

# New Nematode Plagues Pecan Trees

**F**or the past few years, in an orchard in Dona Ana County, New Mexico, yields from mature pecan trees, *Carya illinoensis*, have been in decline despite growers' use of normal fertilization and irrigation practices. So Agricultural Research Service and New Mexico State University scientists agreed to work together to get to the root of the problem.

The low-yielding pecan trees, growing in sandy soil in two widely separated irrigation terraces, had chlorotic (yellowed) foliage, substantial dieback of branches in the upper canopy, and nematode-infested roots.

In October 2000, a team of New Mexico State University scientists led by plant pathologist Stephen Thomas collected fresh pecan roots and sent them to the ARS Nematology Laboratory in Beltsville, Maryland, for identification of the nematode species.

Examination by nematologist Zafar A. Handoo revealed the presence of many small galls and egg masses on feeder roots—with female nematodes often protruding from root tissue. The worms were identified as root-knot nematodes, *Meloidogyne partityla*.

“Finding this particular species of nematode is significant because it's the first report of its presence in New Mexico—and only the second report of it in the Western Hemisphere,” says Handoo.

Host range tests conducted in Texas, where this nematode was first discovered in 1996, revealed that it prefers to feed on hickory, pecan, and walnut trees. There are now reports of the nematode surfacing in Georgia and Arizona, as well.

Although *M. partityla* is not likely to kill the pecan trees, it will debilitate them and lower their productivity to a point where the orchard may no longer be profitable.

Nematodes are microscopic worms that attack plant roots and cause billions of dollars of agricultural losses each year in the United States alone. Root-knot nematodes are particularly important root parasites that can seriously damage many economic plants and crops worldwide.

New Mexico is the second largest pecan-growing state, behind Georgia and ahead of Texas, producing 32 million pounds in 2000. This was down 33 percent from the record 52 million pounds harvested in 1999. There are currently over 30,000 acres of pecans in New Mexico alone.

To help avoid future threats to the state's \$50-million pecan industry, scientists are now evaluating control measures and educating growers to recognize *M. partityla* and prevent its spread. Not only are pecans a valuable cash crop, they are also an important source of trace elements and other dietary nutrients.—By **Jennifer Arnold**, formerly with ARS.

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## Pecan Fun Facts

- The name “pecan” is a Native American word of Algonquin origin that was used to describe nuts requiring a stone to crack.
- The history of pecans can be traced back to the 16th century, originating in central and eastern North America and the river valleys of Mexico.
- George Washington and Thomas Jefferson planted pecan trees in the 1700s. Washington called them Mississippi nuts.
- Pecan trees are magnificent, usually ranging in height from 70 to 100 feet but sometimes growing to 150 feet or more. Native pecan trees—those over 150 years old—have trunks more than 3 feet in diameter.
- The pecan tree is a member of the hickory family.
- There are over 1,000 varieties of pecans with many named for Native American Indian tribes.
- Pecans contain compounds with antioxidant properties and can help fight the buildup of LDL cholesterol—low-density lipoprotein—the so-called bad cholesterol.
- Pecans contain over 19 vitamins and minerals, including vitamins A, E, several B vitamins, folic acid, calcium, magnesium, phosphate, potassium, and zinc.
- Pecans are heart-healthy, containing 87 percent unsaturated fatty acids—62 percent monounsaturated and 25 percent polyunsaturated.
- Pecans come in a variety of sizes—mammoth, extra large, large, medium, small, and midget. They are sold as whole nuts, halves, pieces, granules, or meal.
- Although the pecan is a heavy nut, it takes 5,640 halves to equal the weight of a standard watermelon.
- In 1919, the pecan became the state tree of Texas.
- Albany, Georgia, known as the pecan capital of the United States, holds a National Pecan Festival annually.
- Pecan trees are prized for their lumber, which makes beautiful furniture, flooring, and paneling.
- Although consumers pay more per pound for shelled pecans than those in the shell, about 90 percent of all pecans are sold shelled.