



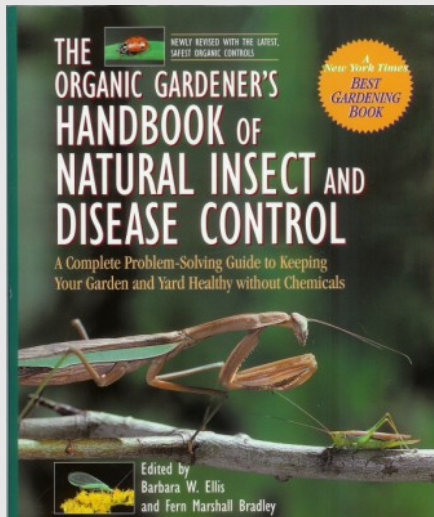
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**The Organic Gardener's Handbook of Natural Insect and Disease Control: A Complete Problem-Solving Guide to Keeping Your Garden and Yard Healthy without Chemicals**

*Edited by Barbara W. Ellis and Fern Marshall Bradley*

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### New News on Neem



Recent research indicates that neem may be good for more than pest control—it can help stop plant diseases, too! When sprayed on plant leaves, the oil extracted from neem seeds provides a protective coating that blocks fungal spores and prevents disease development.

Researchers aren't sure exactly how neem oil protects the plant from infection, but they do know that it works against several common fungal diseases, including powdery mildew and rust. Tests showed that a spray of 1-percent neem oil controlled 95 to 100 percent of the powdery mildew on hydrangeas, phlox, and lilacs. When repeated every 7-14 days, the neem oil sprays provided protection through the season without damage to the plants. Preliminary test results show that neem oil may even help stop infections that have already started. Besides being effective as a fungicide, neem oil may also help to control pests, including spider mites.

Neem (also known as azadirachtin) is an insecticide extracted from the seeds of the neem tree (*Azadirachta indica*) common in most of Africa and India. It is closely related to the chinaberry tree (*Melia azadarach*), common in the southern and southeastern United States. Extracts of both trees have insecticidal properties. Neem is unique among pesticides since it has so many uses: It acts as a broad spectrum repellent, growth regulator, and insect poison. It discourages feeding by making plants unpalatable to insects; if they still attack, it inhibits their ability to molt and lay eggs.

Unlike most botanical insecticides, neem also has somewhat of a "systemic" effect. This means that plants can take up neem extracts through their roots and leaves, spreading the material throughout the plant tissues. That's how neem can help to control pests like leafminers, which feed within leaves and are normally not bothered by sprays that only cover the outsides of the plant.



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**Protection Offered:** Use neem to kill a wide range of pests, including aphids, gypsy moths, leafminers, loopers, mealybugs, thrips, and whiteflies. It kills the difficult pests, like Colorado potato beetles, corn earworms, cucumber beetles, flea beetles, Mexican bean beetles, and pest mites. Until recently, the use of neem was restricted to nonfood plants like ornamentals, trees, and shrubs in and around greenhouses, nurseries, and homes. The Environmental Protection Agency has now expanded the restriction of neem products to include vegetable and fruit crops as well as ornamentals.

**Precautions:** Neem is almost nontoxic to mammals and is biodegradable. It is used in India as an ingredient in toothpaste, soap, cosmetics, pharmaceuticals, and cattle feed. The seeds and extracts of both neem and chinaberry trees, however, are poisonous if consumed. Because neem's chemical structure is so complex, scientists hypothesize that it will take a long time for pests to develop resistance to it.

Since neem generally must be ingested for it to be toxic, its effect on spiders, honeybees, and other beneficial creatures is usually minimal. It can, however, sometimes harm parasites that prey on insects that have eaten neem-sprayed foliage. It's possible that repeated use of neem could also lead to pest resistance, as it has with other pesticides. To minimize the chance of affecting beneficials and encouraging pest resistance, use neem sprays only when absolutely necessary, and only on plants that you know contain pest insects. Alternating neem sprays with insecticidal soap or other treatments may be most effective.

Alternately, you could shred 1 pound of whole neem or chinaberry fruit in an old blender or food processor. Since chinaberries are poisonous, you must use a blender or food processor that is reserved for yard use and not food preparation. After shredding, add enough water to cover the pulp, and let stand overnight. The next day, strain and discard the pulp and add water to the strained liquid to make 4-5 quarts of spray mixture. Add 1/16 teaspoon liquid dish soap or insecticidal soap to improve sticking. The mix should remain effective for 3-4 days if stored in a dark place. Keep it in a tightly sealed, labeled container.

Pests can tell the difference between treated and untreated plant parts, so when you spray, make sure you cover all plant parts thoroughly and evenly to get the best results.

Neem compounds break down fairly quickly-usually in 5 to 7 days – in sunlight and in the soil, so you may need to repeat the application during the growing season to deal with new pests that arrive through the summer. Pests on treated plants may not show any effects right away; in fact, they may continue feeding lightly on plants until the spray takes effect. (On adult insects, in fact, you may not see any direct effect, but they may in fact produce few or no offspring, reducing future damage.)

Neem works fastest during hot weather, so expect results within a few days in summer; spring and fall applications may take longer. Heavy rain within a few days after the application may wash the spray off the leaves; reapply if pests are still a problem.

**Commercial Products:** Neem America Neem Oil