



## Cultural Based Traditional Wisdom for the Control of Insect Pests

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Crop management is a basic tool for getting higher and optimum production. Heritage rich traditional methods include basic agronomic cultural managements that protects the crop from the yield reducing insect pests and leading to higher productivity without causing any yield loss viz., time of sowing, trap crops, intercropping, summer ploughing, proper spacing, provision for sunlight, rope method, bird perches, fumigation and use of effigies.

### Introduction

There is a growing concern over the adverse effects of agrochemicals on soil productivity and environmental quality which is emerging to recognize that the farmer has a great social responsibility as a land owner than merely agribusiness consideration. In the history of Indian Agriculture, most of the farmers relied only on the heritage rich traditional methods of age old techniques for crop protection. Following are some cultural based traditional measures for the control of insect pests:

**Time of sowing:** The time of sowing should be adjusted to modulate growth of the crop. Plant to plant and row-to-row spacing is similarly used to alter the microclimate and reduce risks. There are no standard prescriptions for these and are generally based on the knowledge and experience of the farming community.

**Crop rotation:** Crop rotation should be done in such a way that rotating the crop belonging to one family with one of a different family helps to reduce pests to a large extent.

**Trap crops:** Trap crops act as a sacrificing one when it is grown as a control measure to lure pests away from the cash crop to protect it from attack. Pests are strongly attracted by certain plants and when these are sown in a field or along the border, tend to gather in them, enabling their easy collection and destruction. African marigold, mustard, castor, maize, etc., can be grown as trap crops in cole crops, cotton and vegetables (Fig. 1).



Fig. 1: Castor as a trap crop in the field

**Intercropping:** Intercropping generally has a positive effect in terms of reducing the occurrence of pests. Insects find it difficult to locate host plants as the visual and chemical stimuli from the hosts are not strong and the aromatic odour of other plants can disrupt host finding behavior.

**Use of resistant / tolerant varieties:** Genotypes showing tolerance or resistance to pest and disease are preferred in organic cultivation. A series of resistant varieties of different crops have been developed in recent years for most climatic conditions

**Summer ploughing:** Summer ploughing is an important age old practice for pest control. When the land is ploughed, the inactive stages of pests like egg masses, larvae and pupae present within 5–10 cms surface of the soil get exposed. They are killed due to the intense heat of summer and are also eaten away by predatory birds (Fig.2).



Fig. 2: Summer Ploughing

**Keeping bunds clean:** Field and field bunds are the favorite egg laying spots of most pests. Hence, wild grasses and weeds found in the field and on the bunds should be periodically removed.

**Plastering of bunds:** Weeds found on the bunds should be removed and the bunds should be plastered. By doing this, rat holes found near the bunds can be sealed and rodent damage controlled. Such a procedure also prevents water leakage.

**Proper spacing among the seedlings:** When paddy seedlings are transplanted to the main field, they should be laid out with proper spacing. For short duration varieties, the inter row spacing should be 5 cm and inter hill spacing should be 10 cm. For medium duration varieties, it should be 20 cm x 10 cm and for long duration varieties, 20 cm x 15 cm. This facilitates penetration of sunlight to the lower portions of the crop and thus prevents pest and disease incidence.

**Providing sufficient gaps:** While planting seedlings, a one-foot gap should be provided after every eight feet to enable sunlight to reach the lower segments of the plants. This reduces the incidence of pests that are found on the under surface of the crop. Such spacing also helps during the application of manures and the spraying of biopesticides.

**Provision for sunlight:** *Neekal podum murai* is a traditional practice that has been followed in the Chengalpet district of Tamil Nadu for a number of years. In this method, women stand in a line in between the plants and walk from one end of the field to the other, pressing the under parts of the plants. This enables sunlight to reach the lower segments of the crop. The practice not only kills the nymphs of the brown plant hoppers sticking to the under surface of the plants but also helps to check the rodent population.

**Rope method:** The field should be filled with water up to a height of 5 cm. One litre of kerosene should be mixed with 25 kg of sand and strewn in the field. Later, a string should be dragged over the surface of the leaves vigorously so that the caterpillars fall into the water. The caterpillars are killed by the kerosene present in the water. Later, the water should be drained to remove the dead caterpillars. The field should be dried and then freshly irrigated. This method should be used only during the vegetative stages of the crop.

**Bird perches:** 'T' shaped bird perches should be erected in the field at the rate of 15–20 per hectare. They should be placed one foot above the crop canopy. These perches serve as

resting places for the birds which feast on the larvae they find in the field. Mix rice with the blood of a chicken, make it into pellets and broadcast these in the field. The smell of blood and rice attracts predatory birds to the perches in the field from where they pick up the swarming caterpillars.

**Fumigation for disease control:** Diseased crops can be sprayed with 10% cow urine solution. On the same day or the following day, fumigation should be carried out in the evening. About 200 gm of vaividanga (*Embelia ribes*) or sweet flag (*Acorus calamus*) is powdered well, put in a wide mouthed pot with burning charcoal and carried into the field in a direction opposite to the wind. On the seventh day after fumigation, sweet flag rhizome extract should be sprayed. This method controls bacterial and fungal diseases.

**Use of effigies:** A human-like figure, made of paddy straw and wearing a white dress (@ two effigies per hectare) kept in the field at milky to grain filling stage, will scare away the birds.

**Cow dung extract:** Mix one kilo of cow dung with ten litres of water and filter using a gunny cloth. Dilute the solution with five litres of water and filter again. The result can be used for spraying.

### Conclusion

Timely practices of the traditional methods are most crucial one in controlling of insects pests. These technologies are most useful in enhancement of conserving our heritage rich cultural practices and at the same time it reduces the cost of inputs spent for chemicals thereby increasing the income of farmers.