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TIMING OF BIO-FUNGICIDE APPLICATION FOR SCLEROTINIA CONTROL

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Introduction

Contans is a biofungicide with proven value for reducing the numbers of sclerotia in the soil, which are resting bodies for *Scerotinia scerotiorum*. The fungus involved in the product is *Coniothyrium minitans*. This is a disease that affects many broadleaf horticultural and field crops. Due to the high cost of this product, it has mainly been used by organic producers and for high-value horticultural crops. It could potentially be useful for grain-crop producers, and is registered for use on canola, soybean and sunflower. Sunflower is particularly relevant, since sunflower is infected through the roots by sclerotia bodies, and fungicides are ineffective at controlling sclerotinia in this crop.

Materials and Methods

Fall 2013 – Spring 2014

Contans was applied at 0.6 kg/ha using a field sprayer in October, 2013 to three areas to be used for spring 2014. However, in spring 2014, very wet soils in May and June prevented timely seeding of the trial. On June 10, canola was seeded over the treatment area and flooding in July 2014 further damaged the trial. The 2013-14 trial was abandoned due to flooding damage.

Fall 2014 – Fall 2015

The trial was restarted in Fall 2014. Three areas were chosen for the canola, sunflower, and soybean and they were marked as three separate RCBDs. The canola and soybean trials had four replicates. The soybean and canola trials were established on canola stubble to ensure high levels of the pathogen. Each soybean and canola plot was 30 by 50 feet for the spray applications. The canola had only recently been harvested due to late planting and poor harvest conditions. Contans was applied at 0.6 kg/ha on Oct 20 to Treatment 1 for canola, soybean and sunflower, and then those treatments were cultivated. The three crop trials were kept separate for purposes of weed control.

The canola was seeded on May 15 with 4 lb/ac of RR Nexera canola with 80 lb/ac N, 30 lb/ac P, 5 lb/ac S. The trial was sprayed with pre-emergent glyphosate on May 20th and with 0.33 L/ac of glyphosate on June 15th. Proline was sprayed on July 10th at 30% flowering stage to plots 20 feet wide by 40 feet long. The trial was harvested on September 6, 2015. Yield samples were air-dried before yield measurement and moisture determination. Yields are adjusted for moisture.

Soybeans were seeded on May 21, 2015 with TH33003RR at 72 lb/ac, 30 lb/ac P and 8 lb/ac Optimize. They had emerged evenly on May 29 with no apparent treatment differences. Glyphosate was applied twice and Basagran was used to control glyphosate-tolerant soybean. Weed control was good. Proline was applied on July 23th at about 45% flowering. The trial was checked for presence of sclerotinia near physiological maturity, when infection is most apparent due to premature maturation. There was no incidence of sclerotinia in the soybeans. The trial was harvested on October 6, 2015.

In fall, 2014, the sunflower trial was flagged ovetop of the wheat regional variety trial stubble and each spray plot was 30 by 40 ft. This was due to a lack of other suitable stubble, as weed control in canola stubble is problematic for sunflower. Sunflowers were seeded on May 29 with 70 lb/ac N, 20 lb/ac P, 5 lb/ac S with the variety 63-A21 using the cone seeder at 11 plants/m². It was seeded with three replicates due to space constraints. The plot area was pre-treated with glyphosate and sulfentrazone for weed control. The trial was also treated with Centurion for grassy weed control. We could not spray the fungicide treatment for Treatment 3 due to the Sunflowers being too tall. The trial was rated for sclerotinia pressure in September. It was harvested in mid-October. Seed samples were dried prior to yield measurement and yields are adjusted for moisture.

For all three trials, plots were trimmed in front and back to 20 foot long plots to remove edge effects so that each plot was 30 ft by 20 ft. A 4-foot strip was taken out of the middle of each 20-foot long plot. The purpose of this was to minimize edge effects of the treatments.

Table 1. Treatments.

Trt #	Description
T1	Fall Contans
T2	Untreated Control
T3	Fungicide

Results and Discussion

There were no dramatic differences in growth, disease incidence or yield due to treatment. Disease incidence was zero on soybeans and canola. Sunflowers treated with Contans had an average of 1% infected plants. The untreated control had 0% infected plants. At this low level of incidence, this is assumed to be a random effect rather than a treatment effect.

Table 2. Yield of three crops

Trt	Soybean		Canola		Sunflower	
	Bu/ac	StdDev	Bu/ac	StdDev	Bu/ac	StdDev
Contans	35.6	2.31	23.3	4.5	21.7	2.47
Control	36.1	1.17	23.4	1.36	15.4	1.8
Fungicide	40.1	1.04	21.0	1.68	N/A	N/A

The Redvers location generally had low pressure from sclerotinia in 2015. A fungicide product trial conducted for a private company also had no sclerotinia pressure. It is difficult to do agronomic trials on crop diseases, especially when it is a single-season trial. In spite of this, a new product was demonstrated and discussed with producers at the 2015 SERF Field Day on July 24. It is suitable for organic production and may be more suitable for application on canola residue after harvest, allowing 2 years for the fungus to break down sclerotia bodies. Longer-term trials would be more likely to show results. It may prove to be useful when growing sunflowers in rotation with canola due to limited fungicide options in this crop for sclerotinia.

Extension

This trial was visited in the SERF Annual Plot Tour on July 24, which had about 50 participants. It was labelled for viewing until harvest.

Abstract

A trial was initiated in 2014 to compare fall Contans treatments with fungicide application and an untreated control for canola, soybean and sunflower. The three crops were seeded in separate small trials in 2015. Canola and soybean were seeded onto canola stubble. Proline was applied at the appropriate stage to the canola and soybean trials. The fungicide was not applied to sunflower due to height logistical problems. There was very low incidence of sclerotinia in this trial and in other fungicide trials in 2015 at Redvers. No treatment effects were apparent. Longer-term trials are needed to evaluate this product.