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

Nitrogen (N) plays a critical role in canola 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 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 field of their choice, using their own equipment and otherwise normal practices. An agronomist/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.

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Treatments:

1. 70% at seeding + 30% in-crop
2. 100% N at seeding
3. 100% N at seeding + additional in-crop

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. Layouts will be provided.

Rep	**1**			**2**			**3**			**4**		
Plot	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Trt	**1**	**2**	**3**	**2**	**1**	**3**	**1**	**3**	**2**	**3**	**1**	**2**
Treatment Description	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 ensure that the cooperator seeds the trial according to the protocol and will complete the following in-season data collection. A data collection spreadsheet will be provided and must be used to submit all data.

1. Spring soil samples will be collected at each trial site prior to seeding and fertilizer application to assess residual soil nutrient levels (regardless of whether soil sampling was previously completed). Trial site managers will collect a minimum of 12 soil cores throughout the trial area, separated by 0-6" and 6-24" depths. A single composite sample for each depth will be submitted directly to AgVise Laboratories for Test F2. Shipping and Purolator information will be provided.
2. Plant density will be assessed at the 2-4 leaf stage for canola. A minimum of 8 counts will be conducted on each treatment strip.
3. The trial should be visited regularly to collect notes, observations, and/or photos describing visual treatment differences in flowering, maturity, disease pressure and plant health. NDVI imagery at key growth stage(s) would also be an asset. Photos and updates should be provided to the protocol lead throughout the season.
4. Yield will be determined separately for each treatment strip using a weigh wagon or calibrated grain cart scale. Cooperators will communicate with trial managers regarding the harvest date.
5. Grain samples (approximately 1 kg, bags will be provided) will be collected separately for each treatment strip for quality analysis (12 samples). Shipping information will be provided.
6. The following management and agronomic data will be recorded precisely:
   a. Fertilizer products, rates, placement, timing
   b. Equipment type, openers, row spacing
   c. Canola hybrid and TSW
   d. Crop protection: seed treatment, pesticide applications
   e. Previous crop and residue accumulation
   f. General notes on weed, insect, disease infestations, and notable weather events
7. Daily precipitation will be recorded using a weather station positioned at or within 0.5 miles of the trial site. If a weather station is not available, a rain gauge can be provided. Daily average temperature will be recorded from a weather station within 25 km of the trial site or the nearest Environment Canada station. Precipitation and temperature should be recorded from May 1 to August 31, regardless of the seeding and harvest dates.

For more information or to participate in the program contact:

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