

## **Response of GA<sub>3</sub> and NAA on growth, flowering, bulb production and vase life of tuberose (*Polianthes tuberosa* L.) cv. SINGLE**

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### **ABSTRACT**

A study was conducted in tuberose (*Polianthes tuberosa* L.) cv SINGLE by dipping the bulbs in different concentration of GA<sub>3</sub> and NAA (50, 100, 150, 200) for 6 hours and 12 hours. GA<sub>3</sub> 200 ppm was found to be the best for plant height, spike / clump, spike length, floret number/spike, inflorescence length and width, spike weight, for early emergence of sipke, increased flowering duration and vase life. Bulb and bulblet production was also higher in the same treatment.

**Key words :** Tuberose, GA<sub>3</sub>, NAA.

**T**uberose (*Polianthes tuberosa* L.) is an important commercial flower crop grown in many tropical and subtropical parts of the world. In India, it is largely grown in Karnataka, TN, A.P., U.P., W.B., Haryana and Gujarat. The present investigation was under taken to elucidate the effect of growth regulators *i.e.* gibberellic acid (GA<sub>3</sub>) and Naphthaleic Acetic Acid (NAA) by soaking of bulbs and find out the optimum concentration for better growth, flowering, yield of bulbs and vase life in tuberose.

### **MATERIALS AND METHODS**

An experiment was conducted at the Horticultural Research Farm of Udai Pratap Autonomous College, Varanasi (U.P.) during 2005 and 2006. Bulbs of tuberose cv. SINGLE, having diameter of 2 cm were soaked for 6 hours and 12 hours in GA<sub>3</sub> and NAA at four concentration *viz.* 50, 100, 150 and 200 ppm. For control, bulbs were not soaked in any solution. All the bulbs were dried in shade and planted at a spacing of 20 cm. x 20 cm. in the beds having the size of 1.0m x 1.0 m in a randomized block design, with three replications. Observation on growth, flowering quality yield of bulbs and vase life parameter were recorded time to time.

### **RESULTS AND DISCUSSION**

Number of leaves per clump were significantly increased by GA<sub>3</sub> and NAA during both the years (Table1). More number of leaves (128.00 and 130.17) were obtained by the bulb dipping in GA<sub>3</sub> 200 ppm + 12 hours (T<sub>8</sub>) followed by GA<sub>3</sub> 200 ppm + 6 hours (T<sub>7</sub>)

dipping. Increase in number of leaves with GA<sub>3</sub> treatment has also been reported by Sanap *et al.* (2004) in tuberose. There was a corresponding increase in plant height with consequent increase in concentration of GA<sub>3</sub>. Maximum plant height was observed under GA<sub>3</sub> 200 ppm + 12 hours (T<sub>8</sub>) bulb dipping treatment and this treatment significantly differed to all other treatments under study. Increase in plant height with GA<sub>3</sub> application has been observed by Sagar *et al.* (2005) in tuberose. Leaf area per leaf and fresh weight of leaves per clump were also significantly affected by GA<sub>3</sub> and NAA treatments. Maximum leaf area (37.40 and 37.86 cm<sup>2</sup>) was recorded in treatment with GA<sub>3</sub> 200 ppm + 12 hours (T<sub>8</sub>) bulb dipping followed by GA<sub>3</sub> 200 ppm + 6 hours (T<sub>7</sub>) bulb dipping. Similarly, more fresh weight of leaves per clump was also obtained by bulb dipping in 200 ppm GA<sub>3</sub> for 12 hours (T<sub>8</sub>). Improvement in leaf area and leaf fresh weight due to GA<sub>3</sub> was observed by Tiwari and Singh (2002) and Sanap *et al.* (2004).

The result in respect of flowering behaviour of plants presented in the Table 2 shows that application of GA<sub>3</sub> 100 ppm + 12 hours (T<sub>4</sub>) bulb dipping significantly lowered down the number of days required scape emergence however, it was *at par* with GA<sub>3</sub> 100 ppm + 6 hours (T<sub>3</sub>) bulb dipping during 2005 and 2006, respectively. Earliness in spike emergence was also reported by Sanap *et al.* (2004) and Sagar *et al.* (2004). The spike length was significantly maximum with GA<sub>3</sub> 200 ppm + 12 hours (T<sub>8</sub>) bulb dipping followed by NAA 200 ppm + 12 hours (T<sub>12</sub>) bulb dipping both the years. Data inferred that spike weight was markedly influenced by GA<sub>3</sub> and NAA treatment over control. GA<sub>3</sub> 200 ppm + 12 hours bulb