



## Positioning Canada's Potato Industry for Improved Sustainable Production

### LEAD RESEARCHER

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This research activity is studying ways to improve nitrogen use efficiency in Canadian processing and table potato production. The research team is working to determine the environmental and agronomic performance indicators for fresh and processing potatoes in Canada. Emissions efficiency and nitrogen management practices on potato farms across the country are being tested. Trials are taking place in Alberta, Manitoba, New Brunswick and Prince Edward Island.

The research team found that by growing the processing potato variety Dakota Russets, they were able to reduce the amount of nitrogen lost to atmosphere, while not impacting yield. Yield remained the same when 20 per cent less nitrogen was applied.

For fresh potatoes, a new potato variety Musica has been outstanding for yield. While it does take more nitrogen than Dark Red Norlands, the yield increase is much greater than the extra nitrogen use. It's a more nitrogen efficient fresh market potato cultivar.

For both fresh and processing trials, the research team found the nitrification inhibitor eNtrench to be effective most years in reducing nitrous oxide emissions. The split nitrogen application depends on the timing of rains. If there isn't a lot of rain after planting and emergence, then the nitrous oxide emissions will increase. Previous research found that the split application produces less nitrous oxide emissions.

Overall, the research team has been able to show that through the use of 4R management, nitrous oxide emissions can be reduced by up to 46 per cent in a single growing season. The researchers also found they can produce three times the amount of potatoes per kilogram of nitrous oxide when combining new potato cultivars and 4R management.

### KEY TAKEAWAYS:

- The amount of nitrogen lost to atmosphere was reduced in Dakota Russets. Yield remained the same when 20 per cent less nitrogen was applied.
- While the fresh potato variety Musica does take more nitrogen than Dark Red Norlands, the yield increase is much greater than the extra nitrogen use making it more nitrogen efficient.
- The nitrification inhibitor eNtrench is effective most years to reduce nitrous oxide emissions.
- The split nitrogen application depends on the timing of rains. If there isn't a lot of rain after planting and emergence, then the nitrous oxide emissions will increase.
- Through the use of 4R management, nitrous oxide emissions can be reduced by up to 46 per cent in a single growing season.
- Three times the amount of potatoes per kilogram of nitrous oxide can be produced when combining new potato cultivars and 4R management.



Nitrogen being sampled from a field trial near Portage la Prairie, MB on July 10, 2026. Photo: Toban Dyck

