

## Seed yield in relation to bulb size and umbel number in onion (*Allium cepa* cv. AGGREGATUM)

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### SUMMARY

Demand of onion in domestic and international market the area under production is increasing day by day but non-availability of recast quality seed is a limitation for profitable production programme of onion. Selection of larger (more than 2.5 cm in diameter or mean 100 seed bulbs weight of 1360 g) and medium size (2.1 to 2.5 cm in diameter or mean 100 seed bulbs weight of 780 g) mother bulbs and allowing all umbels without cutting will result in higher seed yield and quality for commercial seed production. Using larger sized bulbs and allowing three umbels plant<sup>-1</sup> will be more suitable for production of highly valuable seeds of breeder and nucleus seeds.

Key words: Bulb size, Umbel number, Seed yield, Seed germination.

The seed production is a unique venture where yield with quality is focussed and this phenomenon fetches much importance in low volume high value seeds of crop like onion. Two types of onion viz., common onion and aggregatum onion are commercially important. The common onion type, *Allium cepa* var. *cepa* produces single large bulb per plant and it is propagated through seeds. The aggregatum onion *Allium cepa* var. *aggregatum* produces small bulbs which form an aggregated cluster and is propagated through bulblets. The national area under aggregatum onion is being increased especially in Tamil Nadu. The total area under onion in Tamil Nadu is 23,492 hectares with a production of 1,98,712 tonnes (Anon, 2004). Normally aggregatum onion varieties do not flower and set seed and hence propagated through bulblets. If there is a possibility of raising the aggregatum onion through seeds, then a drastic cut in the cost of cultivation could be achieved. Onion COOn5 is one such variety with high bulb yield and the better seed setting quality (Veeraragavathatham *et al.*, 2002). The biggest bottleneck in aggregatum onion production is the high cost and non-availability of quality seeds of improved varieties. The seed production of aggregatum onion, which differs from bulb production, needs to be standardized.

The size and weight of the bulbs used for planting are the most important factors which influence the seed production (Bose *et al.*, 1993). Planting of large size mother bulbs results in higher seed yield. However, it will be neither economical nor easily available for commercial seed production. The medium sized bulbs were economically best, although the seed yield was

higher with increase in the size of the mother bulb (Orlowski, 1974).

The number of umbels plant<sup>-1</sup> depends on several factors including storage environment of the bulb, plant density, cultivar and management practices. The rate of initiation of inflorescence is strongly influenced by the size of bulbs. As the size of mother bulb increases in a given constant plant density, the yield of seed also increases with increased number of umbels plant<sup>-1</sup> resulting in a slight reduction in seed weight (Brewster, 1994). So optimization of number of umbels plant<sup>-1</sup> is to be determined for quality seed production.

### MATERIALS AND METHODS

Pure seeds of aggregatum onion (*Allium cepa* var. *aggregatum* L.) cv.COOn5 were collected from Horticulture College and Research Institute, Coimbatore. The seeds were utilized for bulb production in the Department of Seed Science and Technology, Tamil Nadu Agricultural University, Coimbatore during June to September 2003-04 and 2004-05 which formed the basic material for the study. For planting the seed bulbs, ridges and furrows were formed with a spacing of 45 cm. The seed bulbs were size graded and planted on both the sides of the ridges with a spacing of 15 cm during Rabi season adopting Factorial Randomized Block Design with three replications, in a plot size of 3 x 2.5 m<sup>2</sup>. The recommended agronomic practices were followed.

The onion seed bulbs were graded into large, medium and small based on the bulb width (diameter) as well as weight of bulbs,

i. Large - more than 2.5 cm diameter or mean

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