
EFFECT OF NITROGEN FERTILIZATION AND GRANULAR INOCULANTS
ON YIELDS OF SNAP BEANSCharles A. Mullins
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Snap beans grown in Tennessee have not been highly responsive to nitrogen (N) fertilization. Usually 20 to 40 lbs/A have been optimum for maximum yield and quality (1). Increased N usually increased plant size and lodging. Since snap beans are a member of the leguminosae family, it is thought that they have some N fixation to meet their N requirements. With standard production techniques, including N fertilization, nodulation is seldom observed. Granular inoculants have recently been developed and promoted for use on snap beans. An experiment was conducted at the University of Tennessee Plateau Experiment Station at Crossville in 1979 to compare 3 inoculant treatments to 3 levels of N fertilization.

Plantings were made on July 3 and July 18. The first planting was on a site that had been planted to snap beans in 1978 as well as in previous years in a rotational program. The second planting was made on a site not previously planted to snap beans or soybeans. Soil type for both plantings was Hartsells sandy loam. Cultivar was Tidal Wave, a promising new Blue Lake type with considerable rust tolerance. The plots were fertilized with 60 lbs of P_2O_5 and 30 lbs of K_2O per acre broadcast before final discing. Levels of N were 0, 20, and 40 lbs/A banded beside the row after planting. Granular inoculant treatments included 5 lbs/A each of strain K 17, K 44, and a blend of K 17 and K 44. These were applied in the furrow before planting. Other cultural techniques were standard for the area.

In both experiments, plots with either K 17 or K 44 strains of inoculant applied had yields which were no better than those of no nitrogen and significantly less than plots with 20 lbs/A of N. In test 1, yields from plots with 5 lbs/A of the K 17 and K 44 composite were not significantly different from those with 20 lbs of N/A but were significantly lower than from those with 40 lbs of N/A. In test 2, 5 lbs/A of the composite resulted in significantly lower yields than 20 lbs of N/A. In both tests N at 20 lbs per acre resulted in significantly higher yields than no N. The N rate of 40 lbs/A increased yields only slightly in test 1 and decreased yields significantly from the 20 lb rate in test 2. Perhaps in test 2, N was applied too close to the row or was washed too close due to excessive rainfall soon after planting.

The inoculants showed little promise in these tests. Perhaps with other cultivars and years with less rainfall, granular inoculants may be useful. The K 17 and K 44 strains of rhizobium were supplied by the Nitragin Co., Milwaukee, Wisconsin.

Reference

Mullins, C.A., D. L. Coffey and H.D. Swingle. 1977. Snap bean response to fertilization. Tennessee Farm and Home Science 102:19-22