# Technical Data Report

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# Effects of Nutriplant™ AG on Pinto Bean Production

**Objective**

The objective of the trial was to determine the effect of Nutriplant AG on production of pinto beans.

**Materials and Methods**

A field trial was conducted on pinto beans (*Phaseolus vulgaris* L. cv. Remington) at the independently owned and operated agricultural research facility, Irrigation Research Foundation, in Yuma, Colorado, USA, under the supervision of Colorado State University. Pinto beans were planted at 222,300 seeds/ha (90,000 seeds/acre) in four 76 cm (30 inches) wide and 198 meters (650 feet) long rows on the following dates: June 11 in 1998, June 23 in 1999, June 1 in 2004 and June 4 in 2005. Two uniform plots were selected for each trial. One plot was treated with Nutriplant AG at 1.2 l/ha (16 fl oz/acre) at pre-bloom in 1999, 8-10 leaf stage in 2004 and 8-10 leaf stage and pod set (2 applications) in 2005. The control plot was left untreated. On July 10 in 1998, nitrogen was applied through the sprinkler irrigation system at a rate of 112 kg N/ha (100 lb N/acre). In 2004 and 2005, crop was fertilized with urea (including urease inhibitor) at 343 kg/ha (306 lb/acre) applied at 4.2 l/metric ton (1 gal/ton). Starter fertilizer (25-40-3-56-.02 ) was applied at planting at 159 l/ha (17 gal/acre) in 2004 and 2005. Weed control included Poast at 2.3 l/acre (32 oz/acre) and Copper-Count-N at 4.7 l/ha (64 oz/acre) in 1998, standard weed control in 1999, Dual at 1.2 l/acre (16 fl oz/acre) with Spartan at 0.15 l/ha (2 fl oz/acre) at planting in 2004, and Prowl with Outlook and Spartan herbicides at 2.3, 1.2 and 0.15 l/ha (32, 16 and 2 fl oz/acre), respectively in 2004 and 2005. Select, post-emergence herbicide, was used for weed control at a rate of 0.6 l/ha (8 fl oz/acre) in 2004 and 2005. Other cultural practices, including irrigation and pest management, followed local practices and were the same for treated and untreated plots. On July 7 in 1999, hail caused severe damage to plant stand and four additional hail storms in 2004 on May 10, June 20, and July 2 and 15, caused severe crop damage. Pinto beans were harvested on September 23 in 1998, October 13 in 1999, September 15 in 2004, and October 3 in 2005. Because of extensive hail-storm damage in 2004, crop yields from this year were not included.

**Results**

Application of Nutriplant AG to pinto beans at pre-bloom in 1998 and 1999, and in 2005 at the 8-10 leaf stage, and again at pod set, increased bean yields by 1352 kg/ha (1207 lb/acre) in 1998, 354 kg/ha (316 lb/acre) in 1999, and 374 kg/ha (334 lb/acre) in 2005 (Table 1).

*Table 1. Influence of Nutriplant AG applied pre-bloom in 1998 and 1999, and 8-10 leaf stage and again at pod set in 2005 on pinto bean yields at Irrigation Research Foundation, Yuma, Colorado, USA.*

| Year | Grain yields of pinto beans | | | | | | |
|---|---|---|---|---|---|---|---|
| | Control | | Nutriplant AG | | Difference | | |
| | (kg/ha) | (lb/acre) | (kg/ha) | (lb/acre) | (kg/ha) | (lb/acre) | (%) |
| 1998 | 2,378 | 2,123 | 3,730 | 3,330 | 1,352 | 1,207 | 56.9 |
| 1999 | 2,121 | 1,894 | 2,475 | 2,210 | 354 | 316 | 16.7 |
| 2005 | 3,113 | 2,779 | 3,487 | 3,113 | 374 | 334 | 12.0 |

**Conclusion**

Compared to the untreated control, Nutriplant AG increased yields with pre-bloom applications in 1998 by 56.9% and by 16.7% in 1999. In 2005, application of Nutriplant AG at the 8-10 leaf stage and again at pod set improved yields by 12.0%. On average, Nutriplant AG increased yields of pinto beans by 28.5%.