Seed Inoculation Strategies on Fields with Prior Soybean Production

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Double inoculation of soybean seed is defined as use of a liquid plus granular formulation of N-fixing bacteria (*Bradyrhizobium japonicum*) with the seed at planting. Double inoculation is a common practice for soybean grown on fields without prior history of soybean production. Two trials were conducted by the Carrington Research Extension Center (CREC) in 2015 to examine soybean yield response to single versus double seed inoculation on ground with recent soybean production.

Soybean root system containing nodules.

The trials were at Carrington and the CREC off-station crop research site near Wishek. Trial locations were on ground with spring wheat as the 2014 crop and soybean as the 2013 crop. Soil nitrate-N was 48 lb./ac with 6.7 pH (6-24" depth) at Carrington, and 65 lbs. nitrate-N/ac and 6.5 pH (6-24" depth) at Wishek, with low carbonates and soluble salts at both sites. At Carrington, seed inoculant treatments (used at labeled rates) included: 1) liquid applied with seed (Vault HP; BASF), 2) granular applied in-furrow (Rhizo Flo; BASF) and 3) liquid plus granular. At Wishek, seed inoculant treatments included: 1) liquid (Optimize; Novozymes), 2) granular (Rhizo Flo) and 3) liquid plus granular. A non-inoculated check also was included in each trial.

The table shows yield results for each location and average across locations. Statistically for each location, yield was similar among inoculant treatments including the non-inoculated check. Averaged across trials, double inoculation tended to have higher yield versus single inoculation but yield was similar to the non-inoculated check. This preliminary data indicates no yield advantage using double versus single seed inoculation on ground with prior soybean production history.

Table. Soybean yield with seed inoculants[a], Carrington and Wishek, 2015.

	Seed Yield (bu/acre)				
	Non-inoculated Check	Liquid	Granular	Liquid + Granular	LSD (0.05)
Carrington	30.8	28.7	25.3	27.1	NS
Wishek	22.4	22.2	24.5	25.4	NS
2-site average	26.6	25.5	24.9	26.3	x

[a]Carrington: liquid = Vault HP, granular = Rhizo Flo; Wishek: liquid = Optimize, granular = Rhizo Flo

The research will continue in 2016.