



INTEGRATED PEST MANAGEMENT AND FFS

Integrated pest management

- IPM is a broad based approach that integrates practices for economic control of pests. IPM aims to suppress pest population below the economic injury level.










Farmers field school(FFS)

- Farmer Field School is a school without walls. Farmers and extension workers are students. The Farmers Field is the class room and the plant is the teacher
- A Farmers Field School (FFS) is a “school without walls” bringing 25-30 Farmers from a village to undergo an intensive training on IPM over the entire life cycle of a crop.
- Thus, in FFS farmer participants meet for 14-16 weeks, from land preparation to crop harvest, and they are being facilitated by a trainer.
- Each FFS has at least 1000m² “Learning Field”.
- Each week, farmers practice plant health, water management, nutrient management, weed density, disease surveillances, weather, insect pest and their predators/parasite observation.

Useful or Beneficial insects

- Useful insects include pollinators which is important in the pollination process of all plants, and natural enemies of pests such as parasitoids and predators which are important in the suppression of pest damage to crops.

| INSECTS | PREYS ON | ATTRACTED BY |
|---|--|--|
|  <p>LADYBUGS</p> | <ul style="list-style-type: none"> • APHIDS • WHITEFLIES • COLORADO POTATO BEETLES | <ul style="list-style-type: none"> • DILL • DANDELION • FERN-LEAF YELLOW • BASKET OF GOLD |
|  <p>GROUND BEETLES</p> | <ul style="list-style-type: none"> • SLUGS • CATERPILLARS • COLORADO POTATO BEETLES • CUTWORMS | <ul style="list-style-type: none"> • EVENING PRIMROSE • AMARANTHUS • CLOVER |
|  <p>MINUTE PIRATE BUGS</p> | <ul style="list-style-type: none"> • SPIDER MITES • APHIDS • THRIPS • CATERPILLARS | <ul style="list-style-type: none"> • CARAWAY • FENNEL • ALFALFA • SPEARMINT |
|  <p>GREEN LACEWINGS</p> | <ul style="list-style-type: none"> • APHIDS • WHITEFLIES • LEAFHOPPERS • MEALYBUGS | <ul style="list-style-type: none"> • DILL • ANGELICA • GOLDEN MARGUERITE • CORIANDER |
|  <p>APHID MIDGES</p> | <ul style="list-style-type: none"> • APHIDS | <ul style="list-style-type: none"> • DILL • PLANTS WITH PLENTY OF NECTAR AND POLLEN |
|  <p>DAMSEL BUGS</p> | <ul style="list-style-type: none"> • CATERPILLARS • MITES • APHIDS • CABBAGE WORMS | <ul style="list-style-type: none"> • CARAWAY • PETER PAN GOLDENROD • SPEARMINT • FENNEL |
|  <p>BRACONID WASPS</p> | <ul style="list-style-type: none"> • CATERPILLARS • APHIDS | <ul style="list-style-type: none"> • FERN-LEAF YARROW • LEMON BALM • PARSLEY • COMMON YARROW |

Methods of pest management

1. Mechanical
2. Physical
3. Cultural
4. Biological
5. Chemical

Methods of pest management

1. **Mechanical method:-** involve the use of mechanical devices or manual operations for the control of pests.

Mechanical method includes following different practices:

a) **Destruction**

- **Hand picking:-** Usually large size insects (caterpillar, bugs) and their egg masses are hand-picked and destroyed. Eg:- larvae of cabbage caterpillar, tobacco caterpillar etc.
- **Shaking or beating:** Infested plants & their branches are shaken or beaten with a stick to drive among the pests. Eg: houseflies, mustard sawfly, locust etc.
- **Sieving and winnowing:** Insects of stored grains are removed by sieving and / or winnowing.

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b) Exclusion:-

- **Banding:** The use of 5 cm wide sticky/greasy band around the trunk of a mango tree, (mango mealy bug)
- **Wrapping of fruits:** Bunches of grapes are wrapped in muslin bags to protect from wasps & bees.
- **Wire gauge screening:** Doors & ventilators of buildings are screened to prevent the entry of houseflies & mosquitoes.
- **Trench digging:** The digging of 30-60 cm wide & 60 cm deep trench around the field gives protection to the crops from hairy caterpillars, grasshopper & locust nymphs.
- **Use of water barrier:** The legs of food or plant cabinets, cages are kept dipped in pots containing water. This prevents the entry of ants to food & plant materials

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- **Sticky/ Water pan trapping:** Aphids & whiteflies are attached by yellow pan trap. Sound traps are used to scare the insects away.

Some interesting facts of insects

- Insects species is believed to be between 6-10 million.
- Some insects can walk on surface of water.
- Insects do not breathe through their mouths. They inhale oxygen and exhale carbon dioxide via holes called spiracles in their exoskeletons.
- The most poisonous insects are in the order Hymenoptera (wasp, bees, and ants) and the ones with the most toxic venom are certain harvester ants.
- A queen termite has been known to live 50 years. Some wood beetles can emerge from wood where they live after as long as 40 years.
- The heaviest insect is probably the African goliath beetle (*Megasoma elephas*), weighing up to 3.4 oz.
- The longest insect is a huge stick insect (*Pharnacia serritypes*). The females can be over 36 cm in length.



THANK YOU