Evaluation of some phenological and quality parameters of *Dianthus barbatus* under the application of different levels of manure and chemical fertilizers

M. K. Souri[1*], M. Taghipour[2] and Gh. Tohidloo[2]

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Abstract

Nowadays, knowing that chemical fertilizers have distinct pollution effects on environmental quality parameters, the organic fertilizers represent a suitable and safe alternative, at least for landscape applications. However, the response of many ornamental and landscape plants, including Sweet William, to different chemical and organic fertilizers are not well known. Thus, this factorial experiment was conducted as a pot experiment, based on completely randomized design with three replications, to investigate the yield and quality responses of *Dianthus barbatus* to different levels of organic manure (0, 20 and 40% V/V) and NPK fertilizer (0, 1, 2 and 4 g/kg soil) under greenhouse conditions. Results of the experiment showed that application of 20% animal manure and low rate of NPK, compared to no manure or 40% manure, improved plant growth and quality (number of leaves, plant height, number of lateral shoots and number of flowers per plant). High levels of organic manure (40% V/V), as well as high levels of NPK (2 and 4 g/kg soil), separately or combined together, resulted in reduction of plant growth, and significant increase in germination, stemming and flowering times. Despite low germination rate and less plant growth in 40% animal manure treatment, both levels of animal manure resulted in increasing the number of flowers per plant, flowering period and vase life of the cut flowers. Therefore, according to the results of this experiment, as well as the importance of environmental health issues, medium level of animal manure and zero or low levels of NPK is suggested for optimum quantitative and qualitative production of *Dianthus barbatus*.

Keywords: Ornamental plants, Manure, NPK fertilizer, Flowering, Flower quality.

1. Dept. of Hort. Sci., College of Agric., Tarbiat Modares Univ., Tehran, Iran.
2. Islamic Azad Univ., Karaj, Iran.
* Corresponding Author, Email: mk.souri@modares.ac.ir