

Soybean response to plant nutrition and foliar inputs, Wishek, 2016.

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A field trial continued in 2016 at the CREC Tri-county off-station crop research site near Wishek to examine the response of soybean to preplant sulfur (S) fertilizer, seed inoculation, and special foliar inputs. Experimental design was a randomized complete block with four replications. Spring soil analysis indicated 186 lb nitrate N/acre, 16 ppm P (Olsen), 186 ppm K, 0.81 ppm Zn, 4.8% organic matter, 5.4 and 5.9 pH (0-6" and 6-24" soil depth), and 0.21 and 0.31 mmho/cm soluble salts (0-6" and 6-24" soil depth). Previous crops were spring wheat in 2015 and soybean in 2014. Dairyland Seed 'DSR0404' Roundup Ready soybean was direct-seeded in 14-inch rows on May 9. Foliar inputs were applied on July 22 to R4-stage soybean with a hand-boom sprayer with 8001 flat-fan nozzles delivering 14 gpa at 35 psi. Seed was harvested with a plot combine on October 3.

Plant stand across treatments averaged 150,900 plants/acre on June 20 at V4-stage soybean. Trial seed yield (average of 57.8 bu/acre) was high though soil nitrate N was high and soil pH was low. Seed yield, test weight, seed count and seed oil content was statistically similar among all treatments including the untreated check (Table). Yield with double inoculation (treatment #6) tended to be greater versus only granular or liquid inoculation, but similar to the untreated check.

Table.								
Treatment				Seed				
Number	Product ^a	Product rate/acre	Application method/timing	Yield	Test weight	Number /lb	Oil	Protein
				bu/A	lb/bu		%	%
1	untreated check	x	x	57.9	56.1	3415	15.7	35.5
2	11-52-0	42 lb	Preplant broadcast	58.7	54.9	3420	15.8	35.6
3	MES15	67 lb	Preplant broadcast	58.8	56.0	3495	15.8	35.8
4	BYSI-N granular inoculant	2.8 lb	in-furrow	56.8	55.8	3515	15.7	36.2
5	TagTeam LCO XC liquid inoculant ^b	1.5 fl oz/100 lb seed	seed	56.7	55.8	3595	15.5	36.6
6	granular and liquid ^b inoculant	same as above	in-furrow and seed	58.0	56.5	3485	15.6	36.3
7	Ascend	4.5 fl oz	R4	59.7	55.8	3480	15.4	36.4
8	Priaxor + NIS	4 fl oz + 0.25%	R4	56.9	56.4	3370	15.5	36.6
9	MAX-IN Ultra ZMB	32 fl oz	R4	55.9	56.4	3465	15.7	36.0
10	MES15 + granular inoc./Ascend + Priaxor + NIS + MAX-IN Ultra ZMB	same as above	Preplant broadcast + in-furrow/R4	58.6	56.3	3400	15.7	36.1
CV (%)				5.4	1.2	3.5	1.7	1.5
LSD (0.05)				NS	NS	NS	NS	0.7
^a All treatments included seed with bacteria inoculant except untreated check.								
^b <i>Penicillium bilaii</i> was not included with inoculant.								