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ALL THINGS COME TOGETHER: TOWARDS A PLANT HEALTH SYSTEM FOR KENYA

SOLINSA SHOW CASE REPORT

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The Kenya showcase is funded by an EU project, *Support of Learning for Innovation Networks for Sustainable Agriculture*, and is one of seven short studies selected to illustrate key processes, describe progress and discuss the implications for further work. The Kenya showcase is the only one to look at an innovation network outside Europe. The showcase was developed at a Solinsa workshop held in Stroud in February 2013. This study took part in Kenya from 8 – 19 July 2013 with additional time in the UK on analysis and report writing.

PLANTWISE

Plant health clinics were developed by the Global Plant Clinic alliance, managed by CABI, and networks established in 16 countries between 2003 and 2010. The Plantwise programme is building on this foundation with over $60 million of donor investment. Plantwise has expanded plant clinic networks to 31 countries and adopted a plant health system approach to strengthen support for sustainable livelihoods through extension-led initiatives.

Abbreviations

AKIS – Agricultural Knowledge and Information Systems

CABI – Centre for Agriculture and Bioscience International

CBO – Community Based Organisation

FiBL – Research Institute of Organic Agriculture (SOLINSA partner)

GPC – Global Plant Clinic

KARI – Kenya Agricultural Research Institute

KEPHIS – Kenya Plant Health Inspection Service

LINSA – Learning and Innovation Networks for Sustainable Agriculture

MoA – Ministry of Agriculture

SOLINSA – Support of Learning for Innovation Networks for Sustainable Agriculture

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Front cover photos

TOP: Plant clinic held at Mumbuni, Machakos, by Kataloni CBO, supported by Infonet-Biovision and Village Vocations Program (NGO). BOTTOM LEFT: Lucy Karimi Murithi, plant doctor at Nderi and extension worker with the Ministry of Agriculture, Kikuyu. BOTTOM RIGHT: Peter, Munyoungi Agrovet, Kikuyu.

TABLE OF CONTENTS

1. Summary

This short study looked at plant health clinics and the role of the plant clinic network in enabling a national plant health system for Kenya. Plant clinics began in Kenya in 2010 and by mid-2013 there were 59 operating in 13 counties and six regions. The demand-led clinics serve local farmers and are run by public extension services. Better access to information and scientific and technical support is improving services provided by extension. The plant clinic network offers new ways to monitor and learn more about new and emerging pests and diseases and to coordinate smarter responses.

CABI's Plantwise programme supports the establishment of plant clinics, a key part of a plant health systems approach that aims to catalyse links and strengthen interactions between extension, research, regulation and input supply. Plant clinics have been officially endorsed by the Ministry of Agriculture (MoA), a key partner of Plantwise. Other agricultural projects are introducing plant clinics and the network of plant clinics is growing.

Kataloni, a community-based organisation, runs mobile plant clinics for its member farmer groups and links to other NGOs. Overall, the involvement of NGOs in plant clinics is still small. A wider variety of clinic operators would increase availability of services to farmer groups beyond those served by public extension services. Thousands of farmers have already received advice from plant clinics and there is widespread satisfaction with their introduction. Improvements to sustainable agriculture and reduced pesticide use are generally evident by difficult to directly attribute to plant clinics without greater investment in rigorous data collection.

It is also difficult to assess progress in developing a national PHS. There is a strategic plan for 2013-2017 and a baseline study is underway which should help to clarify how to integrate personnel, resources and expertise. A PHS framework adapted from human health systems and trialled in Uganda can help guide this process by monitoring performance of individual components (e.g. extension) and assessing overall outcomes. More evidence is needed to encourage wider investment in plant clinics and commitment to national PHS. The strategic plan will help shift the current emphasis on plant clinics towards a wider consideration of institutional, organisational and policy matters needed to develop a systems approach.

Regular meetings held by Plant clinic clusters, national stakeholder forums and steering committee foster debate and gather feedback at local, regional and national levels. The national coordinator for Plantwise holds a senior position in the MoA. and an assistant coordinator, also from extension, works closely with plant clinic clusters, liaising between CABI and other plant health stakeholders.

Plantwise will continue working in Kenya until at least 2016. This is a rare moment for bringing about systematic and systemic change in plant health. Plant clinics have in a relatively short time inspired fresh thinking and created new value through existing extension services. A PHS framework will help achieve much more, guiding the integration of plant health stakeholders and creating new interactions that will better serve the real needs of farmers and rural communities.

2. Plant clinics and plant health system in Kenya: a brief introduction

Plant health clinics accept 'any plant/any problem' and are demand-led. Sessions are usually held in public places and clinics are run by extension staff who act as 'plant doctors'. Kenya was the sixteenth country to start plant clinics in 2010, though pilots were first held in 2005.

Kenya will receive support for development of plant clinics from CABI's Plantwise programme until at least 2016. This includes training, small grants to establish plant clinics, coordination, clinic data management, mass extension (plant health rallies), bespoke access to a global knowledge bank and overall strengthening of a plant health system (PHS) approach. The eventual aim is for plant clinics to be part of everyday extension, supported by a national PHS which coordinates responses and increases farmer access and coverage to advisory services.

An ad hoc*, one-off clinic held in 2005 in Lubao, a large cattle market, five years before clinics were formally started. Farmer interest was intense and indicated a large unmet demand for advice on plant health problems*

The Ministry of Agriculture is the lead partner for Plantwise in developing plant clinic networks. Plant clinics are run predominantly by agricultural offices based at sub-county offices[1]. Two NGOs in western Kenya ran the first plant clinics but they are no longer involved. Kataloni is the only civil society organisation running (mobile) plant clinics, serving up to 280 farmer groups in Machakos. Kataloni is supported by Infonet-Biovision (of which FiBL, one of the lead organisations involved in SOLINSA, is an institutional partner). There are no private organisations running plant clinics.

The aim of a PHS is to integrate resources and expertise of extension, research, regulation and input supply to deliver effective responses to plant health problems for all farmers. Key players include the Kenya Agricultural Research Institute (KARI), whose scientists provide technical support and information on crop management; and the Kenya Plant Health Inspectorate (KEPHIS), which monitors pests and diseases and is the National Plant Protection Organisation. A Plantwise National Stakeholder Forum and plant clinic cluster meetings are two important ways in which the PHS approach is being developed and promoted.

There are now 59 plant clinics, organised in eight geographical clusters. Regular cluster meetings discuss operations, coordination, training schedules and current plant health problems and are the main source of learning and innovation. The Kenya PHS will eventually become the main 'learning and innovation network for sustainable agriculture' (LINSA).

[1] Names of administrative divisions changed under the new 2010 constitution, which promotes decentralization and devolution of powers. Districts are now counties, for example.

The three main objectives of this showcase address key interests of Plantwise.

1. What are the key elements needed for a plant clinic network to function effectively and what improvements could be suggested to improve links to input supply, research and regulation and emergence of a national plant health system?

2. How do plant clinics help farmer groups and associated LINSAs and what is the clinics' contribution to sustainable agriculture, paying particular attention to the use of pesticides.

3. What is the best approach to evaluating the contributions made by extension workers through plant clinics and how are these contributions currently measured in performance contracts applied under the Ministry of Agriculture?

3. Study approach

I read reports on plant clinics, talked to current CABI personnel involved with Plantwise and interviewed people running plant clinics and others from extension, research, regulation and input supply with an interest in a national plant health system.

This study also draws on personal experiences in managing the Global Plant Clinic until 2010, including the launch of plant clinics in Kenya, and then as Global Director for Plant Health Systems until I left CABI at the end of 2012.

A review of Agricultural Knowledge and Information Systems (AKIS) in Kenya (Rees et al 2000) provided a useful historical perspective to the current study. A policy brief on agricultural services and decentralization, distilled from four district-level case studies, assessed past extension efforts from farmers feedback and considers the implications of the new constitution for future delivery of services (Poulson, 2010). These are only two selected studies from a large literature on agricultural development in Kenya.

Reports of meetings organised by Plantwise and MoA (Annex 1) track the introduction and expansion of plant clinics and provide the background to the current analysis. Participants include senior people from extension and crop protection within the Ministry of Agriculture, research (KARI), regulation (KEPHIS), plant clinic cluster coordinators and representatives from the university sector (Nairobi, Egerton, Jomo Kenyatta, Kenyatta) and the agrochemical sector (Agro Chemical Association, Pest Control Products Board). There have been few direct interactions with agrodealers.

I visited two plant clinics and interviewed a total of eight people: **Lucy Karimi Murithi,** who works for public extension and is a plant doctor; **John Mutisya**, a plant doctor working for Kataloni CBO; three staff (**Doris, Stephen Muendo, Timothy**) working for the Village Vocations Programme, an NGO in Machakos; **Lucy Waweru**, the head of extension at Kikuyu, who manages several plant clinics; **Peter**, in charge of an agrodealer shop in Kikuyu with a background in horticulture and plants (most agrodealers are vets); **Washington Otieno**, recently appointed Regional Coordinator for Plantwise in Africa, who previously worked in plant health regulation; and **Christie Peacock**, Chief Executive of SIDAI, a development initiative to create a franchise-based agrodealer business for 'quality advice and quality products'.

The people who run and support plant clinics come from diverse backgrounds. I asked them about their back ground, training and areas of knowledge (**characteristics**) before discussing their current job and involvement with extension (**context**). What tools and methods did they use or have experience of? Who was the target audience? For those with direct experience of plant clinics I asked how they related to other areas of extension (**contribution**). How well were plant clinics integrated into general work plans? Lastly, we looked at the technical support available to plant doctors and from where (**connections**). What about links to agrodealers? How much evidence was there of a coordinated response to farmers' queries?

I have incorporated the information obtained in my general assessment and given selected quotes.

The main event during my short stay in Kenya was a one day Roundtable meeting (Annex 2), attended by a cross-section of people working in plant health, including the private sector. The Roundtable was entitled: Toward a Kenya Plant Health System: fact or fiction? We had useful

though limited discussions on a complex topic. Further detailed study and research is needed, and some suggestions are given in this report.

4. Results of the analysis

1. What are the key elements needed for a plant clinic network to function effectively and what improvements could be suggested to improve links to input supply, research and regulation and emergence of a national plant health system?

IN THE BEGINNING: One-off plant clinics were held in 2005 in western Kenya and in 2008 in Nairobi. The first clinics were *ad hoc* events in market places with regional KARI staff as plant doctors. The clinics attracted large audiences and all who took part judged them a success. Other one-off clinics were held by CABI staff in Wangigi market in 2008 and 2009. The plant doctors were from Extension Kikuyu (MoA) and KARI and their participation was coordinated by CABI staff based in Kenya. CABI scientists also took part in the clinic.

Elizabeth (seated) from extension liked the clinic, especially the help of technical experts from KARI (Miriam, standing right) and CABI (Daniel, back to camera) in answering queries.

Wangigi was chosen because Elizabeth Kamau, an extension worker with the MoA, already ran a regular 'information desk' outside Jukran Agrovet. (The location is also close to Nairobi.) This was the first example of bringing together people and organisations with common interests (see photo). One of the reasons for the later success in establishing plant clinics is that they built on an existing extension method (the information desk).

The pilots confirmed a demand for services and demonstrated the feasibility of running clinics in a public place. Results of clinics held in other countries were circulated to encourage regular sessions but no more were run until 2010, when CABI began formal discussions with the Ministry of Agriculture. The creation of a plant clinic network needs official support and regular engagement with key staff, in this case the Ministry of Agriculture.

It is important to know who does what and with what apparent authority. In 2008 there was a limited understanding (in CABI) of how extension was organised and how staff performed their duties. KARI's aim is to disseminate technologies and provide general technical support but it is not an extension agency. Individual staff were keen to run more plant clinics after the first pilots but this appeared difficult without official support and funds. It is also difficult for individual scientists to manage clinics, let alone run them regularly, given other responsibilities.

When CABI began working directly with the MoA in 2010 things began to change. Regular discussions led to a formal agreement which officially endorsed plant clinics. A group of plant health stakeholders began to coalesce with representatives from extension, research, regulation and input supply. A solid momentum was created for expanding plant clinics and exploring contributions from the various stakeholders. Training courses for plant doctors showed CABI's commitment to developing skills and capacity in extension.

DEVELOPING COLLABORATIONS: KARI's regular involvement in plant clinic operations is still relatively small though they play an active role in stakeholder meetings. Few samples are sent by plant clinics to diagnostic laboratories and attendance of KARI scientists at clinics varies. There was

some initial scepticism about the experience of plant doctors and their ability to run plant clinics, but this appears to have declined as the scope of plant clinics has become better known.

It has become clearer (to scientists) that plant doctors are not expected to know everything. A more pertinent question now is how to organise regular backstopping from KARI staff. Plant clinics offer a new way to disseminate new technologies and get feedback on their usefulness from farmers and extension workers. So far there is little evidence of plant clinics being used regularly by researchers while plant doctors expressed variable responses in contacting KARI staff.

KEPHIS, the plant health regulatory body, does not have an extension mandate. Yet there are strong connections with plant clinics that could be better exploited. Plant clinics monitor pests and diseases and report their relative importance area-wide. KEPHIS alerts could help plant doctors know what to look out for and promote preventative measures which limit spread. Plant clinics do vigilance ('being aware') rather than surveillance ('actively monitoring and mapping'); the information they collect depends on who attends the clinic.

The advantages of linking plant clinics with regulation have been discussed in national-level meetings. Yet the strength of current collaborations with KEPHIS are still relatively weak. More direct contact with plant clinics would help explain what plant doctors do and, with official encouragement, enable a strengthening of ties. Visits by KARI scientists and KEPHIS plant health inspectors to plant clinics should be encouraged so that staff gain a wider appreciation of extension and extension workers and see for themselves what type of support and engagement is needed.

Banana bacterial wilt kills all varieties and was introduced to Trans-Nzoia in Kenya from Uganda. Plant clinics on both sides of the border are helping to detect and respond to this new threat, offering a new opportunity for extension services to work together.

GROUP MEETINGS: Groups of plant clinics known as clusters meet at least once a year to discuss operations and articulate requests for support. Extension workers (plant doctors) have few opportunities to meet and share experiences as well as knowledge of plant health problems. The solidity of the plant clinic network depends on creating stronger relationships within extension as well as links to research and regulation

Requests for assistance from the cluster meetings are passed on to the Ministry of Agriculture and CABI. The cluster meetings are also an opportunity for regular contact with KARI and KEPHIS and building the professional relationships that will help sustain the plant clinic network as well as help research and regulation do their jobs better.

Stakeholder meetings have increased the contact between extension, research and extension and encouraged debate about a national plant health system. However, it is still unclear what precise actions have been taken to 'enable' a PHS and how this will be assessed. Attendance of researchers and regulators at training courses widens personal contacts and allows greater exchange of ideas with extension. The plant doctor courses are good 'levellers', improving practical skills and showing that everyone struggles with field diagnosis, for example.

Despite the optimism about plant clinics and a new found vigour of extension services, new attempts by Plantwise to strengthen links to research and regulation must take into account an

historical wariness about extension capacity. Measuring the achievements of plant clinics will be important in cementing collaborations and integrating plant health stakeholders under a PHS.

It was notable that several interviewees used CABI scientists for technical queries and praised their quick response. Plant doctors also used KARI but there was a general feeling that it was difficult to know who to contact and no guarantee of a quick reply. Establishing trusted professional relationships is an essential part of a plant health system and it is important to have clear entry points and links.

SYSTEM? WHAT SYSTEM? Human health systems talk about primary, secondary and tertiary healthcare, comprising professionally trained staff working in different types of health facilities, from rudimentary community clinics to hospitals and consultants. There is no equivalent hierarchy of plant health services or plant healthcare professionals in Kenya (or indeed most countries). Plant doctor is an accepted informal term even though they lack a formal qualification. Further work is needed on how to assess the skills of plant doctors and quality of plant healthcare, and give additional credibility to the services provided by plant clinics.

Discussions about a national PHS have brought together a wide spectrum of plant health stakeholders but it is still unclear what is expected of different organisations and how to link, for example, universities teaching prospective agronomists about pests and diseases with those regulating the use of pesticides. The broad services offered by plant health clinics ('any crop, any problem') contrast sharply with projects to manage specific pests and disease. Plant health campaigns and rallies targeting particular problems are one way to to link science-led initiatives at national level with extension services operating locally. It is easier to bring multi-disciplinary teams together for one or two days to address a priority pest or disease than to organise regular participation by scientists in plant clinics. Successful trials of plant health rallies were supported by Plantwise in Kenya and campaigns are planned for later in 2013.

There are few Kenyan examples of plant clinics detecting new diseases, one of KEPHIS's main roles. The Plantwise Summit in March 2012 discussed examples and experiences from other countries. Plant clinics in Uganda, Tanzania, DRC and Ethiopia, who share borders or have strong transport links to Kenya, have detected serious pest and diseases which have since moved to Kenya or escaped (e.g. maize lethal necrosis diseases). A common PHS approach could help to increase contact and collaboration between neighbouring extension services, where few opportunities exist to meet and liaise compared to meetings attended by national plant protection organisations, or conferences on a common pest or disease (such as coffee wilt).

John Mutisya of Kataloni CBO, has gained much practical knowledge about pest and diseases during his work with farmers, but few opportunities for training until Plantwise started. When he was a school teacher he received regular in-service training and other support to assist his professional development – and benefit pupils.

DEVELOPING NETWORKS: The first regular clinics were run by NGOs in western Kenya but it was difficult to sustain their efforts and ensure consistent delivery of services. Starting clinics in a new country with NGOs can suggest a lack of confidence in public extension and there is always a

danger of setting up a parallel support service for farmers. Yet NGOs are flexible and work with communities that sit outside the circle of public extension. NGOs are keen to try new ideas and this can generate early evidence of what plant clinics do, as early work by the Global Plant clinic demonstrated in other countries.

Plant clinic networks should involve all potential service providers, though those with weaker technical capacity will need support. A pluralistic approach makes best use of diverse contacts and involvements with farmer groups and other social networks. Public extension resources are spread thinly in Kenya and there are not enough staff to meet growing demand for plant clinics. Lucy Waweru, head of extension in Kikuyu commented on the low number of staff she had available to serve over 40 000 farmers. Her target was to contact a minimum of 17 000 farmers each year.

A diversity of clinic operators is a strength. Some plant clinics have closed while others struggle to attract clients. NGOs work closely with communities across a wide range of social and economic issues and can integrate plant clinics within livelihood-based programmes, as Village Vocations Programme (VVP) in Mumbuni has started to do in association with Kataloni CBO. Stephen from VVP had previously worked for an NGO tackling HIV/AIDS in western Kenya. It soon became apparent that people needed more than medical support: families depended on agriculture and they had to had to learn new skills in adapting to the loss of a parent.

PLANT CLINIC OPERATIONS: Regular follow-up visits by CABI staff during the early stages of plant clinic operations is vital in ironing out problems, such as allowances for clinic staff or finding the best time and site for a clinic. Plantwise pays for tables, chairs and other basic equipment and this reduces delays in getting started. If too long elapses between training and starting a clinic there is a danger of diluted enthusiasm and commitment generated through the training can be undermined.

PEOPLE WHO MANAGE PEOPLE: Extension managers are a key part of managing plant clinics. They give permission to staff to run them as part of their routine duties, and seek replacements for temporary absences and staff who move to new posts. Lucy Waweru in Kikuyu is a keen supporter of plant clinics but she noted that they were only a part of the duties her staff have to perform.

A failure to consult extension managers or involve them in planning plant clinics can jeopardise continuity and the chance to embed the service in everyday extension. Once a plant doctor leaves there may be little urgency to find a replacement if the departing individual was acting largely on their own initiative. Kenya has largely avoided this type of disruption, because of thorough and regular consultation between CABI and MoA from the beginning. Agreement at national level does not however guarantee commitment from sub-country agricultural offices, where the practical realities of everyday extension need to be worked out.

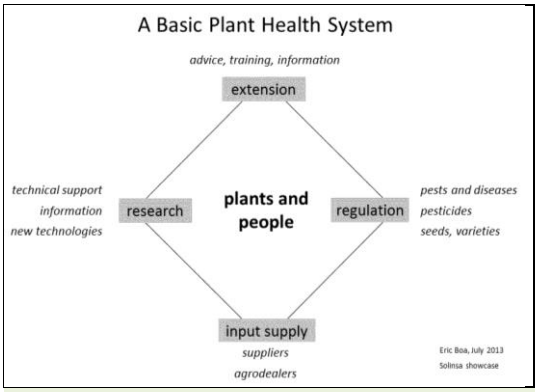
TRAINING OF PLANT DOCTORS: Kenya extension staff like the emphasis on practical exercises and strong visual material to explore and learn about pests and diseases. Analysis of clinic data is helping to identify areas where plant doctors have difficulties in diagnosing problems and giving advice and thus identifying future training needs. Lucy Karimi said: 'I really like the plant doctor courses. There are few training opportunities and I usually have to learn on the job.' The demand for more training is best expressed through cluster meetings and national forums, where strategic decisions can be made about courses.

COORDINATION AND CLINIC CLUSTERS: Plantwise has created new posts to help manage clinic operations, including a national (plant clinic) data manager from the crop protection department of the MoA. In 2012 a national coordinator for Plantwise was appointed, James Wanjohi, the current

head of extension in the MoA. An Assistant National Coordinator, Rose Kamau, works at ground level to ensure that plant clinics and clusters get the support they need. The plant clinic cluster meetings are an important way of learning, sharing experiences and identifying improvements to maintain networks and strengthen integration with others (e.g. research). There are eight clusters in total, each meeting once a year, though more are planned.

It is not clear how effective cluster meeting are in bringing about change. There appears to be no formal mechanism for tracking the outcome of action points raised at national level by the Assistant National Coordinator. More generally, the flow of information back to plant clinics from analysis of clinic results and data validation is still weak.

IMPORTANCE OF DATA: Plant doctors record details of queries, their diagnosis, recommendations given and follow-up action e.g. sending a sample to a diagnostic laboratory. Standardized methods for validation of clinic data and monitoring of progress and overall quality (e.g. regularly of clinics)



The Roundtable said this was of general help in depicting components of a PHS but it was of little use in analysing interactions.

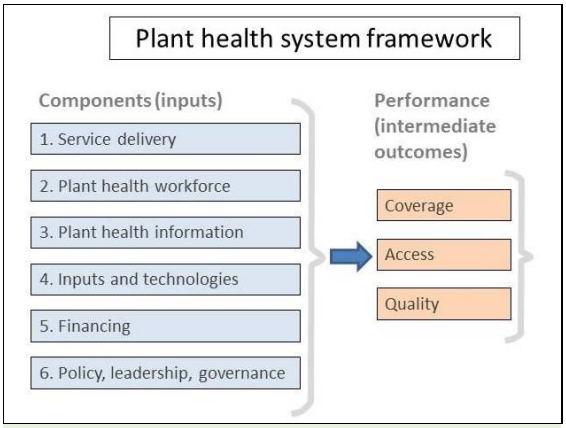
are being introduced and, through the Plantwise Online Management System (due in 2014), help to ensure that plant doctors and therefore farmers get the best advice in a timely manner. The physical collection of data currently relies on the completion of a machine-readable form, which notes farmer details, types of symptoms, related facts about the crop, diagnosis and recommendation. Plant doctors have to carefully fill in the cells noting presence of symptoms, farm size and so on. Some are more consistent than others in completing the forms. Data validation methods are still being finalised and so it is too early to say how well this will work. There are also unresolved questions about collecting forms and the scanning method[2].

NEW TOOLS FOR INTEGRATION: Plant doctors can often offer farmers good advice directly and it is understandable that plant clinics have been the main focus of attention of Plantwise. Many plant doctors have years of experience and know farmers well. Yet there are important cases when being well connected to diagnostic laboratories at county, national and international levels is essential, for example with the recent discovery of maize lethal necrosis diseases.

The basic PHS model (above) is a simple attempt to represent key elements and functions. The original intention of this diagram was to explore the inter-relations and interactions between the different components, though this has proved difficult. The Roundtable suggested putting 'people and plants' at the top, and placing research, extension and regulation in a straight line. Even with these changes a better tool is needed to understand how to improve links.

The Plant health system framework (see below), based on a WHO model for human health, has already been used in Uganda (Danielsen et al, 2012) to measure performance of plant clinics. Applying this to all components of the system (and interactions) will need more detailed study.

[2] Plantwise later confirmed that clinic data will no longer be scanned. Other methods are being developed for collecting clinic results.



The framework identifies important resources and processes. Overall outcomes will include reduced vulnerability and increased responsiveness – how to manage change and limit risk. (Danielsen et al, 2012)

The Roundtable liked the framework as a potential tool to analyse performance and functions, though we were unable to test it during the short meeting. A short consideration of the components (building blocks) addresses selected topics.

SERVICE DELIVERY: Plant clinics are discussed elsewhere in this report and this short section will look at other relevant examples. Few samples are received by the labs and their overall contributions to improved plant health management remain small in comparison to those suggested by scientists. Agrodealers also provide advice yet despite discussing their role in a PHS there is little evidence of new ways of how they work or support plant clinics.

PLANT HEALTH WORKFORCE: The concept of a *plant health workforce* appears strange at first. There is no recognized body of such people in Kenya: broad job categories apply, such as extension or research, qualified by subject areas or disciplines that define a particular expertise.

It is doubtful if researchers would recognize themselves as belonging to a plant health workforce. Yet it could be beneficial when reviewing education and training needs across the spectrum of plant health activities to consider all potential members of a workforce and how skills and expertise might be linked. Plant doctor courses have been attended by scientists as well as extension officers. Learning about rapid diagnostic tests would help plant doctors.

PLANT HEALTH INFORMATION: The most used sources of information appear to be current and recent projects. Some plant doctors have old and well-worn copies of books and leaflets from projects but many have have few if any reference material to refer to. Recent initiatives include the Agricultural Information Resource Centre of the MoA, projects such as KENGAP (Kenya Good Agricultural Practices) and Infonet-Biovision. Together with KARI, they provide relevant material for extension workers and scientists, yet participants at the Roundtable said the most common source of information was 'Google'.

The Plantwise Knowledge Bank has been widely promoted through plant clinics and national stakeholder meetings and has fact sheets written by plant doctors and scientists. Printed copies are used at plant clinics but not yet widely available. Some plant doctors access the Plantwise website. Others show less initiative or find it difficult to view material online. Physical distribution of fact sheets and other material relevant to plant doctors and clinics is still limited, though there are other means of dissemination. Plantwise offers a new opportunity to develop innovative channels that would benefit other projects that invest heavily in producing materials and relatively less on getting them to mass audiences and developing 'sustainable delivery' mechanisms.

Farmers are willing to pay for quality material but distribution channels have to be established. Without a clear communications *research* strategy slow progress will be made in getting information to extension workers and farmers. New dissemination methods need to be tested and evaluated in a rigorous manner.

INPUTS AND TECHNOLOGIES: As noted above, the everyday links between plant clinics and agrodealers are still poorly developed, though there has been regular discussion of the agrochemical

sector in Plantwise meetings. I talked with Christie Peacock from SIDAI, a 'social enterprise operating in the livestock sector in Kenya' about the the poor quality of inputs sold in agrodealers and often unreliable advice offered to farmers. Although SIDAI concentrates on animal health, over 40% of the business done by franchisees (agrodealers) is on plants. SIDAI aims to improve the quality of services and products for livestock through a network of franchises that source their materials from a reliable distributor. It would be useful to explore potential collaborations with SIDAI on raising awareness of plant clinics and improving advice given on plant health problems.

There is a wariness amongst scientists about working with agrodealers, arising from a general concern about the use of pesticides. Many farmers have poor access to agrodealers, however, and stronger links are needed to guarantee supply of recommended products. It would also be good to encourage agrodealers to use plant clinics. Peter, the Munyoungi agrovet in Kikuyu said: 'I know about the plant clinic in Wangige but I have not referred any farmer to it.'

Plantwise meetings have invited representatives from the Pest Control Products Board and the Agrochemical Association of Kenya, but few if any agrodealers to meetings. Peter told me that he'd recently been invited to a meeting at KEPHIS, who were advertising services. He was the only agrodealer present out of 100 or so farmers selected by the MoA in his area. It is not only Plantwise that struggles to establish links with agrodealers.

FINANCING: Plantwise is funding most of the work on establishing plant clinics and sponsoring meetings on a national plant health system. Future investments will depend on evidence of impact. Currently, the biggest contribution from MoA is the assignment of staff to run plant clinics, an important step towards integration with everyday extension. As management of extension is decentralized it may become more difficult to ensure local contributions, as budgets are managed locally. Performance indicators such as 'access, coverage and quality' will help to establish value for money while integration of actors within an PHS should demonstrate wider impacts (such as reduced use of pesticides or regular use of diagnostic laboratories) and thus sustain future non-Plantwise investments in advisory services.

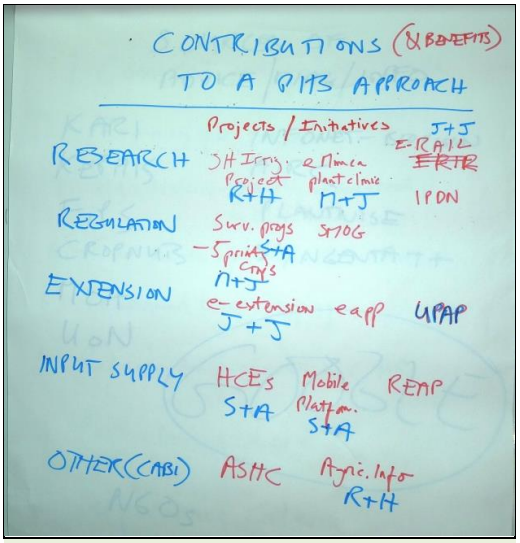
POLICY, LEADERSHIP AND GOVERNANCE: The establishment of plant clinics is officially supported at national level and accepted locally. There is clear commitment to a national PHS as seen through a strategic plan for 2013-2017, developed by the National Plantwise Steering Committee, but note again the challenges of decentralization.

The aim of the strategic plan is to 'establish a baseline of a PHS modelled against four objectives'. These exist to assess existing:

- Plant health information
- Institutional capacity for implementation of plant health services
- Institutional linkages (roles, responsibilities, collaborations, interactions and networking)
- Coordination and management of plant health programmes

The baseline study will not start until later in 2013. At present, any consideration of policies and leadership is largely limited to plant clinic operations, which have already been discussed. Governance structures are emerging through the various forums and committees already established by Plantwise but it is still too early to analyse their functions in the wider context of a national PHS.

How do plant clinics help farmer groups and associated LINSAs and what is the clinics' contribution to sustainable agriculture, paying particular attention to the use of pesticides.



A quick listing of existing projects and initiatives caused some surprise at the end of the Roundtable. eMimea is an online plant clinic which few were aware of. The degree of integration can clearly be improved by telling others what you are doing.

Individual farmers are the main target of plant clinics, not farmer groups. Links with farmer groups have been created through clinics run by Kataloni CBO. They rotate venues in Machakos county to reach as many as possible and work through local NGOs. VVP facilitated one such clinic that I observed, mobilising farmers to attend the clinics and nicely complementing that other activities that VVP promotes in agriculture and supporting women's' groups. Little has been written about NGO involvement in running clinics and further study is needed to assess benefits as well as drawbacks.

Clinics run by NGOs in western Kenya showed initial promise, encouraged by enthusiastic responses from leaders which did not always translate into consistent actions. Eventually the clinics were taken over by MoA staff.

It is difficult to assess how advice received in a clinic contributes towards increased productivity without focusing on on a major crop or new disease. Information on this type of impact is missing. Maize lethal necrosis disease, the most recent newly emerging disease in Kenya (and elsewhere in East Africa) was discovered through non-clinic referrals.

There is no hard evidence to show how pesticide use has changed through advice given at clinics since there have been no detailed studies to assess impact. The overall effects are likely to be small, if only because numbers of people attending clinics are still relatively few (around 6000 in 2011) compared to overall number of farmers.

The impact of plant clinics on sustainable agriculture is more subtle than perhaps first appreciated, though no less important in the absence of compelling impact on productivity or pesticide use. One potential significant impact is on reducing risk and vulnerability to pests and diseases, as well as giving farmers greater confidence about ready access to quality advice. An increased responsiveness to demands shows a wider commitment to rural communities and agriculture. Pests and diseases spread readily and responses need to be coordinated across areas much more extensive than those served by clinics, hence the relevance of a PHS approach.

3. What is the best approach to evaluating the contributions made by extension workers through plant clinics and how are these contributions currently measured in performance contracts applied under the Ministry of Agriculture?

According to Lucy Waweru, head of extension in Kikuyu, plant clinics have not yet been included in performance contracts of plant doctors. There are no job indicators that might incentivize plant doctors, and contributions currently rely more on personal satisfaction from running plant clinics and serving farmers. The opportunity to attend training courses may have some bearing on willingness to run plant clinics.

Contributions can be measured simply in terms of clinic operations: number run, farmers received, queries dealt with and so on. A more detailed approach would look at the quality of diagnoses and recommendations made by plant doctors so that one could assess the potential benefit of advice for farmers. More needs to be known about what happens after the farmer visits the clinics. Were there

follow-up field visits? Did the plant doctor connect the farmer to diagnostic laboratories, for example, of obtain (or write) a relevant fact sheet? What other actions were taken to ensure that a query was fully and successfully dealt with?

5. Conclusion

Plant clinics are connecting people in new ways. A PHS approach is encouraging groups with common interests to explore new ways to work together. Farmers like plant clinics and want more, even though numbers of users is now always as high as expected. Low turnout does not mean low interest, however, and more publicity about clinics is needed, as well as adapting operations to local circumstances.

Plant doctors can achieve much by themselves, though all clearly want more information about pests and diseases and their management. External assistance is always valued, for example in identifying unknown problems and potential new diseases. Initial detection of such diseases appears to be quite good, at least on major crops such as maize. The subsequent response in alerting farmers and taking action locally to combat the new disease is less dynamic and much greater use could be made of plant clinics by KEPHIS, for example. There is a low awareness amongst plant clinics of a soon to arrive tomato pest, *Tuta absoluta*, already present in Ethiopia and heading towards Kenya. This would be a good example to focus on, getting plant doctors ready for its arrival and working closely with KEPHIS and KARI.

It is important to look backwards as well as forwards. Plant clinics are only the latest idea to invigorate extensions where systemic weaknesses have existed for some time (e.g. Rees et al, 2000). But things are changing after nearly three years work of developing plant clinics in Kenya. There is more optimism that improvements will continue now that the MoA has officially adopted plant clinics and the creation of a national plant health system strategic plan is encouraging.

The potential of plant doctors (extension agents) is more widely recognized with implied changes in their standing with scientists. It is important that extension workers are respected. Plant clinics are helping to increase contact across the spectrum of plant health activities and though most focus remains on plant clinics, the emphasis on a PHS approach is ensuring a wider consideration of how to strengthen interactions with research, regulation and input supply.

Plantwise is 'finding out what people do and helping them to do it better', as E F Schumacher said. Regular reflection and introspection identifies key lessons which joint actions seek to improve. There is a danger that CABI becomes a 'mother substitute', taking on the role of public extension, but there is a healthy awareness of the dangers of creating a separate initiative that will ensure closer integration of plant clinics within everyday extension.

Clinics need better publicity, for example, while the flow of clinic data and distribution of results back to plant doctors is still variable. The early enthusiasm generated by training courses needs to be sustained through clear evidence of achievements i.e. clinic results showing numbers of clients reached, gender balance, timeliness of response, quality of services and so on.

The clear demonstration of a PHS approach is more difficult to discern. Involvement of KARI and KEPHIS in plant clinics is slowly increasing. Both organisations have projects that contribute to a PHS approach yet they are not always widely known, as we found out during the Roundtable.

The establishment of clinics has encouraged innovation, both in the way extension is delivered and how CABI itself works. Small, steady steps forward are to be expected, not giant leaps. There are plenty of committed people who have been energised by plant clinics and who are ready and able to look for new ways to do things. The involvement of NGOs is still small and must surely increase if access and coverage of plant clinics is increase.

The PHS framework is an important tool for analysing and assessing progress. As key indicators of outcomes are agreed so it will become easier for different organisations to identify their role and contribution and, equally important, for plant clinics to grow beyond the public sector and engage with the many NGOs in Kenya who play a key part in providing services.

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Annex 1

Major events in the development of plant clinics

The first plant clinics were one-off events and took place in July 2005 at Busia and Lubao market in western Kenya (see photosheets below). Another one-off plant clinic was held in Wangigi market, on the outskirts of Nairobi, in August 2008.

The planning meeting for launching plant clinics was held in **April, 2010** and attended by only CABI staff. The first training course was held in Kitale immediately after the meeting and two NGOs started the first regular plant clinics in Kitale. KARI were involved in the training and provided general support to plant doctors but did not run their own clinics.

Stakeholder meetings and reviews were held in **February 2011** and an Africa- wide Plantwise summit for all countries running plant clinics convened in Nairobi in **March 2012**. Countries attending were DR Congo, Sierra Leone and Uganda with Tanzania as an observer (which encouraged them to start plant clinics in 2012). The official Plantwise launch was not until **May 2012** and was combined with the first national stakeholder forum.

A regional M&E workshop for Plantwise was held in Nairobi in October **2012**.

A two week Masterclass on practical diagnostic techniques for use in the field was organised in Nairobi to tie in with Plantwise. It was attended by countries already mentioned, and included Rwanda (who started plant clinics after a long gestation of interest in 2012) and Mozambique (clinics to start in late 2013).

Annex 2

Roundtable on a Kenya Plant Health Systems: fact or fiction

This was held at ICRAF in Nairobi on the 19 July. It was attended by representatives from extension, regulation, research and input supply who came mainly from the public sector but also included people from the private and civil society sectors.

Participants

Participant	Organisation	Sector
Abed Kagundu	KEPHIS	Regulation (public)
Eric Boa	CABI | Agro Insight	Consultant
Florence Chege	CABI, Kenya Country Coordinator	Plantwise staff, CABI
Hellen Omondi	MoA Agricultural Information Resource Centre	Extension (public)
James Wanjohi	MoA Extension (head), National Coordinator Plantwise	Extension (public)
John Mutisya	Kataloni | Infonet Biovision	Extension (NGO/CBO)
Joshua Oluyali	MoA Plant Protection Services Division	Research/technical support (public)
Miriam Otipa	KARI Senior Research Officer	Research (public)
Rose Kamau	MoA Extension, Assistant National Coordinator Plantwise	Extension (public)
Susan Njoroge	Syngenta	Input supply (private)

Programme

Session 1 was on analysis and reflections. We looked at how different ways of looking at a PHS (basic model, framework and the Plantwise theory of change) helped understand what had happened following the establishment of plant clinics and how coordination and integration of resources and facilities could be improved. We compared quotes from people running and supporting plant clinics in Uganda about their experiences with the story so far in Kenya.

In Session 2 we considered what needed to be done to achieve greater coherence and visibility of a PHS approach and attempted to identify practical actions which individuals and organisations could take. We looked at current interests and activities with people describing current projects that concerned plant health in its widest sense. There were many surprises as people revealed initiatives that others didn't know about yet should – if there was a proper functioning plant health system.

The conclusions of the meeting are woven into the main showcase report. A separate report will be prepared for the roundtable participants so they can follow up on decisions made and actions identified.