Nutrient Management Project Protocol (NMPP)

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Workgroup Meeting # 5

(continuation of meeting #4)

November 10, 2011

10 am – 12 pm PST

Agenda

- Science Advisory Committee Outcomes
- Update on Background Research
- New Idea for Development of Quantification Approaches
- Other topics?
- Next steps

Science Advisory Committee

- Committee of scientist with recognized expertise and research track record in agricultural nitrogen management met at the Reserve on Sept 7, 2010 to discuss the NMPP
- Three main questions guided the meeting discussion:

1. What is the “scientific validity” of providing GHG mitigation credits for various nitrogen management activities?
2. Which greenhouse gas (GHG) sources, sinks and reservoirs (SSRs) must be quantified to accurately and conservatively assess the net effect of a change in nutrient management practice on GHG emissions?
3. What is a scientifically valid, economically practical, and ultimately verifiable approach to quantifying GHG reductions from nitrogen management offset projects (considering specifically four existing approaches established in other similar offset protocols or GHG accounting tools)?

SAC Outcomes

- "Nitrogen" is more accurate than "Nutrient" management
- Narrowed list of practices (next slide)
- Some refinement of GHG boundary
  - Soil C is not necessary to include in GHG boundary
  - Indirect N2O emissions are important to quantify (IPCC Tier 1 is best available)
- Direction on quantification approach
  - Concerns about only using Tier 3 (DNDC) for direct N2O emissions
  - Encouraged development of Tier 2 and Tier 3 only where well-developed
- Need an objective "data standard" to evaluate methods (has also come up in WG and MSC discussions)
- Important to consider accuracy of emission reductions, not just absolute emissions estimates
- Protocol should be flexible to incorporate best available methods
- May be opportunity to coordinate with USDA process

Potential Practices

- Reducing N applied, without going below N uptake demand
- Avoiding losses of supplied N
  - Increasing the number of N applications (if delivering N through irrigation systems)
  - Switching from fall to spring N application
  - Applying N closer to the root system (if delivered through irrigation)
- Reducing the conversion rate of supplied N to N2O
  - Use of nitrification inhibitors
  - Use of nitrification inhibitors combined with urease inhibitors
  - Changing fertilizer composition (source) [specifically, switch from anhydrous ammonia to urea)
  - Changing to slow-release fertilizer
- Scavenging residual N
  - Adding N scavenging cover crops

More Research Needed

- Avoiding losses of supplied N
  - Using Variable Rate technologies and precision farming
- Reducing the conversion rate of supplied N to N2O
  - Use of urease inhibitors (stand alone)
  - Supplying N in organic form through manure application, legume incorporation, or compost application
- Scavenging residual N
  - Adding deep rooting plants to the rotation

SAC Follow-up

- Have reviewed SAC outcomes with MSC
  - MSC may have further questions for SAC
- Received SAC comments on report
  - Will finalize and post meeting report in Nov
- Continued SAC involvement in review of protocol elements via email and webinar
- Questions/comments/suggestions about SAC meeting, process, outcomes?

Background Research Update

- Quantification Approaches
  - Developing 2 case studies comparing calculated to measured N2O data using different approaches: CA tomato (conventional vs. integrated system) and NCR corn (fertilizer type)
    - MSC has seen preliminary results and given feedback
    - Will wrap up soon in a short supplemental report to original background paper
    - Purpose: provide examples that make concrete the differences in quantification approaches
  - Prototype criteria and standards for the development of quantification approaches (includes “data standards”)
- Performance Standard Development
  - Been on hold while we focused on quantification methodology
  - Next step is to develop sample PS thresholds for N rate and/or N use efficiency using multiple data sources, for CA and NCR

New Idea:
NMPP Quantification Approaches

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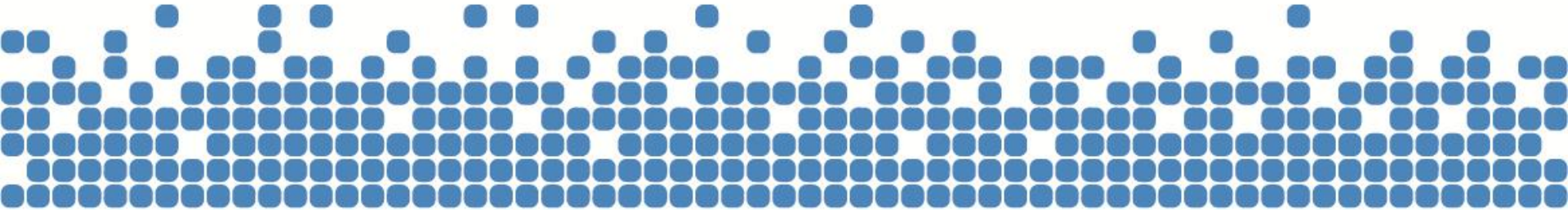
- Quantification approaches (Tier 2 or 3) would be developed for each unique type of management system
- Reserve will develop some approaches to populate NMPP v1.0
- External submissions for new quantification approaches may also be considered by the Reserve for inclusion in NMPP on an ongoing basis after NMPP is adopted
- Provides a way to cover a wide diversity of possible management systems while applying uniform/consistent standards
- Incentive for people to develop existing data into Tier 2 approaches or use data to validate Tier 3 approaches
- Allow for flexibility to incorporate new data as it becomes available, e.g., 2 year CA N2O study specifically designed for helping offset protocols



Prototype criteria and standards for quantification approaches

- Defines required components:
  - A description of the project activity/ies that are covered
  - A set of applicability conditions that must be met to use the quantification approach. (e.g. conditions that are related to geographic characteristics, soil type, cropping system, or any other relevant feature)
  - Equations to calculate N2O emission reductions
  - Approach to calculate uncertainty deductions
  - Parameters that must be monitored
- Provides clear and operational minimum standards for validating quantification approach and for affirming quality of reference data
- MSC has reviewed and will provide comments soon
- Will ask the SAC to review as well

- Questions/comments on this idea for developing quantification approaches
- Detailed questions or comments on the draft prototype? (time permitting)

Next Steps

- Encourage you to submit comments on the RCPP
  - Due November 11, 2011
- NMPP
  - Finalize background research on quantification approaches
  - Refine criteria and standards for quantification approaches
  - Begin internal development of quantification approaches
  - Performance standard research (next High Priority)
- Next WG call in January

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Thank you!