

Technical Data Report

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Evaluation of NUTRIPLANT™ SL Application with and without Starter Fertilizer on Production of Irrigated Corn

Objective

The objective of the study was to determine the effects of Nutriplant SL application with and without starter fertilizer on production of irrigated corn.

Materials and Methods

Field trial was conducted on irrigated corn (*Zea mays* L., var DeKalb 55-56) at the independently owned and operated agricultural research facility, Irrigation Research Foundation at Yuma, Colorado, USA under the supervision of Colorado State University in 2012. Three uniform plots were selected for the trial. Test plots consisted of four rows, each 76 cm (30 inches) wide and 198 meters (650 feet) long. Three treatments were tested: 1) control with starter fertilizer, 2) Nutriplant SL applied in-furrow without starter fertilizer and 3) Nutriplant SL applied in-furrow with starter fertilizer. Corn was planted at 82,779 seeds/ha (33,500 seeds/acre) on 4 May. Nutriplant SL was applied to the planted seeds in-furrow at 0.6 l/ha (8 fl oz/acre) with 37 l/ha (4 gal/acre) of water on 4 May. Starter fertilizer 15-20-0-2S-0.027Zn was applied 5 cm to the side and 5 cm deep (2x2 inches) at a rate of 168 l/ha (18 gal/acre). Additionally, all plots were fertilized with high input fertilizer program before planting and during growing season. Prior to planting, plots were fertilized with 19-13-0 fertilizer 10 cm (4 inches) deep at 94 l/ha (10 gal/acre) and 25 cm (10 inches) deep at 122 l/ha (13 gal/acre) using a strip-till implement on 31 March. Following planting, plots were fertilized through the sprinkler system with 32-0-0 at a rate of 65 l/ha (7 gal/acre) on 29 May and 5 June, and 94 l/ha (10 gal/acre) on 14 and 26 June, and 5 July. Weed control included application of Degree Xtra at 6.8 l/ha (2.9 qt/acre) with Roundup at 2.3 l/ha (32 fl oz/acre), ammonium sulfate (AMS) at 2 kg/100 l (17 lbs per 100 gal) of water and non-ionic surfactant (NIS) at 0.25 l/100 l (1qt/100 gal) of water on 18 April. On 17 June, corn was sprayed with Roundup at 2.3 l/ha (32 fl oz/acre), Status at 0.36 l/ha (5 fl oz/acre), AMS at 2 kg/100 l (17 lb/100 gal) of water and NIS at 0.25 l/100 l (1qt/100 gal) of water. Plots were treated with insecticide Oberon at 0.36 l/ha (5 fl oz/acre) on 19 July. Crop was irrigated with total water amount of 46.0 cm (18.1 inches) per season. Other cultural practices followed local practices and were the same for treated and control plots. Plants were subjected to drought conditions and extreme high winds on 19 October. Corn was harvested on 30 October. Yield was determined and adjusted to 15.5% 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

Both in-furrow applications of Nutriplant SL at 0.6 l/ha (8 fl oz/acre) with 37 l/ha (4 gal/acre) of water improved corn production over control with starter fertilizer. Nutriplant SL applied with a starter fertilizer as a side dressing improved corn yields by 823 kg/ha (13.1 bu/acre), a 6.7% increase compared to the control with starter fertilizer (Table 1). This result confirmed previous findings, where Nutriplant SL application in furrow with starter fertilizer produced 9.2% and 6.8% yield increase over untreated control in 2008 and 2011, respectively. Application of Nutriplant SL without starter fertilizer

resulted in even higher yield increase of 1,256 kg/ha (20.0 bu/acre), a 10.3% increase over control with starter fertilizer. These results indicate that Nutriplant SL is beneficial even with high input fertilization program and suggest that the product may replace starter fertilizer if field is fertilized before planting.

Table 1. Effects of Nutriplant SL applied with or without starter fertilizer on corn yields. Irrigation Research Foundation, Yuma, Colorado, USA.

Treatment	Corn Yield		Difference		Difference (%)
	(kg/ha)	(bu*/acre)	(kg/ha)	(bu/acre)	
Control with starter fertilizer	12,222	194.7	-	-	-
Nutriplant SL at 0.6 l/ha (8 fl oz/acre) in-furrow with starter fertilizer	13,045	207.8	823	13.1	6.7
Nutriplant SL at 0.6 l/ha (8 fl oz/acre) in-furrow without starter fertilizer	13,478	214.7	1,256	20.0	10.3

**One bushel (bu) of corn equals 56 lb at 15.5% grain moisture*

Conclusions

Compared to the control with a starter fertilizer, application of Nutriplant SL at 0.6 l/ha (8 fl oz/acre) in-furrow with a starter fertilizer improved corn yields by 6.7%. Nutriplant SL applied at 0.6 l/ha (8 fl oz/acre) in-furrow without starter fertilizer resulted in higher corn yield increase of 10.3% over a control with starter fertilizer.