Fertilizer Response Support Tool (FRST) Legacy Data Guide

We are looking for legacy data from **P and/or K correlation/calibration, or crop response, trials** for the FRST database. These trials do not necessarily have to be the ones that contributed to fertilizer recommendations in your state. All values must have **clearly defined units** associated with them. If means are given, **standard errors** and other statistical values are desired.

Data can be provided in **any format,** including published article, extension bulletin, dissertation/thesis, spreadsheet, project summary, etc.

The 'Essential Information' listed below is required for data inclusion (It is bolded). The other information listed is desired but not necessarily required at this stage to be considered for the database.

Please see page 2 for a description of the project and contact information.

Essential Information	
o **Soil test P and/or K values prior to fertilization (for individual years)** o **Soil test method and soil sample depth** o **Trial location (state)**	o **Yield response values (for individual years)** o **Replicated fertilizer P and/or K treatment rates (including a control)** o **Trial year**
Trial Information	
o Researcher information (name, contact info.) o Publication information (if published) o Study design o Number of replications o Plot size	o Nutrient researched o Year(s) of trial(s) o Trial location (state, county, nearest city, GPS coordinates)
Soil Information	
o Soil taxonomic information (series, suborder) o Soil texture o Sand, silt, and/or clay content o Number of composites collected o Soil sample depth o Moisture extraction method o Soil test P and/or K values prior to fertilization	o Soil test P method (analysis method, soil mass or volume, extractant solution to soil ratio, ICP or colorimetric, laboratory) o Soil test K method (analysis method, soil mass or volume, extractant solution to soil ratio, laboratory) o Other soil test values and methods (pH, CEC, SOM, Ca, Mg, Na, etc.)
Crop Information	
o Crop and cultivar o Irrigation (yes/no) and method o In-season precipitation o Previous crop	o Fertilizer applied to previous crop o Planting date o Row spacing o Plant population
Yield Information	
o P and/or K fertilizer rates o Fertilizer source o Fertilizer timing (preplant, at planting, etc.) o Fertilizer placement (banded, broadcast, etc.) o Manure information (yes/no, rate, etc.)	o Yield values (and standard error if means) o Crop moisture content o Growth stage at harvest o P values (if means are given)
Plant Tissue Analysis	
o Plant part sampled o Growth stage at sampling	o Nutrient content (N, P, K, etc.)

Project Overview

Soil testing provides the backbone for nutrient management programs in modern, intensive agricultural production systems. Most science-based, soil-fertility-recommendation-systems base phosphorus (P) and potassium (K) fertilizer guidance on correlation and calibration research. Soil testing has the common goal of determining where fertilizer is needed and how much to apply. However, soil testing laboratories may use different soil analytical methods, interpretative terminology, and philosophical approaches to develop fertilizer recommendations. These differences often result in dissimilar fertilizer recommendations, leading to end-user confusion and reduced confidence in soil-test-based nutrient management, which ultimately proves detrimental to research and educational efforts that encourage 4R Nutrient Stewardship. 4R Nutrient Stewardship provides a framework supporting the Right fertilizer source, applied at the Right time, in the Right place, and at the Right rate in a well-managed cropping system to meet specific performance objectives.

The Fertilizer Recommendation Support Tool (FRST) Project has developed a decision-support tool that models soil-test correlation data from a national database to identify crop-specific, critical soil test P and K values. Our short-term goals are to continue adding new and legacy data to the national database, develop additional features into the decision support tool, provide stakeholders database access, and support data analysis to enable novel insight into crop fertilizer response and soil testing. The long-term goal of this project is to develop more consistent, transparent and science-based nutrient management recommendations across the USA. Furthermore, the proposed project would support innovative soil fertility research to advance site-specific, precision nutrient management.

Contact Information

For general information about the project:
Deanna Osmond
dosmond@ncsu.edu

Nathan Slaton
nslaton@uark.edu

For data contribution and other data-related questions:
Qudus Uthman
quthman@uark.edu

Acknowledgements