

## **Assessment of Phosphorus Needs of Potato On-Farm Demonstration Protocol**

The objective of this study is to learn if UW recommendations for P fertilization of potato are adequate to produce maximum economic yield. Data collected in accordance to this protocol can be used to help inform UW recommendations. All data collected will be summarized and reported back to participating growers. Grower anonymity can be maintained if desired.

### **1. Site selection**

- a. Choose a site that has a uniform soil type across the treatment area
- b. Irrigation should be uniform across the treatment/sampling area

### **2. Soil Sampling**

- a. Prior to planting/treatment, collect a soil sample to 6" in each treatment.
  - i. This sample should be a composite of 10 cores from across the area.
- b. Soil samples should have a routine (P, K, pH, OM) soil test run on them.

### **3. Treatments**

- a. There will be two (or three) treatments:
  - i. Growers normal  $P_2O_5$  rate
  - ii. UW recommended  $P_2O_5$  rate based on soil test and expected total yield
    1. Use UWEX A2809 as a guide. A copy can be obtain for download or purchase at: <http://www.soils.wisc.edu/extension/>
  - iii. If there is a large difference ( $> 50$  lb  $P_2O_5/a$ ) between the grower rate and the UW rate, then a rate about half way between the two rates could be useful.
    1. This treatment is optional
- b. The goal of the treatments are to assess the effect of P fertilizer rate, not different fertilizer materials. Therefore, the rates of N,  $K_2O$ , and micros must remain the same between treatments. The easiest way to achieve this to is have two different starter fertilizer blends made such that you will always apply the same rate of fertilizer material.
  - i. Eg. The grower normally applies 500 lb/a of 6-24-24 in starter fertilizer. This is treatment 1. Let's say the soil test level is high. Treatment 2 should supply 70 lb  $P_2O_5/a$ . Thus, 500 lb/a of 6-14-24 could be applied as starter fertilizer for this treatment.
  - ii. The same process can be used with liquid starters.
  - iii. Work with your fertilizer supplier to obtain fertilizer blends that will meet your needs for this study.
- c. Alternatively, if you have the ability to control the rate of starter fertilizer applied (eg. you have Raven control unit), it is possible to use two fertilizer materials applied at different rates that will supply the same amount of total nutrient
  - i. Eg. Apply 325 lb/a of 9-9-37 to supply 30 lb  $P_2O_5/a$  while supplying the same amount of N and  $K_2O$  as 500 lb/a of 6-24-24.

- d. Make sure that any pesticides applied with the fertilizer are applied at the same rate in both treatments.

#### **4. Plot Size**

- a. Plots can be any size. For growers ease, the treatments can be set up as a split field as shown in the diagram at the end. The UW P<sub>2</sub>O<sub>5</sub> rate can be applied to a couple of passes in the center of the field. The grower P<sub>2</sub>O<sub>5</sub> rate (normal practice) can be applied on either side of the UW rate

#### **5. Harvest**

- a. Yield should be measured in four locations in each treatment. Harvest locations should be paired between treatments as shown in the diagram at the end.
- b. Hand dig a minimum of 10' of row to make up one sample.
  - i. Be sure to use the same row length each time.
- c. Place all potatoes in bags.
- d. Place an index card with the sample name/number in each bag. Multiple bags may be required for one sample.
  1. Label each sample.
  2. More directions regarding yield sample labeling will be provided once the extent of the on-farm demos is known.
- e. Total weights from each yield sample may be measured on-farm, if desired.
- f. Transport samples to Hancock ARS.
  - i. Laboski's crew will grade these samples.

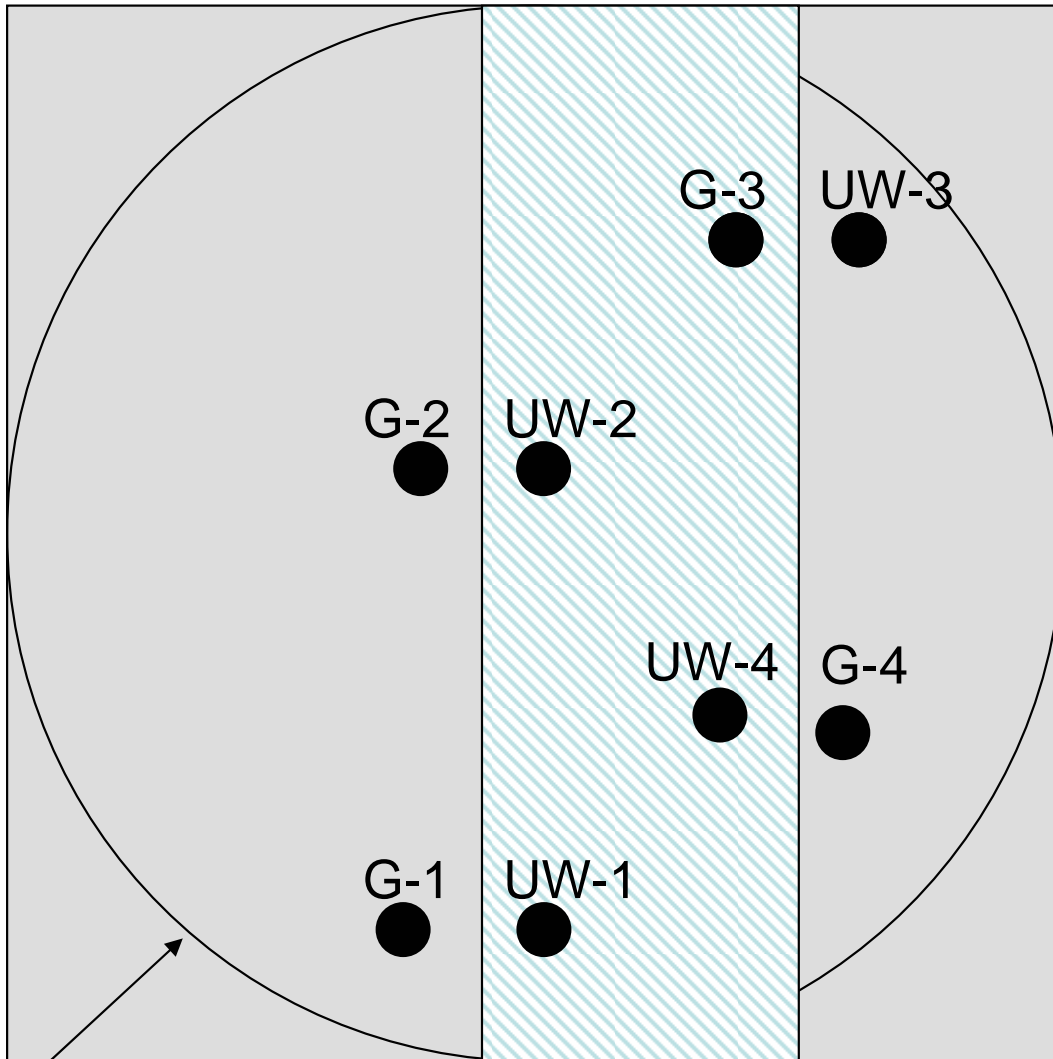
#### **6. Other data collection**

- a. An excel file to aid site data collection can be downloaded from:  
<http://www.soils.wisc.edu/extension/onfarmdemo/>
- b. Please fill out all of the tabs in the file as completely as possible.
  - i. This information is needed to fully document the site and make sure that the data can be used to inform UW recommendations.
- c. Name your completed file in the following manner: Grower name - P on potato.xls
  - i. Eg. Laboski - P on potato.xls.
- d. Email completed files to Carrie Laboski at [laboski@wisc.edu](mailto:laboski@wisc.edu)

#### **7. Contacts – Please contact any of the individuals below regarding this on-farm demo.**

- a. Don Genrich, UWEX Adams Co.: 608-339-4237, [donald.genrich@ces.uwex.edu](mailto:donald.genrich@ces.uwex.edu)
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# Example of acceptable plot layout and yield sampling locations



Extent of center pivot coverage

Growers P rate

UW P rate

● Yield sampling locations