



Wheatland Conservation Area Inc.

P.O. Box 2015, Swift Current, Saskatchewan. S9H 4M7

Ph. # (306) 773-4775

Improving Phosphorus Management Techniques in Lentils

January 16, 2018

The objective of this demonstration is to improve phosphorus (P) management techniques in a rotation involving lentils by applying some or all of the required nutrient in the year preceding the crop to maximize production. P management in pulses is something that most growers struggle with and we see the impacts especially in the durum – lentil areas in southern Saskatchewan. This two-year study demonstrates how lentils respond to various rates of P applied at seeding verses similar rates of P applied in the preceding cereal year to observe if lentils can better utilize "old" P compared to seed applied. Optimizing the use of a P management program that considers the overall nutrients removed in the harvested crop can be useful to determine what is happening to the soil P reserves over the longer term in a rotation and prevent the draw-down of these reserves below a critical level.

Although 2017 yields in southwestern Saskatchewan were impacted by the extended period of hot and dry conditions they remained within the 10-year average. In year one of this trial, lentils responded well to increasing P rates with significantly higher yield resulting from the highest rate (120 lbs/ac) and significantly lower yield resulting from the zero-phosphorous check. For durum, the 90-120 lbs/ac rate of phosphorus resulted in the highest yields, just under the 2017 provincial average. Due to the less than ideal weather conditions, fertilizer applied to meet crop requirements likely supplied more P than an average crop would need, therefore application rates may have exceeded that removed with the crop when harvested. P accumulates in the soil over time creating a positive balance that will be removed with the crop in the following year.

The short term economic benefit for 2017 was minimal when looking at return on fertilizer investment. However, it is hypothesized that there will be additional available nutrient carried over to the 2018 preceding crop that should translate into positive economic returns in 2018 and compensate for the flat return on the 2017 investment.

In year two of this study, we will determine how much P will be carried over and made available to the 2018 crop. It is hypothesized that, although we saw a positive response in lentils, there will be additional available nutrients carried over to the 2018 durum crop. Similarly, to the available P from the durum crop to the 2018 lentil crop. The increase in P uptake by the plant does not necessarily mean increased yield in that year, or reduced fertilizer applications in the future, but suggests producers are able to adjust the way they think about accessing the existing P from the soil, as well as prevent the soil-P reserve from falling below critical level.

Acknowledgments We thank the Saskatchewan Pulse Crop Development Board for all our SPG projects and Sherrilyn Phelps (SPG) for her help.

