened rotating crops, but then Ulalia started to lose her patience with us. She said that she had already done that, and still the tomatoes died.



She has a small garden, so it is difficult to rotate crops, but after tomatoes she planted amaranth and nakati, which do very well. And the tomatoes still get sick. We wanted to help her more, but could only suggest that she grow other vegetables.

She also had fruitflies in mango and we suggested burying the fallen fruits, so that the flies would not reproduce. She described a cacao disease and someone recommended replacing the grove with maize. But that is a rather drastic solution for a valuable, permanent crop like cocoa. Jeff asked if the grove had shade. “Yes, lots of shade,” she said. So Jeff suggested trimming the branches to let in more sunlight. That worked well in Ecuador, and farmers would rather prune shade trees than cut down their cacao trees. It is important to recommend solutions that people like.

By three in the afternoon the clinic had been open for nearly four hours and the sun was starting to drive people away, but everyone was looking forward to the next clinic in two weeks. “People are asking ‘When are you coming back,’” said Father Althy.

## Discussion

*The fact sheets* which we wrote earlier that week were useful. The staff referred to them several times and used the text and photos to explain banana bacterial wilt and other problems to clients.

*Caritas likes the clinics*, and wants to continue holding one every two weeks. Father Althy and Dennis Yiga (district department of agriculture, seconded to Caritas) and the other staff (Alex, Gilbert, John, Jane, and Lydia) met with us after the clinic and reconfirmed their interest. They requested modest funding to buy meals for the staff (especially for John and Lydia, who are farmer-volunteers) and to buy some canvas to make a shade. The Ministry has funds from the GPC for such legitimate expenses. They also need their own banner.

*A diagnostic network* would be very useful. The clinics need a place where they can send samples. Teddy Asio of MAAIF/Entebbe offered to receive samples. It would also be good to have visits from experts to the clinics, to give advice and encouragement to local staff.



## 2.3 *Not laughing anymore in Soroti*

Jeff Bentley and Rob Reeder

Global Plant Clinic

July 2006

Socadido is a Catholic development organization in Soroti, Eastern Uganda. We met the director, the Reverend Athanasius Mubiru, in his office on the Socadido campus. Father Mubiru said “We all laughed the first time one of my young staff brought up the idea of a plant clinic. But why not?” he went on. “There are clinics for people, clinics for animals.”

His staff got their chance one Tuesday in July, 2006 at the Katine market in Teso District, near Soroti. Officers from the district agricultural office and the GPC, Socadido unfurled the Plant Clinic banner. Then they almost rolled it up again when they realized it was written in Luganda. They speak Ateso here, one of the other 70-some languages in Uganda.



Helen Apiyo (centre) has a problem with groundnut

At first, Jeff grumbled a bit about all the levels of hierarchy. As at the other clinics, there was a plant doctor, an assistant plant health specialist, a plant nurse, and two assistant plant nurses. It seemed excessively bureaucratic. But we needed all those people when the farmers began lining up. Five or six people showed up as soon as we got the tables and chairs set up. And many of the 29 farmers we saw brought four samples or more.

Josephine Atupo had little leaf spots, on cowpea, which the clinic staff mistook for rust. People brought in common problems, like striga. There was cassava virus and banana bacterial wilt, and the clinic staff gave good advice for them.



Lucy Akello points to the tip of cassava, describing the attack of cassava mosaic virus. She then goes on to show us a rotting bean plant, and to describe leaf-sucking insects in green gram





## *Recommendations*

**Use radio.** Father Mubiru wants to work with radio. Socadido has two stations. As we have seen in Nicaragua, radio fits perfectly with the clinics. As people bring in problems, and as the clinic staff learns better responses, information can be broadcast over the radio.

**53 pick-up points.** Socadido has 53 'technology transfer farmers,' one in each sub-county they work in. Each farmer learns new technologies to pass on to neighbours. The 53 farmers could just as easily receive samples (the way the San Nicolás parish pharmacy does in Nicaragua) and pass them on to the plant clinic. All we need is an agronomist on a motorcycle to pick them up.

**Improve the forms** a bit. They have little space for writing, and so the written recommendations are cramped. Each recommendation should be written on half a page. Type up the very common recommendations (e.g. for banana bacterial wilt), and have copies so they can be handed out, without having to write them up by hand each time.

**Recommend fewer pesticides.** Only recommend them as a last resort, if there is no alternative, and then specify the right kind, how to use it, and how much. But since people use little if any pesticides, we should be in no hurry to recommend their use **Improve diagnoses.** Some of the diagnoses were excellent and a few could be a little better. Diagnosis will improve as the staff sends samples to MAAIF/Entebbe and to the Global Plant Clinic.

Teddy Asio suggested **training by local experts** for clinic staff.



**Recommend fewer pesticides.** This little display of pesticides and veterinary drugs was all the agrochemicals on sale at the market. And few people bought them. So agriculture in Teso is nearly organic by default. This is no time to rush into pesticides

***The mobile plant clinic staff, 18 July 2006***

***Socadido***

George Oruka

***Local farmer volunteers***

Ana Mary Igiro, John Ogalo

***Global Plant Clinic***

Rob Reeder, Jeff Bentley, Flavia Kabeere

***MAAIF***

Teddy Asio, Ismael Katamanywa

***District agricultural plant protection officer***

Obore Obanya

***Local government extension agent***

James Odieny



Mobile sewing machines, like mobile plant clinics, are easy to move and set up where the people are, in village markets

### 3. Proceedings of the course in Kenya

#### *3.1 Going Public and Writing for Farmers*

##### INTRODUCTION

This course was even faster than the one in Uganda, because we covered popular technical writing and Going Public in two days. Nearly 40 people attended, researchers at the Kitale Agricultural Research Centre (KARI). The people wrote four fact sheets, as collaborations between several people.

The group also Went Public with the same messages, and validated their fact sheets. People seemed delighted with the course. The following week the group plans to translate the four fact sheets to Swahili.

##### LIST OF FACT SHEETS

<b>1</b>	Potato blight	HORTICULTURE
<b>2</b>	Newcastle disease in chickens	ANIMAL PRODUCTION
<b>3</b>	Osama destroys maize (larger grain borer)	MAIZE GROUP
<b>4</b>	Napier stunting disease (Ugonjwa hatari wa Napier)	PASTURES

## SAMPLE FACT SHEETS

Newcastle disease in chickens	Fact Sheet	2
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### How to recognize Newcastle disease

Newcastle disease is also known as breki. It attacks chickens at the beginning of the short rains and the long rains. A chicken with breki has drowsy nodding and a nervous twisting of the neck. It also has ruffled feathers and drooping wings, so it looks like it is wearing a warm jacket (kabuti). When a chicken is held with the head down, mucus oozes out of its nose. The chicken also has green diarrhoea, but other colours of diarrhoea are signs of other diseases. White diarrhoea is a sign of fowl typhoid. And bloody diarrhoea is a sign of coccidiosis.

There is no connection between Newcastle disease and bird flu.

### Background

The disease is caused by a virus. It is spread through the air. Newcastle is the most serious disease of chickens. Almost all of the sick chickens die, so the farmers may lose the whole flock. Since the whole region is affected, getting replacement is difficult.

### Recommendations

There is no cure once the chickens are affected. To keep your chickens healthy, you must vaccinate them with Newcastle disease vaccine, starting when the chicks are 3 weeks old. Repeat every 4 months, till they are killed. The vaccine is available in the agro-vet shop. The vaccine must be stored in refrigerators till time to use, because the vaccine is alive, and if it is kept at room temperature, it will be killed. The vaccine is available in the dry form in doses of 50, 100, 250 and 1000. You may buy a bottle of 50 doses even if you have fewer than 50 chickens. It only costs about 150 shillings, so it pays for itself if it saves the lives of even four chickens. Add water to the dry form as instructed on the label, and give through the nose or eyes. Put one drop in each nostril or each eye. The chicken may be eaten anytime after the vaccine.

Other diseases which are prevented with vaccines are fowl typhoid, fowl pox, gumboro, and merik.



Vaccinate healthy chickens so they do not get Newcastle disease

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Napier stunting disease (Ugonjwa hatari wa Napier)	Fact Sheet	4
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Napier stunting disease is a new disease. If you do not control it, you may lose over half of your yield of Napier grass. The affected plants are small, and yellow. The sick plants have many leaves, but they are very thin. The plant eventually dries and dies.

### Background

The disease is caused by germs (viini), called phytoplasma, which do not let food and water reach the top of the plant. The germs are spread by small insects called leafhoppers, or kamatete that feed on diseased plants. The stunting disease is also spread by planting diseased stems and root splits. The germs do not live in the soil. They only live in grass and in small insects. The diseased grass is safe for livestock to eat. The germs only affect grass and will not make animals sick.

### Recommendations

Plant grass from healthy fields. Check your grass frequently and uproot diseased plants. Replant with healthy grass. Burn the sick plants, or bury them deeply. If you feed the diseased grass to animals, be sure to bury the parts they do not eat. Plant grass at one meter by one meter so each plant will have room to grow healthy.

Well-fed plants are healthier, so fertilize your Napier grass with one 50 kilo bag of TSP at planting and top-dress with 2 bags of CAN per acre. Or, you may fertilize with 4 tons of manure per acre. Cut the grass 10 centimetres above the ground.

Cut healthy grass only every 8 weeks, because frequent cuts attract the insects which carry the germs and cutting near the ground makes the plants weaker. Tell your neighbours to also control the disease. Insects feeding on diseased plants in the neighbours' fields can spread the disease to your farm.



The small, yellow Napier grass is diseased. The large, green ones are healthy



The leafhopper carries the germs that cause stunt

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## COURSE OUTLINE

We used a mix of presentations (slide shows), classroom exercises and field exercises.

C-1	Personal data	Each person filled in a short questionnaire about their background
P-1	Introduction	Explained that the groups would give a Going Public message and write a data sheet
P-2	Going Public	A bit of history and 'how to'
P-3	Snowman	How to organize a fact sheet in three parts
C-2	Plan Going Public	Each group plans their message
C-3	Rehearsal	Each group practices its Going Public in the classroom
P-4	Few words, short words	Prose style for popular technical literature
C-4	First draft	Each group wrote a draft of their fact sheet
P-5	More than a clic	How to take and select photos, and classroom demo on editing photographs (by RR while JB edited fact sheets)
C-5	Editing prose	JB reviewed the edited flyers on the projector. The groups read them and made more changes
P-6	Farmer peer review	How to validate written material with farmers
F-1	Going Public	Each group gave a short talk and demonstration in a rural market, taking notes on farmer questions and concerns
F-2	Farmer peer review	Each group asked at least one farmer to read their fact sheet and comment on it. The reviews were the best we have ever seen. Because the group already had a crowd assembled, the farmers read the fact sheets in large groups, and made bold, often critical comments. The researchers paid attention well
C-7	Final edit	Each group discussed the changes to make and then we made them together on the projector. The changes were thoughtful and and substantial, taking into account the farmer peer review. We left five copies of a CD with the fact sheets (Word and PDF), photos, previous photo essays, articles, and PDFs of the Ugandan fact sheets
C-8	Letter to Rob and Jeff	Each group wrote a letter starting with "Dear Rob and Jeff, we went public today and an interesting thing happened..." Then they read their letters to the group
P-X	Farewell presentation	Some photos from the field activity.

Note: **C** = Classroom exercise. **P** = presentation. **F** = field exercise

## GOING PUBLIC

### *3.2 A bird in the hand is worth more when vaccinated*

Rob Reeder and Jeff Bentley

Global Plant Clinic

July 2006

It was the last day of the training course and for the trainees the time had finally come to put into practice what they had learnt the previous day. The four groups had each rehearsed what they were going to say while Going Public and had written fact sheets on their topics. Today would be the day when they got to Go Public for real and to validate their fact sheets with farmers.

There was a buzz of excitement as the 30 plus people piled onto the bus that would take them to the marketplaces. As they boarded the bus one person carried some sealed boxes with samples of maize weevils and larger grain borer, another held a live chicken in one hand and a medical box in the other.

The first stop was a bustling market at Sikhendu. The market had several stalls selling dried

fish and clothing. Everybody filed out of the bus and headed towards a small rise where most of the stalls were.

Going Public is not for everybody, for some the mere thought of addressing a crowd is the stuff of nightmares, while for others, such as Khisa Wekulo an audience holds no fear. I was one of the last to get off the bus and by the time I had got my camera and notepad out of my bag Khisa had already leapt one of the traders' tables and had started giving his Going Public message on vaccinating chickens. An outgoing personality helps attract the attention of a crowd, but props are also important. A man standing on a table in a market place will draw some attention, but a man standing on a table waving a syringe and a chicken cannot be easily be ignored. Within minutes Khisa had drawn a sizable crowd.

Khisa's flamboyant presentation was given in the local Luos language, therefore I was unable to follow most of what was being said. However, it was obvious that the audience was enthralled and people trotted over from other parts of the market to listen as he demonstrated the finer points of chicken inoculation. The crowd was quick to ask questions after the demonstration had finished and Khisa spent several minutes answering each. On that day Khisa and his colleagues shared some of what they learnt from the exercise.



Nothing draws a crowd like a man, a chicken and a syringe

“The first lesson we learnt was to always introduce ourselves”, said Khisa. We instructors had neglected to tell them to introduce themselves, but we won’t make that mistake again. An audience usually appreciates some form of introduction, which helps to set the scene and reassure people you know what you are talking about. Khisa went on to explain that the audience was initially a little suspicious of them, as one man had asked, “Do you only vaccinate black chickens?” To me this seemed a reasonable question, as the demonstration chicken was black. “Black chickens are always associated with witchcraft,” said Khisa, “had we introduced ourselves from the beginning, they should have known we were scientists and have nothing to do with witchcraft”. Witchcraft was not the only misconception. “Some suspected that we were perhaps politicians and going to give them money, others that we were giving the vaccines for free and one person even wanted to bring his chickens for vaccination”.

Going Public involves interactions with the audience and much can be learnt in a short period. For we discovered that the farmers use several local remedies to cure symptoms associated with Newcastle disease of chickens, these included; onion leaves for respiratory diseases; old engine oil for fowl pox; alum in water for diarrhoea; Mexican marigold mixed with pepper, soot and water for controlling chalky diarrhoea.

### 3.3 *Osama bin weevil*

Rob Reeder and Jeff Bentley

Global Plant Clinic

July 2006

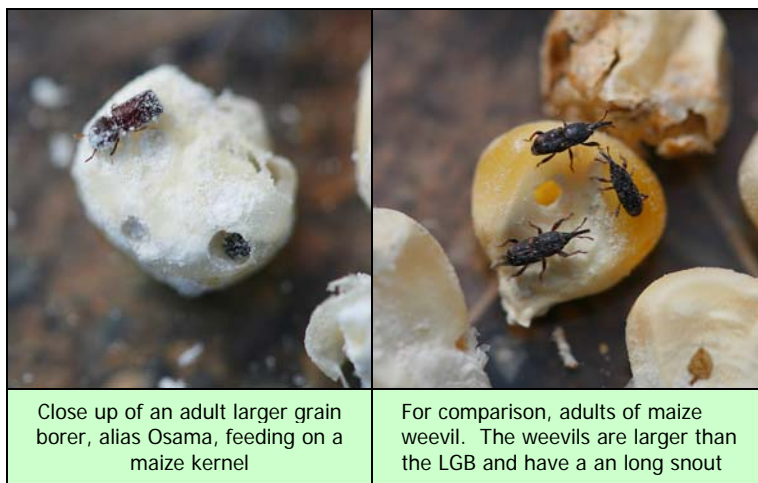
“Osama destroys maize in stores,” sounds more like a newspaper headline than a fact sheet for Kenyan farmers. Osama, as Ernest Manono explains, is the local name for the Larger Grain Borer (LGB), a tiny 2 mm long beetle that has been terrorising maize stores in since the late 90s. This introduced species is especially damaging to stored maize and without treatment can turn a hard-won

harvest into dust. Maize is one of the most important crops in the highlands and in recent years the damage caused by both Osama and the maize weevil has been increasing.

I met up with the one of groups who chose maize storage pests for Going Public, and followed them during the afternoon. The group had just watched Khisa’s performance in Sikhendu market and fearing that the crowd may have had enough for one day, decided to wait until we reached the second market in Webuge to give their message.

Friday is not a market day in Webuge and the usually bustling market area had only a few stores selling mainly clothing. At first sight this did not look like promising territory for GP and I followed the group to a street behind the main market where we came across sometraders selling maize. A quick examination of the maize revealed that it was peppered with the characteristic feeding holes of Osama, and the team decided that this was as good a place as any. The audience was initially a little small, so members of the group encouraged a few of the passers-by to come and listen to what was being said.

Ernest stood on a rock next to the stall of maize trader, Peter Okony and began to deliver his GP message. Before long a small group gathered and listened closely to what Ernest had to say. Peter Okony examined closely one of the small pots and nodded in agreement as Ernest described the contents.





“We know Osama well,” Peter said, “We first noticed this insect doing a lot of damage in 1997. I think that it came from grain outside Uganda. Now it is here and we need to treat our maize twice after shelling with Actellic Super”, the crowd nodded their agreement, confirming that Actellic was the best insecticide. Peter was clearly worried about the weevil damage and spoke up in the ensuing debate.

Simiti Siteti, a tall man, wearing a security guard’s outfit, asked if there a drug for the sack that the maize was kept in, because he did not want to put chemicals directly on his maize grains. Ernest explained that there was no drug for the sack and that he must dust his maize grain with the insecticide. Another man asked “Which was the best sack to store maize in, plastic or sisal?” Ernest replied, “Sisal was better because it let the maize dry, and that dried maize was more resistant to attack by Osama.” Peter added “You should not use the old sacks as they already have Osama in them”.



Edward finds a good vantage point to Go Public

The crowd appreciated the time spent explaining the problem, but were already well aware of the insects that attacked maize in storage and were able to identify both larger and lesser grain borers and also maize weevils. Most treated their seed with insecticide, but complained that the insecticides did not work well and the insects were not controlled when inside the grain. Many suspected that the reason that the chemicals did not work was because they were fake, and asked if KARI could certify that chemicals were genuine.

After the main going public message had been delivered the group validated the fact sheet that they had written. Peter was keen to read the sheet and spent some time studying it. Eventually he announced that he understood it well, except for the word ‘debris’. Researchers and extensionists know the word ‘debris,’ but Kenyan farmers may not.

Osama continues to attack Kenyan maize stores despite the use of recommended control measures. However, there are simple technologies in use in other parts of the world, which can effectively protect properly dried grain from insects, moisture, mould and rodents. Lightweight metal bins made from locally available materials have proven effective in Guatemala, Honduras, India, and other countries. This technology could help to protect Kenyan maize harvests from the ravishes of Osama, however much more groundwork is needed before any new technology is adopted.

## 4. Annex

### 4.1 Sixteen fact sheets for Uganda and Kenya

(COPIES AVAILABLE ON REQUEST)

A Mugita • A Musisi • A Masinde • BE Sekitoleko • C Mulusa • C Kute D Asena • D Yiga • D Wekesa • E Wanyama • E Lunzalu • E Manono • E Limo F. Lusweti • F Kabeere • F Muyekho • F Tumuramye • G. Mulira • G Sebutare H Opolot • H Wambani • J Nakaziinga • J Wanyama • J Chesoro • JN Coabo J Kamau • J Mulati • J Kasule • K Wairimu • KN Wekulo • K Nicodemus • K Justus • Lokwaleput • L Ddumba • Macosore • M Kamidi • M MulaaM Mwanja • M Wanyonyi • M Powon • N Akinyi • N Makete • O Simanto P Imbali • P Kalama • P Wang'unda • R Toromo • R Kaggwa • R Onyango S Rono • T Mwangi • T Lobeta • W Jotham • W Kiiya

**b y E X T E N S I O N I S T S**



**16**  
**Fact Sheets**  
**UGANDA AND KENYA**

**f o r F A R M E R S**

**NAKIFUMO** Agnes Naguko > Hubaga Ibra > Kitela Richard > Mdagire Eva > **LUBAO** Margaret Juma > Florence Atieno > Peter Orika > John Wesonga **NABUMALI** Difasi Klekosa > Kibuwo Joshuwa > Waniale Alon > Kasimu Watzala **BUSIA** Nerbert Bulima > Peris Achioka > James Mukhwana > Josephat Ndabu **SOROTI** Helen Apigo > Ajepo Betty > Alado Garety > Nayaja Sarah **IGANGA** Lawrence Balirine > Lukatu Waiswa > David Kazungu **MUKONO** Vulandi Kyakwena > Vincent Ntuluma > Lesa Kafeero **and others...**

**Edited by Jeffery Bentley, Rob Reeder and Eric Boa**

**GLOBAL PLANT CLINIC July 2006**

