

## SOME PROPHYLACTIC MEASURES IN INSECT PEST CONTROL

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The well-known saying that "Prevention is better than cure" is a very old maxim and is specially appropriate, in many cases, where we have to deal with diseases and pests of various kinds; but, unfortunately the very sage advice contained in the pithy saying, is more honoured in its breach, than in its observance. It may be affirmed that in the case of many insect pests, prophylactic measures will be found far more practicable and economical, than those adopted to actually fight a disease or pest when it has made its appearance, and when it often becomes too late to employ preventive measures or, too difficult to resort to curative methods. In certain special cases, no other methods other than preventives will be found practicable. The more important preventive methods against crop pests, may be conveniently grouped under one of two kinds, viz., cultural and sanitary. The following is a brief summary of some of the more practicable and advantageous preventive methods which can be adopted against insect pests under South Indian conditions.

**I. Field And Plant Sanitation.** (1) *Keeping the fields clean by regular removal of all weeds* is important, since many crop insects feed on some weeds when their cultivated food plant is not available. Examples of such insects are—the Paddy mealy bug, the Rice bug, the Army worm, the Sunnhemp moth, the Fruit moth, etc., (2) *Pruning of dead branches, removal of loose bark, scraping of the unhealthy stems and patching up wounds with clay and tar* in fruit and other trees of economic importance; these measures will kill some insects which lurk or hibernate in these situations in one of their many stages, and which would otherwise attack the healthy parts of the plants in due course. Examples are shoot, bark and stem boring beetles, bark caterpillars, etc. The removal of the dead and splitting of crownless rotting palm trees and drying the stems will keep away the palm weevil and the rhinoceros beetle in coconut gardens. (3) *The removal of all remains of a crop* after harvest such as stubbles of cereals like paddy and cholam, old cotton, brinjal, sweet potato and cucurbitaceous plants. Failure to remove these, allows borers, etc., to breed unnoticed and appear on the crops during the following season, (4) *Proper disposal of litter*—in cattle sheds and stables. The trouble from domestic and cattle flies can be prevented by proper disposal of cattle yard and stable manure in which flies of all sorts breed, multiply and become not only a nuisance, but also play their part as disease-carriers in some cases. The oiling of stagnant pools and ponds to destroy mosquito larvae, is a similar measure. Under this heading may also be brought the periodical raking up of the manure heaps, to prevent

multiplication of the rhinoceros beetle grubs, and other cockchafer larvae that breed in them.

**II. Cultural Methods.** Some of these methods though partially curative, go a great way in checking the multiplication of some pests and effecting their control very easily and economically. (1) *Deep ploughing in general.* To destroy weeds, white grubs attacking garden crops like chillies, groundnut, etc., pupae of hairy and Sphingid caterpillars often attacking crops like groundnut, green gram, sweet potato and gingelly, this method will be found very helpful. (2) *Ploughing and raking up of field bunds* for destroying grasshopper eggs in paddy areas like Malabar, Ganjam, etc., forms another preventive measure in such areas. (3) *Crop rotation.* It is perhaps not widely realised that apart from its agricultural benefits, this method of growing crops in rotation on any area is also beneficial in checking the multiplication of some insect pests which would otherwise continue breeding in the same area right through the year. (4) *Digging out and destroying ants' nests in fields*—white ant attack on wheat, groundnut and cane and the occasional outbreaks of red ants on brinjal and other garden plants, can be prevented by this prophylactic measure. (5) *Raking up and hoeing of the soil* around melon plants and around mango and other fruit trees like Guava, Zizyphus, etc., which suffer from attacks of fruit flies, will destroy the underground pupae of these flies and prevent further breeding; this may be done for plants suffering from flea beetle and leaf beetle attacks also—such as the Pollu flea beetle in pepper areas, the pumpkin and other leaf beetles and the beetle pests of grape vine. (6) *Thorough drying before storage.* The thorough drying and chaff-free-storing of harvested crops like grains, pulses, oil seeds, ginger, turmeric, nuts of different kinds, pepper, cardamoms, chillies, etc., will prevent the infestation and multiplication of many insect pests like weevils, moths, mites, etc., which are partial to such stored products. It has also to be remembered that there is no good of storing such clean and healthy seeds in pest-infested and unclean cellars and vessels. Small quantities of valuable seeds may also be preserved in jars with a layer of sand on the top surface; this is found to prevent weevil-breeding in many cases. The use of naphthalene to keep away vermin from stored products, records, pictures, etc., is another closely allied method. A further precaution in this direction is to fumigate the commodities and store them in insect-proof vessels. Fumigation of ordinary seeds, etc., can be done by the use of carbon-bi-sulphide, which, of course, has to be done by trained hands. (7) *Flooding.* Whenever possible flooding may be resorted to, to check the multiplication of cut-worms, mole crickets, white grubs, and other underground pests often found in garden areas.

**III. Other Preventive Measures.** (1) *Treatment of cane setts before planting.* Before planting sugarcane and grape-wine, setts may be



treated with Copper sulphate, dilute Crude oil emulsion, or tar water to prevent white ant, mealy bugs and even borers. (2) *Light Traps*—Many insects including some well-known crop pests are attracted to lights; the setting up of light traps at the very beginning of a season when a phototropic insect pest is likely to appear, will nip the pest in the bud and very greatly check its multiplication and reduce its menace as a serious pest. Such are the paddy stem borer, the ground-nut *surul*, the hairy caterpillar moths, the cockchafer beetles, one or two of the sorghum and cane borers, the ragi white borer, the spotted jassid of paddy, and many others. A study of the light trap catches in any area for a fairly long period, will give any one an idea of the incidence of the phototropic insects and the time of the year when they usually appear. Even bon-fires in field bunds at such seasons will serve the purpose. (3) *Covering ripening fruits to prevent insect attack*. Pomegranate fruits of good quality and size are kept free from the borer butterfly, by loose muslin or paper covers which prevent the butterfly from laying eggs on the fruit. Batavian and allied varieties of oranges, are often covered with cheap bamboo baskets in parts of the Northern Circars. Though the practice originated with a different purpose, it prevents the attack of the fruit-sucking moth which is a bad pest in the area. (4) *Banding cocoanut trees with smooth tin plates* will prevent rats going up the trees and causing damage to the nuts. A similar measure is the tarring of the stems of fruit and other trees to prevent white ant infestation. (5) *Use of healthy seeds, cuttings, tubers, etc., for propagation*. This is particularly the case with seed potatoes which often contain the borer larvae, cane setts often containing mealy bugs, borers and white ants, cuttings of grape-vine, crotons and other garden plants containing scales and mealy bugs, etc.

The above are some of the more suggestive and practical methods of actually preventing outbreaks of insect pests in many cases, and in some, to considerably minimise the damage even when the pest appears. The success of many such preventive measures depends a good deal, on the promptness with which they are adopted for different pests. It may also be added, that for an effective and economic application of one or more of the above prophylactic measures for different insect pests, it is essential that one should have correct ideas of the insect or insects, and the approximate seasons in the year when the different forms begin to appear in his tract. This is easily gained by intelligent preliminary observations, and records made through different seasons for a year or two, and then compiling a sort of pest calendar for the tract. There is no doubt that as the farmer gets to know his important pests and their vagaries, he will himself be able to devise such prophylactic measures which might suit specific pests and special localities.