

EFFECT OF ROW SPACING AND SEED RATE ON THE YIELD OF
MUNG BEAN (*PHASEOLUS AUREUS*)

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ABSTRACT

The effect of row spacing and seed rate on the yield of mung bean, grown on a sandy clay loam soil were studied. Distance between the rows was 1', 1½' and 2'. The seed rate was 8, 12 and 16 lbs. to an acre. Planting the crop in 1½' apart rows gave the higher yield as compared to the wider or narrow spacings. Similar yield could be obtained by using a seed rate of 8 lbs. to an acre as compared to that of 12 lbs. and 16 lbs. per acre.

INTRODUCTION

There is severe protein deficiency in the diet of common man in this country. Mung bean (*Phaseolus aureus*), one of the cheapest and a rich source of vegetable protein containing 28.5 per cent protein content, can help a lot to overcome this deficiency. Moreover being a leguminous crop it fits well in the crop rotation and is relatively a more sure crop than other summer legumes. Consequently efforts should be made to increase its production. Although a high yielding Mung No. 6602 is already recommended for general cultivation but most of its agronomic requirements commensurate with high yield still needs to be investigated. Plant population is one of the basic factor affecting the yield can be adjusted through seed rate and the distance between the rows. In this connection Bose, (1932) and Roberts and Singh (1951) suggested that for obtaining normal plant density of mung, 10-12 lbs. seed rate should be used. Martin and Leonard (1957) stated that for obtaining the desired stand under favourable irrigated or humid conditions bean plants should be spaced 2" to 4" apart, in rows 18" to 20" apart. However Delorit and Ahgrent (1923) reported that the beans sown in rows spaced out 48" apart produced more seed per acre than broadcast or rows spaced 18" apart. Aziz (1960) concluded that the best plant spacing for mung bean was 9" apart rows. Kiessellback and Lyness (1942) in a comparison of the method of

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planting beans for grain production found that growing the beans in cultivated rows was decidedly better than seeding in close drilled rows. Most of these studies were with older varieties and may not be applicable to the new high yielding strains with different plant characteristics and grain size. Hence the effects of varying the row spacing and seed rate were studied on the new recommended variety.

MATERIALS AND METHODS

The effects of row spacing and seed rate on the yield of mung bean (*Phaseolus aureus*) were studied on a sandy clay loam soil during the year 1972. The experiment was laid out in split plot design with three replications, and a net plot size of 1/134 acre. Seed rates were kept in the main plot and row spacing in the sub-plots. The crop was sown in mid-April in 1', 1½' and 2' apart rows, using seed rates of 8, 12 and 16 lbs. per acre. The seed was placed at 2" depth with the help of single row drill. The field was fertilized at 50 lbs. P_2O_5 per acre, before sowing the crop. Germination counts per unit area (2' x 2'), number of pods per plant, number of beans per pod, 1000-bean weight and yield in lbs. per acre were recorded. The data obtained were analysed statistically using analysis of variance and where a significant F value was obtained, Duncan's Multiple Range Test was employed to test significance of differences among the treatment means.

TABLE 1. *Effect of row spacing on the seedling density, number of pods per plant, number of beans per pod, 1000-bean weight and bean yield per acre.*

Row spacing (feet)	Seedling density (2' x 2')	No. of pods per plant	No. of beans per pod	1000-bean weight (gm.)	Yield per acre (Lbs.)
1	16.33 b	22.7 N.S.	7.89 N.S.	33.29 b	386.24 b
1½	21.99 a	21.4	7.97	36.32 a	684.89 a
2	20.99 a	17.0	7.90	33.85 b	444.80 b

1) Duncan's Multiple Range Test at 5 per cent probability. Any two means not sharing a letter differ significantly.

N.S. = Nonsignificant.

TABLE 2. *Effect of seed rate on the seedling density, number of pods per plant, number of beans per pod, 1000-grain bean weight and bean yield per acre.*

Seed rates (lbs/acre)	Seedling density (2' x 2')	No. of pods per plant	No. of beans per pod	1000-bean weight (gm.)	Yield (lbs/acre)
8	18.89 N.S.	20.40 N.S.	7.69 N.S.	33.96 N.S.	491.33 N.S.
12	22.63	24.40	8.56	35.57	584.37
16	17.26	16.27	7.51	33.94	440.21

N.S. = Nonsignificant.

RESULTS AND DISCUSSION

The data presented in Table 1 indicate that the bean yield was affected significantly by varying row to row distance. A row to row distance of 1½' gave higher yield as compared to that of 1' or 2' row distance. This increase in the yield could be attributed to heavier beans and greater seedling density (Table 1). Because a significant increase in the 1000-bean weight was observed when the crop was at a row to row distance of 1½' apart. While the other yield characteristics such as number of pods per plant and number of beans per pod were not affected significantly. These results are in accordance with the findings of Martin and Leonard (1957) who observed that bean plants spaced 2" to 4" apart and in rows 18-20" apart gave maximum yield. However, the earlier findings of Delorit and Ahlgren (1923) have shown that beans sown in rows spaced at 48" apart produced more seed per acre than broadcast or row spaced 18" apart.

The results presented in Table 2 indicate that varying the seed rate from 8 to 16 lbs. per acre did not affect the yield or any other yield components significantly. It should also be noted that even the seedling density was not affected by varying the seed rate. Theoretically the seedling density would have been increased by increasing the seed rate. In this study probably the seedling emergence was suppressed by higher seed rate. This reduction in the seed density could be due to increase in the competition for moisture or air during germination, which probably already were limited in supply. Bose (1932) and Roberts and Singh (1951) also suggested that for obtaining normal density of mung, a seed rate of 10-12 lbs. should be used. It is concluded from these studies that optimum yield of mung beans could be obtained by sowing 8 lbs. of seed to an acre in 1½' apart rows. However, more elaborate

studies are needed before any recommendation in this direction could be made.

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