

## Canola (Rapeseed) Seed Treatment

Chemical	Application	Dosage <sup>1</sup>	Disease Control <sup>2</sup>		Remarks
			Seed-borne Blackleg	Seedling Diseases <sup>3</sup>	
<b>Azoxystrobin (11)</b> Dynasty, 9.6%	Slurry	0.10-3.75 fl oz/cwt	X	X	Resistance statement 5. Seed-borne blackleg, seedling <i>Rhizoctonia</i> damping off, <i>Alternaria</i> seedling blight. Add Apron XL LS for <i>Pythium</i> spp.
<b>Carboxin (7) + Ipconazole (3)</b> Rancona V RS 6.78%; 0.73%	Slurry or mist	12.3 fl oz/cwt	X	X	For commercial seed treater use. Do not graze or feed livestock on treated areas for six weeks after planting.
<b>Clothianidin+ Penflufen (7)+ Trifloxystrobin (11) + Metalaxyl (4)</b> Prosper EverGol 22.32%: 0.82%: 0.55%: 0.55%	Slurry or mist	21.5 fl oz/cwt	X	X	Registered for commercial use as a seed treatment in canola only. Contains both fungicide and insecticide.
<b>Difenoconazole (3) + Metalaxyl M (4) + Fludioxonil (12) + Thiamethoxam</b> Helix Xtra 1.25%; 0.38%; 0.13%; 20.7%	RTA slurry	23 fl oz/cwt	X	X	Commercial use only. Contains both insecticide and fungicide. Contains higher concentration of insecticide - to be used for high flea beetle pressure.
<b>Ethaboxam (22)</b> Intego Solo, 34.2%	Slurry or mist	0.2-0.3 fl oz/cwt		X	For control of <i>Pythium</i> .
<b>Fludioxonil (12)</b> Maxim 4FS, 40.3%	Slurry	0.08-0.16 fl oz/cwt	X	X	For seed-borne and soil-borne fungi.
Spirato 480 FS	Slurry	0.08-0.16 fl oz/cwt	X	X	
Dyna-Shield Fludioxonil, 40.3%	Slurry	0.08-0.16 fl oz/cwt	X	X	
<b>Metalaxyl (4)</b> Allegiance FL, 28.35% Sebring 318 FS, 28.35%  Belmont 2.7 FS, 28.89%	Mist or slurry	0.25-0.5 fl. oz/cwt	X	X	For <i>Pythium</i> damping off <b>only</b> .

<sup>1</sup>Dosage = amount of formulated product to apply.

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

<sup>3</sup>Seedling blights due to various fungal infections of seed.

## Canola (Rapeseed) Seed Treatment (continued)

Chemical	Application	Dosage <sup>1</sup>	Disease Control <sup>2</sup>		Remarks
			Seed-borne Blackleg	Seedling Diseases <sup>3</sup>	
<b>Pyraclostrobin (11)</b> Stamina, 18.4%	Slurry or mist	1.5-3.1 fl oz/cwt		X	Control of <i>Rhizoctonia solani</i> and suppression of <i>Fusarium</i> sp. and <i>Pythium</i> sp.
<b>Sedaxane (7)</b> Vibrance 43.7%%	Slurry	0.08-0.16 fl oz/cwt or 2.5-5 gal/100 kg seed		X	For seed decay, seedling blight and damping off caused by <i>Rhizoctonia solani</i> .
<b>Sedaxane (7) + Difenoconazole (3) + Mefenoxam (4) + Fludioxonil (12) + Thiamethoxam</b> Helix Vibrance, 0.26%; 1.25%; 0.40%; 0.13%; 20.7%	Slurry	23 fl oz/cwt	X	X	For use in commercial seed treatment facilities with closed transfer systems. For seed decay, seedling blight and damping off caused by <i>Pythium</i> , <i>Fusarium</i> , and <i>Rhizoctonia</i>
<b>Thiram (M3)</b> Thiram 480 DP 42%	Mist or Slurry	6.4 fl oz/cwt	X	X	For use against seed decay, damping-off and seedling blights.
<b>Fluxapyroxad (7) + Pyraclostrobin (11) + Metalaxyl (4)</b> Obvius, 1.58%; 1.58%; 1.26%	RTA Slurry	9.2 fl oz/cwt	X	X	Control of <i>Rhizoctonia solani</i> , <i>Fusarium</i> sp. and <i>Pythium</i> .

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## Canola (Rapeseed) Soil Application

Organism	Application	Dosage <sup>1</sup>	White mold <sup>2</sup> ( <i>Sclerotinia sclerotiorum</i> )	Remarks
<i>Coniothyrium minitans</i> Contans WG, 5.3%	Soil incorporation	1-2 lb/A	X	Fungus attacks sclerotia of the fungus in the soil.

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<sup>3</sup>See fungicide resistance management statements on Pages 7-8.

## Canola Foliar Sprays

Chemical (Fungicide Group)	Application <sup>1</sup>	Dosage <sup>2</sup>	Disease Control <sup>3</sup>			Remarks
			Alternaria Black Spot	Black- leg	Sclerotinia Stem Rot (white mold)	
<b>Azoxystrobin (11)</b> Quadris, 22.9% Satori, 22.9% Equation, 22.9% Tetraban, 22.9%	Spray or fungigation	6.0-15.5 fl oz/A	X	X	X	Resistance statement 5 <sup>4</sup> <i>Alternaria</i> Black Spot alone: 8.0 fl oz/A at pod stage (95% petal fall) Blackleg: 6.2 fl oz/A at 2- to 4-leaf stage <i>Alternaria</i> Black Spot or <i>Sclerotinia</i> Stem rot: 9.2-15.4 fl oz/A at 10-25% flowering (3-7 days after first flower).
<b>Azoxystrobin (11) + Benzovindiflupyr (7)</b> Elatus, 30.0%; 15.0%	Spray or fungigation	7.3 fl oz/A	X	X		Resistance statement 5 <sup>4</sup> For blackleg, apply during rosette stage between 2 <sup>nd</sup> true leaf and bolting. For alternaria, make an application at the end of flowering. Do not apply more than 7.3 fl oz/A per year. PHI = 30 days.
<b><i>Bacillus subtilis</i> strain QST 2808 (44)</b> Serenade ASO, 1.34%	Spray or fungigation	2-6 qt/A			X	Begin applications when environmental conditions and plant stage are conducive to disease development. For disease suppression.
<b>Boscalid (7)</b> Endura, 70%	Spray or fungigation	5-6 oz/A			X	Apply at 20-50% flowering prior to the onset of disease. Apply a second application if conditions continue to be favorable for disease development.
<b>Fluxapyroxad (7) + Pyraclostrobin (11)</b> Priaxor 14.33% + 28.58%	Spray or fungigation	4-8 fl oz/A	X	X	X	Resistant statement 5 <sup>5</sup> & 6 <sup>5</sup> . For blackspot, apply at early pod development, for blackleg apply at 2 to 4 leaf stage, for <i>sclerotinia</i> apply at 20% to 50% bloom, and a second application may be made 14 days later if weather conditions are favorable for disease development. Do not make more than two consecutive applications of priaxor or more than 16 oz per season.

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<sup>2</sup>Dosage = amount of formulated product to apply.

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<sup>4</sup>See fungicide resistance management statements on Pages 7-8.

## Canola Foliar Sprays (continued)

Chemical (Fungicide Group)	Application <sup>1</sup>	Dosage <sup>2</sup>	Disease Control <sup>3</sup>			Remarks
			Alternaria Black Spot	Black- leg	Sclerotinia Stem Rot (white mold)	
<b>Metconazole (3)</b> Quash WDG, 50%	Wettable Granule	2-4 oz/A			X	Apply at 20-50% bloom, 10-20 gpa by ground, 5 gpa by air. 35-day PHI. Do not make more than 1 application or apply more than 4 fl oz/A.
<b>Prothioconazole (3)</b> Proline 480 SC, 41%	Spray	4.3-5.7 fl oz/A		X	X	A 2(ee) allows for application of Proline at 4.3-5.7 oz/A at 2-4 leaf stage for blackleg management. Use higher rate if field has history of severe disease or if susceptible variety grown.  Apply at 20-50% flowering for white mold. Do not make more than 2 applications per year. For maximum disease control, apply in 15-20 gpa by ground or 5 gpa by air. Do not apply within 36 days of harvest.
<b>Penthiopyrad (7)</b> Vertisan, 20.6%	Spray or fungigation	14-20 fl oz/A	X		X	Begin applications prior to disease development. For white mold, make initial application at 20-50% bloom. Do not exceed 41 fl oz/A per year. PHI = 21 days.
<b>Picoxystrobin (11)</b> Approach, 22.5%	Spray	6-12 fl oz/A	X	X	X	For white mold, apply at 20-50% bloom at 8-12 fl oz/A. Do not apply more than 24 fl oz/A per season. PHI = 28 days.
<b>Pyraclostrobin (11)</b> Headline EC, 23.6% Headline SC, 23.3%	Spray	6-12 fl oz/A	X	X	X	Resistance statement 5 <sup>4</sup> . For blackleg control, apply at 2- to 4-leaf stage. For black spot control, apply at early pod development. A second application 7-10 days later may be made if disease persists or weather is favorable for disease.
<b>Pythium oligandrum DV 74</b> Polyversum (44) 1.0%	Spray or fungigation	1.5-3 fl oz			X	Research at NDSU showed efficacy against white mold when applied at 1.5 fl oz, 30 days before flowering and at 3 fl oz at flowering. Do not mix with chemical fungicides.

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<sup>4</sup>See fungicide resistance management statements on Pages 7-8

## Canola Foliar Sprays (continued)

Chemical (Fungicide Group)	Application <sup>1</sup>	Dosage <sup>2</sup>	Disease Control <sup>3</sup>			Remarks
			Alternaria Black Spot	Black- leg	Sclerotinia Stem Rot (white mold)	
<b>Thiophanate Methyl (1)</b> Topsin M WSB, T-Methyl 70 W WSB, 70% Cercobin	Spray or fungigation	1-2 lb/A			X	Resistance statement <sup>14</sup> Apply 1-2 lb once at 20-50% flowering, or apply 1 lb twice with the first application at 20-30% flowering and the second application at 40-50% flowering. Do not apply more than 2 lbs product/acre/season.
Thiophanate Methyl, WDG 85%	Spray or fungigation	0.8-1.6 lb/A			X	Apply 0.8-1.6 lb once at 20-50% flowering, or apply 0.8 lb twice, with the first application at 20-30% flowering and the second application at 40-50% flowering. Do not apply more than 1.6 lbs product/acre/season.
T-Methyl E-AG 4.5F	Spray or fungigation	20-40 fl oz/A			X	See label for specific application timings. Do not apply more than 40 fl oz of T-Methyl E-AG per acre per season.
<b>Fluopyram (7) + Prothioconazole (3)</b> Propulse 17.4%; 17.4%	Spray or fungigation	13.6 fl oz/A	X		X	For optimum disease control apply at early flowering. Do not apply more than 27.2 fl oz/A per year. Do not apply ProPulse within 36 days of harvest.

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<sup>4</sup>See fungicide resistance management statements on Pages 7-8.

## Chickpea (Garbanzo Bean) Seed Treatment

Chemical	Application	Dosage <sup>1</sup>	Control <sup>2</sup> of Seedling Diseases <sup>3</sup>	Remarks
<b>Azoxystrobin (11)</b> Dynasty 9.6%	Slurry	0.153-0.765 fl oz/cwt	X	For seed-borne and soil-borne fungi.
<b>Carboxin (7) + Thiram (M3)</b> Vitaflo-280 15.59%; 13.25%	Ready to use slurry			
<b>Fludioxonil (12)</b> Maxim 4FS, 40.3% Spirato 480 FS Dyna-Shield Fludioxonil	Slurry Slurry Slurry	0.08-0.16 fl oz/cwt 0.08-0.16 fl oz/cwt 0.08-0.16 fl oz/cwt	X X X	For seed-borne and soil-borne fungi.
<b>Fludioxonil (12) + Mefenoxam (4)</b> Apron Maxx RFC 2.31%:3.46%	Slurry	1.5 fl oz/cwt	X	

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<sup>3</sup>Seedling blights due to various fungal infections of seed.

Note: Some seed treatments may affect Rhizobia inoculants; read inoculant label for specific information.