



Presentation to Farm & Food Care
Guelph, Ontario, Canada
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4R Nutrient Stewardship and Agricultural Sustainability

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 Agrium Inc.	 Arab Potash Company	 Belarusian Potash Company	 CF Industries Holdings, Inc.	<p>Formed in 2007 from the Potash & Phosphate Institute, the International Plant Nutrition Institute is supported by leading fertilizer manufacturers.</p> <p>Its mission is to promote scientific information on responsible management of plant nutrition.</p>
 Compass Minerals Specialty Fertilizers	 Incitec Pivot	 International Raw Materials LTD.	 Intrepid Potash, Inc.	
 K+S KALI GmbH	 The Mosaic Company	 OCP S.A.	 PotashCorp	
 Qatar Fertiliser Company (QAFCO)	 Simplot	 Sinofer Holdings Limited	 SQM	
 Toros Tarim	 Uralchem	 Uralkali		



Outline – 4R sustainable farming

1. Concept
2. Examples of industry action
3. Collaboration opportunities

• *Slides: available at <http://nane.ipni.net>*



www.nutrientstewardship.com

ABOUT | CALENDAR | FUNDING | PARTNERS | CONTACT | 4R ADVOCATE | Search... **GO**

WHAT ARE THE 4RS | **IMPLEMENT THE 4RS** | **4R TRAINING** | **4R NEWS**

Sign Up to Receive E-Mails with the Latest 4R News and Resources

THE RIGHT TIME FOR NUTRIENT STEWARDSHIP is RIGHT NOW.

IMPROVE YOUR BOTTOM LINE AND THE ENVIRONMENT WITH 4R NUTRIENT STEWARDSHIP.

Today's farmers live in a world where environmental concerns and increased food demand create challenges never seen before. Meet those challenges with 4R Nutrient Stewardship by choosing the Right Nutrient Source to apply at the Right Rate in the Right Place at the Right Time.

LEARN MORE ABOUT THE 4RS

START BUILDING YOUR 4R PLAN

THE LATEST IN NUTRIENT STEWARDSHIP

The Fertilizer Institute
Nourish. Replenish. Grow.

CANADIAN FERTILIZER INSTITUTE
INSTITUT CANADIEN DES ENGRAIS

IPNI
INTERNATIONAL PLANT NUTRITION INSTITUTE

International Fertilizer Industry Association

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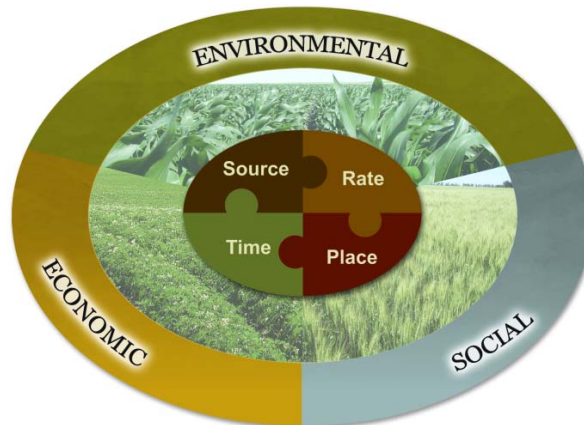
4Rs:

Right source

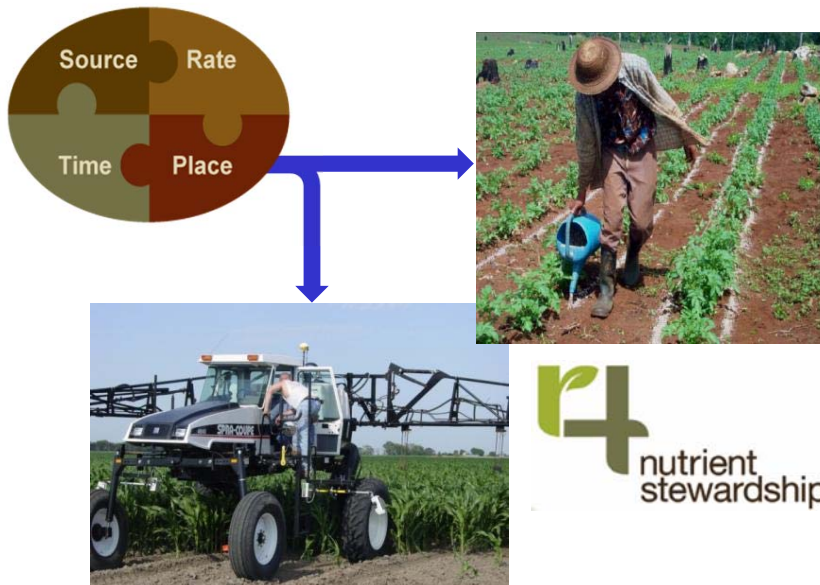
Right rate

Right time

Right place



Universal science ... applied for local impact



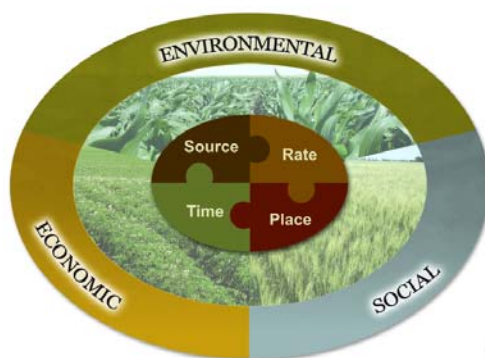
Source, rate, time, and place describe any nutrient application



4R
PLANT
NUTRITION

4
nutrient
stewardship

4R: “right” means sustainable

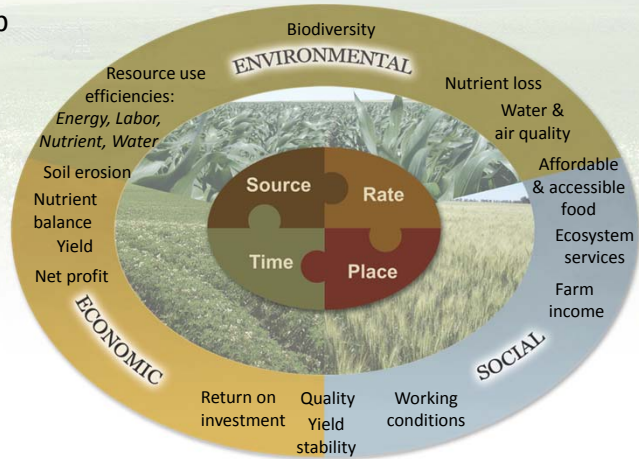


4R
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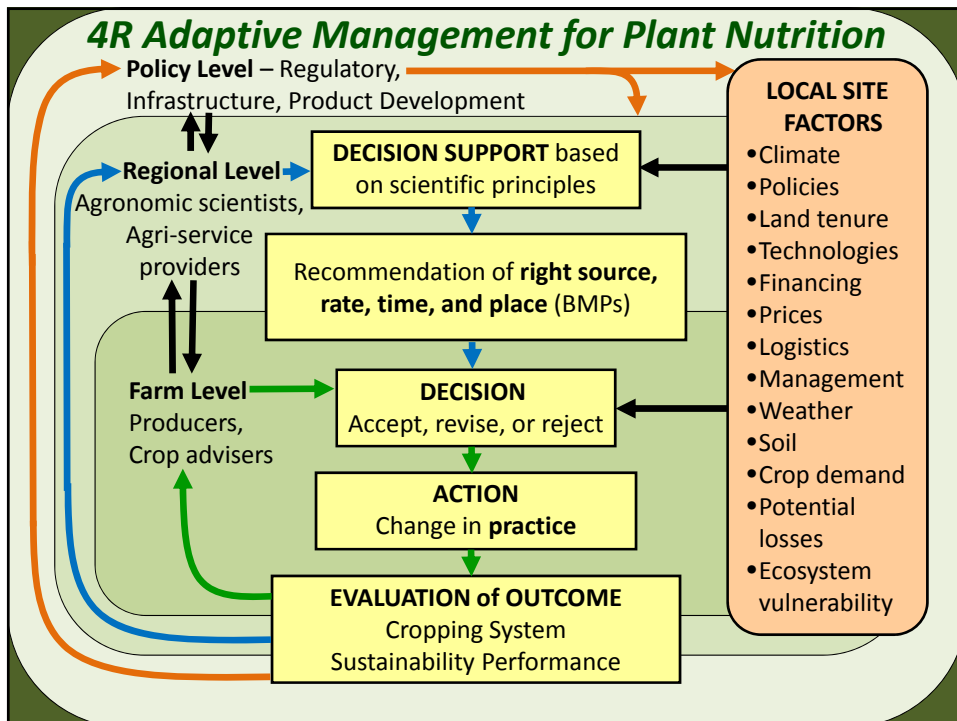
The 4Rs influence many performance indicators

- social, economic and environmental performance
- influenced by crop and soil management as well
- whole system outcomes



4R
PLANT
NUTRITION

4
nutrient
stewardship





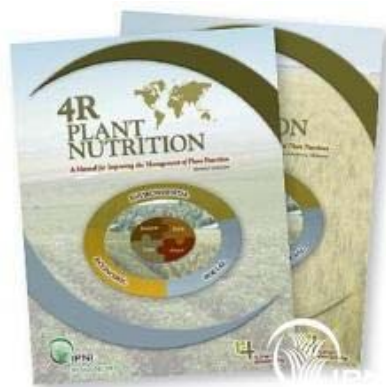
Modules and Case Studies for the 4R Plant Nutrition Manual

Modules describe specific practices related to principles explained in the text of the 4R Plant Nutrition Manual.

Module 5.3-2 Timing broadcast phosphorus fertilizer applications can help protect Lake Erie

Module 6.3-1 Place phosphorus in the soil to protect water quality in Lake Erie

www.ipni.net/4R



4R Research Fund – *environmental, social, economic impacts of 4Rs on sustainability*

- **\$7M** over 5 years across North America
- **Meta-analyses:** Review and analysis projects.
- **New Projects** – Measurement.
- Both to contribute measures of performance for 4R Nutrient Stewardship.
- For additional information:
www.nutrientstewardship.com/funding



4R
PLANT
NUTRITION



Our Nutrient World

The challenge to produce more food and energy with less pollution



- GPNM 2013, 128 pages
- Analysis of global N & P cycles
- Essential for food [fuel & fiber]
- Threats to WAGES
- Full-chain N use efficiency 8% [could be 16%?]
- Multiple definitions of crop NUE
- Deserves attention... and refinement

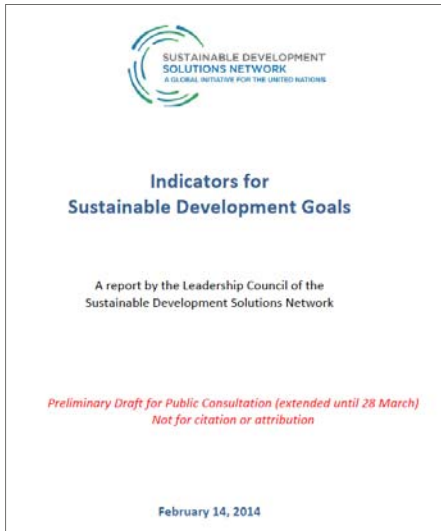
Global Overview on Nutrient Management

Prepared by the Global Partnership on Nutrient Management
in collaboration with the International Nitrogen Initiative



Public Consultation on Indicators for Sustainable Development Goals

- Proposes two indicators related to nutrients:
 - Excessive loss of reactive N [and P] to the environment (in relation to planetary boundaries)
 - Crop N use efficiency (30% inc. by 2030 in countries with low NUE)
- IPNI, IFA, and TFI submitted comments



4R Certification – Lake Erie Watershed

- Rollout 18 March 2014 – 190+ agri-retail audience
- Over 50 agri-retail locations signed up for audit summer 2014
- Audit procedures from SCS Global

4R Nutrient Stewardship Certification Program Launched



<http://4Rcertified.org/>



4R Nutrient Stewardship Certification Standard

Requirements for Certification

For Nutrient Service Providers in the Lake Erie Watershed

Introduction	
A Background.....	
B Scope.....	
C Goals	
D Structure and Implementation	
E Contact.....	
Terms and Definitions.....	
References.....	
Standard – Requirements for First 3 Years.....	
1 Initial Training and Ongoing Education.....	
2 Monitoring of 4R Implementation.....	
3 Nutrient Recommendations and Application.....	

Version 2.0
October 2013



Who is working on 4R Certification?



Farming4RFuture.ca


- Farming 4R Climate (National) – NERP
- Farming 4R Land (Alberta)
- Farming 4R Watershed (Ontario) – partnering with GRCA
- Farming 4R Island (PEI) – phosphorus and nitrate issues
- Farming 4R Manitoba – KAP – 4R Designation





Farming4R Watershed

AgriINNOVATIONS: Supporting farmers and communities with practical tools to implement Beneficial Management Practices that protect water quality and grow agriculture.





4R Nutrient Stewardship encompasses:

Right Source | Right Rate | Right Time | Right Place












farming4Rfuture.ca



Understanding **NERP** and what it can mean to you

Nitrous oxide Emission Reduction Protocol



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Benefits

Farmers


- Offset credit for reduced GHGs

Industry

- Source of credits
- Quantification for sustainability

Government

- Tool to meet emission reduction targets
- ISO 14064-2 criteria for “real, measurable, additional, verifiable”
- Approved October 2010 by Alberta Environment



Summary

1. The fertilizer industry plays an important role in food security; it keeps > half of humanity alive.
2. 4R Nutrient Stewardship is the industry’s response to sustainability issues including food security, water, air and climate.
3. Real improvement in sustainability performance requires higher levels of partnership, research and communication.





Collaboration Opportunities – Ontario

1. 4R demonstrations and case studies on-farm?
2. Joint 4R research?
3. Customize a 4R nutrient stewardship plan?
4. Designation/certification?
5. Ag retailers and/or Certified Crop Advisers – role in performance indicator data aggregation?
6. University of Guelph – Loblaw?
7. IPNI, CFI, OABA open to further discussions

