

COVERAGE AND ACCESS OF PLANT CLINIC IN NEPAL

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ABSTRACT

Plant clinic is one of the extension approaches that deliver field level services to farmers. In Nepal, this service started in 2008. An assessment of the coverage and access of Plantwise plant clinic in Nepal was conducted from 2013 to 2016 with the view to assess the performance of this approach. The number of plant clinic sessions and queries by farmers increased from 2013 to 2014 whereas in 2015 the numbers of both sessions and queries decreased due to the earthquake that struck the country in April 2015 and disturbances throughout the year. The average number of clinic session run per year was 10.5 and the average number of queries per session was 12. The farmers' gender ratio for female to male who visited the clinic was 45:55. The coverage and access of plant clinics is increasing, but plant clinics are not yet widespread across Nepal.

Key words: access, coverage, crops, gender, plant clinic

INTRODUCTION

The livelihood of the majority of Nepalese people and economic development of the nation are closely associated with the performance of the agricultural sector. Adoption of improved technology is, however, limited due to insufficient agriculture extension services and infrastructure support (FAO, 2010). Thus, there is low productivity and competitiveness of agricultural produces (MoAD, 2014). Low production of agricultural crops due to pests and diseases poses serious threat to food security. Negussie et al. (2011) mentioned that increasing productivity and food security among small-scale farmers requires access to effective, reliable and practical advisory and other support services that enable farmers to address the threats of pests and diseases. Various studies indicated that about 35-40% pre and post-harvest losses are caused by pests in Nepal (PPD & FAO, 2004). Thus, timely diagnostic and management strategies to combat yield loss due to pests and diseases are important aspects. Srivastava (2013) highlighted the importance of plant health security through advisory services like plant health clinics in order to prevent losses occurring from field to fork globally.

The technical service to the huge number of small land-holding farmers in Nepal is challenging and insufficient. According to the agricultural census 2011, there is one agricultural service centre under Minister of Agriculture Development for every 11,269 farmer households in Nepal (MoAD, 2016). Plant clinic is a novel approach in the agricultural extension services of Nepal. It is a demand driven extension service which focuses on diverse crops and technologies (Adhikari et al., 2013), aims to reduce the unnecessary application of chemical pesticides (Bentley et al., 2009). It links research and extension, discovers new crop problems (Boa & Harling, 2008), acts as an early warning system for new pests and diseases, supports quarantine function (Adhikari et al., 2013), provides pest surveillance function in the particular location, updates the extension service providers to solve the

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farmer's technical problems, improves quality of services and provides plant health extension services to small holder farmers. Thus, it has been gaining popularity among farmers in Nepal since its launch. The concept of plant clinic was initiated during 2008 in Nepal. Government of Nepal, MoAD, and PPD initiated the CABI led Plantwise programme in 2011 and entered into an agreement in 2013 for a structured implementation of the programme in Nepal. Presently, there are 40 regular plant clinics in different parts of the country (CABI, 2015). Regular plant clinic sessions were generally conducted every month in the same location. Besides the regular plant clinics, there are also mobile plant clinics operating in Nepal; but are not in the same location and time interval. This paper focuses only on the regular plant clinics because only these currently collect clinic data.

These days, plant clinics are endorsed by the government of Nepal, and have been integrated into the national plant protection programme. CABI, through its global Plantwise programme, is supporting plant clinic and associated activities in Nepal. CABI is an inter-governmental, International, not-for-profit organization set up by a United Nations level treaty. One of the objectives of the Plantwise programme is to enhance a country's responsiveness to agricultural threats by strengthening stakeholder linkages and feedback loops to maintain quality and relevance of advisory services. Given the difficult nature of diagnosing crop problems and giving quality advice in the field, it is necessary to examine the performance of plant clinic to deliver technical services for the farmers. Performance of plant clinic can be assessed by describing the coverage and access as well as the quality of plant health care advice. This paper highlights the coverage and access of plant clinic between 2013 and 2016 to improve the functioning of agricultural extension services in Nepal.

METHODOLOGY

This study was conducted through plant clinic data analysis. Farmer queries at plant clinics are documented and uploaded to the Plantwise Online Management System (POMS), which is an online tool within the Plantwise knowledge bank that serves as a repository database. The plant clinic data include plant clinic code, plant doctor, date of plant clinic sessions, farmer's details including gender and location, crops, details about the plant health problem (diagnosis) and the recommendation. The data collected in Nepal from September, 2013 to July, 2016 available in POMS were used for this study. The coverage of plant clinics in terms of number and distribution of plant clinics, crops and pest problems at plant clinics and farmers' gender composition were assessed. The queries were categorized into the crop categories such as cereals, fruits, vegetables, pulse and oilseed, spices, flower etc. Number and percentage of crops in each group were calculated and were compared with national data.

RESULTS AND DISCUSSION

NUMBERS OF PLANT CLINIC SESSIONS AND QUERIES

The 25 plant clinics that entered clinic data in POMS are concentrated in the central region of Nepal (Figure 1). Thirteen out of the 25 clinics which uploaded data to POMS are located in the central region, namely Kathmandu, Bhaktapur01, Bhaktapur02, Lalitpur, Kavrepalanchok, Makwanpur, Sindhuli, Sindhupalanchok, Nuwakot, Rasuwa, Dhading, Bara and Parsa. Nine clinics are located in the western part, namely Kaski, Tanahun, Nawalparashi, Rupandehi, Palpa, Syangja, Kapilbastu,

Aarghakhachi, and Pyuthan, and 3 in the eastern part of the country, namely Jhapa, Morang and Sunsari districts.

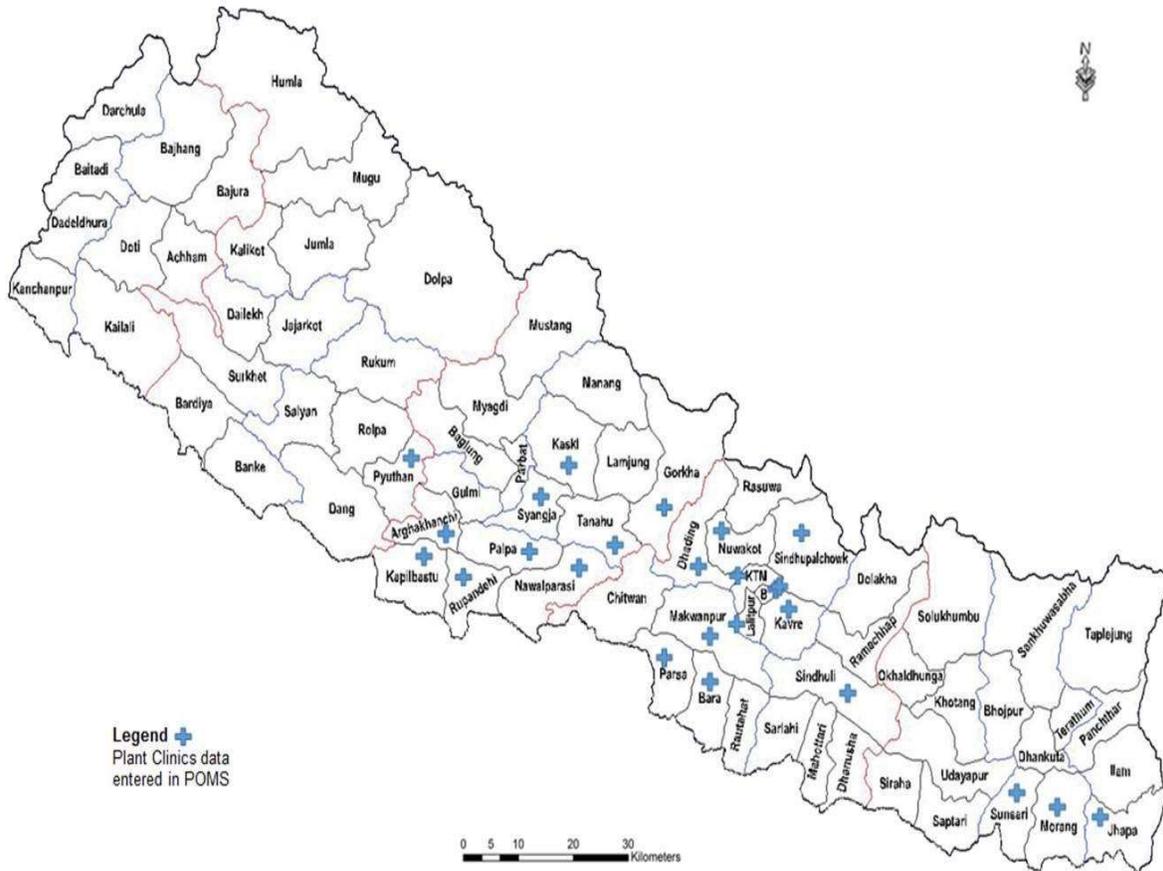


Figure 1: Map of plant clinics in Nepal based on plant clinic data entered in POMS

The coverage of plant clinic in Nepal by Plantwise in terms of number of regular plant clinics increased from 2013 to 2015 (Figure 2). Seven plant clinics were established in 2013, 16 in 2014 and 2 more in 2015. The regular plant clinics operated once in a month in their designated locations. Over the study period, a total of 265 plant clinic sessions were run and 3268 queries made by 1754 farmers (Annex 1). The average number of queries per session and the average number of farmers per session were 12 and 7, respectively. The plant clinics were run by 56 active plant doctors. The highest numbers of plant clinics sessions per year was 7 in 2013 (Bhaktapur district), 12 in 2014 (Kathmandu district) and 13 in 2015 (Gorkha district). In total, there were 288 queries in 7 plant clinics in Nepal during 2013 (based on data from 4 months only). Those numbers increased to 23 clinics with 1868 queries in 2014 and 25 clinics with 968 queries in 2015. Hence, while the number of plant clinics in Nepal increased each year, there was a reduction in numbers of queries in 2015. This was due to the earth quake during April 2015 which killed more than 8,000 people, and

continued disturbance for more than a year. These very difficult times, severely hampered the plant clinic activities in Nepal.

Sept., 2013 to July, 2016 has been presented in annex 4.

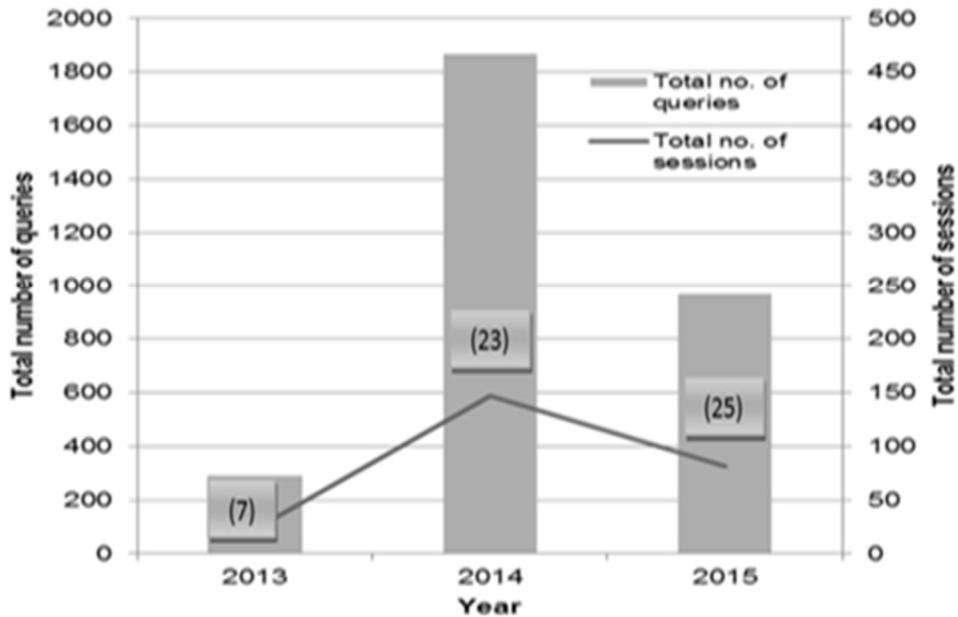


Figure 2: Total numbers of plant clinic sessions and total number of queries in Nepal from September 2013 to 2015. The number in parentheses shows the number of active plant clinics in the respective years.

The coverage of plant clinics during the study period was one-third of the country districts, i.e. 25 of the 75 districts of the country had at least a plant clinic running. The coverage and access of plant clinics in Nepal is increasing though there are still many farmers without access to reliable diagnostic services. Likewise, Adhikari et al. in 2015 also stated the clinic programme has increased access to plant health services by providing wide range of services at one place. The increment of number of plant clinics in Nepal seems to be due to the popularity of the plant clinics among the farmers and also by the contribution of many organizations that considered clinics as an effective tool to provide advisory services to farmers. Similar reason was mentioned by Adhikari et al. (2015).

The average numbers of plant clinic sessions per year varied (1-13) in the regular plant clinics. This variation in numbers of sessions might be due to the some administrative and location specific reasons such as transfer of plant doctors, blockade, fuel shortage and others. The coverage and access of plant clinic need to be increased through planned advertisement, awareness raising for plant health and increased commitment among stakeholders (Adhikari, 2016).

CROP DIVERSITY IN PLANT CLINIC

This study recorded 94 different crops reported in the clinic data from September, 2013 to July, 2016. These crops were categorized into different groups as presented in Figure 3. The vegetables,

consisting of 38 different vegetable crops, were the crop group having largest number of crops followed by fruits, pulses & oil seed crops, cereal crops and spices. Statistical information on Nepalese agriculture 2014/15 published by MoAD (2015) indicates 107 major commercial crops. Of these, 76, i.e. 69% crops were covered in the plant clinics in Nepal. Figure 3 shows that, 5 among 6 (83%) cereals, 9 among 16 (56%) pulses and oil seeds, 19 among 24 (79%) fruits, 38 among 56 (68%) vegetables and 5 among 5 (100%) spices crops were reported in the plant clinic data in Nepal. Vegetable crops are most frequently brought to plant clinics. Pulse and oilseed crops were underrepresented at plant clinics while fruit crop were overrepresented. The plant clinic extension method is truly demand-driven. It doesn't give priority to a small number of crops, but allows farmers to ask advisors about any concerns they have. In total, 94 different crops, covering all crop types (major and minor), were brought to plant clinics. Vegetable crops were most frequently brought to plant clinics (67%) followed by fruit (15%) and cereal crops (9%). Two hundred ninety-eight (298) problems of the 94 different crops were diagnosed during the study period. Besides, problems of other minor crops were also recorded.

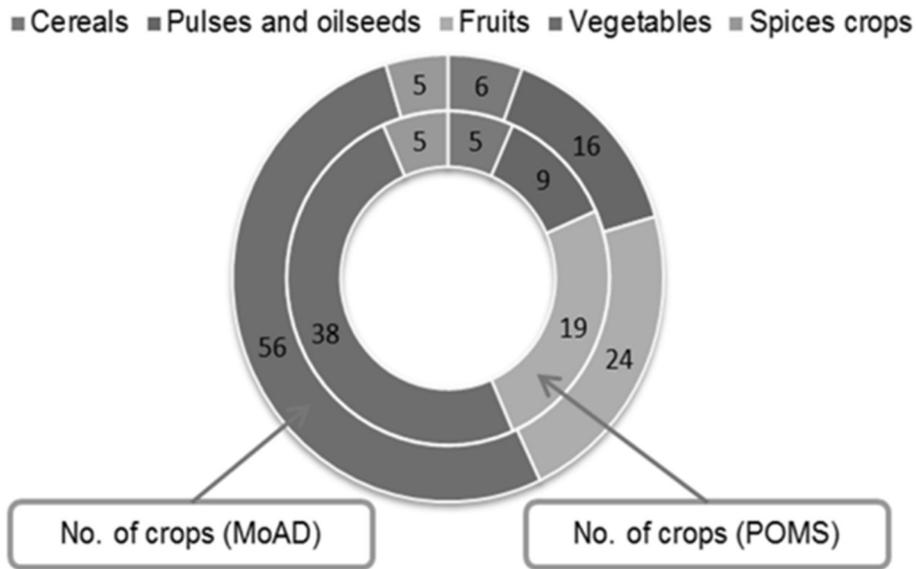


Figure 3: Group of major crops recorded in Ministry of Agricultural Development and data in POMS during September 2013 to July 2016.

The problems diagnosed included insects, fungal diseases and nutrient deficiencies showing that farmers can find solutions for most of the plant health problems at plant health clinics in the majority of queries. The high proportion of vegetable crops brought to clinics (67%) might be due to the higher investment per unit area and the high cash income these crops generate that make the farmers highly interested in seeking advice in order to prevent pest problems from reducing yield.

FARMER’S GENDER IN PLANT CLINIC

The results show that 43% of the queries were brought by female farmers and 53% by male farmers. Information on gender was not available for 4% of the queries. Male farmers submitted more queries

in 2014 and 2015, Whereas female farmers submitted more queries in 2013 and 2016 plant clinics of Nepal from September 2013 to July 2016 (Table 1).

Table 1: Genderwise queries in plant clinic in Nepal from September 2013 to July 2016

S N	Year	Total queries	Number of queries by gender		
			Female (%)	Male (%)	Unknown (%)
1	2013(Sept-Dec only)	288	112 (39%)	106 (37%)	70 (24%)
2	2014(full year)	1868	825 (44%)	1003 (54%)	40 (2%)
3	2015(full year)	968	373 (38%)	578 (60%)	17 (2%)
4	2016(Jan-Jul only)	144	84 (58%)	60 (42%)	0 (0%)
Total		3268	1394 (43%)	1747 (53%)	127 (4%)

The highest proportion of female farmer’s participation in plant clinic was recorded in Sunsari district (NPSR01) i.e. 94% followed by Bhaktapur district (NPBP02) 88% and Makwanpur district (NPMW01) 75 % (Figure 4). It might be due to the involvement of women in farming especially vegetable cultivation as an income generation enterprise.

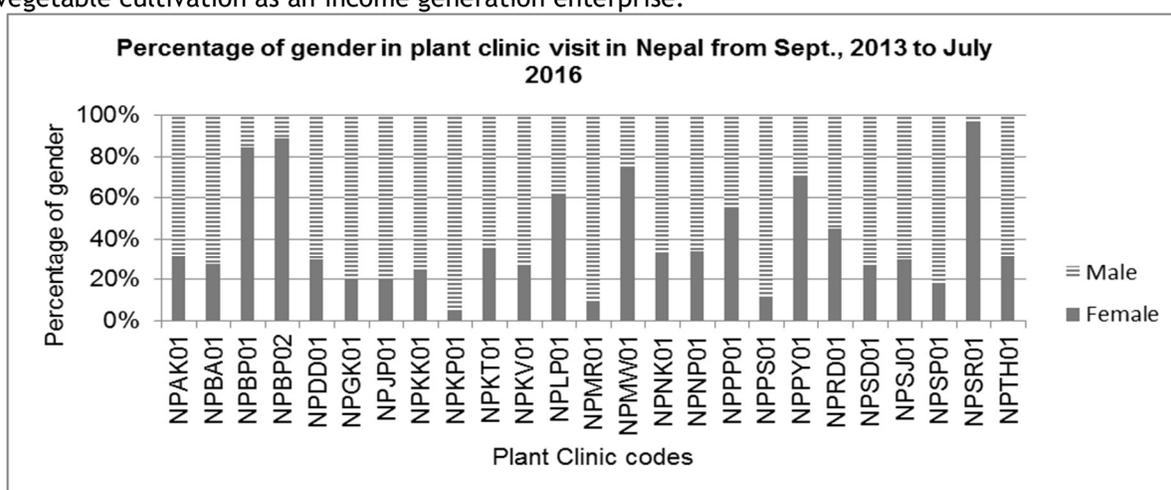


Figure 4: Percentage of gender in plant clinic visit in Nepal from September 2013 to July 2016. The location of the plant clinics is given in Annex 1.

CONCLUSION

Plant health service through plant clinic is a very useful tool for approaching the farmer and creating a familiar and trustful environment where a farmer and plant doctor could have two way communications about the plant health problems. As a whole, plant clinics are providing support to farmers for the pest management to minimize crop losses. The effectiveness and impact of plant clinics could be enhanced by increasing their coverage and accessibility. This is one of the demand-driven extension approaches for the farmers. The location of plant clinic, accessibility, proper advertisement, awareness for crop pest management to minimize losses, quality of plant health services and functional coordination among the stakeholders are important to increase the coverage

and access of plant clinic. Establishing plant clinics in regions where they are absent will help increase their coverage and reach to farmers for effective delivery of location specific information. Further research is needed in order to understand why few female farmers attend plant clinics in some regions. Strengthening the plant clinic programme and further implementing it as a component of plant health system in Nepal will facilitate the access of farmers to the information they need to lose less to pests and diseases.

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Annex 1: Plant Clinic details in Nepal from September 2013 to July, 2016

S N	Clinic Code	District	Started year	No. of clinic sessions run	Total No. of queries	Avg. No. of queries per session	No. of Farmers' visit	Avg. No. of farmers per session	Farmers visit from No. of villages (Location 3)
1	NPBP01	Bhaktapur	2013	21	332	16	178	8	8
2	NPDD01	Dhading	2013	13	146	11	106	8	23
3	NPKP01	Kavrepalanchok	2013	6	63	11	14	2	5
4	NPKT01	Kathmandu	2013	22	293	13	135	6	unknown
5	NPLP01	Lalitpur	2013	10	104	10	64	6	18
6	NPNK01	Nuwakot	2013	11	109	10	71	6	24
7	NPSP01	Sindhupalanchok	2013	8	87	11	59	7	9
8	NPBA01	Bara	2014	6	117	20	70	12	13
9	NPBP02	Bhaktapur	2014	11	221	20	81	7	unknown
10	NPGK01	Gorkha	2014	21	128	6	80	4	unknown
11	NPJP01	Jhapa	2014	9	108	12	51	6	6
12	NPKK01	Kaski	2014	7	63	9	48	7	9
13	NPKV01	Kapilvastu	2014	6	55	9	38	6	unknown
14	NPMR01	Morang	2014	5	47	9	27	5	18
15	NPMW01	Makwanpur	2014	5	44	9	19	4	unknown
16	NPNP01	Nawalparashi	2014	3	39	13	35	12	unknown
17	NPPP01	Palpa	2014	19	326	17	119	6	16
18	NPPS01	Parsa	2014	4	35	9	31	8	7
19	NPRD01	Rupandehi	2014	10	100	10	79	8	24
20	NPSD01	Sindhuli	2014	13	236	18	92	7	15
21	NPSJ01	Syangja	2014	20	171	9	94	5	19
22	NPSR01	Sunsari	2014	9	93	10	60	7	6
23	NPTH01	Tanahun	2014	13	249	19	108	8	unknown
24	NPAK01	Aarghakhachi	2015	10	86	9	73	7	6
25	NPPY01	Pyuthan	2015	3	43	14	22	7	unknown
Total			265	3295		1754			
Average			10.6		12	70.16	7		13.29