

Research develops simple 'recipe' for fungus-free horseradish

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This is a horseradish root on a farm in Collinsville, Ill. Credit: Debra Levey Larson

In the battle against soil fungi that discolor horseradish roots and can render the entire crop unsellable, University of Illinois researcher Mohammad Babadoost found that subjecting the roots to hot water before planting was most effective in killing the pathogen in propagative root stocks.

The final recipe: submerge in water heated to 47 degrees Centigrade for 20 minutes.

Babadoost was looking for a reliable, non-chemical method to control *Verticillium* and *Fusarium* - soil-borne fungi species that cause the internal discoloration of horseradish roots. "The discoloration doesn't affect the taste of the horseradish, but it does affect the color of the processed horseradish sold in glad jars. Consumers expect horseradish to be a light color," said U of I plant pathologist Mohammad Babadoost.

Horseradish producers save root cuttings from their harvest in order to propagate plants in the next season, Babadoost said. "Most of the cuttings are apparently healthy, showing no symptoms, but they are often infected with *Verticillium* and *Fusarium*. So, starting horseradish production from pathogen-free cuttings is essential for managing the internal discoloration of roots."

In order to find a treatment, Babadoost experimented with immersing the horseradish root stocks in water at temperatures from 44 to 50 degrees Centigrade for 10, 20 and 30 minutes. Treatments at temperatures lower than 46 degrees Centigrade did not control the [pathogens](#). Treatments at 48 degrees Centigrade or higher affected the germination and vigor of the plant.

"We found that the most effective treatment for control of the pathogens without adverse effects on plant was 47 degrees Centigrade for 20 minutes," Babdoost said.

He said that the beauty of this treatment is that it is a simple, safe, reliable, and cost-effective method. "[Hot-water](#) treatment of horseradish roots is simple and can be done using equipment and tools that are readily available to producers and requires no license. It's environmentally safe because no chemicals are used and it's effective," Babadoost said.

Horseradish is an important crop in the Midwest with half of the total

commercial horseradish supply of the United States is grown in the Mississippi River Valley near East St. Louis, and horseradish is a high-value cash crop.

Internal discoloration of horseradish roots is the main production problem for horseradish growers. Since the early 1980s, horseradish producers in Illinois have experienced substantial reductions in marketable yield of horseradish as a result of the internal discoloration of roots. Yield losses of up to 100 percent, caused by the internal root discoloration, have frequently occurred in Illinois.

Provided by University of Illinois at Urbana-Champaign

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