



Communities  
in Bloom



National Symposium on Parks and Grounds  
Vaughn, Ontario  
30 September 2009

# Nutrients for Plants: Cosmetic or Aesthetic?



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Director, Northeast Region, North America Program*



CANADIAN FERTILIZER INSTITUTE  
INSTITUT CANADIEN DES ENGRAIS

# IPNI Mission

“to develop and promote scientific information about the responsible management of plant nutrition for the benefit of the human family.”



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## Definitions [Oxford dictionary]

**cosmetic** *adj.* “superficially improving or beneficial”

**aesthetic** *adj.* “concerned with that which is beautiful; artistic, tasteful”

## Benefits of Turfgrass and Ornamentals

- **Aesthetic** – positive therapeutic benefit that improves mental health and productivity, social harmony and stability
- **Functional** – erosion control, dust stabilization, groundwater recharge, temperature moderation, noise abatement
- **Recreational** – low-cost, safe surface that reduces injuries

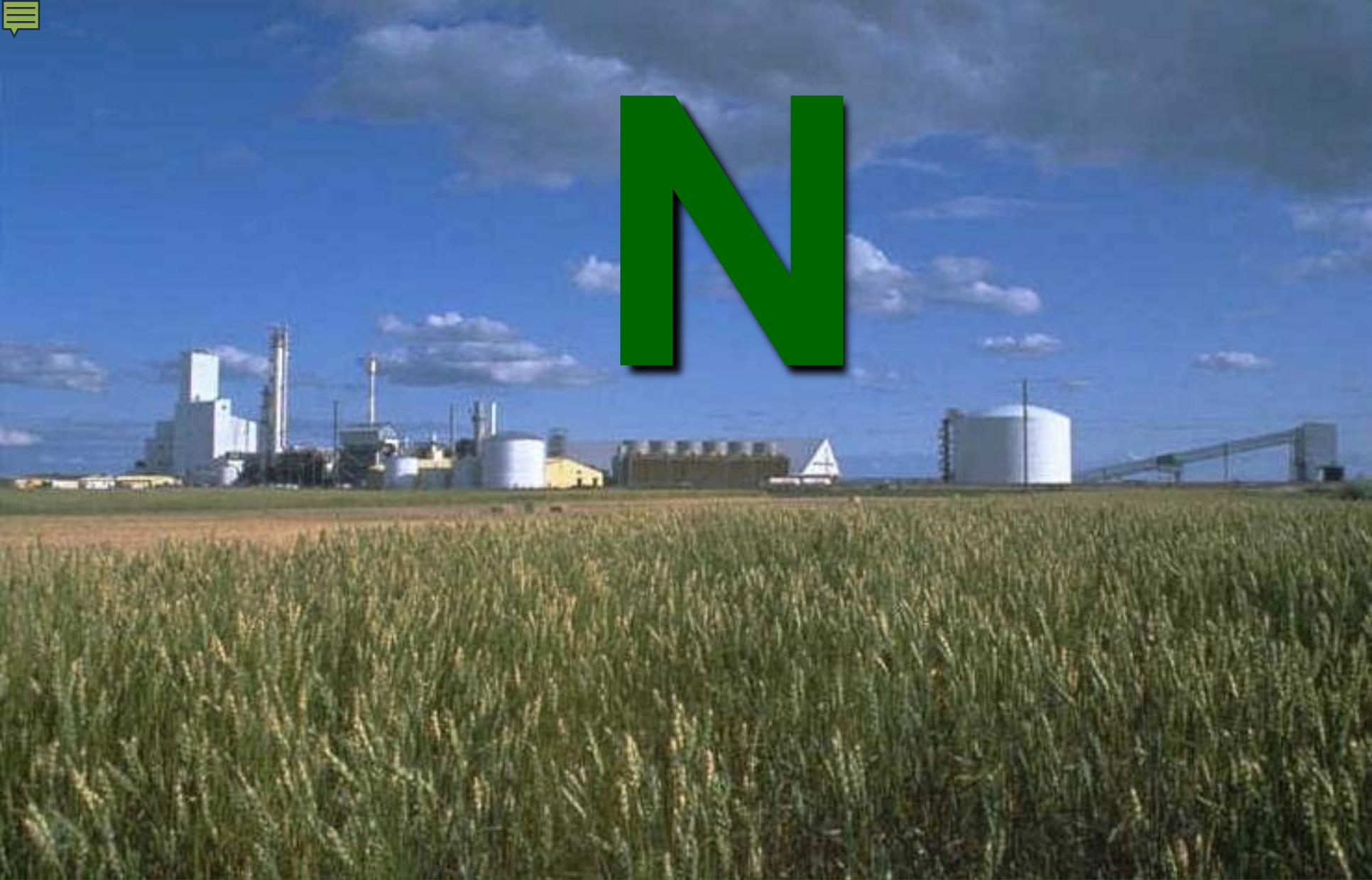


# Outline

- Fertilizers – where they come from
- Sustainability
- 4R Nutrient Stewardship
  - Scientific principles
  - Linking research to practical recommendations



**N**



***Made from air and natural gas***

# World Phosphate Rock Reserves

Country	2007 Production	Reserves	Reserve Life
	Million tonnes		Years
China	45	4,100	90
USA	30	1,200	40
Morocco	27	5,700	210
World Total	156	15,000	96

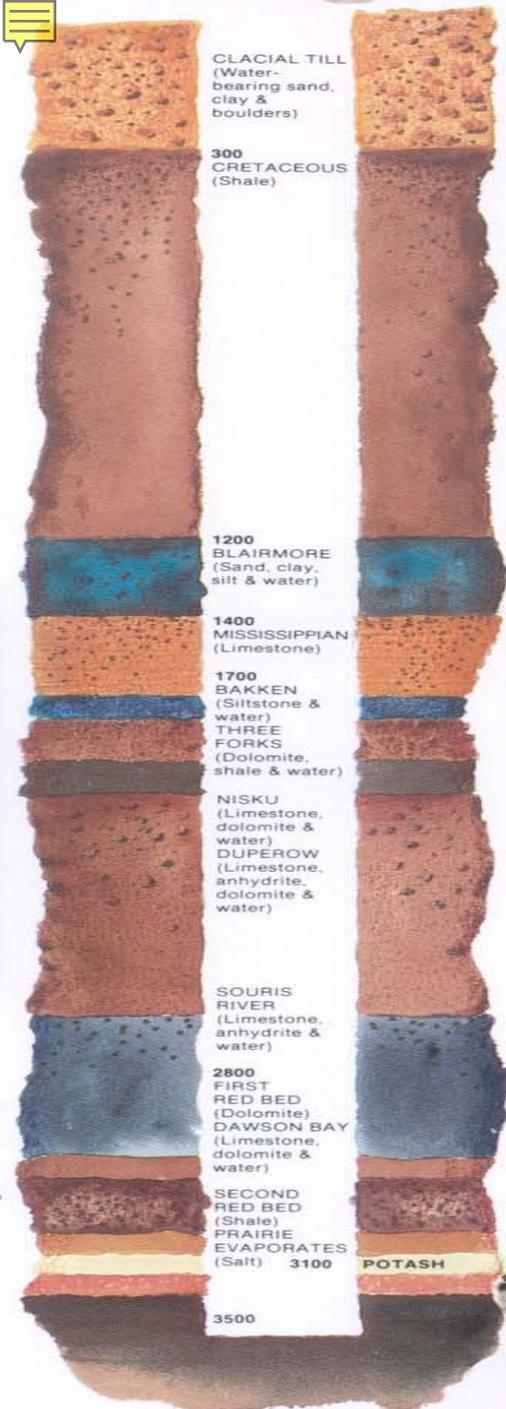
Source: USGS Mineral Commodities Summaries, 2009



# World Potash Reserves

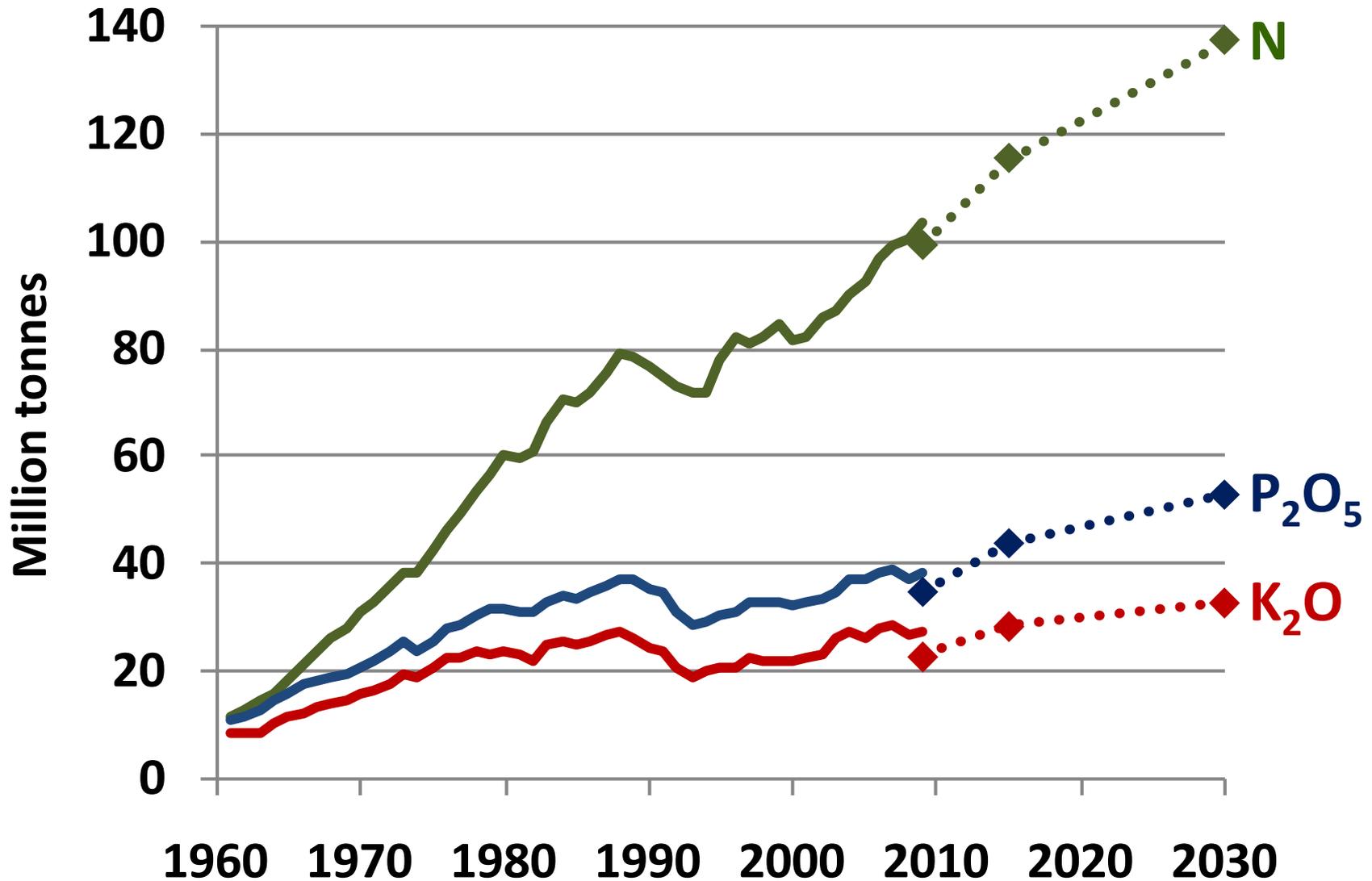
Country	2007 Production	Reserves	Reserve Life
	Million tonnes K <sub>2</sub> O		Years
Canada	11	4,400	400
Russia	7	1,800	270
<b>World Total</b>	<b>35</b>	<b>8,300</b>	<b>240</b>

USGS Mineral Commodities Summaries, 2009



# World Fertilizer Consumption

## Historical and Projected



## Environmental

- Sustain or improve soil quality
- Maintain nutrient levels within natural ecosystems
- Preserve wildlife habitat



## Social

- Produce nutritious, abundant and affordable food
- Support programs for strong and caring communities
- Help meet global food needs
- Provide ongoing employment opportunities in agriculture and related industries



## Economic

- Produce revenue to sustain farm operations
- Preserve quality of life
- Make the most of dollars spent on fertilizer

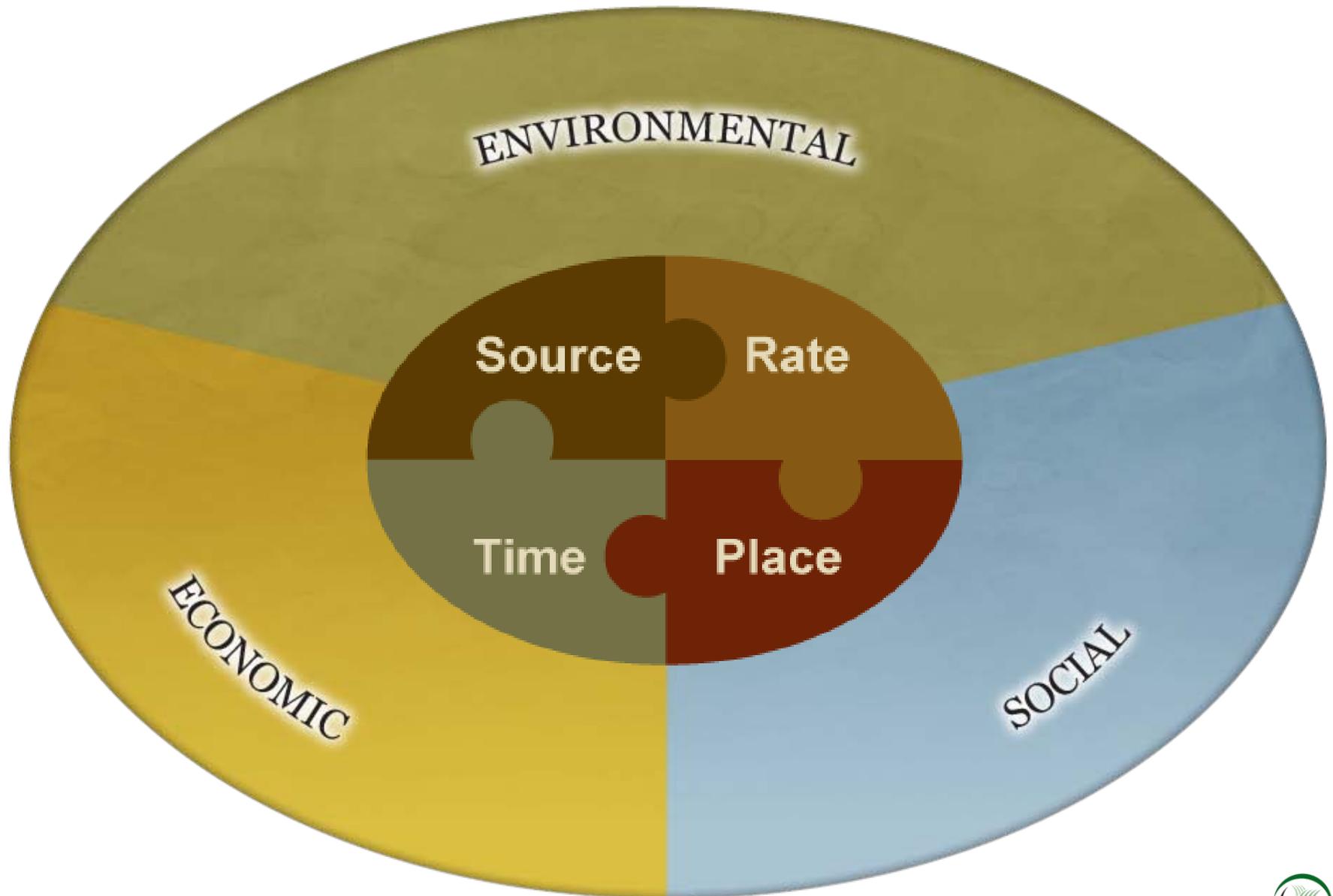


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## SUSTAINABILITY ISSUES

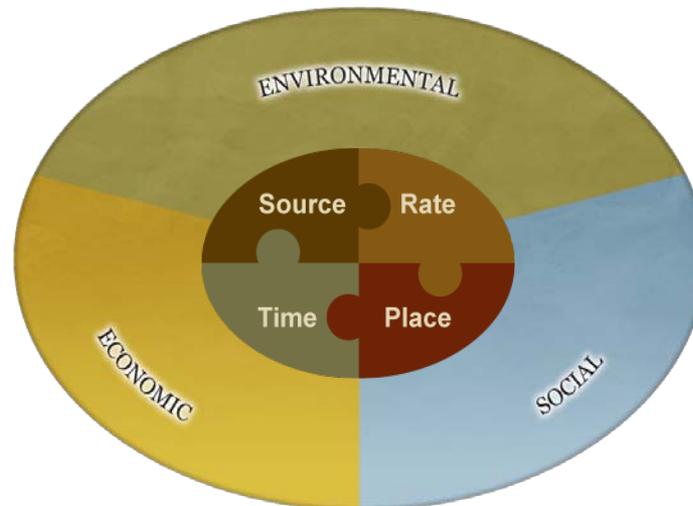
- Food and nutrition security
- Water quality: nitrate, algae
- Air quality: ammonia, smog
- Greenhouse gas emissions
- Stratospheric ozone depletion (N<sub>2</sub>O)
- Trace elements in soil

# 4R Nutrient Stewardship



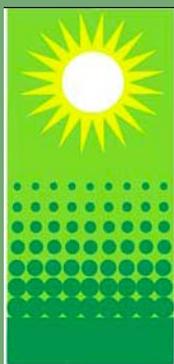
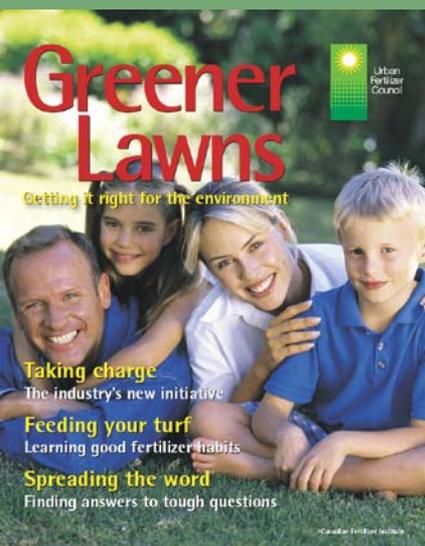
# 4R – Who decides what's RIGHT?

- Input from ALL stakeholders on PERFORMANCE GOALS
  - Farmers, crop advisers, scientists, policymakers, consumers, public
  - Outcomes in terms of economic-social-environmental sustainability
- Land manager selects the PRACTICE
  - Dynamic, site-specific decisions on the RIGHT source, rate, time and place
- Science provides the PRINCIPLES



# Urban Fertilizer Council

- Members:
  - Scotts
  - Sure-Gro
  - Agrium AT
  - Canadian Fertilizer Institute
- Educate homeowners, public
- Provide tools to municipal officials



## Best Management Practice



### Right Product

*Use the correct fertilizer for your soil conditions.*



### Right Rate

*Use the right amount of fertilizer*



### Right Time

*Use fertilizer at the right time of the year*



### Right Place

*Make sure fertilizer stays where it has the most benefit to your lawn and the least impact on the environment and our waterways*

NUTRIENTS  
FOR LIFE



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POUR LA VIE

Plant Science Classroom Material for High Schools in Saskatchewan

# Nourishing the Planet in the 21st Century



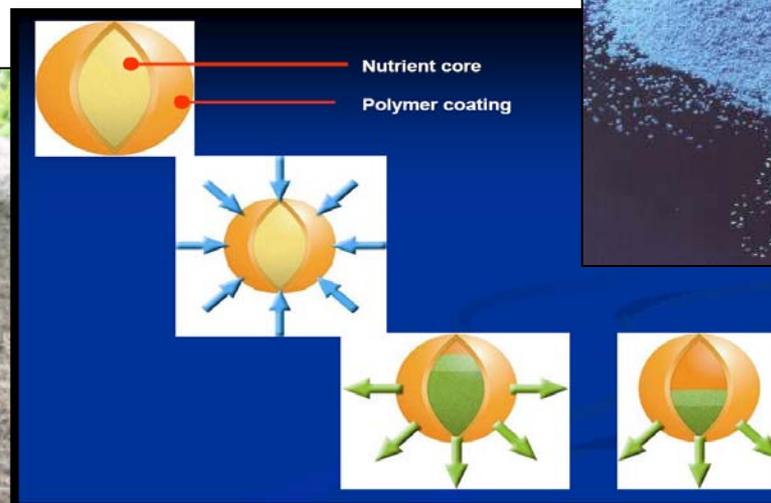


# Scientific Principles: Right Source

- Supply essential nutrients, in balance.
- Supply plant-available forms.

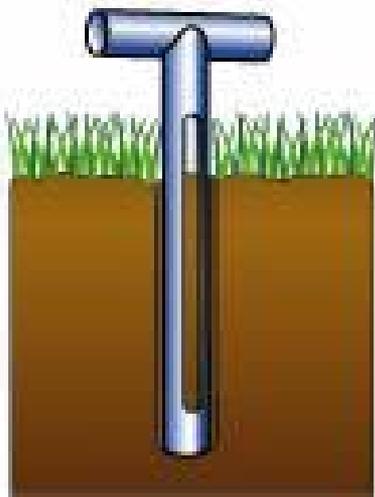
N P K Ca Mg S

B Cl Cu Fe Mn Mo Ni Zn



# Scientific Principles: Right Rate

- Assess soil nutrient supply.
- Assess plant demand.
  - *Clipping management for turfgrass*



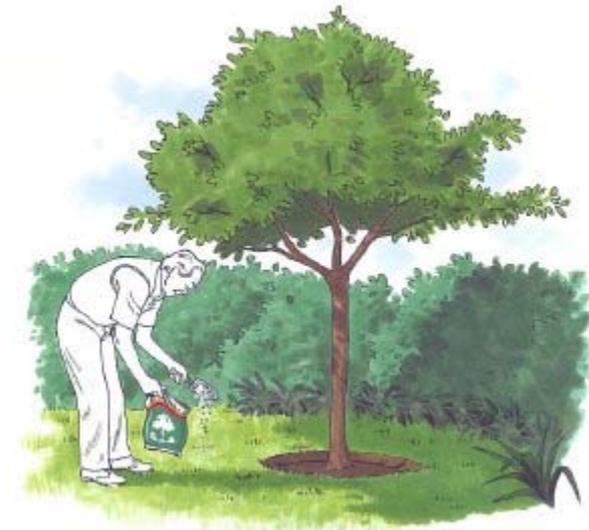
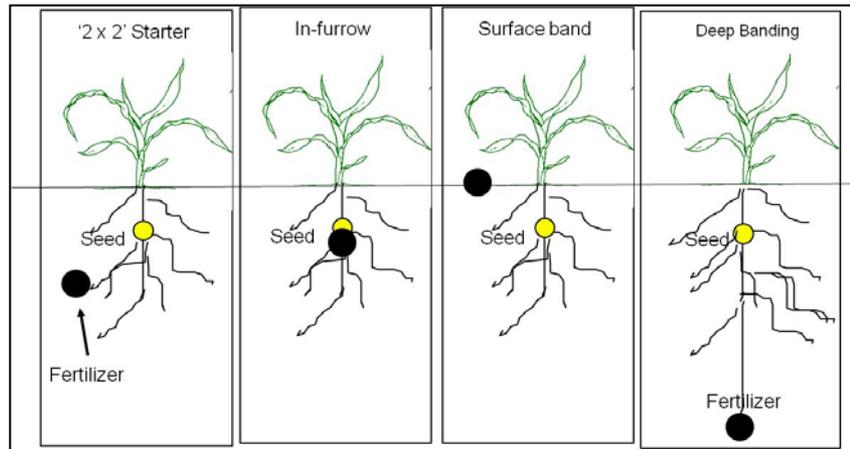
# Scientific Principles: Right Time

- Match timing of plant nutrient uptake.
  - *Fertilize when the roots are growing!*
- Coordinate with irrigation
  - *For turfgrass: water after application.*



# Scientific Principles: Right Place

- Place nutrients where roots pick them up.
- Limit potential runoff losses of nutrients.
  - *Sweep lawn fertilizer off the pavement!*





# Biodiversity

- Different plant species have different nutrient needs
- Overloads and imbalances of nutrients can drive down biodiversity
  - 4R nutrient stewardship
- Keeping a range of nutrient sources available is important for maintaining biodiversity in the urban environment



# Regulation of Lawn Fertilizer

## Follow Minnesota's Phosphorus Lawn Fertilizer Law

\*Starting January 1, 2005, fertilizers containing phosphorus cannot be used on lawns in Minnesota.

### Identify the fertilizer

There are three identifying numbers on a bag of fertilizer. Find the phosphorus content by looking for the middle number.

It must be **0**.

\*These restrictions do not apply to fertilizers used for agricultural crops, flowers and vegetable gardening, or on golf courses by trained staff.

\*Exemptions - Fertilizers containing phosphorus may be used on lawns if a soil test indicates that it is needed or if you are establishing a new lawn.



For more information go to the Minnesota Department of Agriculture website: [www.mda.state.mn.us](http://www.mda.state.mn.us)



# Low and No Phosphate Standard



Canadian Food  
Inspection Agency

Agence canadienne  
d'inspection des aliments

Canada



Canadian Food Inspection Agency  
www.inspection.gc.ca

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## T-4-123 - Labelling of Low and No Phosphate Lawn / Turf Fertilizers under the *Fertilizers Act and Regulations*

August 2009

### 1. Introduction

#### 1.1 Purpose

The objective of this document is to describe the labelling requirements and guaranteed nutrient tolerances for **Low** and **No** phosphate specialty fertilizers, intended for use on lawns and turf. Establishment of a **Low** and **No** phosphate policy will ensure that such products have accurate label representation, and consumers, as well as other regulatory bodies (federal, provincial and municipal), can readily identify these products in the marketplace.



## New York Turfgrass Survey

- 3,400,000 acres in 2003
- 82% residential lawns
- On average, \$31 per acre spent on fertilizer

## Turfgrass Soil Testing (2007)

- 20% need P fertilizer
- Two-thirds needed correction for P, K or pH



**New York**

*Turfgrass Survey*

*Soldat, et al., 2007. Better Crops 91(1): 26-27.*

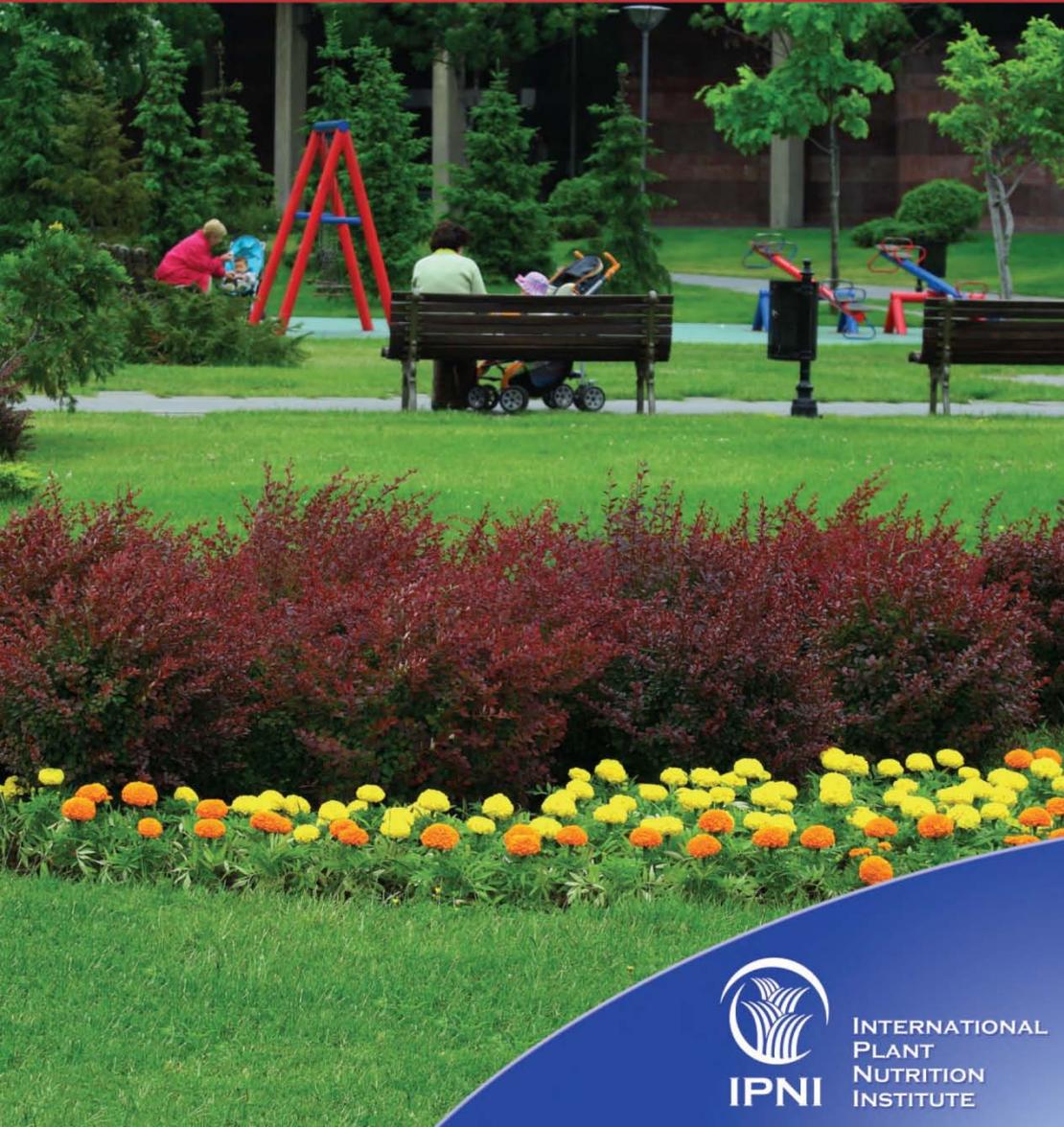
# Fertilizer can reduce P loss from turf

Fertilizer	Total losses in runoff July 2000 – November 2001 (33 runoff events)
	Phosphate-P, pounds per acre
Controlled-release 24-5-11	0.9
Soluble 35-3-5	0.7
Control 0-0-0	1.4

*Easton and Petrovic, 2004*

# Best Management Practices for Turf and Lawn Fertilization

USING THE RIGHT SOURCE AT THE RIGHT RATE, RIGHT TIME, AND RIGHT PLACE



Following the principles  
of the “4 R’s”

— right source  
at the right rate, right  
time, and right place —

is the foundation of  
fertilizer BMPs for turf.



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# 4R Plant Nutrition Stewardship

- Managing the nutrition of plants in the landscape enhances aesthetics and provides social, economic and environmental benefits to communities.
- Best management for plant nutrition is to apply the **right source** at the **right rate** at the **right time** in the **right place**.
- Educational information on 4R Plant Nutrition Stewardship is available from:
  - **Nutrients for Life Foundation** – [nutrientsforlife.ca](http://nutrientsforlife.ca)
  - Urban Fertilizer Council – [cfi.ca](http://cfi.ca)
  - Canadian Fertilizer Institute – [cfi.ca](http://cfi.ca)
  - International Plant Nutrition Institute – [ipni.net](http://ipni.net)

