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Response of plant growth regulator on growth and yield of fenugreek (*Trigonella foenum - graecum* L.)

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ABSTRACT

An experiment was conducted to study the effect of bio-regulators *viz*., *Triacontanol* @0.5 ml/ liter of water, NAA @50 ppm, GA @50 ppm and water sprayed at one, two and three times on growth and yield of fenugreek (*Trigonella foenum - graecum* L.) variety Rajendra Kanti. Spraying of Triacontanol @0.5 ml/liter water, NAA @50 ppm and GA @50 ppm gave significant effect on yield and yield attributing character as compare to water sprayed. Maximum plant height (80.47 cm), number of branches per plant (7.04), number of pods per plant (49.09), length of pod (10.82 cm), number of grains per pod (16.90) and yield (1.86 t/ha) was recorded by spraying Triacontanol @0.5 ml/l. Three spray (at 25, 45 and 70 DAS) produced maximum plant height (79.92 cm), number of branches per plant (7.07), number of pods per plant (50.50), pod length (11.03 cm), number of grain per pod (17.70) and yield per hectare (1.85 t/ha) followed by two spray (25 and 45 DAS). Interaction of bio-regulator and number of sprays were found non-significant regarding yield and yield attributing characters.

Key words : Fenugreek, Yield, Triacontanol, NAA

Fenugreek (*Trigonella foenum-graecum* L.) is an important condiment occupying third place in area and fourth in production among all the minor spices grown in our country. It is a small seed with yellowish brown colour. It is a rich source of proteins, minerals, vitamin-A and C. Fenugreek belongs to family Leguminosae, subfamily papilionaceae and genus *Trigonella*. It has chromosome no. 2n=2x8=16. It is an annual crop. The nodules found at the tip of side roots have nitrogen fixing bacteria which fix nitrogen in the soil and thus add to the fertility of the soil. Saxena and Ahmed (1983), reported that fenugreek fixes about 283 kg nitrogen per hectare per year.

Beneficial effect of various plant growth regulators have been reported on many spices crops and proved beneficial for improving yield and quality. Mostly the plant growth substances have been used for various beneficial effects such as promoting roots growth, number of branches per plant, number of pods per plant, pod length, number of grains per pod, yield and grain quality.

The main objective of present sudy was to assess the quantitative parameters with regard to application of different plant growth regulator in fenugreek *viz*., stage of application, number of application to see its effect on crop yield.

MATERIALS AND METHODS

A field experiment was conducted under AICRP on spices during 2006-07 to 2008-09 at Horticultural Research Farm, Department of Horticulture, Tirhut College of Agriculture, Dholi, Muzaffarpur. The soil was sandy loam in texture and slightly alkaline (pH-7.4). It was low in available nitrogen (155 kg ha^{-1}), trace in available phosphorus (10 kg ha^{-1}) and low in available potash (160 kg ha^{-1}). The experimental design was F-Ranomized Block Design (FRBD) with three replications having plot size 3.0 x2.4 m. The fenugreek variety "Rajendra Kanti" was sown in *Rabi* season (during 20-25 October every year) at spacing of 30 x 10 cm with application of 25 : 40 : 40 kg :: N : P : K ha^{-1} and following other recommanded packege of practices. Observations were recorded for seven traits on ten randomly selected plants per treatment from each replication. The experiment consistsed of 12 treatments. The treatments details are given below:

Combination of the treatments:		
F_1D_1	:	@ 0.5 ml/l at 25 DAS
F_1D_2	:	@ 0.5 ml/l at 25 and 45 DAS
F_1D_3	:	@ 0.5 ml/l at 25, 45 and 70 DAS
F_2D_1	:	@ 50 ppm at 25 DAS
F_2D_2	:	@ 50 ppm at 25 and 45 DAS
F_2D_3	:	@ 50 ppm at 25, 45 and 70 DAS
F_3D_1	:	@ 50 ppm at 25 DAS
F_3D_2	:	@ 50 ppm at 25 and 45 DAS
F_3D_3	:	@ 50 ppm at 25, 45 and 70 DAS
F_4D_1	:	Water spray at 25 DAS
F_4D_2	:	Water spray at 25 and 45 DAS
F_4D_3	:	Water spray at 25, 45 and 70 DAS