

Parasite-resistant peppers green alternatives to chemical pesticides

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Researchers work to improve bell pepper resistance to Root-knot nematodes.
Photo by Stephen Ausmus

Root-knot nematodes are extreme parasites. These microscopic, omnipresent worms cause major damage to horticultural and field crops in sub-tropical regions, resulting in significant financial losses to growers and gardeners.

Until recently, fumigation of the soil with methyl bromide before planting was the primary method for controlling root-knot nematodes in valuable vegetable crops. Methyl bromide (MeBr) is an odorless, colorless gas that has been widely used as a plant pesticide. Since the discovery that the substance has severe negative effects on the environment—it depletes the stratospheric ozone layer—the use of methyl bromide has been phased out in the U.S.

To combat parasites like root-knot nematodes without the use of chemical pesticides, scientists are focusing more research on developing new, parasite-resistant varieties of vegetables. Dr. Judy Thies, a research plant pathologist at the U.S. Department of Agriculture's Agricultural Research Service, was part of a team of scientists who developed the Charleston Belle variety of bell pepper, the first nematode-resistant bell pepper.

In a study published in the February issue of the American Society for Horticultural Science's journal *HortScience*, Dr. Thies and her colleagues tested the stability of two types of bell peppers, Charleston Belle and Carolina Wonder. Thies explained, "These two types of pepper cultivars are the only nematode-resistant varieties available to commercial growers and home gardeners. Since a large percentage of bell pepper production in the U.S. occurs in the Southeastern U.S., and in particular Florida, we tested the peppers for resistance to nematodes in sub-tropical climates to determine if the cultivars were stable when grown in Florida under high soil temperatures. It is important to know whether the peppers' resistance to parasites breaks down when peppers are grown in hot climates."

Good news for growers and gardeners: study results showed that nematode-resistant varieties such as Charleston Belle and Carolina Wonder are viable alternatives to methyl bromide for managing southern root-knot nematode in bell pepper in sub-tropical environments. To increase the availability of parasite-resistant vegetables, commercial seed companies are currently developing nematode-resistant hybrid bell peppers using both Charleston Belle and Carolina Wonder.

The complete study and abstract are available on the ASHS HortScience electronic journal web site: hortsci.ashspublications.org/content/abstract/43/1/188

Source: American Society for Horticultural Science

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