Using the crop clinic concept to minimize the indiscriminate use of pesticides and promoting effective, judicious pesticide use

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Decades ago agro chemicals were introduced with the objective of enhancing crop yields and protecting crops from pests. Owing to adaptation and resistance developed by pests to chemicals every year higher amounts and new chemical compounds are used to protect crops causing undesired side effects and raising the cost of food production. Moreover excessive and misuse of pesticides leads to create environmental issues such as soil and water contamination and non target effects. As a consequence persistent residues of chemicals contaminate food and disperse in the environment. This in turn has resulted in a significant effect of pesticide residues on human health. In this context use of pesticides in judicious manner is very essential. Coordinated efforts are required to increase the production of food but with a view to enhanced food quality and safety as people get increasingly concerned with food safety.

Plants with pest and disease problems are a major source of concern for farmers around the world, and nowhere more so than in developing countries. For many subsistence farmers a healthy crop can mean the difference between a plentiful food supply and the possibility of going without. Farmers often turn to their peers or seek advice from pesticide dealers on managing their crop problems. The help they find here can be useful, but if it is inaccurate they run the risk of losing their crops and potentially jeopardizing their livelihood. Therefore to mitigate this the concept of plant clinics has been developed by Center for Agricultural and Bio Science International (CABI) which is a not-for profit an intergovernmental, International organization performing both research and information services. It’s mission is to improve people’s lives worldwide, by providing information and applying scientific expertise to solve problems in agriculture and the environment. Modeled on the human health concept a plant clinic is a facility where farmers take samples of their affected plants to agronomists and extension agents who diagnose and recommend pest management measures. The advise may include use of pesticides or crop management methods like crop rotation, fertilizer use etc. Plant health clinics are the building blocks of a public plant health service, which in turn seeks to bring together extension and research, regulation and crop management under the one heading of ‘plant healthcare system’. Clinics and services are ‘designed by demand’ and not 'driven by capacity'.

CABI's Global Plant Clinic and partners have established plant health clinics to bring accurate, up-to-date information to farmers in developing countries; thus enabling them to care for their crops in the most effective way. The plant health clinics advise farmers on pests and diseases the way a health centre does for humans. Consultations take place once a week in public places, such as markets or the village place (central meeting area). The farmers bring samples of their diseased plants for plant doctors to diagnose and prescribe safe, affordable and locally available pest management solutions.

In an attempt to achieve the above objectives a programme named Permanent Crop Clinic programme (PCCP) has been launched which links several stakeholders in the ‘plant health system’ of the country such as agriculture extension, Research Institutions, diagnostic laboratories, regulatory bodies and agro-input suppliers. PCCP was initiated in Sri Lanka after global plant clinic training in 2009. After survey was conducted to identify apparent gaps in plant health service delivery it was revamped in 2013 and fresh two training modules was introduced. Basically Module I, “How to become a Plant Doctor” concentrates on field
diagnosis and operation of clinics while module 2 deals on managing plant health problems and recommending solutions. Subsequently first partnership was agreement was signed between the CABI and the Ministry of Agriculture to commence Plantwise an initiative led by CABI. Concurrently National Steering Committee was established. Further technical assistance provided by the CABI regional office in Pakistan which has appointed a country coordinator specially for that purpose. In March 2013 the responsibility of coordinating PCCP was assigned to the Plant Protection Service of the Department of Agriculture which now functions as the National Responsible Organization. The implementation is performed by the provincial and interprovincial extension service of the Department of Agriculture. PCCP is supported by Plantwise led by CABI is successfully implemented in 16 districts in the country and gradually being extended to other districts as well. The Department of Agriculture and the Provincial DOAs have taken a decision to train all the Agriculture Instructors working in the field as Plant Doctors. Up to now a total of 576 AIs have been trained and currently about 260 crop clinics are in operation under the PCCP. The methodology adopted at a crop clinic is shown below.
Prescription and record sheet

This form has dual purpose, the first part all relevant data pertaining to the problem is recorded which is useful for several purposes namely, pest surveillance, quarantine, Agricultural policy and planning after analyzing the collated data. In other words the national data flowing from crop clinic records is a rich resource on farmer needs and local pest tracking.

Plant Doctor at the crop clinic diagnoses the problem after studying sample brought by the farmer and gives the prescribes the pest management recommendation in the latter part of the form. In the case where a pesticide is recommended it provides the name, rate and the way of application. Since the destruction of natural enemies occur due to the use of broad spectrum pesticides as well as pesticide cocktails is major cause for pest outbreaks eg:- Brown plant hopper in rice recommending the effective specific pesticide is vital. Specially in the backdrop of vulnerability of farmers in the agricultural provinces of Uva, North Central and Central who have become increasingly prone to sudden outbreaks of Chronic Kidney disease(CKD) which has currently become a major socio-economic issue doubly important. When the PCCP is fully implemented in all the districts in the country it would be possible to make this prescription given by the plant doctor at the crop clinic to the farmer compulsory when buying agro chemicals from dealers which will go a long way in making the farming community healthy and ensuring the consumers have pesticide free food.
Green and Yellow lists

After diagnosing the cause for the plant health problem the plant doctors recommend a solution as stated earlier. In-order to facilitate the process the plant doctors are provided with Pest Management Decision Guides (PMDGs) made on specific problems. They are known as Green and yellow lists which base their directions on prevention, monitoring and direct control. For each specific pest or disease it describes the pest or diseases visually. It also gives details on the preventive aspects followed by the monitoring the progress by the action threshold. Then if the problem still persists it provides actions that are non hazardous which are known as green measures. Finally when the green direct control measures are exhausted details on the types of slightly to moderately hazardous chemicals are recommended to be applied with restrictions. Above all, plant doctors are encouraged to give advice that keeps pesticide usage to the lowest effective level and ensures minimal risks to human health and environment.

Utilization of information from Knowledge Bank
The Plantwise Knowledge Bank is a free resource that brings together plant health information across the world. It includes a diagnostic tool and fact sheet which gives details on pest problems to help diagnose and manage plant health problems. This serves as another facility for plant doctors in running crop clinics in providing solutions to farmers because the plant doctor could access to information from the Plantwise knowledge bank to assist with diagnosis and pest management recommendations.
Use of Diagnostic support services

When the plant doctor is unable to find the cause for the problem he has the option of getting the assistance of experts in the relevant field at the research divisions of the DOA in diagnosing and obtaining a recommendation and give a solution to the farmer concerned. Here too as it diagnosed by specialists and giving the proper recommendation the possibility of using ineffective pesticide use is avoided. (In cases where the only option is the use of chemicals)

The foregoing features of PCCP will create a policy environment and other key stakeholders to act in ways that are consistent with the goal of contributing to a more productive and resilient plant health system. Also the PCCP connects the extension system, diagnostic laboratories, research institutions, regulatory bodies agro- input suppliers who perform following roles in the plant health system.

- Agriculture Information (approach and structure of providing information to the farmers and other relevant actors, etc.)
- Advice to Farmers (mechanism to provide advice to the farmers, such as extension agents, Crop clinics, etc.)
- Diagnostic Support (facilities, their management and linkage with other extension services, etc.)
- New Product/Technology development (as a result of research in the field of agriculture extension, etc.)
- Input supply and management and control (productions, imports/exports, supply and quality controls, etc.)
- Regulation and Control (in policy making, planning and budgeting)