

Technical Bulletin #28:

Botanical Insecticide, Preparation and Use

In Cambodian Agriculture, there still exists a very good balance between beneficial and harmful insects (pests); this means that we should still be careful when preparing spraying programs for our crops because the indiscriminant and careless use of chemical pesticides can be very harmful to all beneficial insects and microorganisms. USAID-HARVEST is introducing IPM concepts to all its clients, so that in the future the use of chemical pesticides should be less than in other countries with very well developed agriculture.

As part of this approach we are providing training in the preparation and use of botanical insecticides that can effectively kill or stunt the most common pests we find in our crops such as; aphids, whiteflies, leafhopper, Thrips, certain beetles, and caterpillars are some of the insects affected by the organic pesticides we recommend in this bulletin.

In Cambodia there are various plants that can be used as botanical or organic pesticides. These are divided into four groups in the table below according to their mode of action (affect) on the insect pests. Depending on the ingredients used in the mixture, they can poison the insect, be hot or irritating to the insects' body, have a bitter taste when the insect feeds on the plants, or produce nausea when the insect has ingested the mixture.

1. Plants and plant parts to be used:

Mode of Action	Plant Name	Scientific Name	Weight (kg)	Active Ingredient	Source
Poisonous	Yam (Tuber)	Diocorea Hispida	3	Alkaloid, Dioscoreine	www.stuartxchange.org
	Wood star gooseberry (bark)	Phyllanthus Emplica	5	Alkaloid	www.wikipedia.com
	Strychnine Plant (fruit/bark) *	Strychnos Nux-vomica	5	Azadirachtin	www.botanical-online.com
	Downy thorn apple (fruit) *	Datura Metel	4	Tropane Alkaloid	www.wikipedia.com
	Derris (leaf) *	Derris Elliptica	3	Retenone	www.wikipedia.com
Irritating	Chili (fruit)	Capsicum Frutescens	2	Capsaicinoid, Dihydrocapsaicin	www.wikipedia.com
	Galangal (Rhizomes)	Alpinia Galanga	2	Volatile oil, resin, galangol, galangin and alpinin	www.botanical.com/galangor
Unpalatable	Boraphed	Tinospora Crispa	3	Alkaloid, resin, apigenin, picroretoside, berberine, palmatine	www.dweckdata.co.uk

	Neem (fruit/bark)	Azadirachta indica	5	Azadirachtin	www.cahe.nmsu.edu
Upset Stomach	Basil	Ocimum basilicum	0.5	Eugenol, methyl eugenol, citronellol, myrcene, pinene, linalyl acetate, camphor octanane	www.wikipedia.com
	Tobacco	Nicotiana tabacum	1	Nicotine, Tar, Carbon monoxide	www.epigee.org
	Custard apple (bark)	Annona sqamosa	2	Alkaloid, flavonoid, hydroxyl ketone	www.globalresearchonline.net
	Dodder	Cuscuta maritime	2	Flavonoid, terpenoid, alkaloid, phenolic	www.chifoutain.com

* If the first option is not available use any of the other ones.

2. Preparation Method

1. Chop the ingredients (leaves or bark) into small pieces (not longer than 3 cm) and put them in a clay jar filled with 200 liters of water.
2. Add 30 to 50 liters of animal urine. Mix the solution well and cover the jar with the lid tightly.
3. Let the mix ferment for 15 to 20 days.
4. Stir the solution every day for about 10 minutes.



3. Use Method

- Mix one liter of this solution with 15 liters of water and add five grams of washing detergent and mix together well before spraying.
- Spray the mixture twice per week, preferably late in the afternoon. Remember that almost all pests will be found under the leaves, therefore when spraying you have to be sure to wet under the leaf.

4. Target plants

This organic insecticide can be used on all types of vegetables as well as on rice.

5. Use Safety

Always follow the personal safety guidelines while spraying this solution. Even if organic, botanical insecticides can be toxic for humans. Therefore it is recommended that farmers follow the same safety procedures as when using chemical pesticides.

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