National Priorities on Plant Health and working partnerships with CABI

Dilli Ram Sharma, PhD

Head of NPPO

National Coordinator, CABI, Plantwise

Prospective Member Country

Nepal

The Country

- Land locked country
- Birth place of **Lord Buddha**
- Bordering countries:
  - China (Tibet): North
  - India: East, south and west
- Geographical region: (3)
- Altitude ranges from few meters to 8,848m
- (Mt Everest; the highest peak of the world)
- Predominantly an agricultural country, about 65.5%
- Major contribution in GDP: 35.11%

Major crops :

Rice, Wheat, Maize, vegetables, potatoes and fruits.

Cash crop- Tea, Coffee, Sugarcane, Jute and cardamom

Geographical and Political division of Nepal

Geographical division: 3 Eco-zones

Mountain (16 districts)

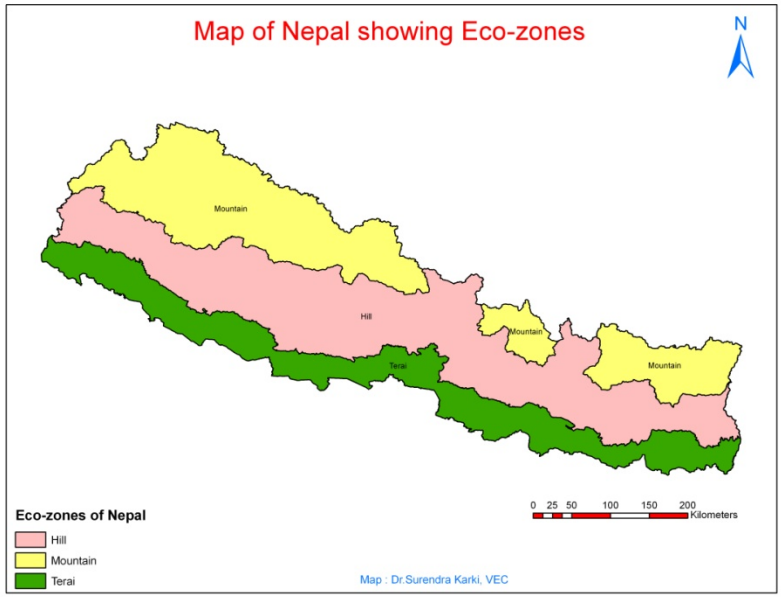
- 35% of total area. (4800 mt and above)
- Yak/Nak, sheep, alpine goats (Chyangr*a*) and mule rearing forms the way of life of people in this region.

Hills (39 districts)

- Covers about 42% area.(300 to 4800 masl.)
- Agro-based livestock industries and horticultural production in the region are the main source of income of the people.

Terai (20 districts)

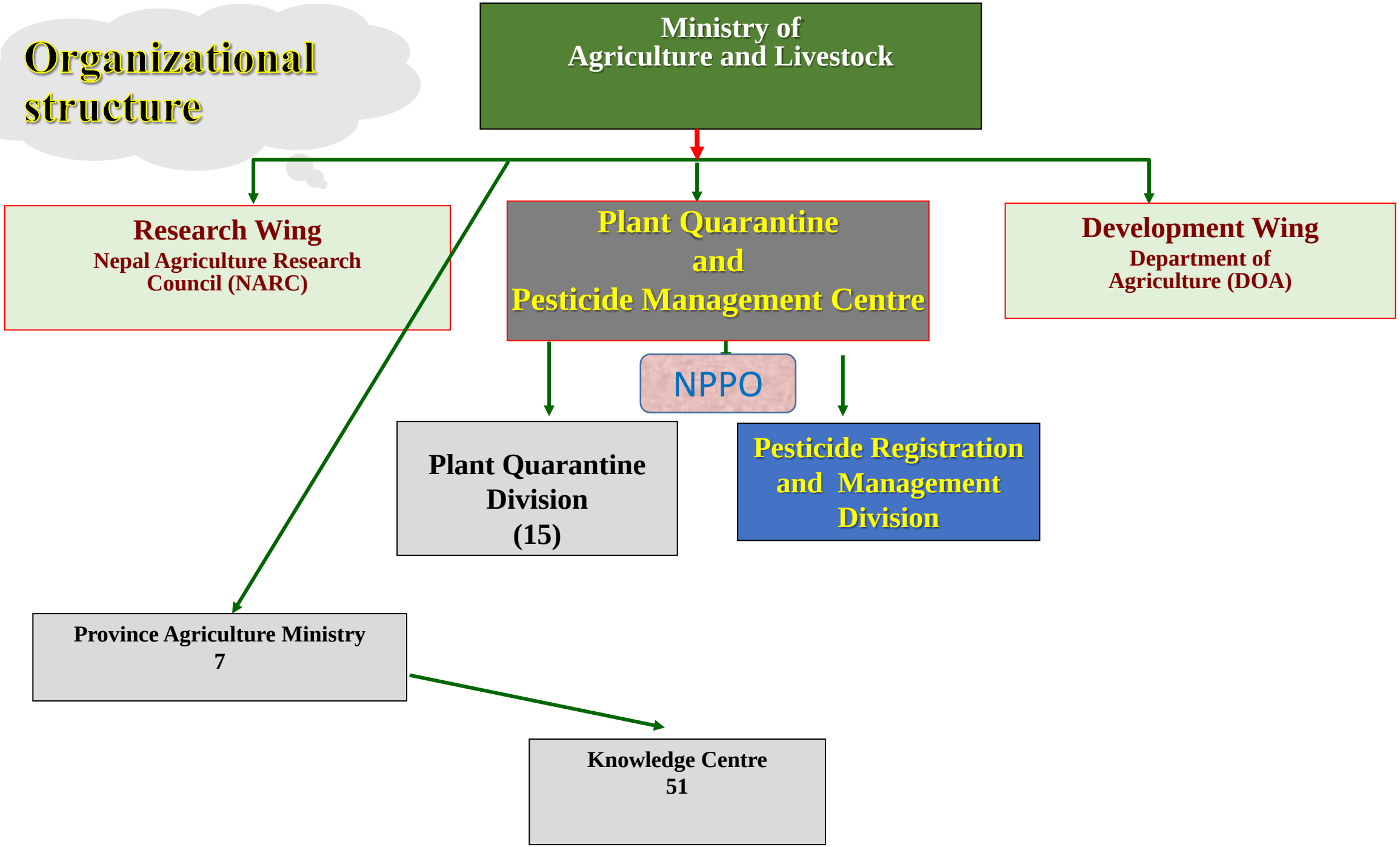
- Covers about 23% of the total area.(<300 masl.)
- This region serves as a main source of food supply to other region of the country.



Administrative division

- 7 Provinces
- 77 Districts
- 753 Local Government

Organizational structure



National policies, rules and regulations for promotion of sustainable and environmentally friendly pest management

- ***Pesticide Act, 1990***
- ***Pesticide Regulation,1992 (Amendment, 2007)***
- ***Plant Protection Act, 1995 (Revised 2007)***
- ***Plant Protection Regulation, 1996(Revised 2010)***
- ***IPM policy in discussion***
- ***The standard of IPM crop production measures***
- ***The bio pesticides promotion guidelines***
- ***Amendment in Seed Act and Seed Regulation , 2012***
- ***Developed GAP/Nepal***
- ***Plant Clinic Conduction Directive***

Reasons for Plant Health Management in Nepal

- Agricultural based economy, dominant sector for development
- To support to large number of illiteracy growers
- To establish proper diagnosis
- To improve plant health advisory services
- To minimise from excessive losses due to insect pests (25-30%)
- To improve current plant protection approach
- To improve records of pests and diseases

Reasons for plant health management in Nepal .....

- To increase crop productivity thereby enhance food security
- To monitoring of the spread of biotic and abiotic problems
- To start constant dialogue with farmers and improve networks
- To minimise pesticide risks and
- Finally, to raise income of farmers and contribute to food security

National Priorities

- **Support plant health systems** .
- **Provide advice and support for farmers** in crop management
- **Strengthen support for food safety** - legislative and regulatory requirements, maximum residue levels, heavy metal contamination,
- **Promote Climate Smart Agricultural practices** - reduce greenhouse gas emissions, adapt to changing conditions and improve resilience
- **Prevention and management of invasive species** – Improve the capacity and strengthen for management and control of terrestrial and aquatic invasive.
- **Capacity to use microbial resources**, - IPM program- bio-pesticides, composting and waste management.
- **Information and data management** - publication of and access to authoritative information resources, awareness-raising and policy development
- **Support for market access along value chains**- including SPS compliance and standards harmonization and food safety
- **Capacity development** of national actors(Officials, farmers) on plant health.

Pesticide Consumption by Crop

Crops	Total Pesticide a.i.kg	Total Area (ha)	Quantity (a.i.kg/ha)
Cereals	43.975	953.379	0.046125
Vegetables	**513.967**	**320.290**	**1.604693**
Cash Crops	12.921	69.266	0.186542
Pulses	2.178	42.916	0.05075
Fruits	1.952	66.880	0.029187
Total	574.993	1452.730	

PPD, 2015

Trend of Pesticides Import

Registered Pesticides in Nepal

S.N.	Pesticides	Trade name	Common name
1	Insecticide	1276	51
2	Acaricide	23	6
3	Fungicide	564	38
4	Bactericide	13	1
5	Herbicide	286	21
6	Rodenticide	29	2
7	Molluscicide	2	1
8	Biopesticide	82	12
	Total	**2275**	**132**

Source: PRMD, 2017

LIST OF BANNED PESTICIDES IN NEPAL

S.N.	Name of pesticides	Year
1	Chlordane	2001
2	Dieldrin	2001
3	Aldrin	2001
4	Mirex	2001
5	Lindane	2001
6	Phosphamidon	2001
7	DDT	2001
8	Endrin	2001
9	Heptachlor	2001
10	BHC	2001
11	Organo mercury Fungicids	2001
12	Toxaphene	2001
13	Monochrotophos	2006
14	Methyle parathion	2006
15	Endosulfan	2012
16	**Phorate**	**2015**

Source: PPD, 2016

National forum for Plantwise programme in Nepal

- Ministry of Agriculture Development (MoAD)
- Department of Agriculture (DoA)
- Plant Protection Directorate (PPD)
- Nepal Agricultural Research Council (NARC)
- Institute of Agriculture & Animal Sciences (IAAS)
- National farmers' associations
- NGO working on agriculture
- Pesticides Association Nepal

Positive impact of the Plantwise programme

Government of Nepal is focusing to reduce Chemical pesticides through the Integrated Pest Management program and other activities. Plant clinic program has synergistic effect to increase awareness, knowledge and skills on safe pesticide use and promoting other non-chemical solutions for crop pest management.

Achievement through CABI Planwise program

Within four years,

- There are now 45 regular plant health clinics throughout the country through CABI support program. More than 55 Plant Clinics are running through Government regular program. **Total-100**
- Hundreds of Pest Management Decision Guides (PMDGs) and factsheets developed.
- Five clusters with cluster coordinators established.
- Separate wings for Data management and monitoring and evaluation established.
- Up to now more than 200 plant doctors trained module 1 & 2 trainings
- Trained human resources are in data entry, harmonization and validation developed.
- Different networks in social medias established and being operated for the interaction and experience sharing among the plant doctors.
- Trained to Plant Doctors on E-plant clinic and it has also been operated.
- IPM Facilitators developed as Plant Doctor.
- Plant Health Rally also conducted.
- Plantwise programme supported to empower farmers and strengthen the overall Plant Health system in the country.

Stakeholders Linkage for the synergistic efforts

- Plant clinic provides the additional services to the farmers and it produces synergistic efforts with integration of other relevant program and coordination with related stakeholders.
- Plant clinic could integrate in other agricultural extension approaches such as Integrated Pest Management Farmer's Field School (IPM FFS) to produce synergistic results that contribute to reduce the use of chemical pesticides.
- To make possible synergistic linkup between plant clinic and IPM FFS, a workshop had been conducted in Nepal and trained 40 IPM Farmer Facilitators to develop as Plant Doctor. (Supported by FAO/Nepal and CABI Plantwise Program)
- Linkage was done with International Organization(IDE) to establish plant health system through Community Based Farmers (CBF) being a Plant Doctor and conducting Plant Clinic in the remote areas of Nepal.

Technology transfer, triangular co-operations, and working partnerships with CABI

- **Technology Transfer:**
  1. Capacity development on Diagnosis of pest and disease of technician and farmers
  2. Service provide to farmers through plant clinic
  3. Awareness to farmer through plant health rally, different media and different publications
  4. Increase the use of knowledge bank of CABI
  5. Capacity Development on Data management and data use
  6. Capacity development on M & E.
  7 Organizing workshop and conducting discussion forum on relevant subjects.
- **Triangular Cooperation;**
  1. Plant Clinic Program through IDE (Good performance up to now)
  2. Plant Clinic Program through AFU
- **Partnership:**
  1. SECARD
  2. HICAST
  3. CARITAS

Plant clinic

Cluster of Plant Clinic

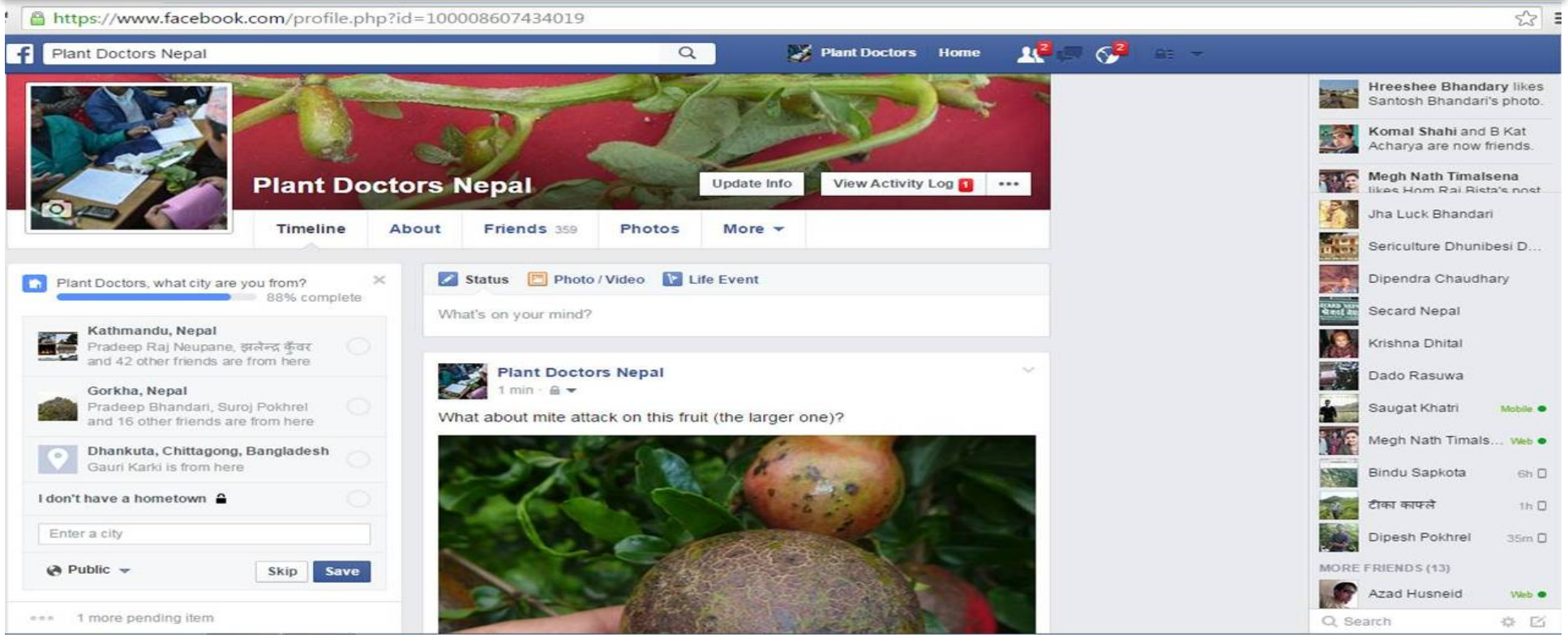
- Green: Kathmandu Cluster Kathmandu, Lalitpur, Bhaktapur, Kavre, Sindhupalchok, Nuwakot, Dhading, Bara, Parsa, Makawanpur, Sindhuli (2014) Dolakha &AFU (2015)

- Blue: Morang Cluster Siraha, Saptari, Morang, Sunsari, Jhapa (2014)
  Ilam (2015)

- Red: Banke Cluster Kanchanpur, Kailali, Bardiya, Banke, Dang(2014)
  Rukum and Pyuthan(2015)

- Yellow: Kaski Cluster : Kapilvastu, Rupandehi, Nawalparasi, Chitawan, Palpa, Syanja, Tanahu, Kaski, Gorkha, Lamjung, Myagdi, Parbat, Baglung (2014)
  Arghakhachi (2015)

Online Discussion Forum



- PPD created this page and keep an open access to everyone interested or concerned
- Mostly plant doctors are actively taking part on this site by the discussion on plant health problems, management and sharing clinic activities
- Plant doctors mostly share photos of undiagnosed or difficult to diagnose problems and experts on this give suggestion

Plant clinic in Nepal is perceived as:

- A quick, practical and problem solving service
- Survey and surveillance function
- Demand driven extension service
- Quality of advice for crop pest management
- Effective plant protection measures
- Two way communications process
- Minimize misuse of chemical pesticides
- Higher coverage of the service
- Participatory approach
- Update and build capacity of extension staff
- Support for data collection and preservation.

Plant clinic program in Nepal are available to the resource poor smallholder farmers to deliver plant health advisory services. It contributes for the plant health system management. Demand driven and the popularity of this program certainly leads towards sustainability in long run.

Success outcome

- Plant clinic internalized in the national agricultural extension system regular program in Nepal.
- Plant clinics increase the awareness to the farmers for the promotion of IPM practices and safe use of pesticides.
- Collection of data for future planning.

Plant clinic recommendation based on the pest management decision guides and Plantwise has created the “Plantwise Pesticide Red List” (https://www.plantwise.org/pesticide-restrictions/)

Challenges of plant clinic in Nepal

- Coverage and access of plant clinics – few area and number
- The average numbers of queries and farmers visit per clinic session are 24 and 12 respectively in Nepal.
- The laboratory diagnostic service is difficult to access due to the remoteness of the location. The development and dissemination of extension materials such as fact sheets and PMDGs should focus.

- The efforts should concentrate to increase the coverage and access of plant clinics in the particular locality. 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.

Lessons and experiences as well as in difficulties in controlling pest outbreaks and the newly invaded species

- In controlling the pest outbreak, mainly chemical pesticides were being using, which are hazardous to human health and environment.
- IPM practices are very useful to control out break of pests, due to protection of natural enemies.
- Plant clinics help us to identify the out break of particular pest in time, therefore our effort to manage the pests have been successed timely.
- Plant clinic play a vital role to advocate to use of bio-pesticides in the farmer community.
- The data provided by plant clinics are very useful to make policy as well as to manage pest in a ecofriendly manner on time. The data is also supporting to improve plant health advisory services in the Country.

Learning from Plant Clinic

- Frequently occurring pests (insects and diseases) noticed
- Farmers participation in the clinics showed high interest.
- Farmers were benefited to manage their corps by participating in clinics.
- High demand for the plant clinics from farmers side
- Both side Information exchange
- Plant Doctor must have good technical knowledge.
- Plant clinics and plant doctor training regularized in GoN system
- Support in other programme like Survey surveillance and chemical pesticide usage reduction
- Plant clinic provides an important mechanism of delivery of information to resource poor farmers.
- Very few farmers are benefiting form Plant clinic.


Mobile Plant Clin


Mobile


Training for Agricultural Officers
(Government of Nepal)
How to become a plant doctor ?
Module-III
17-22 September 2012

Mobile Plant Clinics

Mobile Plant Clinics and Training

A CASE STUDY TO EXPLORE BENEFITS OF PLANT CLINIC-FFS (Farmer Field School) VS GOVERNMENT SYSTEM MODEL

Background of FFS-PC

- Total number of farmers household in Nepal is 3831093 and total number of agricultural technicians are 2875. The ratio between agricultural technicians and farmers household is 1:1333. And there are only 378 Agriculture Service Centers .
- It was selected 38 farmers facilitators on the basis of their minimum qualification of at least of having passed the School Leaving Certificate (SLC) and operated at least 10 different field schools.
- PPD organized Plant Clinic Module 1 & Module 2 trainings for them in 2 shifts.
- After this training each of them were given at least 3 plant clinics to be operated by themselves and each were supported by the Plant Protection Officer of respected district.
-

Priority of farmers given to different types of plant health service providers

Priority %	Government Extension worker	Agro-input dealer	PC-FFS linked service	Only PC	Only FFS	Family /Friends	Lead Farmers	Farmer's Group	Radio /TV/ Internet	NGO
1st Priority	23	40	15	22	0	0	0	0	2	0
2nd Priority	16	2	33	23	0	6	9	0	6	0
3rd Priority	11	29	9	0	2	34	11	0	9	0
4th Priority	2	17	0	0	0	20	37	11	11	2
5th Priority	2	2	0	0	0	23	23	19	31	0
6st Priority	0	2	0	0	0	5	17	19	29	28
7^{th} Priority	0	0	0	0	0	7	0	25	29	39

Conclusion of Case study

In FFS-linked plant clinic it has been observed that:

- There is a very good relationship established between farmers and farmers' facilitators,
- Because of having good communication technology as well as no hesitation to communicate with farmers' facilitators;
- Farmers can interact about their problems in mobile phone and even call for a visit,
- Farmers' facilitators have the positive point of being local and most importantly the service provided by them are fully satisfactory.
- In the case when farmers' facilitators are backed up with the good technical advices, reference materials as well as quality job aids; they can provide an excellent service to the farmers and
- Full fill the gap between farmers and extension workers.

Future needs:

- Capacity building of the Govt staffs, farmers, input dealers.
- Functional role: Govt (strength of infrastructure and human resources)
- Supportive role: Research, Teaching Institutes and Private organization
- Support: External (CABI and multi-partners association)
- Government role: Streamlining and scaling up
- Greater emphasis to the program-Regularization
- Strengthen in diagnosis through strengthening regional laboratories

We would like to thank CABI for supporting us even though we are not member of CABI.

We would not like to be a prospective member of CABI. Very soon Nepal Government going to be approved be a member of CABI.

THANK YOU