

**Water Quality Enhancement Activity – WQL11 – Precision application technology to apply nutrients**



**Enhancement Description**

The use of precision agriculture technologies to apply nutrients to fit variations in site-specific conditions found within fields.

**Land Use Applicability**

Cropland and pastureland.

**Benefits**

Precision agriculture methods are used to collect information needed to more precisely evaluate production input factors, accurately predict crop yields, and precisely apply

variable rates of nutrients. The primary benefit of precision agriculture techniques is the use of accurate information about within field variability to minimize nutrient losses and optimize inputs. Done properly this helps to protect surface and ground water resources while maximizing net production.

**Criteria**

Implementation of this enhancement requires the use of nutrient management techniques. This enhancement requires:

1. The use of the following precision agriculture practices:
  - a. Variable rate technologies (VRT) for nutrient application- Computer-controlled equipment that adjusts fertilizer applications based on soil maps, vegetative indexes, or yield maps, etc. used to create management zones. Nitrogen, phosphorus and potassium fertilizer will be applied according to Land Grant University recommendations in the management zones.
  - b. Yield monitoring systems - Yields in the field are measured using combine-mounted sensors or volume meters. A GPS receiver mounted on the combine is required to correlate field location with yield to create a yield map.
2. Soil samples for nutrient analysis are taken based on soil management zones or on a maximum of a five acre grid
3. Base nitrogen application rates on a real time analysis of crop nitrogen needs. Examples include in season aerial photography and in field equipment based chlorophyll sensors.
4. Producer must have current soil tests for P and K (and Nitrogen where applicable) that are no more than 3 years old



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5. Nutrient application rates must be within the “Land Grant University (LGU) recommendations based on soil testing and established yield goals and considering all nutrient sources.

### **Documentation Requirements**

Documentation for each Treatment area (field) and year of this enhancement describing these items:

1. A map showing where the activities are applied.
2. Treatment acres
3. Crop grown in each treatment area
4. Soil sampling protocol (grid or zone) for each treatment area
5. Number of soil samples taken per treatment area
6. Soil test results
7. Calibration of fertilizer application equipment
8. Nutrient application rates/amounts and application dates for each treatment area
9. When using NDVI, provide an as-applied digital map of nutrients applied

## ALABAMA SUPPLEMENT TO ENHANCEMENT WQL11 PRECISION APPLICATION TECHNOLOGY TO APPLY NUTRIENTS

The use of precision application technology to match the application rate to within field variations will help protect surface and ground water resources. This enhancement is applicable to crop land and pastureland. This enhancement requires soil samples to be taken within management zones developed within the field or on a maximum of a five acre grid sampling system. All nutrient application must be made within Alabama fertilizer recommendations for each management zone or grid zone using variable rate technologies. Management zones may be developed from past yield monitoring data, soils maps, electrical conductivity data and other spacial data collected before the development of the management zones. The producer must have a soil test for each management zone or grid zone no older than 3 years. Refer to the national enhancement and Alabama fertilizer recommendations for more information.

### Documentation Requirements:

1. For each year of this enhancement, written documentation describing the cash crop planted, sampling protocol (zone or grid), number of samples taken per field, and fertilizer application rate and date.
2. Calibration of fertilizer application equipment and soil test results
3. A map showing fields where the enhancement is applied.

### References:

#### **ALABAMA Soil Testing and Fertilizer Recommendations:**

<http://www.ag.auburn.edu/agrn/croprecs/NutrientRecsIndex.html>

**ALABAMA SUPPLEMENTAL INFORMATION FOR THIS ENHANCEMENT**

***WQL11 - Precision Application Technology to Apply Nutrients***

**Documentation Form**

<b>Producer Name:</b>		<b>Date:</b>		
<b>Tract Number(s):</b>		<b>County:</b>		
<b>Field Number(s):</b>				
<b>Crop:</b>				
<b>Acres:</b>				
<b>Yield Goal:</b>				
<b>Measured Yield:</b>				
<b>Calibration of Fertilizer Application Equipment:</b>				

The following documentation is to be provided in a colored map format:

- 1 **Soil Sampling Area Map that includes the sampling dates, number of samples, and the size of the grid or zone area sampled.**
- 2 **Soil test results for all nutrients**
- 3 **As-Applied map that includes the nutrient(s) application rates, amounts, and date of application. When using NDVI, provide a digital as-applied map.**

The attached documents accurately represent the implementation of this enhancement.

**SIGNATURE:** \_\_\_\_\_