Technical Data Report
Review
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Effects of NUTRIPLANT™ SD on Production of Irrigated Winter Wheat

Objective

The objective of the study was to evaluate the effects of Nutriplant SD on production of irrigated winter wheat.

Materials and Methods

Field trials were conducted on irrigated winter wheat (*Triticum aestivum* sp.) at the independently owned and operated agricultural research facility, Irrigation Research Foundation, at Yuma, Colorado, USA, under the supervision of Colorado State University. Trials were conducted on the wheat in the years 2002, 2003, 2004 and 2006. The wheat was planted at a rate of 112 kg/ha (100 lb/acre) during the first two years and at 135 kg/ha (120 lb/acre) during the last two years. Starter fertilizer in a form of urea was applied each year to the field at a rate of 67 kg nitrogen per hectare (60 lb/acre). Two uniform sections of the field measuring 4.6 by 198 meters (15 by 650 feet) were selected for each trial. One section was treated with Nutriplant SD applied at 2.5 g/kg of seeds (4 oz/100 lb of seeds) just prior to planting. Seeds were thoroughly mixed with the product to obtain a uniform coating. The other section was left untreated as a control. Cultural practices, including fertilization and pest management, followed local practices and were the same for the treated and the control sections. At harvest, wheat yield, grain density and percent grain moisture were determined.

Results

Nutriplant SD consistently increased grain yield of the wheat (Table 1). Each year, plots treated with Nutriplant SD produced 270 to 465 kg/ha (4.0 to 6.9 bu/acre) more than the control. The average yield increase for the four years was 8.8%, ranging from 5.8% in 2002 to 16.3% in 2006. The greatest yield increase, 16.3 %, was obtained in the year when crops in the area were exposed to extreme heat early in the season. This increase indicates that Nutriplant SD helps plants overcome the negative effects of abiotic stress, the main cause of yield reduction in crops.

Table 1. Results of Nutriplant SD on irrigated winter wheat grain yields. Irrigation Research Foundation, Yuma, Colorado, USA.

Year	Grain Yields						
	Control		Nutriplant SD		Difference		
	(kg/ha)	(bu/acre)	(kg/ha)	(bu/acre)	(kg/ha)	(bu/acre)	(%)
2002	4,685	69.5	4,955	73.5	270	4.0	5.8
2003	6,303	93.5	6,768	100.4	465	6.9	7.4
2004	4,679	69.4	4,955	73.5	276	4.1	5.9
2006*	2,157	32.0	2,508	37.2	351	5.2	16.3

**Low yields are a result of extreme heat early in the season.*

In addition to improved yields, Nutriplant SD improved seed quality of the wheat as indicated by decreased moisture in the grain at harvest. The average moisture reduction was 5% (Table 2). Nutriplant SD did not appear to affect seed density of the wheat.

Table 2. Results of Nutriplant SD on grain density and moisture of irrigated winter wheat. Irrigation Research Foundation, Yuma, Colorado, USA.

Year	Grain Density				Grain Moisture (%)	
	Control		Nutriplant SD			
	(g/liter)	(lb/bu)	(g/liter)	(lb/bu)	Control	Nutriplant SD
2002	772	60.0	772	60.0	--	--
2003	811	63.0	798	62.0	8.5	8.2
2004	739	57.4	745	57.9	15.0	14.5
2006	759	59.0	732	56.9	13.9	13.1
Mean	*770*	*59.9*	*762*	*59.2*	*12.5*	*11.9*

Conclusions

Nutriplant SD increased irrigated winter wheat yields by an average of 8.8% compared to the untreated controls. Nutriplant SD also improved grain quality, as indicated by less moisture in the grain at harvest.

The highest yield increase was observed under heat stress conditions, indicating that Nutriplant SD helps crops overcome the negative effects of abiotic stress which is the main cause of yield reduction in crops.

Resources

WHEAUSCO0201
WHEAUSCO0301
WHEAUSCO0402
WHEAUSCO0602