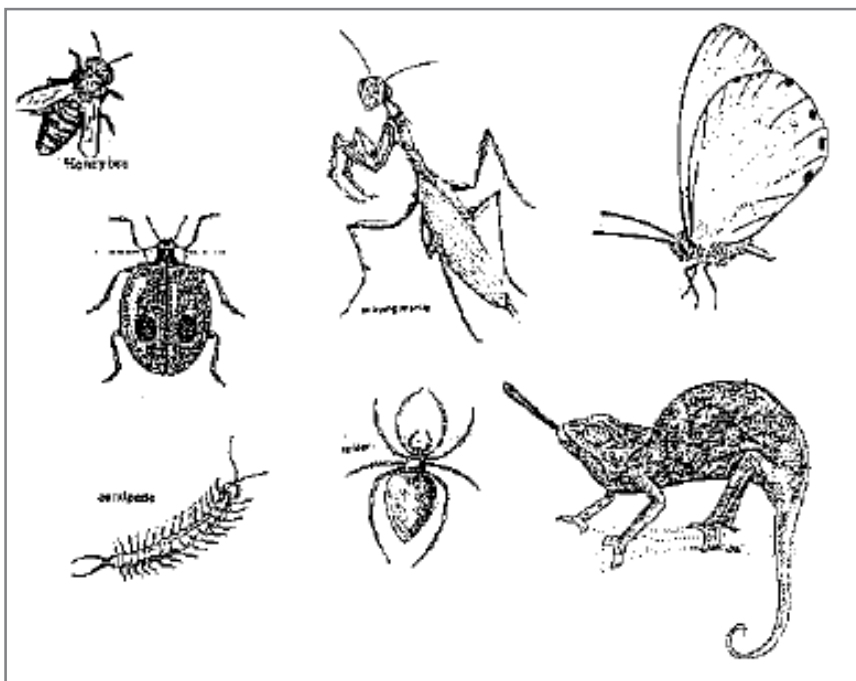


**Insects and animals which help you in the garden/ field**



Don't kill these insects/animals. (Honey bee, praying mantis, ladybugs, butterflies, centipides, spiders, chameleon). They are beneficial to your garden, orchard and field crops

# BIOPESTICIDES

## What you should know about combating pests with natural pesticides

### Introduction

- ♦ Insect pests are responsible for 20-30 per cent of the crop destruction
- ♦ There are many safe, natural and simple methods of protecting plants
- ♦ In the long term modern chemical pesticides increase the pest and disease problem and they do not solve it
- ♦ Modern chemical pesticides are poisonous. They are harmful to human health and destroy the farm environment.

This booklet explains various simple and affordable natural pesticides. There are many more natural pesticides. You can use the methods you find appropriate in your area. Remember always spray selectively specifically to kill the pest which has become a problem. You should try not to kill friendly insects. Where spraying equipment is not available, the liquid can be sprinkled on to the plants with paint brushes or brushes made from local plants



This manual was elaborated by:  
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THE   
GAIA-MOVEMENT  
TRUST  
LIVING EARTH   
GREEN WORLD ACTION

## Aromatic plants (strong smelling)

**Material:** Leaves from any strong smelling plant such as gums, Lantana (photo), tomato, garlic, chilli or any herb.

**Target:** Any insects.

**Method:** Dry the plant material and then grind into powder. You may mix 2 or more types of plant material.

Mix the powder with boiling water and allow to cool before spraying.

Recommended mixes range from 20 g to 500 g per liter of water.

Frequency: Spray when you see the insects on the plant. Spray more often in the rainy season because the rain washes away the substance from the plants.

Planting some aromatic plants in between crops can also keep away some insects.



## Ash

**Material:** Wood ash.

**Target:** Soft bodied insects such as aphids, caterpillars, cutworms, grasshoppers, nematodes, stalk borers, termites and other insects. Mildew diseases.

**Method:** Dust ash evenly on the leaves to dehydrate soft-bodied insects.

Spray ashes thickly around the plant, seed beds or trees to discourage soil pests such as cutworms, eggs, larvae. Do not let the ash touch the stem.

Mix ashes into planting holes of trees.

## Brushing

**Target:** Crawling insects and swarms.

**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

A 3 to 5 cm layer of crushed plants in the base of grain bins, or mix powdered plants with the grains.

## Bead tree - Syringa (Melia azederact)

**Target:** Used against many different insects and fungi

**Method** Boil a handful of leaves and berries in five liters of water for 10 minutes. Cool and spray to prevent pests and fungi

Mix leaves with crops in the storage bin.



## Sweet Basil (*Ocimum basilicum*)

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

**Method:** Crush the plant and rub it on the skin.

Put branches under the sleeping mat and bed.

Hit the house walls with the plant.

Put it on fire. To protect stored grains, put a 3-5 cm layer in the bottom of the grain bin.



## Mexican Marigold (*Tagetes Minuta*)

Strong smelling weed flower

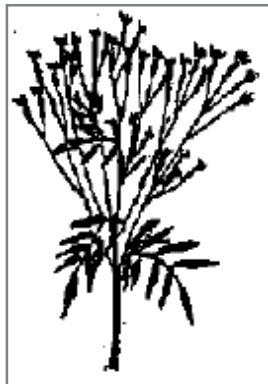
**Target:** Many insects, late blight, mildew, pests in stored grains.

**Method:** Plant in vegetable gardens and orchards to repel pests.

Soak crushed parts of one mature plant in two liters of water for 24 hours and filter, spray. A handful of wood ash can be added and spray on to 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.



falling insects. Some insects can seriously injure the eyes.

## Manure

**Target:** Animals, birds, grasshoppers, aphids, fungal bacteria and viral diseases.

**Method:** Put 1 shovel full of dry cow manure into a bucket of 10 liters of water. Stir once per day for at least 2 weeks. Dilute the mixture 5 times before spraying. (2 liters of the mixture to 10 liters of water). The remaining mixture can be left for next spraying. Clay dust can be sprinkled into the bucket to reduce smell. Spray the leaves to protect the plant against aphids and give it resistance to bacterial and fungus diseases. It can be sprayed on the soil surface to protect seedlings against cutworms.

Fruits and vegetables that have been sprayed must be washed thoroughly before eating.

Paint tree trunks with a mixture of goat, cow, poultry manure and clay dust at monthly intervals to repel baboons, hares, bucks, goats and rabbits.

## Mulch

**Material:** Dead plant material, e.g. crop residue, hay leave weeds etc.

**Target:** Cutworms, grasshoppers, nematodes, snails and termites.

**Method:** Cover the soil between the plants with at least 1 cm (1 finger) thick dry plant materials. It is good to mix the mulch with leaves from aromatic plants such as gum, marigold, herbs etc. A mulch of tobacco leaves or dust will control cutworms, lawn caterpillars, snails and many other insects.

## Soap Solution

**Material:** Bar soap.

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

**Method:** Dissolve 5 cm (100 g) of bar soap into 10 liters of water with or without paraffin added. Only spray when needed as soap can destroy the fertility of the soil if over used.

## Onions

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

**Method:** Soak 50g of onion leaves/peels in 1 liter of water. Leave for one week in a closed container. Spray the attacked plants. Alternatively, you can boil the mixture for about 30 minutes and leave it to cool before spraying on to the attacked plants.

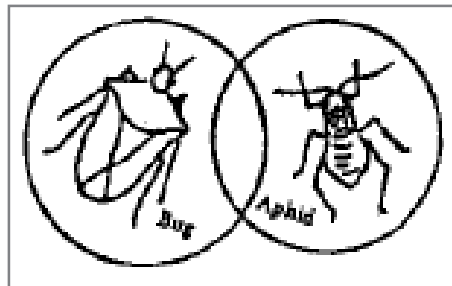
## Chilli

**Material:** Ripe pods and seed of chili. **Target:** Insects in general, fungi, bacterial and viruses.

**Method** Grind two handfuls of chillies, soak in one liter of water for one day. Shake well, filter and add 5 liters of water (1 small bucket). Add a little soap then spray.

Apply powder around the stem of the plant to repel ants, cutworms, snails and other soil pests.

Interplant in the garden to repel various insects.



## Sunhemp (Crotolaria)

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

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



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

## Tobacco

**Target:** Works against most insects, rust and viruses.

**Method:** Soak 1 kg of bruised leaves in 15 liters of water for 24 hours or boil for 30 minutes and add a little soap, filter, spray.

Grind into powder for dusting to kill wet bodied pests like slugs or snails.

Dust on trees and crops to repel insects.

**Warning:** Do not spray on tomatoes, potatoes or pepper as it will make the leaves black Use the remaining leaves to mulch against termites.

## Finger euphorbia (Euphorbia tirucalli)

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

**Method** To repel termites apply chopped leaves to planting holes or place the branches around trees.

As a general insect spray mix 10 drops of the milky juice from the stem, thoroughly into one liter of water. The mixture should be slightly milky spray.

**Warning:** Dangerous for the eyes and skin.

