Embracing 4R Opportunities

**4Rs of Nutrient Stewardship**
Economically, Environmentally & Socially Sustainable Crop Nutrition

The 4Rs promote best management practices (BMPs) to achieve cropping system goals while minimizing field nutrient loss and maximizing crop uptake.
What do you think of when you hear the word FERTILIZER?
Word Association with Fertilizer
• 50% of food production is the result of fertilizer use

• To meet growing population needs we need to double food production by 2050

  • 34 Growing Seasons

• 77% of increased food production will be the result of increased yields, while only 9% is due to increased cultivation
“Efficiency is doing things right; effectiveness is doing the right things.”

- Peter Drucker
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
Challenge We Face

• Negative Headlines

• Public sector, including government agencies and NGOs don’t understand retailer services and industry efforts

• Weather Extremes

• Need a unified message and positive visibility across the agricultural landscape
Reality
Ohio – Total Fertilizer Nutrient Consumption

Percent change from 1980 to 2011:
N = down 20%
P2O5 = down 65%
K2O = down 58%
Total: 46%

Source: Commercial Fertilizer Report, 2011 and earlier editions
Since 1980, Ohio has produced 21% more total corn using 32% less nutrients per bushel on 17% less acres.
Opportunities We Have

• Ability to achieve **positive visibility across the agricultural landscape**

• Ability to engage with stakeholders and influence state efforts

**EMBRACE OUR PARTNERSHIP OPPORTUNITIES**
4R NMP Specialty Program for CCAs

• Designed for CCAs with a heavy focus on Nutrient Management Plans

• Aligns with USDA-NRCS and state nutrient management standards

• Open to all CCAs

• Currently available in:
  • Illinois, Indiana, Iowa, Michigan, Minnesota, Wisconsin
  • Plans for Nationwide Expansion

• 70 took first exam on August 7th
4R NMP Specialty Program Cont.

- Wonderful Opportunity for Collaboration with TFI & Our Members

How the Program is being Supported

- Letter of Support
  - 11 Membership Supporters
  - Publicity/Public Engagement Opportunity
- 4R Strategic Plan
- TFI’s State of the Industry Report
  - Show where the industry currently is on a variety of issues..
    - Production, Safety, Transportation, and a variety of other topics
  - Hope to include as a future reporting metric
In Addition...

- Use of Online Training Modules by TFI Members
- Work Very Well with Current 4R Learning Modules
- Adds Value To Other Partnerships
  - 4R Advocates
  - State Associations
Nutrient Stewardship Across the Nation

**4R STATE EFFORTS**
Several states are helping lead the way for nutrient stewardship by developing governing methods such as certification programs, codes of practice and sustainability programs. State by state, 4R BMPs are gaining ground in local communities through demonstration and outreach efforts.

**4R ADVOCATE**
Each year the Nutrient Stewardship 4R Advocate program recognizes outstanding agriculture retailers and farmers dedicated to sustainable crop nutrition. These advocates travel the country educating local communities about the 4R principles as well as promoting the benefits of sustainable farming to the general public.

**4R EDUCATION**
Industry partners have come together to help producers learn more about sustainable farming. These partners have developed webinars, learning modules and online interactive training to provide essential information about the basic components of soil fertility and nutrient BMPs as they pertain to implementation of the 4Rs.
**4R Nutrient Stewardship Certification Program**

Western Lake Erie Basin - Ohio, Michigan, and Indiana

- 16 Certified Branch Locations
- 50 Commitments From Other Branches

<table>
<thead>
<tr>
<th>Description</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acres serviced or applied in WLEB</td>
<td>636,000</td>
</tr>
<tr>
<td>Acres outside WLEB serviced or applied</td>
<td>477,000</td>
</tr>
<tr>
<td>Total</td>
<td>1,113,000</td>
</tr>
<tr>
<td>Number of Clients Serviced in WLEB</td>
<td>1,580</td>
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<tr>
<td>Clients Serviced Outside WLEB</td>
<td>1,460</td>
</tr>
<tr>
<td>Total</td>
<td>3,040</td>
</tr>
</tbody>
</table>

Voluntary Program for Agricultural Retailers & Service Providers Implementing the 4Rs
Other State Efforts

• Illinois Fertilizer and Chemical Association
  • 4R Code of Practice for retailers
  • 4R included in state NLR strategy

• Chesapeake Bay 4R Alliance

• PA 4R Alliance – Identify best practices, effective outreach to growers, and collaborative efforts with other service providers

• Florida Chemical Fertilizer Association
  • Help bring 4R message to state agencies
  • Working to include 4R messaging in state BMP guides and non-point source efforts

• TFI inventorying state efforts and developing case studies for others to utilize
4R Advocates
Grower: John Werries
Retailer: Verne “Tinker” Bader

• 3800 Corn & Soybean farm in Chapin, Ill.

• Goal: Continually evaluate practices to strive for improved yields, reduced soil erosion, sequestering of nutrients, and improved soil health

• Yield and Nitrogen Use Efficiency:
  • Average corn yield
    • 2006-2012: 193 bu/ac
    • 2013: 234 bu/ac
  • NUE based on inputs/yield
    • 2006 – 2012: 1.2 – 1.3 lb N/bu
    • 2013: 0.96 lb N/bu
**Expected Farm Expenditure Cuts When Corn Reaches Trigger Point**

- A fall 2013 survey of 500 Mid-west corn growers conducted by Dow AgroSciences indicates where growers will make significant changes to farm expenditures when the price of corn reaches their “trigger point”
  - Growers were asked to identify the specific corn price at which they would make significant cuts to their farm expenditures

- Capital investments will see the greatest reduction in growers expenditures
  - **However**, capital purchases are not always made on an annual basis.

- Significant cutbacks in crop input expenditures threaten some categories more than others.
  - Fungicides, fully-stacked corn hybrids, micronutrients and fertilizer are most likely to see greater pricing scrutiny.

- Herbicides, nitrogen stabilizers and insecticides will see the least pullback activity overall.

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### Capital Investments (% of users)

<table>
<thead>
<tr>
<th>Category</th>
<th>Significant Cut in Investment</th>
<th>No Change</th>
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</thead>
<tbody>
<tr>
<td>Farm machinery</td>
<td>73%</td>
<td>27%</td>
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<tr>
<td>Purchased crop land</td>
<td>63%</td>
<td>37%</td>
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<tr>
<td>Infrastructure</td>
<td>61%</td>
<td>39%</td>
</tr>
<tr>
<td>Rent/leased crop land</td>
<td>57%</td>
<td>43%</td>
</tr>
<tr>
<td>Precision ag technologies</td>
<td>46%</td>
<td>54%</td>
</tr>
</tbody>
</table>

### Crop Inputs (% of users)

<table>
<thead>
<tr>
<th>Category</th>
<th>Significant Cut in Investment</th>
<th>No Change</th>
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</thead>
<tbody>
<tr>
<td>Fungicides</td>
<td>58%</td>
<td>42%</td>
</tr>
<tr>
<td>Fully-stacked corn hybrids</td>
<td>48%</td>
<td>52%</td>
</tr>
<tr>
<td>Micronutrients</td>
<td>47%</td>
<td>53%</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>39%</td>
<td>61%</td>
</tr>
<tr>
<td>Insecticides</td>
<td>30%</td>
<td>70%</td>
</tr>
<tr>
<td>Nitrogen stabilizers</td>
<td>25%</td>
<td>75%</td>
</tr>
<tr>
<td>Herbicides</td>
<td>14%</td>
<td>86%</td>
</tr>
</tbody>
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*Source: 2013 Dow AgroSciences third party research*


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The 4Rs Are EXPANDING...

U.S. Department of Agriculture

*Upper Mississippi River Basin & Chesapeake Bay CEAP 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 placement 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
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
USDA Climate-Smart Ag Fact Sheet


- **Nitrogen Stewardship**: Focus on the right timing, type, placement and quantity of nutrients to reduce nitrous oxide emissions and provide cost savings through efficient application.
Outreach and Resources

• Become a 4R Partner: www.partners.nutrientstewardship.com
• 1fertilizer
• @4Rnutrients
• 4R Quarterly Newsletter: sign-up at www.nutrientstewardship.org
• 4R Pocket Guide
Discussion

- How do we show/promote level of 4R adoption?
- How can the role of fertilizer industry continue to evolve?
- What is the best way to expand the 4R NMP nationally?
- Can effectiveness/adoption data be aggregated locally or by watershed to help tell the story?

How Will You Get Involved?
Thank You