

# CLS Ag Beet Series

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## Incorporating Topsin and Headline Back into the Program

End of season resistance numbers for Headline has historically been very high for SMBSC and as a result has not been recommended in the CLS Fungicide Program. However, spring spore traps and latent infection testing in June and July shows lower levels of resistance are present earlier in the season.

Resistance to Headline also drops following an application of a DMI(triazole) fungicide. This makes an application of Headline within a month of the DMI an excellent tank-mix partner with an EBDC. However, we also want to use a Tin + Topsin application between the DMI and Headline applications to alternate DMI chemistries with Tin. This allows for an early season application of Topsin as we are also seeing early season susceptibility to this fungicide (Figure 1).

Historically, Topsin has had high levels of resistance in end of season testing but has not been tested in the fall for the last 5 years. However, spring testing shows susceptibility of the CLS population to Topsin. Cross resistance between Tin and Topsin is very low (Figure 2). This makes a Tin/Topsin tank-mix very effective as spores that are resistant to Tin are highly unlikely to be resistant to Topsin.

Cross resistance testing in Figure 2 also shows the importance of alternating between the two DMI(triazole) resistance groups.

All data and figures provided by Dr. Nate Wyatt, USDA-ARS Fargo, ND. For a more detailed explanation the reasoning for adding Topsin and Headline back into the CLS Program please watch Dr. Nate Wyatt's video under the meeting info tab.

<https://www.smbc.com/agronomy/AgronomyDefault>

### CLS Fungicide Program

Start when leaves are ~4" apart or ~June 21  
Applications on ~14-day intervals  
Weather Dependent

1. Proline + EBDC
2. Tin + **Topsin / T-methyl**
3. **QoI (Strobi)** + EBDC
4. Tin + EBDC
5. Inspire XT/Provysol + EBDC
6. Tin + EBDC
7. EBDC + Copper (if needed)

See the CLS Quicksheet on the website under Agronomy Quicksheets for full program details.  
<https://www.smbc.com/agronomy/AgronomyDefault>

Figure 1

Fungicide	Commercial product	Headline	Topsin	Domark	Proline	Inspire	TPTH
Strobilurin	Headline	1.00					
Benzimidazole	Topsin	<span style="border: 1px solid green; border-radius: 50%; padding: 2px;">0.18</span>	1.00				
Triazole	Domark	0.69	0.33	1.00			
Triazole	Proline	0.53	0.41	<span style="border: 1px solid red; border-radius: 50%; padding: 2px;">0.92</span>	1.00		
Triazole	Inspire	0.51	0.37	0.59	0.60	1.00	
Tin	TPTH	0.40	<span style="border: 1px solid green; border-radius: 50%; padding: 2px;">0.21</span>	0.48	0.54	0.43	1.00

• Cross resistance scored from 0.00 to 1.00 with higher values indicating higher degrees of cross resistance.

Figure 2