

Growth and flowering of African marigold as affected by nitrogen and phosphorus under varying intra-row spacing

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ABSTRACT

The effect of nitrogen, phosphorus and intra-row spacing on the plant growth and flower production of African marigold was studied under subtropical Lakhoati conditions. Results of the present experiment showed that 300kg N ha⁻¹ produced noticeably highest flower yield and yield attributes *viz.*, no. of flowers plant⁻¹, size of the flower head and weight of flower plant⁻¹. Though the phosphorus dose @ 200kg ha⁻¹ gave sustainable increase in flower yield and yield attributes of African marigold. However, 40 × 40cm intra-row spacing was observed significantly superior than 40 × 30 and 40 × 50cm intra-row spacing in addition to the flower yield. On contrary, flower weight of individual plant was higher with 40 × 50 intra-row spacing. However, the nitrogen and phosphorus application not produced any positive increase in growth parameters of marigold over control. Simultaneously, 40 × 50cm intra-row spacing produced marked effect on the 40 × 30cm and 40 × 40cm intra-row spacing in relation to height of plant, diameter of stem, spread of plant and no. of leaves plant⁻¹.

Key words : Marigold, Nitrogen, Phosphorus, Intra-row spacing, Pusa Narangi

Marigolds have been cultivated from centuries and have acquired many religious and mystical associations. It is one of the most promising ornamental and is task establishing as an important cut flowering crop. Nitrogen and phosphorus being the major elements having immense importance in flowering crops. The deficiency of Nitrogen and phosphorus brought tremendous loss in addition to growth and flowering of cut blooming flori crops as being the constituents of protein. The combined application of nitrogen and phosphorus produced promising effect in response to the flower production. Although present need is to assess adequate dose of nitrogen and phosphorus with advantageous spacing. Thus, keeping above facts in view, the present investigation was conducted to evaluate the promising dose of nitrogen and phosphorus along with optimum intra-row spacing for maximization of African marigold flower production.

MATERIALS AND METHODS

The investigation was carried out at the Research farm of A.S. College, Lakhoati, Bulandshahr (U.P.) during the winter season of 2002 -2003 and 2003 – 2004. The experiment was laid out in split plot design with treatments, Four levels of nitrogen (0, 100, 200 and 300kg ha⁻¹), three levels of phosphorus (0, 100 and 200kg ha⁻¹) and three intra-row spacing (40 × 30cm, 40 × 40 cm and 40 × 50cm). Thus in all the thirty six treatments were used and replicated thrice. The soil of experimental field was sandy

loam having pH 7.8, organic carbon 0.30%, available nitrogen 178.0 kg ha⁻¹ and available phosphorus 28.1kg ha⁻¹. Treatments nitrogen and spacing were used in main plot and phosphorus was applied as sub plot treatment. A uniform dose of 120kg K₂Oha⁻¹ was applied before transplanting along with one third nitrogen (N) and full dose of phosphorus, however, remaining nitrogen was top dressed in two split doses at 30 and 60 days after transplanting. The seedlings of cultivar Pusa Narangi were transplanted on 8th November during both the seasons. nitrogen, phosphorus and potash were used in the form of urea, single superphosphate and muriate of potash. Observations were recorded for various plant growth and flowering parameters.

RESULTS AND DISCUSSION

Data presented in Table 1, showed that plant height of stem, spread of plant and number of leaves plant⁻¹ were significantly increased in various levels of nitrogen over control. Growth characters *viz.*, height, diameter, spread and number of leaves were noticeably enhanced due to the phosphorus application; the tallest plant with maximum no. of leaves, diameter and spread of plants were produced by receiving 300 kg N and 200kg P₂O₅ ha⁻¹ under 40 × 50cm, intra-row spacing. Similar results have also been reported by Kumar *et al.* (2003). Singh and Baboo (2003), Baboo and Sharma (1997), Baboo and Sharma (2003) and Sharma *et al.* (2003).