

Fertilizer Recommendation Support Tool (FRST) Collaborator Survey and FRST Database Update

NRSP11, FRST Annual Collaborator Meeting

9 June 2025

Durham, NC



<https://soiltestfrst.org>

Outline

- Database
 - Status
 - Next steps
- Survey
 - How are collaborators are using FRST decision aid?
 - Suggestions for improvements

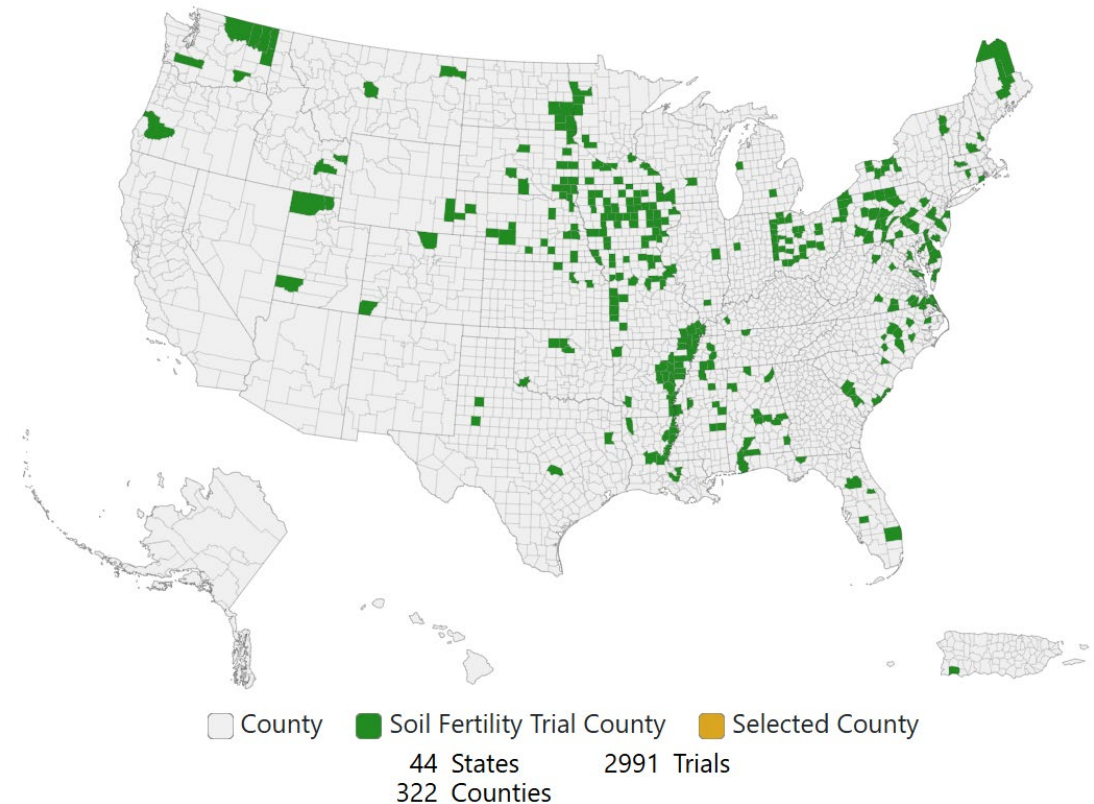
The graphic for the Fertilizer Recommendation Support Tool features a background image of a field with rows of young green plants in a grid pattern. Overlaid on this image is the title "Fertilizer Recommendation Support Tool" in a large, bold, white font. Below the title, a paragraph of white text describes the tool's purpose: "Increasing soil testing transparency by promoting clear and consistent interpretations of fertilizer recommendations by removing political and institutional (public and private) bias from soil test interpretation and providing the best possible science in order to enhance end-user adoption of nutrient management recommendations." The text is centered and uses a smaller, regular white font.

Fertilizer Recommendation Support Tool

Increasing soil testing transparency by promoting clear and consistent interpretations of fertilizer recommendations by removing political and institutional (public and private) bias from soil test interpretation and providing the best possible science in order to enhance end-user adoption of nutrient management recommendations.

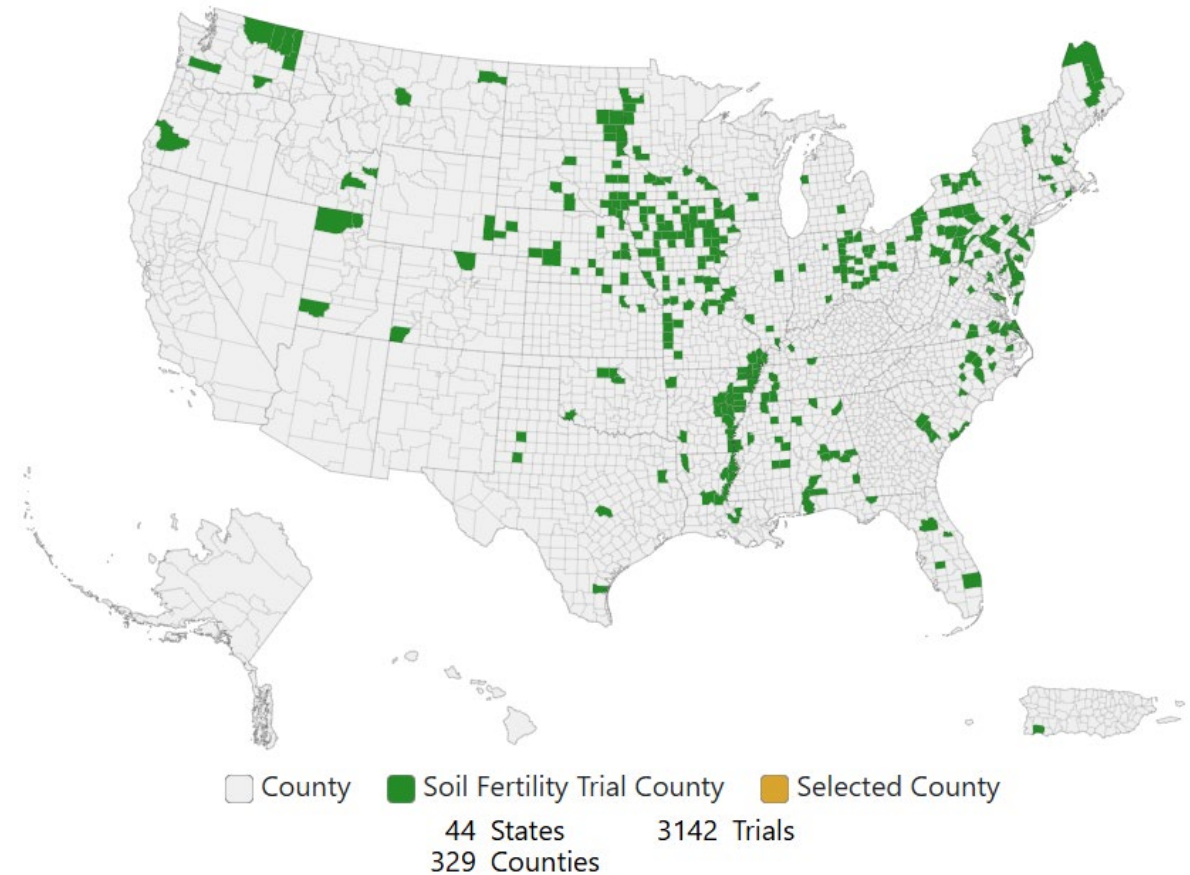
Database Content (05.24.2025)

- 2,991 Total Trials entered (05.24.2025)
 - 1,333 Potassium (30 states)
 - 1,516 Phosphorus (39 states)
 - 143 Sulfur (8 states)
- Includes 7 Corn P trials conducted in 2024
- 61 site-years of soybean P trials from Louisiana (2020-2023)
- Peanut data from Florida



Current Database Content (06.06.2025)

- 3,142 Total Trials entered
 - 1,336 Potassium (30 states)
 - 1,636 Phosphorus (39 states)
 - 171 Sulfur (10 states)
- 3 OCP-NA trials to upload
 - Illinois (x 2)
 - Wisconsin



Completed Templates Recently uploaded or in Queue to Import

Nutrient	Crop	State	Trial #	Extractant
P	Corn	Kansas	3	Bray-1
P	Corn	Iowa	60	Bray-1
P	Corn	Nebraska	2	Bray-1
P	Corn	Illinois	4	Bray-1
P	Grain Sorghum	Kansas	9	Bray-1
P	Grain Sorghum	Missouri	1	Bray-1
P	Soybean	South Dakota	3	Bray-1
P	Soybean	Missouri	4	Bray-1, Bray-2
P	Soybean	Iowa	60	Bray-1
			149	

Completed Templates Recently uploaded or in Queue to Import

Nutrient	Crop	State	Trial #	Extractant
P	Barley	Idaho	12	Olsen
P	Oats	Iowa	15	Bray-1
P	Potato	Idaho	2	Olsen
P	Cotton	Missouri	4	Bray-1, Bray-2
P	Winter Wheat	Kansas	45	Bray-1, Mehlich-3®, Olsen
P	Winter Wheat	Kansas	1	Bray-1
P	Winter Wheat	Missouri	4	Bray-1, Bray-2
P	Sweet Corn	Oregon	12	Bray-1 (6), Mehlich-3 (6)
P	Sugar beet	Idaho	2	Olsen
			97	

Completed Templates Recently uploaded or in Queue to Import

Nutrient	Crop	State	Trial #	Extractant
K	Corn	Missouri	3	Ammonium Acetate
K	Corn	Kansas	2	Ammonium Acetate
K	Corn	Illinois	4	Ammonium Acetate
K	Grain Sorghum	Missouri	1	Ammonium Acetate
K	Soybean	Indiana	4	Ammonium Acetate
K	Soybean	Missouri	6	Ammonium Acetate
K	Soybean	Illinois	4	Ammonium Acetate
			24	

Completed Templates (recently added data)

Nutrient	Crop	State	Trial #	Extractant
K	Bermudagrass	Louisiana	7	Ammonium Acetate
K	Cotton	Missouri	4	Ammonium Acetate
K	Cotton	Texas	1	Mehlich-3
K	Sorghum-Sudangrass	New York	1	Morgan
K	Oats	Iowa	15	Ammonium Acetate
K	Winter wheat	Missouri	5	Ammonium Acetate
			33	

Completed Templates (recently imported)

Nutrient	Crop	State	Trial #	Extractant
S	Corn	North Dakota	13	Calcium Phosphate
S	Corn	Kansas	5	Calcium Phosphate
S	Corn	Iowa	6	Calcium Phosphate
S	Soybean	Iowa	5	Calcium Phosphate
S	Corn	Minnesota	9	Calcium Phosphate
S	Soybean	Minnesota	9	0.25 M KCl
			47	

Database – what next?

- NRCS-CIG Regional Project data
 - Ask that it be contributed as it is collected
- More current/ongoing trial data
 - Data 489 trials (256-P, 230-K, & 3-S) from the last 5 years 2019-2024)
- Geographic diverse data
 - Need data from all regions, especially the West, the Northeast, & South
- Data with a complete suite of soil data
 - Required and recommended data
- With a few exceptions, data contributions must be incentivized
- Publish data file before end of project



National Agricultural Library
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National Agricultural Library

The National Agricultural Library (NAL) is one of five national libraries of the United States. It houses one of the world's largest collections devoted to agriculture and its related sciences.



Online Resources

AGRICOLA

Search citations from two agricultural science databases: indexed journal articles and the NAL catalog.

[Search the Catalog](#)

PubAg

Find full-text articles and citations to peer-reviewed journal articles in the agricultural sciences.

[Browse Journal Articles](#)

Ag Data Commons

Access open data relevant to agricultural research.

[Access Open Data](#)

Digital Collections

Explore NAL collection materials available in digital format.

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NALT Concept Space

The National Agricultural Library Thesaurus (NALT) is now a multischeme concept space.

[Browse the NALT](#)

Invasive Species

Learn about invasive species that threaten the United States.

[Go to invasivespeciesinfo.gov](#)

Nutrition.gov

Uncover reliable resources on food, healthy eating, physical activity, and food safety.

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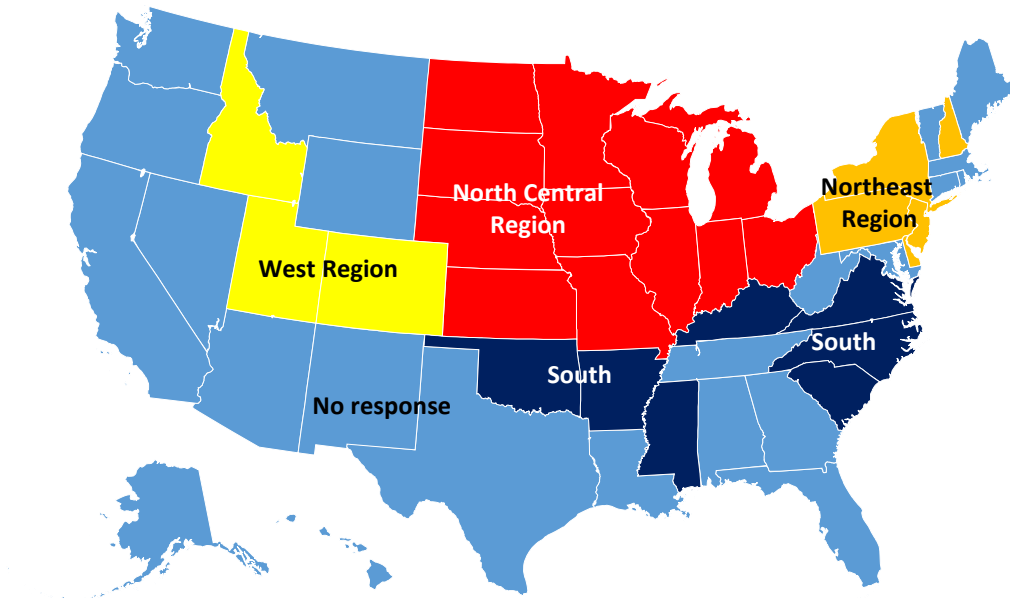
LCA Commons

Find Federal life cycle assessment data, research, and information systems.

[Access Data Repositories](#)

Survey Information & Participants

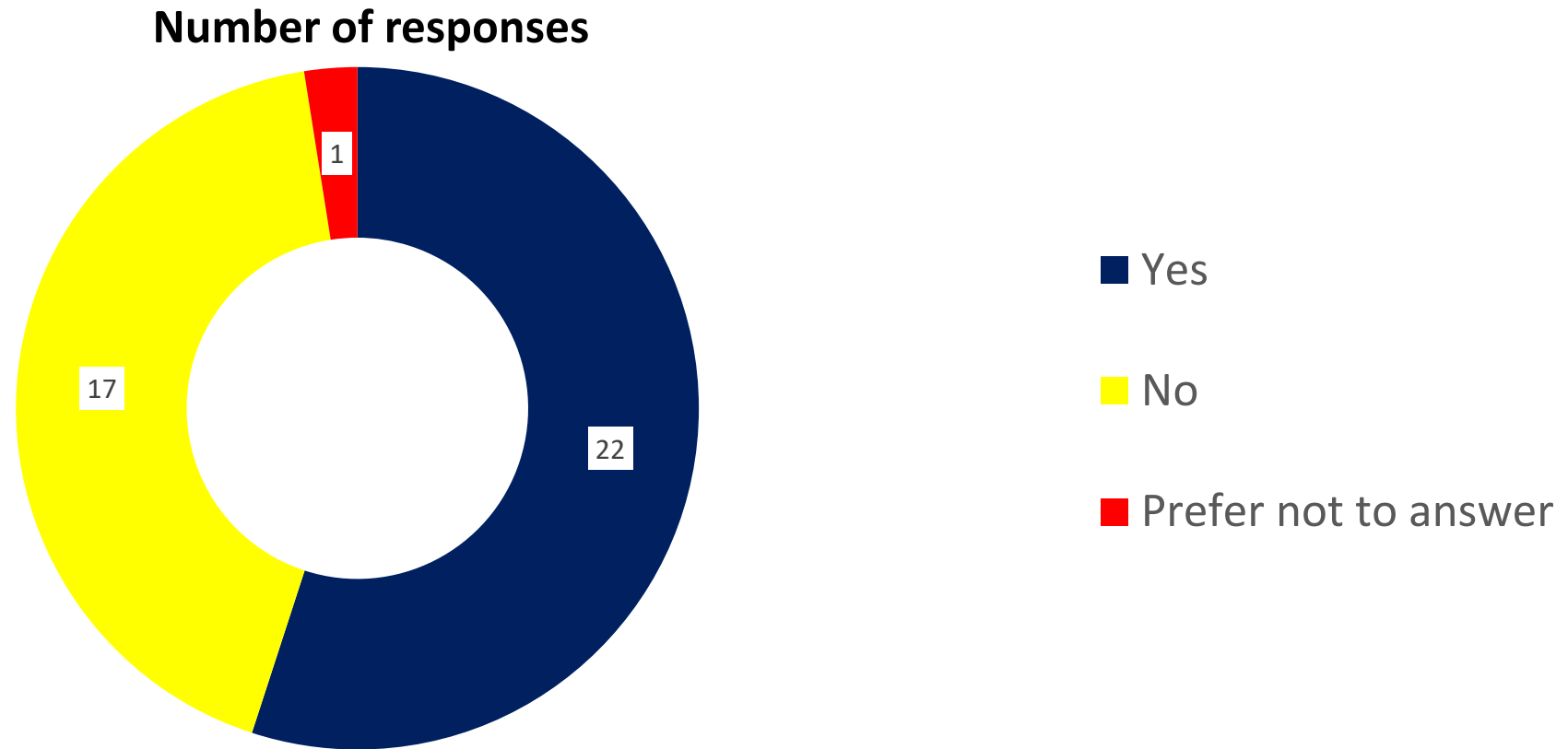
States with Responses



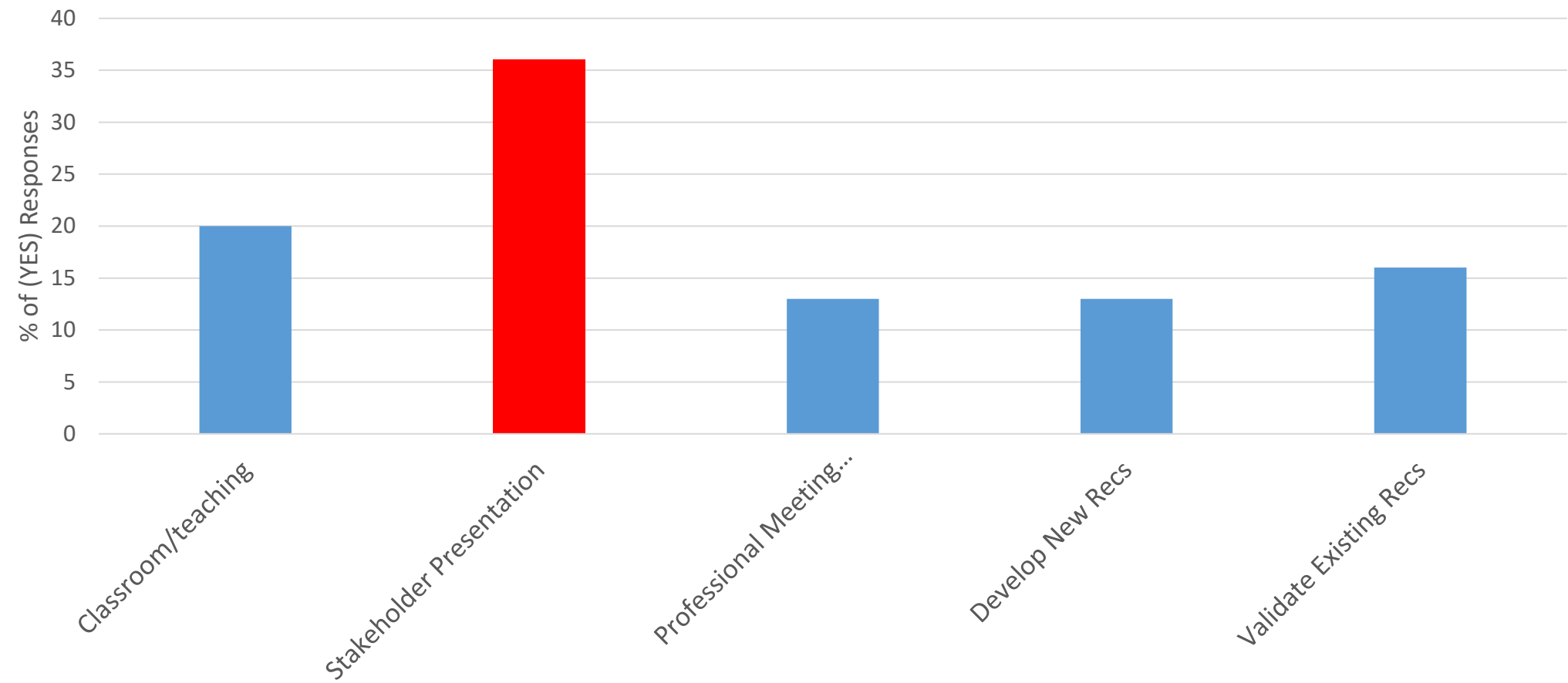
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- 40 FRST collaborators completed the survey
 - 28 States represented
 - 30 university scientists
 - 5 Industry agronomists/scientists
 - 2 USDA scientists
 - 1 State Dept of Agric. scientist
 - 1 Unknown respondent
- Avg time, 7:54 (min:sec)

Have you used the FRST Decision Aid in your professional job responsibilities?



Select the ways you have used the FRST Decision Aid in your professional responsibilities. (Select all that apply)



Summary of Open Response Comments

Features to add to FRST Decision Aid

- **Ongoing efforts** (*requiring collaborator engagement*)
 - Add more research data
 - Add N and more PKS data for western states
 - More data for western states
 - More info on tropical soils and crops
 - Larger databases for some extractants
 - More awareness
- **Features to add**
 - *Decision support tools that help growers figure out the probability that fertilization will be profitable*
 - *Calibration and probability of response information*
 - Add zinc to database
 - Other nutrients including micronutrients
 - Feature to assess the accuracy/efficacy of soil tests
 - *Ability to download the data and trial results summary*
 - Add video tutorial
 - Disclaimer (use at own risk, no guarantees of CSTV accuracy)

Summary of Open Response Comments

Features to add to FRST Decision Aid

- **Investigation Opportunity Comments**

- Show side-by-side comparison of extractants
- The database can facilitate a host of other activities for investigation of soil-test questions that currently lack answers
 - CSTV and probability of response as affected by yield level
 - Assessment of existing recommendations and their fertilization philosophies (CSTV and fertilizer cut-off values)

- **Other comments**

- Information that supports USDA organic growers
 - Standard spreadsheet to shorten process for submitting new data
- *Fertilizer P and K recommendations in 5 categories*
- *Situation assessment (recommendation for crop and location)*
- *Summary of NPK and lime recommendations used in all states*



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FRST Team + Collaborators

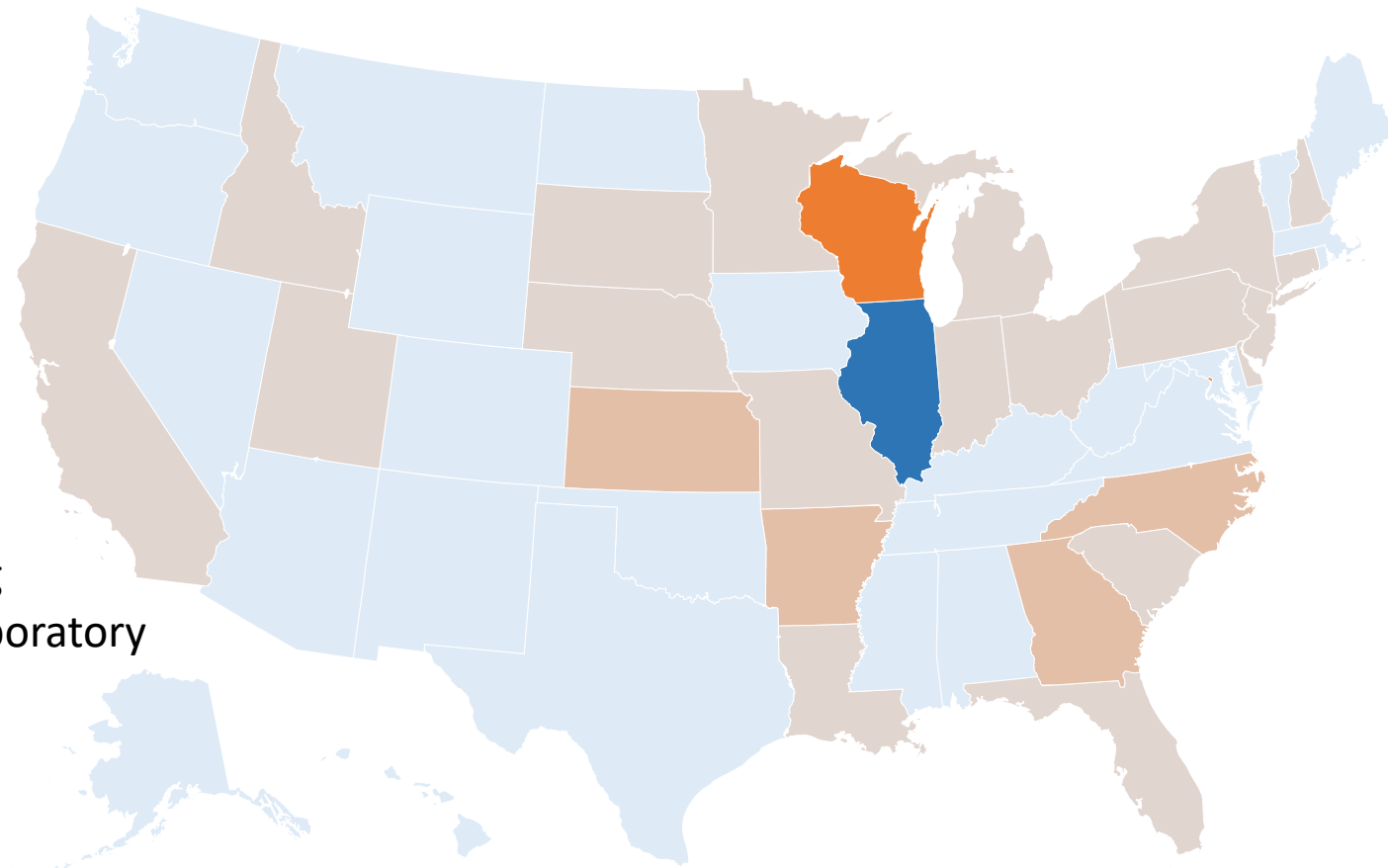
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Matt Yost Utah State University
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Frank Sikora University of Kentucky
Gurbir Singh University of Missouri

NRSP11 Participating States & Industry



- 24 Land Grant Universities
- Brad Joern, Precision Planting
- Dustin Sawyer, Rock River Laboratory
- Sarah Lyons (FFAR)