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Introduction

Insect pests are responsible for about 20-30 % of crop destruction.

There are many safe, natural, and simple methods of protecting plants.

In the long term, most industrial chemical pesticides increase pest and disease problems rather than solving them. Many of them are highly poisonous. They are harmful to human health, and destroy the environment.

This chapter explains various, simple and readily available natural pesticides. There are many more pesticides in addition to those discussed here. You should use the methods you find most appropriate in your area. Remember to always spray selectively, specifically to kill the pest which has become a problem. Do not try to kill beneficial insects. Where spraying equipment is not available, the liquid may be applied to the plants with soft-bristled brushes.

Aromatic (strong-smelling) plants

Material: Leaves from any strong-smelling plant, such as ginger, lantana (see photo), tomato, garlic, pepper, or other spices.

Target: Most insect pests.

Method: Dry the plant material and then grind into powder. You may mix two or more types of plant material. Mix the powder with boiling water and allow to cool before spraying. Recommended mixes range from 20g to 500g per litre of water.

Frequency: Spray when you see insects on plants. Spray more often in the wet season, because rain washes the substance off plants.

Inter-planting specific aromatic plants between crops may also keep away certain insect pests.

Ash

Material: Wood ash

Target: Soft-bodied insects such as aphids, caterpillars, roundworms, grass-

hoppers, termites, stalk borers, cutworm, and others, as well as mildew and fungal diseases.

Method: Dust ash evenly on leaves to dehydrate soft-bodied insects. Place ash thickly around the plants or trees to discourage soil pests such as cutworms. Do not let the ash touch the plant stem.

Mix ash into planting holes when planting trees.



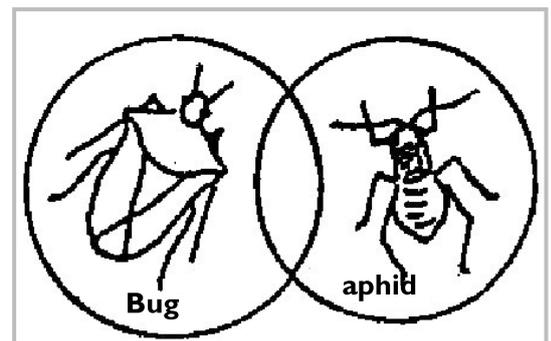
Lantana - often with some flowers yellow, others red and purple

Brushing

Target: Crawling and swarming insects.

Method: Insects, larvae and eggs can be swept from leaves, branches, and trunks of fruit trees with a stiff brush. Protect the eyes (wear glasses) from falling insects.

Some insects may seriously damage one's eyes.



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Sweet basil (*Ocimum basilicum*)

Target: Used as a mosquito repellent and against pests among stored grains.

Pests result in the loss of 20-30% of crops



Sweet basil. It smells good, but not to pests

of the grain bin.

Finger euphorbia

Target:

Aphids, mosquitoes, red spider mites, termites, fungi, and insects in general.

Method:

To repel termites, place chopped leaves in the planting holes, or place branches around trees.

To make a general mix for spraying against insects, use 10 drops of the milky juice from the stem and mix thoroughly in one litre of water. The mixture should be a slightly milky liquid.

Warning: Harmful to the eyes and skin.

Manure

Target: Animals, birds, grasshoppers, aphids, fungi and bacteria.

Method: Put one shovel full of dry cow manure into 10 litres of water. Stir once a day for at least two weeks.

Dilute the mixture 5 times before spraying (2 litres of the mixture to 10 litres of water). The remaining mixture should be kept for the next spraying. Clay dust may be sprinkled into the bucket to reduce the odour.

Spray the leaves to protect plants against aphids, and to give resistance to bacterial and fungal diseases.

It may also be sprayed on the soil surface to protect the seedlings against cutworms.

Fruits and vegetables that have been sprayed must be washed thoroughly before eating. Paint tree trunks once a month with a mixture of clay dust and goat, cow, and chicken manure to repel monkeys, antelopes, goats, and rabbits.

Mulch

Material: Dead organic plant material, e.g. crop residue, seed-free weeds, leaves, etc.

Target: Cutworms, grasshoppers, roundworms, snails, and termites.

Method: Cover the soil between plants with at least one cm (one finger) of thick, dry plant material. Mix this mulch with leaves from aromatic plants such as ginger, marigolds, and other fragrant herbs. A mulch of tobacco leaves, or tobacco dust, will control snails, caterpillars, cutworms, and many other insects.

Soap solution

Material: Bar soap.

Target: Aphids, caterpillars, leaf miners, mites, psyllids, white fly and other insect pests.

Method: Dissolve 5 cm (100g) of bar soap in 10 litres of water. Only spray when needed, as chemical soap can lower soil fertility.



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Onions

Target: Aphids, army worms, caterpillars, leaf miner, mites, psyllids, white fly and other insect pests.

Method: Soak 50 g of onion leaves/pieces in one litre of water. Leave for one week in a closed container. Spray the infested plants.

Alternatively, to make the solution available more quickly, you can boil the mixture for about 30 minutes and leave it to cool before spraying onto plants.

Chili

Material: Ripe chili pods and chili seeds.

Target: Insects in general, fungi, bacteria and reducing the incidence of viruses.

Method: Grind two handfuls of chilies, and soak in one litre of water for a day. Shake well, filter and add five litres of water (one small bucket). Add a little soap, then spray. Apply powder around the stems of plants to repel ants, cutworms, snails and other soil pests. Plant in the garden amongst the other crops to repel various insects.

Mexican marigold

(*Tagetes minuta* - A strong-smelling weed flower)

Target: Many insects, mildew and pests in stored grains.

Method: Plant in vegetable gardens and orchards to repel pests. Soak crushed parts of one mature plant in two litres of water for 24 hours, then filter and spray. A handful of wood ash may also be added. The mixture can be sprayed onto the soil around plants to protect them from ants.

Leaves rubbed on the skin will repel mosquitoes.

Mix fresh leaves into planting holes to repel termites.

To protect grain stores, place a 3-5 cm layer in the bottom of the grain bin.

Bead tree - *Syringa* (*Melia azederact*)

Target: Used against many insects and fungal infections.

Method: Boil a handful of leaves and berries in five litres of water for 10 minutes. Cool, and then spray on the plants. Mix leaves with crops in the storage bin.



Tobacco

Target: Works against most insects, plant rust and prevents a number of viruses.

Method: Soak 1 kg of crushed leaves in 15 litres of water for 24 hours, or boil for 30 minutes. Add a little soap, filter, and spray.

Crush into powder and scatter over soft-bodied pests such as slugs or snails.

Dust on trees and crops to repel insects.

Tagetes minuta - marigold. It has a strong smell and small orange-coloured flowers.

Warning: Do not spray on tomatoes, potatoes or peppers as it will turn leaves black. Use the remaining leaves as mulch to combat termites.



Sunhemp (*Crotolaria*)

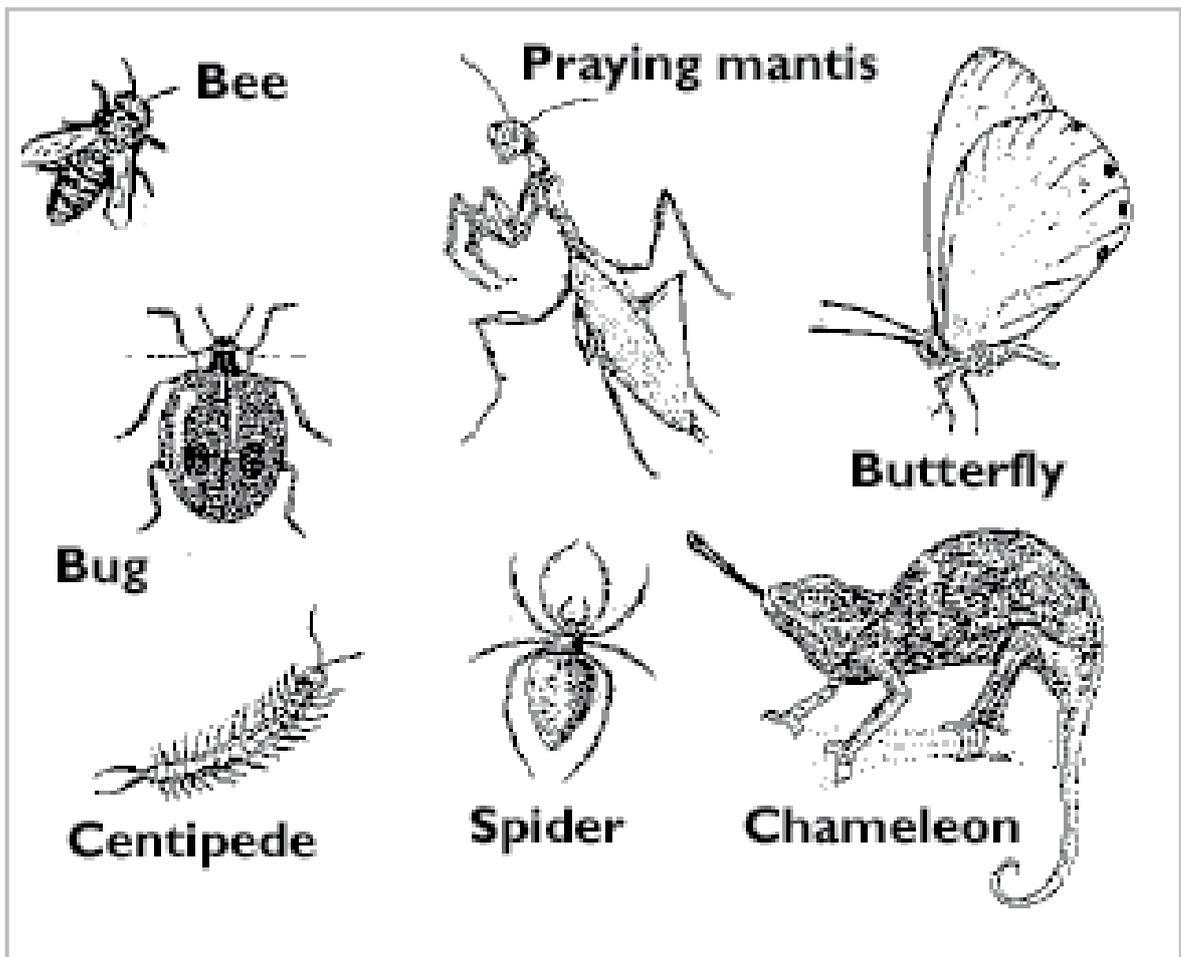
Target: Insects in general, pests in stored grain, roundworms and fungi.

Bead tree (*syringa*) is common in many parts of Africa



Method: Rotate or interplant as a trap crop for roundworm and other pests.

Pound the seeds and mix it with grains in storage bins.



*Beneficial organisms found in the garden and the fields. Do not kill them.
They are helpful to your garden, orchard, and field crops.*