TOP NOTCH FARMING RESEARCH TRIALS
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Split N or Top-Up N

Nitrogen (N) plays a critical role in canola/wheat production in Saskatchewan. Producers are tasked with increasing yield, quality and economic return while using applied nutrients efficiently, considering factors such as cost and environmental impact. Two related management practices have emerged to potentially increase efficiency and reduce the economic risk of N fertilizer application, ***split N application and top-dressing N.*** *Split application is primarily a risk management approach, where only part of the total N required based on the yield goal, is applied at or before seeding, and the remainder applied in-crop if conditions are conducive to achieving the yield goal. Top-dressing entails applying 100% of the recommended N at seeding and supplementing with additional N in-season if growing conditions are conducive to further improving the yield or quality of the crop. These methods could potentially help crops utilize N more effectively, boost productivity, reduce costs, and minimize environmental impact from N losses.*

Objective:

The objective of this field scale trial is to determine if there is an agronomic and economic advantage to using a split N application or top-dressing N compared to applying all nitrogen at seeding on canola/wheat yield, quality and economic return under various soil and weather conditions in Saskatchewan.

Project Overview:

Cooperators will implement a replicated field-scale trial in a canola/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 result meeting and banquet. This program is only available to members in good standing.

Study Design:

There are two different options for this protocol:

A. Split N option, 2 treatments:
   1. 70% N at seeding + 30% in-crop
   2. 100% N at seeding

B. Split N + Top dress option, 3 treatments:
   1. 70% at seeding + 30% in-crop
   2. 100% N at seeding
   3. 100% N at seeding + additional in-crop

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The full applied N rate (100%) and additional top-dress rate will be determined by the producer and their agronomist using spring soil tests, yield goals and typical management practices. Different N fertilizer sources can be used for seeding and in-crop applications. N fertilizer cannot be applied using variable rate under this study design at this time. All other applied nutrients must be the same for each treatment but can be applied at a variable rate across the trial area. Treatments will be replicated four times, for a total of 8 strips with Option A and 12 strips for Option B. Treatments will be randomly arranged within blocks in the field. The location of the treatment strips will be marked with GPS and by placing tall flags in the field at time of seeding. 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 also be used but will be discussed and decided on a case-by-case basis.

Option A (two treatments):

	Block 1		Block 2		Block 3		Block 4	
	1	2	2	1	1	2	1	2
Treatment	70% seeding + 30% in-crop	100% seeding	100% seeding	70% seeding + 30% in-crop	70% seeding + 30% in-crop	100% seeding	70% seeding + 30% in-crop	100% seeding

Option B (three treatments):

	Block 1			Block 2			Block 3			Block 4		
	1	2	3	2	1	3	1	3	2	3	1	2
Treatment	70% seeding + 30% in-crop	100% seeding	100% seeding + additional in-crop	100% seeding	70% seeding + 30% in-crop	100% seeding + additional in-crop	70% seeding + 30% in-crop	100% seeding + additional in-crop	100% seeding	100% seeding + additional in-crop	70% seeding + 30% in-crop	100% seeding

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
- Management data
- Weather data

For more information or to participate in the program contact:

Kaeley Kindrachuk
Agronomy Extension Specialist, SaskCanola

Office: 1-306-975-0273 **Cell:** 1-306-260-2531
kkindrachuk@saskcanola.com

Carmen Prang
Agronomy Extension Specialist, SaskWheat

Office: 1-306-653-7966 **Cell:** 1-306-550-3595
carmen.prang@saskwheat.ca

Christiane Catellier
Research Agronomist, IHARF

Office: 1-306-695-4200 **Cell:** 1-306-660-7322
ccatellier@iharf.ca

Kayla Slind
Lead Research Agronomist, WARC

Office: 1-306-247-2001 **Cell:** 1-306-843-7984
Kayla.slind@warc.ca

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