

# Technical Data Report

## Review

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### An Evaluation of Two Application Methods of NUTRIPLANT™ SL on Corn Production

#### Objective

The objective of the study was to determine the most effective method of application of Nutriplant SL on production of corn.

#### Materials and Methods

Field trials were conducted on corn (*Zea mays*) of 105 to 110 day maturity, at the independently owned and operated agricultural research facility, Irrigation Research Foundation, at Yuma, Colorado, USA under the supervision of Colorado State University. Corn hybrids Dekalb 60-18 was tested in 2006 and 2008, Dekalb 55-54 in 2010 and Channel 209-85 in 2011. Two methods of Nutriplant SL application at planting time were evaluated: 1) directly to the seeds and 2) in-furrow over the planted seeds. Application directly to the seeds was tested in 2005 and 2006. Application in-furrow was tested in 2008, 2010 and 2011. Planting populations were similar each year: 79,264 plants/ha (32,000/acre) in year 2005, 74,310/ha (30,000/acre) in 2006, 80,503/ha (32,500/acre) in 2008, 87,934/ha (35,500/acre) in 2010 and 84,218/ha (34,000/acre) in 2011. Test plots consisted of 4 rows 76 cm (30 inches) wide and 195 meters (650 feet) long. Two uniform plots were selected each year for the trial. One plot was treated with Nutriplant SL applied directly to the seeds at a rate of 2.6 ml/kg of seeds (4 fl oz/100 lb of seeds) or applied on the seeds planted in furrow at a rate of 586 ml in 38 liters/ha (8 fl oz in 4 gal/acre) of water. The other plot was left untreated as a control. Starter fertilizer 25-40-3-6-0.2 was applied as side dressing in 2005 and 2006. In 2008 starter fertilizer 9-24-3 was applied in-furrow. In 2010 and 2011 no starter fertilizer was used. Other cultural practices, including fertilization, irrigation and pest management followed local practices and were the same for treated and untreated plots. At harvest, corn yield was determined and adjusted to 15.5% moisture.

#### Results

Application of Nutriplant SL directly to the seeds at planting increased corn yield by 188 kg/ha (3 bu/acre) in 2005 and by 1,006 kg/ha (16 bu/acre) in 2006 over the untreated control (Table 1). High yield increase in 2006 coincided with plants exposure to abiotic stress of high winds and extreme high heat early in the season, proving that Nutriplant SL helps overcome negative effects of abiotic stress, the main cause of yields reduction in crops.

*Table 1. Results of Nutriplant SL applied directly to the seeds at planting time on corn yields. Irrigation Research Foundation, Yuma, Colorado, USA.*

Year	Grain Yields						
	Control		Nutriplant SL		Difference		Difference
	(kg/ha)	(bu/acre)	(kg/ha)	(bu/acre)	(kg/ha)	(bu/acre)	(%)
2005	14,409	229	14,597	232	188	3	1.3
2006	11,892	189	12,898	205	1,006	16	8.5

Application of Nutriplant SL in-furrow at planting time increased corn yield by 1,070 kg/ha (17 bu/acre) in 2008 and by 818 kg/ha (13 bu/acre) in 2011 but did not have any effect on yield in 2010 (Table 2). In 2008 and 2011, the crop was exposed again to abiotic stress of high winds and extreme high heat early in the season, proving again that Nutriplant SL helps crops overcome negative effects of abiotic stress.

*Table 2. Results of Nutriplant SL applied in furrow at planting time on corn yields. Irrigation Research Foundation, Yuma, Colorado, USA.*

Year	Grain Yields						
	Control		Nutriplant SL		Difference		Difference
	(kg/ha)	(bu/acre)	(kg/ha)	(bu/acre)	(kg/ha)	(bu/acre)	(%)
2008	11,640	185	12,710	202	1,070	17	9.2
2010	12,836	204	12,836	204	0	0	0.0
2011	12,018	191	12,836	204	818	13	6.8

Both methods of application of Nutriplant SL to corn seeds had similar effects on corn production. During the five years of testing, Nutriplant SL was most effective in 2006, 2008 and 2011, years when corn plants were exposed to extreme weather conditions, increasing corn yield by an average of 8.2% over the untreated control. In 2005 and 2010, the crop yield was not reduced by stress as indicated by the high yields of 14,409 kg/ha (229 bu/acre) and 12,836 kg/ha (204 bu/acre), respectively. These yields exceeded average corn yield of 12,836 kg/ha (204 bu/acre) registered in surrounding Yuma county fields in 2005 and were comparable to the average yield of 13,024 kg/ha (207 bu/acre) in 2010.

### **Conclusions**

Both methods of application of Nutriplant SL to corn seeds: 1) directly to the seeds and 2) in-furrow, had similar effects on corn production, thus application method should be chosen based on availability of application equipment.

Nutriplant SL was most effective during years when corn plants were exposed to abiotic stress, increasing corn yield by an average of 8.2% over the untreated control.

### **References**

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