

## OMRI-Listed Products for Disease Management of Wheat in Pennsylvania

<i>Active Ingredient</i>	<i>Commercial Name</i>	<i>Organism</i>	<i>Formulation</i>	<i>Labeled for</i>	<i>Mode of Action</i>
<i>Aureobasidium pullulans</i>	Botector	fungus		Fusarium head blight	competition
<i>Bacillus amyloliquefaciens</i>	Various (including: Double Nickel (55 and LC), Serifel)	bacterium	water dispersable granules; aqueous suspension	Powdery Mildew, Rust, Blast, Sheath Spot and Blight, Smut, Bacterial Blight and Streak, Stem Rot, Brown Rot, Leaf Spots and Smuts	competition; anti-microbial compounds; induced resistance
<i>Bacillus pumilus</i>	Sonata	bacterium	aqueous suspension	Powdery Mildew, Rust, Blast, Sheath Spot and Blight, Smut, Bacterial Blight and Streak, Stem Rot, Brown Rot, Leaf Spots and Smuts	antifungal compounds
<i>Bacillus subtilis</i>	Serenade	bacterium	aqueous suspension	Powdery Mildew, Rust, Blast, Sheath Spot and Blight, Smut, Bacterial Blight and Streak, Stem Rot, Brown Rot, Leaf Spots and Smuts	competition, plant defense stimulation, antimicrobial compound production
<i>Bacillus subtilis</i>	Aviv	bacterium	wetable powder	Powdery Mildew, Rust, Blast, Sheath Spot and Blight, Smut, Bacterial Blight and Streak, Stem Rot, Brown Rot, Leaf Spots and Smuts	competition, plant defense stimulation, antimicrobial compound production
Cinnamon oil	Cinnerate	plant extract	liquid	Powdery Mildew, Rusts	growth inhibition
Copper hydroxide; Copper octanoate; Copper oxychloride; Cuprous oxide	Various (including AmeriCop 40 DF, Badge X2, Basic Copper 53, Champ WG, ChampION++, Cueva, Kocide, Nordox 75 WG, Nu-Cop, Previsto)	non-biological	dry flowable; flowable liquid; water dispersable granules	Fusarium Head Blight, Helminthosporium, Powdery Mildew, Septoria Leaf Blotch, Stagonospora Leaf and Glume Blotch, Stem Rust	Nonspecific denaturation of proteins and enzymes
Copper sulfate pentahydrate	MasterCop	non-biological	liquid	Helminthosporium Spot, Blotch, Septoria Leaf Blotch	disrupts cell membranes

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Extract of <i>Reynoutria sachalinensis</i>	Regalia	plant extract	liquid	Powdery Mildew, Leaf Spots, Rust, Septoria Leaf Blotch, Smut, Tan Spot	plant defense stimulation
garlic oil	Brandt Organics Aleo	plant extract	liquid	Fusarium head blight	unknown
Hydrogen dioxide; Peroxyacetic Acid	Oxidate	non-biological	liquid	Blast, Common Smut, Sheath Blight, Stem Rot	cell lysis
Hydrogen dioxide; Peroxyacetic Acid	Various (including: SporeQuell, TerraClean 5.0)	non-biological	liquid	Fusarium, Phytophthora, Pythium, Rhizoctonia	cell lysis
Neem oil	Various (including Debug ON, Trilogy)	plant extract	oil	Foliar and Head Diseases	spore germination inhibition
Potassium bicarbonate	Various (including Carb-O-Nator, Kaligreen)	non-biological	soluble powder	Powdery Mildew	disrupts cell walls
Potassium bicarbonate	Milstop	non-biological	soluble powder	Powdery Mildew	disrupts cell walls
Potassium silicate	SIL-MATRIX	non-biological	liquid	Fungal diseases	plant defense stimulation
<i>Pseudomonas chlororaphis</i>	Howler	bacterium	dry	Powdery Mildew	competition
<i>Streptomyces lydicus</i>	Actinovate AG	bacterium	seed treatment (dry or slurry)	Pythium, Phytophthora, Rhizoctonia, Fusarium, other root fungi	competition; anti- microbial compounds
Sulfur	Various (including Acoidal, Cosavet DF Edge, Kumulus, Microfine Sulfur, Microthiol Disperss, Sulfur 80, Thiolux)	non-biological	water dispersable granule	Fusarium, Powdery mildew, Septoria leaf spot, Rust, Take all	inhibits respiration, production of hydrogen sulfide (microbial toxin)
<i>Swinglea glutinosa</i>	EcoSwing	plant extract	liquid	Powdery Mildew	disrupts cell walls
Tea tree oil	Timorex Act	plant extract	oil	Foliar Diseases	cell membrane disruption

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Thyme oil	Various (including Thyme Guard, Thymox Control)	plant extract	liquid	Powdery Mildew	unknown
<i>Trichoderma asperellum</i> , <i>Trichoderma gamsii</i>	Bio-Tam 2.0	fungus	wetable powder	Fusarium, Phytophthora, Rhizoctonia, root fungi	parasitism, antifungal compounds
<i>Trichoderma asperellum</i> ; <i>Trichoderma gamsii</i>	Tenet	fungus	wetable powder	Pythium, Phytophthora, Rhizoctonia, Fusarium, other root fungi	parasitism, antifungal compounds
<i>Trichoderma harzianum</i> ; <i>Trichoderma virens</i>	RootShield Plus WP	fungus	wetable powder	Pythium, Phytophthora, Rhizoctonia, Fusarium, other root fungi	parasitism, antifungal compounds

This list includes the most widely marketed products available. It is not intended to be a list of all labeled active ingredients and products. Additional active ingredients or formulations may be available. Many active ingredients and their products have specific use restrictions. Read and follow all use restrictions before applying any fungicide. This information is provided only as a guide. It is the applicator's and user's legal responsibility to read and follow all current label directions. Reference in this publication to any specific commercial product, process, or service, or the use of any trade, firm, or corporation name is for general informational purposes only and does not constitute an endorsement, recommendation, or certification of any kind. Individuals using such products assume responsibility for their use in accordance with current directions of the manufacturer.

Prepared by A. Collins, Penn State University, revised February 2022

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