

Enhanced Efficiency Fertilizer

Nitrogen (N) is one of the most important nutrients for canola/wheat production in Saskatchewan. Producers have been challenged with maximizing nitrogen use efficiency while increasing yield and quality due to high fertilizer prices and government/societal pressure to minimize greenhouse gas emissions. As part of a nitrogen management plan producers have included the use of enhanced efficiency nitrogen fertilizer (EENF) products including urease inhibitors, nitrification inhibitors and controlled release nitrogen or combination products. These products have the potential to reduce nutrient loss and increase N fertilizer efficiency. Producers are interested in using an EENF to sustain or increase yield and quality on their farm but are unsure of the best practices for their growing conditions and operation and whether it is economical.

Objective:

The objective of this field scale trial is to examine different ratios or proportions of treated and untreated N fertilizer using an EENF product of choice, compared to 100% untreated N fertilizer, on canola or wheat establishment, yield, and quality under various management, soil, and weather conditions in Saskatchewan.

Project Overview:

Cooperators will implement a replicated field-scale trial in a canola or wheat field of their choice, using their own equipment and otherwise normal practices. An agronomist or trial manager will provide support throughout the season, including setting up the trial and collecting data. Statistical analysis of the data will be conducted following harvest, and a report with your results including economic analysis will be provided. Data from all on-farm trials will also be pooled to examine the results across different management, soil, and weather conditions. Results from all trials will be publicly available, however individual farm data will be kept anonymous, apart from the location of the trial (nearest town or R.M.). Collaborators will be invited to join a network of producers who are conducting on-farm research through field tours and a year-end results meeting and banquet. This program is only available to members in good standing.

Study Design:

Three treatments will be compared:

1. 100% untreated N fertilizer
2. 25% treated with EENF product + 75% untreated N fertilizer
3. 50% treated + 50% untreated

Producers will choose the EENF product they are going to use based on their N source, typical growing conditions, and management practices. Producers will be responsible for sourcing and cost of the EENF product. The applied N fertilizer rate will be determined by the producer and their agronomist using spring soil tests, yield goals and typical management practices. The three treatments will be replicated four times, for a total of 12 strips, and randomly arranged within blocks in the field. Apart from fertility, all strips must be managed the same agronomically including seeding rate, seeding date, variety, seeding depth and pesticide application. An example randomized field plan is shown below. An alternate layout may be used but will be discussed and decided on a case-by-case basis.



	Block 1			Block 2			Block 3			Block 4		
	1	2	3	2	1	3	1	3	2	3	1	2
Treatment	100% untreated N	25% treated: 75% untreated	50% treated: 50% untreated	25% treated: 75% untreated	100% untreated N	50% treated: 50% untreated	100% untreated N	50% treated: 50% untreated	25% treated: 75% untreated	50% treated: 50% untreated	100% untreated N	25% treated: 75% untreated

Data Collection:

Agronomists or trial managers will help the cooperator seed the trial according to the protocol and will complete the following in-season data collection.

- Spring soil sample
- Plant density at 2-4 leaf stage
- Yield – weighed separately for each treatment strip using weigh wagon or grain cart scale
- Harvest samples for each treatment strip
- Regularly scouting for treatment differences in flowering, maturity, disease pressure, and plant health, and general scouting observations
- Management data
- Weather data

▶ For more information or to participate in the program contact:

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