

South Dakota Center for On Farm Research (in cooperation with the South Dakota Soybean Association) and the Alliance of Site Specific Providers

Protocol for phosphorous fertility study

Objective:

The purpose of this project is to quantify the agronomic and economic impacts of on the go changes to phosphorous fertilization. This information is needed to address increasing costs of phosphorous fertilizer. After the initial fertilizer application, the field will be yield monitored for 5 years with the goal of determining optimum long term soil test level to maintain.

Brief summary:

A grower with a field with a low phosphorous soil test level (Olson P of ~5ppm) will be selected. Previous 5 years of yield monitor data will be used to select (South Dakota Center for On Farm Research) strip locations. Strips will be laid out on a ½ mile length of field in width that is equal to the local fertilizer supplier's applicator. Strips will be fertilized perpendicular to the field variability.

Treatments will be

500 lb of actual P₂O₅/Acre (after application soil test ~30)

300 lb of actual P₂O₅/Acre (after application soil test ~20)

100 lb of actual P₂O₅/Acre (after application soil test ~10)

0 lb of actual P₂O₅/Acre

Harvesting must ensure at least one "pure" combine pass (not mixing yields from two strips) within each strip. Loads should be used in the yield monitor to identify each pure rate pass.

Grower Requirements:

- 1) Apply one set of strips of the 4 rates, the length of the field. Document each year the cultural practices such as planting date, hybrid, condition of seed bed, etc.
- 2) Accurately record the (A-B) beginning and ending end points of each strip. If Rows are not straight (not applied on an A-B line with an auto steer, an agronomy profession will walk the strip centers with a recording GPS receiver.
- 3) Trial must be harvested with a calibrated yield monitor equipped with GPS. If possible, harvest the entire trial area on the same day. Combine direction of travel should be the same for all strips within a set. GPS yield data must be submitted within 30 days of harvest or no later than December 1, 2009 as raw yield from the memory card.
- 4) Allow South Dakota Center for On Farm Research to use submitted and collected data for research, educational, and informational purposes.
- 5) If it is possible, provide the South Dakota Center for On Farm Research yield monitor data from the field being studied for up to the previous 5 years. (as site specific locations on the strips are selected for comparison, analysis will be accomplished to ensure that there are minimal differences between site blocks)
- 6) Document as much auxiliary information as is possible (precipitation, weed, insect, disease problems, soil test analysis, etc....)

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Agrees to:

- 1) Return a report analyzing the treatment differences.
- 2) Keep data in a confidential manner that can't be linked back to the individual producer by other parties. Only resultant recommendations will be made public.
- 3) 0-6 inch soil sample taken and analyzed for each strip approximately every 400 ft in each ½ mile strip (starting 200 ft from field beginning) before treatment and in years 2,3,4,and 5. (if 400 ft sample is on side slope and the next 400ft sample is on the other side of the slope, sample point can be move to the top or bottom of the hill. Mark points with GPS).
- 4) 15 cores (cores to be composited) need to be pulled within 20 ft of each 400 ft flag
- 5) Strips must be the size of spreader booms wide (70' or whatever)
- 6) Fields should be of low phosphorous fertility (Olson or Bray ~5 or less) and without manure history.
- 7) Spread following years with producer's normal flat rate of fertilizer and document it (normal rate of what producer uses).
- 8) Soil test for phosphorus must be pulled every year on strips.
- 9) Use the same lab every year to do analysis.
- 10) Need to yield data all 5 years of study.
- 11) Seeding rate should be flat on VR N & P