



BMP FACT SHEET

Nitrogen Management

RDAR's dedicated OFCAF team works with producers to increase the adoption of Beneficial Management Practices (BMPs) across farms in Alberta.

About Nitrogen Management

Nitrogen (N) management is a BMP that focuses on applying nutrients using the **Right Source, Right Rate, Right Time, and Right Place** (the **4R Nutrient Stewardship** approach).

The goal is to maximize crop uptake of nitrogen, which in turn:

- **Increases Yields:** Ensures your crops get the exact amount of nitrogen they need, precisely when they need it.
- **Reduces GHG Emissions:** Minimizes the loss of excess nitrogen to the atmosphere in the form of nitrous oxide (N_2O), a potent greenhouse gas.
- **Boosts Profitability:** Optimizes fertilizer purchases by avoiding over-application, a crucial economic advantage given rising input costs.



Why Nitrogen Management?

Increased Farm Profitability

- **Lower Input Costs:** By precisely matching nitrogen application to your crop's needs, you stop wasting fertilizer on areas where it won't produce a return, directly reducing your largest input expense.
- **Maximized Yield Potential:** Healthier soil and more efficient nutrient delivery mean better, more consistent yields, especially during variable growing seasons.
- **RDAR Funding Support:** With the OFCAF program, you can receive up to 85% reimbursement on eligible expenditures, lowering the financial barrier to adopting expensive precision technologies like VRT equipment or enhanced fertilizers.

Enhanced Environmental Stewardship

- **Reduced GHG Emissions:** Cutting down on N_2O emissions positions your farm as a leader in climate-smart agriculture.
- **Improved Soil Health:** Better nutrient cycling and the potential to integrate legumes and cover crops (also OFCAF eligible!) contribute to healthier, more resilient soils.
- **Protected Water Quality:** Reducing nitrogen runoff and leaching protects groundwater and surface water sources, maintaining the long-term sustainability of your land.



RDAR's OFCAF program is a fantastic opportunity to make practical, measurable improvements on your farm that will yield both financial and environmental returns for years to come.

Implementing 4R Nitrogen

Adopting improved nitrogen management is a farm-specific process that starts with good planning. Here are some considerations for applying the 4Rs:

1. Right Rate and Right Place

- Start with the Soil Test: Soil sampling to a minimum of 12 inches (30 cm) depth is the non-negotiable first step. It provides the foundation for determining the exact nutrient requirements for your planned crop.
- Use Variable Rate Technology (VRT): Applying fertilizer based on detailed soil zone maps ensures nutrients are placed only where they're needed, which maximizes return on investment.
- Banding vs. Broadcasting: Banding (placing fertilizer below the soil surface) is consistently more effective than broadcasting, especially in dry or no-till conditions, as it reduces volatilization (gassing off) and immobilization losses.

2. Right Time

- Match Timing to Crop Uptake: The most effective time is just before or during the crop's periods of peak nitrogen demand.
- Consider Split Applications: Applying a portion of nitrogen at seeding and the remainder in-crop (side-dressing or broadcasting with an inhibitor) can significantly improve nitrogen use efficiency by ensuring the nutrient is available when the plant is rapidly growing.
- Manage Fall Application Risk: If applying nitrogen in the fall, it must be banded and applied after the soil temperature is cool (below 10 degrees C) to minimize the risk of denitrification and leaching over the winter.

3. Right Source

- Inhibitors and Controlled-Release: Use nitrification and urease inhibitors to stabilize urea and UAN fertilizers, slowing the conversion of nitrogen to forms that are easily lost. ESN (Environmentally Smart Nitrogen) provides controlled-release nitrogen throughout the growing season.
- Alternative Sources: Consider incorporating legumes (like peas or faba beans) into your rotation or utilizing manure. These are effective, natural ways to cycle and fix nitrogen in your soil, reducing reliance on synthetic fertilizer.



How OFCAF Can Help

RDAR's OFCAF program provides cost-share funding to help you adopt these innovative practices. Eligible activities include:

- **Soil Sampling and Mapping:** To create zone-based nutrient prescriptions (up to a \$20,000 lifetime maximum).
- **Application Equipment/Custom Work:** Funding for equipment rental or custom rates for precision fertilizer application (e.g., banding instead of broadcasting, or split in-crop application).
- **Enhanced Efficiency Fertilizers:** Cost difference for using products like nitrogen inhibitors (nitrification and urease) or Environmentally Smart Nitrogen (ESN).
- **Agronomic Services:** Getting expert advice from a Professional Agrologist (P.Ag.) or Certified Crop Advisor (CCA) to develop a custom BMP Action Plan for your farm.

Resources & Support

Information on RDAR's OFCAF program can be found here:
<https://rdar.ca/funding-opportunities/ofcaf>

A comprehensive set of RDAR OFCAF application resources are also available:
<https://rdar.ca/funding-opportunities/resources>

Direct support is also available by email: ofcaf.bmp@rdar.ca

Or, by telephone: 1-877-503-5955

