

Insects and Chili Pesticides – teacher information sheet

Basic Crop Protection

Pests refer to mostly the ‘bad’ insects and their larvae that feed and damage vegetables. Insect pests can be controlled by physical, cultural and biological methods, and with organic and inorganic pesticides.

Insect pests and pesticides: what is it?

Pests refer mostly to the ‘bad’ insects and their larvae, which feed and damage food crops. They include:

- sucking insects such as aphids, stink bugs, plant hoppers and thrips;
- chewing insects such as grasshoppers, caterpillars and beetles;
- leaf rollers such as aibika leaf roller and banana skippers; and
- burrowing insects such as taro beetles, sweet potato weevils and red banded caterpillars.

A pesticide is any substance or mixture of substances used to destroy, suppress or alter the life cycle of any pest. A pesticide can be a naturally derived or synthetically (unnatural) produced substance.

Example of pests



Symptoms of sucking insects



Chewing insects—caterpillar



Burrowing insects—weevils

(Seta-Waken, Malie, Utama & Palaniappan, 2016, p. 43).

Ways to control insect pests

Physical control

Physical control is by hand removal and killing them. It is possible only in a small garden, and the best time to hand-pick insects is early in the morning on a weekly basis.

Cultural control

- crop rotation
- planting of repellent crops in the vegetable garden
- planting of resistant crop varieties.

Biological control

Biological control encourages the use of other natural living organisms (e.g. insects, birds) to control/kill other 'bad' insects. The 'good insects', called parasites/parasitoids or predators, include praying mantis, ladybird beetles and spiders (although these are not insects) that feed on other 'bad' insects that damage or destroy crops.

Organic control: natural pesticides

Natural pesticides are made from plants such as:

- derris (poison roots)
- tobacco leaf and stalk
- neem leaves, bark and seeds
- marigold leaves and stem
- chilli fruits
- pawpaw leaves.

What are homemade pesticides?

There are a number of native and exotic plants that have substances in their leaves, roots or wood that protect them from being eaten by insects. Homemade pesticides can be produced from these plants without expensive equipment. We call them plant-derived pesticides or **PDPs**. Most PDPs are not as dangerous to people as commercial pesticides and can be used without expensive protective clothing.

Equipment and materials to make PDPs

Materials needed:

- 1 medium-sized plastic bucket (~10 L capacity)
- rubber gloves
- wooden hammer / strong stick
- plastic kitchen strainer
- stick for straining
- sprayer
- clean water (preferably rainwater)
- piece of soap
- chilli pods—350 g fresh or 70 g dry pods or 1 fish-tin of dry pods
- neem seeds—100 g of kernels or 120 dry seeds.

Making chilli PDP

Steps in making chilli PDP are:

1. Put chilli pods into bucket.
2. With a mallet or gloved hand pound or squeeze pods to a fine paste.
3. Add 1 L of water (3 soft drink cans 330 mL in size) and rub mixture of pods and water between gloved hands.
4. Add four teaspoons (20 g) of soap flakes.
5. Leave mixture in bucket overnight or for one day.
6. Pour liquid into sprayer through a strainer to remove dirt and large particles.
7. Add water to make up to the knapsack carrying capacity.
8. The liquid is now ready to spray the crops.

Information taken from

Seta-Waken P., Malie R., Utama P. and Palaniappan G. 2016. Introduction to basic crop production, post-harvest and financial management practices: a training manual for smallholder vegetable farmers in western Pacific island nations (ed. by C.J. Birch and B.E. Chambers). Monograph Number 176 Australian Centre for International Agricultural Research: Canberra, ACT. <http://aciar.gov.au/node/25047>

This resource has been developed as part of the ACIAR-funded project Improving opportunities for economic development for women smallholders in rural Papua New Guinea (ASEM/2014/095).



ACIAR

Research that works for developing countries and Australia

aciar.gov.au



**UNIVERSITY OF
CANBERRA**