

pest

Forecasting plant disease epidemics:

very useful for the farmer to understand and to manage the epidemic

1. It gives the prediction
2. It is very important in disease management.
3. It tells us about
 - i. where & why apply management strategy.
 - ii. severity & spread of pathogen.
 - iii. No. of times the particular crop.
 - iv. whether is resistance cultivar should grow
 - v. when to spray fungicide.
 - vi. Should grow cultivar of moderate resistance.
 - vii. How many fungicide be apply.

For the forecasting of monocyclic disease like root rot of peas, strawberry, wilt, disease and some polycyclic disease like apple scab disease will require the initial inoculum information.

For the forecasting of late blight of potato require no. of infection cycle.

For the forecasting of Beet yellow disease initial inoculum and no. of infection cycle information are required.

Model of plant disease epidemics.

epidemic is a dynamic process. It begins from the single plant and spread to the whole field, or an area depending

1st Phase:- when some disease, when they are at early stages, the disease incidence will increase rapidly while disease severity will be low on individual plant.

2nd phase:- Disease incidence will increase but there will be little increase in disease severity.

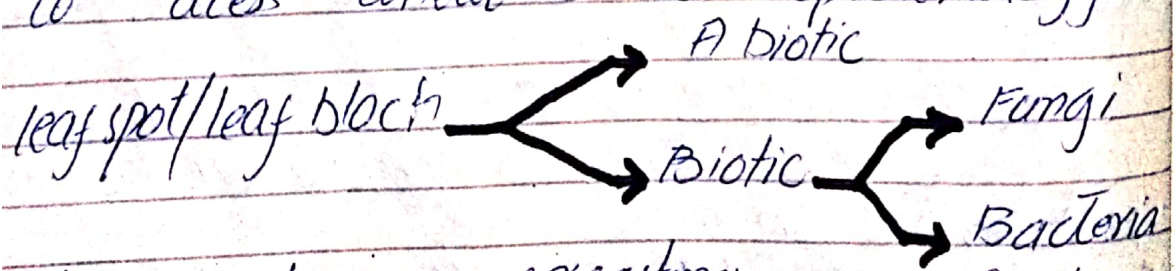
3rd phase:- Disease incidence will decrease while disease severity will increase.

In different cases, if 1-50% plant damage and 1-25% leaves are damaged then you can say that it is epidemic. Then economic threshold level will start.

when the disease severity 2-50% per week, that will be epidemic.

Disease Diagnosis:-

At initial phase, it is very difficult to assess whether it is epidemiology.



The key to any forecasting of any plant disease epidemic when the epidemic occurred, then it is easy to assess the epidemic.

upon the magnitude and duration of environmental factor that influence the host and pathogen. The epidemic will stop when all the plants are killed. It may slow down when

1. Drier condition prevail.

2. when cold condition are present.

Researcher are interested to find that which element (conditions) are favourable for epidemic. what type of condition that favour the introduction of epidemic. what type of elemental condition favour spread or deviation of epidemic.

you require for the condition,

1. observation

2. Mathematics

3. Mathematic formula

4. Computer.

you can predict the time, size and path of epidemics. All of the diseases including Downy mildew powdery mildew, stem wheat rot, late blight of potato, potato scab. follow the same path. This path may change by host variety, pathogen new strain, amount of pathogen environmental condition (moisture level, temp).

So, when you make the disease epidemic model. You should make the

consider all the factors that are related to the plant (component and subcomponent.) The ability to produce the severity & direction of epidemic, help you to

1. whether and when to apply intervene control measures.

2. what type of measure strategy.

Model:-

It was firstly prepared in 1960s. Model are the crude specification and are analysis to model eg toys, airplane model. As if the toy have all parts and subpart then you will consider all them in the real case.

If the components and subcomponent are added in equation / material equation, of model then it will describe the epidemic. The material model will ~~provide~~ provide information as following.

It will tell about element & efficacy of inoculum, disease, efficacy of host, length of time, interaction b/w host and pathogen. and the effects of various management strategies.

The data base must consist of

1. information of crop
2. information of disease
3. information of pathogen
4. Location
5. weather situation.
6. Sensor related to crop

* small scale epidemic caused by the variant pathogen and same variety of host into the large scale.

* The large scale epidemic is caused by the favourable moisture, wind should be favourable, susceptible stage of the host, penetration, reproduction and infection of pathogen should be done.

3. Wind is required for the spread of the pathogen in addition for the dispersal from 1 place to another.

The moisture and temperature also should be favourable for growth, infection, penetration. They should be favourable and optimal. Firstly for reproduction again for the dispersal/spread again for the infection and reproduction in new susceptible host.

4. In the southern-hemisphere, the epidemic is from north-south b/c the season and weather are favourable.

5. The most epidemic disease are potato late blight, Apple scab, cereal rust (small scale), The chemical should be applied for the management.