

Soybean Foliar Fertilizers

Purpose:

The purpose of this project was to evaluate the yield impact of adding foliar fertilizer to a glyphosate herbicide application on Roundup Ready soybeans in fields with adequate soil fertility.

One foliar nutrient that is known to increase soybean yields in Ontario is Mn when visual foliar leaf deficiency symptoms are evident. Recently, there have been claims that Mn may give a yield boost to glyphosate tolerant soybean varieties even in the absence of visual nutrient deficiency symptoms. This could be a result of glyphosate interference with Mn metabolism, which is often apparent (yellow flash) in glyphosate tolerant soybeans after a glyphosate application.

Another aspect of this study was to evaluate the yield impact of three foliar fertilizers, namely Sure-K (liquid potassium), SUPERMAN (13-4-7 plus 5% Mn and 2.2% S) and Soy Booster (6-18-6 plus micros) on soybean yields when added to glyphosate.

Methods:

The trial was located at the Winchester Farm of the Kemptville Campus, University of Guelph. Five foliar fertilizer treatments were compared to the check (Roundup WeatherMax applied at 0.675 L per acre). Treatments were as follows:

1. Roundup WeatherMax at 0.675 L/a (**check**)
2. Roundup WeatherMax at 0.675 L/a + **22% Mn @ 2 lbs/a**
3. Roundup WeatherMax at 0.675 L/a + **22% Mn @ 2 lbs/a + Sure K @ 11 L/a**
4. Roundup WeatherMax at 0.675 L/a + **22% Mn @ 2 lbs/a applied 10 days after the Roundup WeatherMax application**
5. Roundup WeatherMax at 0.675 L/a + **SuperMan @ 1.5 L/a**
6. Roundup WeatherMax at 0.675 L/a + **Soy Booster @ 1 L/a**

All treatments were applied at the R2 stage (full bloom), with the exception of treatment 4 (22% Mn @ 2 lbs/a) which was applied at early R3 (beginning pod). All treatments were replicated 4 times.

Results:

No visible differences in crop colour or growth were observed between the treatments one week after application.

Adding Mn with the glyphosate tank mix or making an extra pass to separate the Mn from the glyphosate to eliminate the possibility of antagonism provided no extra yield in the absence of true visual deficiency symptoms (Table #1). Previous research has shown that if soybeans are truly deficient in Mn they will respond to foliar feeding of Mn.

The addition of Sure-K, SUPERMAN or Soy Booster with the glyphosate tank mix also provided no extra yield (Table #1).

Table 1: Addition of Foliar Fertilizer to Glyphosate

| | Treatments | Yield Bu/acre |
|---|---|---------------|
| 1 | Check | 45.0 a |
| 2 | 22% Mn @ 2 lbs/a | 43.4 a |
| 3 | 22% Mn @ 2 lbs/a + Sure K @11 L/a | 42.4 a |
| 4 | 22% Mn @ 2 lbs/a applied 10 days after the glyphosate application | 44.3 a |
| 5 | SuperMan @ 1.5 L/a | 44.5 a |
| 6 | Soy Booster @ 1 L/a | 45.9 a |

Yields followed by the same letter are not statistically different at the 10% confidence level.

Summary:

The addition of foliar fertilizer (22% Mn @ 2 lbs/a, 22% Mn @ 2 lbs/a + Sure K @11 L/a, 22% Mn @ 2 lbs/a 10 days after glyphosate, SuperMan @ 1.5 L/a, Soy Booster @ 1 L/a) to a glyphosate herbicide application on Roundup Ready soybeans in fields with adequate soil fertility did not provide additional yield.

Next Steps:

Note that this is a one year project at one location.

Acknowledgements:

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Location of Project Final Report: