Pinto Bean Yield, Maturity, and Nitrogen Fixation Efficiency as Influenced by Nitrogen Fertilizer Management. (S04-stevens155338-Poster)

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Abstract:

Dry edible beans (Phaseolus vulgaris L) respond to preplant N applications even though they obtain fixed N through a symbiotic relationship with Rhizobium bacteria. Disadvantages of adding fertilizer N to dry beans include delayed maturity and possible inhibition of N2 fixation by the bacterial symbiont. It is unknown whether N fertilizer applications are most beneficial during early growth stages prior to nodulation, or during reproductive growth stages when N demand is the highest. A field study was implemented to determine the most effective timing and placement for N fertilizer applications to 'Maverick' Pinto beans. Preplant broadcast, preplant banded, sidedress, and split applications were evaluated. Effects of fertilizer treatments on R1 plant weight and ureide content, as well as yield and maturity were documented. In a preliminary study, a split application (34 kg N/ha preplant, 34 kg N/ha at V8) produced the highest bean yield (4350 kg/ha), but maturity was delayed significantly. When N application (68 kg/ha) was delayed until the V8 growth stage, maturity was not affected compared to the unfertilized check. Delaying N application resulted in a bean yield of 4220 kg/ha while the check yielded 4030 kg/ha.

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