

Technical Data Report

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Effect of Nutriplant™ SL and AG on Irrigated Soybeans

Objective

The objective of this study was to determine the effect of Nutriplant SL and Nutriplant AG on irrigated soybeans without starter fertilizer.

Materials and Methods

The field trial was conducted on soybean (*Glycine Max* L. cv. Syngenta NK S24-K2) at the Irrigation Research Foundation located in Yuma, Colorado, USA under the supervision of Colorado State University in 2017. Uniform plots were selected for this trial. The following treatments without starter fertilizer were evaluated: 1) Untreated control, 2) Nutriplant SL at 0.15 l/100 kg (2 fl oz/100 lb) of seeds, 3) Nutriplant SL at 0.15 l/100 kg (2 fl oz/100 lb) of seeds and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at R3/R4 on 23 July, 4) Nutriplant SL at 0.15 l/100 kg (2 fl oz/100 lb) of seeds and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at pre-bloom on 27 June and again at R3/R4 stage on 23 July, 5) Nutriplant SL at 0.29 l/ha (4 fl oz/acre) in 37.3 l/ha (4 gal/acre) of water applied in-furrow, 6) Nutriplant SL at 0.29 l/ha (4 fl oz/acre) in 37.3 l/ha (4 gal/acre) of water applied in-furrow and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at R3/R4 on 23 July, and 7) Nutriplant SL at 0.29 l/ha (4 fl oz/acre) in 37.3 l/ha (4 gal/acre) of water applied in-furrow and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at pre-bloom on 27 June and again at R3/R4 stage on 23 July.

Soybeans were planted at 444,600 seeds/ha (180,000 seeds/acre) with the seed inoculant Microsurge Dry using a Farmreign precision planter on 23 May. On 17 March, soil detoxifier Overhaul was applied to the experimental area at 4.7 l/ha (64 fl oz/acre). Liquid 9.6-17-3S fertilizer was applied at 94 l/ha (10 gal/acre) 10 cm (4 inch) deep and 122 l/ha (13 gal/acre) 25 cm (10 inch) deep with a strip-till implement on 5 April. Additionally, 28-0-0-5 fertilizer was applied through the irrigation system at 18.7 l/ha (2 gal/acre) on 15, 20 and 26 June, 56 l/ha (6 gal/acre) on 12 July and 37 l/ha (4 gal/acre) on 22 and 25 July. Weeds were controlled with the following applications: Boundary 6.5 EC at 1.75 l/ha (1.5 pt/acre) with Roundup WeatherMax at 2.3 l/ha (32 fl oz/acre) and ammonium-sulfate (AMS) at 0.25 l/100 l (1 qt/100 gal) and nonionic surfactant (NIS) at 0.25 l/100 l (1 qt/100 gal) on 24 May, Sequence at 5.8 l/ha (2.5 qt/acre) with Fusilade DX at 0.4 l/ha (6 fl oz/acre) and Roundup WeatherMax at 2.3 l/ha (32 fl oz/acre) and ammonium-sulfate (AMS) at 0.25 l/100 l (1 qt/100 gal) and nonionic surfactant (NIS) at 0.25 l/100 l (1 qt/100 gal) on 22 June, Fusilade DX at 0.4 l/ha (6 fl oz/acre) with Roundup WeatherMax at 2.3 l/ha (32 fl oz/acre) and fertilizer 27-0-0-1 at 9.3 l/ha (1 gal/acre) and ammonium-sulfate (AMS) at 0.25 l/100 l (1 qt/100 gal) and nonionic surfactant (NIS) at 0.25 l/100 l (1 qt/100 gal) on 21 July.

Soybeans were irrigated with 31.1 cm (12.25 inches) of water and received 31.9 cm (12.56 inches) from rainfall during the season. Other cultural practices followed local practices and were the same for treated and untreated plots. Soybeans were harvested on 15 October and grain yield was adjusted to 13% moisture.

Results

Application of Nutriplant SL and AG improved soybean yields (Table 1). Compared to untreated control, Nutriplant SL at 0.15 l/100 kg (2 fl oz/100 lb) of seeds increased yields by 1,082 kg/ha (16.1 bu/acre), Nutriplant SL at 0.15 l/100 kg (2 fl oz/100 lb) of seeds and Nutriplant AG at 1.2 l/ha (16 fl

oz/acre) applied at R3/R4 by 1,250 kg/ha (18.6 bu/acre), Nutriplant SL at 0.15 l/100 kg (2 fl oz/100 lb) of seeds and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at pre-bloom and again at R3/R4 stage by 1,304 kg/ha (19.4 bu/acre), Nutriplant SL at 0.29 l/ha (4 fl oz/acre) in 37.3 l/ha (4 gal/acre) of water applied in-furrow by 1,190 kg/ha (17.7 bu/acre), Nutriplant SL at 0.29 l/ha (4 fl oz/acre) in 37.3 l/ha (4 gal/acre) of water applied in-furrow and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at R3/R4 stage by 1,485 kg/ha (22.1 bu/acre), and Nutriplant SL at 0.29 l/ha (4 fl oz/acre) in 37.3 l/ha (4 gal/acre) of water applied in-furrow and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at pre-bloom and again at R3/R4 stage by 1,774 kg/ha (26.4 bu/acre).

Table 1. Influence of Nutriplant SL and AG on irrigated soybean grain yields at Irrigation Research Foundation, Yuma, Colorado, USA in 2017.

Treatment	Yield (kg/ha)	Yield (bu/acre)	Difference from control (kg/ha)	Difference from control (bu/acre)	Difference (%)
Without starter fertilizer					
Control	3,212	47.8	-	-	-
Nutriplant SL at 0.15 l/100 kg (2 fl oz/100 lb) of seeds	4,294	63.9	1,082	16.1	33.7
Nutriplant SL at 0.15 l/100 kg (2 fl oz/100 lb) of seeds and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at R3/R4	4,462	66.4	1,250	18.6	38.9
Nutriplant SL at 0.15 l/100 kg (2 fl oz/100 lb) of seeds and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at pre-bloom and again at R3/R4 stage	4,516	67.2	1,304	19.4	40.6
Nutriplant SL at 0.29 l/ha (4 fl oz/acre) in 37.3 l/ha (4 gal/acre) of water applied in-furrow	4,402	65.5	1,190	17.7	37.0
Nutriplant SL at 0.29 l/ha (4 fl oz/acre) in 37.3 l/ha (4 gal/acre) of water applied in-furrow and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at R3/R4	4,697	69.9	1,485	22.1	46.2
Nutriplant SL at 0.29 l/ha (4 fl oz/acre) in 37.3 l/ha (4 gal/acre) of water applied in-furrow and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at pre-bloom and again at R3/R4 stage	4,986	74.2	1,774	26.4	55.2

Conclusions

Compared to untreated control, application of Nutriplant SL at 0.15 l/100 kg (2 fl oz/100 lb) of seeds increased yields by 33.7%, Nutriplant SL at 0.15 l/100 kg (2 fl oz/100 lb) of seeds and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at R3/R4 by 38.9%, Nutriplant SL at 0.15 l/100 kg (2 fl oz/100 lb) of seeds and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at pre-bloom and again at R3/R4 stage by 40.6%, Nutriplant SL at 0.29 l/ha (4 fl oz/acre) in 37.3 l/ha (4 gal/acre) of water applied in-furrow by 37.0%, Nutriplant SL at 0.29 l/ha (4 fl oz/acre) in 37.3 l/ha (4 gal/acre) of water applied in-furrow and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at R3/R4 stage by 46.2%, and Nutriplant SL at 0.29

l/ha (4 fl oz/acre) in 37.3 l/ha (4 gal/acre) of water applied in-furrow and Nutriplant AG at 1.2 l/ha (16 fl oz/acre) applied at pre-bloom and again at R3/R4 stage by 55.2%.