Effect of Bulb Size and Spacing on the Quality and Yield of Arabicum (*Ornithogalum saundersaie* Bak)

Kihara, S. N., Muriithi, A. N., Kamau, E. M. and Gateri, M. W.
Kenya Agricultural Research Institute,P. O. Box 220, Thika
E-mail: kihasam@yahoo.com

Abstract

Arabicum, *Ornithogalum saundersiae* Bak, is one of the most popular flower crops among the small scale cut flower growers and florists in many countries including Kenya mainly because of its ease of cultivation and having regular stem form and white inflorescence which can be used in different floral arrangements. In a series of experiments to determine the most appropriate agronomic packages required for the growth of this crop, trials were conducted under on station trials at KARI-Thika in 2008 and 2009. The study investigated the effect of variable plant spacing, hence different plant densities, different seed bulb sizes big, medium and small (<18 cm, 18-23 cm and >23 cm diameter respectively) on the number of stems produced, stem length and stem weight and stem head size and also quantity of assorted sizes of lifted bulbs. The 2008 experiment parameters were evaluated in a split-plot design while that of 2009 experiment was laid in a randomized complete block design (RCBD) experiment, each with three replications. The effects of both bulb size and spacing and their interactions were evaluated in the 2008 experiment. The small bulbs produced the largest number of big bulbs while the big bulbs produced the largest number of small bulbs. The results from the data collected showed that there were no significant differences ($P<0.05$) in the stem yields and stem length among the evaluated spacings, but the bulb size showed some significant differences ($P<0.05$) with big bulbs giving the highest stem yield, 1420 bulbs in total. The interactions between bulb size and spacing did not have significant difference ($P<0.05$) in big and total bulbs and stem weight but significant difference in medium and small bulbs and stem length. There were also significant differences in bulb-let yield with the big bulbs producing the highest number of small to medium bulbs while the small bulbs produced more of the big bulbs than the small ones. Bulb rot was almost uniform in all the treatments, for both spacing and bulb size. In the 2009 trial bulbs of different sizes, >23cm (big), 18> <23cm (medium) and <18cm (small) diameter were evaluated while planted each separately. The assessment was based on parameters; average number of stems produced for the whole harvesting period, average length of stems (10 randomly selected stems and head diameter and number of big, medium and small bulbs lifted from each bulb category, all per m^2. The mean yield for the different categories of bulbs were: big size bulbs, 53 stems/ m^2 of which 80% were above 60cm long (the minimum market acceptable length) while the lifted bulbs were 19 big, 147 medium and 325 small; medium size bulbs, 18.08 stems/ m^2 of which 55% were above 60cm long while the lifted bulbs were 10 big, 62 medium and 78 small; small size bulbs, 8.98 stems/ m^2 of which 20% were above 60cm long while the lifted bulbs were 10 big, 62 medium and 78 small. Big and medium bulbs were found to be superior in the production of both flower stems and bulbs. Spacing did not seem to affect any agronomic performance. Arabicum growers are, therefore, advised to sort out their seed tubers into big, medium and small and plant each category separately. We recommend farmers to use big and medium bulbs (>23cm, 18-23cm) at a spacing of 35 bulbs/m^2 for commercial crop while the small ones can be used for seed bulb production.

Key words: Flower length, flower head, circumference of bulb, plant density