4R Nutrient Stewardship: CCA Involvement

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Increased Scrutiny of Land and Resource Management

- Negative headlines effecting public opinion
- Potential rulemaking affecting agriculture
- Environmental organizations litigating to force regulatory action
Essential Goal of Agriculture

- Simultaneously improve productivity & efficiency
  - Increasing societal demands
  - Global financial stress
  - Growing concerns on impact to air and water quality

- Efficiency without productivity
  - Increases pressure to use marginal lands

- Productivity without efficiency
  - Squanders resources & increases environmental impact
U.S. Department of Agriculture

*Upper Mississippi River Basin, Chesapeake Bay CEAP, Great Lakes report:*

- Increase complete and consistent use of nutrient management (proper rate, form, timing, and method of application)
  - 53-80% of the cultivated cropland require additional nutrient management to reduce the loss of N or P from fields

- Nutrient losses are acceptable when practices for soil erosion are paired with management of rate, form, timing, and method of nutrient application to maximize nutrient availability for crop growth while minimizing environmental losses
  - Suites of practices to reduce soil erosion and manage nutrients are required to simultaneously address soil erosion and nutrient loss
**4R Nutrient Stewardship**

- Improve agricultural production while contributing to social well being and minimizing environmental impacts (benefits water and air quality)

- 4R represents the use of fertilizer Best Management Practices to ensure:
  - the right source
  - at the right rate
  - at the right time
  - in the right place
Framework for management systems and education based on basic universal scientific principles

**Source**
1. Supply in plant available forms
2. Suit soil properties
3. Recognize synergisms among elements
4. Blend compatibility

**Rate**
1. Appropriately assess soil nutrient supply
2. Assess all available indigenous nutrient sources
3. Assess plant demand
4. Predict fertilizer use efficiency

**Time**
1. Assess timing of crop uptake
2. Assess dynamics of soil nutrient supply
3. Recognize timing of weather factors
4. Evaluate logistics of operations

**Place**
1. Recognize root-soil dynamics
2. Manage spatial variability
3. Fit needs of tillage system
4. Limit potential off-field transport
Example Fertilizer BMPs

• Source
  • Select appropriate fertilizer nutrient source
  • Consider fertilizer form for soil type and conditions
  • Consider fertilizer form for application time
  • Consider enhanced efficiency fertilizers

• Rate
  • Grid or zone soil testing for rates
  • Nutrient budgeting to plan management and application
  • Address spatial variability with variable rate application technology
  • Use in-season methods for in-season rate decisions
Example Fertilizer BMPs

- **Time**
  - Follow recommended times for nutrient applications
  - When necessary utilize enhanced efficiency fertilizers for controlled nutrient release and urease or nitrification inhibition
  - Utilize split applications to improve crop nutrient uptake.

- **Place**
  - Utilize application methods that limit nutrient losses
  - Incorporate fertilizers
  - Adjust applications to avoid unnecessary applications to non-crop areas
  - Couple applications with appropriate soil conservation practices
  - Utilize controlled drain management in tile drained fields.
NRCS Embraces 4Rs in 590 Std.

- NRCS incorporated 4Rs in the revised 590 Nutrient Mgmt. conservation practice standard
- 590 Std. an important NRCS tool
- Used to help farmers apply nutrients more efficiently
- With 590 as base, NRCS will offer voluntary technical and financial assistance to producers for planning and implementing on-farm nutrient management plans
NRCS 590 Nutrient Mgmt. Std.

- From 590 “Nutrients must be applied with the right placement, in the right amount, at the right time, and from the right source to minimize nutrient losses to surface and groundwater.

- NRCS Chief White – “If we can get those four R's right, we will have gone a tremendous way towards:
  - maximizing the efficiency of fertilizer
  - helping protect the environment
  - saving producers money
Nutrient Use Efficiency Technologies to be Considered

- Slow and controlled release fertilizers
- Nitrification and urease inhibitors
- Enhanced efficiency fertilizers
- Incorporation or injection
- Timing and number of applications
- Soil nitrate and organic N testing
- Coordinate applications with optimum crop nutrient uptake
- Corn Stalk Nitrate Test (CSNT), Pre-Sidedress Nitrate Test (PSNT)
- Tissue testing, chlorophyll meters, and spectral analysis technologies
Communicating with Stakeholders

• Agriculture needs to understand its role in sustainability

• Policy makers and the public need to understand agriculture’s role in sustainability

• Need a means to communicate how nutrient management contributes to sustainability
4R Website

www.NutrientStewardship.org provides:

- Articles regarding fertilizer best management practices
- Information about partner products and service that supplement 4R
- Information about 4R supporters
Industry Efforts

**Goals:**

- Establish 4Rs as recognizable strategy for economic, social, and environmental sustainability
- Expand the implementation of 4Rs by service providers on the farm
- Increase awareness of these efforts to the public and policy developers worldwide
IPNI 4R Manual

• Educate reader on adapting and integrating fundamental agronomic principles into a comprehensive method of nutrient management

• Includes chapters on:
  • Scientific principles and supporting practices for each “R”
  • Approaches for nutrient management planning
  • Measuring sustainability performance
  • Case studies
Upcoming Education Tools

- NRCS 4R/590 On-line Learning Modules
  - Intended for use by NRCS, SWCDs and agronomic service providers
  - Materials developed with ISU, IPNI, NRCS and TFI
  - Addresses major and minor nutrients and provides info on BMPs relative to each

- Potential CCA Webinar Series based on IPNI Manual
  - Planned to be available late this fall and offered a couple times a year
  - Might provide a special level of recognition for CCA relative to 4Rs
Awareness & Promotional Materials

- Co-branding of print, on-line and radio advertising
- Co-branding of educational flyers and brochures
- Participation in expos and conferences
- Utilizing regional and national speaking engagements
Partner Outreach

- 4R Quarterly Newsletter - Complete the “Contact Us” form on www.NutrientStewardship.org
- 4R Partner Tool Kit
- Work with state associations and stakeholders to implement 4R programs and policies
4R PARTNER SUPPORT

As agricultural industry representatives and stakeholders, we support 4R Nutrient Stewardship. Support of this initiative means:

- Embracing the 4R framework within our organization and our messaging as a recognizable strategy for economic, social, and environmental sustainability;
- Creating awareness and providing outreach for the initiative within our organization, to our stakeholders, to policy developers and to the public; and as applicable
- Implementing services or practices consistent with the 4R scientific principles, as defined below:
  - Use concepts and terminology consistent with defined 4R scientific principles and evolving standards.
  - Balance consideration of the three areas of sustainability – economic, social, and environmental.
  - Provide site-specific recommendations addressing specific regional soil, climate and operational issues.
  - Balance nutrition to ensure that N, P, K, secondary nutrients and micronutrients are in adequate supply to meet crop production expectations.
  - Use appropriate tools such as soil testing, tissue testing, nutrient budgeting and knowledge of crop nutrient uptake demand dynamics to assess nutrient requirements.
  - Consider all sources of nutrients (fertilizer, soil organic matter, manure, irrigation water, crop residual etc.) during the planning process.
  - Comply with applicable nutrient management regulations in your region or community.
  - Measure or evaluate the effectiveness of selected BMPs and use on farm or community based assessments to support continuous improvement in nutrient use efficiency and effectiveness to achieve crop yields and quality.
  - Adapt to changes in proven crop production and soil and water technologies (e.g. fertilizer, seed, equipment, etc.) which support goals for economic, environmental, and social progress.
  - Provide and maintain clear documentation of the nutrient management plan and its implementation.
RIGHT HERE. RIGHT NOW.
JOIN THE 4R EFFORT.

WHAT ARE THE 4RS?

4R nutrient stewardship is a framework designed to help farmers achieve cropping system goals, such as increased production, increased farmer profitability, enhanced environmental protection and improved sustainability. To achieve those goals, the 4R concept incorporates the:

- Right fertilizer source at the
WELCOME TO THE 4R PARTNERS WEBSITE.

This online portal is designed to help you make the most of your 4R partnership. The featured resources listed below are just a sample of the tools that are available to assist your efforts to promote the 4Rs. If you have questions about any of the resources you see within the site, have ideas for additional resources we can develop to assist you or if you can’t find what you’re looking for, click here to send an inquiry to TFI.

FEATURED RESOURCES

VIDEO: 4R ADVOCATES IN ACTION

Growers and retailers from the 2012 4R Advocate Program discuss the 4Rs relative to crop

4R ARTICLES FOR PARTNER NEWSLETTERS

Help educate your employees, clients and stakeholders about the 4Rs. These articles were

VELCRO TABLE TOP DISPLAY

This display sets up nicely in small spaces and can be easily carried to your next event to promote the 4Rs. Learn more »
4R ADVOCATE

WHAT IS THE 4R ADVOCATE PROGRAM?

Raising awareness and adoption of 4R nutrient stewardship is a top priority for the fertilizer industry. The industry is working to educate fertilizer manufacturers and retailers, growers, and agricultural stakeholders about the 4Rs at agricultural trade shows, through company visits and other 4R speaking engagements. While the 4R messages from the fertilizer industry are being well received, we recognize that engaging agricultural producers and sharing 4R success stories from the field level will play a critical role in adoption of 4R nutrient stewardship practices.

In 2012, The Fertilizer Institute (TFI) launched a 4R Advocate program to recognize agricultural retailers and agricultural producers that are leading the way when it comes to implementing 4R nutrient stewardship on the farm. Here from the 2012 4R Advocate Award winning growers and their nominating retailers as they explain the 4Rs in their own words to address Crop Production, Environmental Protection, Stakeholder Partnerships, and Public Perceptions. ➔ 2012 4R Advocate Video
4R Advocate Program

- Recognize producers and retailers utilizing 4Rs
- Engage producers and share success stories
- Inaugural program received 37 producer nominations from retailers across the US
- Winners get trip to Commodity Classic and will participate in TFI booth
- Looking for other opportunities to engage winners