AGRONOMY

Spring Nitrogen Side-Dress Recommendations

The nitrogen recommendations for side-dressing corn are based on the Spring Nitrogen Side-Dress Test (also called the LSNT or PSNT) and are designed to supply the crop with adequate nitrogen for its growth requirements between V6 and harvest. The recommendations are based on Iowa State and University of Wisconsin research that says that there is not an additional yield increase to adding N if the soil test nitrate level is above 25 ppm. The assumptions behind this finding are that the sample is a composite sample of the top 12 inches of soil, taken when the corn crop is between 6 and 12 inches tall. Whether there has been manure applied in the prior year or if the previous crop was alfalfa also influence the recommendations. For more information on collecting and handling a sample see the Pre-sidedress/Late Spring Nitrate Testing technical bulletin.

The following table shows the recommended nitrogen application rates based on the concentration of nitrate in the soil sample and categorizes the rates according to rainfall received in the spring and yield potential of the field.

The results under the university recommendations are grouped according to response levels, from highly responsive to not-expected-to-respond. The columns under AgSource recommendations are calculated for each soil concentration and assume two levels of productivity. The 180-bushel column is comparable to the normal rainfall and normal yield potential column to the left. If the productivity is expected to be higher than 180 bushels then the column under 210 bushels should be used. This column reflects the addition of 50 lbs N/acre required to achieve this higher yield.

A few other assumptions are included in the AgSource calculation. Specifically, that the nitrate content in the upper 12 inches of soil is not all the available nitrogen in that soil. Nitrates are expected to move to lower depths with drainage during the spring and corn roots will be able to reach that nitrogen during the growing season. Also, other sources of nitrogen contribute to the crop requirements including mineralization of organic matter and any residual ammonium from fertilizer or manure applications. Adding ammonium to the test will indicate its concentration and if there is more than 8-10 lbs/acre it can be subtracted from the recommendation.

LSNT/PSNT Recommendations

	ISU and UW Recommendations			AgSource Recommendations	
	Manure Applied or Corn after Alfalfa			Non-manured ground, Corn after Corn or Corn after Soybeans	
	Normal Potential Soil		High Pot.		
Soil Nitrate, ppm	**Excess Rain***	**Normal Rain**		**180 bu****	**210 bu#**
1	90	120	160	192	242
2	90	120	160	184	234
3	90	120	160	176	226
4	90	120	160	168	218
5	90	120	160	160	210
6	90	120	160	152	202
7	90	120	160	144	194
8	90	120	160	136	186
9	90	120	160	128	178
10	90	120	160	120	170
11	60	90	160	112	162
12	60	90	130	104	154
13	60	90	130	96	146
14	60	90	130	88	138
15	60	90	130	80	130
16	30	60	100	72	122
17	30	60	100	64	114
18	30	60	100	56	106
19	30	60	100	48	98
20	30	60	60	40	90
21	0	30	60	32	82
22	0	30	60	24	74
23	0	30	60	16	66
24	0	30	60	8	58
25	0	30	30	0	50
26	0	0	30	0	42
27	0	0	30	0	34
28	0	0	30	0	26
29	0	0	0	0	18
30	0	0	0	0	10
31	0	0	0	0	2
32	0	0	0	0	0

** If there is excessive rainfall in the spring reduce the recommendation by 30 lbs/acre because a greater proportion of the nitrate is expected to be deeper in the soil.*
*** The calculation assumes 50% of the nitrate is in the top foot of the soil and mineralization of organic matter will release 15 lbs of N. Concentrations of ammonium in the soil can be deducted from the recommendation.*
 # For higher yield expectations (210 bushels vs 180 bushels) add 50 lbs of N/acre.