

Sulphur Fertilizer Response Trials 2018 **GFO and OMAFRA/UG Funding - Interim Report**

Purpose:

To determine the existence of sulphur deficiency and yield response to sulphur fertilization across a wide variety of soil and climatic conditions in Ontario for corn, winter wheat and soybeans following their typical rotational crops in each of 3 years. The project also aims to develop a sulphur soil test for the province.

Methods:

On-Farm Trials:

The on-farm strip trials were a simple with and without sulphur trial that were replicated three times in a grower's field. The treatment recommendations for each crop are as follows:

- Treatments
 1. Winter Wheat:
 - a. Check - No S: 0 lbs S; additional 17.5 lbs/ac N to account for N in AMS)
 - b. With Sulphur: 20 lbs S (83 lbs of dry AMS)
 2. Corn:
 - a. Check - No S: 0 lbs S, additional 17.5 lbs/ac N to account for N in AMS)
 - b. With Sulphur: 20 lbs S (83 lbs of dry AMS)
 3. Soybean:
 - a. Check - No S: 0 lbs, additional 17.5 lbs/ac N to account for N in AMS)
 - i. 63 lbs of Calcium Ammonium Nitrate
 - b. With Sulphur: 20 lbs (83 lbs of dry AMS)
- 3 replications minimum: field length strips (minimum 200 m), randomized
- Timing of sulphur application:
 - Wheat: spring applied, with nitrogen
 - Corn: pre-plant or no later than traditional side-dress timing (V5)
 - Soybeans: before or after planting

The on-farm trials were located in Bornholm, Arkona, Sombra, Merlin, Winchester, Stayner, and Thorndale.

Small Plot Trials:

The small plot trials were set up in corn, soybean and wheat with the following treatments at the Elora Research Station:

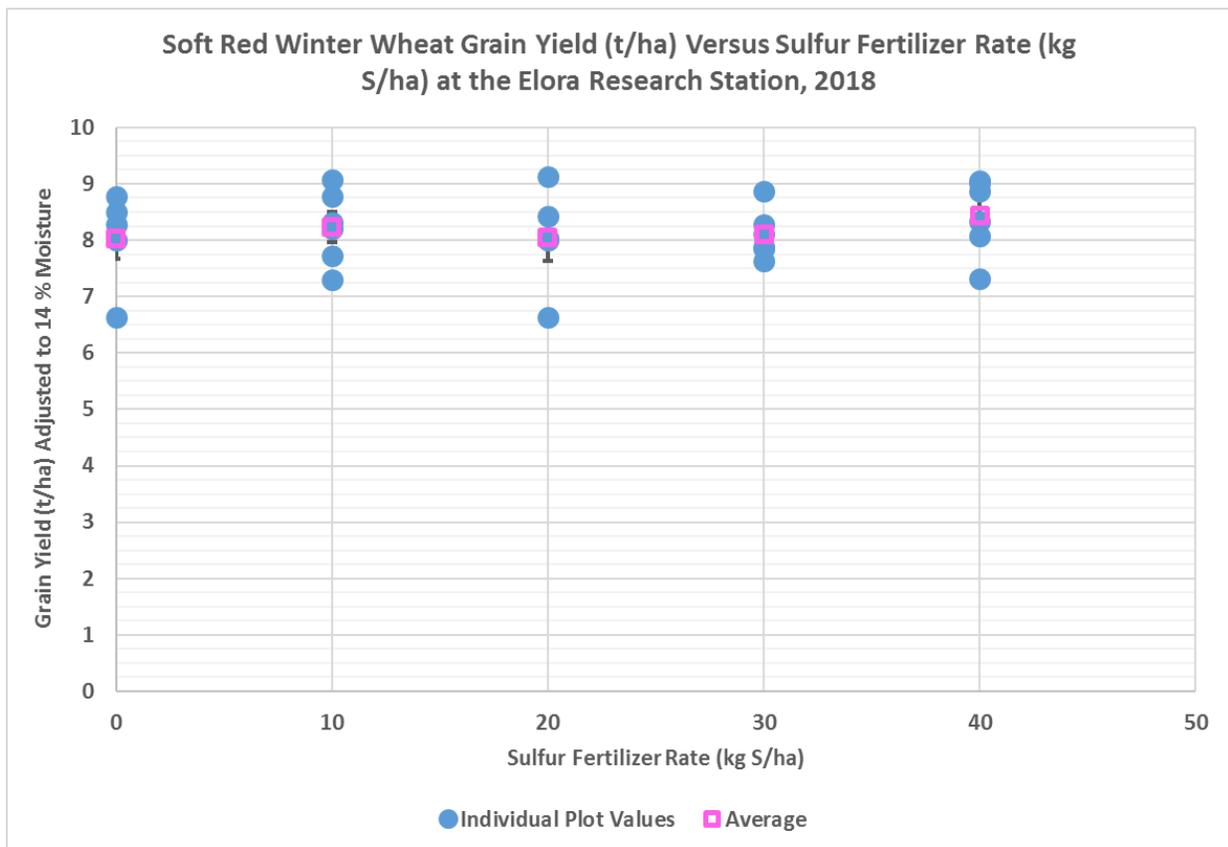
- 0 kg S/ha sulphate of potash
- 10 kg S/ha sulphate of potash
- 20 kg S/ha sulphate of potash
- 30 kg S/ha sulphate of potash
- 40 kg S/ha sulphate of potash

Results:
Winter Wheat:

Table 1: 2018 winter wheat yield response to sulphur at various locations across Ontario.

Site	Fertilizer Source	Sulfur Rate (lbs/ac)	Yield – Check (bu/ac)	Yield – Sulfur (bu/ac)	Difference (bu/ac)	Significant
Sombra	ATS	15	86.0	81.6	-4.4	No
Stayner	KMag	22	104.4	105.5	+1.1	No

Figure 1: Winter Yield Response to Sulphur Application at the Elora Research Station.



Corn:

Figure 2: Corn Yield Response to Sulphur Application at the Elora Research Station.

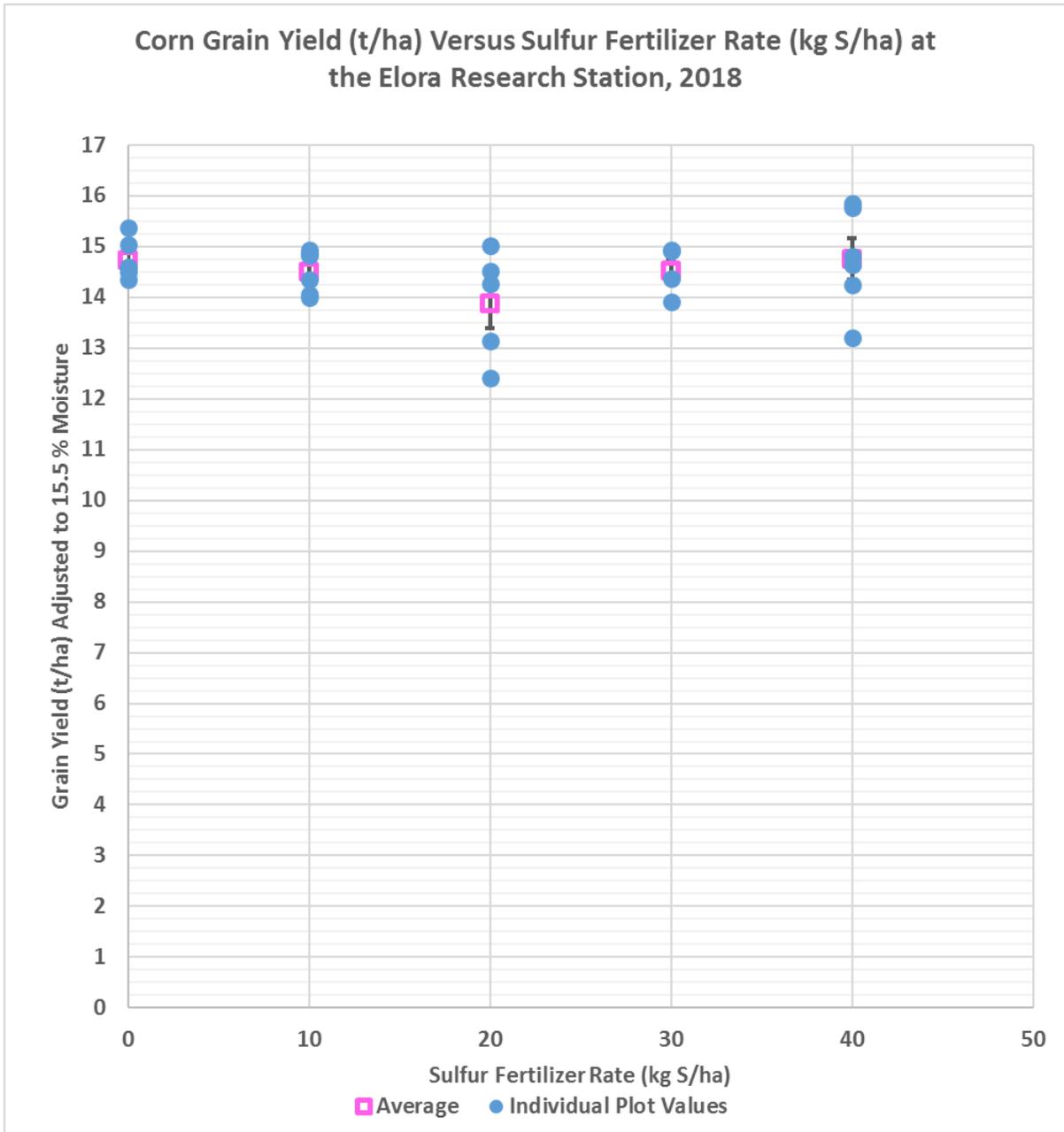
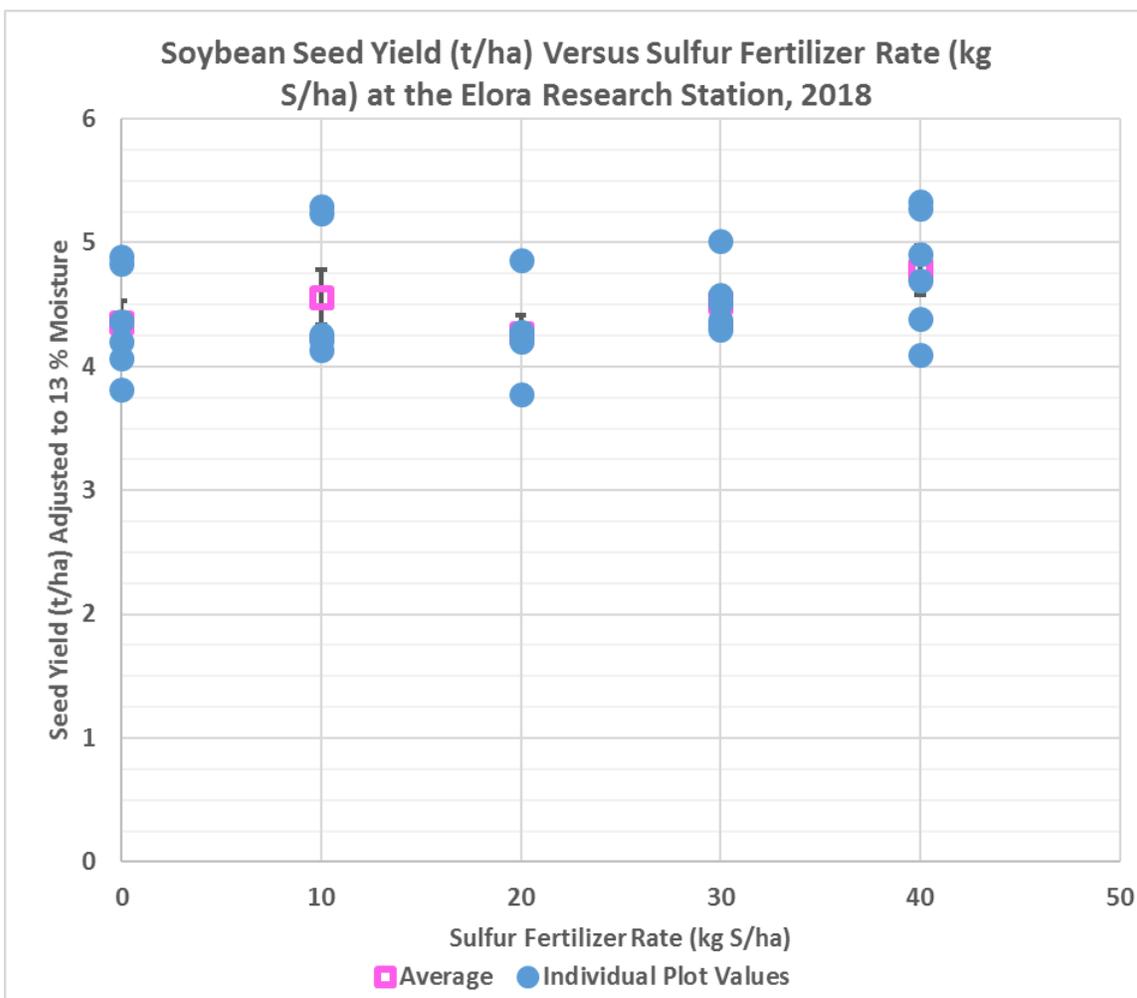


Table 3: 2018 Soybean Yield Response to Sulphur at Thorndale, Ontario.

Sulphur Rate (lbs S/ac) as ATS Preplant	0	10	20	30
Yield (bu/ac)	90.2	79.8	87.9	87.9

Figure 4: Soybean Yield Response to Sulphur Application at the Elora Research Station.



Summary:

1. There was no response seen in soybeans at Elora, Thorndale or Winchester. There was a response noted in Arkona, Bornholm (Titus), Elora (AMS), and Merlin but the response was not significant. There was a significant response seen in Bornholm (SP12PX3), but it is unknown if this was due to additional N or S.

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2. There was no response observed in corn.
3. There was also no response seen in winter wheat in Elora or Sombra although there was a non-significant response observed in Stayner .

This is the first year of this research project; therefore, single year data should be interpreted with caution. The project will be conducted for another two years so if you are interested in participating please contact Joanna Follings at joanna.follings@ontario.ca.

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