

Eco-friendly methods of pest management

INTEGRATED PEST MANAGEMENT



Studies on Population Dynamics of the Insect Pest



Uses all suitable Technologies and methods which are compatible



Maintains Insect population at levels below causing Economic damage

INTEGRATED PEST MANAGEMENT

Includes many technologies and methods which
are called as

“components of IPM”

Legislative measures

- First Act in the country was passed in 1906 under the “Sea Customs Act of 1878” to stop the entry of Mexican Cotton boll weevil
- “Cotton Pest Act” – 1911 in Madras State-Cotton stalks had to be removed by 1st August every year to minimize the incidence of PBW
- “Destructive Insects and Pests Act of 1914” which also includes Plant Quarantine Act. This prevents prohibition of movement of any class of plants or plant products or pests from foreign country or Inter State or locally from one territory to another

- **“Insecticide Act of 1968”** Regulate the import, manufacture, Sales, transport, distribution and use of insecticides. This was enforced from April 1, 1971. Later amendments were made.

- **“The prevention of Food Adulteration Act of 1954”**
Pesticide residues-Tolerance limits.

Cultural practices

Alterations / Changes in cultivation Practices

- ✚ Habitat mgt.
- ✚ Tillage
- ✚ Inter cropping
- ✚ Trap cropping
- ✚ Border cropping
- ✚ Banker cropping
- ✚ Eco-feast / scarifice cropping
- ✚ Push-Pull poly cropping
- ✚ Vegetative trap
- ✚ Crop rotation
- ✚ Plant nutrition
- ✚ Water mgt.
- ✚ Sanitation
- ✚ Closed season
- ✚ Mulching

Host Habitat Management

- Manipulation of crop production and management tactics
- Planting time-Early sowing decreases Gall midge, Shoot fly, earhead bug, white grub, aphid, podborer
- High seed rate- SF, SB in maize and sorghum - BND in g.nut
- Plant spacing

Closer - increases leaf hoppers, whitefly & bollworms in cotton.

Increases plant hopper, BPH, WBPH, gall midge & leaf folder in paddy

Decreases thrips, hoppers, leaf miners in groundnut

Increases *Spilosoma*, *Melanoagromiza* & *Bemicia* in Soybean

- Alley formation – (60 cm wide) for every 2mt planting decreases BPH
- Wider spacing – Decreases SWA, shoot internode & stalk borers

Time of Sowing : Sorghum Shoot Fly

1.	Early sowing	up to June end	Less incidence
2.	Normal sowing	July 1 st to July 15 th	Medium incidence
3.	Delayed sowing	After July 15 th	More incidence



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DISRUPTING THE CONTINUITY OF THE FOOD SOURCES

a) Crop Spacing

b) Crop Location

c) Crop Rotation

d) Disrupting Crop and insect synchrony

a) Crop Spacing

- **Spacing can affect the relative growth rate of plants and development of environments favourable to insect population growth.**
- **Aphids were found to be less of a problem when plant spacing was less than 0.8m, whereas a spacing of 1.0–1.5 reduced flower thrips and the pod borer in cowpea.**

b) Crop Location

- **Fields with unmanaged habitats adjacent to it should not be selected for cultivation as it may lead to increased pest infestations which overwinter in the habitat.**

Crop Rotations

Not only creates discontinuity in pest life cycle but also improves soil structure and fertility.

Works best when

- 1)The pest has a narrow host range**
- 2)Eggs are laid before the new crop is planted**
- 3)The feeding stage is not very mobile.**
- Rotations for soil dwellers like white grubs have been successful.**
- Cereal –legume rotation scheme is quite popular.**

Disrupting crop and insect synchrony

- **If the crop phenology can be changed to be asynchronous with insect events like egg laying and larval development, insect numbers can be reduced drastically**
- **Modifying planting dates is a classical example**
- **Early sown sorghum escapes serious damage by the midge, *Contarinia sorghicola* (Coq.) whereas the late sown crop usually suffers heavy loss.**
- **Late transplanted rice crop is severely affected by gall midge, while early sown one escapes the infestation.**

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Alley formation in Paddy

