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Access and coverage: which farmers do plant clinics reach in Uganda?

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ABSTRACT

This article reports on a study that assessed farmers' access to, and coverage of, five plant clinics operating from market places in two districts of Uganda. Despite the noticeable geographic and thematic coverage of the services, placing plant clinics at markets did not automatically ensure equitable access and high farmer attendance. Clinic users were predominantly middle-aged male farmers and overall attendance was relatively low. Uganda has taken plant clinics to scale in recent years due to their potential to strengthen the country's responsiveness to pests and diseases. Optimising farmer reach and ensuring equity in access requires reviewing clinic placement, timing, and mobilisation strategies.

Cet article rend compte d'une étude qui a évalué l'accès et la portée de cinq cliniques des plantes opérant sur des marchés dans deux districts ougandais. Malgré la portée géographique et thématique remarquable des services, l'installation des cliniques sur les marchés n'a pas automatiquement garanti l'accès équitable et la participation élevée des agriculteurs. Les usagers des cliniques étaient principalement des agriculteurs de sexe masculin et d'âge mûr, et la tendance générale de la fréquentation était relativement faible. L'Ouganda a mis les cliniques des plantes à l'échelle ces dernières années en raison de leurs capacités potentielles à renforcer sa réactivité face aux parasites et aux maladies. L'optimisation de la manière d'atteindre les agriculteurs et l'engagement à garantir l'équité dans l'accès aux cliniques des plantes exige une réévaluation de l'emplacement de ces établissements, de leurs horaires de fonctionnement et de leurs stratégies de mobilisation.

El presente artículo da cuenta de un estudio orientado a evaluar el acceso de los productores agrícolas a cinco clínicas de plantas que operan en mercados localizados de dos distritos de Uganda. Asimismo, el estudio valoró la cobertura ofrecida por éstas. A pesar de que la extensión geográfica y temática de los servicios brindados es notable, el hecho de que existan clínicas de plantas en los mercados no significa que, de manera automática, se produzca el acceso equitativo a las mismas, y tampoco garantiza la elevada presencia de productores. Los principales usuarios de las clínicas son productores varones de edad media, quienes acudieron a estas en forma relativamente limitada. Durante los últimos años, Uganda ha multiplicado la presencia de clínicas, debido a que representan una posibilidad para fortalecer la respuesta del país a plagas y enfermedades. Por tanto, para optimizar la cobertura brindada a productores y garantizar la equidad en términos de acceso, parece necesario replantear la ubicación de las clínicas, la elección del momento oportuno y las estrategias de movilización.

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Introduction

Uganda's public agricultural extension system has undergone a raft of organisational and institutional changes over the last 50 years (Bashaasha, Mangheni, and Nkonya 2011; Rwamigisa et al. 2013). Despite ambitious efforts to make extension services more inclusive and responsive to the needs of farming communities, the extension reforms have visibly not led to the expected results (Kibwika, Wals, and Nassuna-Musoke 2009; Bashaasha, Mangheni, and Nkonya 2011; AfranaaKwapong and Nkonya 2015). Extension coverage remains low, and farmer access to sources of information and advice is limited (Sseguya et al. 2012). Improving farmers' access to quality agricultural advisory services remains a significant challenge for public action in Uganda.[1,2]

Crop health is an area evidently affected by the deficient extension services in Uganda. Inadequate pest and disease management remains a major agricultural production constraint for Ugandan smallscale farmers (Bukenya 2010) and an obstacle for entering domestic and international markets. There are examples of major public investments in eradication campaigns following outbreaks of devastating diseases such as banana bacterial wilt and cassava mosaic disease. Such efforts tend to be oneoffs in response to alarming situations and actions are difficult to sustain because of the costs and efforts involved (Vurro, Bonciani, and Vannacci 2010). In addition to the occasional outbreaks of "big" diseases, farmers face a range of crop health problems every growing season (Danielsen et al. 2012). Nonetheless, there are hardly any regular services that farmers can turn to when plant health problems occur. Extension services and farmers have benefitted little from Uganda's vast investments over the last decades in laboratories and human resources to strengthen diagnostic capacity (Smith et al. 2008).

In order to address these long-standing barriers, community-based plant clinics, mostly operating from market places, were introduced in Uganda in 2006 at a pilot scale as a means to reach more farmers with quality plant health advisory services (Danielsen and Matsiko 2016). Initially implemented in Iganga, Mukono, and Soroti districts, the initiative was driven by CABI in collaboration with the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), and selected local governments and NGOs.

The plant clinic approach intends to address one of the common shortcomings of agricultural extension services, namely their tendency to target a narrow range of crops and problems and to work with selected farmer groups and individuals. The recent National Agricultural Advisory Services of Uganda (NAADS), for example, worked with farmers' groups on selected commodities providing general information on agronomic and animal husbandry practices, with little focus on pest and disease management (Kibwika, Wals, and Nassuna-Musoke 2009; Danielsen, Matsiko, and Kjær 2014).

The promise of plant clinics to reach more farmers with targeted plant health advice using existing extension capacity was appealing to Uganda (MAAIF 2010). Beginning 2012, the plant clinic initiative, after gaining considerable policy support, turned into a large-scale intervention involving 70 districts (Alokit et al. 2014).

The plant clinics are by design meant to help reduce pre- and-post-harvest losses caused by pests and diseases by providing on-the-spot demand-led primary plant healthcare (Bentley et al. 2009). The assumption is that placing the clinics at rural markets will make the services accessible to all types of farmers, irrespective of their age, gender, education, and socio-economic level and, in addition, extend the boundaries of the clinic catchment areas beyond the normal reach of extension workers.

In order to test these assumptions, we examined the operations and performance of selected plant clinics in two Ugandan districts, with particular focus on farmer access and plant clinic coverage. We discuss the potential scope of plant clinics for meeting farmer demand for plant health advisory services, as well as the implications for clinic implementation in a Ugandan context.

Operation of plant clinics in Uganda

A typical Ugandan plant clinic consists of a tent sited in a market place, one or two tables, a few chairs, waiting benches, and clinic materials such as photo sheets and factsheets to assist with the

diagnoses. The clinics are open to any farmer who wants advice on any plant health problem they might have.

During the study period, extension workers ("plant doctors") employed by local governments under the recent NAADS programme worked with lead farmers ("plant nurses" or "nursing aids") to run fortnightly plant clinics in Buikwe and Mukono districts. Prior to deployment, all clinic personnel had received training on field diagnostics as well as the general operation of a plant clinic (Danielsen et al. 2012).

In the period leading up to each clinic session, the plant doctor publicised the event using local channels such as radio or the area extension workers. At the clinic venue, the plant nurse and nursing aids registered the clients' names and location of origin as well as the nature of the samples brought to the clinic. Thereafter clients took turns to meet the plant doctor who listened to them, examined the samples, diagnosed the problems, and recommended a course of action to the client. Every query was recorded on a prescription form in two copies, one for the client and one to be retained in the plant clinic records.

Methodology

The study was carried out in Mukono and Buikwe districts in central Uganda from November 2010 to February 2012. Five plant clinics were included in the study: two in Mukono (Ntunda and Nakifuma sub-counties) and three in Buikwe (Nkokonjeru, Lugazi and Kiyindi sub-counties).

Access and coverage were the major themes measured based on selected attributes suggested by the World Health Organization (WHO) for monitoring health service performance (WHO 2008), which build further on the plant clinic performance framework developed by Danielsen and Kelly (2010). Access was assessed by looking at gender, age, and education of participating farmers, location and visibility of the clinics, and timeliness of the clinic sessions. Coverage was established as geographical reach of clinic services (catchment area), farmer attendance, and the range of crops and/or plant health problems the plant clinics dealt with.

We used a mix of qualitative and quantitative methods. Quantitative data were gathered at the clinic locations in a cross-sectional survey (exit survey) of 97 farmers who received clinic services (hereafter referred to as plant clinic users). The survey questionnaire was administered immediately after the farmers had attended the clinic sessions. Focus was on selected socio-demographic characteristics; their gender and age, where they came from; what crops they grew; the purpose for visiting the plant clinic; how they learnt about the plant clinic; what crop problem they brought; and how often they visited the plant clinic. The farmers also narrated their perspectives on clinic operations and the influence of plant clinics in ensuring access to the service. Fifty-two people who had purposely come to participate in market activities but without visiting the plant clinics (hereafter referred to as market visitors or non-users), were interviewed. They were selected based on convenience and willingness to be interviewed. They provided information regarding the social context, clinic publicity, and market attendance. The short questionnaire used in these intercept interviews helped to establish the knowledge and perceptions of market visitors about the plant clinic.

Twenty focus group discussions (FGDs) were held at the respective sub-county headquarters (10 male groups and 10 female groups) with 160 participants from the clinic catchment areas (80 clinic users and 80 non-users). The FGDs were used to validate and triangulate findings from the exit and market visitor surveys, and to gain additional insights on how the plant clinic operations favoured or disfavoured farmer access to the service. Survey methods and number of informants are listed in Table 1.

Table 1. Data collection methods and number of respondents.

Type of informant	Data collection method	# informants
Plant clinic users	Exit interviews	97
	Focus group discussions	80
Plant clinic non-users	Market visitor interviews	52
	Focus group discussions	80
Total		309

Quantitative data were retrieved from clinic records from November 2010 to September 2011 to establish the numbers of clinic users, crops and problems covered, and the parishes and/or villages from where the clinic users came. We also captured the Global Positioning System (GPS) coordinates of each clinic user's parish of residence to establish the clinic catchment areas in the same period.

Qualitative data were analysed through content analysis and coding processes to identify the major themes of the study. Quantitative data were entered into SPSS 16.0 and Microsoft Excel 2007 to generate descriptive statistics of clinic users' bio-data, their views about the access and coverage, and the proportions of villages and parishes from which clinic users came. GPS coordinates were entered into Arc view GIS version 3.1 to generate maps for the clinic catchment areas.

Findings

Access to plant clinics

Based on the exit survey, clinic users were grouped into three age categories: youths (<30 years), middle-aged (31–50 years) and seniors (>50 years). Around two-thirds of the clinic users were middle-aged or senior farmers, while 16–20% were youths (Table 2). In contrast, the proportion of young people was considerably higher among the general market visitors (non-users) (42%). Only a few were seniors. Approximately 73% of the market visitors were farmers (Table 3).

The relatively poor participation in the clinics by youths was mainly attributed to their limited interest in agriculture and their preference for engaging in relatively quick return activities such as riding motorcycle taxis (Boda boda), playing chess, fishing, and trading (FGD with clinic users, November 2011): "*When I play chess, I am able to win over 60,000 Uganda shillings per day which the plant clinic does not provide. Why should I go for such an initiative?*" a male market visitor from Lugazi observed (August 2011).

Table 2. Age groups and education levels of plant clinic users.

	% plant clinic users ($n = 97$)	
Farmer characteristic	Buikwe	Mukono
	Age category	
Youths (below 30 years)	16	20
Middle aged (31–50 years)	60	47
Seniors (above 50 years)	24	33
Total	*100*	*100*
	Education level	
Primary or none	59	51
Secondary	39	43
University	2	2
Other tertiary institutions	0	4
Total	*100*	*100*

Source: Exit survey with clinic users, August 2011.

Table 3. Age and occupation of market visitors (clinic non-users) in Mukono and Buikwe districts.

Characteristic	% market visitors ($n = 52$)
	Age category
Youths (below 15–29 years)	42
Middle aged (30–49 years)	50
Seniors (50 and above years)	8
Total	*100*
	Occupation
Farmer	73
Other occupation	27
Total	*100*

Source: Market intercept interviews, August 2011.

Most clinic users were of modest educational background. More than half (51–59%) had primary education or no education, while most of the rest (39–43%) had attained a secondary level of education (Table 2). The differences in age and education patterns between the two districts were minor. Low education may have affected clinic attendance. Some FGD participants mentioned that some uneducated farmers did not attend the clinics out of fear of being asked complex questions. A non-user put it this way: "*Most farmers, especially women, are not educated which scares some of them from going to the clinic*" (FGD with non-users, Nakifuma sub-county, October 2011).

Several FDG participants, both male and female, highlighted the advantages of the plant clinics as a new type of farmer service. "*The clinic is a good innovation since it has improved service delivery by bringing services closer to the beneficiaries*" and "*I have come to learn that even plants have life and need special attention*." They emphasised that having a service that reaches out to many people was something new and valuable. Yet, the majority expressed their disappointment about not being able to get inputs from the plant clinic (male and female clinic-user FGDs, October–November 2011).

While about 52% of the market visitors were women (market intercept interviews, September 2011), the exit interviews and clinic records revealed an overall male to female ratio of 1.8:1 among clinic users (Table 4). Most women (70%) attributed their failure to attend clinics to domestic and community commitments.

During the FGDs, women cited the timing of clinic events in the afternoon hours, operating clinics at market places, as well as social engagements like attending burials, wedding ceremonies, and community meetings as constraining the time that they could otherwise devote to attending plant clinics. This was illustrated by one Nakifuma female farmer who asserted, "*Plant clinics are useful in providing crop pest and disease information. However, the timing of these clinics does not favour women's participation because of other social obligations and domestic chores*" (FGD with female users, Nakifuma sub-county, October 2011).

Most women preferred a morning scheduling that affords them opportunity to juggle clinic and market activities, and yet allows them to get back home in time to undertake other gender-based commitments. Some women are not able to attend the market at all, as stated by a FGD participant, "*There are women who do not go to the market because they are stopped by their husbands*" (FGD with male non-users, Nakifuma sub-county, October 2011). Male farmers seem to benefit most from the market-based plant clinics. As explained by a female farmer in Kiyindi: "*Men stay longer in the market, socialising and drinking alcohol. This gives them more opportunity to attend plant clinic sessions*" (FGD with female clinic users, Kiyindi sub-county, November 2011).

Some respondents, both male and female, also stressed the effort and time required to get to the plant clinics. Lugazi FGD participants in particular emphasised the counter-intuitiveness of locating the clinics in the town, while the vast majority of farmers live in the villages.

Table 4. Coverage of plant clinics in Buikwe and Mukono districts.

Variable	District		Total
	Mukono	Buikwe	
	Service delivery		
# clinic sessions held	24	40	64
# farmers attended to	104	214	318
# farmers per session	4.3	5.4	5.0
Male:female ratio	1.7:1	1.9:1	1.8:1
# queries reported	138	214	352
# crops attended to[a]	18	23	28
# plant health problems diagnosed[a]	57	68	107
	Geographical coverage		
# parishes reached	32	24	56
# villages reached	41	34	75

Note: [a] Several crops and problems overlap between the two districts.
Source: Plant clinic records (Nov 2010–Sept 2011)

The majority of the market visitors (64%) and half the clinic users (51%) lived within 8 km of the clinic sites, with the most distant client having travelled 51 km purposely to attend the market. To get to the market, many clinic users (about 40%) walked on foot while nearly as many (37%) hired motorbike taxis (exit and market intercept interviews, August 2011). Other clinic users travelled by boat and bicycle. Physical barriers, such as Lake Victoria and rivers, constrained clinic access, especially in Kiyindi and Ntunda sub-counties. Farmers complained about the difficulties of crossing the water bodies to participate in clinic sessions.

Some clinic venues were described as inappropriate because they were overshadowed by market activities and/or noisy. The Lugazi clinic, for example, was not easily noticeable to the casual observer, while heavy trucks obstructed the view of the Kiyindi clinic. Some clinic users, especially those selling agricultural produce, noted that it was difficult to divide their time between plant clinics and selling their produce. They suggested that mounting plant clinics around places of worship after prayer services would be a better option for many farmers, including women, youth, and more distantly located people who do not come to the markets regularly (FGDs, July 2011).

The informants highlighted a general issue with limited farmer awareness about the plant clinics. Most clinic users had learnt about the clinics only after seeing the banner (37%) and/or the tent (33%) while visiting the market (exit survey, August 2011). About 56% of the market visitors (market intercept interviews, August 2011), and the majority of the FGD non-user participants had never heard about the plant clinics (FGDs with non-users, October–November 2011). Several farmers, both users and non-users, recommended use of an integrated mobilisation strategy, particularly involving local leaders, to enhance ownership and visibility of clinic activities. The non-users who had heard about the plant clinics cited workload, physical distance, as well as limited and irregular clinic operations as reasons for farmers' failure to attend the clinics (FGD with non-users, October–November 2011). Perceptions about the clinics also prevented some farmers from seeking their services. Some non-users, for example, thought that the clinic would charge a fee or that the prescribed drugs would be too expensive (market intercept interviews, August 2011 and Nkokonjeru non-user FGD, October 2011).

Despite the many restrictions mentioned by clinic users, 81% thought that markets were appropriate clinic locations, while 8% thought that they were fairly appropriate. Yet, they strongly emphasised the need to improve publicity, align the timing better with women's schedules, rotate the clinics among the sub-counties, and complement the markets with other farmer-friendly locations (exit survey, August 2011; FGDs with clinic users, October–November 2011).

Coverage of plant clinics

A review of plant clinic records showed that in the 64 clinic sessions held over the study period, the plant clinics served 318 farmers who presented a total of 352 plant queries (Table 4). The Buikwe

Table 5. The ten most frequently presented crops at the plant clinics in Buikwe and Mukono districts.

	# queries		
Crop	Mukono	Buikwe	Total
Banana	37	29	66
Cassava	39	17	56
Coffee	34	17	51
Tomatoes	23	11	34
Beans	6	17	23
Cabbages	13	7	20
Maize	7	7	14
Sweet potatoes	9	3	12
Pineapples	3	7	10
Groundnut	4	5	9

Source: Plant clinic records (Nov 2010–Sept 2011).

Table 6. Frequencies of top-five most reported crop problems at the plant clinics in Buikwe and Mukono districts.

Mukono district	# cases	Buikwe district	# cases
BBW*	23	CBSD	35
CWD*	10	BBW	26
CBSD*	9	Coffee stem borer	14
Bean aphids	7	Tomato bacterial wilt	10
Maize stalk borer	5	CWD	8

Notes: *BBW = banana bacterial wilt; CBSD = cassava brown streak disease; CWD = coffee wilt disease.
Source: Plant clinic records (Nov 2010–Sept 2011).

clinics received more queries than the ones in Mukono. Since the average number of clients per session was almost the same across the districts (5.4 and 4.3 for Buikwe and Mukono, respectively), the larger number of clinic sessions in Buikwe (40) compared to Mukono (24) probably explains much of the difference in overall attendance.

The plant clinics received queries on 28 crops and over 100 plant health problems across the five clinic sites (Table 4). Most of the crops and problems recorded were present in both districts. As illustrated in Table 5, the most frequently reported crop queries were about banana (66), cassava (56), coffee (51), and tomato (34). The relative differences in crop frequency between the two districts were small. Minor crops (1–2 queries) included avocado, sugarcane, yam, pumpkin carrot, vanilla, peach, and water melon (data not shown in Table 4).

Table 6 lists the five most frequently presented crop problems in each district. Three of them were shared by the two districts though their relative prominence varied: banana bacterial wilt (BBW), cassava brown streak disease (CBSD), and coffee wilt disease (CWD). BBW and CWD were in that order from the most frequent in Mukono, while CBSD and BBW were by far the most prevalent in Buikwe. Overall, the 28 crops were diagnosed with an average of 3.8 plant health problems (biotic

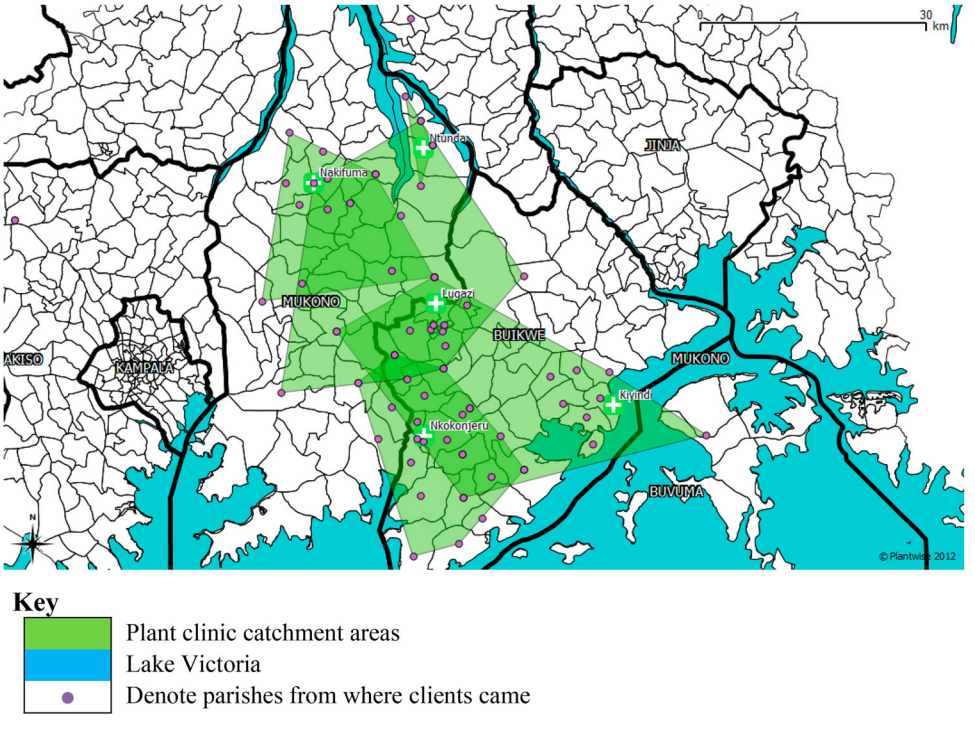

Figure 1. Plant clinic catchment area in Buikwe and Mukono districts, -Uganda.

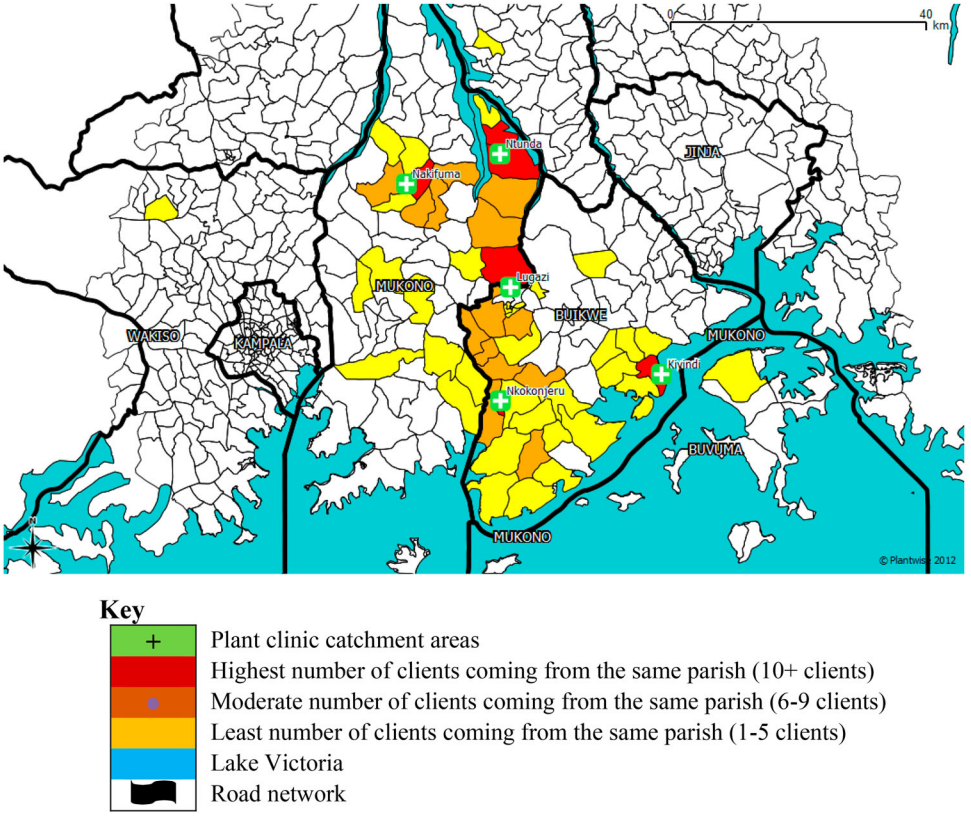

Figure 2. Plant clinic user densities for Buikwe and Mukono clinic catchment areas.

and abiotic) ranging from one problem per crop (peach, rice, vanilla, and watermelon) to 15 problems per crop (tomato) (data not shown in Table 6).

The farmers came from 75 villages situated in 56 parishes (Table 4). Figure 1 illustrates the five plant clinic catchment areas. The clinics served clients from a wide geographical area in which the individual clinic catchment areas overlapped considerably. There was also significant overlap in clinic catchment area between the two districts.

Most users came from the vicinity of the clinic sites and were mostly from within the districts in which the clinics were located. Ten clients came from other districts outside the areas of the "plant clinic jurisdiction": Kayunga, Nakaseke, Mubende, and Wakiso districts (not shown in Figure 1).

Figure 2 illustrates clinic user density per parish. The largest concentration of clients was along the Mukono-Buikwe district border transecting the areas of the Ntunda (Mukono), Lugazi, and Nkokonjeru (Buikwe) sub-counties. Client density was low and scattered in approximately two-thirds of the parishes reached.

Discussion

Farmer access to plant clinics

While the age and education profile of plant clinic users in the two districts matched the general pattern among farmers in Uganda (UBOS 2010), female farmers were under-represented at the plant clinics. According to O'Sullivan et al. (2014), women account for 56% of crop labour in Uganda, yet, only one third of the clinic users were women. A study by Lamontagne-Godwin et al.

(2017) found a similar gender imbalance among plant clinic users in Ghana (33% women) and Sri Lanka (40% women).

Scheduling and location of clinic events, and the opportunity cost of engaging in agricultural activities apparently, if inadvertently, worked against women's participation in the plant clinic sessions. Socio-cultural norms and conceptions are known to play an important role in determining women's access to agricultural services and assets (Meinzen-Dick et al. 2011). Thus, a visit to the plant clinic may not be considered a priority in women's busy schedules. Social norms also influence the behaviour of men and women. It is often more acceptable for men to stay at markets to socialise, while women are expected to return to their homes as soon as they have fulfilled their duties at the market. Distance can further discriminate between the sexes in the sort of socio-cultural contexts that prevail in the study areas. In these situations, where the community frowns upon bicycle riding by women, the predominantly poor women are largely confined to moving on foot. The loss of time attending a plant clinic can be a disincentive to female farmers.

A 2008/9 Uganda Census of Agriculture (extensively cited in UBOS 2012) established that more women than men are permanently engaged in farm work (55%). Conversely, 57% of the men played the role of crop enterprise manager (that is, one who makes decisions on what to plant, what seed to use, how, when, for who, and so on). As argued by UBOS, the level of involvement in enterprise management may be a product of differential access to land and/or a precursor of perceived superior farm management skills of men. This imbalance is likely to exacerbate many of the biases against women already built into the way agricultural households are managed.

For the plant clinics to contribute to closing the gender gap in access to agricultural extension, they must be able to target the needs of the relatively more marginalised groups better by, for example, choosing days and hours that suit women better and/or combining the fixed-market approach with mobile clinics and other extension activities. Evidence from plant clinics in Kayunga (central Uganda) and Hoima (western Uganda) districts show that regular rotation of plant clinics between different market places (mobile clinics) combined with targeted publicity led to higher farmer attendance and a higher proportion of female clients (41–44%) (Danielsen et al. 2012). A rotating scheme would also help reach farmers for whom the physical distance to the market is a hindrance to clinic attendance.

Middle-aged to senior farmers tended to participate in clinic sessions disproportionately (58%). The youths who constitute about 75% of the Ugandan population were clearly under-represented (UBOS 2015) at only 42%. This is likely to be a reflection of the general trend in Uganda where only about 35% of the youth engage in farming. The tendency is for them to seek employment opportunities outside the agricultural sector (Ahaibwe, Mbowa, and Lwanga 2013).

This study has started to uncover some of the aspects that determine farmers' access to the plant clinics. Further studies are needed to gain a broader understanding of the different physical, socio-economic, and socio-psychological dimensions of access.

Plant clinic coverage

The plant clinic catchment areas varied in size and there was considerable overlap between them. The clinics reached farmers from a wide geographic area, most of them from within the local government jurisdictions in which the clinics were located. An exception was the Ntunda clinic whose catchment area was restricted by the two water bodies surrounding the clinic (Figure 1). The mobility of large sections of the inhabitants of the rapidly urbanising districts studied may explain some of the overlap in clinic catchment areas, as well as the participation of several clients from outside the target districts. A major road goes through both districts, connecting central and eastern Uganda. The size of the catchment areas also indicates that the plant clinics have the potential to attend to a much larger geographic area than the extension workers ordinarily can. According to the NAADS model being implemented at the time of the study, each extension worker was assigned a specific sub-country and specific farmer groups for the delivery of extension services (World Bank 2010). Contrary to

this, the plant clinics operate in a manner akin to that of human health services where the location and timing of the services determine who will attend and be served (WHO 2008).

The geographic reach notwithstanding, the client density per parish showed a fairly scattered and overall low farmer attendance (Figure 2). Insufficient publicity was identified as a major reason for the low attendance of five farmers per session on average, raising questions about the cost-effectiveness of the plant clinics. Around half of the clinic users were unaware of the plant clinics until they spotted the banner in the market. Even more of the non-users (56% of the market visitors and the majority of the non-user FGD participants) had never heard about the plant clinics. The limited public awareness of the clinics indicates that they were still not fully rooted as a community service.

The plant clinics covered 28 crops and dozens of plant health problems. This demonstrates the clinics' ability to address broad farmer demand for advice on crop health problems over a relatively short period. The plant clinics, arguably, have made the demand for plant health services explicit. About one third of the queries were on banana and coffee, the predominant crops in central Uganda according to official statistics (UBOS 2010). Thus, the plant clinics seem to have easily aligned themselves with the demands of major crops such as those targeted by the national programmes. Another way of looking at this would be to say that the plant clinics have also captured the demand for advice on a large number of minor crops that traditionally receive little attention from research and extension programmes. This was initially one of the objectives MAAIF and the plant clinic implementers intended to meet (MAAIF 2010).

Implications for plant clinic scaling up

The findings from this study challenge some of the basic assumptions underlying the plant clinic intervention. The plant clinics examined here were not as gender inclusive as initially expected. Future research should establish whether there are other under-represented farmer groups.

The results revealed some of the aspects influencing farmers' access to, and coverage of, the plant clinics. Implementers need to address the trade-offs when making strategic choices about clinic location and operation in order to maximise reach with the given resources. Access and coverage are two sides of the same coin. Improving farmer access is likely to enhance attendance and geographic coverage. Conversely, by conscientiously capitalising on the existing social dynamics to deliver the service, a diversity of farmers will most likely be able to access it. Market places are "social magnets" and can be suitable options when well selected and timed, but they are no panacea, and will inevitably limit the participation of certain farmer groups. Other suitable venues could include village and town centres, churches and mosques, hospitals and health centres. Irrespective of the choice of venue, the service needs to be properly advertised so that the target clients become aware of its existence and have opportunity to plan their visits in time. An invisible service is by definition not accessible to its potential users.

In human health, access and coverage of health services are standard criteria for assessing performance of services and systems (WHO 2008). Plant clinic implementers need to set up systems for routine monitoring to underpin management decisions about service location and delivery mechanisms. Performance monitoring has so far been a weak point of the plant clinic initiative in Uganda (Danielsen and Matsiko 2016). Capturing farmers' perspectives on the plant clinic operations, including quality, feasibility, and relevance of the advice, should be integral to current and future implementation strategies.

This study shows the importance of understanding the specific context and adapting the plant clinic model accordingly. Lessons and practices from one country or region cannot automatically be applied to another. The social dynamics within rural communities vary hugely, even within the same country.

Conclusion

Since 2012, Uganda has taken on plant clinics at scale. Ministry and local government officials essentially agree that plant clinics as an extension approach have something unique to offer in terms of

reaching farmers with plant health advice that targets their specific crop problems. The present study confirms that the coverage of plant clinics in Mukono and Buikwe was considerable, both in terms of geography and type of farmer demand they met. However, placing plant clinics at market places does not automatically ensure equity in access and high farmer attendance. Women and youth, in particular, were under-represented. The overall clinic reach was restricted by general low farmer attendance measured as number of clients per clinic session. The limited visibility and public awareness about the plant clinics undermined their ability to meet the original aims. Plant clinics are designed to be an inclusive service open to all, providing on-the-spot advice to smallholder farmers. Yet, optimising farmer reach and ensuring equity in access by all gender, age, and socio-economic farmer categories in Uganda will require reviewing the current clinic placement, timing, and community mobilisation strategies. The study demonstrates the value of performance assessments to inform operational and strategic decision-making.

Notes

1. As this article was being written, a new extension reform was under development, replacing NAADS with a new service delivery model: www.monitor.co.ug/Magazines/Farming/Uganda-to-get-new-strategy-for-agricultural-extension/689860-3165964-hskgpyz/index.html.
2. From 2002 to 2011, the plant clinic initiative was spearheaded by CABI's Global Plant Clinic (GPC). In 2012, GPC was replaced by Plantwise, a global, CABI-managed programme, aiming at strengthening plant health systems in Africa, Asia, and Latin America (34 countries in 2017: www.plantwise.org).

Disclosure statement

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