

Effect of plant growth regulators on growth, yield and quality of cabbage (*Brassica oleracea* var. *capitata* L.) cv. GOLDEN ACRE

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ABSTRACT

A field experiment was conducted during the *Rabi* season of 2004-2005 at Agronomy farm, N.M. College of Agriculture, Navsari Agricultural University, Navsari. Results showed that spray of GA₃ and NAA significantly influenced the performance of growth, yield and quality characters of cabbage. The best plant growth regulator treatments for growth, yield and quality characters of cabbage was GA₃ 100 mg l⁻¹ foliar spray at 30 and 45 days after transplanting (DAT) followed by NAA 100 mg l⁻¹ foliar spray at 30 and 45 DAT.

Key words : Cabbage, Growth, Yield, Quality, GA₃, NAA

Cabbage (*Brassica oleracea* var. *capitata* L) is a native of Western Europe and northern shores of Mediterranean sea. Cabbage is one of the important cole crops, locally known as *kobij*, *kobi*, *bandh-kobi* and *karamkalla*. The edible portion of cabbage is "head". It is popular as salad crop and also widely used as cooked vegetable, in pizza and many other additional dishes like soups, pickles and boiled vegetables. It helps in preventing constipation, increasing appetite, speeding up digestion and it is very useful for patients suffering from diabetes. The application of plant growth regulators in various ways, modify the plant characters like height, number and size of leaves, root growth, fresh and dry weight etc by modifying the physiological processes within the plant, which ultimately effect the yield and quality of the crop.

MATERIALS AND METHODS

The experiment was conducted during the *Rabi* season of 2004-2005 at Agronomy farm, N.M. College of Agriculture, Navsari Agricultural University, Navsari, laid out in Randomized Block Design (RBD) with three replications and 14 treatments. The treatments comprised of three different concentrations of GA₃ (25, 50 and 100 mg l⁻¹) and NAA (25, 50 and 100 mg l⁻¹) at two spraying levels (single spray at 30 DAT and double spray at 30 and 45 DAT) as foliar application of cabbage including distilled water spray and absolute control. Data on all the parameters were collected and analyzed statistically.

RESULTS AND DISCUSSION

The results obtained from the present investigation are summarized below :

Growth characters :

A perusal of data in Table 1 apparently indicates that GA₃ and NAA affected various growth characters significantly. It is evident that GA₃ 100 mg l⁻¹ foliar spray at 30 and 45 DAT (T₉) had maximum influence over other treatments with respect to plant height, plant spread, number of non-wrapping leaves per plant, stalk length, days taken for initiation of head formation after transplanting and complete maturity of head and head diameter. Similar results were found by Chhonker and Singh (1964), Patil *et al.* (1987) and Yadav *et al.* (2000). The possible reason for increase in all growth characters of cabbage plants may be due to the increased osmotic uptake of water and nutrients under the influence of gibberellic acid which would have maintained a constant swelling force against softening of cell walls. Gibberellic acid promotes vegetative growth by way of cell division and cell elongation.

Yield and yield attributes :

It is evident from Table 2 that GA₃ and NAA treatments increased the fresh and dry weight of head and yield as compared to absolute control. GA₃ 100 mg l⁻¹ foliar spray at 30 and 45 DAT (T₉) produced 1.387 kg fresh weight of head and 113.31 g dry weight of head which was statistically significant to all the treatments,