

Iron Deficiency Chlorosis (IDC): Fe Chelate by Variety Effects — Northwest

Soil Type: variable
 Planting Date: Downer 5/12, Moorhead & Shelly. 5/13, Gary & Callaway 5/14
 Row Width: 10 inch
 Weed Management: 5/16 - Preemerg: Zidua (2 oz/a) + Glyphosate/AMS or Sharpen; 6/13 Postemerg: Outlook
 Insecticide: None
 Experimental Design: Randomized complete block with 4 replications.

Objective: Establish small plot studies looking at variety, rate and timing of iron chelate treatment interactions. Compare response by two varieties (tolerant vs susceptible) to two chelate rates and two timings, at-plant vs. post emerge.

Results:

IDC plots were established at five (5) soybean breeding research plot locations in NW MN in May 2016. The treatments, set up as IDC Variety x Fe rate and timing, were:

For SCN Infested sites:

Loc – Downer, Gary and Callaway

RSCN trait

Yes = Resistant

IDC Variety

T = Tolerant

S = Susceptible

Fe rate and timing

0 = None

1 = 2 lb/acre @ plant

2 = 4 lb/acre @ plant

4 = 2 lb/acre @ post

For non-SCN sites:

Loc - Moorhead and Shelly

No = Susceptible

IDC Variety

T = Tolerant

S = Susceptible

Fe rate and timing

0 = None

1 = 2 lb/acre @ plant

2 = 4 lb/acre @ plant

4 = 2 lb/acre @ post

Sites were not specifically selected for prior IDC issues. Assessment for IDC symptoms at the locations did not detect any visual differences by treatment or variety. There were no significant yield differences detected within sites by treatments. The only significant response was across locations (Table 1). The Callaway site had significantly lower overall yield than the other locations. This was likely due to precipitation and persistent saturated soils from July-August-September.

Table 1. Analysis of Variance for Iron Deficiency Chlorosis study in NW MN. 2016.

Source	DF	SS	MS	F	P
Rep	3	312.25	104.08	1.34	0.2655
Location	4	4675.31	1168.83	15.02	0.0000 *
IDC	1	145.97	145.97	1.88	0.1734
Fe	3	336.07	112.02	1.44	0.2347
Location*IDC	4	600.09	150.02	1.93	0.1103
Location*Fe	12	1476.28	123.02	1.58	0.1063
IDC*Fe	3	317.24	105.75	1.36	0.2588
Location*IDC*Fe	12	485.75	40.48	0.52	0.8980
Error	117	9102.61	77.8		
Total	159				

* Significant response at $P = 0.05$.

Iron Deficiency Chlorosis (IDC) (continued) — Northwest

continued . . .

Table 2. Mean Yield (bu/acre) across all treatments by Location. 2016.

Location	Yield (bu/a)
Moorhead	70.7 A
Shelly	69.5 A
Downer	69.4 A
Gary	67.1 A
Callaway	56.0 B

At no location were the yields significantly different by variety (Figure 1). The varieties rated as more tolerant to IDC yielded more at three of the five sites, but again, not significantly.

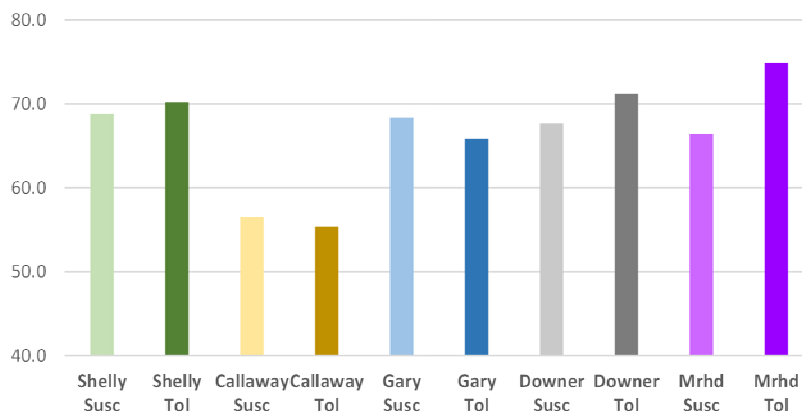


Figure 1. Soybean Yields (bu/acre) grouped by variety and location combined across all iron treatments from five (5) locations in NW MN. 2016.

No significant response by variety and iron treatment was found, though the IDC tolerant variety had lower means for yields when Fe was applied at planting (Figure 2).

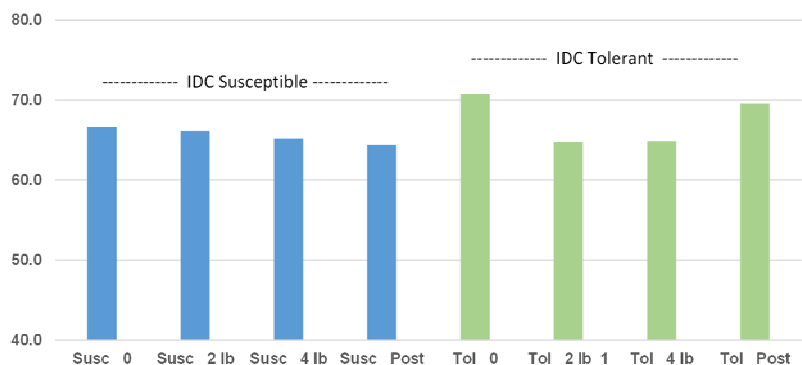


Figure 2. Mean Soybean Yields (bu/acre) across all locations in NW MN grouped by variety and iron treatment. 2016.

For Additional Information:
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