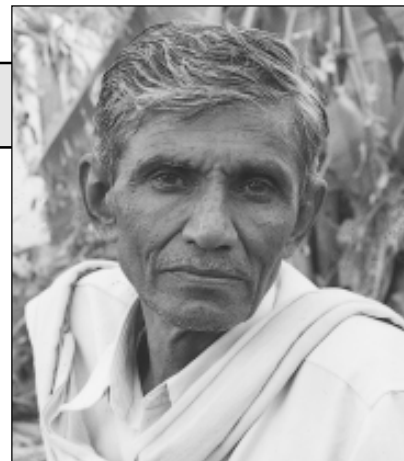


Eco friendly and cost effective pest management



Most of the pest problems cropped up due to hybridization and varietal improvement, imbalanced chemical fertilization, monocropping, unseasonal crop cultivation (weather and season), high density planting and growing the same crop repeatedly. If these wrong cultivation practices are given up, most of the pest problems could be avoided.

Application of organic manures, poly cropping or mixed cropping, cultivation of crops at the right season, providing proper spacing among plants or trees, crop rotation so as to check the fast multiplication of pests in the same soil and cultivation of companion plants are some of the practices that could check pest infestation. Even the use of indigenous seeds will help in combating pest problems. However, in spite of these good practices there is still a possibility of pest infestation, may be due to the result of global warming and erratic weather changes. Hence, to control the pest damage upto the threshold level of damage i.e upto 6% to 8% of crop losses, there may be a need for using plant protection. The use of expensive and harmful chemical pesticides, which poison the food, fodder, soil destroying beneficial predator population, result in more and more pest prevalence, environmental destruction and economic losses. Hence, the use of traditional knowledge of our ancestors is the best way of checking the agricultural crisis caused by the green revolution agriculture technology being practiced during the past 6 decades.

The bio-intensive way of crop cultivation itself can help to grow healthy and tolerant plants. Plants grown on humus rich productive soil with a soil carbon content of about 2% or more, encourage soil beneficial organisms, which control virus, fungus and insect attacks. It is not only the healthy soil, but also the water retention capacity which double the mineralization of humus by another 8 to 10 tonnes per year. Regular mineralization of 8 to 10 tonnes per year per acre is common in tropical countries. The bio-intensive farming system can bring down most of the problems like imbalanced plant nutrition.

It is very unfortunate that termites or white ants are branded as enemies in agriculture. Actually the termites and earth worms are the builders of the soil, aptly known as 'soil engineers'. I would say that termites are the chief engineers and earthworms are assistant engineers. They create a huge amount of space in the soil, that helps in improving the availability of air (oxygen for the roots) and infiltration of water into the soil. Many people think that termites would kill a plant or tree, which is a myth. Actually they eat away a plant while it is struggling to dry away due to lack of moisture. It is like mercy killing. They graze only on dead bark of the tree which otherwise could have encouraged fungus growth during rainy season. In reality, the termite hill built up with their saliva moistened mud is not only fertile but also a very good antibiotic. We use this termite hill mud for bathing and shaving. In many African countries it is applied in the pit before planting saplings.

Dense planting encourages both fungus and insect multiplication by providing thick shade on the land. Companion planting with

strong smelling crops like Tulsi, garlic, onion and marigold, can deter many insects getting into the land. Marigold plants when disturbed by wind, or other means emit strong odour and

deter insects getting into the field. The marigold plant root excretion is very much liked by root nematodes, but it is a poison for them and get killed. Three kilograms of marigold flowers when grounded and diluted with 200 litres of water and sprayed on crops can control many insects. Being photo toxic, care has to be taken to spray the preparation during bright sunlight. It does not work as poison on cloudy days.

Similarly maize grown as a companion plant with beans, cucurbits, tomato can deter pests on them. Trap crops like Okra, mustard etc, can attract most of the sucking insects, which can be easily destroyed. The mother moth of hairy caterpillar is stupid in laying all its thousands of eggs only on a few uppermost leaves of the crops like sunflower etc. These can be easily scouted if the farmer is regularly visiting his crops. After 5 or 6 days of hatching, the young hairy caterpillars would move away to the whole of the crop. Placing bright light traps over a water bowl with a thin layer of kerosene can attract and kill many insects. In the evening, smoking among the crops and placing yellow coloured thick paper sheets with sticky paste can also trap insects. Shaking the plants particularly paddy crop with twigs or a rope held by two or more people into the stagnating water with a thin film of Kerosene will also help in insect control.

White grub adults usually come out of the soil within the first three days after a 2 cms rainfall and feed on neem, subabul or whatever vegetation available around the land. After mating the male insect dies. The female gets into the wet soil, make a small pot, lay 60 to 80 eggs and die. The eggs that hatch would feed only on the roots of crops or weeds till a crop is sown. If the farmers can plant 8 to 10 neem branches dipped in poison in an acre of land soon after the first monsoon rain (not less than 2 cms of rain) can eradicate most of the adults of root grub or white grub even before they lay their eggs in the soil. Root grubs can also be controlled by applying 4 kgs of *Beauveria brongniartii* into an acre of land, which is not hazardous to other soil organisms, like DDT, BHC, Timet or other poisons. Since it is fungus harming only root grubs at all ages, there is no need of applying it again and again, as it multiplies in the soil continuously. The neem seed or leaf extraction at 0.5% can control most of the insects as it acts like a deterrent, contact and stomach poison, controlling breeding, retarded growth rate etc. Similarly we can use many herbs in our locality which are not eaten by goats, like Datura, Negundi, lantana, adathoda, cleoradandra, calatropis etc., using their sap sprayed on our crops and save them.

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