Technical Data Report

Review

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Evaluation of NUTRIPLANT™ SD and NUTRIPLANT™ AG Applications on Production of Irrigated Soybeans

Objective

The objective of the study was to determine the effects of Nutriplant SD seed treatment followed by foliar application of Nutriplant AG on production of irrigated soybeans.

Materials and Methods

Field trials were conducted on irrigated soybeans (*Glycine max* L.) of maturity groups 2.5 to 2.8 at the independently owned and operated agricultural research facility, Irrigation Research Foundation, at Yuma, Colorado, USA under the supervision of Colorado State University. Treatments consisted of 1) untreated control and 2) Nutriplant SD seed treatment at 250 g/100 kg (4 oz/100 lb) of seeds applied at planting followed by foliar application of Nutriplant AG at 1.2 l/ha (16 fl oz/acre) at pod set stage. Nutriplant SD was applied directly to the seed by thoroughly mixing seeds with the product. Tests were conducted for two consecutive years. Control and treated soybeans were planted on 7 June in 2010 and 1 June in 2011. Planting population was 555,975 seeds/ha (225,000 seeds/acre) in 2010 and 543,620 seeds/ha (220,000 seeds/acre) in 2011. Variety Asgrow 2532 was used in 2011. Test plots consisted of four rows, each 76 cm (30 inches) wide and 198 meters (650 feet) long. Two uniform plots were selected for each trial, one for the control the other for treatment. In 2010, plots were fertilized using strip-till implement with 20.5-35.8-0-0.6S-0.2Zn liquid fertilizer applied 12 April at 140 l/ha (15 gal/acre) at 10 and 25 cm (4 and 10 inches) depth, followed by three applications of 28-0-0-5S through irrigation system at 56 l/ha (6 gal/acre) on 9 June, 75 l/ha (8 gal/acre) on18 June and 94 l/ha (10 gal/acre) on 12 July. In 2011, Humalfa fertilizer was applied to the plots on 16 March at a rate of 11,200 kg/ha (10,000 lb/acre), followed by application of liquid 21-36-0 fertilizer on 11 April at a rate of 75 l/ha (8 gal/acre) at 10 cm (4 inches) deep and 122 l/ha (13 gal/acre) at 25 cm (10 inches) deep using a strip-till implement, then starter fertilizer 30-40-0-4S-0.053Zn at 84 l/ha (9 gal/acre) was applied at planting, followed by two applications of 32-0-0 fertilizer at 65 l/ha (7 gal/acre) through sprinkler irrigation system on 29 June and 17 July. The same year, Headline at 0.73 l/ha (10 fl oz/acre) and Sulpak at 9 l/ha (1 gal/acre) were applied on 23 July. Weed control consisted of four applications in 2010: Class Act at 1.3 l/ha (18 fl oz/acre) with Roundup at 2.3 l/ha (32 fl oz/acre) applied on 28 April, Roundup at 2.3 l/ha (32 fl oz/acre) with ammonium sulfate (AMS) at 2 kg/100 l (17 lb/100 gal) applied on 31 May and again on 8 June, and Roundup at 2.3 l/ha (32 fl oz/acre) with AMS at 2 kg/100 l (17 lb/100 gal) and Assure II at 0.7 l/ha (10 fl oz/acre) applied on 9 July. In 2011, Roundup WeatherMax at 2.3 l/ha (32 fl oz/acre) with AMS at 2 kg/100 l (17 lb/100 gal) and non-ionic surfactant at 250 ml/100 l (32 fl oz/100 gal) were applied on 3 June, 25 June, 2 July and 11 July. Assure II was applied at 0.66 l/ha (9 fl oz/acre) together with the products listed above on 25 June and 11 July. Other cultural practices, including fertilization, irrigation and pest management followed local practices and were the same for treated and untreated plots. Soybeans were harvested on 21 September in 2010 and

27 September in 2011. At harvest, soybean yield was determined and adjusted to 13% moisture. Unit conversions were calculated using USDA Conversion Factors and Tables posted at: http://www.mn.nrcs.usda.gov/technical/ecs/nutrient/planning/planning.htm.

Results

Application of Nutriplant SD in combination with Nutriplant AG increased soybean yields by 847 kg/ha (12.6 bu/acre) in 2010, a 31.8% increase over the untreated control (Table 1). In 2011, Nutriplant SD with Nutriplant AG increased yield by 403 kg/ha (6.0 bu/acre), an 8.5% increase over the untreated control. Averaged across years, application of Nutriplant SD with Nutriplant AG increased soybean yields by 625 kg/ha (9.3 bu/acre), a 20.2% increase over the untreated plot.

Table 1. Effects of Nutriplant SD applied directly to the seed at planting followed by foliar application of Nutriplant AG on soybean yields. Irrigation Research Foundation, Yuma, Colorado, USA.

Year	Control		Nutriplant SD and Nutriplant AG		Difference		Difference
	(kg/ha)	(bu*/acre)	(kg/ha)	(bu/acre)	(kg/ha)	(bu/acre)	(%)
2010	2661	39.6	3508	52.2	847	12.6	31.8
2011	4771	71.0	5174	77.0	403	6.0	8.5
Mean	*3716*	*55.3*	*4341*	*64.6*	*625*	*9.3*	*20.2*

**One bushel (bu) of soybeans equals 60 lb at 13% moisture*

Conclusions

The application of Nutriplant SD with Nutriplant AG to soybeans increased soybean yield by an average of 20.2% and as high as 31.8% compared to the untreated control.

References

SBEAUSCO1001
SBEAUSCO1101