

# Awareness Raising and Training Service Providers

Banana Bacterial Wilt Disease • Uganda

DR ERIC BOA

GLOBAL PLANT CLINIC, CABI *Bioscience*

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Custom courses improve skills



Learning how to help farmers

Agricultural Sector Programme Support

DANIDA



## S U M M A R Y

This is an account of a three week consultancy during which I developed a course on banana bacterial wilt disease. I trained three staff from the National Agricultural Research Organisation and three from the Ministry for Agriculture, Agricultural Industries and Fisheries, to teach and deliver the course independently. The course is designed for service providers and extension services operating in already affected and vulnerable districts throughout Uganda. It is part of an awareness raising campaign initiated and coordinated by the Agricultural Sector Programme Support of DANIDA.

The course explains how to identify BBW and distinguish it from other diseases. It stresses the importance of accurate reporting of disease outbreaks and seeks to improve collaboration between service providers, farmers and researchers. The teaching material and methods are relevant and easily adapted for other crops and major pests and diseases.

I held a preliminary two day course for the facilitators, to develop the initial material for the course, then led the first training course proper in Mukono. I supervised the facilitators for second course held in Mbale. After this trial period I finalised all course material and provided practical notes and guidelines for facilitators. The full schedule of 10 courses in 23 districts for 200 participants was completed in May. The early indications are that the course has improved understanding of BBW amongst service providers but further action is needed to review progress, and to ensure that the most effective use is made of increased capabilities in coordinated efforts to control BBW.

I organised the first *Going Public* event in Uganda at Kamus Corner market in Sironko. We met around 200 farmers, traders and others in a two hour period, explaining and talking about BBW in lively and informative debates. *Going Public* is a new extension method which provides a quick and cheap means of contacting diverse groups of people who have few opportunities to get support and advice. It is an effective way of conveying simple messages and absorbing local knowledge. For BBW it will help to identify actions best suited to successful implementation of control programmes.

I took part in BBW Working Group meetings and worked on general aspects of the awareness raising campaign. I have continued to comment on activities and proposed actions in my role as head of the Global Plant Clinic. The raising awareness campaign has taken important steps to tackle the huge threat posed by BBW to farmers throughout Uganda but it is only one facet of a campaign that needs to ensure effective coordination between research, direct action and effective collaboration between farmers, service providers and scientists.

## F O L L O W - O N A C T I V I T I E S

In the short term we need to assess the success of the courses in improving general skills and knowledge about BBW. This will best be achieved through a series of short interviews with the facilitators, and meetings with selected participants to discuss and explore how the course has helped them. This will further help in improving the course and making it robust and easier for others to use.

Service providers are a relatively untapped resource capable of innovation and independent action. The role of service providers as collaborators needs strengthening. The relatively short process of designing and testing a course, followed by training of local facilitators, suggests a general approach with wider application and relevance to other topics of interest to ASPS2.

Another possibility for strengthening delivery of advice and better responsiveness to farmer demands, is to show service providers how to prepare simple publicity material and information sheets locally. This has already proved successful in Bolivia. It is part of a wider effort of empowering service providers to play a more active role in supporting farmers.

The long term contribution of the course and *Going Public* in the campaign against BBW will depend on close coordination with other efforts. Service providers trained under this consultancy need to be involved in the broader campaign or the increased capacity started here will start to fray at the edges. There has been a hesitant start to the many activities proposed on BBW and greater urgency is needed in putting work in place.

The Global Plant Clinic has a small-scale initiative on plant health services coordinated by MAAIF. This is funded by DFID and provides a continuity of technical assistance and support on basic diagnostic matters. The time available did not permit the compilation of a course manual but I have continued to work on this under the Global Plant Clinic. I hope that we can continue to work with the raising awareness campaign and to maximize the impact of the joint efforts of ASPS, NARO, MAAIF and CABI *Bioscience*.

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**Dr Rob Reeder** and **Ms Paula Nash** of the GLOBAL PLANT CLINIC and **Dr Julian Smith**, with **Ms Lisa Offord** and **Dr Jayne Crozier**, have all carried out work on BBW courtesy of our DFID grant. The GPC continues to provide technical and scientific assistance that assists researchers and supports agricultural officers and service providers in Uganda in their efforts to control and contain the disease.

Lastly, but most importantly, I want to warmly acknowledge the cooperation and collaboration of the six facilitators or banana doctors who were brought together for the purposes of this consultancy and who bravely continued the programme of courses until May 2004. Without their dedication and enthusiasm the work that was begun here would not have been completed. Since completing the initial preparatory work, the banana doctors have delivered the course to a total of 198 agricultural officers on nine separate occasions. Each course lasts for two days and has up to 20 participants. This is a daunting task and a major achievement for each pair of facilitators who had little or no previous experience of teaching.



**Banana doctors at Mbale course** (l to r, wearing T shirts):  
MAAIF – Wamusira Mundaka, Bosco Bua, Francis Buyondo  
KARI/NARO – Fred Ssekiwoko, Okurut Asher Wilson, Ssali Godfrey (far right, standing)

## Abbreviations

APEP	Agricultural Productivity Enhancement Program (USAID)
ASPS	Agricultural Sector Programme Support (DANIDA)
BBW	Banana Bacterial Wilt disease
BXW	Banana Xanthomonas Wilt disease (alternative name for BBW)
CABI	Centre for Applied Biosciences International
CABI <i>Bioscience</i>	Division of CABI which hosts the GPC
DATIC	District Agricultural and Training Centre (under ASPS)
DFID	UK Department for International Development
GPC	Global Plant Clinic <sup>1</sup> ( <a href="http://www.globalplantclinic.org">www.globalplantclinic.org</a> )
KARI	Kawanda Research Institute (part of NARO)
MAAIF	Ministry for Agriculture, Agricultural Industries and Fisheries
NAADS	National Agricultural Advisory Service
NARO	National Agricultural Research Organisation
PMA	Plan for the Modernisation of Agriculture
TOR	Terms of reference

### Useful links

GLOBAL PLANT CLINIC • [www.globalplantclinic.org](http://www.globalplantclinic.org)

NATIONAL BANANA PROGRAMME • [www.banana.go.ug](http://www.banana.go.ug)

NATIONAL AGRICULTURAL RESEARCH ORGANISATION • [www.naro.go.ug](http://www.naro.go.ug)

NATIONAL AGRICULTURAL ADVISORY SERVICES • [www.naads.or.ug](http://www.naads.or.ug)

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<sup>1</sup> In conjunction with *Rothamsted Research*

## 1. Terms of Reference

- To work with NARO, MAAIF and the National Task Force in training staff to carry out a national programme of awareness raising for BBW
- To develop, test and prepare course materials, schedule and guidelines for teaching methods to be used in a national training programme
- To discuss mechanisms for monitoring the effectiveness of the training programme and to agree a schedule of courses
- Contribute to wider discussions on BBW through the working group and in conjunction with NARO, MAAIF and NAADS
- Share wider experiences with ASPS II components in new extension approaches and meeting local demand for technical advice and support

The main thrust of the consultancy was to design a course to help service providers (extension services) make an effective contribution towards the control of the BBW. The course concentrated on three main topics: being able to confidently recognize the symptoms of BBW and distinguish it from other banana diseases; accurate reporting of disease outbreaks; good rapport and effective collaboration with farmers to enhance the adoption of recommended control measures.

I organised one 'Going Public' session on BBW, a new extension method developed originally to help with plant diseases and how to control them<sup>2</sup>.

## 2. Schedule

**14 March** *Depart UK for Uganda*

**22– 23 March**, Mukono ARDC  
*Develop training course with six facilitators*

**25 – 26 March**, Mukono ARDC  
*First banana awareness raising course, delivered by Dr Eric Boa*

**29 – 30 March**, Mbale  
*First banana awareness raising course, delivered by local facilitators*

**31 March**, Kamus corner  
*Going Public event on key features of BBW*

**2 April** *Depart Uganda for UK*

I prepared and developed course materials and supporting documents on other days and also attended Working Group meetings.



TALKING with farmers about their experiences with BBW helped us to develop the course

<sup>2</sup> Bentley JW, Boa ER, Van-Mele P, Almanza J, Vasques D, Eguino S. 2003. Going Public: a new extension method. *International Journal of Agricultural Sustainability* 1 (2):108-123.

### 3. Setting the scene

Banana bacterial wilt disease has attracted much attention within and outside Uganda. It has become an important national issue and one which various donors have been asked to consider. This is not the place to describe existing programmes or project proposals but it is also important to have a general picture of what is happening. At the time this work was carried out ASPS and the Gatsby Foundation were the main sources of external funding. Dialogue with a number of other sources continues and a variety of research-based proposals have been discussed and some submitted to the Crop Protection Programme of DFID.

ASPS chose to support a programme of awareness raising and has pursued items such as the courses described here as well as radio programmes, posters, brochures and newspaper inserts. The ASPS support has been moderated through a Working Group that comprises key people from NARO and MAAIF as well as representatives from ASPS (see section 6). Gatsby support is managed through KARI (NARO) and covers a wide range of topics relevant to BBW. With the exception of the Global Plant Clinic (see section 7), the Gatsby money is the only external source of funds for research activities. USAID is also contributing to the raising awareness programme through APEP.

All parties involved in bananas, growers and farm families in Uganda have been eager to help combat the threat of BBW. Interests have varied widely from scientists keen to fill gaps in scientific knowledge or explore new ideas, to people tackling the practical issues of what can be done to control and contain the disease using existing knowledge. Resolving the relative merits of themes represented by these different groups has proved difficult. There is clearly not enough money to support all the proposed activities at the same time yet pragmatic decisions are needed that recognize the strengths and weaknesses of various approaches, particularly with regard to control.

There has been particular concern about how farmers might react to the set of recommendations that emerged early on in the BBW, stimulated by the report of Dr Simon Eden-Green in October 2003 and quickly followed by a major report prepared by a National Task Force in November 2003. I have summarised one version of the national R&D action plan in Annex 1 for general reference.

The courses described here, and the raising awareness programme, has been designed to enhance a much broader effort to control and contain BBW. Positive steps have been taken to ensure that field staff are confident in identifying and recognizing BBW and, as the GOING PUBLIC exercise showed (section 5), a new forum for exchanging ideas with banana growers and local communities is now available. This report outlines what was done to achieve this progress.



THE uneven ripening of fruit is a tell-tale sign of BBW, heralded by the death of the male bud. Internally the fruit is stained and rotten.

**BBW Distribution, September 2004**

The arrows represent each district in which BBW has been found. The disease was first confirmed in Mukono ('MU', arrow shown to East of Kampala). For more details of locations see Annex 5. Originally associated with a similar disease from Ethiopia, a 2004 report confirmed the presence in the Democratic Republic of the Congo, this time also on banana. The status of BBW in Rwanda is still uncertain.



## 4. Banana Disease Course

### 4.1 WHAT WAS ITS PURPOSE?

I discussed the general purpose of the course with the Working Group before the training programme began. Mr Okaasai from MAAIF was already familiar with the general plant health course I had held a few months earlier in Uganda. We agreed on three main objectives for the banana disease course. See Annex 6 for more details.

1. Recognize BBW symptoms and distinguish from other related diseases and problems
2. Accurate recording of all useful information and events in the field
3. Effective communication and collaboration with farmers on control

This was my first opportunity to develop a course that targeted one crop (banana) and one disease (BBW). Previously, I have taught 16 plant health courses in six different countries to nearly 200 people, most from extension. The main purpose is to improve symptom recognition and interpretation in response to crop disease queries. We also examine weak reporting of problems and the woeful condition of samples sent for diagnosis, and suggest how to do better.



SHARING  
observations  
widens  
understanding  
of what to look  
for – and what  
it means

The banana course went one stage further and examined how farmers might react to suggested control measures and simple ways to overcome difficulties of adoption. At this stage there was no official programme on control of BBW though there were a series of recommendations published and discussed in previous reports.

The emphasis on teaching service providers was a deliberate attempt to improve their ability to take an active role in disease control programmes. Despite the crucial job they are expected to do in helping farmers with plant diseases I have seen little evidence of training that has improved their ability to work independently. Researchers have a low opinion of service providers and that is one barrier to progress which this joint programme attempted to overcome through developing a mutual respect for little known strengths.

Service providers are not experts in banana diseases and doubtless appear weak in technical matters. Some are less than diligent in executing their duties, but many are keen to do a better job only lacking the right opportunities to improve. They know a lot about farmers (certainly more than researchers) but rarely write this down. Furthermore, they do not know how to relay what farmers do well for the wider benefits of others. When it comes to persuading and encouraging farmers to adopt better practices service providers either attempt crude enforcement or talk about the vague need to ‘sensitize farmers’ (Annex 4).

Training courses need to deal sympathetically with the plight that service providers find themselves in: how to be an expert generalist. That was an unstated challenge that helped me think about course exercises and teaching approaches. Two days is a short time in which to become a banana plant doctor but, as I was reminded during the two courses, service providers already have a network of farmers that they regularly meet and talk with. The challenge is how to encourage better collaboration between the two groups, adopting good ideas wherever they come from while working to change mistaken ideas and fill gaps in knowledge.

#### 4.2 CREATING THE COURSE AND TESTING MATERIAL

The awareness raising course for BBW was developed in three stages. First, I met with the six trainee facilitators nominated by MAAIF and NARO over a two day period. We explored and discussed the course structure and content. I began with material and exercises used in the plant health courses taught in Kumi and Mukono in December 2003. Major changes were needed to adapt this material on banana, though some of the general presentations were still relevant. New illustrated material was required, particularly photographs of other banana diseases. Despite the widespread availability of digital cameras, good quality photographs showing key symptoms of major diseases are hard to find. Some I obtained in Vietnam while on other project business. Copies of all photographs were left with ASPS and MAAIF and are generally available for use.

Do you need to be a banana disease expert to design and teach this course? Clearly such knowledge is helpful though it can also blind you to some of the simpler messages that need to be conveyed. A more important characteristic is having a sympathetic yet critical understanding of service providers. I am not a banana disease expert but I have worked with extension officers in many countries and that has highlighted some of the fundamental weaknesses in plant health services that this course addressed in the context of BBW. I referred to published information on banana diseases in Uganda and elsewhere to widen my knowledge, but I relied more heavily on an extensive library of disease photographs when preparing course material.



GOING to the field is a vital part of learning. Fred Ssekiwoko enthusiastically shares his knowledge of banana diseases

Recognizing BBW involves knowing the symptoms **and** being able to distinguish them from other symptoms. Diseases don't occur in glorious isolation in real life nor do they always show the classic symptoms that textbooks tend to portray. The course teaches differential diagnosis through field visits and the use of printed sheets showing various symptoms on banana. A combined effort by all the facilitators to contrast and compare major banana diseases resulted in a much appreciated one sheet summary (Annex 9). Researchers and agricultural officers worked fluently on this task, each contributing and sharing personal knowledge and experiences of banana diseases.

**First Stage** During the first stage of discussing the course and its contents we struggled to develop a mutual understanding of what the course was trying to achieve, let alone how we would do this. There were initial problems in grasping the idea of mutual learning and reflection that the course encourages. None of the facilitators had taught courses before (to the best of my knowledge) and

were perhaps nervous about having gaps in their own knowledge exposed. This would explain the initial hesitancy of the facilitators during the course preparation phase.

I suspect that they also expected a stronger emphasis on straightforward teaching of facts, the ‘chalk and talk’ method. I explained that this was not appropriate and that I wanted participants to learn by doing, in this case the observing of symptoms and how they might distinguish BBW in the field. I also wanted the participants to tell us what they knew and had experienced in previous dealings with farmers. The course was designed to encourage sharing of knowledge. It is hardly surprising that getting all these points across in two days to people I had not met previously was difficult. It is to the immense credit of all the facilitators that they had made huge strides in adopting the above ideas by the time we completed the second course in Mbale.

In the beginning there was some dissatisfaction about the terms and conditions that would apply to the facilitators and, though eventually resolved, this was an unhelpful distraction at the start of our working relationship.

**Second stage** I spent one day finalising the printed material necessary for the exercises, including forms, photosheets and changes to powerpoint presentations after the initial two days with the future course facilitators. We moved quickly to the second stage where I led the first awareness raising course at Mukono ARDC. This was attended by 23 people, almost all of whom worked in extension. Most were from local agricultural offices but a few came from NGOs.

This was a tricky stage in developing the course. I was testing most material for the first time. I expected the facilitators to assist with general supervision while assessing their performance. The number of participants was too large, and I lacked someone with enough experience to give all the groups equal attention. I used a rough mental list of criteria to assess success. We also got useful feedback from the participants at the end of the course, though reviewing initial expectations proved to be more helpful in assessing what had worked well and what needed changing (Annex 3).



MAGOMBE discusses his group’s ideas for a BBW poster at Mbale. It’s easy to spot a bad poster, not so easy to design a good one

My mental list included difficult to measure aspects such as involvement of participants in exercises. Were some bored because they already knew a lot or were they distracted for other reasons? The curse of the mobile phone was always present and stating a policy on use at the beginning of courses is important. For most exercises a majority of people were alert and wholly engaged. At other times people seemed to drift. It’s important to check whether it’s time to end an exercise or do it differently the next time. That is a difficult skill to teach facilitators.

I checked to see if group discussions reflected the experiences and opinions of all present or simply those who spoke most fluently. The voluble can dominate proceedings yet I am always impressed by the courtesy that participants show each other in Uganda. People who are reluctant to contribute to the larger inter-group sessions sometimes speak more freely within the group discussions. Some

people show no interest however hard you try; and there are always one or two who contribute little and take away even less after two days on the course.

I was concerned to see that the facilitators were slightly casual in supervising exercises. I wasn't sure whether this was timidity or uninterest, though perhaps I underestimated my own leading role as person in charge of the first course. This may have dissuaded greater involvement. I suspect that most facilitators were still bemused by the course and the style of teaching. This bemusement disappeared when they had direct responsibility for the course and group exercises.

It is important to be decisive when teaching the course yet absorb and respond positively to the results of group discussions and the ensuing debates between groups. One moment you are teaching facts about BBW, the next you are moderating a debate about farmer participation. You have to maintain a balance between confident delivery and sympathetic listening. It reinforced for me the need to have at least two test runs with the course. Mukono was only the first course and though we had made a useful start, there was still some way to go before taking the course and facilitators on the road.

We now had a better idea of what worked, where changes were necessary and what areas needed further attention in the third stage of course development. This final stage marked the end of an intensive period of testing and modifying the course itself and now my attention shifted to how the facilitators would perform when put in charge. We travelled to Mbale for this final testing of the course. We had fewer participants to teach this time, only 16 people, but now it was the responsibility of the facilitators to deliver. I would be observing events and making notes.



PEOPLE are encouraged to express ideas. There is always a lively debate

**Third stage** I arranged a schedule for pairs of facilitators to teach different exercises. One member of each pair came from NARO, the other from MAAIF. The pairs decided on for Mbale would continue to work on the schedule of courses planned for May. It was important that each pair worked well together and the group decided amongst themselves the pairings. I was impressed at how well each pair worked together. By this time I was confident that the teaching exercises were basically sound though we also tried out a new exercise for the first time. Participants were asked to comment on the success of disease control programmes involving other crops then had to speculate on responses of farmers to the BBW recommendations (Annex 4).

I was able to pay closer attention to the facilitators and how they performed. My mental checklist of success criteria now expanded to include: style of teaching, encouragement of participants, clear explanation of instructions and supervision of group debates. I was encouraged by general performances and careful in how I commented on individual performances. A slight hectoring style emerged at one point, demanding that people respond and 'participate'. I pointed out, in private, that a gentler approach would encourage people to contribute and failures to respond could also indicate that you were asking the wrong questions. Some went into 'chalk and talk' mode, and as

the details became more dense the weaker extension officers in the audience seemed to drift off. A few keen and eager minds were, on the other hand, lapped up the extra information.

I have discussed the steps in developing this course in some detail because of the wider relevance in training service providers using local facilitators. After an intensive three week period I was confident that each pair was able to lead and supervise courses independently. A final judgement on this can only be made once facilitators and participants of future courses can be interviewed and performances and progress assessed in more detail..



FACILITATORS  
guide groups in  
different  
exercises

Perhaps the biggest challenge for the facilitators is in finding out what service providers know or believe. I made repeated play of the need to teach (gently) and to listen (sympathetically). The facilitators revelled in the opportunity to explain to participants what they knew about banana and its diseases and it was a genuine delight for me to observe enthusiastic and lively talks. At the same time we need to respect the experience and knowledge of service providers and the course offers a unique opportunity for researchers to learn more about what goes on in during the everyday work of extension workers in the field. The interpretation of events, as explained by service providers, may not be correct but the experiences are genuine and extremely valuable.

I made final adjustments to the schedule and material and left copies of all items with ASPS and MAAIF prior to my departure. The material comprised document files, powerpoint presentations, digital photographs and a series of notes for facilitators. I have subsequently combined the material into a manual and this will be available separately with support from the Global Plant Clinic.

#### 4.3 LEARNING FROM PARTICIPANTS

I have been increasingly struck by the amount of information and knowledge gathered by people who work directly with farmers, and the poor use that is made of it. Service providers, extension agents, agricultural officers and others see what works and what doesn't. They may not know exactly why or reach false conclusions but capturing their experiences is what matters most.. Nor should they be held in low regard because their work practices are poorly documented or because of gaps in their understanding. We should be making better and more regular use of 'técnico knowledge', both to celebrate and amplify the good parts and to correct misconceptions so that they do things better. Or it may simply be filling in gaps in knowledge.

The course encourages participants and facilitators to learn more about each other. Researchers will also have mistaken ideas about what farmers do and why, and perhaps reach false conclusions. Service providers can help to explain or simply interpret what farmers do. The course helps to overcome misunderstandings between research and extension, one of the hidden benefits of working together for two days. To help analyse problem areas I collect the responses to simple questions and carefully consolidate the answers to avoid identifying those who give the wrong

answers. I repeatedly emphasise that the course is not an exam or a competition, though a competitive element does have a positive effect in make some exercises more exciting.

In one exercise people are asked how locally important diseases move around (Table 1). First we agree on major diseases to consider then summarise the results for wider discussion. It is useful for the facilitator to know the all correct answers but it's not essential and will depends on experience and background. If the facilitator doesn't know, or is uncertain, then accept the majority answer and check later with the CABI Crop Pest Compendium or other reliable source. I've often found that participants enlighten me and that they are pleased to see that they teach the teacher.

**Table 1: How diseases move around, according to 35 participants on Mukono and Mbale courses**

MEANS OF SPREAD	COFFEE WILT			CASSAVA MOSAIC			FUSARIUM WILT			TOMATO BACT. WILT		
	Y	N	?	Y	N	?	Y	N	?	Y	N	?
Yes (y); No (n); Don't know (?)												
Insects – Mukono	14	5	0	16	2	1	12	4	3	8	9	2
Insects – Mbale	1	12	1	12	0	2	0	10	4	0	11	3
Planting material – Mukono	17	0	2	19	0	0	18	0	1	16	0	3
Planting material – Mbale	12	1	1	14	0	0	14	0	0	10	2	2
Soil – Mukono	16	3	0	5	11	3	14	4	1	17	0	2
Soil – Mbale	8	4	2	2	10	2	5	5	4	11	3	0
Wind – Mukono	14	1	4	9	10	0	7	7	5	4	9	6
Wind – Mbale	4	6	4	5	7	2	3	7	4	3	9	2
Water – Mukono	15	3	1	3	14	2	9	7	3	13	4	2
Water – Mbale	3	8	3	1	8	5	4	9	1	8	4	2
Tools (for pruning) – Mukono	19	0	0	17	0	2	17	0	2	16	0	3
Tools (for pruning) – Mbale	12	1	1	7	3	4	10	3	1	10	1	3
Animals – Mukono	8	8	3	7	10	2	9	6	4	4	8	7
Animals – Mbale	0	11	3	3	6	5	8	2	2	0	7	7
People – Mukono	19	0	0	16	1	2	19	0	0	19	0	0
People – Mbale	12	0	2	14	0	0	12	1	1	11	3	0

The 'prior knowledge' exercise (Annex 3) helps to identify some of the advance difficulties or challenges to be overcome during the course. A surprising number of people were unconfident in distinguishing BBW from other diseases. We then explained what to look for and emphasised that a field diagnosis is as much as process of elimination as it is positive identification. In other words 'if it's definitely not *Fusarium* wilt it must be something else'. Fortunately BBW has very clear symptoms though interpreting only yellow, wilted leaves in the absence of other distinctive features is tricky. It was particularly useful for the facilitators from NARO and MAAIF to get a better grasp of what people knew about disease symptoms generally. Starting with other major crop diseases allowed us to broaden discussions and to move smoothly onto BBW.

Despite my confidence about what service providers do well there were clear gaps and mistakes in basic understanding of major crop diseases. The course provides a good opportunity **in a short time** and at **relatively low cost** to fill those gaps and correct misconceptions.

4.4 SCHEDULE OF COURSES AFTER APRIL 2004

Before leaving Uganda I supplied all material necessary for delivering course, including powerpoint presentations, forms to fill in, notes on carrying out exercises, schedule of events, handouts, photosheets (for exercises) guidelines for facilitators and a wealth of digital photographs to be used in the general awareness raising campaign. Other documents relating to the working group discussions and deliberations, some of which are included as annexes, were left with ASPS.

I have developed a separate ‘manual’ with the support of the GPC and this is available independently of this report. It is an evolving document since changes may be needed following the experiences of the six facilitators in the series of courses that followed after my visit (Annex 8). The anchor and organiser of this schedule has been Mr Okaasai of MAAIF. He attended one of the original plant health courses held in December 2003 and was also present during the three courses held during this consultancy.



SUPERVISING groups and writing down what they say is difficult. I take photographs of writings for reference and analysis later

4.5 EFFECTIVENESS

People liked attending these courses. We received enthusiastic feedback from Mukono and Mbale audiences. The extent to which information and new knowledge was absorbed and deployed later is another matter, and requires further attention. I believe that the relaxed atmosphere of the courses and the high quality teaching material – people are always particularly appreciative of good photographs – encourages people to think and work hard and to participate effectively. Service providers come in all shapes and sizes, however, and it is a formidable challenge to keep them engaged all of the time given their different needs and abilities.

Documenting prior knowledge before the course started alerts the facilitators to particular needs. The expectations of the participants provides a useful starting point for discussing what the course achieved. It is important to give participants copies of this information so that they can compare with other viewpoints and so that form filling has a purpose.

In previous general plant health courses the most common request is for more information about control. I have been reluctant to do so, partly because I think field diagnosis is neglected and needs more attention. I must also admit to being a little shaky on the wide range of control options for many diseases. The banana course was an excellent opportunity for me to address control issues. We did not discuss how to implement control programmes or the nature of the recommendations, but instead looked carefully at farmer responses to control recommendations for major diseases on other crops as well as banana. Then we considered the possible responses of farmers to

recommendations for BBW. This was a relatively short but revealing exercise (Annex 4) and pointed out potential problems and opportunities that a control programme will encounter.

There are of course still important gaps in our knowledge of the disease itself, which research must address. Robert May said that science was a way of asking questions, suggesting that it doesn't always find the answers. But that is precisely what people want and it in turn suggest a compromise. My work with service providers is a salutary reminder that they need available facts presented simply and clearly, caveats and all. They also have useful suggestions to consider (Annex 4) and it encourages them to see that their opinions can be expressed and reviewed.

The active participation of service providers in the BBW campaign requires a more careful consideration of the potential role that growing numbers of people believe they can play in developing new technologies. The course is based on a wider notion that service providers do have a positive and proactive role to play in improving agriculture and this consultancy provided me with a valuable opportunity to promote this idea. A simple and short course, taught locally, can I believe be a useful tool in encouraging new attitudes towards service providers providing a thoughtful forum where they can exchange ideas and share knowledge with researchers.



ENTHUSIASM is contagious and here Ssali from KARI uses fancy movements to get across key points about BBW to affected farmers in Sironko

## 5. Going Public: extension in markets

### ► FIRST TIME TRY

Kamus Corner<sup>3</sup> is the premier banana market in the eastern region of Uganda. It is situated on the slopes of Mt Elgon on the border between Kapcherwa and Sironko districts. Held on a Wednesday and Saturday, it attracts many buyers, including ones from Kenya. Within Uganda, the bananas are transported as far as Kampala to the west and Kumi to the north. The bananas come from a relatively small radius, estimated at 5–10 km, and determined by the time taken to walk to market. I didn't see any evidence of trucks bringing in bananas from growers but there were plenty of trucks going out. Many smaller vendors made the tricky journey down the hill with their laden bicycles, to the towns and villages of Mbale district.



KAMUS Corner market

### ► GETTING STARTED

We (myself and the six facilitators) went to Kamus Corner the day after the Mbale course ended. I asked the facilitators to draw some pictures of banana plants the night before so that they could show key features of the disease, a simple visual aid for the market. I wrote a short account to explain a little more about *Going Public* (Annex 7) though I suspect this was more useful after the event than before. We took a few of the photosheets showing symptoms of BBW. Demand for photographs quickly outstripped supply. We didn't have handouts saying who we were and how to contact us later, a small but important thing I forgot to do. Always let people know who you are and where you come from.

After the event I thought it would be useful to have a painted sign at the entrance to the market mentioning the disease, a contact point, and with a simple illustration of key symptoms. You could potentially contact up to 1000 people with simple messages in one market day. Another possibility is a notice board with basic information. Getting permission for this and other activities is important. We got the approval of the market master for our stall without any difficulty. A local contact is useful and the District Agricultural Officer from Mbale helped us find our way around. We borrowed a table from a nearby office and placed the drawings and photos for people to see. In this instance we thought bringing diseased plant material was not a good idea.



LEARNING about BBW with homemade drawings

I was eager to try *Going Public* because I was convinced that it had a part to play in the BBW campaign. I was also proud of having contributed to the first sessions in Bolivia. Initial reactions to my proposal were lukewarm but it was agreed in the Working Group that we should have a go. It was good to be set a challenge, to see if I was right. And without rigorous testing and iteration good ideas never become great ideas. I'm intrigued to see how people adapt and adopt the method to their own circumstance and if they feel at home with *Going Public*. It's not for everyone to perform.

<sup>3</sup> I have also written this previously as 'Kamuskonon' though I believe this is wrong.

► WHAT EXACTLY IS GOING PUBLIC?

It's an extension method that's more than a simple demonstration. You go to a public place where large numbers of people congregate as a matter of course, such as a market place. We've used a bus stop in Bolivia and a future possibility is to work the milling masses after a church service.

The three words that perhaps best describe *Going Public* are: cheap, quick and responsive. It is also a considerable challenge for those leading a session. The person behind the table has to balance the short explanation/demonstration side of *Going Public* with listening and responding to the assembled audience. I encourage a second person to stand to the side making notes about what happens and what people say. We didn't do this formally at Kamus corner though we quickly learnt something new and revealing. The local name for BBW is *kyimwemwe* or firefly, on account of the glowing yellow colour of the first affected leaves, as was explained to us. This is the name we used throughout the morning in addition to our own 'banana bacterial wilt disease'. Talk in the language people understand.

On this wider issue, Mundaka was the only one from NARO and MAAIF who could speak and understand Lugisu, the language spoken by the Bagisu of Mbale and Sironko. The other language used was Kuksabiny, from the Sabiny (Sebei) people, also from eastern Uganda. I spoke in English, as did most of the others, and we had little difficulty in holding conversations with most people.

*Going Public* differs from the institute stalls set up maybe once or twice a year at agricultural fairs to display the wares and recent achievements of researchers. *Going Public* makes a conscious effort to gather information and to analyse it later to inform and direct future activities. For example, you may learn of one area where the disease is particularly severe or people who claim to have controlled the disease. *Going Public* is like a quick opinion poll. If a majority of people tell you something unusual or new (an effective control method for example) you can follow up the leads in more detail at a later date. Following-on shows that you are serious about helping farmers.



WE estimate that around 200 people listened to our simple messages in less than three hours

► CHEAP AND CHEERFUL

You turn up at a suitable place with minimal materials and complete the session in less than half a day. You have to prepare what you're going to say first but that shouldn't take too long to do. This doesn't cost a lot. A natural confidence in front of people and ability to improvise as you go along is important, but that you don't have to pay for this. You do have to work hard to attract people's attention and it can be frustrating at times when only three people are listening. There is no captive audience and people are free to come and go. But they can also hover around the fringes without having to feel embarrassed by standing at the front (and someone asking you a question).

Performing *Going Public* session is not for everyone. All of the six staff had a go at some time or other, some showing more enthusiasm and aptitude than others. A few moved along the row of banana sellers, talking to them about the disease and listening carefully to what they had to say. They did this without prompting from me. Okurut kept his messages short and responded well to questions. You don't teach *Going Public* to people, rather they work to the normal rhythm of brief social encounters and the to and fro of normal conversations, staying longer if someone is

interested and moving on if they are not. It helped that we were dealing with a hugely important crop and the fact that most of our audience had heard about the disease.

*Going Public* is meant to be quick, using simple messages that can be got across in less than ten minutes. We showed the symptoms of the disease, explaining how the disease was spread. I stood in the back of a truck and mimicked an insect visiting the banana flowers and transferring the disease. My audience duly smiled at my showy antics though I'm not so sure how effectively I got my point across. A sidekick takes notes and asks for names and places people live. That allows the presenter to concentrate on the action part.



OKURUT in the green hat talks fluently with the ladies. Distinctive clothing helps to make you more noticeable

The audience renews itself naturally but usually after a few hours there is no one new to attend. Your novelty value has worn off. I was thrilled by the number of people selling bananas and the general hustle and bustle of the market place and there was a genuine buzz amongst the facilitators as we left Kamus Corner. Within a few minutes of arriving people were gathering round and from then on it remained busy at our two tables (one either end of the market) for almost three hours. The presence of strangers and our Banana Doctor T shirts caught the attention of people. Never assume that people will stop to listen and that's an important lesson when doing *Going Public*. You have to work hard but there are significant rewards. Working with people is fun but it's not easy.

► YOU LEARN AND I LEARN

*Going Public* is also an opportunity to listen and learn. The local name of *kyimwemwe* for BBW was new to everyone. We need to speak the language and use the lexicon of farmers to be most effective and that's one of the clear lessons that everyone understood better after this busy morning. We also explained about control but this first attempt at working in a market didn't provide us with the opportunity to discuss recommendations in detail. Many people asked us what would happen if people and animals ate the diseased bananas. Would they also become sick? You learn a lot in a short time about how people view plant diseases. What they ask you doesn't appear in books about plant pathology.



TRADER busy negotiating prices

Okurut thought he had found an infected bunch for sale but this proved to be a false alarm. Still, he was able to point out that the disease could be spread through bunches sold wholesale in the market. The one group we had least success in talking to were the traders. They were busy checking the bananas being offered for sale. Next time we need to go up to them and talk directly about BBW. Positive engagement is encouraged by *Going Public* and my own short experience of this method is that it has opened my eyes to many new opportunities to do things better for farmers.

## 6. Banana Bacterial Wilt Working Group

The Working Group first met in December 2003 and has continued to convene regularly under the aegis of ASPS, to discuss the awareness raising campaign, strategy, component parts and delivery. I attended several meetings during my stay under this consultancy. Our discussions dealt with all aspects of what should be done to cope with the disease. From the early days we have been conscious of the need to place the awareness raising activities within the broader context of BBW programmes. I sketched out a general ‘scheme’ to simplify and clarify the relationship between the awareness raising programme and others concerned with studying the disease itself and control strategies. The scheme is shown below and can be compared with an official research and development action plan summarised in Annex 1.

The scheme below was loosely adopted by the working group but has no official standing. It does not seek to replace, either explicitly or implicitly, other work plans or project proposals. It defines three key areas which are closely connected. The integration of activities and proposals has proved a challenge in Uganda with many meetings to identify ‘the best way ahead’. Much depends on having available funds as well as effective coordination between different organisations. I have found the scheme useful because it draws a clear line between the ‘not yet discovered but we want to know’ (purpose 1), ‘let’s tell everyone about the problem’ (purpose 2) and ‘here’s what we can try to do with existing knowledge’ (purpose 3).

Ideally all three purposes would be addressed together, with cross-fertilization of ideas and results but this will depend on timing and nature of support for other parts of the BBW programme.

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**GOAL** *To control BBW by reducing the impact of the disease in areas where it is already present and preventing its spread to new and presently (early 2004) unaffected areas*

### PURPOSES

1. To understand and describe the essential features of BBW in order to identify suitable control measures (**scientific research and development**)

The outputs would address bio-ecology of the pathogen, host responses, search for resistance, testing and evaluation of cultural, chemical and biological control measures. Information and results would be fed into purpose three to refine and modify guidelines for control and also help inform long term strategies for tackling the disease

2. Farmers, service providers and other ‘key actors’ able to recognize and distinguish the symptoms and make informed decisions about management of BBW (**awareness raising**)

The outputs would address awareness raising via courses, production and dissemination of posters, brochures plus radio and TV programmes, press inserts; they would also include developing a network of BBW correspondents or local links (‘eyes and ears’) to liaise with central coordination of the overall BBW effort. Note the need to consider how outputs would relate to the three different types of BBW area (affected, under threat, not yet but major banana zone)

3. Appropriate strategies for controlling BBW developed according to the nature of the disease threat (affected; poised to occur; ‘fireline’; major banana areas not yet affected)(**control**)

The outputs would address: developing guidelines according to zones; validation of control measures through collaborative (participatory research) work with farmers; putting in place resources to support actions (particularly for the ‘fireline’ zone)

## 7. Global Plant Clinic

The Global Plant Clinic (GPC) helps developing countries identify the causes of new diseases. We confirmed that the pathogen causing BBW in Uganda is *Xanthomonas campestris* pv. *musacearum*<sup>4</sup>. A scientific paper written by Dr Julian Smith and collaborators announcing this discovery has now been published. Julian has liaised closely with a number of scientists working at KARI, INIBAP and IITA and we have been in regular contact with Dr Simon Eden-Green.

A number of project proposals to carry out research on BBW were submitted to the Crop Protection Programme of DFID at the end of August 2004. The programme is managed by NR International and the proposals are now being reviewed. There are good signs that funding will be available for a short period. The GPC and CABI *Bioscience* are committed to helping and contributing to work that requires our varied expertise in bacteriology, crop protection, extension and participatory research.

As this report emphasises, training courses have an important role to play in strengthening extension services so that they can independently help farmers. Uganda is one of three countries included in a GPC initiative to improve plant health services and through this we will continue to develop our ideas about how best to meet the demands of the agriculture envisaged by the PMA.

The 'free' service provided by the GPC is not open-ended. We will continue to do our best to help scientists in Uganda and others involved with this disease but there will be limits to the extent that we can carry out extended studies within our existing funding arrangements.

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<sup>4</sup> Tushemereirwe W, Kangire A, Ssekiwoko F, Offord LC, Crozier J, Boa E, Rutherford M, Smith J. 2004. First report of *Xanthomonas campestris* pv. *musacearum* on banana in Uganda. **online** at [www.bspp.org.uk/ndr/july2004/2004-44.asp](http://www.bspp.org.uk/ndr/july2004/2004-44.asp). Due to be published in *Plant Pathology* 53 (6)

## Annex 1

### Master National R&D Action Plan

I was given an undated photocopied version of this plan – six pages – in March 2004. It contains research areas and outputs with associated activities but is not a full logframe. The plan appears to be a modification of a plan that appears in the National Task Force report of November 2003.

Headings for different columns are as follows:

- |                               |                       |
|-------------------------------|-----------------------|
| 1. Research areas and outputs | 4. Proposed           |
| 2. Activities                 | 5. Key players/donors |
| 3. Comments/ current status   | 6. Action points      |

Only the research outputs and activities are shown, for general reference and comparison with other project or work plans concerning banana bacterial wilt. Compare with working group scheme in section 6.

RESEARCH OUTPUT	MAIN ACTIVITIES	SUB-ACTIVITIES
<b>1. Current status of BBV and workplans established</b>	1.1 Baseline information	5
	1.2 Develop R&D agenda	2
	1.3 Monitoring disease spread and impact	1
	1.4 Identify gender implication of BBV and strategies for promoting gender contributions	none listed
<b>2. Biology and epidemiology of BBW understood</b>	2.1 Etiology and pathogenesis	7
	2.2 Epidemiology of BBW	3
<b>3. Appropriate technologies for management of BBW developed, tested &amp; introduced</b>	3.1 Cultural, chemical and biocontrol methods	2
	3.2 Disease resistance	6
<b>4. Sensitisation, surveillance and control</b>	4.1 Technology and information dissemination	4
	4.2 Containment of disease	2
	4.3 Disease management	2
<b>5. Capacity for disease management and R&amp;D developed</b>	5.1 Capacity building	5
<b>6. Impact of disease management, R&amp;D assessed and monitored and promoted</b>	6.1 Monitoring activities and outputs	1
	[6.2] Impact assessment (not numbered)	2
<b>7. Appropriate policies developed and promoted</b>	7.1 Policy development	3
	7.2 Partnerships and linkages	1
	7.3 Monitoring and evaluation	1
<b>8. Alternative enterprises identified</b>	8.1 Fall-back options	2
	8.2 Partnerships and linkages	1
	8.3 Gender mainstreaming	1
	8.4 Dissemination	1
	8.5 Monitoring and evaluation	1

## Annex 2

### List of Course Participants

#### COURSE 1. Mukono ARDC, 25-26 March 2004, 23 participants

NAME	JOB	PLACE OF WORK	TELEPHONE
Mr Tsekoko John	<i>Extension Worker</i>	PO Box 18279, Kayunga (office of the woman MP)	077 313512
Mr Daniel Lubanga	<i>Agricultural Extension</i>	FITCA, PO Box 18000, Kayunga	077 314762
Mr Ssonko Remmegidus	<i>Agricultural Advisor</i>	Rubaga Youth Development Association – Kayunga Project (NGO) Po Box 18184 Kayunga	none
Mr Muloma Samuel	<i>Extension Worker</i>	Kayunga District Local Govnt., PO Box 192 Jinja	077 640005
Mr Sseruwo Badru	<i>Extension Worker</i>	Kayunga District Local Govnt., PO Box 18000, Kayunga	077 643197
Mr Nganda Silver	<i>UNFA</i>	Uganda National Farmers Federation, PO Box 6364, Kampala	077 620309
Mr Kebba Bernard	<i>Extension Worker</i>	Self-employed (veterinary), c/o Kayunga s/c HQ, PO Box 18000, Kayunga	077 556720
Mr Wali Christopher	<i>Agricultural Officer</i>	Mukono District Council, Dept Agriculture, PO Box 72 Mukono	077 897943
Ms Robinah Gafabusa	<i>Technician</i>	Mukono ARDC, PO Box 164 Mukono	077 524498 <i>email</i> rggfabusa@naromukono-ardc.org
Dr Flavia Kabeere	<i>Research Scientist</i>	Mukono ARDC, PO Box 164, Mukono	077 844146 <i>email</i> fkabeere@naromukono-ardc.org
Mr Luswata Kannakulya	<i>Agricultural Officer</i>	Mukono District Council, PO Box 72, Mukono	071 844146
Ms Ann Bulya	<i>Agricultural Officer</i>	Kayunga District Local Council, PO Box 18000 Kayunga	077 486805 <i>email</i> annbulya@yahoo.co.uk
Ms Wassajja Emmy	<i>Agricultural Officer</i>	KANADA, PO Box 10138 Kampala	077 483137 <i>email</i> emmyrado@yahoo.com
Ms Rose Kabuye	<i>Agricultural Officer</i>		078 464660
Mr Lumu Richard	<i>Agricultural Officer</i>	Mukono ARDC, PO Box 164, Mukono	075 629203
Mr Rwebikire James	<i>Agricultural Extension</i>	Kayunga District Local Council, PO Box 18000 Kayunga	077 550180
Ms Nakyingi Susan	<i>Assistant Agricultural Officer</i>	Dept. Agriculture, PO Box 72, Mukono	071 866234
Mr Ssenyonjo Joseph	<i>Assistant Agricultural Officer</i>	NARO, Box 164 Mukono	077 828452
Ms Nansukusa Margaret	<i>Assistant Agricultural Officer</i>	Mukono Local Govnt., Dept Agriculture, PO Box 72 Mukono	071 700640
Mr Kyambadde Maurice	<i>Agricultural Officer</i>	Mukono District Local Govnt., PO Box 160 Mukono	077 436055
Mr Lwanga Henry	<i>Agricultural Officer</i>	Mukono District Council (Agric. Dept.), PO Box 72 Mukono	071 800054

NAME	JOB	PLACE OF WORK	TELEPHONE
Mr Wandera Moses	<i>Agricultural Officer</i>	Mukono District Council (Agric. Dept.), PO Box 72 Mukono	077 489868
Ms Lydia Mukasa	<i>Assistant Agricultural Officer</i>	Dept Agric., Mukono District Council, PO Box 72, Mukono	071 936291 lydiamukasa22@yahoo.com

**COURSE 2. Mbale, 29-30 March 2004. 16 participants**

NAME	JOB	PLACE OF WORK	TELEPHONE
Mr David Owor	<i>Agricultural Extension Officer</i>	Mbale District Local Govnt., PO Box 911, Mbale	075 814117
Mr Magombe Andrew	<i>Agric. Officer; NAADS coordinator. Bufumbo s/c</i>	Mbale District Local Govnt., PO Box 911, Mbale	077 531521 <i>email</i> andrew magombe@yahoo.com
Mr Watsombe AK	<i>AAO, Namanyonyi s/c</i>	Mbale District Local Govnt., PO Box 911, Mbale	[none]
Mr Mundayi Davis	<i>Agricultural Extension Officer</i>	Mbale District Local Govnt., PO Box 1563, Mbale	077 498392
Mr Abudu K Masaaba	<i>Agricultural Extension Officer</i>	Mbale District Farmers' Assoc., PO Box 336, Mbale	071 924039
Mr Natanga Patrick	<i>Agricultural Extension Officer</i>	Mbale District Local Govnt., PO Box 911, Mbale	077 591093 <i>email</i> matember@yahoo.com
Mr Masoboni Samson	<i>Agricultural Extension Officer</i>	Mbale District Local Govnt., PO Box 911, Mbale	077 952695
Mr S M Mude	<i>Agricultural Extension Officer</i>	Production Dept, PO Box 34, Sironko	077 612108
Mr Masolo Pande Patrick	<i>Production Officer</i>	Production Dept, PO Box 34, Sironko	077 319372
Mr Nayumu Akabu	<i>Chairman Bubyangu Parish Farmers Assoc., Bufombo s/c</i>	c/o Mbale District Local Govnt., PO Box 931, Mbale	[none]
Mr Mungau William	<i>Agricultural Extension Officer</i>	Sironko Local Govnt., PO Box 766, Mbale	[none]
Mr Wadada Simon	<i>Agricultural Officer</i>	Mbale District Local Govnt., PO Box 911, Mbale	077 412075
Mr Musana John Michael	<i>Agricultural Extension Officer</i>	Agricultural Dept, PO Box 34, Sironko	[none]
Mrs Nadunga Daphine	<i>Agricultural Extension Officer</i>	Production Dept, PO Box 34, Sironko	[none]
Mr Wettaka Francis N.	<i>Agricultural Extension Officer</i>	Production Dept, PO Box 34, Sironko	[none]
Mrs N Sarah Makada	<i>Chair Buyaya/Kyarule Farmers, Nema Trainer</i>	Sironko/ Buwalasi	[none]

## Annex 3

# Expectations and Prior Knowledge of Participants

*The responses (n=39) from awareness raising courses at Mukono and Mbale have been combined.*

### ► Expectations of Course

#### SYMPTOMS, IDENTIFICATION

How it can be identified • Able to identify the disease by symptoms • Techniques in identifying symptoms • To know more about symptoms • Diagnosis of the disease • Early signs of disease • How to determine disease (2) Procedures/methodology of guiding farmers on how to identify and describe the symptoms • Notifiable symptoms to farmers To differentiate/distinguish disease from other banana diseases (2)

#### SPREAD/ORIGINS

How the disease is spread • Mode of transmission Where it came from Scope (distribution?) of the disease

#### CONTROL

Recommended and practical control measures • Get better or more control measures and if possible the remedy to stop disease i.e. curative chemicals • Mechanisms and approaches to control and maybe eradicate the disease To understand more about control (2) • How it can be controlled (3) • Some ideas about control • Way forward with control • Progress with research on control Hope to be equipped with enough knowledge for control • Gain knowledge and skills in prevention and control • Skills to contain the disease To learn effective control measures which I am to pass on to farmers, students and pupils • Basic control

measures that are affordable to farmers • How to control on farms Prevention of the disease Measures taken (or put in place) (3) How far has research gone in terms of control and resistant varieties?

#### OTHER

What alternative crops can farmers plant Share experiences with other participants in the workshop • Share experience with people from affected areas • Know friends from different areas of work Create awareness about disease Knowledge to train or advise (on disease) Expect to learn more about disease

#### INFORMATION/GENERAL

To know more about disease • Hope to gain more practical knowledge about the disease Nature of the problem (disease) Most recent findings about the disease Texts for field workers and farmers To get a lot of information about disease • To obtain literature on disease • Greater access to photos and reference materials for subcounty resource centres • Improve farmer access to information Access visual aids which can show and teach farmers plus handouts to take to farmers

#### GENERAL COMMENTS BY ERB

*It is reasonably standard practice to ask participants what they hope to gain from a course. It is perhaps less common to have the facilitators or trainers comment on the nature of these expectations. Let me offer a few observations that I hope will help in designing better courses.*

The emphasis on control is clearly evident though few participants noted the explicit need to tailor recommendations to farmers circumstances. Nobody asked explicitly about the cause of the disease while all wanted to know how to recognize the symptoms, with a minority noting the need for differential diagnosis. A few sought more background information on BBW and a similarly small number of participants viewed the training as an opportunity to share experiences with others. The above comments suggest that most participants had apparently low expectations that they too had useful knowledge and experiences that could be shared and disseminated.

## ► Prior knowledge of BBW

### IMPACT

A disease of national concern

A new disease which is very destructive to the banana industry in Uganda. Attacks all varieties except the 'desserts'

It has destroyed bananas in Namuganga and Kasawo sub-counties where I work

A serious disease which has cleared almost all species of banana • Have seen it attacking mainly beer type of bananas but recently also on cooking types • It attacks all banana varieties • It affects mainly the roasting and brewing varieties

A very destructive disease • A fast spreading disease that destroys the harvest

### SYMPTOMS

I have seen the symptoms in the field • I have some information on the symptoms and how it can be controlled

I know the symptoms: yellowing of leaves; drying of male bud; ripening of immature bananas; the pseudostem turning pus-like when cut

Complete wilting of plant starting from leaves • Oozing of sap • It affects the fruit from the male buds drying, then going to the leaves and down the pseudostem; always yellowing and wilting of leaves

Leaves dry first the whole plant and then it dries. Fingers turn yellow and rot and have a bad smell

Development of poor quality bunches due to failure of good finger development

Destroys the entire plant from top and leaves down to the pseudostem. Causes premature/ irregular ripening of fingers

I know about the symptoms and I can distinguish BBW from other banana diseases

I just know the symptoms: wilting/drying of the whole plant, brownish colour inside fruits

### CAUSE/ORIGINS/SPREAD

It is a bacterial disease which causes ripening and hardening of immature fruits • Caused by a bacterium *Xanthomonas campestris*

It is transmitted by either or all of the following: ?beans, birds, tools such panga and knife

### CONTROL

BBW is a disease that cannot be cured • No agro-chemicals to control it

I know about methods of prevention

It is a very destructive bacterial disease which is difficult to control

Newly identified disease that needs early intervention to prevent spreading

### GENERAL

I know about the symptoms, mode of spread (not stated), preventative measures and sources of infection

Participated in initial surveys so I saw the disease and its consequences

In Kongulumira s-c it affects all types of bananas, mainly in fields not looked after well. It has been controlled where farmers remove the flowering parts as early as possible and use sterilized cutters

### GENERAL COMMENTS BY ERB

*One of the difficulties in teaching a course to extensionists and general agriculturists (including farmers – remembering that most participants farm and grow bananas) is in knowing the extent of their knowledge before the course. The pace of teaching and course contents need to reflect this prior knowledge which will of course vary, including profound ('deep'), incomplete ('shallow'), wrong ('mistaken') and absent ('missing'). My comments were made after the course was held.*

Everyone was convinced that this was a serious disease and while this appeared to reflect personal experience of the disease others had picked up on the publicity and official news. There were varying opinions on which varieties were attacked. A few gave detailed descriptions of symptoms, some noted particular features. One person named the causal organism. The confidence in distinguishing BBW from other banana diseases was expressed by only a few participants. The statement about farmers who control BBW by 'removing flowering parts and using sterilized cutters' is encouraging news of recommendations being adopted, though how widespread this occurs requires further investigation.

## Annex 4

# Responses of Farmers to Control Recommendations

*These exercises (C9 and C10) were only carried out for the Mbale course. First we considered well known diseases for which control strategies and recommendations have already been elaborated and actively promoted. Second, participants were asked to imagine how farmers might react to control recommendations for BBW. These have yet to be widely promoted. I have added my own comments on the responses at the end of the second exercise.*

**EXERCISE C9 • Tomato, Cassava and Coffee diseases:  
success of recommended control measures**

We chose four major diseases based on participants' experience. Each group was asked to assess the uptake of control recommendations for a disease they had worked with. Adoption by growers was marked using a 0 – 4 scale (see separate form used in class for this exercise) and then groups commented on why a measure had been successfully taken up or not, according to their experience.

I have reported responses more or less verbatim, inserting text in brackets only to complete statements. Exercise C9 was used as a warm-up for C10. **Eric Boa, Global Plant Clinic.**

### BACTERIAL WILT OF TOMATO

**Crop rotation:** poor and patchy uptake. *Why?* limited land due to population pressure.

**Roguing:** poor and patchy uptake. *Why?* (farmers) sceptical (that this was necessary); hoped that the affected plants might recover.

**Limited tilling, weeding of land:** poor and patchy uptake. *Why?* ignorance and resistance to change.

**Sterilize implements:** poor and patchy uptake. *Why?* destruction of implements by fire. Cumbersome.

**Use of sterilized implements e.g. hoe:** poor and patchy uptake. *Why?* lack of sensitization.

### CASSAVA MOSAIC

**Clean planting material (use resistant varieties):** majority apply and see material benefits. *Why?* wide publicity and availability of material.

**Restrict movement of infected materials:** around 50% do this. *Why?* some people don't adhere due to ignorance.

**Spray against white flies:** poor and patchy uptake. *Why?* lack of chemicals and pumps.

### FUSARIUM WILT OF BANANAS

**Destroy and burn affected plants:** poor and patchy uptake. *Why?* negligence of farmers.

**Use of clean planting material:** majority apply and see benefits. *Why?* because farmers hope for success. Also, 'lack of sensitization'.

**Pairing (?) of corms before planting:** poor and patchy uptake. *Why?* very tedious for farmers.

**Use of furadin at the beginning of rains:** poor and patchy uptake. *Why?* furadin is expensive.

### COFFEE LEAF RUST

**Spray with fungicides:** around 50% do this. *Why?* because extension staff help (growers) to identify the disease and advise on its effects.

**Early weeding of coffee gardens:** majority apply and see benefits. *Why?* because of the advice (growers) get from extension staff.

**Pruning of old trees to reduce incidence (of coffee rust):** poor and patchy uptake. *Why?* farmers are slow adopters in certain (areas).

**Exercise C10 • Banana Bacterial Wilt Disease**  
farmer reactions to suggested control methods

Participants were asked to comment on how the ‘official’ recommendations would: contribute to control, any perceived problems in getting farmers to adopt them, and action needed to overcome them. All four groups of participants reviewed the six recommendations. Three new ones were suggested.

**Recommendation 1 ► KILL INFECTED PLANTS WITH HERBICIDES**

- May be too expensive: advise government to provide free inputs.
- *Why? To kill the bacteria.* Chemical is expensive: requires support from government or provide herbicide.
- *Why? The herbicide kills the plants.* Expensive and (potential) problems with handling chemical: needs government to give subsidies to importers of agrochemicals.
- *Why? Kills host.* Cost of herbicide application is high and (possible problems with) environmental pollution and degradation: need to subsidize farmers and train on sustainable chemical uses.

**Recommendation 2 ► CUT DOWN DISEASED PLANTS, CHOP UP THEN BURY OR MOUND**

- Tedious to farmers: need intensive sensitization.
- *Why? To destroy the bacteria.* It can be done: (but needs) sensitization and training of farmers.
- *Why? Without regeneration the bacterium dies with the destroyed material.* Laborious for farmers and time consuming: farmers to work in groups to (undertake task).
- *Why? Host is killed.* (There are) social implications e.g. labour costs, plus the danger of moving the disease further: need sensitization and (practical) demonstrations, also promote alternative food crop.

**Recommendation 3 ► STERILIZE TOOLS FOR PRUNING**

- Tedious and weakens tools: needs continual sensitization by extension staff and provide free tools.
- *Why? Stop spreading the bacteria.* (Problem in adopting by farmers is) negligence: needs training of farmers.
- *Why? Reduces the risk of spread.* Chemical for sterilizing may be expensive to farmers: (one solution is to) reduce price.

- *Why? Kills pathogen.* Cumbersome and weakens tools: sensitize and give practical demonstration.

**Recommendation 4 ► REMOVE ALL MALE BUDS**

- Most easy way: inform the farmers.
- *Why? Stop spread of bacteria.* Can be done with training.
- *Why? Insects spreading the disease (denied) access to male buds.* (Suggested that there was no problem in getting farmers to adopt these) but added that need to ‘encourage farmers (to do this) through workshops and meetings.’
- *Why? Denies entry point for bacteria.* (Problem is) the poor attitude of farmers and ignorance towards bud removal, also cultural beliefs (in significance of male bud): need to sensitize and demonstrate procedure.

**Recommendation 5 ► DO NOT GIVE PLANTING MATERIAL TO NEIGHBOURS**

- Scares farmers: needs local government to impose byelaws and quarantine, or provide clean planting material.
- *Why? To control the spread of BBW.* Lose relationships with neighbours: need to provide clean planting material from outside.
- *Why? Control spread of disease.* Can (make farmers appear) selfish and (give rise to) social conflicts: need to increase awareness among neighbours.
- *Why? Limits spread through planting material.* Fear of being called mean: need to train and sensitize communities.

**Recommendation 6 ► DO NOT REPLANT THE SAME AREA UNTIL ALL DISEASED PLANTS REMOVED, & SUITABLE TIME PASSES**

- Land fragmentation may be a major problem: commit farmers’ participation towards planting alternative crops.
- *Why? To reduce the incidence of occurring of BBW.* Lack of enough land (is a problem): need to sensitize and train farmers to plant alternative crops e.g. maize.

- *Why? Stops the spread of the disease.* Land shortage (is a problem): need to diversify crop production and practice crop rotation.
- *Why? Limits the pathogen.* Lack of land in smallholdings (and priority of banana as a staple or major food: continue sensitization and introduction of alternative food crops.

### **New recommendations from groups**

USE ORGANIC MANURE (Not all farmers have access to it: continue sensitizing farmers)

ORGANIC MANAGEMENT OF PESTS AND DISEASES (expensive venture: sensitize (farmers))

CONTROLLED GRAZING ('to reduce spread of disease' – needs sensitization of people and training)

### **Comment and analysis**

My immediate response to this exercise – the first time I have done this as part of plant health course – is to wonder why it has taken me so long to ask such simple questions. The replies are revealing and though they don't suggest immediate solutions they at least clearly state the difficulties faced in getting farmers to adopt apparently sensible, simple and straightforward measures for major diseases. We do not have enough feedback from BBW efforts to reflect on what steps might be necessary to improve adoption of recommendations (or indeed to reject some as being impractical), but I hope the above information indicates the immediate problems to overcome.

There is a danger of over-analysing the responses and a temptation to point out the undoubted weaknesses in some of the answers provided. Not much detail was provided in C10 on exactly how a particular recommendation would halt the spread of the disease, with the notable exception of one group who said that removing the male buds would 'deny entry' for the bacterium. Throughout both exercises there was little imagination expressed in getting farmers to adopt particular procedures beyond 'sensitization' and 'training'. This needs further exploration and could have been explored further in a follow-up exercise or on a separate, later occasion as part of a campaign to control BBW.

The experiences with other major diseases are revealing and illuminate the problems that we will face with a campaign to control and contain BBW. There is no straightforward solution and therefore hope to offer farmers, in marked contrast to the availability of resistant varieties to combat cassava mosaic disease, for example.

My own feeling is that we under-estimate the ability of field officers/ service providers/ extension agents – call them what we will – to work with farmers in disease campaigns. This varied group does need more information about the biology and ecology of the disease but the real challenge is to see how current best practices could be promoted and adopted. Some are more straightforward than others though all require individual actions to be taken and a commitment to continue doing so as long as the threat of disease is present.

It may be too early to state that mounding and destroying is impractical and should be removed from our menu of options, or that sterilizing tools sounds fine in practice but farmers are unhappy about blunting tools or carting round unpleasant chemicals. On the other hand this is where collaborative research and an active dialogue with farmer groups will allow researchers and others to find out if the initial barriers to adoption can be overcome. A little information, joint development of techniques and wider discussions of results and implications of particular measures will show what can be done and it is important not to dismiss any of the *ex cathedra* recommendations until we have explored them further in real life situations. That is the purpose of 'participatory research'.

## Annex 5

# Where does Banana Bacterial Wilt occur in Uganda?

*prepared by Dr Eric Boa, GLOBAL PLANT CLINIC (updated September 2004)*

Originally taken from reports by Eden-Green (October 2003) and the Taskforce (November 2003), other sources were added later. It is not always clear who observed the disease or who confirmed its presence. Confirmation appears most commonly based on visual observation of symptoms. The only identified isolates of *Xanthomonas campestris* pv. *musacearum* that I am aware of are those made through the GPC.

Date of confirmation is taken as date of source/report, unless otherwise stated. BBW was first confirmed in 2001 in Mukono and there will be other examples of earlier confirmation to that shown below. No information available for districts missing from first table, but many do not have banana or insignificant production while districts in the southwest are generally reported to be free of BW. Kitgum removed from list (not important?) and Busia status unclear. See map in Section 2. A separate document lists affected sites for BBW in the Democratic Republic of the Congo but is not included in this report.

Codes used for sources:

SJEG – *report for Gatsby Foundation, October 2003*

TF – *taskforce report of November 2003 (later updated, thought without new disease outbreak information?)*

OK – *email of 15 April 2004 to ERB*

WG1 – *list of districts quoted in BBW Working Group document, 2 July 2004*

WG2 – *circular from BBW Working Group, 28 September*

### 1. Districts

LOCATION	NOTES	DISEASE STATUS	DATE
Apac	SJEG	confirmed	Oct 2003
Bugiri	WG1	confirmed	Jul 2004
Bushenyi	WG1 target district, proposed 'fire-line'.	not recorded	July 2004
Hoima	OK	confirmed	Apr 2004
Iganga	Suspected/poised to occur (SJEG). Noted by WG1	confirmed	Jul 2004
Jinja	SJEG* and TF*.	confirmed	May 2003
Kaberamaido	SJEG and TF*.	confirmed	Mar 2003
Kampala	WG2	confirmed	August 2004
Kamuli	SJEG and TF*.	confirmed	May 2003
Katakwi	Suspected/poised to occur (SJEG and WG1).	suspected/poised	July 2004
Kayunga	SJEG* and TF*.	confirmed	May 2003
Kiboga	WG1 'target district, proposed fire-line'. Noted by WG2	confirmed	August 2004
Kumi	Suspected/poised to occur (SJEG). Noted by WG1.	confirmed	July 2004
Lira	SJEG and TF* reports.	confirmed	Mar 2003
Luwero	SJEG	confirmed	Oct 2003
Masaka	WG1 target district, proposed 'fire-line'.	not recorded	July 2004
Masindi	OK	confirmed	Apr 2004
Mayunge	OK and WG1	confirmed	Apr 2004
Mbale	SJEG*, TF*	confirmed	Oct 2003
Mubende	WG1 target district, proposed 'fire-line'.	not recorded	July 2004

LOCATION	NOTES	DISEASE STATUS	DATE
Mukono	SJEG*, TF*	confirmed	Oct 2003
Nakasongola	Suspected/poised to occur (SJEG). Noted by OK	confirmed	Apr 2004
Ntungamo	WG1 target district, proposed 'fire-line'.	not recorded	July 2004
Pallisa	Suspected/poised to occur (SJEG). Noted by WG1.	confirmed	July 2004
Rakai	WG1 target district, proposed 'fire-line'.	not recorded	July 2004
Sironko	SJEG* and TF*.	confirmed	May 2003
Soroti	Suspected/poised to occur (SJEG and WG1).	suspected/poised	July 2004
Tororo	Suspected/poised to occur (SJEG and WG1).	suspected/poised	July 2004
Wakiso	WG1	confirmed	July 2004

\* sites visited by persons identified in report

## 2. Subcounties

SUB-COUNTY	DISTRICT	SOURCE	NOTES
Kayunga	?	TF	?confirmed
Budondo *	Jinja	SJEG*, TF	confirmed
Busede *	Jinja	TF	confirmed
Butagaya *	Jinja	TF	confirmed
Buwenge *	Jinja	TF	confirmed
Lwala *	Kaberamaido	TF	confirmed March 2003
Otuboi *	Kaberamaido	TF	confirmed March 2003
Bugulumbya *	Kamuli	TF	confirmed
Kisozi *	Kamuli	TF	confirmed
Mbulamuti *	Kamuli	TF	confirmed
Abako *	Lira	TF	confirmed March 2003
Acoi *	Lira	TF	confirmed March 2003
Agwata *	Lira	TF	confirmed March 2003
Amach *	Lira	TF	confirmed March 2003
Apala *	Lira	TF	confirmed March 2003
Aputi *	Lira	TF	confirmed March 2003
Awero *	Lira	TF	confirmed March 2003
Bar *	Lira	TF	confirmed March 2003
Kadekokwok *	Lira	TF	confirmed March 2003
Kangai *	Lira	TF	confirmed March 2003
Kwera *	Lira	TF	confirmed March 2003
Kamira *	Luwero	TF	confirmed August 2003
Kikyusa *	Luwero	SJEG*, TF*	confirmed August 2003
Zirobwe *	Luwero	TF	confirmed August 2003
Namamyoni *	Mukono	TF	confirmed
Ntunda *	Mukono	TF	confirmed
Buwalasi *	Sironko	TF	confirmed

### 3. Villages

VILLAGE	SUBCOUNTY	DISTRICT	SOURCE	NOTES
Nsuube	Budondo	Jinja	SJEG*	confirmed
Bugiri	Kayunga		TF*	confirmed May 2003
Kiziika	Kayunga		SJEG*	confirmed
Nakaseta	Kayunga		TF*	confirmed May 2003
Nakaziba	Kayunga		TF*	confirmed May 2003
Nawandagala	Kayunga		TF*	confirmed May 2003
Ntooke	Kayunga		TF*	confirmed May 2003
Wankyayiraki	Kayunga		TF*	confirmed May 2003
Tema	Kikyusa	Luwero	SJEG*	confirmed
Bulyanti	?	Mukono	SJEG*	confirmed
Kiwanula	?	Mukono	TF*	confirmed May 2003
Namayiba	?	Mukono	TF*	confirmed May 2003
Budadiri	?	Sironko	SJEG*	confirmed

## Annex 6

# Aims of Awareness Raising Course

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'We' refers to the facilitators who will lead the courses. These aims were drawn up before the courses were developed and finalised.

### 1. RECOGNIZE THE SYMPTOMS OF BBW

**Result:** *gain confidence in recognizing different stages of disease development; can distinguish other from other banana symptoms*

Once people start looking closely at plants for particular symptoms they have to be able to identify symptoms that are NOT the target disease. We will explore through series of practical exercises how well participants recognize general symptoms of plant diseases and their knowledge of causes. The key features of BBW will be explained and elucidated using live samples and photographs. Participants must be able to distinguish BBW from other banana problems. Part of the task is to find out exactly what these other problems are according to participants, both according to their own perceptions and those reported by farmers.

### 2. INFORMATION FLOW FROM FIELD: ACCURATE AND COMPREHENSIVE DESCRIPTION OF EVENTS CONCERNING BBW

**Result:** *effective delivery of information to ensure timely action required to contain and reduce impact of disease*

Requests for assistance and advice must be clearly expressed to help understand the nature of the problem. Good surveillance depends on accurate reporting yet accuracy and completeness of accounts is often inadequate. Groups will carry out a number of practical exercises in the field and using photo case studies to improve writing and recording skills. We will review with participants the use of forms to collect information and ask them for suggestions of the best way to submit reports. One suggestion is prepaid SMS messages (on mobile phones). Prior to the courses being run ERB and the trainers need to discuss what information will be requested on form(s).

### 3. INFORMATION FLOW TO THE FIELD: EFFECTIVE COMMUNICATION AND COLLABORATION WITH KEY PEOPLE CARRYING OUT CONTROL MEASURES

**Result:** *guidelines for control explained to farmers and farmer groups, noting and reporting initial responses to recommendations*

The course will take initial steps to help participants understand both the technical nature of the control guidelines or recommendations ('why are we doing this') and to explain some of the important features of collaborative processes. I'm sure that a substantial number of participants will already have good experience of working with farmers and we will make best use of this in a series of short exercises and discussions.

## Annex 7

### Going Public outline and guidelines

*Prepared 30 March 2004 prior to Kamus Corner market where we tried out GP for the first time.*

#### *Background*

This is a major new method for getting in touch with farmers – the intended beneficiaries of much of our efforts. How exactly do we contact the tens if not hundreds of thousands of people who grow bananas and are involved in the banana industry? Mass media can be very effective at conveying messages but the flow of information is essentially one way. We need more direct contact with significant numbers of farmers to know what they are doing and how successful it is. We also need to know why they are doing things, amplifying success stories where adoption of control recommendations has occurred and learning from experiences where (as often appears to be the case) the success is much less than anticipated.

Trying to visit farmers one by one is impossible. It is time consuming and very costly. Organising meetings or working through various forums – such as farmer groups – can be very useful but relies on good cooperation and organisation. Ultimately if this approach is to be successful then those attending the meetings or represented in the groups need to pass on the messages to their friends and neighbours. There is only limited evidence to suggest that this downward diffusion is effective.

#### *Not another 'new' method ...*

Eric Boa, Jeff Bentley and Paul Van Mele, working on a number of CABI Bioscience projects, have come up with a simple method called going public which aims to supplement and complement other information and knowledge exchange methods. Is going public new? Not really – others have used similar approaches to contact large numbers of people.. The difference with going public is more to do with the emphasis on assuming little in advance, working with existing meeting

places (usually markets, though we've also used one bus stop and are eager to try church-going groups in Uganda) and placing the onus on researchers, extension agents and similar people to be interesting and engaging.

When we analyse other means of contacting farmers, we often find that they are asked to attend meetings or to come to a scheduled event. going public differs in that the 'meeting' is in fact an ad hoc event set up in a public place (e.g. the market) where a simple message or pieces of information are conveyed in an interesting and lively manner over a matter of hours. We judge the 'interesting and lively manner' by the number of people who stop to listen and become interested in the stall where a particular topic is being explained.

#### *Bananas and Going Public*

Now to the nitty-gritty of what happens. Firstly, a small team of people knowledgeable about an issue (in our case BBW) identify a place and a time where relatively large numbers of people have already congregated for some purpose. Let us assume that this is a market. Will all the people attending be farmers? We don't know initially, though we certainly hope to capture a sizeable audience of people who grow bamboo or even trade in it. There is therefore an element of chance in who will be present, though experiences in other countries repeatedly encounter significant numbers of growers and agriculturalists.

Before you set up the 'stall' (more about this later) you have to get permission to work in the market. Although this is best done in advance, an unannounced arrival at a market can be smoothed by asking a local agricultural officer or similar to accompany you. This person should be pre-briefed about the initiative – Going Public benefits from advance planning

as much as any other initiative, though we aim to keep this to a minimum.

What next? You need to find a small space in the market at which to display your wares. Can you borrow a table or use some natural surface for displaying posters, leaflets and showing plant material? Try to find an elevated spot so that people can clearly see, but if all else fails use a blanket on the ground. What are you going to ‘show and tell’? For BBW we might have handouts for people to take away. We should certainly have posters, either official or hand-drawn, to adorn our stall. Collect plant material to show key features of the disease and be aware that people might accuse you of introducing the disease to an area – researchers and foreigners are often maligned as active spreaders of diseases.

So ensure that the material comes from a nearby place, to avoid any criticism. If in doubt, use only photographs to make your points about symptoms or some other feature of BBW. Having done all this, people will not simply stop and listen. The sounds, sights and smells of a market are constantly luring people to new places. You need to announce your presence. Gently call out to passers by. You need to work in teams of at least two and preferably three people. One attends the stall, answering questions and presenting information. He or she can also call for peoples’ attention – ‘Excuse me my fine man, but are you interested in bananas?’ – while a roving person can attempt to draw people into the stall.

### *Be prepared*

The role of the remaining person is vital to the process and success of Going Public. Someone needs to make notes about what people ask, or information they offer. Perhaps someone has seen BBW many years ago – or so they claim. What is their name? Where do they live? Remember that you’re not only passing on information but using the opportunity to learn things. You need to write down key information and, ultimately, see how you or the local Agricultural Field Officer can respond. Maybe one community has a particularly

serious BBW problem, or believes they have the disease. Can you arrange to visit them sometime soon to follow-up?

Remember to listen and respond, not to lecture. going public is different in tone and emphasis to agricultural fairs where useful exchanges with growers do occur but in rather a formal setting. And the people who attend fairs represent a limited cross-section of the farming community.

As a general guide, a going public session might last two to three hours. It all depends on the particular market and timing of your visit. How many people might you expect? It has ranged in other places from over 100 to around 25 people. Large numbers of people who stop to listen – however briefly – is an encouraging sign, but fruitful discussions with five to 10 farmers is still a good ‘result’. How long would it take to visit them individually – assuming you knew where they lived and could arrange a suitable time to visit?

If possible, wear distinctive clothing. Print a slip beforehand with your name, where you work and how to contact you. Hand these out liberally, much as you would do if attempting to advertize a new product. Going Public is exciting and useful if you understand what it sets out to do.

### *Get your hands dirty*

The best way of learning is to do a session and then to reflect quickly afterwards on what happened. Much as the courses help you learn and inform at the same time, a few hours in a market will help you understand more about the challenges we face with BBW while suggesting how we can solve them.

Finally, don’t be afraid to express your concerns or doubts about going public. It may not be a suitable vehicle for raising awareness or instructing people on control options. If so, be prepared to suggest improvements or come up with another method that is quick, cheap and exciting!

**Eric Boa, Mbale**

## Annex 8

### Schedule of BBW Courses from March to May 2004

The first course was a dry run for the material, testing out new ideas. The second course was the first opportunity for me (ERB) to observe the facilitators in action. Courses 3 to 10 were all organised and delivered locally using three pairs of facilitators, one each from NARO and MAAIF.

A total of 23 districts and 199 people have been trained in the two month period from setting up the course to completing this schedule.

EVENT	DATE	LED BY	TARGET DISTRICTS
Course development and training of trainers	22-23 March	Eric Boa	All
<i>Course 1</i> <b>Mukono ARDC</b> 23 people	25-26 March	Eric Boa with local facilitators	Mukono and Kayunga
<i>Course 2.</i> <b>Mbale town</b> 16 people	29-30 March	Local facilitators with Eric Boa	Mbale and Sironko
<i>Course 3</i> <b>Kachumbala</b> 20 people	10-11 May	pair X	Kumi and Kapchorwa
<i>Course 4</i> <b>Mbale town</b> 20 people	10-11 May	pair X	Tororo, Busia and Bugiri (and DATICs)
<i>Course 5</i> <b>Mbale town</b> 20 people	10-11 May	pair X	Kaberaido and Soroti
<i>Course 6</i> <b>Lira</b> 20 people	20-21 May	pair X	Apac and Lira
<i>Course 7</i> <b>Masindi</b> 20 people	24-25. May	pair X	Nakasongola, Masindi and Hoima
<i>Course 8</i> <b>Mukono ARDC</b> 20 people	24-25. May	pair X	Luwero and Wakiso
<i>Course 9</i> <b>Busembatia</b> 20 people	24-25. May	pair X	Pallisa, Iganga, and Mayunge (and DATICs)
<i>Course 10</i> <b>Busembatia</b> 20 people	20-21. May	pair X	Jinja and Kamuli (also HASP, DFA, DATICs)

Names of pairs to be confirmed.

## Annex 9

### Differential diagnosis of BBW

*Developed for the Mbale course with NARO and MAIFF staff and given to each participant as a handout*

It is not enough to know the symptoms of one disease. You must be able to tell the difference between other diseases. BBW is most similar to Fusarium wilt. Note the comments about the ‘feel’ of plant parts, or indeed smells and other sensations (even taste!) which may be helpful in telling diseases apart. Even once you have grasped the key features and differences, as summarised in this scheme, you will still encounter instances where symptoms prove tricky to resolve. In theory you could send samples for analysis, but in practice this is rarely possible. Remember that different people will interpret disease features in different ways and that their ability to detect some features will also vary.

	Banana Bacterial Wilt KEY FEATURES		Fusarium Wilt KEY FEATURES
LEAVES	<ul style="list-style-type: none"> <li>Dull yellow coloration which develops throughout whole leaf</li> <li>Sudden death of leaves, sometimes at random, sometimes starting with youngest</li> <li>Appears as if fire has passed over blade; easy to crush without tearing</li> <li>Wilted leaves have distinctive folded and limp appearance</li> </ul>	LEAVES	<ul style="list-style-type: none"> <li>Deep yellow coloration, similar to normal senescence of leaves</li> <li>Slow death of leaves, beginning with oldest; steady decline to complete death of plant</li> <li>Affected leaves tear when crushed and have ‘crisper’ feel</li> </ul>
<p><b>LEAVES SUMMARY</b> <i>BBW has a different pattern of symptom development; the yellowing is both more general and duller compared to FW. BBW wilt is more rapid and indicates a sudden loss of internal pressure. Wilting in FW is more distinct and begins with the oldest and not youngest leaves.</i></p>			
FLOWER STALK or AXIS	<ul style="list-style-type: none"> <li>Sections of male bud (bracts) begin to wilt (NB yellowing or wilting of leaves not present)</li> <li>Male bud rots and stays on plant</li> <li>The flower stalk changes colour; orange/yellow blockages of vessels can be seen and after 5-10 minutes an ooze is produced</li> </ul>	FLOWER STALK or AXIS	<ul style="list-style-type: none"> <li>Bracts of male bud remain unaffected</li> <li>the flower stalk remains healthy; no internal staining</li> </ul>
<p><b>FLOWER STALK SUMMARY</b> <i>The shrivelling of the male bud and premature ripening of fruit are highly distinctive, diagnostic features of BBW. However, some plants have typical leaf symptoms but no fruit bunches; infection has come from using infected tools or suckers that already carried the bacterium.</i></p>			
FRUIT	<ul style="list-style-type: none"> <li>Premature ripening of fingers which rot and stay on stalk</li> <li>No change in bunch size, numbers of fingers or size</li> <li>Internal staining of fingers ranging from black to brown and some yellowing; become hard and pulpy</li> </ul>	FRUIT	<ul style="list-style-type: none"> <li>Remain green – do not ripen</li> <li>Bunch size normal but finger size slightly reduced</li> <li>No internal staining of fingers</li> </ul>
<p><b>FRUIT SUMMARY</b> <i>Premature ripening is distinctive in BBW and the internal staining, though of variable colour, is absent in FW. Note the reduced size of fingers in FW only.</i></p>			
PSEUDO-STEM	<ul style="list-style-type: none"> <li>Splitting at base of pseudostem occurs – occasional and irregular</li> <li>Internally, blockages in xylem vessels can be seen in centre of pseudostem. Yellow coloration also visible. Yellow/orange colour seen more clearly after cutting</li> <li>Once cut, bacterial ooze will appear after about 10 minutes</li> </ul>	PSEUDO-STEM	<ul style="list-style-type: none"> <li>Stem splitting at base and buckling of leaf bases (banana plant ‘spreads’ out more), especially at advanced stages of disease</li> <li>Internally there is a distinctive purplish/red/brown staining, does not change colour over time</li> <li>Whitish powder at base, especially on young suckers</li> </ul>
<p><b>PSEUDOSTEM SUMMARY</b> <i>Dark staining of FW in rings and along pseudostem is characteristic.</i></p>			