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By Carl Collen

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## Peppers show greater resistance

### UF/IFAS scientists develop a specialty pepper with better resistance to root-knot nematodes



Image: UF/IFAS

**T**he University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) is aiding the search for bell pepper cultivars that have increased resistance to root-knot nematodes.

As a US\$235m-a-year business in Florida, bell peppers are an important crop, especially in the southeast and southwest parts of the state.

As of 2019, the amount of bell peppers harvested in the US is equivalent to 38,300 acres, with Florida accounting for 31 per cent, or 11,800 acres, according to the US Department of Agriculture National Agricultural Statistics Service.

Florida farmers grow far more sweet bell peppers than the hot ones, according Bala Rathinasabapathi, a UF/IFAS professor of horticultural sciences, but as a rule, farmers are not going to grow as many bell peppers if root-knot nematodes are prevalent in the soil around them.

Nematodes are microscopic worms that

varieties that are resistant to the root-knot nematodes, we can circumvent these

damage the roots, weaken the plants and reduce the yield.

Increasingly, farmers are looking for non-chemical ways to control root-knot nematodes. Scientists know they can help growers if they can find ways to make bell pepper varieties that are genetically resistant to root-knot nematodes.

"The variety we developed, although a hot pepper, can be used as a rootstock for bell peppers by using grafting," Rathinasabapathi explained. "Root-knot nematodes do their damage in the plant's root, and if one uses a rootstock that is resistant to the nematode, the plant will not be affected much by the nematode."

Rathinasabapathi led a recently published study in the journal *HortScience* in which he and his colleagues found a type of UF/IFAS-bred chilli, or specialty pepper, that showed resistance to the root-knot nematode.

Through greenhouse and laboratory tests at the main UF campus in Gainesville,

"We would like to transfer the resistance gene into sweet bell pepper hybrids via

Rathinasabapathi and his team screened a handful of bell pepper varieties.

They found that one advanced bell pepper variety, named 'RJ107(6)A3C,' was the most resistant to three species of the most common root-knot nematodes – southern, peanut and peach.

UF/IFAS scientists developed this pepper variety by cross breeding a hot pepper line and a sweet pepper.

According to Rathinasabapathi, Florida vegetable production has three major soil production limitations – plant-parasitic nematodes, weeds and soilborne fungi – and to manage these problems, farmers use soil fumigants (pesticides) to free the soil of these pests before they plant their crops.

"These fumigants, though effective against the root-knot nematodes and soil fungi, are much less so against weeds, are highly toxic and cumbersome to use," Rathinasabapathi outlined. "Farmers need specialised equipment to apply them in soil. But if we use bell pepper

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parasitic worms, thereby improving pest management options for the farmer.

conventional breeding” Rathinasabapathi added.

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