

# Factsheet: Sclerotinia Levels in Canola as Affected by Biofungicide, Fungicide, and Preceding Crop



## Objective:

The objective of this product is to identify the most effective application method and timing of Contans WG™ (UAP) biofungicide.

## Methodology:

This demonstration was at the AAFC Scott Research Farm; it was initiated October 2013 and will be completed December 2015. The design of the experiment was a complete factorial design (2x3) with three replicates. The main plots consisted of crop type and sub-plots consisted of the Contans WG™ application timing, and method of incorporation into the soil. The fall treatments of Contans were applied October 17, 2013 and incorporated the same day using a Salford vertical tillage implement (5 cm depth). The spring application of Contans was applied May 13, 2014 and May 8<sup>th</sup>, 2015 incorporated using the same implement as in the fall. The 2014 fall application of Contans was not applied, due to unavailability of the product. At both fall (2013) and spring timing (2014; 2015) the Contans was applied at a 4 kg/ha rate. The foliar fungicide treatments were applied on July 14, 2014 and July 10, 2015 at a rate of 700 ml/ac of Vertisan on sunflower, 600ml/ac of Vertisan on canola, and 350ml/ac of Acapela on soybeans. Granular fertilizer was applied at seeding according to soil test recommendations for each crop and inoculant was applied on soybean. Weeds were controlled using a pre-seed burn-offs and registered in-crop herbicides (See Appendix, Table 1 for complete details of field maintenance activities).

**Table 1:** Demonstration treatment list

Treatment	Timing and Incorporation Method	Crop
1	Fall/Mechanical Tillage	Canola
2	Fall/ No Tillage	Canola
3	Spring/ Mechanical Tillage	Canola
4	Spring/ No Tillage	Canola
5	Untreated Control	Canola
6	Foliar Fungicide	Canola
7	Fall/Mechanical Tillage	Sunflower
8	Fall/ No Tillage	Sunflower
9	Spring/ Mechanical Tillage	Sunflower
10	Spring/ No Tillage	Sunflower
11	Untreated Control	Sunflower
12	Foliar Fungicide	Sunflower
13	Fall/Mechanical Tillage	Soybeans
14	Fall/ No Tillage	Soybeans
15	Spring/ Mechanical Tillage	Soybeans
16	Spring/ No Tillage	Soybeans
17	Untreated Control	Soybeans
18	Foliar Fungicide	Soybeans

## Key Findings:

- Disease Ratings Overall, the disease ratings for each treatment were not statically different from one another. Neither the fall nor the spring applications showed any effect on the disease ratings on all three crops compared to the control.

- The foliar fungicide treatments also did not provide any statistically different results from that of the Contans treatments or the control.
- Grain yields were significantly affected by crop type, but the sclerotinia control effect and sclerotinia control by crop interaction were not significant.
- Conditions that are conducive of heavy sclerotinia infection typically occur when a canola crop is lodged or has an excessively thick canopy.
- The timing of sclerotinia infection at a given crop stage can also play a role in the severity of the infection. Typically, an earlier onset of the disease at the beginning of flowering will have more detrimental effects on yield than compared to a late infection.
- Although conditions were ideal in 2014 in producer fields, we did not observe the same degree of infection in any of our three susceptible crops. The plants that we found to be infected with sclerotinia were infected late in the season and did not lodge.
- Furthermore, the plant densities of soybeans and sunflowers were low and well aerated within the canopy, therefore, the microclimate was not ideal for apothecia growth.
- Contans WG™ is more effective when a high degree of sclerotinia bodies are present within the soil and the degree of efficacy declines as the level of infestation lowers. Sclerotinia infestation was minimal during this study, therefore, it was not surprising that the effect of Contans was not significantly different compared to the control.
- If this product was used in soils with a high degree of infestation, the effect of Contans may be significant. Overall, a lack of disease was likely the causing factor behind the non-significant response, rather than the inability of Contans WG™ to control sclerotinia

**Table 3.** Least squares means for main effects of sclerotinia control method and crop type on disease ratings and grain yield at Scott, SK in 2014. Main effect means followed by the same letter do not significantly differ (Fisher's protected LSD test;  $P \leq 0.05$ )

Main Effect	Disease Ratings 1	Disease Ratings 2	Yield (kg ha <sup>-1</sup> )
	7-Aug	20-Aug	
<i>Crop x Timing and Application</i>			
Canola Untreated Check	0.2667	0.6667	2049
Canola Fall/ Mechanical	0.1	0.5333	2313
Canola Fall/ No Tillage	0.3667	0.7333	2242
Canola Foliar Fungicide	0.3667	0.4333	2484
Canola Spring/ Mechanical	0.2333	0.2667	2127
Canola Spring/ No Tillage	0.3667	1.1333	2240
Soybean Untreated Check	-3.05E-16	-5.82E-17	929
Soybean Fall/ Mechanical	0.06667	-3.18E-17	1118
Soybean Fall/ No Tillage	0.1	-5.27E-17	905
Soybean Foliar Fungicide	-2.50E-16	-1.27E-17	966
Soybean Spring/ Mechanical	0.06667	-5.26E-17	977
Soybean Spring/ No Tillage	-1.94E-16	7.92E-17	999
Sunflower Untreated Check	-2.50E-16	1.49E-17	995
Sunflower Fall/ Mechanical	-2.78E-16	1.67E-01	863
Sunflower Fall/ No Tillage	-3.33E-16	3.33E-02	1394
Sunflower Foliar Fungicide	-3.05E-16	-2.10E-17	925
Sunflower Spring/ Mechanical	-2.78E-16	-7.86E-17	948
Sunflower Spring/ No Tillage	2.33E-01	-3.56E-16	1161