Using Botanicals to Control Insects

By Gil Medeiros, Fairfax Master Gardener Intern

Botanicals are the oldest insecticides known to man; some of them have been in use for centuries. Most of these chemicals are extracted from plants which produce them to ward off insects. One botanical, Spinosad, is produced by bacteria. Some kill the target pests on contact; others work by ingestion. In general, they act fast, have low toxicity to humans and other mammals, and degrade quickly in the environment. This makes them popular with organic gardeners.

Although botanicals have attractive features, they must be used with caution because they are not selective. They kill beneficial insects as well as pests. (See our story on Biological Controls.)

Most botanicals are approved for use in organic gardening by certifying organizations. There are exceptions, however. When manufacturers add synthetic chemicals called adjuvants to botanical products to enhance effectiveness, the product is not certified for use in organic gardens.

Botanicals are applied as sprays and dusts, similar to synthetic pesticides. Care must be taken to protect people, pets and others from contact with the chemicals. Botanical insecticides are registered for use with the Environmental Protection Agency. Label instructions must be followed rigorously

Botanical chemicals available to the home gardener for use in the landscape

Chemical	Target Pest	Notes
Spinosad	Broad spectrum. Many caterpillars and moths, thrips, leaf miners, spider mites, mosquitos, and fruit flies.	Extracted from a soil bacterium. It has many precautions including toxicity to honeybees within the first few hours after spraying. Most effective when ingested by the insect
Pyrethrins	Broad spectrum. Mosquitoes, beetles, flies, aphids	Powerful contact insecticide derived from chrysanthemums
Neem oil	Broad spectrum. Aphids, lacebugs, squash bugs, thrips	Derived from the seeds of the Neem tree, native to the Indian subcontinent
Azadirachtin	Broad spectrum. Aphids, lacebugs, squash bugs, thrips	Derived from Neem oil
Spinosad	Broad spectrum. Many caterpillars and moths, thrips, leaf miners, spider mites, mosquitos, and fruit flies.	Extracted from a soil bacterium. It has many precautions including toxicity to honeybees within the first few hours after spraying. Most effective when ingested by the insect

References

2015 Pest Management Guide, Ch. 2 Home Vegetables, Virginia Cooperative Extension