control with fungicides was not satisfactory with the dense spacings. The humidity relationship probably influenced rust more than any other factor.

These studies indicate that planting design changes offer possibilities for greatly increased snap bean yields per acre. However, planter perfection, more effective herbicides, effective systemic fungicides and insecticides and varieties with improved growth habits are needed to make the 6 by 3 inch design feasible.


FERTILIZATION OF BUSH BLUE LAKE SNAP BEANS

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Production of Bush Blue Lake (BBL) snap bean cultivars has been a problem in Tennessee. Pod quality has been outstanding, but plants have sprawled and machine harvest has been extremely difficult. Reduced fertilization and infertile sites have long been suggested for BBL varieties.

Experiments were conducted from 1972 through 1974 to evaluate the effect of various nitrogen levels on yield and quality of BBL varieties. Nine plantings of BBL 274 and Niagara 773 cultivars were made in 1972 and 1973. Nitrogen levels were 0, 15, 30, 45, and 60 pounds banded per acre with Ammonium Nitrate as the source. No other fertilizer was added to the soils with medium phosphate and potash levels. Plant height, width and lodging increased as nitrogen levels increased. Yields from both cultivars were increased by nitrogen, but the difference among levels was not significant. Nitrogen composition of petiole tissue increased as nitrogen fertilization rates increased and phosphorus, potassium, magnesium, and calcium composition was influenced little by nitrogen levels. Several pod characteristics studied were influenced little by nitrogen levels.

Experiments conducted in 1974 involved three plantings of BBL 274 using 15 and 60 pounds of nitrogen per acre using Ammonium Nitrate, Calcium Nitrate and Sulfur Coated Urea as nitrogen sources. No differences in yield or pod quality were found from either rates or sources of nitrogen. However, plants lodged more severely at the 60 pound rate.

These tests suggest that 15 pounds of nitrogen banded on BBL 274 and Niagara 773 is sufficient for maximum yields and pod quality of
these two cultivars. Production was highly satisfactory without other fertilization. Several other cultivars with Blue Lake genes probably would perform in a similar manner. A report is available upon request.

Bibliography


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GROWTH CHARACTERISTICS IN RELATION TO PRODUCTIVITY
OF SNAPBEANS (PHASEOLUS VULGARIS L.)

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Few experiments have been conducted in which the interaction between high population density and variety has been measured in snapbean. This study was initiated to examine the relationship between some growth characteristics and productivity and the interaction of these characters with changes in population density and variety.

'Sunrise', 'Top Crop' and 'Bush Blue Lake 274' were selected for this experiment. Selection of these varieties was based on significant differences in growth characters. Three spacing treatments were used and consisted of plants in a square arrangement spaced 8 x 8, 12 x 12, and 16 x 16 cm. Plots were 5 meters long and about 3 meters wide depending on the spacing treatment.

Treatments were arranged in a factorial experiment in a randomized complete block with two replications. The treatments consisted of the three varieties and the three plant spacings, resulting in a total of nine combinations.

Seeds were sown in the field on May 27 and 28, 1973. Seeds were hand planted and two seeds were placed in each hill. Shortly after emergence populations were thinned to one plant at each desired spacing.

A pre-emergence spray of Treflan was applied for weed control. During the growing season, plots were sprayed to protect against disease and insect damage. The plots were irrigated by overhead sprinklers during the growing season to provide adequate moisture for the plants.

At 10-day intervals, beginning 30 days after planting, a sample of five plants was selected at random from each plot. At each sampling time, total leaf area was estimated and dry weight of the various parts was recorded. Leaf area index as well as different growth characteristics were later calculated using the formula described by Radford (1). Sampling was continued until seeds constituted 5% pods dry weight.