



# IPM Stewardship

## Cultural Practices

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Cultural methods of pest control consist of regular farm operations in such a way which either destroy the pests or prevent them from causing economic loss. The various cultural practices have been grouped as under.

- Preparation of nurseries or main fields free from pest infestation by removing plant debris, trimming of bunds, treating of soil and deep summer ploughing which kills various stages of pests. Proper drainage system in field is to be adopted
- Testing of soil for nutrients deficiencies based on which fertilizers should be applied
- Selection of clean and certified seeds and treating seeds with fungicide or biopesticides before sowing for seed borne disease control
- Selection of seeds of relatively pest resistant/tolerant varieties which play a significant role in pest suppression
- Adjustment of time of sowing and harvesting to escape peak season of pest attack
- Rotation of crops with non-host crops. It helps in reduction of incidence of soil borne diseases
- Proper plant spacing which makes plants healthier and less susceptible to pests
- Optimum use of fertilizer. Use of FYM and biofertilizers should be encouraged
- Proper water management (alternate wetting and drying to avoid water stagnation) as the high moisture in soil for prolonged period is conducive for development of pests especially soil borne diseases
- Proper weed management. It is well known fact that most of weeds besides competing with crop for micronutrients also harbour many pests
- Setting up yellow pan sticky traps for white flies and aphids at far above canopy height
- Synchronized sowing. Here, community approach is required to sow the crops simultaneously in vast area so that pest may not get different staged crops suitable for its population build up. If pest appears in damaging proportion, control operation could also be applied effectively in whole area
- Growing trap crops on the borders or peripheries of fields. There are certain crops which are preferred more by a pest species. These are known as trap crops for that pest. By growing such crops on the border of the fields, pest population develop there which can be either

killed by using pesticides or its natural enemies are allowed to develop there for natural control

- Root dip or seedling treatment in pest infested area
- Inter-cropping or multiple cropping wherever possible. All the crops are not preferred by each pest species and certain crops act as repellents, thus keeping the pest species away from preferred crops resulting in reduction of pest incidence
- Harvesting as close as to ground level. This is because certain developmental stages of insect pests/diseases remain on the plant parts which act as primary inoculum for the next crop season. Hence, harvesting crops at ground level will lessen the incidence of pests in next season
- Before planting, nursery plants could be sprayed/dipped in copper fungicide/biopesticide solutions to protect the plants from soil borne diseases
- While pruning fruit trees remove crowded/dead/broken/diseased branches and destroy them. Do not pile them in the orchards which may act as source of pest infestation
- Large pruning wounds should be covered with Bordeaux paste/paint to protect the plants from pest/disease attack
- For excellent fruit set, pollinizer cultivars should be planted in required proportion in the orchards
- Keeping bee hives or placing flower bouquets of pollinizer cultivars facilitate better pollination and subsequent fruit set

### **Mechanical Practices**

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- Removal and destruction of egg masses, larvae, pupae and adults of insect pests and diseases parts of plants wherever possible
- Installation of bamboo cage cum bird perches in the field and placing parasitized egg masses inside them for conservation of natural enemies and withholding of pest species wherever possible
- Use of light traps, pheromone traps and destruction of trapped insects
- Use of rope for dislodging leaf feeding larvae e.g. caseworm and leaf folders
- Installation of bird scarer in the field where ever required
- Installation of bird perches in the field for allowing birds to sit and feed on insects and their immature stages viz., eggs, larvae and pupae
- Use of pheromones for mating disruption, monitoring pest levels and mass trapping

### **Genetic Practices**

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Selection of comparatively pest resistant/tolerant varieties with reasonable yield levels.

### **Regulatory Practices**

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Ensure regulatory rules framed by Govt of India and or state governments from time to time.

## **Biological Practices**

Biological control of insect pests and diseases through biological means is most important component of IPM. In broader sense, biocontrol is use of living organisms to manage crop damaging living organisms (pests).

## **Chemical Practices**

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Use of chemical pesticides is the last resort when all other methods fail to keep the pest population below economic loss. Use of pesticides should be need based, judicious, based on pest surveillance and economic threshold level (ETL). This helps minimise not only the cost involved, but also to reduce associated problems. While going for chemical control, we must understand thoroughly what to spray, when to spray, where to spray and how to spray, keeping in mind the following points.

- ETL and pest defender ratio must be observed
- Relatively safer pesticides should be selected e.g. neem based and biopesticides
- If pest is present in strips or isolated patches, whole field should not be sprayed

Relevance of IPM practices is more important in vegetable and field crops because of their unique mode of consumption by human being. Pesticides which are generally highly toxic and are known to have toxic residual effects should not be recommended off hand. To get more profit, farmers do not wait until waiting periods of pesticides and harvest the crop to market the same. This leads to pesticides poisoning, chronic effects, in some cases even deaths. Thus, we must be more careful and cautious in applying pest control practices in field crops