

# Technical Data Report

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## Evaluation of NUTRIPLANT™ SL and NUTRIPLANT™ AG Applications without Starter Fertilizer on Production of Dryland Corn

### Objective

The objective of the study was to determine the effect of Nutriplant SL and Nutriplant AG applications without starter fertilizer on production of dryland corn.

### Materials and Methods

Field trial was conducted on irrigated corn (*Zea mays* L., var. Golden Harvest 76-52) at the independently owned and operated agricultural research facility, Irrigation Research Foundation at Yuma, Colorado, USA under the supervision of Colorado State University in 2013. Uniform plots were selected for the trial. Two treatments were tested: 1) control without starter fertilizer, and 2) Nutriplant SL applied in-furrow without starter fertilizer followed by Nutriplant AG at 16 fl oz/acre at 6-8 leaf stage. Corn was planted at 34,580 seeds/ha (14,000 seeds/acre) on May 8. Nutriplant SL was applied to seeds in-furrow at 0.6 l/ha (8 fl oz/acre) with 37 l/ha (4 gal/acre) of water on May 8. Humalfa compost was applied at 3 ton/acre on January 3 and plots were fertilized with 19-13-0 fertilizer at 10 cm (4 inches) deep at 93 l/ha (10 gal/acre) and 25.4 cm (10 inches) deep at 121 l/ha (13 gal/acre) using a strip-till implement on April 5. On May 8, starter fertilizer 21.8-11-1.8-1.2S-0.1Zn was applied at 5 cm to the side and 5 cm deep (2 x 2 inches) at a rate of 168 l/ha (18 gal/acre). Weed control included application of Harness at 2.9 l/ha (2.5 pt/acre) with Roundup Weather Max at 2.3 l/ha (32 fl oz/acre) and ammonium sulfate (AMS) at 2.0 kg/100 l (17 lbs per 100 gal) of water and non-ionic surfactant (NIS) at 1 l/100 l (4 qt/100 gal) of water on May 10. On June 9 and 30, corn was sprayed with Roundup at 2.3 l/ha (32 fl oz/acre) with ammonium sulfate (AMS) at 2.0 kg/100 l (17 lbs per 100 gal) of water and non-ionic surfactant (NIS) at 1 l/100 l (4 qt/100 gal) of water on June 9 and 30. Other cultural practices followed local practices and were the same for treated and control plots. Corn was harvested on October 2. Yield was determined and adjusted to 15.5% moisture.

### Results

Based on USDA-NASS statistics, 10-year average yield for dryland corn in Yuma County was 2,973 kg/ha (47.4 bu/acre). Insufficient rainfall and drought conditions during growing season in 2013 contributed to overall drastic reduction of corn yields (Table 1). However, applications of Nutriplant SL and Nutriplant AG significantly improved corn yields under these conditions. In-furrow application of Nutriplant SL at 0.6 l/ha (8 fl oz/acre) with 37 l/ha (4 gal/acre) of water followed by Nutriplant AG at 1.2 l/ha (16 fl oz/acre) at 6-8 leaf stage improved corn production by 585 kg/ha (8.7 bu/acre), a 94.6% increase over control without starter fertilizer (Table 2).

Table 1. Total rainfall for 2013 compared to multiyear averages. Irrigation Research Foundation, Yuma, Colorado, USA.

Month	Total rainfall		
	Multiyear	2013	Difference
	----- mm (inch) -----		
April	43.2 (1.7)	46.5 (1.8)	3.3 (0.1)
May	76.2 (3.0)	44.7 (1.8)	-31.5 (-1.2)
June	65.8 (2.6)	30.5 (1.2)	-35.3 (-1.4)
July	78.0 (3.1)	45.0 (1.8)	-33.0 (-1.3)
August	63.8 (2.5)	56.4 (2.2)	-7.4 (-0.3)
September	35.8 (1.4)	55.6 (2.2)	19.8 (0.8)
Total	362.7 (14.3)	278.6 (11.0)	-84.1 (-3.3)

Table 2. Effects of Nutriplant SL applied without starter fertilizer and Nutriplant AG on corn yields. Irrigation Research Foundation, Yuma, Colorado, USA.

Treatment	Corn Yield		Difference		Difference (%)
	(kg/ha)	(bu*/acre)	(kg/ha)	(bu/acre)	
Control without starter fertilizer	618	9.2	-	-	-
Nutriplant SL at 0.6 l/ha (8 fl oz/acre) in-furrow without starter fertilizer followed by Nutriplant AG at 1.2 l/ha (16 fl oz/acre) at 6-8 leaf stage	1,203	17.9	585	8.7	94.6

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

## Conclusions

Insufficient rainfall during corn growing season drastically reduced corn yields. However, application of Nutriplant SL at 0.6 l/ha (8 fl oz/acre) in-furrow without a starter fertilizer followed by application of Nutriplant AG at 1.2 l/ha (16 fl oz/acre) improved corn yields by 94.6% under these conditions compared to the control without a starter fertilizer.