



Research Note

Influence of GA₃ and NAA on yield parameters of cauliflower cv. SNOWBALL-16

V.M. PATEL, N.K. PATEL AND S.R. CHAUDHARI

Abstract : Investigation was carried out to evaluate the performance of different level of GA₃ and NAA as root dipping and foliar spray on cauliflower cv. SNOWBALL-16. GA₃ applied at 50mg/l foliar spray on cauliflower gave the best results for length of stalk (5.22 cm), curd diameter (17.78 cm), gross weight of curd (3.53 kg/plant), net weight of curd (1040 kg/ha), yield of curd (12.25 kg/plot and 378.04 q/ha), while the same treatment showed minimum days to 50 per cent marketable curd (88.80 days).

Key Words : GA₃, NAA, Cauliflower, Root dipping and Foliar spray

How to cite this Article: Patel, V.M., Patel, N.K. and Chaudhari, S.R. (2011). Influence of GA₃ and NAA on yield parameters of cauliflower cv. SNOWBALL-16, *Internat. J. Forestry & Crop Improv.*, 2 (2) : 213-214.

Article Chronical : Received : 01.07.2011; Accepted : 13.10.2011

Cauliflower got an important place among the cole crops because it's delicious taste, flavour and nutrition. Cauliflower is a good source of protein, carbohydrates, minerals and vitamins. The leading cauliflower growing states are West Bengal, Bihar, Uttar Pradesh, Punjab and some part of Gujarat. Cauliflower gives good response to the plant growth regulators for better vegetative growth. So it directly related to the yield of curd in cauliflower. Therefore, the present investigation was carried out on the effect of GA₃ and NAA on the yield parameters of cauliflower cv. SNOWBALL-16.

A field trial was conducted at College Farm, N.M. College of Agriculture, Navsari Agricultural University, Navsari during 2009-10. The soil of experimental field had a pH (7.7), available nitrogen (229.08 kg/ha), available phosphorus (29.54 kg/ha) and available potash (336.50 kg/

ha). The experiment was laid out in Randomized Block Design (RBD) with three replications and different concentration of GA₃ and NAA at 50, 75, 100 mg/l with root dipping and foliar spray. Basal dose of FYM was applied at the rate of 20 tonnes per ha, phosphorus and potash were applied uniformly to each plot at the rate of 80 kg/ha. Whereas nitrogen was applied at the rate of 100 kg/ha in two splits. The first half dose of nitrogen was applied at basal dose and remaining dose at 30 days after transplanting. The data on length of stalk, days to 50 per cent marketable curd, curd diameter, gross weight of curd, net weight of curd, yield of curd per plot and yield of curd per hectare were recorded and statistical analysis was done at statistical department, N.M. College of Agriculture, N.A.U, Navsari.

The data presented in Table 1 revealed that length of stalk was influenced significantly by GA₃ and NAA. Highest stalk length 5.22 cm was recorded in GA₃ 50mg/l foliar spray which remained at par with NAA 50mg/l (4.97 cm), GA₃ 75 mg/l (4.82 cm) and GA 100 mg/l (4.56 cm) foliar spray. It might be due to the folier spray of gibberlic acid which stimulate vegetative growth and involved in initiation of the cell division in cambium. Enhance in auxin content of tissue also increase cell elongation. Similar results were also

MEMBERS OF RESEARCH FORUM

Author of the Correspondence :

V.M. PATEL, ASPEE College of Horticulture and Forestry, Navsari Agricultural University, NAVSARI (GUJARAT) INDIA

Address of the Coopted Authors :

N.K. PATEL AND S.R. CHAUDHARY, ASPEE College of Horticulture and Forestry, Navsari Agricultural University, NAVSARI (GUJARAT) INDIA

Table 1 : Effect of GA₃ and NAA root dipping and foliar spray on yield parameters of cauliflower cv. SNOBALL-16

| Treatments | Length of stalk (cm) | Days to 50% marketable curd | Diameter of curd (cm) | Gross weight of curd (kg/plant) | Net weight of curd (kg/ha) | Yield per plot (kg) | Yield per hectare(q) |
|--------------------------------------|----------------------|-----------------------------|-----------------------|---------------------------------|----------------------------|---------------------|----------------------|
| GA ₃ 50mg/l root dipping | 3.82 | 96.73 | 15.36 | 2.88 | 845.00 | 9.66 | 296.15 |
| GA ₃ 75mg/l root dipping | 3.77 | 96.87 | 14.37 | 2.80 | 834.00 | 9.46 | 291.93 |
| GA ₃ 100mg/l root dipping | 3.73 | 97.93 | 14.17 | 2.77 | 832.33 | 9.12 | 281.34 |
| NAA50mg/l root dipping | 3.70 | 98.53 | 13.91 | 2.75 | 798.33 | 8.28 | 255.63 |
| NAA75mg/l root dipping | 3.65 | 99.87 | 13.79 | 2.74 | 791.67 | 7.98 | 246.36 |
| NAA100mg/l root dipping | 3.53 | 100.67 | 13.52 | 2.70 | 758.33 | 7.49 | 231.14 |
| GA ₃ 50mg/l foliar spray | 5.22 | 88.80 | 17.78 | 3.35 | 1040.00 | 12.25 | 378.04 |
| GA ₃ 75mg/l foliar spray | 4.82 | 93.07 | 16.48 | 3.30 | 910. | 10.83 | 334.32 |
| GA ₃ 100mg/l foliar spray | 4.56 | 94.83 | 16.44 | 2.99 | 894.00 | 10.08 | 311.17 |
| NAA50mg/l foliar spray | 4.97 | 92.53 | 17.10 | 3.37 | 965.00 | 10.21 | 341.11 |
| NAA75mg/l foliar spray | 3.92 | 96.27 | 16.46 | 3.00 | 901.33 | 9.68 | 314.98 |
| NAA100mg/l foliar spray | 3.86 | 97.77 | 15.64 | 2.87 | 887.67 | 9.87 | 298.83 |
| Water spray | 2.69 | 102.13 | 11.98 | 1.91 | 611.67 | 6.56 | 202.34 |
| Control | 2.59 | 108.53 | 11.89 | 1.84 | 595.67 | 6.33 | 195.24 |
| S.E. ± | | | | | | | |
| C.D. (P=0.05) | 0.93 | NS | 2.11 | 0.48 | 135.92 | 2.05 | 63.13 |
| CV% | | | | | | | |

reported by Mishra and Singh (1986).

The days to 50 per cent marketable curd was significantly affected by various treatments. The minimum days (88.80 days) was observed in gibberelic acid (50mg/l) applied by foliar spray as well as in NAA but result were non significant. This may be due to the gibberellins which increase nutrient transport from root to the aerial parts of plant. Reddy (1989) reported 10days earliness in formation of curd with GA₃.

The maximum curd diameter (17.78 cm) was found in GA₃ (50mg/l) foliar spray which was at par with NAA (50mg/l), GA₃ (75 mg/l), NAA (75 mg/l) and GA₃ (100 mg/l). This might be due to effect of gibberelic acid on cell enlargement, cell elongation and cambial activity. Also, gibberelic acid may increase accumulation of carbohydrates owing to better photosynthesis by plant. These results are in conformity with the earlier findings of Mishra and Singh (1986) and Reddy (1989).

The significantly maximum gross weight and net weight of curd (3.53 kg/plant and 1040.00kg/ha) were recorded in GA₃ (50mg/l) applied as a foliar spray. So, rapid and better nutrient was transport from root to their aerial parts as the result of GA₃. Similar results were earlier reported find by Vijay and Ray (2000) in cauliflower.

The significant maximum yield per plot and hectare (12.25 kg/plot and 378.04 q/ha, respectively) which was on same bar with NAA (50mg/l), GA₃ (75 mg/l), NAA (75 mg/l) foliar spray. This might be due to high reserve of

carbohydrates. The photosynthesis activity is directly related with the number of leaf and their development. The greater accumulation of carbohydrates in plant due to GA₃ and NAA facilitate the development of curd. Similar trends were earlier observed by Yadav *et al.* (2000) and Kumar *et al.* (1996) in cabbage.

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