

Chemical trickery explored to help contain potato pest

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If left unchecked, the pale cyst nematode burrows into potato roots to feed, obstructing nutrients and causing stunted growth, wilted leaves and other symptoms that can eventually kill the plant. Now USDA and cooperating scientists are evaluating new ways to control the pest using naturally occurring chemicals called egg-hatching factors.

The pale cyst [nematode](#), *Globodera pallida*, is one bad roundworm.

Unchecked, the pest burrows into potato roots to feed, obstructing nutrients and causing stunted growth, wilted leaves and other symptoms that can eventually kill the plant. Severe infestations can cause tuber yield losses of up to 80 percent.

Now, however, U.S. [Department of Agriculture](#) (USDA) and cooperating scientists are evaluating new ways to control *G. pallida* using naturally occurring chemicals called egg-hatching factors.

According to lead scientist Roy Navarre, with USDA's Agricultural Research Service (ARS), the egg-hatching factors are actually chemicals exuded from the roots of potato and certain other solanaceous plants into surrounding soil. There, the chemicals stimulate *G. pallida* eggs to hatch.

Normally, this helps ensure the survival of emerging juvenile nematodes. But Navarre's approach calls for using the chemicals to "trick" the eggs into hatching when no [potato plants](#) are present, leaving juveniles without food or a host on which to reproduce.

His investigations are part a broader, multi-pronged control effort involving researchers from state universities, other ARS labs, and other federal and state agriculture departments.

G. pallida, a non-[native species](#) from Europe, was first detected in eastern Idaho in April 2006. To date, it's been found in and confined to 17 infested

fields representing 1,916 total acres in Idaho's Bingham and Bonneville counties. Despite *G. pallida*'s limited [geographic distribution](#), its presence in U.S. soils has had far-reaching impact: closed or limited export markets, devalued farmland, regulatory restrictions and other economic hardships.

Fumigation is a key defense. However, the eggs are encased in cysts that can resist fumigation, according to Navarre, who works at the ARS Vegetable and Forage Crops Research Laboratory in Prosser, Wash.

He is exploring two approaches to force the eggs to hatch in the absence of a host: amending the soil with purified forms of egg-hatching factors, and planting sticky nightshade as a "trap crop" whose roots exude the chemicals, but don't support the nematode's reproduction.

More information: Read more about this research in the March 2013 issue of *Agricultural Research* magazine:
[www.ars.usda.gov/is/AR/archive ...
13/nematodes0313.htm](http://www.ars.usda.gov/is/AR/archive...13/nematodes0313.htm)

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