

Technical Bulletin



As First Triazole Application for CLS - Get Greater ROI!

Cercospora leaf spot (CLS), caused by the fungus *Cercospora beticola*, has been identified as one of the most destructive foliar diseases, resulting in excessive damage of sugarbeet crops. Growers in Minnesota, North Dakota, as well central High Plains of western Nebraska, northeastern Colorado, and southeastern Wyoming have to implement measures to combat CLS. This disease reduces tonnage, lowers the concentration of sucrose, reduces the amount of extractable sucrose, and increases impurities escalating processing costs.



Sugarbeet with severe *Cercospora* leaf spot infection.

Photo courtesy of Mohamed Kahn, Extension Assistant
Director, Agriculture and Natural Resources,
North Dakota State University.

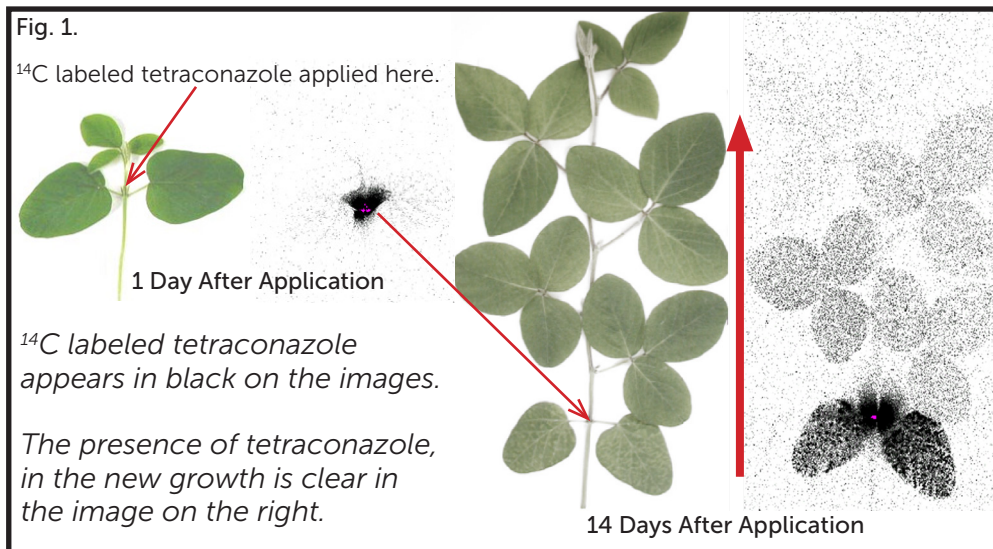
Infected debris in the sugarbeet fields is the most common source of the fungus, and spreads mainly by wind. CLS develops rapidly when conditions are warm and wet. With favorable conditions, initial leaf spot symptoms can occur within 5-7 days after infection. Spots, one-eighth inch in diameter, with ash gray centers and dark brown or reddish-purple borders, result as the infection progresses. Severe infections can result in withering and death of leaves.

Leading agronomists and university researchers agree that implementing a fungicide treatment program, with alternating Modes of Action (MOA) is the most effective way to combat *Cercospora* Leaf Spot in sugar beet. Triazoles, DMI (DeMethylation Inhibitors) Group 3 mode of action are highly recommended* in a rotational program.

Why MINERVA®?

While there are different triazole options, MINERVA® Fungicide, active ingredient tetraconazole, is a top choice. After application, tetraconazole rapidly penetrates the leaf surface and translocates upwards throughout the plant, protecting existing foliage as well as new growth.

Figure 1 shows the movement of tetraconazole within the plant one day after application (left) to 14 days later, when new growth had occurred (right).



*Part of American Crystal Sugar's "Ag Gold Standard" - see reverse



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Fig. 2.

Application # Sequence based on Initial Fungicide Application Timing & 12-Day Intervals	Late June Initial Application	Early - Mid July Initial Application	Mid July Initial Application	Late July Initial Application (Replant)	
1	Triazole + EBDC	Triazole + EBDC	Triazole + EBDC	Option 1 Triazole + EBDC	Option 2 TPTH + Benzimidazole
2	EBDC	TPTH + Benzimidazole	TPTH + Benzimidazole	TPTH + Benzimidazole	Triazole + EBDC
3	TPTH + Benzimidazole	Triazole + EBDC	Triazole + EBDC	Headline/Priaxor + Triazole	Headline/Priaxor + TPTH
4	Triazole + EBDC	EBDC	Headline/Priaxor + TPTH		
5	EBDC	Headline/Priaxor + TPTH			
6	Headline/Priaxor + TPTH				

CR+ Variety CLS Fungicide Program

	Late June Initial Application	Early - Mid July Initial Application	Mid July Initial Application	Late July Initial Application (Replant)
1	Triazole + EBDC	Triazole + EBDC	Triazole + EBDC	Triazole + EBDC
2	TPTH + Benzimidazole	TPTH + Benzimidazole	TPTH + Benzimidazole	*Extended Interval
3	*Extended Interval	*Extended Interval	*Extended Interval	Headline/Priaxor + TPTH
4	Triazole + EBDC	Triazole + EBDC	Headline/Priaxor + Triazole	
5	*Extended Interval	Headline/Priaxor + TPTH		
6	Headline/Priaxor + TPTH			

Contact your Agronomist
Contact your American Crystal Agronomist for the most up-to-date information and issues affecting sugarbeets in your area.

Figure 2, extracted from the American Crystal Sugar Company website shows their recommended rotational program for control of CLS.

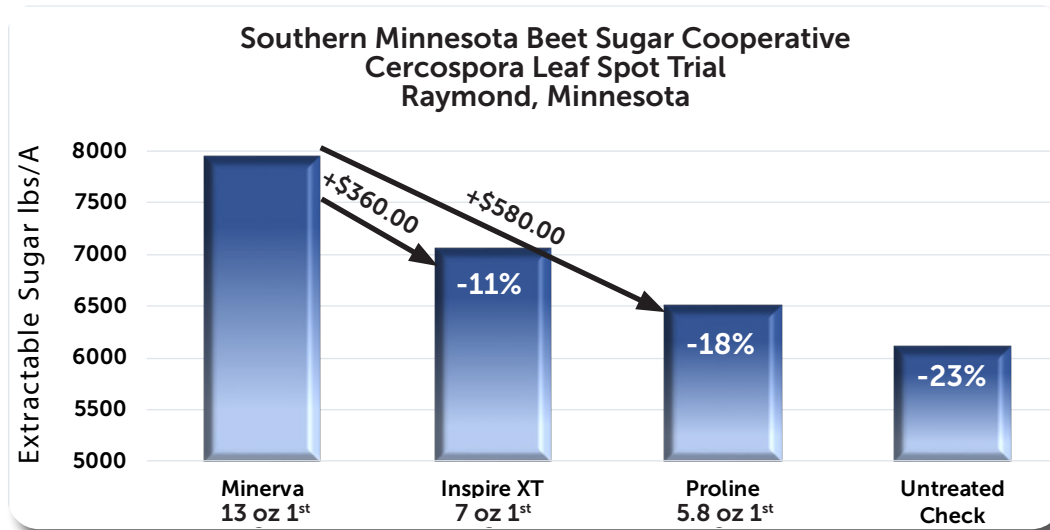
Similar recommendations are found on the Southern Minnesota Beet Sugar Company (SMBSC), Minn-Dak, and University websites across sugar beet states.

Source: <https://www.crystalsugar.com/media/dvrnod4v/cercospora-leaf-spot-quick-card.pdf>

Why MINERVA For The First Triazole Application? Greater ROI!

Research conducted by SMBSC (Figure 3) evaluated the impact of CLS treatment programs on extractable sugar. The FIRST triazole applied was the only variable in all three treatments. Using a \$.40/pound price for sugar, results showed that applying MINERVA first produced \$360.00/acre more than Inspire XT, and \$580.00 more than Proline!

Fig. 3.



Choosing MINERVA as the first triazole treatment in the fight against Cercospora Leaf Spot, makes dollars and SENSE!

ALL Programs:

1st Application: shown above; 2nd Application: Super Tin (8oz/A) + Manzate (1.5 lb/A); 3rd Application: Headline (9 oz/A)

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