

# NERP — High Level Issues from State of Science Findings

**ClimateCHECK**  
SET THE STANDARD™



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**Presented To:**

**Developing a Nitrous Oxide Emissions  
Reduction Protocol: Science at Work**

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## KEY MESSAGES

### Science and Policy Framework

- **Baseline & Project.**
- **Quantification — Canada's National Inventory Report.**
- **Policy — Alberta & Canada Offset Systems.**

### Decisions

- **Include fertilizer, manure, residues and irrigation**
- **Exclude tillage, summerfallow.**
- **Reduction modifiers for levels of NERP.**
- **4R N management plan as gateway to NERP.**
- **Integrity of 4R N management plan is key to use of NERP..**



**Right Product @ Right Rate,  
Right Time, Right Place™**

**Canada's National  
Inventory Report**

**ISO 14064-2 Standard  
Alberta Offset System, Canada's Offset System,  
Voluntary Carbon Standard**

# Framework

## Canadian Fertilizer Institute Stewardship System

- Product, Rate, Time, Place → 4R.
- All performance areas considered in every BMP.

## International Plant Nutrition Institute

- Literature Review ([www.ipni.net/ghgreview](http://www.ipni.net/ghgreview))

## National Inventory Report.

- N<sub>2</sub>O emission calculations ecodistrict-specific.
- Already uses modifiers —  $F_{\text{TOPO}}$  and  $F_{\text{TILL}}$ .



# Baseline & Project

## Baseline

- Emissions of  $N_2O$  calculated for farm by NIR method according to practices before implementation of N stewardship plan.

## Project

- Baseline Emissions x NUEP Modifier ( $F_{SIMP}$  or  $F_{ADV}$ )



# Best Management Practices

Performance Levels	Performance Areas			
	Rate	Time	Place	Form
Simple	Recommend according to N plan	Spring or Split or Controlled Release	Banded	Ammonium-based
Advanced	Recommend according to N plan for GIS-derived sectors	Spring or Split or Controlled Release	Banded and Variable Rate	Ammonium-based



# Gaps

**Details of manure use & management**

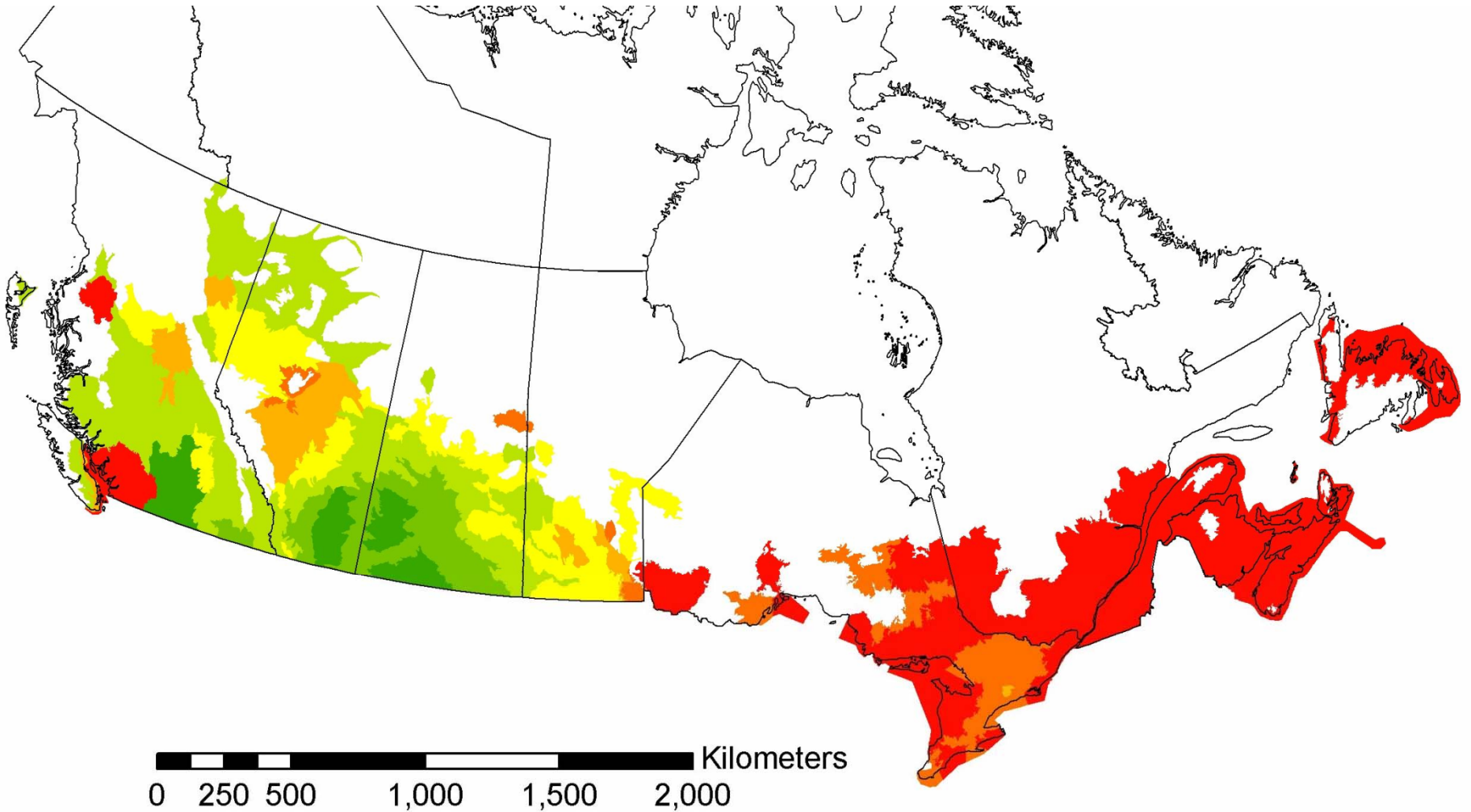
**Application (and 'stacking') of 4R in diverse climates**

**Implementation of landscape-driven plans**

**Development of new technologies and practices**



# Canada's National Inventory Report



# Policy — Offsets Systems

**Alberta and Canada — ISO 14064-2.**

**Alberta allows credits from 2002.**

**Canada allows wider geographic scope.**



# Decisions

**Exclude tillage, summerfallow.**

- **These from other protocols.**

**Include fertilizer, manure, cop residues, irrigation.**

- **Provide account of all N added on farm.**



# Decisions

## Reduction modifiers for levels of NERP.

- Follows logic of  $F_{TILL}$  or  $F_{TOPO}$
- Simple Intermediate Advanced
- Requires expert judgment



# Decisions

**4R N management plan as gateway to NERP.**

- **Additional/incremental, yet practical**
- **Adaptable for levels of NERP**
- **Verifiable**

***Integrity of 4R N management plan is key to use of NERP — most important decision is how to assure plans are appropriate for each farm***





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