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Module 10: ITKs IN ORGANIC FARMING



Session 2: ITK RELATED TO INSECT-PEST AND DISEASE MANAGEMENT



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Indigenous Technical Knowledge (ITK) related to insect-pest and disease management:

- Generations, using neem leaves in storage bags as a means of preventing damage by pests has been employed by farmers in India. It is observed that farmers of West Bengal, Bihar, Andhra Pradesh and Tamil Nadu used it to protect paddy, and those in Madhya Pradesh, Uttar Pradesh, Haryana, Punjab and Maharashtra to protect wheat.





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- Dry *mahua* flowers (*Madhuka india*) are applied to the field at the rate of 10-15 kg/hectare without any other mixture to control Gaygwalan (*Scalopendra spp*) pest that causes economic losses to crop amounting to 20 percent of soyabean. The insect, after feeding on the flower, becomes unconscious for 20-25 days, which is enough to save the crop.
- 6-8 kg of freshly collected green neem leaves (*Azardirachta indica*) are boiled in 10 liters of water until the liquid turns dark brown. After 10-12 hours, this is mixed with 80-100 liters of clean water and sprayed on the fields for controlling the girdle beetle (*Oberia brevis*), Bihar hairy caterpillar (*Dicrisia obliqua*) and other pests in soybean.



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- 1.5 - 2 kg of dry tobacco leaves are placed in 5-6 litres of water and boiled until the liquid is reduced to 1-1.5 liters and has turned dark black. After 10-12 hours the solution is filtered and mixed with 80-90 liters of fresh water to spray one hectare, early in the morning to control the larvae of *Helicoverpa armigera*.
- Farmers collect 1000-1200 fresh leaves with buds from *Ipomea* bushes. The leaves are placed in 30-35 liters of water and boiled until the liquid turns milky white. The solution has to be sprayed within four days of its preparation to control the larvae of *Helicoverpa armigera*, spotted bollworm and armyworm.



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- Both rich and poor farmers in the area collect the larvae of major insects, especially the girdle beetle (*Oberia brevis*) and *Helicoverpa armigera*. 2 to 2.5 kg of larvae are placed in 2 liters of clean water and boiled for 45-60 minutes until the water turns dark brown. After 5 to 6 hours, the solution is mixed with 25-30 liters of fresh water and sprayed over the crop in one hectare. The odor acts as a repellent to larvae of the same species, which quickly flee the field, leaving it entirely free of that particular species.



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- Deep ploughing is taken up in summer in dry lands for avoiding hard pan in soil, improving water holding capacity and pest control.
- Neem leaves are buried in soil for termite control.
- Residues of Tobacco are incorporated into soil to control termites.





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- One kg jaggery is mixed with 10-12 litres of water, and, 5-6 litres of this solution is sprayed on one acre of Cotton crop to control whitefly up to 40-50 percent.
- Intercropping castor, Bhendi and Cluster beans with Cotton reduced pest and disease incidence in Cotton.
- Ash, which farmers get after burning of the fuel wood, is mixed with the pulses and millets grains while storing. 20 kg millet grain mixed with 500-1000 g of ash may control the storage pests.
- To save sugarcane, wheat and paddy crops from rats, saccharum (saw edged grass) grass is filled in the burrows of rats and closed with mud.



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- Farmers grow gram with linseed or coriander to save gram crop from wilt disease.
- Mix cropping of pigeon pea with grain sorghum escapes wilt disease.
- Tying the broad basal stem of mango tree with polythene, mealy bug of mango can be controlled.
- To prevent attack of wilt disease in gram and lentil, farmers mix 100 ml mustard oil with 40 kg seeds at the time of sowing.



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- To save the crops of gram, pigeonpea and lentil from fungal diseases, the seeds are treated with mattha (buttermilk) @ 5 lit/40 kg seeds.
- To control termite attack, farmers use 2.5 lit kerosene oil per acre at the time of irrigation.
- To control khaira and blight disease in paddy, farmers broadcast 8 kg salt per acre.
- Farmers cultivate coriander, ginger and turmeric crops in mango orchard to prevent the insect pests attack.



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Indigenous Technical Knowledge (ITK) related to insect-pest and disease management:





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- Before sowing, farmers sieve rice seeds in order to separate the seed of weeds. It is observed that some seeds are smaller and by sieving those will be filtered.
- Farmers irrigate the rice nurseries on the first day and they store the water for three-four days and even some farmers wait for one week. Then they plough the fields by turning the soil upside down .Again, they irrigate the nursery area and repeat the entire practice to check the weed growth in rice nursery.



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- In traditional transplanted rice field water is stagnated during a long period of crop growth to manage the weed problem.
- Cultivation of sunhemp or daincha or cowpea as a green manure helps to control the nut grass (*Cyperus rotundus*) weed.
- To check the growth of Aarai (*Marsilea quadrifolia*) weed, *Calotropis gigantea* can be grown as a green manure.



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- Seeds of Coriander are mixed with sorghum seed before sowing for complete control of Striga (parasitic weed).
- Allowing swine in the fields helps to eradicate nutgrass. Involving pigs for burrowing the puddled fields and addition of tamarind husk complements control of rice weeds especially nut sedge, which was reduced by 61 per cent.





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- Keeping the irrigation channels clean reduces weed problem in the field.
- Farmers grow sunhemp in those fields where the motha (Cyperus sp.) weed is problem.





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