"NERP" — A Science-based GHG Reduction Quantification Protocol

ClimateCHECK

SET THE STANDARD™

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Summary

Development Approach	Consensus of consulted experts in Canada & US	Standards-setting process, integrating iterative learnings in Alberta Offset System
Scope	4R N management for cultivated crops in Alberta (and Canada)	4R framework is universal, but quantification and BMPs tuned to regional crops and conditions.
Quantification method	Canada's National Inventory Method and Reduction Modifiers for direct and indirect N_2O.	Method addresses variation of soil, topography and climate in Canada. But, uses scale which allows verifiability.
Baseline	3-year historical average for each crop type per unit crop produced	Output-based intensity approach facilitates comparison of baseline and project.
Project	Implement 4R N management with Accredited Professional Advisor	Implement at selected performance level, increasing in degree of landscape-directed management
Guidance for N management	Prescriptive requirements for practices and documentation.	4R-based training program for professional advisors to streamline project implementation and verification.

Process and Scope

- **Broad-based consensus of experts according to ISO 14064-2**
  - **Extensive documentation to provide background was provided to experts (from Canada and USA, n=25 to 50, depending on phase of development) — decisions in process can be documented.**
  - **Experts achieved 80% agreement on all elements of NERP.**
  - **Expert = MSc or greater in relevant science (soils, agronomy, etc.)**
- **All sources of nitrogen accounted in quantification and documentation**
  - **Required by IPCC, Canada's Tier II method, and ISO 14064-2.**
  - **Includes fertilizer, manure / compost, crop residues.**

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Quantification — Nitrogen Rate

- **Reductions related to N rate decrease**
  - **Based on data from many observations (n=72) across the climatic region**
  - **Linear equation (Tier II) accounts for regional differences, but estimated emissions are comparable to Tier I**
  - **Ecodistrict-level emission factors address local moisture regime, soil texture, topography, etc.**

Quantification — Nitrogen Management

- **Reductions related to N management change**
- **Reduction Modifiers (RM) represent consensus of expert judgment.**
    - **Conservative — assigned according to reduction potential for single BMP (must use suite of BMPs).**
    - **Reduction Modifier (and conservativeness) justified by case study data.**
    - **Emissions estimated by Tier II method, then multiplied by Reduction Modifier to estimate project emissions.**
    - **Basic RM = 0.85; Intermediate and Advanced RM = 0.75**

    Reduction Modifiers used only to quantify project emissions.

Guidance — Implementation

- **Prescribe suite of practices for each performance level, with increasing degree of landscape-directed management.**

- **An Accredited Professional Advisor(AAP) must sign-off on baseline calculations, management plan, and post-harvest assessment.**

- **APA will need to be qualified to sign-off on regulatory documents in agronomic practice, and will be required to pass 20+ hour on-line training course.**

- **To track development of training resources, visit www.interactivestandards.com .**

Guidance — Documentation

- **Prescribe the sources of data which constitute evidence that the NERP practices have been implemented effectively.**

- **The prescribed data and documentation are aligned with the data and documentation needed (1) to support comprehensive management of N, and (2) to provide confidence of sustainability of management.**

- **The prescribed documentation, including the several points of sign-off by the APA, provide the basis of a checklist for verification.**

Benefits of NERP

- **Drives practice change**
  - **Comprehensive, professional, 4R plan advances better N management.**
  - **Support for NERP enhances infrastructure to continue advances in N management.**

- **Provides leading edge for ecosystem services**
  - **Documentation prescribed by NERP requires assessment of total farm N balance.**
  - **Documentation provides proof of claim of management to support water quality trading.**

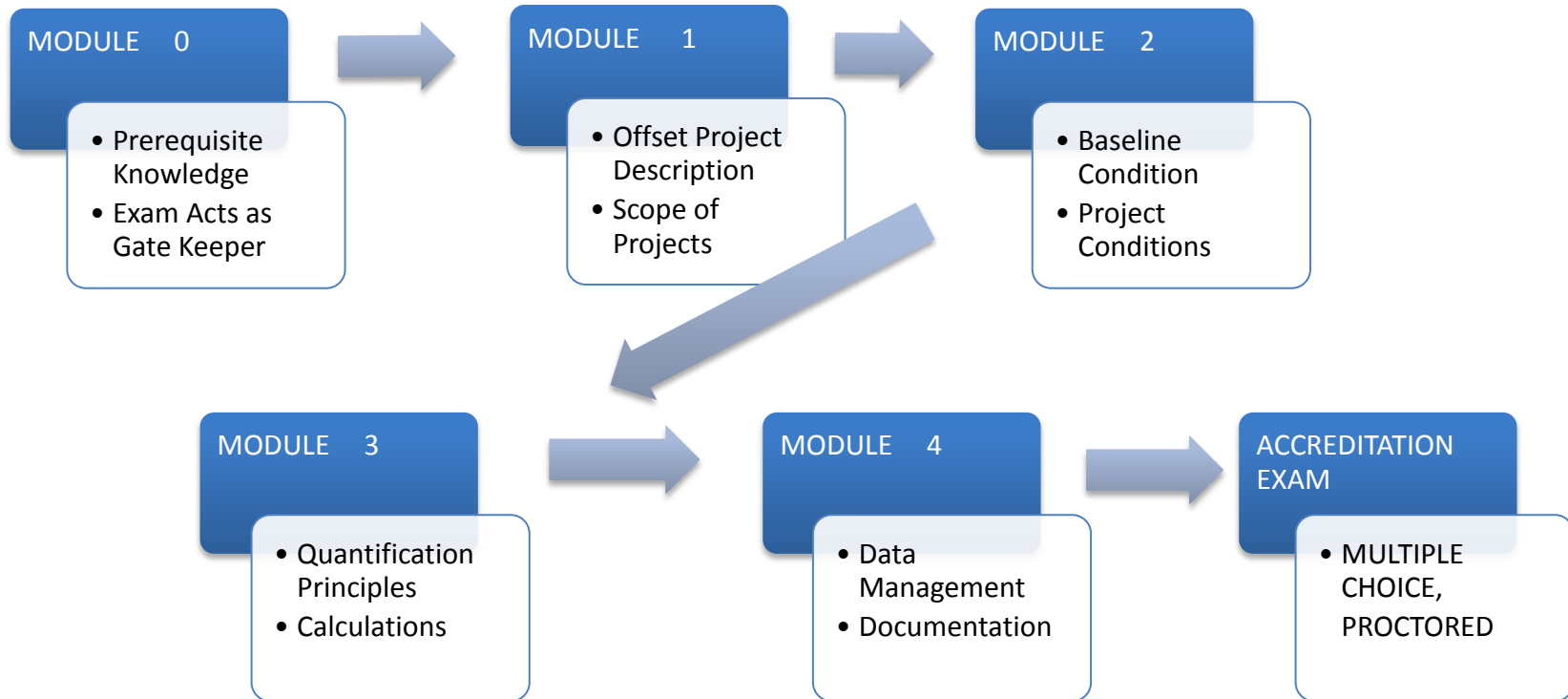Innovative Greenhouse Gas Management Solutions.

Approved Professional Advisor (APA)

- **APA will sign-off on the Baseline calculation.**
  - Review of the documentation for Baseline practices
  - Evaluate conclusions supported by the documentation, and
  - Attest to the accuracy of calculations.
- **APA will design and sign-off on 4R plan for participating farm.**
  - 4-R plan will address all fields and all crops at the performance level selected by the grower.
- **APA will provide written attestation that the 4R nitrogen plan was implemented as designed.**
  - Involves post-harvest assessment of activities (including responses to weather-related disruptions), of yield data and of testing results.
  - Assessment will form the basis for the next year's 4-R nitrogen plan.

Training of APA

MODULE 0
- Prerequisite Knowledge
- Exam Acts as Gate Keeper

MODULE 1
- Offset Project Description
- Scope of Projects

MODULE 2
- Baseline Condition
- Project Conditions

MODULE 3
- Quantification Principles
- Calculations

MODULE 4
- Data Management
- Documentation

ACCREDITATION EXAM
- MULTIPLE CHOICE, PROCTORED

Training will be designed for ease of adaptation to support 4R management of N (including GHG reduction practices) in global agriculture.

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