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## What's New in Plant Pathology

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## **Disease Management Products**

During the past year several new products have become available for disease management. The new products are summarized in Tables 1 and 2, as well as included in the 2014 Guide for Weed Management in Nebraska with Insecticide and Fungicide Information. In addition, fungicides labeled for use on sorghum and sunflower have also been added to the publication.

Among the products is a new seed treatment nematicide with a new biological mode of action. The organism in the new nematicide, Clariva pn is *Pasteuria nishizawae* Pn1. This organism is one of several *Pasteuria* species of bacteria. These bacteria are unique among bacteria in that they are gram positive and can form both fungal-like mycelia and endospores. All of the species are obligate parasites requiring living hosts for survival. Much of the past research on this species has proven parasitism on cyst nematodes in the genera *Globodera* and especially *Heterodera*, such as soybean cyst nematode (Atibalentja et al., 2004). Endospores produced by the bacteria attach to the outer cuticle of nematodes when they are in the infective second juvenile stage (J2's). Bacterial

endospores will be produced once again later in adult females and cysts. Endospores on J2 cuticles do not germinate to produce a germ tube until the nematode infects the soybean root. Then, the bacteria begin dividing and growing forming structures that look like cauliflower in the J2/J3 nematodes and leads to a sporulation cluster in the J4 and females. The structures continue to grow into endospores that fill the cavity of the infected nematode and are eventually released into the soil when the nematode body disintegrates (Noel, et al., 2005).

## **Disease Identification and Management Resources**

The electronic resources formerly housed at the Plant Disease Central website have been consolidated to the comprehensive Crop Watch website. Disease identification and management resources can be found sorted under each crop heading labeled, "Disease Management" and includes a list of relevant Crop Watch newsletter articles, UNL Extension Publications and other resources.

**Table 1. New Foliar Fungicides**

Foliar Fungicides	Active Ingredient	Fungicide Class	Labeled Crops
Aproach	picoxystrobin	strobilurin	barley, chickpea, dry bean, corn, oats, rye, sorghum, soybean, triticale, wheat and others
Eminent 125SL	tetraconazole	triazole	sugar beet,
Endura	boscalid	carboxamide	dry bean, potato, soybean, and others
Fortix	fluoxastrobin + flutriafol	strobilurin + triazole	corn, soybean, sugar beet and others
Quadris Top	azoxystrobin + difenoconazole	strobilurin + triazole	chickpea, millet, oats, potato, rye, soybean, sugar beet, and others
Satori	azoxystrobin	strobilurin	barley, dry bean, chickpea, corn, potato, sorghum, soybean, sunflower (for oil), triticale, wheat and others.

**Table 2. New Seed Treatment Nematicide**

Seed Treatment Nematicide	Active Ingredient	Labeled Crops
Clariva pn	<i>Pasteuria nishizawae</i> – Pn1	soybean

### Literature Cited

Atibalentja, N., Jakstys, B. P., and Noel, G. R. 2004. Life cycle, ultrastructure, and host specificity of the North American isolate of *Pasteuria* that parasitizes the soybean cyst nematode, *Heterodera glycines*.

Noel, G. R., Atibalentja, N., and Domier, L. L. 2005. Emended description of *Pasteuria nishizawae*. International Journal of Systemic Evolutionary Microbiology 55:1681-1685.