

## Barley-Oat-Rye-Wheat SEED TREATMENT

Chemical	Appl.	Dosage <sup>1</sup>	Disease Control <sup>2</sup>				Remarks
			Covered Smut	Loose Smut	Seedling <sup>3</sup> Blight	Common Root Rot	
<b>Azoxystrobin</b> Dynasty, 9.6%	Slurry	0.153-0.382 fl oz/cwt			X		For wheat and barley. Also controls dwarf bunt and common bunt. Always use with Dividend Extreme or Dividend XL RTA.
<b>Carboxin + PCNB</b> Vitavax-PCNB, 17%:17%	Slurry or mist	3-4 fl oz/cwt wheat, oats, barley	X	X	X		Not registered for rye.
<b>Carboxin + Thiram</b> RTU-Vitavax-Thiram, 10%:10%	Liquid or slurry	5-6.8 fl oz/cwt	X	X	X		Not registered for rye. RTU-Vitavax-Thiram registered for triticale.
<b>Difenoconazole + Mefenoxam</b>  Dividend XL RTA 3.21% : 0.27%  Incentive RTA 3.21%:0.27%	Ready to apply	2.5 fl oz/cwt common bunt, loose smut, Fusarium seed scab	X(bunt)	X	X	X	<b>For spring and winter wheat.</b> Do not graze until 55 days after planting. Do not plant any crop other than wheat within 30 days to fields in which treated seeds were planted. For commercial or on-farm use.
5 fl oz/cwt common bunt, loose smut, seed-borne Septoria, general seed rots, seed-borne Fusarium, Pythium damping off, partial control of common root rot		X(bunt)	X	X	X		
10 fl oz/cwt above diseases plus partial control of take-all, common root rot and Rhizoctonia root rot		X(bunt)	X	X	X		

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<sup>2</sup>X = product labeled for crop and disease; Blank = product not labeled for specific disease.

<sup>3</sup>Seedling blights due to fungal infections of the seed such as black point and scab.

## Barley-Oat-Rye-Wheat (continued) SEED TREATMENT

Chemical	Appl.	Dosage <sup>1</sup>	Disease Control <sup>2</sup>				Remarks
			Covered Smut	Loose Smut	Seedling <sup>3</sup> Blight	Common Root Rot	
<b>Difenoconazole + Mefenoxam cont</b>  Dividend Extreme 7.73%: 1.87%	Slurry	1 fl oz/cwt common bunt, loose smut, Fusarium seed scab	X(bunt)	X	X		For spring wheat and barley. See label for winter wheat recommendations.  <b>Registered on barley</b> to suppress root rots and covered smut, and control seedling blight, at a rate of 2-4 fl oz/cwt.
		2 fl oz/cwt as above, plus seed-borne Septoria, Penicillium and Aspergillus seed rots, Pythium damping off, early season common root rot (Cochliobolus) and Rhizoctonia root rot	X(bunt)	X	X	X	
		4 fl oz/cwt as above, plus flag smut, early season take-all root rot	X (bunt)	X	X	X	
<b>Fludioxonil</b> Maxim 4FS, 40.3%	Slurry	0.08-0.16 fl oz/cwt			X		For control of seed-borne and soil-borne fungi that cause seed decay, damping off and seedling blight. Cereal forage may be grazed 30 days after planting.
<b>Ipconazole</b> Rancona 3.8 FS, 40.7%	Mist or slurry	0.051-0.085 fl oz/cwt	X	X	X	X	Does not control Pythium.
	Rancona Apex, 0.44%	5.0-8.73 fl oz/cwt	X	X	X	X	
<b>Ipconazole + Metalaxyl</b> Rancona Pinnacle, 0.434%:0.57%	Mist or slurry	5.0-8.33 fl oz/cwt	X	X	X	X	Contains metalaxyl for Pythium control.  Has 29.5% imidacloprid added for insect control
	Rancona Crest WR 0.45%:0.585%	5.0-8.33 fl oz/cwt	X	X	X	X	

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## Barley-Oat-Rye-Wheat (continued)

### SEED TREATMENT

Chemical	Appl.	Dosage <sup>1</sup>	Disease Control <sup>2</sup>				Remarks
			Covered Smut	Loose Smut	Seedling <sup>3</sup> Blight	Common Root Rot	
<b>Mancozeb</b> Dithane WSP, 80%	For planter box trmt. only	Consult labels for appropriate rate for each crop	X		X		
Manzate ProStick, 75%	Slurry		X		X		
Penncozeb 75DF 75%	Planter box trmt. only	Consult label	X		X		
Penncozeb 80WP 80%	Planter box trmt. only	Consult label	X		X		
<b>Mefenoxam</b> Apron XL-LS, 32.3%	Mist or slurry	0.32-0.64 fl oz/cwt			X		For Pythium damping off control. See label for Dividend-Apron XL-LS combination.
<b>Mefenoxam + difenoconazole + thiamethoxam</b> Cruiser Maxx Cereals 0.56%:3.36%: 2.80%	Slurry	5.0 fl oz/cwt	X	X	X	X	Not registered for rye or oats. Also contains 2.80% thiamethoxam for insect control.
<b>Metalaxyl</b> Allegiance FL, 28.35% Sebring 318 FS, 28.35%	Mist or slurry	0.375-0.75 fl oz/cwt			X		For control of Pythium damping off only.
Dyna-Shield, 28.35% Aquire, 28.35%	Slurry Mist or slurry	0.75 fl oz/cwt 0.75 fl oz/cwt			X X		
<b>PCNB (Terraclor)</b> PCNB Seed Coat, 24%	Slurry	2-4 oz/bu barley, oats 2 oz/bu wheat	X		X		Not registered for rye.
<b>Pyraclostrobin</b> Stamina, 18.4%	Slurry or mist	0.4-0.8 fl oz/cwt			X		Registered for wheat, barley and rye.
<b>Thiram</b> 42-S Thiram, 42% Signet 480 FS, 42%	Liquid or slurry	2 fl oz/bu			X		Not registered for oats.

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## Barley-Oat-Rye-Wheat (continued) SEED TREATMENT

Chemical	Appl.	Dosage <sup>1</sup>	Disease Control <sup>2</sup>				Remarks
			Covered Smut	Loose Smut	Seedling <sup>3</sup> Blight	Common Root Rot	
<b>Prothioconazole + Tebuconazole + Metalaxyl</b> Proceed MD, 1.47%:0.29%:0.59%  Proceed Concentrate 1.47%:0.29%:0.59%	Slurry or mist	5-7.5 fl oz/cwt	X	X	X	X	Proceed is not registered for use on rye. Do not graze wheat, barley or triticale green forage for 31 days. For control of seed and soil-borne diseases and early suppression of powdery mildew and rust.
	Commercial application only	1.0 oz/cwt	X	X	X	X	
<b>Tebuconazole + Metalaxyl</b> Raxil MD, 0.48%:0.64% Sativa M RTU, 0.48%:0.64% Raxil XT, 15.0%:20%  Raxil MD-W 0.461%:0.615%  Sativa IM RTU 0.46%:0.615%  Sativa IM Max 0.46%:0.615%  Foothold 0.499%:0.668%  Foothold Extra 0.455%:0.607%	Slurry or mist	5 fl oz/cwt	X	X	X	X	Not registered for rye. Do not graze barley, wheat or oat green forage for 31, 31 and 51 days, respectively.  Raxil MD-W also contains 1.538% imidacloprid for wireworm suppression.  Sativa IM Max also contains 11.4% imidacloprid for insect control.  Not registered for rye.  Not registered for rye.  Foothold Extra also contains 11.4% imidacloprid for insect control.
	Slurry (WP pouch)	0.16 oz/cwt or 1 pouch/50 cwt	X	X	X	X	
	Slurry or mist	5 fl oz/cwt	X	X	X	X	
	Slurry or mist	3.4-5 fl oz/cwt	X	X	X	X	
	Slurry or mist	5-6.5 fl oz/cwt	X	X	X	X	
	Slurry or mist	5.0-6.5 fl oz/cwt	X	X	X	X	
	Slurry or mist	3.4-5.0 fl oz/cwt	X	X	X	X	
<b>Tebuconazole + Metalaxyl + Imazalil</b> Raxil MD Extra, 0.34%:0.58%: 1.0%  Raxil MD Extra-W 0.415%:0.560%:0.965%	Slurry or mist	5 fl oz/cwt	X	X	X	X	Not registered for rye or oats.  Contains 1.384% Imidacloprid for wireworm control.
	Slurry or mist	5.14 fl oz/cwt	X	X	X	X	

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## Barley-Oat-Rye-Wheat (continued) SEED TREATMENT

Chemical	Appl.	Dosage <sup>1</sup>	Disease Control <sup>2</sup>				Remarks
			Covered Smut	Loose Smut	Seedling <sup>3</sup> Blight	Common Root Rot	
<b>Tebuconazole + Thiram</b> Raxil-Thiram, 0.6%:20.0%	Liquid or slurry	3.5-4.6 fl oz/cwt	X	X	X	X*	Not registered for rye. Effective against seed-borne <i>Fusarium</i> and <i>Septoria nodorum</i> . Do not graze wheat or barley for 31 days and oats for 30 days after planting.
<b>Triticonazole</b> Charter, 2.4%	Concentrated product	3.1 fl oz/cwt	X	X	X	X	Apply with water in a 2:1 ratio of water:Charter. Registered for wheat and barley.  Suppression of root rot.
<b>Triticonazole + Metalaxyl</b> Charter F2 1.32%:0.79%	RTA	5.4 fl oz/cwt	X	X	X	X	Registered for wheat and barley.
<b>Triticonazole + Thiram</b> Charter PB 1:25%:12.5%	Ready to apply	5.5 fl oz/cwt	X	X	X	X	Charter PB can be used as a ready-to-apply product or in a slurry with water. Registered for wheat and barley only.

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## Barley-Oat-Rye-Wheat FOLIAR SPRAYS

Chemical (Fungicide Group)	Application <sup>1</sup>	Dosage <sup>2</sup>	Disease Control <sup>3</sup>					Remarks
			Leaf <sup>4</sup> Spot	Leaf Rust	Stem Rust	Powdery Mildew	Fusarium Head Blight	
<b>Bacillus subtilis</b> strain QST 713 (44) Serenade ASO	Aerial sprays or fungigation	2-6 qt/A	X	X		X		Begin applications when environmental conditions and plant stage are conducive to disease development.
<b>Bacillus subtilis</b> strain QST 2808 (44) BalladPLUS	Aerial sprays or fungigation	1-4 qt/A	X	X		X		Begin applications when environmental conditions and plant stage are conducive to disease development.
<b>Copper (M)</b> Champ DP, 57.6%	Spray or fungigation	1-1.33 lb/A	X					None registered for rye.
Champ WG 77%	Spray or fungigation	1.5-2 lb/A	X					Make first application at early heading and follow with second spray 10 days later.  Kocide 3000 can be applied as a foliar application for early season disease control and again at early heading and followed with another application 10 days later.
Champ Formula 2, Flowable, 37.5%	Spray or fungigation	1-1.33 pt/A	X					
Cuprofix Ultra 40 Disperss 71.1%	Spray or fungigation	1-1.25 lb/A	X					
Kocide 2000, DF 53.8%	Spray or fungigation	1.25-1.5 lb/A	X					
Kocide 3000, DF 46.1%	Spray or fungigation	0.5-0.75 lb	X					
Kocide 4.5 LF, 37.5%	Spray or fungigation	1-1.33 pt/A	X					

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<sup>4</sup>Leaf spot includes fungal leaf diseases such as tan spot, Septoria blotch and spot blotch on wheat, and spot blotch and net blot on barley.

## Barley-Oat-Rye-Wheat (continued) FOLIAR SPRAYS

Chemical (Fungicide Group)	Application <sup>1</sup>	Dosage <sup>2</sup>	Disease Control <sup>3</sup>					Fusarium Head Blight	Remarks
			Leaf Spot <sup>4</sup>	Leaf Rust	Stem Rust	Powdery Mildew			
<b>Mancozeb (M3)</b> Dithane DF Rainshield NT, 75%	Spray or fungigation	2.1 lb/A	X	X					Do not make more than 3 applications of mancozeb. Do not apply mancozeb within 26 days of harvest. Do not graze livestock in treated areas prior to harvest. Addition of spreader/sticker will improve performance.  0.75 to 1 quart rate of Dithane F-45 or 1 lb rate Dithane DF Rainshield NT is for application at the tillering stage to barley and wheat in North Dakota, South Dakota and Minnesota; this is covered by a Section 2 (ee) label.  Penncozeb labels state control of Fusarium head blight as well.
Dithane F-45, 37%	Spray or fungigation	1.6 qt/A	X	X					
Dithane M-45, 80%	Spray or fungigation	2 lb/A	X	X					
Dithane WSP, 80%	Spray or fungigation	2 lb/A	X	X					
Manzate Flowable, 37%	Spray or fungigation	1.6 qt/A	X	X					
Manzate ProStick, 75%	Spray or fungigation	2 lb/A	X	X					
Penncozeb, 80 WP, 80%	Spray or fungigation	1-2 lb/A	X	X					
Penncozeb 75 DF, 75%	Spray or fungigation	1-2 lb/A	X	X					
<b>Mancozeb (M3) + Copper (M)</b> ManKocide, 15% + 46.1%	Spray or fungigation	2-2.5 lbs/A	X					Not registered for rye. Apply at early heading and follow with second spray 10 days later. Do not apply within 26 days of harvest. Use higher rates when conditions favor disease. Do not graze livestock in treated areas prior to harvest.	
Cuprofix MZ Disperss, 30.4% + 22.1%	Spray or fungigation	2.5-4.75 lb/A	X						
<b>Triazoles</b> <b>Metconazole (3)</b> Caramba, 8.6%	Spray or fungigation	10-17 fl oz/A	X	X	X	X	X	Maximum of 2 applications per season. Apply 13.5-17 fl oz at early flowering for Fusarium head blight. Maximum rate per season 34 fl oz; 30-day preharvest interval.	

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<sup>5</sup>See fungicide resistance management statements on Pages 9-10.

## Barley-Oat-Rye-Wheat (continued) FOLIAR SPRAYS

Chemical (Fungicide Group)	Application <sup>1</sup>	Dosage <sup>2</sup>	Disease Control <sup>3</sup>					Remarks
			Leaf Spot <sup>4</sup>	Leaf Rust	Stem Rust	Powdery Mildew	Fusarium Head Blight	
<b>Triazoles cont.</b>								
<b>Propiconazole (3)</b> Tilt 3.6EC, 41.8%	Spray or fungigation	2-4 fl oz/A	X	X	X	X	X	A 2-4 fl oz/A application for early season leaf disease control. May be applied to wheat until Feekes 10.5. Do not apply more than 8 fl oz per season. The preharvest interval is 40 days in wheat. The PHI for barley, oat and rye is 45 days. See labels for grazing and haying restrictions.
Fitness, 41.8%	Spray or fungigation	2.4 fl oz/A	X	X	X	X	X	
PropiMax EC, 41.8%	Spray or fungigation	2-4 fl oz/A	X	X	X	X	X	
Bumper 41.8%	Spray or fungigation	2-4 fl oz	X	X	X	X	X	
Propiconazole E-AG, 41.8%	Spray	2-4 fl oz/A	X	X	X	X	X	
<b>Prothioconazole (3)</b> Proline 480 SC, 41%	Spray	4.3-5.7 fl oz/A	X	X	X	X	X	Registered for use in wheat (including durum), barley, oat and rye. Apply for Fusarium head blight (scab) when the main stems of barley plants are fully headed or when 15% of the main-stem plants of wheat have started flowering. Do not make more than 2 applications of Proline per year. For maximum disease control, tank mix with the lowest rate of a nonionic surfactant and then apply in 15-20 gpa by ground or 5 gpa by air. Do not apply within 32 days of barley harvest or 30 days of wheat harvest.
<b>Tebuconazole (3), 38.7%</b> Folicur, Embrace, Monsoon, Muscle, Onset, Orius, Tebucon, Tebustar, Tebuzol, and Toledo	Spray	4 fl oz/A		X	X		X	For wheat and barley for suppression of Fusarium head blight (scab) and rust control. Do not apply more than 4 fl oz per year. Do not apply within 30 days of harvest.
<b>Prothioconazole + Tebuconazole (3)</b> Prosaro 421 SC, 19.0%:19.0%	Spray	6.5-8.2 fl oz/A	X	X	X	X	X	Registered for wheat (including durum) and barley. Prosaro has a 30-day PHI. Apply Prosaro for Fusarium head blight (scab) when the main stems of barley plants are fully headed or when 15% of the main stem plants of wheat have started flowering. Do not apply more than 8.2 oz of Prosaro per year.

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<sup>4</sup>Leaf spot includes fungal leaf diseases such as tan spot, Septoria blotch and spot blotch on wheat, and spot blotch and net blot on barley.

<sup>5</sup>See fungicide resistance management statements on Pages 9-10.



## Barley-Oat-Rye-Wheat (continued) FOLIAR SPRAYS

Chemical (Fungicide Group)	Applica- tion <sup>1</sup>	Dosage <sup>2</sup>	Disease Control <sup>3</sup>					Fusarium Head Blight	Remarks
			Leaf Spot <sup>4</sup>	Leaf Rust	Stem Rust	Powdery Mildew			
<b>Qols</b> <b>Azoxystrobin (11)</b> Quadris, 22.9%	Spray or fungigation	6.2-12.3 fl oz/A (7.7-12.3 fl oz/A, powdery mildew)	X	X	X	X		Resistance statement 5 <sup>5</sup> Wheat and barley. Do not apply within 45 days of harvest. Application may be made from immediately after jointing (Feekes 6) up to late head emergence (Feekes 10.5). Do not harvest treated grain for forage. Do not harvest within 14 days for hay.	
<b>Pyraclostrobin (11)</b> Headline, 23.6%  Headline SC, 23.3%	Spray or fungigation	6-9 fl oz/A	X	X	X	X		Not registered for oats. Apply no later than 50% head emergence for barley and rye. A sec. 2 (ee) allows early application at 3 fl oz/A on wheat. Registered for up to full head emergence (Feekes 10.5) for wheat. No more than 2 applications per season. Apply prior to disease onset.	
<b>Fluoxastrobin (11)</b> Evito 480SC, 40.3%	Spray or fungigation	2.0-4 fl oz/A	X	X	X	X		Do not apply more than 11.4 fl oz/yr. Begin applications preventively and continue as needed on a 14- to 21- day interval. Apply from Feekes 5 up to late head emergence (Feekes 10.5).	
<b>Qols + Triazoles</b>  <b>Trifloxystrobin (11)</b> <b>+ Propiconazole (3)</b> Stratego 11.4%:11.4%	Spray (barley)  Spray or fungigation (wheat)	4-10 fl oz/A	X	X	X	X		Resistance statement 5 <sup>5</sup> & 3 <sup>5</sup> . Stratego not registered for rye. Apply Stratego at 4-7 fl oz/A in barley and 4-10 fl oz/A in wheat for early season diseases. Do not apply Stratego after Feekes stage 8 (emergence of flag leaf ligule) in barley or 10.5 (full head emergence) in wheat. Do not exceed 2 applications of Stratego or 20 fl oz/season. PHI= 32 days in wheat, 40 days in barley.	
<b>Pyraclostrobin (11)</b> <b>+ Metconazole (3)</b> Twinline 12.0%:7.4%	Spray or fungigation	7-9 fl oz/A	X	X	X	X		Apply Twinline immediately after flag leaf emergence and before flowering. Apply prior to disease development to ensure maximum disease protection PHI = 30 days.	
<b>Azoxystrobin (11) +</b> <b>Propiconazole (3)</b> Quilt 7.0%: 11.7%	Spray or fungigation	7-14 fl oz/A	X	X	X	X		For wheat, barley and triticale. May be tank mixed with Axial and Discover herbicides. Quilt or Quilt Xcel also can be applied at 7 fl oz/A for early season disease control. Both may be applied through full head emergence (Feekes 10.5) for wheat; 45 days PHI for barley and triticale.	
<b>Quilt Xcel</b> 13.5%:11.7%	Spray or fungigation	7-14 fl oz/A	X	X	X	X			
<b>Sulfur (M)</b> Sulfur DF, 80%	Spray	6-15lb/A				X		Do not apply when temperatures are high (above 90 F). For powdery mildew only.	

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<sup>5</sup>See fungicide resistance management statements on Pages 9-10.