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Editor	Prof. Waleed I Shaban Prof. Manal Eid



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National Plant Clinic Network





Introduction

Plant clinics are an important and practical way to provide plant health services to the surrounding farming community on how to manage all kinds of plant health problems. However, plant clinics differ in how they operate and the services they provide.

The Plant clinics at the EG partner universities, which were funded by the European Union (ERASMUS) program for institutional capacity building and have good laboratory facilities for plant diagnosis and identification of pests and pathogens.

It is unlikely that most smallholder farmers or even many owners of agricultural businesses know of such clinics or are unable to contact them directly. The idea of establishing plant clinics is the main focus for solving this problem, as plant clinics provide services to the agricultural community.

Establishing plant clinics in partner universities, which are far from each other and scattered in various locations in Egypt from east to north and south, will provide a great opportunity. Plant clinic net work will be near various customers of agricultural companies or even among the various agricultural communities in the east, north, central, and south of Egypt.

Plant clinics, which are a major and main output of this project, are a service that provides counseling as part of the extension activities on a daily basis. The presence of a plant clinic network that will work harmoniously among the beneficiaries in the various agricultural regions of Egypt will make them work more effectively.

Vision of National Plant Clinic Network

Our vision is to ensure that the Plant Clinic Network keeps pace with advancing detection and diagnostic technologies and remains prepared to meet the challenges of protecting plant systems that keep people and the environment healthy.

Mission of National Plant Clinic Network

The National Plant Clinic Network at partner universities in the eastern, north, center and south of Egypt to enhance the health and productivity of plants in Egypt's agricultural and natural ecosystems by providing high-quality diagnostic services for plants by highly professional and technical teams providing services to farming communities and stakeholders.

Task description of network partners:

A network of diagnostic facilities or plant clinics enhances national agricultural security by facilitating rapid detection and accurate diagnosis of high-consequence pathogens and pests. The network provides the means for rapid diagnosis and communicates with all the participating clinics about the possible outbreak of high-risk pests and pathogens. The network may operate at an international, national or even regional level. Establishment of regional plant diagnostic clinic networks empowers rural individuals by giving communities their own capability for accuracy.

Philosophy and principles plant clinics network

The main aim of the plant clinic network is to give farmers advice on plant health problems. The key features are described below.

Target: Plant health clinics are open to all farmers, and aim to provide equal access to men and women from all social and ethnic groups. They accept any crop and any type of problem.

Quality diagnostics: Provide high quality diagnostics to support plant health communities through constant improvement and quality assurance.

Professional Development: Provide training opportunities and experiential learning that accelerate the learning curve and enhance diagnostic capabilities of current and future diagnosticians.

Communication: Ensure effective and timely communications and productive collaborations with regulatory partners, diagnostic labs, and the plant health communities. Curate and communicate quality diagnostic information that benefits plant health.



Target group: The Plant clinic network will be open to all farmers or beneficiaries and aim to provide good services for all agricultural groups. They accept any crop and any type of problem.

Location: A network of Plant clinics at EG partners in different Egypt locations should be accessible, visible, and held at times that are convenient to farmers. Good publicity is essential for all venues, such as agricultural markets, agricultural societies, agricultural fairs and other places that farmers regularly visit.

Samples: Farmers must bring plant samples to the nearest plant clinic near them in one of the partner universities of the plant clinic network if this university has qualified staff to examine and diagnose the sample. The specimen should be representative of an unhealthy plant, preferably with early symptoms.

Plant Clinic Data: Regular recording of inquiries and advice helps monitor use and the relative importance of various problems, including new pests and diseases. An analysis of the advice identifies areas where Plant Clinic staff need further training and information. This feedback is important for Plant Clinic staff to understand the benefits of recording data.

The following guidelines consider the relatively large-scale establishment of plant clinic networks usually at the country level. This approach offers significant advantages in facilitating access to expert support. Single or small groups of plant clinics can be run independently, but establishing links will require more effort.

Getting started: Planning should ideally start our network. This will strengthen sustainability. Early results help to demonstrate the network of plant clinics' wider value and encourage official support and investment.

Identifying operators: The functions and features of the plant clinic need to be clearly described and discussed with potential operators at each partner.

It is important to discuss plant clinic results and experiences with staff as well as their managers, so that the value of plant clinics to organizations is clearly understood.

Development stages: Our network will do a Scoping study of other organizations working in plant health at the national and regional levels to assess roles and interactions.

Consolidation- The plant clinic network will have regular clinics run by confirmed operators.

Sustainability – stable operation of plant clinics as part of a functioning plant health system.

Plant Clinic required materials and equipment

- **INSTRUMENTS**

- Microscope
- Autoclave
- Hot air oven
- Incubator
- Inoculation chamber/ Laminar flow
- Ultraviolet lamps
- Temperature and humidity control chamber
- Micrometers
- Colony counter
- Specimen press board
- Centrifuge
- Spectrophotometer or colorimeter
- Camera lucida
- Haemocytometer
- Sintered glass filters
- Hot plate stirrer
- Electrophoresis
- PH meter
- Hot water bath
- Distilled water

- **TOOLS**

- Inoculation loop or Inoculation needle
- Glass Ware
- (Test Tube - Pipettes, Flask and Beakers - Petri-dishes - Slides and cover slips- Glass spreader)

Skills required for Plant Clinic.

Plant protection is inevitable, especially when the achievement of a high yield of crops is deemed necessary. Technical advice on plant protection and crop management is directly associated with the yield increase.

Plant health doctors should be knowledgeable and skilled and have a positive attitude towards the role of plant health clinics in increasing crop yield. Plant health doctors have high knowledge regarding plant protection areas like:

- Insect pests and diseases management,
- Spraying techniques,
- Economic threshold level of insects and pests, optimization of pesticide dosage,
- Biological control methods of insect pest management.
- Plant doctors were skillful in sharing information timely,
- Sowing techniques,
- Weeds management,
- Insects' pests and diseases management
- Irrigation management.
- Plant doctors have a high level of knowledge regarding plant protection as compared to agronomic attributes of crops, like knowledge regarding seed rate.

For the farmers, the attitude of the plant doctors was favorable, so they preferred to continue contacting them for their efficiency, availability, technical knowledge, and friendly behavior.

The knowledge and skill level of the plant doctors are statistically significantly related to the increase in yields as compared to their attitude, which is non-significant.

This implies that the knowledge and skill level of doctors is the right avenue to be focused on through education and training, ensuring institutional collaboration.

Partner universities jointly organize training programs for the plant doctors to become acquainted with the latest agricultural innovations. Plant doctors are more focused on plant protection, so they should be trained and supported to facilitate farmers' decisions regarding plant production, agronomic attributes, and crop nutrition. Plant doctors should shift their motives towards crop management, ensuring sustainable environmental protection and conservation of biodiversity.

Evidence of impacts, sustainability, and scalability

Several studies of the plant clinic network have found positive trends in increased crop production and income earned. Attributing these key changes to the plant clinic network alone is difficult. High farmer satisfaction is reported from several countries and anecdotal evidence attributes yield gains to clinic visits. Plant doctor knowledge and confidence have improved substantially following the training program.

Sustainability depends on organizations incorporating plant clinic networks into their everyday activities and embedding them in a plant health system. Local commitment plus strategic national support is the key to maintaining regular and high-quality services.

Cooperation between partner universities progresses using a sustainability roadmap, combining scores for key elements such as plant clinic operations, stakeholder linkages, use of data, and monitoring and evaluation. In the future, this tool will help identify corrective actions needed to strengthen sustainability.