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The Effects of Sulfur Formulations on Pea and Lentil

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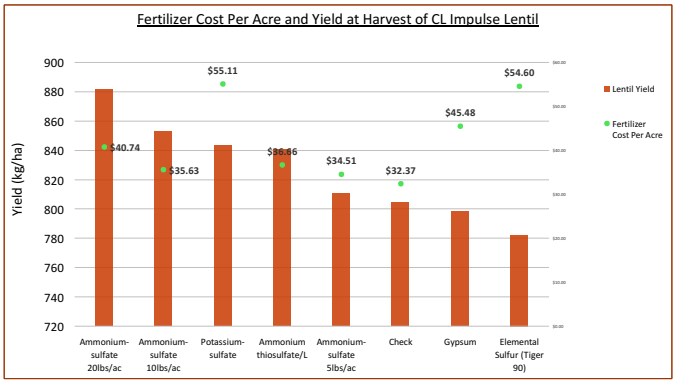
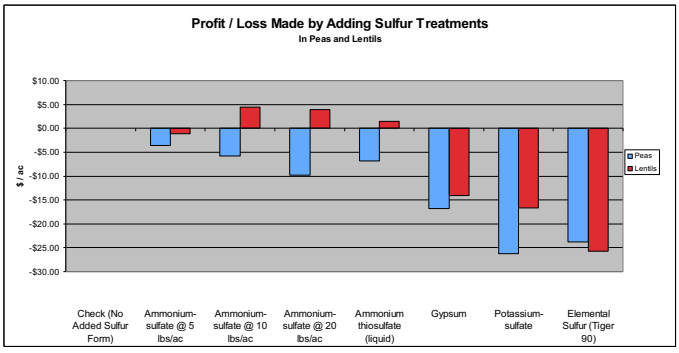
Soils in south western Saskatchewan have been identified as sulfur deficient; an important nutrient throughout crop growth. The purpose of this demonstration was to show farmers the effectiveness of the currenlty available sulfur-based fertilizers for pea and lentil crops and improve the implemention of an appropriate fertilizer management program to suit the needs for optimum yield, quality and budget. The demonstration consisted of 3 rates of ammonium-sulfate compared to 4 other sulfur formulations and a zero sulfur check.

Although 2017 weather conditions had a considerable effect on sulfur treatments, sulfate applied at 10-20lbs/ac and thiosulfate formulations that are readily available to plants dissolve quickly when side-banded, or seed placed and performed well in terms of yield. Previously, gypsum has performed well in wet conditions by preventing leaching, but did not here due to the dry conditions throughout this growing season. Elemental sulfur is not effective in the short term, but could work if applied well in advance to crop demand, as it is extremely sensitive to soil and environmental conditions with a slow conversion rate from sulfur to plant-available sulfate.



Peas were unresponsive to additional sulfur applications due to heat and extremely dry soil throughout the growing season. Balanced nitrogen application along with the sulfur fertilizer may have given too high of nitrogen concentration in the soil and interfered with nitrogen-fixation in the pea plant.

Very low seasonal precipitation and numerous hot, windy days combined with low commodity prices ($6.88/bu peas and $0.17/lbs lentils) painted a poor economic picture for this trial. Ammonium-sulfate applications at 10-20 lbs/ac showed the highest net profit per acre for lentils. The Peas did not appear to respond to the added sulfur treatments and overall yields were too poor to achieve positive economic returns.



Ammonium-sulfate at a rate of 20 lbs/ac resulted in the highest yield on the lentil crop and pea was unresponsive to additional sulfur. This suggests differences in ability of specific crop rooting systems to remove sulfur from the soil. These formulations may carry over and become accessible to future crops. Utilization of sulfur reserves from sulfate fertilizer sources applied in previous years could be an effective step toward fertilizer sustainability.

Acknowledgements

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