GROWING STRONGER

ADVOCACY | SAFETY & SECURITY | NUTRIENT STEWARDSHIP

FERTILIZER CANADA

FITTING THE 4RS INTO NUTRIENT CYCLE STEWARDSHIP

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The farm nutrient cycle is now a central focus of sustainable development discussions. It plays crucial roles in global issues including food security, climate change, biodiversity, and water quality. Thus it is important to understand where 4R Nutrient Stewardship fits into the stewardship of the cycle.

The flow of nutrients through a farm includes inputs from the atmosphere, internal turnover, and outputs in the form of crop removals and losses with soil erosion, in drainage water, and back to the atmosphere. The 4Rs address an important part of that cycle: the application of nutrients to the soil. Agricultural service providers have a large but not total influence on producer decisions regarding the right source, right rate, right time and right place for nutrient application. The 4R concept addresses everything included in those decisions, but implementation requires a context of total system stewardship touching on other important controls of nutrient flows into, within, and from the farm.

It's no surprise that the 4R concept has been widely embraced by agricultural service providers. It is the most appropriate place to start in any effort to reduce nutrient loss. While the 4Rs on their own may not be enough, why put effort into controlling and trapping excess nutrients coming off the edge of the field, before doing what can be done to avoid loss at the point of application? From a grower's perspective, it's the most profitable way to reduce nutrient loss.

The 4Rs address the full decision cycle for choices of source, rate, time and place. Any technology relating these choices to the full farm nutrient cycle can be considered part of 4R Nutrient Stewardship. Enhanced efficiency fertilizers, soil testing, and variable rate application can't be considered technologies separate from the 4Rs. They are included, along with a list of traditional practices like plant analysis and scouting for symptoms, and precision tools like GPS, GIS, yield monitors, sensors, and weather-based computer models.

Nevertheless, the agricultural service provider's role in the stewardship of nutrient cycling need not be limited to the 4Rs. Crop, soil and pest management practices interact strongly with 4R choices. Key performance indicators of nutrient stewardship—crop productivity, soil health, and nutrient use efficiency—can be influenced as much by choices of crop genetics, pest control, and conservation tillage as they are by choices of specific 4R combinations. Cover crops and drainage systems also influence the amounts and forms of nutrients lost. Many retailers already provide service relating to these choices.

In many cases, reducing nutrient losses to societally acceptable levels will require going beyond agronomic practices. 'Control and trap' practices beyond the edge of field may be necessary because, face it, to attain the productivity levels demanded for today and tomorrow, crops need nourishment beyond natural levels. Over the past 20 years, service providers have increasingly engaged technologies supporting 4R and beyond. Many already provide seed, pest control products, and integrated crop and pest management advice. And others are considering ways to go further. Building a business providing services addressed at nutrient losses beyond the edge of the field is challenging, but efforts are being made. Possibilities for making it profitable include environmental credit trading, food industry supply chain sustainability initiatives, and other collaborative actions.

Society increasingly expects agriculture and agri-business to improve its stewardship of the nutrient cycle. Starting with the 4Rs enables agricultural service providers to embrace every opportunity to engage this challenge.

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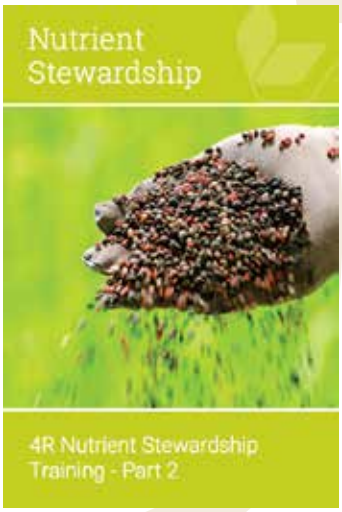
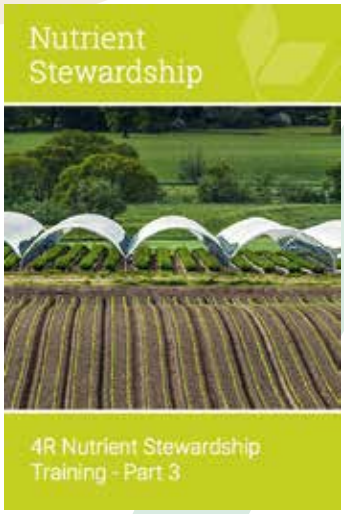
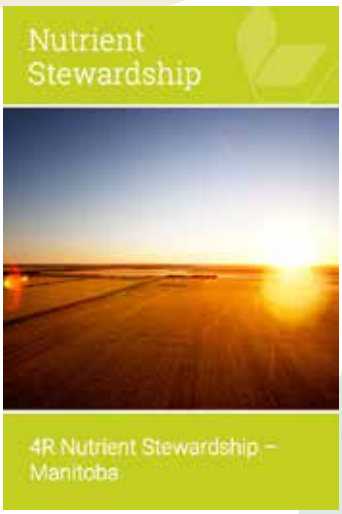
eLearning: Nutrient Stewardship

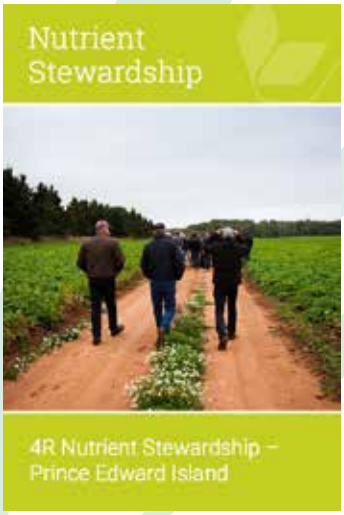
Adopt sustainable on-farm best management practices.

4R Nutrient Stewardship and the Nitrous Oxide Emissions Reduction Protocol (NERP) help to increase production and profitability on the farm while enhancing environmental protection and improving sustainability. Fertilizer Canada has developed nutrient stewardship eLearning courses to help farmers, agri-retailers, crop advisors and industry professionals adopt fertilizer best management practices. To help ensure your success, Fertilizer Canada's eLearning courses are offered for free online, are easily accessible and provide reliable, versatile information.









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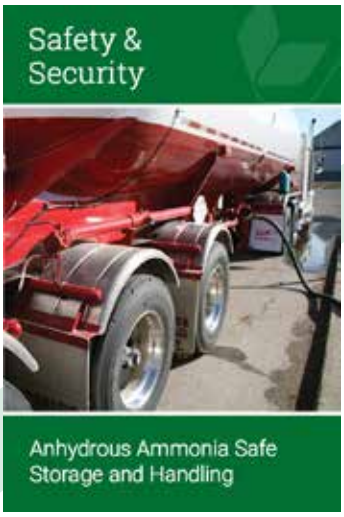
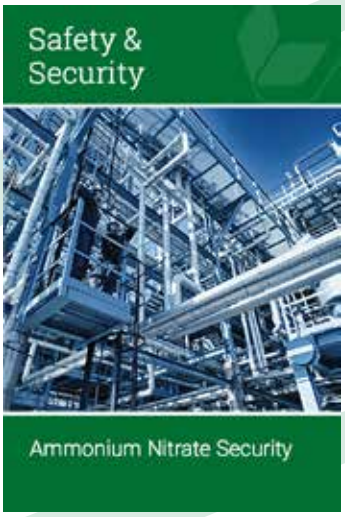
eLearning: Safety & Security

Advance safe and secure fertilizer storage, and handling.



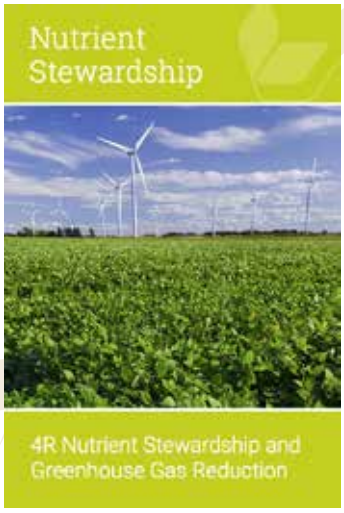


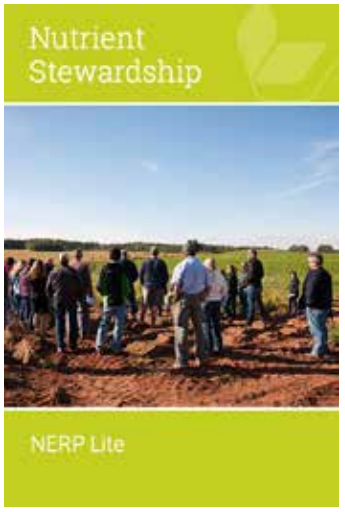
Fertilizer Canada promotes the safe and secure manufacturing, handling, storage, transportation, and application of commercial fertilizers. The Canadian fertilizer industry is widely viewed as a world leader in fertilizer safety,with industry-leading, world-class Codes of Practice.

Fertilizer Canada's eLearning courses provide the necessary tools to maintain critical standards and procedures knowledge to ensure safety and security across the industry. Fertilizer Canada's eLearning courses are offered at no cost online, providing industry professionals reliable, versatile information.

eLearning: Reducing Greenhouse Gas

Improve environmentally responsible use of fertilizer.





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Canadian Agri-Retailers Take Note:

Agricultural Ammonium Nitrate Code of Practice Now in Full Force.

Ensuring fertilizer safety requires standardized Codes of Practice and a coordinated effort among all industry stakeholders. The Canadian fertilizer industry champions industry-led, world-class Codes of Practice to manage the risks of fertilizer products throughout their life-cycle. Ammonium nitrate is a highly effective fertilizer that helps farmers feed our growing population and replenish nutrients in the soil. As a fertilizer, Ammonium Nitrate is a valuable fertilizer that helps produce healthy food for Canadians, but it must be handled responsibly.

The Agricultural Ammonium Nitrate Code of Practice provides best practices for safe and secure ammonium nitrate storage and handling. It was developed in close partnership with industry officials, and parallels existing federal regulation. The Code of Practice can aid manufacturers, distributors, and agri-retailers which sell, distribute, or store ammonium nitrate in providing their employees with the training and information for increased safety and security and assist in complying with federal regulations.

The Agricultural Ammonium Nitrate Code of Practice is a part of Fertilizer Canada's Safety and Security program designed to demonstrate the importance of product stewardship that the members of Fertilizer Canada consider a pillar of our industry.

Please note that the Agricultural Ammonium Nitrate Code of Practice is in full force, effective December 31, 2015. If you have questions please email codes@fertilizercanada.ca.

Agri-Retailer Checklist:

- ☑ Understand the employer responsibilities
- ☑ Know your customers
- ☑ Keep accurate records
- ☑ Keep your customers informed

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