Project D:

Manitoba Crop Alliance

CORN – REDUCED NITROGEN RATE

Replicated Strip Trial Protocol

Objective:
The purpose of this project is to quantify the agronomic impacts of a reduced Nitrogen rate on grain corn for yield and grain quality - 4 sites.

Brief Summary:

- All the fertilizer treatments will be applied at the time of planting as in the example to the right.
- The reduced rate of Nitrogen will be about 80% of the full rate (a minimum reduction of at least 30 lbs N is recommended).
- Plant the same grain corn hybrid throughout the entire trial. Use the same planting rate for all treatments.
- Flag where each treatment starts and stops. If available, use GPS as well.
- Envita will be foliar applied at the 2-4 leaf stage (V2-V8). Follow labelled instructions and rates.
- The width of a strip must be at least as wide as a full combine header, preferably wider to ensure at least one "pure" combine pass per each treatment. The minimum harvested length should be 300 meters.
- All treatments should be harvested on the same day with each treatment being weighed off using a calibrated weigh wagon.

Rep 1	80% N + Envita
	80% Nitrogen
	100% Nitrogen
Rep 2	100% Nitrogen
	80% N + Envita
	80% Nitrogen
Rep 3	100% Nitrogen
	80% N + Envita
	80% Nitrogen
Rep 4	80% Nitrogen
	80% N + Envita
	100% Nitrogen

Grower Requirements:

- Supply information (if unknown prior to planting) on location, planting date, hybrid, fertility, cropping history, etc. by June 30.
- Areas containing waterways and headlands should be avoided. All other factors in the trial area must be managed the same (planting date, hybrid, fertility, etc.).
- If possible, accurately record where all the treatments were applied using GPS mapping equipment.
- Allow Manitoba Crop Alliance to use the collected data for research, educational and informational purposes.
- ***The Grower Must be a member in good standing with the MCA.***

MCA and Partners Agree to:

- Attempt to collect aerial images from each field and provide them to the grower at no cost.
- Set up trial with growers in field, soil sample, do plant counts after planting but before harvest, weigh individual strips with weigh wagon, take a harvest sample.
- Provide a report analyzing the statistical and economical treatment differences.
- Keep data in a confidential manner that cannot be linked back to the individual producer by other parties.

Benefits to Grower:

- Access to the latest research which can be adapted to your farm.
- Creating a crop production database for your local area.
- Higher quality of data – multiple evaluations across numerous farms under different management styles, soil types and cropping history.

If you are interested in doing a trial or have questions, please contact:

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Important Notes:

- ✓ A biofertility product (Envita) can be used to fulfill the mid to late season nitrogen fertility gap in a variety of crop types by nitrogen fixation. Envita claims an average increase in corn yields when applied in conjunction of a growers 100% nitrogen fertility rate, or the reduction of a grower's nitrogen fertility rate of up to 27% while maintaining average corn yields. These results occurred 73-80% of the time.
- ✓ Envita is a product distributed by Syngenta in Canada. Check with Doug Fotheringham
- ✓ Utrisha N is marketed by Corteva (Nicole Philp).

Data to be Collected by Contractor or MCA (2024 Trials):

- ✓ Plant Stand – plants/acre – after emergence but prior to harvesting
- ✓ Lodging – 1=no lodging; 5=flat – just prior to harvest or before swathing
- ✓ Yield – bushels/acre – adjusted to 15.5% seed moisture
- ✓ Seed Moisture - % taken at time of harvest
- ✓ Bushel Weight – lbs/bus – taken at time of harvest
- ✓ Harvest Sample – 1 representative sample per strip for quality analysis
- ✓ General Observations – eg. Differences in height, lodging, silking, maturity

Notes from John Heard (added February 22/22):

- Need a good soil sampling program
- Need a good weather record for the season
- Need a good harvest grain sampling program
- Possibly get John's comments on the trial(s) results in the fall for the results book

How to Estimate
Plant Population Per Acre

An accurate estimate of plant population per acre can be obtained by counting the number of stalks in a length of row equal to 1/1000 of an acre. Make at least three counts in separate parts of the cornfield, figure the average of these samples, then multiply this number times one thousand.

Row Width	*Row Length Equal to 1/1000 Acre*
20"	26' 1"
24"	21' 10"
28"	18' 8"
30"	17' 5"
32"	16' 4"
36"	14' 6"
38"	13' 9"
40"	13' 1"