Organic Pesticides

Market Oriented Agriculture Programme

Pyrethrum (*Chrysanthemum cinerariaefolium*) (Information based on G. Stoll, Natural Crop Protection in the Tropics, Agrecol, 1988)

Pyrethrum is a daisy-like perennial plant of the genus *Chrysanthemum* belonging to the Asteraceae (old: Compositae) family. The flower heads with white ray flowers and yellow disc flowers possess insecticidal properties.

Pyrethrum originated in the Dalmatian mountains of the former Yugoslavia and its cultivation spread throughout the world from the early 1900s.

The colonial powers introduced it to East Africa and South America and after World War I Japan became the principal exporter.

The cultivation of pyrethrum takes place in mountainous regions up to a height of 3000m, ideally in semi-arid conditions where the winters are cool. Rainfall of 1200 mm with a 2-3 months dry season are best. The content of the active substances increases with height and cooler average temperatures and also when grown in poorer, drier conditions.

http://en.wikipedia.org/wiki/Pyrethrum

The flowers are picked on dry, hot days, when they are fully open and left for a short time in small heaps to warm before being spread out to dry, 3 – 4 cm thick on mats in an airy, shady place. Harvest yields can amount between 200 and 1000 kg per hectare. Dried flowers are best stored in dark, air-tight containers.

Recipes:

20 grams of pyrethrum powder are mixed in with 20 l of water. The powder is stirred in well and the solution is applied immediately.

1– 1.5 kg of pyrethrum powder, 3 kg of liquid soap and 100 litres of water are being well stirred together and sprayed immediately (the addition of soap increases the efficiency about four times.

Both mixtures should be applied in the evening.

The active ingredient Pyrethrin acts as a nerve poison. Pyrethrin is effective against numerous pest insects, such as caterpillars, beetles, aphids, mites, locusts, thrips, moth etc.

The efficacy of Pyrethrin is significantly enhanced by the addition of small quantities of rotenone (e.g. Tephrosia). But check on organic certification rules!

Substances known as synergists such as sesame oil or piperonyl butoxide enhance the effect of the Pyrethrin. But check on organic certification rules!

Pyrethrum can be used as a powder/dust (Dalmatian insect powder) or as a spray. The powder can be mixed with talc or lime to increase its adhesiveness.

When used as a spray it is usually dissolved in water, soap solution or kerosene (the latter however not compatible with most organic certification rules).

A commercially available Pyrethrum product in Ghana is Pyrethrum 5 EW, available from Yara Glover (www.yayraglover.com/products)

Compiled by Holger Kahl , GIZ MOAP – Kpando, Volta Region

Neem (*Azadirachta indica*)

Neem originates from the Indian subcontinent and is a fast growing tree that thrives well in Ghana.
The trees fruit when they are 4 – 5 years old. The oil content of the seeds is 35 – 45 %. The effective ingredient of the tree, Azadirachtin, is most concentrated in the seeds and the oil extracted from these.
Neem oil preparations are effective against a wide range of insect pests, mites, nematodes and diseases.
Azadirachtin is being broken down by ultra-violet light. It is therefore best to apply neem preparations in the evening, also to minimize any potential, detrimental effect on beneficial organisms, even though neem is known to have very little negative effects on the beneficial parasitoids.
There are many ways of using water extracts from Neem. Fruits and/or seeds can begrated and seepted in water overnight (25 g/litre).
Even the leaves can be boiled in water for a couple of waters and used as a spray once cooled down sufficiently.
Incorporation of neem pulp or cake (the left over after pressing the oil) into soil affected by diseases and nematodes is also known to have very positive results.

Neem Oil Production by hand (G.Stoll, Natural Crop Protection in the Tropics, Agrecol, 1988)

To produce neem oil by hand use the dried kernels. These firstly have to be "decorticated" = in a mortar they are light cracked so that the outer husks are freed from the inner seed. The husks are then removed by winnowing. The decorticated seeds are returned to the mortar where they are pounded until they form a brown, slightly sticky mass. A little water is added so as to form a workable paste which forms an almost solid ball. This ball is kneaded for several minutes over a bowl until oil collects on the surface; then press it firmly. Oil will come out in drops. Alternate kneading and squeezing will separate the oil. With this mehtod 100 – 150 ml of oil can be extracted from one kilogram of neem kernels. This is about half the total oil content.

If machines are available these can also be used for oil extraction. Heating of oil is said to not affect the insecticidal properties.

Mixing instructions for Neem dip to treat pineapple suckers against Phytophthora:

1. Take 1 litre of water
2. Add 10mls (one heap of tablespoon) of black (or other)soap.
3. Stir vigorously to mix soap and water
4. Add 50mls of neem oil to the water -soap mix.
5. Mix oil into water soap - mix
6. Add water to make up to 15 litres

After the preparation of the neem oil you can dip the suckers in the solution for a few minutes and plant them.

Some commercially available neem products in Ghana are:

Neem Oil	Philomena Brittain philomena@green-grogh.com, website: www.green-grogh.com.
Neem Oil, cake and powder	Paul Yeboah 0243702596 yeboahpaul70@yahoo.com
Neem oil and cake	Aqua-Agric Community Project (AACP), Dawhenya (east of Tema), Neem Development Project

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