

Crop protection

What is weed?

Weed is a plant which is not wanted in a particular environment. It is otherwise called 'plant out of place'.

Example – If rice is cultivated any other crop is called weed.

General characters of weed

- They are mostly grasses.
- They have more adaptability than cultivated crops.
- They compete with crops plants for resources: Water, nutrients, light and space.

Management of weeds may be classified into:

1. Mechanical methods
2. Cultural methods
3. Chemical methods and
4. Biological methods

Mechanical methods of weed control

It is by means of tools and implements.

- ❖ Ploughing
- ❖ Hand hoeing and weeding
- ❖ Digging and removing
- ❖ Using sickles to cut

Merits

1. Safe to environment
2. Does not involve any skill

Demerits of Mechanical Method

- Labour consuming
- Possibility of damaging crop

Cultural methods of weed control

- It is by proper crop cropping systems and crop rotations
- Summer ploughing
- Mulching
- Blind tillage

Chemical methods of weed control

Herbicide: It is a chemical used to kill some targeted plants.

METHODS OF APPLICATION

- Spraying
- Broadcasting

Biological methods of weed control

- Use of living organisms viz., insects, disease organisms, herbivorous fish, snails or even competitive plants for the control of weeds is called biological control.
- In biological control method, it is not possible to eradicate weeds but weed population can be reduced.
- Examples of biological control
 - Water hyacinth is controlled by Haycinth moth.
 - Opuntia is controlled by scale insects
 - Parthenium is by Zygomma beetle

PEST MANAGEMENT

1. CULTURAL METHODS

- Intercropping

- Planting dates and crop duration
- Planting density
- Water management
- Crop rotation

2. PHYSICAL METHODS

Modification of physical factors in the environment to minimize pest problems

- Sun drying
- Collection & Destruction

3. MECHANICAL METHODS

- Light trap
- Yellow sticky traps

Biological Control

• Any condition under which or practice where by activity of a pest/pathogen is reduced by any other living organism.

- Parasitoids–wasp
- Predators–grass hopper

DISEASE MANAGEMENT IN AGRICULTURE CULTURAL METHODS

1. Clean Seed

2. Field Sanitation

- Removal of diseased plant debris, burning and keeping the field clean is the best known method for eradicating the source of inoculum.

3. Selection of field

- The sick soil in which the soil borne inoculums persists should not be selected for the ensuing cropping season.

4. Plant spacing

5. Flooding

6. Deep ploughing

7. Fertilization

8. Rouging:

Rouging is removing suspected plant which has infection by visual identification.

9. Amount of irrigation

PHYSICAL METHODS

1. Soil Solarization

- Clear polyethylene placed over moist soil, during summer days raises the temperature at the top 5cm of soil to as high as 52⁰C. The increased soil temperature from solar heat, known as solarization inactivates many soil borne pathogens and reduces the inoculums and the potential for disease-examples.

2. Burning trashes

- Burning of rice stubble's and straw effectively reduce stem rot.
3. Soil mulching and polyethylene traps
- Vertical, sticky, yellow polyethylene sheets erected along the edges of susceptible crops attract a considerable number of aphids which stick to the plastic, reducing the amount of virus inoculums reaching the crop.

CHEMICAL METHOD

- A variety of chemicals are available that have been designed to control plant diseases by inhibiting the growth of or by killing the disease- causing pathogens. Chemicals used to control bacteria (bactericides), fungi (fungicides), and nematodes (nematicides) may be applied to seeds, foliage, flowers, fruit, or soil.