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MANAGEMENT AND CONTROL OF TERMITES IN AGROECOSYSTEMS

MANAGEMENT AND CONTROL OF TERMITES

In Central and North India termites are pests of economic importance for several economically crops like Cotton, Groundnut, Sugarcane, Wheat, Maize, Castor etc. Most of the termite species found as pests of crops is subterranean. Their management and control can be tried in the following ways:

- **Using Termiticides**
- **Cultural control practices**
- **Biological control method**
- **Other Alternatives**

I. Using termiticides :

1. Management of Subterranean termites primarily rely on treatment of soil with termiticides at the site of active infestation.
2. Increased environmental concern due to several unintended repercussions of persistent Organochlorines and Cyclodienes like Aldrin ,Dieldrin, Chlordane and Heptachlor, has prompted the need for screening newer potent insecticides against termites (Khoo and Sharma, 1979).

3. Though Chloropyriphos became available in the 1980's use of organochlorines continued until the ban was imposed on these insecticides.
4. As a result of adverse effect of the organochlorines on the environment, research shifted towards third and fourth generation insecticides like Carbamates, Organophosphorous and Synthetic Pyrethroids.
5. Kakade *et.al.* (2006) after a series of laboratory experiments on worker termites has recommended Nurelle D and Cypermethrin as a promising termiticide. Nurelle D is a combination product. (chloropyriphos + Cypermethrin.)

II. Cultural control practices:

Cultural control practices can be implemented in the following ways:

1. Clean Cultivation to avoid infestation.
2. Irrigating regularly.
3. Not allowing decayed and rotten cellulose materials around the field.
4. By removal of diseased, mechanically injured or damaged plants and weeds from the field.

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5. Weeds surrounding the fields compete with crops for nutrients, light and water and may lead to stress and hence increased susceptibility to termite attack.
6. All the termite food materials, such as tree stumps, roots, organic matter should be dug up, and destroyed.
7. Use of inorganic fertilizers enhances plant vigour and hence the ability to withstand pest damage. Application of nitrogen, phosphorus and potassium in wheat reduces termite incidence.
8. Crop rotation results in better soil fertility and plant vigour.
9. All wooden farming instruments and other useful wooden structures around the field should be coated or painted with coal-tar. This operation will not only give protection against termites but also from other pests.
10. By harvesting crop promptly (in time) and burning plant residues.
11. Deep ploughing or hand tillage exposes the termites to desiccation and predators and thus helps in reducing the numbers of termites
12. Some pest termites are mound builders, it is recommended that the termite mounds of these species, in and around the agriculture fields should be destroyed.

III. Biological control methods :

Biodiversity can be increased by applying less persistent insecticides and planting large trees around the agricultural fields.

1. Efforts should be made to increase the population of Bio-control agents seen predating on swarms of termites.
2. Birds like Drongo, Bush lark, Swallow, Green bee eater, Hoopoe, Indian roller. predate on termites at the swarming time.
3. Lizards like *Hemidactylus* sp. Common Garden lizard (*Calotes versicolor*), *Sitana* sp. are commonly seen feeding on termites.
4. Amphibians were also observed feeding on termites.
5. Mammals like, Five striped squirrel (*Funambulus pennati*) and Mongoose (*Herpestes edwardsi*) were recorded to feed upon a swarm of *Microtermes* sp.
6. Ants like *Pheidole* sp. and *Dorylus* sp. were observed feeding on *Odontotermes obesus*.
7. By pathogens - the use of entomophagus fungi for termite control is currently being investigated.

III. Other alternatives :

1. By wood ash or a mixture of cow dung and aloe juice heaped around the base of plants.

2. To distract termites away from the major crop plantation of fodder plants or grass between crops is normally done by small farmers.
3. Releasing of Nitrogen usually occurs in the first rainy season and gives high yield to the crops.
4. If mounds are detected surrounding the field, it should be chemically treated (mound poisoning). This can be done by pouring water emulsion of any soil insecticide by means of buckets after breaking the earthen structure and making several holes with a crowbar. The quantity of emulsion will depend on volume of the mound.
5. Plant parts or plant extracts are known to be repellent or have antifeedant properties. These can be applied as mulch or as water infusion. Plant products of leaves of *Azadirachta indica* and *Calotropis procera* are also being recommended.
6. Queen removal, removal of fungus combs, destruction of nests can also give some success in termite control.

Since termites are mostly subterranean and cause infestations in parts of plants hidden from view, they are difficult to detect and destroy. Hence termite management practises should be a combination of chemical, traditional, alternative sure-fire methods.