

Effect of sowing dates and NAA application on growth, development and yield in blackgram (*Vigna mungo* L.)

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SUMMARY

The experiment of present investigation was conducted during *khariif* 2004-2005 on the field of Department of Agricultural Botany, Marathwada Agricultural University, Parbhani. The S₂ (5th July) sowing date was optimum to reduce physiological shedding of flowers and increased yield. The N₂ (NAA @ 30 ppm) treatment was found to be effective to increase number of pods per plant, number of grains per pod, dry matter and grain yield (q/ha). In case of interaction effects S₂ (5th July) sowing date with N₂ (20 ppm) concentration of growth regulators was found to be best combination to increase the grain yield.

Key words : Growth, Dry matter, Growth regulator, Black gram, NAA.

The black gram (*Vigna mungo* L.) occupies unique position in Indian agriculture among the pulses. It stands fourth in production and acreage. The productivity of blackgram in Marathwada is less as compared to productivity at national level. The various efforts are being made to boost the yield of black gram but the achievement is not upto expectation inspite of all these efforts. The use of plant growth regulator in agriculture has contributed to a great deal to improve the productivity of many crops. Naphthalene acetic acid is the organic substance which promote the growth of plant and leads to more productivity. The experiment was conducted to study the effect of sowing dates with NAA application on growth, development and yield in black gram.

MATERIALS AND METHODS

The experiment was conducted during *khariif* season of 2004-05 under rainfed conditions on the field of Department of Agricultural Botany, Marathwada Agricultural University, Parbhani. The experiment was laid out in factorial Randomized Block Design with the three replications. The seeds of black gram variety BDU-1 was used for the experiment.

The sowing operations were carried out on 28th June, 5th July and 12th July 2004 by dibbling method under optimum moisture condition. The fertilizers were applied at the rate of 25 kg N and 50 Kg P₂O₅ per hectare in the form of urea and single super phosphate, respectively. Inter-culture operations were carried out to keep the plots weed free and to provide aeration to the soil. The NAA was sprayed at the different concentration of N₁ (15 ppm), N₂ (30 ppm) and N₃ (45 ppm). The observations were recorded on plant height (cm), number of leaves per plant,

leaf area (cm²), number of branches per plant, total dry weight (g/plant), number of pods per plant, 1000 grain weight (g), number of grains per pod, chlorophyll content (mg/g) and grain yield (q/ha).

RESULTS AND DISCUSSION

The data on effect of sowing dates and NAA application on growth, development and yield in black gram is presented in the Table 1. The data on S x W interaction is presented in the Table 2. The data reveals that the sowing dates as well as treatments with growth regulator significantly increased the plant height. The plant height was significantly superior at S₂ (5th July), sowing date as compared to S₃ (12th July) sowing date.

The N₂ (30 ppm) concentration was found more effective to increase the plant height as compared to control and it was *at par* with N₃ (45 ppm) concentration at all the stages. The similar results were also reported by Domodaran *et al.* (1989), Reddy *et al.* (1991), Mahala *et al.* (1999) and Prakash *et al.* (2003) in black gram.

The sowing date S₂ (5th July) was found significantly superior to increase number of leaves which is directly related to number of branches. The NAA @ N₂ (30 ppm) concentration was found significantly superior to other treatments. The branches increased by NAA may be the reason to increase number of leaves. The similar results were reported by Singh and Singh (2000) and Patil (2001).

The Interaction of S₂ (5th July) sowing date with N₂ (30 ppm) of growth regulator was found superior to increase number of leaves. The S₂ (5th July) sowing date was found significantly superior to increase the leaf area which is mainly depend on number of leaves and leaf size. The NAA treatment N₂ (30 ppm) increased leaf

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