United States Department of Agriculture
Natural Resources Conservation Service

Water Quality Enhancement Activity – KS-WQL08
Apply Split Applications of Nitrogen Based on a Pre-Sidedress Nitrogen Test on Cropland

Kansas Criteria for National Water Quality Enhancement Activity – WQL08

The Pre-Sidedress Nitrogen Test (PSNT) is useful for determining how much nitrogen (N) is available in the soil just prior to sidedressing. Soil microorganisms are continually feeding on organic matter and crop residues in the soil. N is released during this process and becomes available to the plants. This N can be measured and used as a credit against the total N requirement of the crop.

Timing: Take the soil test when the corn is in the 4 to 6 leaf stage, or 6 to 12 inches tall. Test should be taken 5 to 14 days ahead of the planned sidedress application. Samples taken too early will not be as accurate since the soil is releasing nitrate continually in the spring. Waiting to test close to sidedress applications will allow the most accurate test of plant available N. The 5 to 14-day sampling window allows adequate time for the sample to be collected, analyzed, and the result returned to the farmer in time to determine the N sidedress rate.

Cautions: The PSNT will not be accurate in measuring soil N if fertilizer N has already been applied, such as plowed down, large amounts broadcast at planting or with pre-emerge herbicides. N placed in a starter band can be avoided during sampling whereas broadcast applications cannot.

Taking the sample: Soil samples should represent no more than 40 acres. The sampled area should be consistent for past crop, soil types, and manure applications. Probe the soil 12" deep, taking 15 to 20 cores per field. Avoid probing through the starter band. If fields have significantly different soil types (dark soil in the low spots or sandy knobs), sample these areas separately.

Handling samples: Do **not** put damp soil samples in plastic bags. Keeping the samples moist and warm causes mineralization to continue, inflating the nitrate level, and resulting in low sidedress rates that may hinder yields. Mix the soil cores as completely as possible and take out one pint of soil to be dried as quickly as possible. Laying them out flat on newspapers to air dry is sufficient. Drying the soil stops microbial activity. If the soil samples cannot be dried right away, keep them cool, less than 50^{o} F is preferred.

Total N recommendations for Corn: Based on a PSNT and the field yield potential, the following Table will be used to obtain the actual amount of N to be applied as a sidedress. Remember to subtract the amount of N applied as a "starter" when determining the sidedress application amount.

Soil NO_3-N	Corn Yield Potential in Bu/A					
	80	100	120	140	160	180
ppm	Pounds additional fertilizer N to apply per acre					
0 – 10	75	100	125	145	170	200
11 – 15	45	75	100	125	145	170
16 – 20	30	55	80	110	125	150
21 – 25	0	10	35	55	80	110
> 25	0	0	0	0	0	0