

In-Season Soil and Plant Tissue Testing in Practice: Early Season Evaluation



In-season plant tissue and soil testing are great tools to confirm and explain visual nutrient deficiency symptoms. While in the field collecting soil and plant tissue samples for a Nitrogen research project, we observed pale yellow-to-white striping nearly everywhere in the field (see photos below). Soil test data suggested that there is limited Zn availability (Table 2) which likely contributed to the observed deficiency in the plants (Table 1). This field will be evaluated with tissue testing (and visual observation) through tasseling to see if the crop “grows out of it” or if the Zn deficiency persists.



Images that show a potential nutrient deficiency (pale yellow to white striping on both sides of the leaves) in corn plants at the ~V4 growth stage.

Serving the testing needs of agriculture since 1958

Arcadia, WI • Stratford, WI • De Pere, WI
St. Cloud, MN • Battle Creek, MI • Jerome, ID

Comprehensive analyses of feed, forage, soil, water, molds and mycotoxins

217 E. Main • Arcadia, WI 54612
P (608) 323-2123 • F (608) 323-2184

www.dairylandlabs.com



In-Season Soil and Plant Tissue Testing in Practice: Early Season Evaluation

DAIRYLAND
Laboratories, Inc.

Table 1. Zinc Concentrations and resulting DRIS and PASS indices from Whole Plant Tissue Samples Collected at the V4 Growth Stage. These data suggest that there is a good possibility that the corn would respond to Zinc fertilizer.

	Tissue Zn (ppm)	Zn DRIS†	Zn PASS INI‡	Zn PASS DNI
1	25.2	-28	-1.7	-10.2
2	18.2	-37	-11.1	-18.2
3	23.1	-28	-4.6	-10.6
4	20.9	-35	-7.5	-17.1
5	32.2	-19	7.6	-4.1
6	27.5	-22	1.4	-7.1
Average	24.5			
Zn Sufficiency Range*	20-60			

† A yield response to Zn is classified as almost certain, possible, or unlikely if the DRISZn is < -15.0, between -15.0 and +15.0, or >15.0, respectively.

‡ A yield response to Zn is classified as: i) “Almost Certain” if the PASS INIZn is < -10.0; ii) “Possible” if INIZn is < 0.0 and the sum of INIZn+DNIZn is < -10.0; and iii) “Unlikely” where neither of the first two criteria are met.

* When interpreting plant analysis results, it is important to study the DRIS and PASS indices in addition to the sufficiency ranges to more accurately determine where nutrient sufficiency’s/deficiencies are occurring.

Table 2. Routine and Zinc Soil Test Results and Interpretation for Trial Location.

Plot/Treatment ID†	Soil pH	OM (%)	P (ppm)	K (ppm)	Zn (ppm)
1	5.5	2.0	23	126	0.7
2	5.4	2.0	26	138	1.2
3	5.9	2.2	33	138	1.5
4	5.9	2.3	37	152	1.2
5	5.4	2.2	39	156	1.3
6	6.2	2.0	26	157	1.3
Average	5.7	2.1	27	145	1.2
Interpretation	Low	N/A	High	High	Very Low

† Soil samples were collected to a depth of 1’ to provide accurate PSNT interpretation (Data not shown). Nutrient results are potentially lower than if cores were collected only to the depth of tillage (~9”).

Summary: An in-field observation of a nutrient deficiency, combined with a thorough review of soil and plant analysis results confirmed that a Zinc deficiency existed in the field. This early season evaluation allowed for the option to make a Zinc fertilizer application to correct the deficiency during this growing season, avoiding possible yield loss due to the deficiency. Select field locations will be treated with Zinc fertilizer, while others will not be. Tissue samples will be collected and analyzed throughout the growing season to see how the Zinc-fertilized and un-fertilized areas differ.

Serving the testing needs of agriculture since 1958

Comprehensive analyses of feed, forage, soil, water, molds and mycotoxins

Arcadia, WI • Stratford, WI • De Pere, WI
St. Cloud, MN • Battle Creek, MI • Jerome, ID

217 E. Main • Arcadia, WI 54612
P (608) 323-2123 • F (608) 323-2184

www.dairylandlabs.com