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What's New in Plant Pathology

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Changes to the Disease Management Section of the 2017 Guide for Weed, Disease, and Insect Management in Nebraska

The Disease Management Section of the 2017 Guide for Weed, Disease, and Insect Management in Nebraska underwent several formatting changes this year to increase the usability for growers. Products are now listed alphabetically within their mode of action, and modes of action are listed numerically. A column was added to the product information charts to indicate the formulation of each product. Numerous seed treatment products contain an insecticide component, and these active ingredients are now italicized to distinguish these active ingredients from fungicidal active ingredients. Several products were also added to individual charts, summarized in Tables 1, 2 and 3. Additionally, Fortix is now listed as Fortix / Preemptor to reflect the offerings of both Arysta and FMC.

Changes were also made to emphasize the importance of resistance management. The "Mixed Modes of Action" label for chemical class is now subdivided into the specific combinations of modes of action. This change was made to aid in the selection of fungicide products with unique modes of action. A majority of commercially-available foliar fungicides are Group 3 (triazoles) or Group 11 (strobilurins), so it is important to know what modes of action are included in combination products to be able to rotate classes. For example, using two products sequentially that are both premixes of Group 3 and 11 fungicides may not be an adequate rotation if there is already concern of resistance to group 11 fungicides.

Bacterial Leaf Streak of Corn – An Emerging Disease in Nebraska and First Report in the United States

Bacterial leaf streak of corn, which was previously only been reported on corn in South Africa, was confirmed in 50 counties in Nebraska during 2016. The causal agent, *Xanthomonas vasicola*, is known to infect dent (field) corn, popcorn, seed corn, and sweet corn. Symptoms appear on the leaves, and include yellow, orange, or light to dark brown striped lesions, usually with wavy margins. The disease has been observed as early as the beginning of June and in seven-leaf (V7) corn. The pathogen is believed to survive for years in infested residue, which becomes a source of inoculum the next time corn is planted in the field.

Management strategies include tillage, which accelerates the degradation of the residue by burying it, and crop rotation to a non-host species, although neither of these strategies will eliminate the disease. More information will be presented in the Corn Disease Update during the afternoon session.

Pest and Plant Diagnostic Clinic Position Change

At the end of September in 2016 the Extension Educator in charge of the Plant & Pest Diagnostic Clinic at UNL left his position to pursue other professional interests. We are in the process of filling the position at the time of this article's submission and hope to have the position filled prior to the beginning of the 2017 season. This is a critical position for our extension plant pathology team at UNL.

New Products

Ethos XB™ [*Bacillus amyloliquefaciens* strain D747 + bifenthrin insecticide].

A biofungicide that builds on FMC's in-furrow insect control product and provides additional seedling disease suppression for early season damping-off and seedling blights caused by *Pythium*, *Rhizoctonia*, *Fusarium*, and *Phytophthora*. Product contains 1.5 lb per gallon of bifenthrin plus *B. amyloliquefaciens* at 1×10^{10} cfu per milliliter. Use rate is 3.4-17.0 oz per acre (0.2-0.98 oz/1000 ft of row) for pests other than corn rootworm. For corn rootworm, the rate is 6.8-17 oz / acre (0.39 oz -0.98 oz/1000 ft of row). FMC Corporation EPA Reg No. 279-3473.

Majestene™ [*Burkholderia* sp strain A396 heat-killed cells].

A bionematicide with application rate of 1-2 gallon per acre. Crops include alfalfa, apples, corn, potatoes, soybean, tomatoes, and wheat. Product can be used in-furrow, foliar applied or in chemigation. It is listed by the Organic Materials Review Institute (OMRI). Marrone Bio Innovations, Inc. EPA Reg No. 84059-14.

Table 1. Foliar products for disease control that were updated in the 2017 Guide for Weed, Disease, and Insect Management in Nebraska.

Trade Name	Active Ingredient(s)	Fungicide Class	Change(s) Made
Affiance	Azoxystrobin (9.35%) + Tetraconazole (7.48%)	Mixed Modes of Action (Groups 3 + 11)	Added to Corn and Soybean tables
Priaxor D	Fluxapyroxad (14.33%) + Pyraclostrobin (28.58%) + Tetraconazole (20.5%)	Mixed Modes of Action (Groups 3 + 7 + 11)	Added to Soybean table
Quadris Top SBX	Azoxystrobin (19.8%) + Difenconazole (19.8%)	Mixed Modes of Action (Groups 3 + 11)	Added to Soybean table
SuperTin 80WP	Triphenyltin hydroxide (80%)	Organo Tin Compounds (Group 30)	Added to Sugar beet table
Topsin XTR2	Tebuconazole (7.5%) + Thiophanate-methyl (37.5%)	Mixed Modes of Action (Groups 1 + 3)	Added to Soybean table
Trivapro Co-Pack	Azoxystrobin (13.5%) + Benzovindiflupyr (10.27%) + Propiconazole (11.7%)	Mixed Modes of Action (Groups 3 + 11)	Added to Corn and Soybean tables
Vertisan	Penthiopyrad 20.6%	SDHI Carboximides (Group 7)	Added to Soybean table
Zolera FX	Fluoxastrobin (17.76%) + Tetraconazole (17.76%)	Mixed Modes of Action (Groups 3 + 11)	Added to Soybean table

Table 2. Seed treatment products for disease control that were updated in the 2017 Guide for Weed, Disease, and Insect Management in Nebraska.

Trade Name	Active Ingredient(s)	Fungicide Class	Change(s) Made
UpShot Soybean Seed Treatment	Fludioxonil (1.15%) Mefenoxam (3.46%) <i>Thiamethoxam (23.1%) (I)</i>	Mixed Modes of Action (Groups 4 + 12) (Group 4A Insecticide)	Added to Soybean table

Table 3. Biological products that were updated in the 2017 Guide for Weed, Disease, and Insect Management in Nebraska.

Trade Name	Active Ingredient(s)	Function	Registered Crops
Ethos XB Biofungicide	<i>Bacillus amyloliquefaciens</i> strain D747 + bifenthrin insecticide	Biofungicide	Corn
Majestene	<i>Burkholderia</i> sp. strain A396 heat-killed cells	Bionematicide	Alfalfa, apples, corn, potatoes, soybean, tomatoes, and wheat