

# Discussion Group: 3

Recommended Option to the Workshop: 4.4.4.a  
The NERP should be designed to generate GHG reduction credits according to a multi-level system.

Recommendation for Acceptance:  
Accept today as part of the standardized protocol for GHG emissions reduction.

## Discussion Group: 3

Recommended Option to the Workshop: 4.4.4.a

The multi-level system should be made up of three levels: Basic, Intermediate, Advanced.

Note terminology change: Simple to Basic

Recommendation for Acceptance:

Accept today as part of the standardized protocol for GHG emissions reduction.

## Discussion Group: 3

Recommended Option to the Workshop: Table 5  
Changes detailed on the following slides.

\*This table applies to inorganic fertilizers only.

Recommendation for Acceptance:

Acceptance will be proposed in stages. This option needs significant work following the workshop. A work group will need to clean up the changes suggested by Group 3

	Right Product	Right Rate	Right Time	Right Place	Proposed Modifier
<b>Simple Basic</b>	Ammonium-based formulation.	Apply N according to recommendation of 4R N stewardship plan, using annual soil testing and/or N balance to determine application rate.	Apply in spring, or split apply, or after soil cools in fall <b>or use controlled release fertilizer formulations</b>	Apply in <b>shallow</b> bands	0.8
Intermediate	<ul style="list-style-type: none"> <li>● Ammonium-based formulation</li> <li>● slow / controlled release fertilizers</li> <li>● Inhibitors / stabilized nitrogen.</li> </ul>	Apply N according to <b>qualitative estimates of field variability</b> (landscape position, soil variability)	Apply in spring, or split apply, or after soil cools in fall <b>if using slow / controlled release fertilizer or inhibitors / stabilized nitrogen</b>	Apply in <b>shallow</b> bands	<b>0.65</b> 0.6
Advanced	<ul style="list-style-type: none"> <li>● Ammonium-based formulation</li> <li>● slow / controlled release fertilizers</li> <li>Inhibitors / stabilized nitrogen based on quantified field variability</li> </ul>	Apply N according to <b>quantified field variability</b> (precision farming techniques, ex. Digitized soil maps, grid sampling, satellite imagery, real time crop sensors.) complimented by in season crop monitoring	Apply in spring, or split apply, or after soil cools in fall <b>if using controlled release fertilizer or inhibitor / stabilized nitrogen</b>	Apply in <b>shallow</b> bands	0.5

## Table 5 – Right Place

-Removed the requirement for shallow placement for all levels.

Recommendation for Acceptance:

This option will be acceptable but needs more work following the workshop.

## Table 5 – Consideration of slow / control release fertilizers

- Removed these materials from Basic
- Changed description to:  
“Slow / controlled release fertilizers” and “inhibitors / stabilized nitrogen”
- Added these materials to the Right Product for Intermediate and Advanced levels
- Made fall application conditional on using these materials in Intermediate and Advanced

Recommendation for Acceptance:

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## Table 5 – Basic

- Right Product: No changes
- Right Rate: No changes
- Right Time: Remove “use of controlled release fertilizer formulations”

Recommendation for Acceptance:

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## Table 5 – Intermediate

- Right Product: Added “slow / controlled release, inhibitors / stabilized nitrogen”
- Right Rate: Remove concave/convex terminology
  - ”...according to **qualitative** estimates of field variability (landscape position, soil variability)”
- Right Time: The fall application was qualified with “if using slow / controlled release fertilizer or inhibitors / stabilized nitrogen”

Recommendation for Acceptance:

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## Table 5 – Advanced

- Right Product: Added “slow / controlled release, inhibitors / stabilized nitrogen based on quantified field variability”
- Right Rate: Remove concave/convex terminology
  - ”...**quantified** field variability (precision farming techniques, ex. Digitized soil maps, grid sampling, satellite imagery, real time crop sensors.) complimented by in season crop monitoring”
- Right Time: The fall application was qualified with “if using slow / controlled release fertilizer or inhibitors / stabilized nitrogen”

Recommendation for Acceptance:

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## Table 5 – Proposed Modifiers

- Basic: No changes (0.8)
- Intermediate: Changed from 0.65 to 0.6
- Advanced: No changes (0.5)

Recommendation for Acceptance:

This option will be acceptable but needs more work following the workshop.

# Summary of Knowledge and Research Gaps

- Potential sub-levels based on soil zones, climate, etc.
- N<sub>2</sub>O emissions from nitrification of ammonium vs. losses from de-nitrification of nitrate
- Quantify benefits (or lack thereof) of split application
- Additional guidance on “Right Place” (surface vs subsurface)
- Modifiers have very low certainty.
- Benefits of site specific / precision management
- Differences between irrigated and dry-land systems
- N<sub>2</sub>O loss from ammonium sulfate

# Discussion Group:

Recommended steps forward to address gaps: