

Framework for a Nitrous Oxide Emissions Reduction Protocol (NERP)

ClimateCHECK
SET THE STANDARD™



Presented By:

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

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KEY MESSAGES

NERP is transformational tool.

- **4R Stewardship System — comprehensive sustainability.**
- **Change how N managed, not just how much N used.**

NERP BMPs minimize NO_3^- accumulation to reduce N_2O emission.

- **Simple Intermediate Advanced versions.**
- **N balance assessed as long-term corroboration.**
- **Focused on on-farm reductions.**

NERP is “additional/incremental”, but practical.

- **Farm-specific.**
- **Comprehensive 4R N stewardship plan, including landscape-directed assessment of N availability.**



**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**

NERP is transformational tool

- **4R Stewardship System — comprehensive sustainability.**
 - **Foundation to develop N management plan which integrates practices.**
 - **Framework suitable for all climates, but adaptable to site-specific circumstances.**
 - **Platform for continuous improvement.**
 - **Justification for integrity and sustainability of agricultural practice.**



NERP is transformational tool

- Change how N managed, not just how much N used.
- N₂O emissions function of fertilizer rate, but also of climate, crop residues (including biological fixation), manure, landscape position, texture, tillage, irrigation.
- Food crisis requires optimized yields.
- N management is a key element in sustainable land management (NERP supports other protocols).



NERP BMPs minimize NO_3^- accumulation to reduce N_2O emission

- Simple, Intermediate, Advanced versions.
 - All credits of equal value.
 - Allows cost-effective implementation — select appropriate practices and technologies.
 - Promotes continuous improvement — develop increasingly effective practices and technologies.



NERP BMPs minimize NO_3^- accumulation to reduce N_2O emission

- N balance assessed as long-term corroboration.
 - No assumed correlation of N efficiency with decreased N_2O .
 - Forces accounting of all sources of N.
 - N balance practice can substitute for soil test.



NERP BMPs minimize NO_3^- accumulation to reduce N_2O emission

- Focused on on-farm reductions.
 - Off-farm reductions associated with displaced use of fertilizer not verifiable (Voluntary Carbon Standard, Offset Quality Initiative).
 - Removal-type (sequestration) credits not permanent.



NERP is “additional/incremental”, but practical.

- Farm-specific.
 - Discount/default approaches please no one.
 - Farm-specific baseline and practice change is justifiable and verifiable.
 - Anticipates increasingly rigorous requirements of markets — carbon, as well as ecosystem services.



NERP is “additional/incremental”, but practical.

- Comprehensive 4R N stewardship plan, including landscape-directed assessment of N availability.
- Farm-specific N management planning is not business-as-usual, but is economically viable.
- Participation in the NERP is as straightforward as implementing a comprehensive 4R N management plan.





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