Government of Alberta

Agriculture and Rural Development
Agriculture Research Division
Food and Bio-Industrial Crops Branch

ESN (polymer-coated urea) on Potatoes

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Purpose

- The purpose of this research project was to determine whether polymer-coated urea (ESN – environmentally smart nitrogen) can be used in southern Alberta potato production to improve nitrogen use efficiency while maintaining yield and quality.

Some potential benefits include:

- Maintaining or reducing costs of production by increasing N-use efficiency and reducing one or more in-season N applications
- Reducing N losses due to de-nitrification and leaching
- Reducing potential for nitrate contamination of surface and ground water supplies
- Providing a fertility-based approach to capping specific gravity in the optimal range for processing

- For ESN to be a useful tool for potato N management in Alberta, local information for producers is essential. We needed to determine the best approach to optimize potato yield and quality without significantly increasing costs of production.

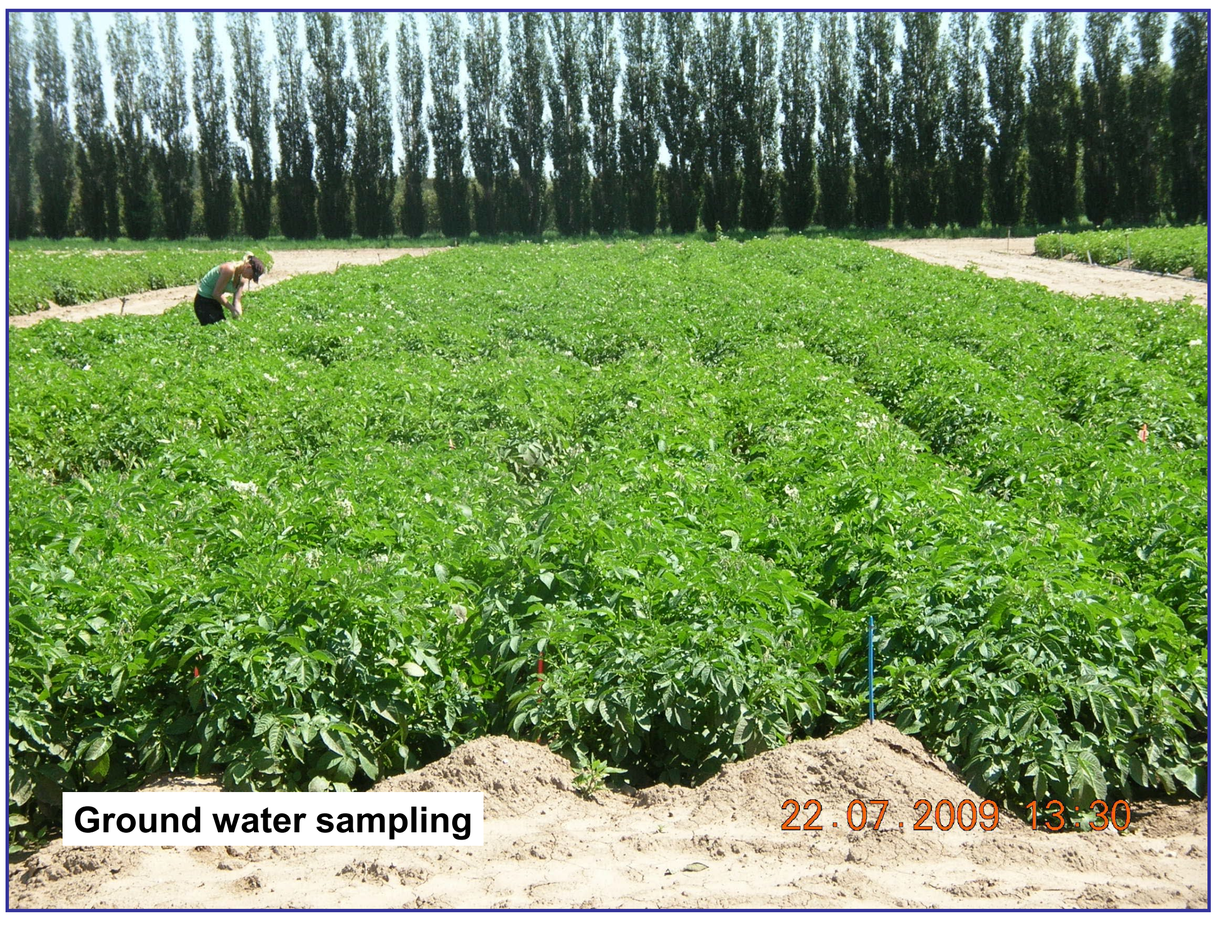
Treatments

2009 Example

Trt #	Soil N	Urea (Pre-plant)	ESN (Pre-plant)	Urea (Top-dressed)	ESN (Top-dressed)	Total N	% of STD
1	75	0	0	0	0	75	37%
2	75	125	0	0	0	200	100%
3	75	75	0	0	0	150	75%
4	75	25	0	0	0	100	50%
5	75	0	125	0	0	200	100%
6	75	0	75	0	0	150	75%
7	75	0	25	0	0	100	50%
8	75	0	0	0	75	150	75%
9	75	38	0	0	37	150	75%
10	75	63	0	62	0	200	100%

Progress

- 2009 was the final year of this three-year trial. The trial was conducted in plots at CDCS (Brooks) and at the AAFC Vauxhall Sub-Station. A total of 6 site years of data were generated and should provide sufficient information to develop recommendations for incorporating ESN as part of a nitrogen management strategy for Russet Burbank potato.
- In 2007, the best economic return at CDCS was observed in the split urea treatment (GSP), while in Vauxhall, the best economic return was observed with a split application (urea pre-plant and ESN at emergence) at the 75% rate.
- In 2008, the best economic return at CDCS was observed with 75% urea pre-plant, while in Vauxhall, the best economic return was observed with an application of ESN (75%) at emergence.
- Differences between sites were related to environmental conditions and irrigation management, while differences between years were related to environmental conditions and the price of fertilizer products.
- ESN can provide a similar or better economic return to a split urea application.
- Statistical and economic analyses of the 2009 results are planned. A final report will be available by March.



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ESN SmartNitrogen

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