



## Rapid Survey of Farmer Satisfaction in Five Plantwise Countries

Frances Williams, Abdillahi Alawy and Solveig Danielsen

September 2015

Plantwise is supported by



Ministry of Foreign Affairs of the Netherlands



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC



Ministry of Agriculture, People's Republic of China

## Contents

Introduction .....	4
Methods .....	4
Survey Results.....	5
The Plant Clinic Visit .....	6
Advice Received .....	8
Benefits and Value .....	10
Discussions and Recommendations .....	14
Conclusions .....	20
Appendix 1 Rapid survey on farmers' satisfaction .....	21
Appendix 2 Farmers' quotes .....	22

## Introduction

Plantwise has now been running for approximately four years, although that does vary between countries. A need was identified to find out what farmers thought about the service being provided, and their level of satisfaction with the service. Due to the timescales involved a decision was made to carry out a telephone survey to collect this information from plant clinic clients. A further study will be carried out that will follow on from this work in more depth, and will also interview farmers who have never visited plant clinics. The current work focused on farmers who had visited a plant clinic and received advice from a plant doctor.

In order to select which countries to include in the survey an initial review of the current POMS data was undertaken to ascertain how many records there were per country and of those records how many included farmer phone numbers. This review quickly limited the possible survey countries to Pakistan, Sri Lanka, Ghana, Malawi and Kenya. Due to potential study fatigue in Kenya it was decided to test the questionnaire there, rather than carry out the full survey. Honduras, Bolivia and Nicaragua were added to the survey at a later date once a method of obtaining farmer phone numbers had been obtained. These results will be added at a later date to allow for a comparison between all three Plantwise regions.

## Methods

The first step taken was to download the POMS data for each country from January 2014 to April 2015. These data were then sorted into separate lists for male, female and unknown farmers. As farmers may have made more than one plant clinic visit, the data were ordered by phone number and date and a manual check of all repeated phone numbers was carried out. If there was a different name against the same phone number all the records were retained. If there was the same name but different dates, the older record (as people will generally remember their most recent visit) was hidden, not deleted. The records in each list were randomly ordered, and farmers were phoned in the order on these lists to provide the random selection for the telephone interviews.

A questionnaire was designed and a pilot study of was carried out in Kenya with 60 randomly selected farmers (as above). Adjustments were made to some of the multiple answer options after the pilot study to reflect the most common choices made by the farmers. The final questionnaire is included in Appendix 1 and was designed with closed questions to reduce response time. Two consultancy firms were contracted to carry out the telephone interviews, one based in Kenya and the other in Pakistan.

A minimum of 250 farmers were targeted per country, with equal numbers of men and women if possible. The questionnaire was translated into local languages to ensure ease of understanding by the farmers. Enumerators were trained and minor adjustments made to the translated versions to ensure a common understanding of the questions being asked. The randomised lists were used to call the farmers with unanswered numbers being called up to three times to try to ensure inclusion of that farmer. Data collection was carried out in June 2015.

## Quality Assurance

To ensure the validity of the results a number of quality assurance procedures were undertaken. During data entry and cleaning any queries were checked with the enumerators and any comments made by farmers during the interviews were recorded. Sound and script recordings of the interviews were made and reviewed by the supervisors to confirm the consistency of the information provided. The checks were carried out randomly but interviews carried out by all the enumerators were checked. Feedback was provided daily to review and improve the data collection process. In addition daily data checks identified data outliers and enumerators were requested on occasion to phone the farmer again to check the data provided.

This report summaries and analyses all the findings from both survey firms and makes recommendations for any actions necessary to respond to the findings.

## Survey Results

The questions in the survey fell into 3 broad areas: 1) questions about the plant clinic visit; 2) questions about the advice provided; and 3) questions about the benefits obtained from and value placed on the plant clinic by farmers. The numbers interviewed in each country varied from 109 to 299 farmers (Table 1). The target was not reached in three countries, due to a number of challenges with reaching farmers by phone. There were also challenges in reaching equal numbers of female and male farmers even though the male and female farmer lists for each country were used. (Male farmers where not phoned first for instance.)

**Table 1: Numbers of farmers interviewed**

	Ghana	Malawi	Pakistan	Rwanda	Sri Lanka	Total
Female	24	36	0	32	93	185
Male	118	71	263	79	206	737
Total	142	107	263	111	299	922

As a cross check on the validity of the data the farmers were asked which crop they brought to the plant clinic on their most recent visit. These data were compared to the information in POMS to confirm whether the farmers were able to remember that visit accurately (Table 2).

**Table 2: Percentage of matches between reported and recorded crops**

	Ghana	Malawi	Pakistan	Rwanda	Sri Lanka	Average
Female	17%	47%	n/a	44%	94%	50%
Male	39%	52%	62%	52%	93%	60%

## The Plant Clinic Visit

Levels of satisfaction with the plant clinic visit were obtained through questions 1-8, although question 1 concerning the number of clinic visits could also be related to persistent crop problems or the advice provided the first time not addressing the problem rather than satisfaction with clinic services. However, other results in this section indicate that the reasons for repeat visits were more likely to be due to satisfaction with the service rather than advice not addressing the farmer's problem. (Selected farmers' narrative is included in Appendix 2.)

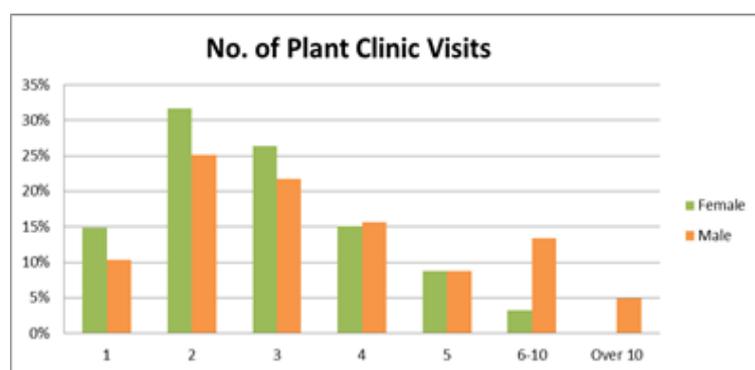


Figure 1: Number of times female and male farmers have visited a plant clinic

58% of female farmers and 47% of farmers made 2 or 3 clinic visits (Fig. 1). There was more variation between countries, with 68% of all farmers in Sri Lanka visiting the clinic twice or three times. In Ghana this figure dropped to 31% but a further 23% of farmers visited 6 – 10 times (Table 3).

Table 3: Number of times farmers have visited a plant clinic

No. of Plant Clinic Visits	Ghana	Malawi	Pakistan	Rwanda	Sri Lanka
1	5%	8%	9%	10%	20%
2	14%	22%	26%	27%	39%
3	17%	19%	25%	19%	28%
4	17%	13%	25%	14%	6%
5	14%	18%	5%	12%	2%
6-10	23%	13%	10%	9%	5%
Over 10	10%	7%	0%	9%	0%

95% of female farmers and 94% of male farmers were satisfied with the overall service received at the plant clinic, and although satisfaction levels were above 90% in all countries

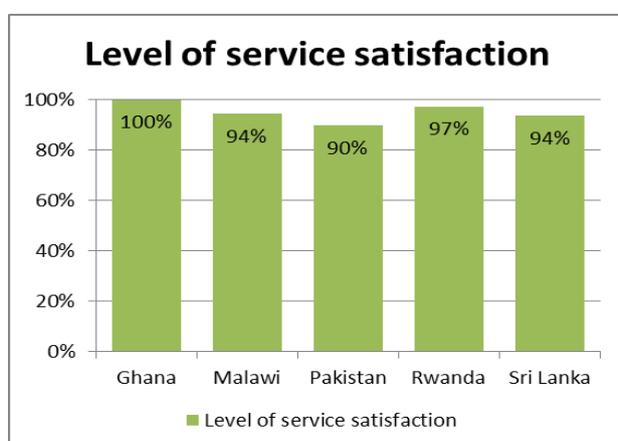


Figure 2: Numbers of farmers satisfied with the plant clinic service

there was variation with Pakistan showing the lowest levels at 90% and Ghana reporting that every plant clinic client was satisfied with the service they received (Fig. 2). Those who were not satisfied with the plant clinic services in Rwanda, Malawi and Ghana stated this was because the information received from the plant doctors was not very helpful, and that the chemicals they were advised to buy were not effective. The high level of stated satisfaction is reinforced by 95% of all farmers (both men and women) stating

they would visit a plant clinic again. Again Pakistan reported the lowest level with 91% of farmers stating they would return to a plant clinic and 99% of farmers in Malawi and Ghana stating they would attend a clinic again. When questioned farmers in Pakistan and Sri Lanka stated there was a need for plant doctors to be more knowledgeable about the whole range of crops that the farmers bring, so they can cater for the diverse needs of the farmers. Farmers in those countries also stated that they would like demonstrations from the plant doctors to increase their understanding of different pests, diseases and the possible solutions to pest attacks.

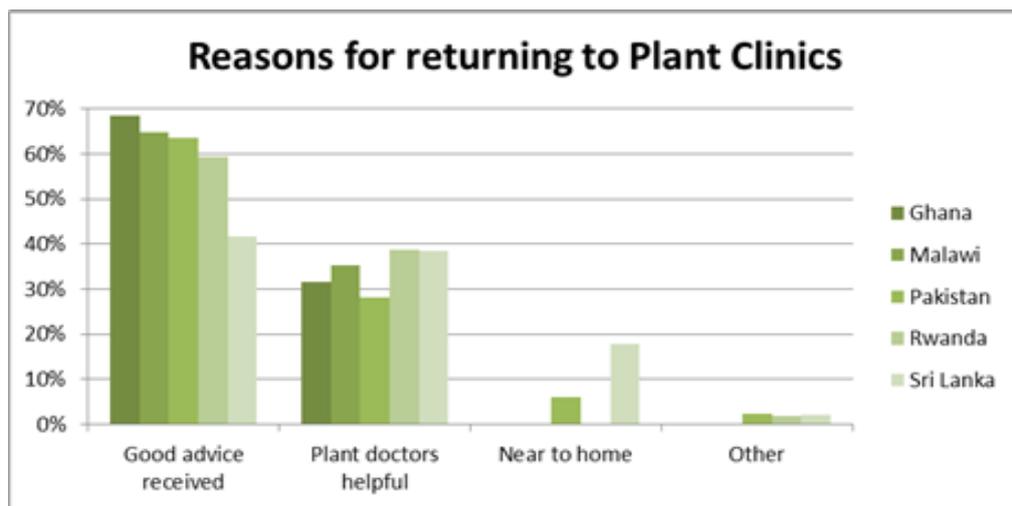


Figure 3: Stated reasons farmers return to Plant Clinics

The majority of respondents stated that receiving good advice and the helpfulness of the plant doctors were the main reasons that they would attend a plant clinic again (Fig. 3). Plant doctors' friendly and cooperative attitude was mentioned in particular. 52% of female farmers mentioned the quality of advice received and a further 29% stated that the plant doctors were helpful. Women farmers were also concerned about accessibility in Sri Lanka where 28% mentioned that they would return to the plant clinic as it was near to home. 55% of male farmers stated they received good advice and a further 36% mentioned the helpfulness of the plant doctors. In addition farmers in Pakistan and Sri Lanka stated that they would visit clinics again to update their knowledge. Of the small numbers of farmers who stated they will not visit plant clinics again, the most common reason was that the

Table 4: Reasons for not visiting a plant clinic again

Reason	Total number (n=924)
Advice not helpful	31
Plant doctors not helpful	15
Plant clinic too far	7
Other	4

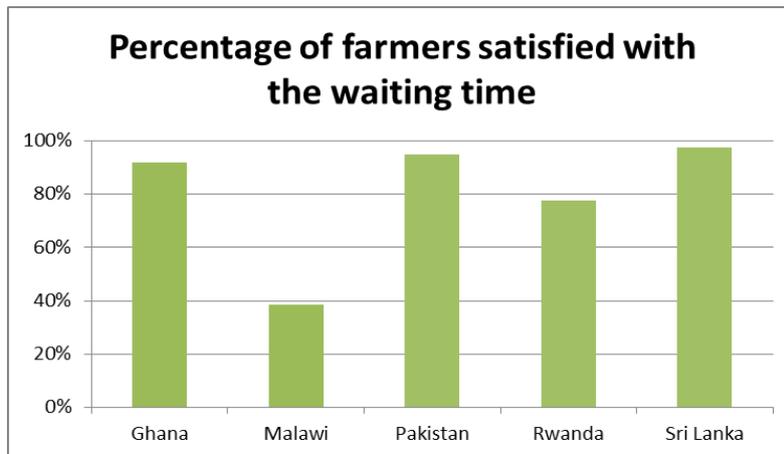
advice provided was not useful or that the plant doctors were not helpful (Table 4).

Satisfaction levels related to the plant doctor's knowledge was over 90% in all countries and for both female and male farmers, with Rwanda having the lowest satisfaction at 93%. The level of understanding of the terms and language used by plant doctors was also high, with over 95% of female and male farmers in all countries stating they understood the plant doctors. There was more variability in the satisfaction with waiting time

at plant clinics however (Table 5), with farmers in Malawi reporting a satisfaction level of 38% not only due to the time it took to receive services at the clinic but also because the plant doctors were not always available as the plant clinics only run on specific days. Ghana and Pakistan still reported levels over 80% (Fig. 4).

**Table 5: Numbers of farmers dissatisfied with aspects of plant clinic service**

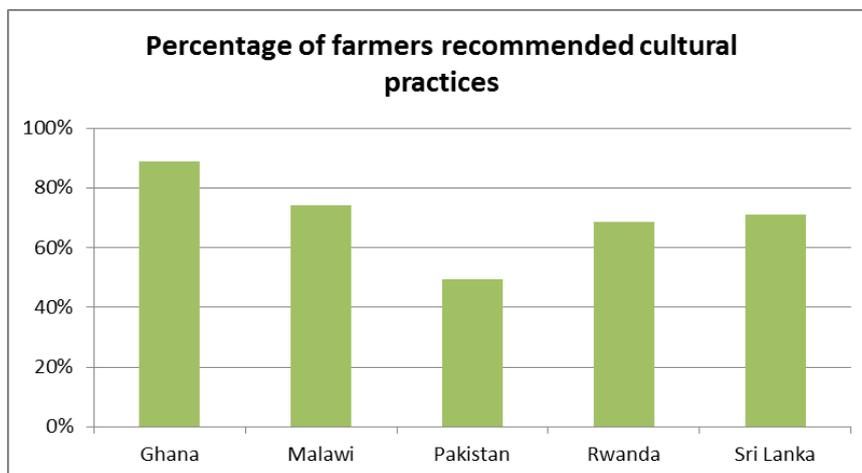
Reason	Total Number (n=924)
Waiting time	158
Plant doctor knowledge	37
Understanding of language and terms used	27



**Figure 1: Plant clinic waiting time satisfaction. Overall: Female 82%; Male 85%**

### Advice Received

Questions 9-16 asked farmers about the advice they received from the plant clinic, whether or not they applied the advice and the reasons for their decisions. There was some variation in the percentages of farmers who were recommended chemicals with 79% of female farmers receiving a chemical recommendation, but 89% of male farmers.

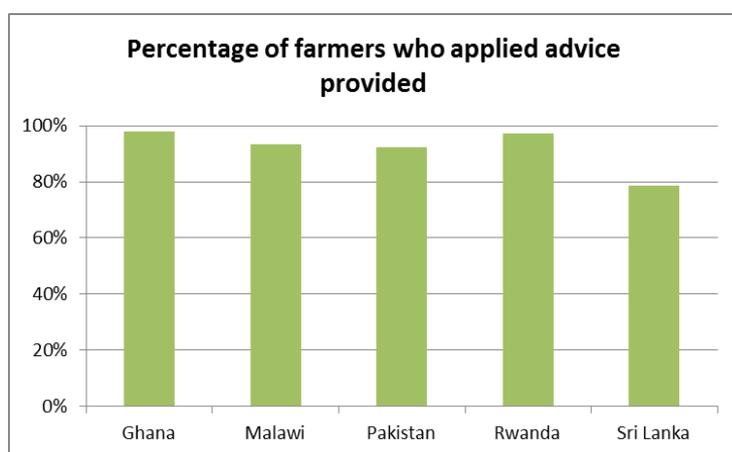


**Figure 2: Percentages of farmers who were recommended cultural practices. Overall: Female 66%; Male 68%**

In Sri Lanka and Malawi only 76% and 78% of farmers, respectively, said they received a chemical recommendation, while in Ghana and Pakistan 96% and 97% of farmers, respectively, were recommended chemicals. Farmers in Pakistan and Sri Lanka did state however, that the chemicals that were recommended were too expensive for them to buy and they often asked for alternative, more cost effective recommendations when talking to the plant doctors.

There was more variation between countries in the numbers of farmers who were recommended cultural practices (Fig. 5). Less than 50% of farmers in Pakistan received cultural recommendations but 89% received them in Ghana. There was little variation in the recommendation of cultural practices between male and female farmers. The most common cultural practices mentioned in Pakistan were resistant varieties and crop rotation while in Sri Lanka homemade applications and manure/crop residues were recommended the most often. In Rwanda and Malawi crop rotation was recommended most, while in Ghana the most common recommended practice was the use of manure or crop residues.

As the advice recommended by plant doctors should be the best advice available, of more interest is whether the farmers were satisfied with the advice given for their crop problem and whether that advice was applied. 90% of female and 93% of male farmers were satisfied with the advice, though there was variability between countries where only 87% of Sri Lankan farmers stated they were satisfied while 100% of Ghanaian farmers were. Of those farmers who were not satisfied with the advice, the main reason specified was that the advice was not practical, while other farmers commented that the advice was not clear, or was not an easy solution to the problem as the recommendation was too expensive.



**Figure 3: Percentage of farmers who followed the recommendations provided. Overall: Female 84%; Male 91%.**

Even when farmers were satisfied with the advice it did not mean that they necessarily applied the advice. The percentages of those who applied the advice were lower than those who were satisfied, with only 84% of women farmers applying the advice, 6% less than were satisfied (Fig. 6). The percentage of male farmers applying the advice was only 2% lower, with the greatest difference between satisfaction and application being in Sri Lanka with an 8% lower application rate. In Rwanda 97% of farmers applied the advice even though only 94% were satisfied with it. The main reason that men did not apply the advice was that they thought the advice did not answer the problem or that there was a better way to solve the problem (Table 6). Female farmers also cited this as a frequent reason for not applying the advice together with the advice being too expensive. The sample size of those not applying

the advice was too small in any country apart from Sri Lanka to analyse. Women farmers there stated that the advice was too costly, and that they were aware of alternative ways of managing the problem. Their male counterparts listed other reasons for not applying the advice including seeking advice too late, the short duration of the crop cycle, lack of sufficient water etc. They did state that they might use the advice in future seasons however.

**Table 6: Reasons for dissatisfaction or not applying the advice**

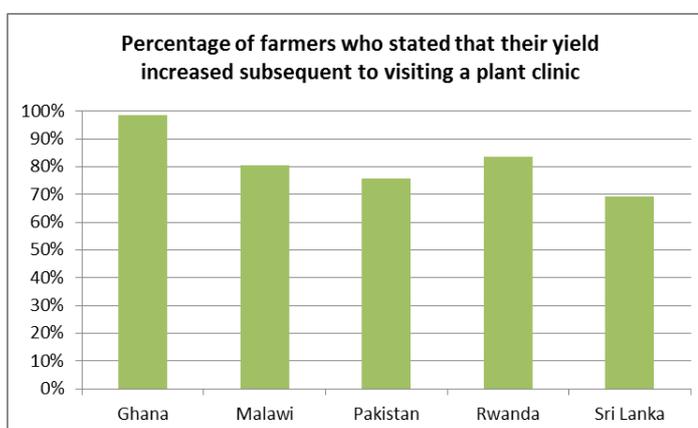
Reason for dissatisfaction with advice	Total numbers (n=924)	Reason for not applying advice	Total numbers (n=924)
Advice unclear	6	Didn't have right equipment	11
Advice not practical	19	Didn't know where to get the product	11
Advice too expensive	9	Too costly	16
		Advice did not answer problem/ better ways to solve problem	21
Other	25	Other	24

## Benefits and Value

The final set of questions asked farmers about what benefits they had gained from attending a plant clinic and what value they placed on the service.

### Yield

The majority of farmers stated that their yields had increased as a result of visiting a plant clinic, though again there was considerable variation between countries (Fig. 7). 69% of Sri Lankan farmers reported a yield increase while 99% of Ghanaian farmers reported the same. There was less variation between male and female farmers with rates of 79% and 76% reported yield increases respectively.



**Figure 4: Yield increases after visiting a Plant Clinic. Overall: Female 76%; Male 79%**

Of the increases that were reported, farmers were also asked if they attributed this increase to their plant clinic visit and if so to what extent. The Sri Lankan results were again the least positive with a total of 26% of farmers attributing their yield increases fully or mainly due to their plant clinic visit (Fig 8). However 90% of Ghanaian farmers stated that their yield increases were fully or mainly due to the clinic visit. 55% of female farmers and 63% of male farmers agreed with that statement. One of the reasons by those who did not increase their yield is the use of poor quality seed. They stated that this was one of the main causes of yield loss, but the prescribed varieties were not easily available. Farmers in both Sri Lanka and Pakistan suggested that plant clinics could become involved in seed provision. Other

reasons mentioned by farmers in Pakistan and Sri Lanka who did not attribute their yield increases to the plant clinic visit included favourable climatic conditions including sufficient rainfall and water.

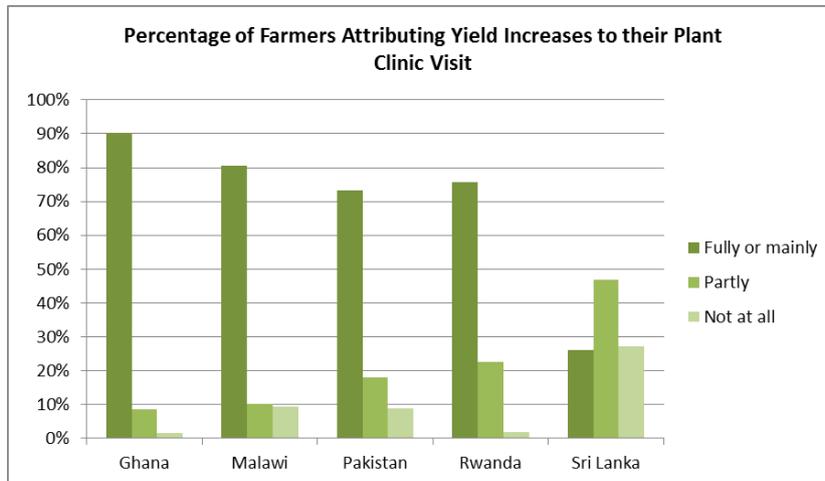


Figure 5: Yield increases due to plant clinic visit

Farmers were also asked to state their yield before and after the plant clinic visit. As this information was provided in a variety of different units the percentage yield increase was calculated for each farmer. Some farmers reported a decrease in yield and there was also a great range of yield increases reported. Grouping the percentage increases again demonstrated the variation between countries.

Rwanda reported that 83% of farmers had obtained yield increases of over 50% while 60% of Malawian farmers reported the same (Fig. 9). However in Pakistan 79% of farmers stated that their yield had not changed. There were no female farmers interviewed in Pakistan as only 11 female farmers were recorded in the POMS data, none of whom were reached by telephone. Therefore the percentage of male farmers from Pakistan reporting no yield increase has led to a split where 37% of male farmers reported no increase in yield and 34% reported an over 50% increase, mainly male farmers from the other survey countries, especially Rwanda.

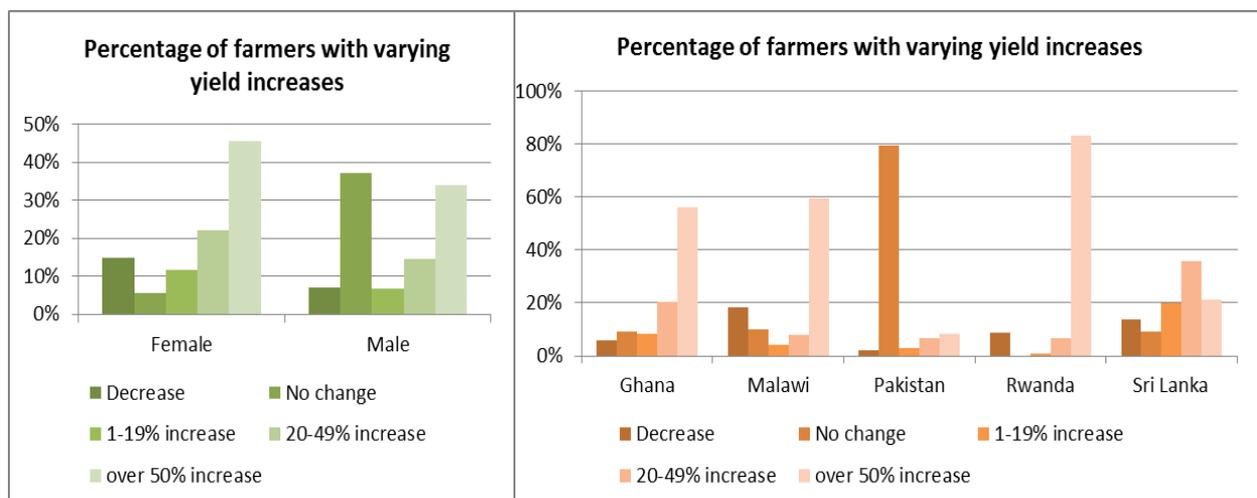
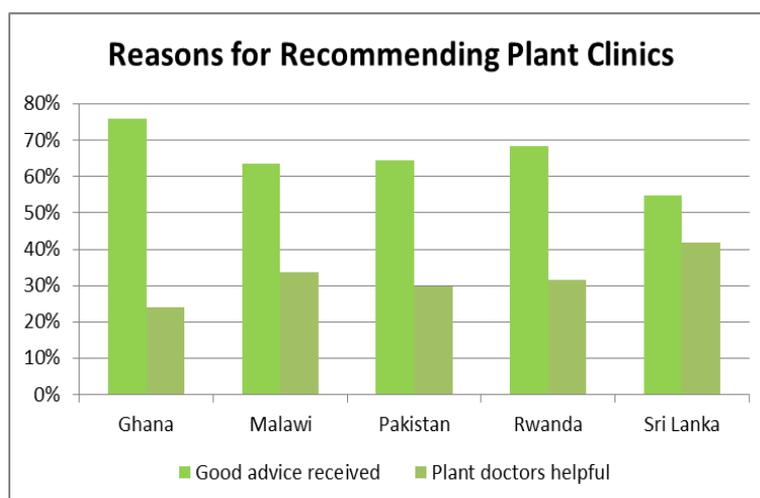


Figure 6: Yield increases after plant clinic visits

## Recommendations and Advice Sharing

Farmers were asked if they would recommend plant clinics to others, if so why and how many people they had already recommended plant clinics to. 93% of female and 94% of male farmers stated they would recommend clinics and 95% or over of all farmers in Ghana, Malawi and Rwanda would do the same. Pakistan had a lower percentage with 87% of farmers agreeing that they would recommend the clinics. The main reasons for recommending plant clinics for all countries and male and female farmers were that good advice is received, and that the plant doctors are helpful (Fig. 10).



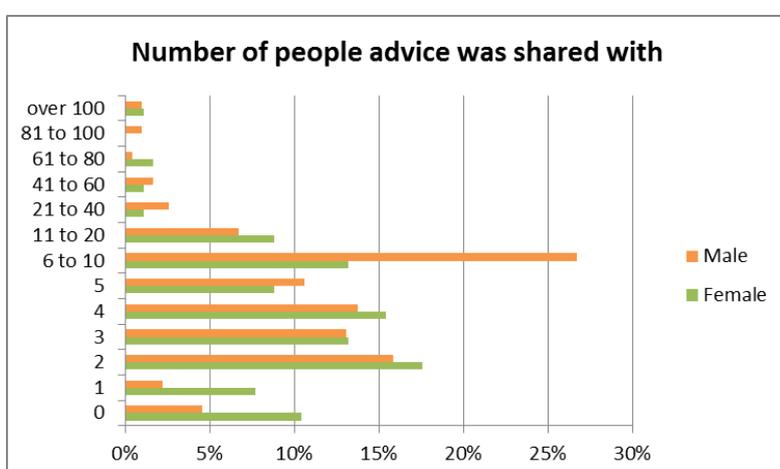
**Figure 7: Stated reasons for recommending plant clinics to others**

The 'excellent quality of advice' was stated mentioned by farmers in Pakistan and Sri Lanka. Only in Pakistan and Sri Lanka were there sufficient numbers of farmers who would not recommend plant clinics to analyse the reasons why not. The most common reason for a lack of recommendation in both countries was that the advice was not helpful (Table 7).

**Table 7: Reasons for not recommending plant clinics**

Reason	Total Numbers (n=922)
Advice not helpful	42
Plant doctors not helpful	8
Plant clinic is too far	1
Other	5

There was great variation in the number of people who farmers told about the advice received at the plant clinics but grouping the results by the number of people told allows percentages of farmers in each group to be calculated.



**Figure 8: Numbers of farmers that advice was shared with**

Although in some instances farmers shared the advice received with a great many farmers, in most instances the advice was shared with between one and five farmers. Female farmers shared the advice with five other people on average (median) (Fig. 11). Male farmers shared with four other people (median).

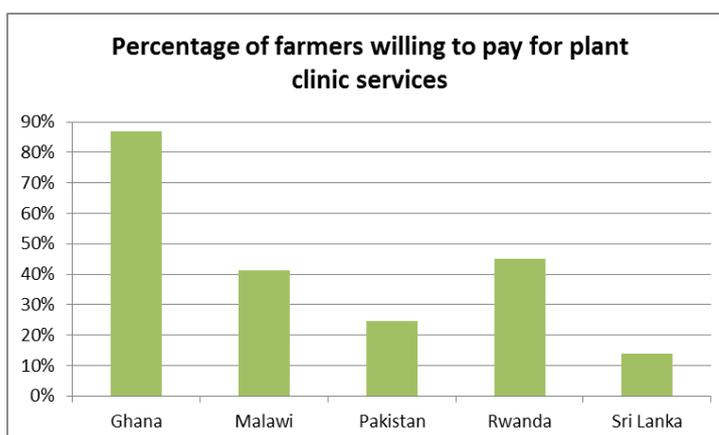
Variations between countries meant that in Sri Lanka advice was shared with, on average (median) three people, up to an average of 7 people in Ghana and 8 people in Rwanda.

### Willingness to Pay

Finally farmers were asked if they were willing to pay for plant clinic services and if so, how much. 87% of farmers in Ghana were willing to pay, while in Pakistan and Sri Lanka only 25% and 14% respectively were willing to pay (Figure 12). There was little variation between male and female farmers' responses at 32% and 29% respectively. Those who were not willing to pay said that they imagined that the cost would be very high and unaffordable for farmers with low income levels.

Of those who were willing to pay the average price farmers were prepared to pay was \$1.66. Women farmers were prepared to pay slightly more at \$1.96 (Table 8) which was the same average as all farmers in Ghana. In Pakistan those that were willing to pay would

pay an average of \$3.11 while in Sri Lanka they would only be prepared to pay \$0.51. In Sri Lanka and Pakistan 27% of farmers were unsure how much they would be willing to pay. In these two countries farmers stated that they were willing to pay because of the contribution to resolving their crop problems, the increased yields and visible improvement in crop quality. They also stated that they would pay for other services such as soil and water testing and in-field crop inspections. In Ghana, Rwanda and Malawi the farmers that said they were willing to pay over \$10 because the advice they receive from the plant clinics is much more valuable than they can afford to pay themselves.



**Figure 12: Willingness of farmers to pay for plant clinic services. Overall: Female 29%; Male 32%**

**Table 8: Amounts farmers are willing to pay for plant clinic services**

	Female	Male	Ghana	Malawi	Pakistan	Rwanda	Sri Lanka
Amount	\$1.96	\$1.66	\$1.96	\$1.49	\$3.11	\$1.09	\$0.51

# Discussions and Recommendations

## High Levels of Satisfaction

Overall the level of satisfaction with plant clinic services reported by male and female farmers in all survey countries was very high. The farmers were of the opinion that plant clinics were very helpful, that the plant doctors were very knowledgeable and professional and that the advice given did result in an increased yield for them.

A total of 924 farmers were interviewed by telephone from the five survey countries. Overall satisfaction levels reached 94% across all countries, with satisfaction with plant doctor knowledge at 96%, and farmers' understanding of the language and terms used at 97%. 95% of farmers would attend a plant clinic again. 92% of farmers were satisfied with the advice they received and 89% of them applied the advice. 79% of farmers stated that their yield had increase after visiting a plant clinic, of which 66% attributed this increase entirely or mainly to their plant clinic visit. 94% of farmers recommended plant clinics to others, and the fact that the advice was widely shared provides further evidence of the farmers' satisfaction as people do not share bad advice. There was wide variation in the number of people that the advice was shared with, but most people shared the information with four other people. This provides concrete evidence of how widely information provided through plant clinics gets shared, and suggests that the reach of plant clinics is four times greater than the numbers of farmers attending the clinic in person.

## Yield Increases

79% of farmers stated that their yield had increased after visiting a plant clinic and of those farmers, 61% said that the yield increase was fully or mainly due to the visit. However when asked how much their yield had changed, 40% of farmers gave figures that demonstrated either no change or a decrease in yield. This contradictory information reflects some positive response bias (see below) but can also be attributed to the many different factors that affect crop yield, from availability of water, nutrients, other pest outbreaks, different fields being planted etc. In particular farmers mentioned that they had not experienced any yield increases due to heavy rains ruining the crops (see Appendix 2) or that they had not applied the advice yet, but would do so in the next cropping season.

## Willingness to Pay

There was considerable variability between countries on the numbers of farmers who would be willing to pay for plant clinic services, as well as between farmers on the amount they would be willing to pay. Many farmers stated that they would not be willing to pay for the services as the cost would be more than they could afford. However other farmers stated they would be willing to pay up to \$34 per visit as the advice they received was far important that any costs they would incur. However in total only 31% of farmers were willing to pay for services, and they were only willing to pay \$1.66 per visit. Given that the cost of running one clinic is far more than that, and even if the cost of the clinic were spread between all the farmers attending, it is still unlikely that farmers would be prepared to cover the costs of running a plant clinic. Therefore it is likely that plant clinics should continue to be viewed as a public good, and part of government extension delivery. However in order to justify this

decision the economic cost and benefit of running a single plant clinic session should be established in a number of countries. A comparison could then be made between the cost of the clinic and the amount of money farmers would be prepared to pay, taking into account the number of farmers that attend any one clinic session.

## **Areas for Improvement**

While the results of this survey were very positive overall, there were still some areas where farmers expressed dissatisfaction with the service provided, and made suggestions about where improvements could be made.

### **Advice Given**

8% of farmers were not satisfied with the advice that they received, stating that the advice was not practical or it was too expensive. Therefore they did not apply the advice. Other farmers stated that the chemicals or other recommended practices they applied did not work, or that they knew better ways to solve the problem themselves, especially through many years' farming knowledge. Therefore it seems that the main issue with being dissatisfied with the advice, or not applying it, is the affordability of chemical recommendations as expensive chemical are also not practical for farmers. The farmers themselves are providing a solution to this by asking for alternative recommendations when recommended expensive chemicals by the plant doctors. There is a need therefore to include cultural practices in the recommendations given wherever possible, even in case where the cultural practice may not be as effective as the chemical solution, as the cultural practice may be much easier, practical and affordable for the farmer to implement.

### **Location and Frequency of Plant Clinics**

Other areas of dissatisfaction mentioned by farmers from the three African countries include the plant clinic location, frequency and the time that farmers have to wait to be seen by a plant doctor. These farmers commented that the plant clinics are only held on specific days, and not always in the same location, so they have to check where the clinic is that day and follow the plant doctors around especially for any follow up advice needed. The farmers stated this was inconvenient. Several plant clinics in Ghana and one in Malawi are mobile plant clinics. The rest are fixed. However there is potential confusion for farmers given that the same plant doctors serve more than one plant clinic. It is possible that farmers do not realise that different clinics are held in different places on different days and some farmers commented that the plant doctors were not 'stationed in one area' or not 'always available' (see Appendix 2). They assume because the plant doctors are the same people then it is one plant clinic that is moving about. It can then be interpreted that the plant doctors are not being consistent in where and when they hold plant clinics. A published and publicised schedule of locations, days and times of the different plant clinics, including the one mobile one in Malawi, as well as listing the plant doctors who will be running the clinics may address this issue. The schedule should make it clear that there are a number of different plant clinics in operation in the area. However it will only help the farmers if the published schedule is then adhere to.

In Sri Lanka and Pakistan there were requests for plant clinics to available all the time so that farmers could seek advice when they needed it, especially at the start of cultivation

seasons. The varying crop cycles means that the cultivation seasons are not always the same and so the farmers wanted to have plant clinics available all the time. While this is not feasible in terms of both human and financial resources, holding regular weekly plant clinics, in areas where they are held on a less frequent basis, should go some way to address the farmers' request. In addition publishing and publicising the plant clinic schedule may also help, so that farmers can plan when they are able to seek advice.

### **Waiting Times**

The waiting time was of particular concern in Malawi where 54% of farmers were dissatisfied with the time they had to wait to see a plant doctor. The survey did not ask how long farmers had to wait so there is no indication whether waiting times in Malawi are significantly longer than in other countries. However a general aim of good service should be that the plant doctors see the farmers in a relatively short time period. Of course there are many factors that can contribute to long waiting times: large farmers numbers at a clinic; complex problems brought by preceding farmers; several samples brought by preceding farmers etc as well as the length of time taken to complete the prescription form, especially when a farmer has brought more than one sample. Various methods of reducing waiting times have been tried in other countries including: having plant nurses at the clinics to group farmers, check they have brought samples, and give general plant health information to farmers while they wait and seeing a group of farmers at once if they all have the same problem. The use of tablets to complete the prescription form may also speed up the time taken with the farmer for diagnosis and completion of the form, which in turn would reduce the waiting time for other farmers. There are observational data from Kenya that indicates this is the case, but further work is needed to ascertain whether this use of tablets does reduce waiting time. In addition revisions to the prescription form currently being discussed may reduce the time taken to complete it. Another way to make good use of the waiting time could be to avail farmers with additional advisory information about crops and plant health in form of posters, fact sheets, photo sheet and live samples displayed at the clinic.

### **Plant Doctor Knowledge**

The other main topic on which farmers commented was plant doctors' knowledge. Even though 96% of all farmers stated they were satisfied with the knowledge of the plant doctors, some still mentioned that plant doctors should be more knowledgeable about the whole range of crops that they grow. They also said that the use of information leaflets and other audio-visual aids within the plant clinics would increase their own awareness of different pests and what to do about them. The continued development and provision of extension material on a wide variety of crops to plant doctors will help to address this issue. The use of social networks to enable plant doctors to consult each other during the clinic sessions, will also increase not only plant doctor learning but also improve the advice given to farmers. Factsheets for farmers are available to a limited extent but there is always a need for additional information and extension material at plant clinics for farmers to peruse. As in-country partners continue to take responsibility for more Plantwise activities, they should be encouraged to find quick and cheap ways of making additional information available through local printing options etc. Farmers are eager for knowledge so any additional information that is provided will be of great benefit.

## Feedback from farmers

There were a number of suggestions made by the farmers of what they would like the plant clinics to provide. They include the following:

- Increasing the number of plant doctors and clinics and ensuring that they are located closer to the farmers, with at least one per district.
- Increasing the number of days that the clinics are held
- Plant doctors should visit the farmers at their farms.
- Recommend chemicals that are available to farmers
- Give out or supply chemicals in the plant clinics
- Some of the fertiliser and pesticides are not very effective
- Provide advice on places to obtain quality seeds
- Provide advice on where to obtain loans, or provide loans
- Plant doctors should spend more time with farmers to discuss their plant health problems
- Provide reference materials to farmers

Many of these requests are outside the scope of the plant clinic service, including the requests to supply chemicals, seeds and loans. However some requests correspond to actions that can be taken to address the negative feedback that was received. The following recommendations are made to CABI Country Coordinators for consideration with national partners, as well as to the M&E team and those running the e-plant clinic pilots:

- Work with government departments to increase the number of plant clinics where possible
- Publish and publicise the plant clinic schedule within a district and ensure that the plant doctors are able to adhere to this schedule
- Work with agro-dealers to ensure that the plant doctors are only recommending chemicals that are available locally.
- Encourage plant doctors to offer alternative cultural recommendations, especially when the chemical solution may be very expensive
- Encourage plant doctors to adapt the ways they run the plant clinics to make use of things such as group diagnosis and recommendations when there are large numbers of farmers in attendance
- Study the effect of using tablets in the plant clinics on the time taken to provide a diagnosis, recommendation and complete the prescription form
- Work with agricultural extension departments to increase the amount of reference materials available at plant clinics for farmers to study while waiting for the plant doctor
- Carry out an analysis of the economic cost of running plant clinic sessions in a number of different Plantwise countries.

## **Survey Challenges**

### **Survey bias**

A common problem with any sort of survey, including telephone interviews, is respondent bias. Those being interviewed may not be able or willing to provide an accurate answer. If questions of fact are being asked (such as which crop did you take to the plant clinic on your most recent visit), the respondent may not remember and instead of telling the interviewer, they will guess an answer. A second common bias that is of more relevance to this survey, is that the respondent may not give honest answers. This is not because they are trying to be dishonest, but rather they are under or over reporting an opinion because they want either to present themselves in a favourable light, or want to tell the interviewer what they think the interviewer wants to hear. There is often an innate desire to please, so respondents may give more positive results than they truly think in order to keep the interviewer happy. If the respondent thinks that a service maybe withdrawn if they over criticise it they will also give a more positive response about the service delivery than is true. While there was no mention of service withdrawal when the survey was administered, some respondents may have thought this and answered accordingly. The very high percentages of farmer satisfaction and application of advice, especially for Ghana, indicate that the results have such a positive bias.

Therefore the survey results reported here need to be assessed with these biases in mind. It is possible that the very high positive results are in reality less positive than stated. However even if the percentages were reduced by 5% for instance there is still very strong positive feedback and satisfaction with the plant clinic services provided. In addition the criticism that was voiced still remains valid and should be addressed as there may be more farmers who have those concerns than were prepared to voice it.

### **High levels of positive results**

The results that have been described above should also be treated with some caution due to the relatively low percentages of farmers whose reported crop on their most recent plant clinic visit matched their most recent clinic record in POMS. Farmers from Sri Lanka remembered their visit most accurately with over 90% of female and male farmers remembering which crop they brought to the plant clinic accurately. (The stated crop matched the most recent clinic record in POMS.) The survey results showed the least positive results for Sri Lanka compared to the other countries, but these results may be a truer reflection of farmers' opinions of plant clinics. The accuracy of crop matches in Ghana was particularly low at less than 40% casting some doubt on the accuracy of responses given, particularly due to the overwhelmingly positive feedback. Therefore making use of the Sri Lanka results may provide a more accurate picture of farmer satisfaction levels.

There is also a likelihood of inaccurate responses relating to yield due to the need of the respondent to remember yields for a particular crop from one season to the next. These figures should therefore be viewed with caution, but overall reflect that the majority of farmers are of the opinion they have increased their yields due to the plant clinic visit.

### **Phone numbers**

The survey firms in both Africa and Asia had difficulties reaching sufficient numbers of farmers. Although long lists of phone numbers were prepared for each country, they found

that many of the phone numbers provided were either invalid, or not answered. They tried the phone numbers a minimum of three times at different time periods and different days, but were still unable to reach the required target of 300 farmers per country (Table 9). In Pakistan the ratio of functional to non-functional numbers was 40:60, and the survey firm reported that this may be due to the recent legislation on biometric authentication of phone numbers. There were also legal restrictions on the number of times phone numbers could be redialled within a week in certain countries.

**Table 9: Number of interview attempts in the three African survey countries**

Country	Number of interviews tried		Number of interviews completed	
	Female	Male	Female	Male
<b>Ghana</b>	129	486	24	118
<b>Rwanda</b>	202	655	32	79
<b>Malawi</b>	157	326	36	73

The inability to reach the targeted number of farmers in each country reduces the sample size to 924 farmers from the targeted 1500, and therefore the statistical reliability of the data. However the aim of this work was to provide a quick overall assessment of satisfaction levels that would be followed by further in-depth work. Therefore the smaller than expected sample size, while reducing reliability to a certain extent does not invalidate the findings. The nearly 1000 farmers that were interviewed still provides sufficient data to draw programme level recommendations and conclusions and gives a snapshot of specific countries issues as well.

### Speaking to women farmers

The survey aimed to interview equal number of female and male farmers in each country. However this was not achieved, with more male farmers being interviewed. This partly reflects the proportions of male and female farmers that had attended plant clinics in each country; hence there were fewer female farmers' phone numbers in the randomised lists provided. However it was also observed that despite high numbers of call being made to female farmers, many of the phone lines were out of service or were not answered. In Pakistan this was a particular issue as no women were included in the survey. There were only 11 female farmers' phone numbers in the records, and of those only three numbers were answered, but by male respondents who did not acknowledge whether a female relative had attended a plant clinic. These difficulties resulted in only 185 women being interviewed. The results for female farmers therefore have to be treated with caution, and it may not be possible to draw any strong gender conclusions from the data. However the gendered analysis carried out does not demonstrate any strong differences between the male and female farmers' satisfaction with plant clinic services so it may be possible to make general recommendations. A larger portion of female farmers will be targeted in the in-depth survey work to be carried out later this year.

## **Conclusions**

The survey results show a generally high level of satisfaction with plant clinics from the farmers that they serve. Despite the limitations of this survey method, positive results were reported in terms of service at the plant clinic and the advice received. The results related to increased yield were not as clear cut due to the many other externalities affecting yield beyond the advice received at a plant clinic. Some areas of improvement have been identified including better publicity and explanation of how plant clinics operate, the use of grouping methods to reduce waiting times; ensuring the chemicals recommended are available; offering lower cost options to the farmers and ensuring there is literature available at the plant clinics as information to the farmers. Overall there is demand for the service from those farmers who have accessed the plant clinic previously and further development of how the service is delivered and tailored to the local situation will improve the service for the farmers.

# Appendix 1 Rapid survey on farmers' satisfaction

## To be completed by enumerator before start of interview

Country		Data ID number	
Farmer Name			
Farmer Phone Number		Male	Female

## To be completed during interview

1. How many times have you visited a plant clinic?								
2. Were you satisfied with the service you received overall?							Yes	No
3. Will you attend a plant clinic again?							Yes	No
4. Why ? Why not?	Good advice received		Plant doctors helpful		Near to home		Other	
	Advice not helpful		Plant doctors not helpful		Too far		Other	
5. What crop did you bring to the clinic in the most recent visit?								
6. Was the waiting time when you attended the plant clinic OK?							Yes	No
7. Were you satisfied with the knowledge level of the plant doctor?							Yes	No
8. Did you understand the language and terms used by the plant doctor?							Yes	No
9. Did the plant doctor suggest using chemicals to address the problem?							Yes	No
10. If yes, which	Fertiliser	Insecticide	Fungicide	Pesticide	Other			
11. Did the plant doctor suggest using cultural practices?							Yes	No
12. If yes, which	Resistant variety	Intercropping	Crop rotation	Homemade applications	Manure/ crop residues	Other		
13. Were you satisfied with the advice you received for your crop problem?							Yes	No
14. If no, why not?	Advice unclear	Advice not practical	Advice too expensive	Other				
15. Did you apply the advice							Yes	No
16. If no, why not?	Didn't have right equipment	Didn't know where to get product	Too costly	Advice did not answer problem/ better ways to solve problem			Other	
17. Did it increase your crop yield?							Yes	No
18. How much did you harvest before consulting a plant clinic?								
19. How much have you harvested on average since visiting a plant clinic? (use same units as previous question)								
20. To what extent is this due to your visit to the plant clinic?				Fully	Mainly	Partly	Not at all	
21. Would you recommend plant clinics to others?							Yes	No
22. Why? Why not?	Good advice received		Plant doctors helpful		Near to home		Other	
	Advice not helpful		Plant doctors not helpful		Too far		Other	
23. How many people have you told about the advice you received at the plant clinic?								
24. Would you be willing to pay for plant clinic services?							Yes	No
25. If so, how much would you pay for one visit? (local currency please)								

## Appendix 2 Farmers' quotes

Farmers would attend the plant clinic again 'to gain more knowledge' and the 'good attitude of the plant doctor'. 'Valuable instructions were provided' with a 'good service' and 'no waiting time' as the 'plant doctor [was] always present'.

However other farmers commented that the 'plant doctor did not have much information' and the 'advice was expensive', they received 'inadequate instructions' and 'there was a lot of rush'. Others commented that the 'waiting time is too long', it 'took long to respond to my request' and the plant doctors were 'slow in giving service'. Some commented that the 'plant doctor [is] not always present' and is 'not stationed in one area'.

With regards to plant doctors knowledge and skills, farmers stated that 'skilled doctors participation increases our knowledge' and that 'valuable instructions [were] obtained' and that the 'plant doctor [is] helpful'.

They also commented that 'plant doctors should have knowledge of all crops' and they 'should increase their knowledge', with 'more skilled [plant] doctors needed'. 'Leaflets to be provided for awareness' and 'visible aids [are] more important', as is 'practical experience'. The plant doctors were 'clear to understand' and 'spoke local language so [it] is understood'.

Farmers had mixed opinions about the advice offered stating that they received 'good advice' and the 'disease was fully controlled'. Not surprisingly more comments were made when the advice 'did not work' or 'was not beneficial'. They stated the advice had 'no affect' or that there was a 'lack of relevant chemicals', or the 'advice couldn't be applied'. They also commented that the 'application of some instructions are more expensive, and the 'high cost was [a] barrier to apply those recommendations; recommended products were too expensive'. They also added that the 'labour cost is high' and they had 'no time to apply those instructions'. Finally they commented that 'my crop season was complete when the advice was given' or that they 'couldn't apply the advice due to heavy rain'.

The comments on yield were also mixed as the 'suggested chemicals didn't result in increased yield', there are 'no treatments for viral diseases' and that 'after the treatment disease was not reduced'. However, they also stated that 'due to heavy rains, yield got reduced but disease got cured' and 'due to salinity yield got reduced' and that both 'quality and quantity improved'. Others had no comment on the yield because they 'did not harvest yet, crop is nursery' or that 'I applied those instructions for small land area and yield increasing was done in that area only'. Some farmers stated that the 'yield didn't increase due to our fault. We didn't spray crops on time', that the 'yield has increased a little bit, but quality has been improved', that there 'is shortage of water in our area' and that they 'will cultivate in the next season'.

# contact CABI

## europa

**CABI Head Office**  
Nosworthy Way, Wallingford, Oxfordshire, OX10 8DE, UK  
T: +44 (0)1491 832111

**CABI**  
Bakeham Lane, Egham, Surrey, TW20 9TY, UK  
T: +44 (0)1491 829080

**CABI**  
Rue des Grillons 1, CH-2800 Delémont, SWITZERLAND  
T: +41 (0)32 4214870

## asia

**CABI**  
C/o Internal Post Box 56, Chinese Academy of Agricultural Sciences,  
12 Zhongguancun Nandajie, Beijing 100081, CHINA  
T: +86 (0)10 82105692

**CABI**  
2nd Floor, CG Block, NASC Complex, DP Shastri Marg, Opp. Todapur Village,  
PUSA, New Delhi – 110012, INDIA  
T: +91 (0)11 25841906

**CABI**  
PO Box 210, 43400 UPM Serdang, Selangor, MALAYSIA  
T: +60 (0)3 89432921

**CABI**  
Opposite 1-A, Data Gunj Baksh Road, Satellite Town, PO Box 8, Rawalpindi-PAKISTAN  
T: +92 (0)51 9290132

## africa

**CABI**  
CSIR Campus, No. 6 Agostino Neto Road, Airport Residential Area, PO Box CT 8630, Cantonments Accra,  
GHANA  
T: +233 (0)302 797202

**CABI**  
Canary Bird, 673 Limuru Road, Muthaiga, PO Box 633-00621, Nairobi, KENYA  
T: +254 (0)20 227 1000/20

## americas

**CABI**  
UNESP- Fazenda Experimental Lageado, Rua: José Barbosa de Barros, 1780  
Botucatu – SP, CEP: 18610-307, BRAZIL  
T: (14) 3882 - 6300 / 3811 - 7127

**CABI**  
Gordon Street, Curepe, TRINIDAD AND TOBAGO  
T: +1 868 6457628

**CABI**  
875 Massachusetts Avenue, 7th Floor, Cambridge, MA 02139, USA  
T: +1 617 3954051