# Solum Barley Nitrogen and Phosphorus Fertilizer Trial

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## Introduction

Solum barley was bred for reduced water use conditions and is typically grown with one or two irrigations. Past research has shown that Solum barley is not very responsive to nitrogen fertilizer, and that yields can be depressed with high nitrogen rates. The response of Solum to phosphorus is assumed to be similar to other barley varieties, although data is not available to confirm this contention. This trial is part of the on-going effort to document the response of this low input barley to fertilizer.

## Procedure

A field study was conducted at the Maricopa Agricultural Center on Field 2, borders 18. The soil type was a Casa Grande sandy loam. The field was in cotton the previous summer. Preplant soil nitrate was 18 ppm $NO_3$-N and preplant soil phosphate was 18 ppm P. Solum barley was planted into dry soil on November 28, 1994, and a germination irrigation was applied on November 30. The seed was planted with a cone planter in six rows spaced 11 inches apart. The seeding rate was 10 seeds per foot of row or approximately 43 pounds of seed per acre. The plots were 6 ft. x 20 ft. The experimental design was a randomized complete block design with 4 replications and three treatments: 1) no nitrogen or phosphorus fertilizer, 2) 100 pounds nitrogen per acre as urea, and 3) 100 pounds phosphate per acre as triple superphosphate. The fertilizer was applied after planting but before the germination irrigation. The plots were harvested with a small plot combine on May 3 and yields were calculated.

## Discussion

Yield and plant characteristics are presented in Table 1. Yield was decreased by nitrogen fertilizer due to increased lodging and excessive vegetative growth. We were not able to detect differences in yield due to phosphorus fertilizer application, which was expected due to the initial high level of native soil phosphorus. The plots that received nitrogen fertilizer actually looked better during the growing season until lodging occurred latter in the season. The results of this study are similar to previous studies of Solum response to nitrogen fertilizer.

Table 1. Response of Solum barley to nitrogen and phosphorus fertilizer.

| Fertilizer | Grain Yield |
|---|---|
| | lbs/acre |
| None | 3418 |
| 100 lbs N/A | 2812 |
| 100 lbs $P_2O_5$/A | 3033 |
| Least Significant Difference (5%) | 491 |