

Response of Gibberellic acid and Cycocel on growth and yield of Clusterbean (*Cyamopsis tetragonaloba* L.) cv. 'PUSA NAVBAHAR'

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ABSTRACT

The field experiment was conducted during late *kharif* season of the year 2002-03 at Lal Baugh, Junagadh Agricultural University, Junagadh in order to find out the response of Gibberellic acid, NAA and Cycocel on growth and yield of clusterbean cv. 'PUSA NAVBAHAR'. The trial was laid out in randomized block design considering total ten treatments of plant growth regulators *viz.*, three concentrations of each of Gibberellic acid (GA₃ 50, 100, 150 ppm), Napthalene acetic acid (NAA 50, 100, 150 ppm) and Cycocel (CCC 1000, 1500, 2000 ppm) along with control (Water spray). The results revealed that the plant height was found maximum with GA₃ 150ppm. The maximum number of leaves and number of branches per plant were recorded with CCC 2000ppm. While the maximum weight of pods per plant and highest yield of pods were received with CCC 1000ppm.

Key words : Gibberellic acid, Cycocel, Napthalene acetic acid, Clusterbean

Clusterbean (*Cyamopsis tetragonaloba* L.) belongs to family leguminoceae. It is draught hardy, deep rooted, summer annual legume. It is good source of protein. It's tender green pods are widely used for vegetable purpose and also feed for livestock and poultry. Seed meal of cluster bean is a byproduct utilised in gum industries consisting of seed coat and germ cell material. The growth and yield of clusterbean crop can be improved by use of plant growth regulators. They increase growth and yield of fruits by altering behaviour of plant systems. Hence, the research work on clusterbean pertaining to plant growth regulators was carried out under Saurashtra region.

MATERIALS AND METHODS

The field experiment was conducted on clusterbean cv. 'PUSA NAVBAHAR' during late *kharif* season of the year 2002-03 at Lal Baugh, Junagadh Agricultural University, Junagadh. The experiment was laid out in randomized block design with three replications. There were ten treatments of plant growth regulators *viz.*, three concentrations of each of Gibberellic acid (GA₃ 50, 100, 150 ppm), Napthalene acetic acid (NAA 50, 100, 150 ppm) and Cycocel (CCC 1000, 1500, 2000 ppm) along with water spray as a control. The sowing of seeds of clusterbean cv. 'PUSA NAVBAHAR' was done manually on 17th Aug, 2002 at depth of 3-4cm and spacing 60x30cm as per treatments. All experimental plots received recommended dose of fertilizers *viz.* N (25 kg/ha), P₂O₅ (37.5 Kg/ha) and K₂O (37.5 Kg/ha). The plants were selected randomly and tagged for recording observations on plant height (cm), number of leaves per plant, number

of branches per plant, weight of pod per plant (gm) and yield of pods (q/ha). The data were analysed statistically.

RESULTS AND DISCUSSION

Influence of Gibberellic acid (GA₃):

The result from Table 1 revealed that the maximum plant height was observed with GA₃ 150 ppm which was statistically at par with GA₃ 100 ppm and GA₃ 50 ppm. The probable reason behind this was account of physiological role of Gibberellic acid in plant. Gradually increased in plant heights with increasing concentrations of Gibberellic acid were due to the reason of cell elongation and quick cell multiplication and there by increased plant heights and lengths of internodes. The present finding is in agreement with Singh *et al.* (1999) in okra.

Influence of Cycocel (CCC):

It is evident from Table 1 that maximum number of leaves and number of branches per plant were recorded with CCC 2000 ppm which were statistically at par with CCC 1000 ppm and CCC 1500 ppm. It means that with increasing concentrations of Cycocel, there was increase in number of leaves and number of branches. These might be due to the beneficial effect of Cycocel. These findings are in agreement with Patel and Singh (1991) and Krishnamoorthy (1993) in okra, Deka and Shadeque (1996) in capsicum and Muhammad-Ibrahim *et al.* (1996) in tomato. The maximum weight of pods per plant and highest yield of pods were received with CCC 1000 ppm, which were statistically at par with NAA 50 ppm. The possible reason for maximum pod weight and highest yield