

Effect of fruit size on seed yield and quality in bottlegourd (*Lagenaria siceraria*)

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Among cucurbitaceous vegetables, bottlegourd [*Lagenaria siceraria* (Mol.) Standl] is widely grown in north Indian plains, lower hills and plateau region. It is grown for immature fruits for culinary purposes and also used for preparation of different types of sweets. Fruit pulp is a good source of fibre-free carbohydrates and fruit pericarp for crude fibre. Fruit size is one of the characters associated with seed yield and quality in many cultivated crop plants. Variability in fruit size is registered in bottlegourd seed crops even under good crop management. A significant correlation was reported between the fruit weight and number of good seeds in cucumber [1]. Fruit selection at harvesting in field can be done in bottlegourd to produce good quality seed.

A study was undertaken at IARI Regional Station, Karnal to evaluate the effect of fruit size/weight on seed yield and quality in bottlegourd cv. Pusa Summer Prolific Long (PSPL). Fruits of bottlegourd cv. PSPL were harvested during November, and separated into four different grades (G-I, G-II, G-III and G-IV) based on their length and weight (Table 1). Harvested fruits were dried for one month under ambient environment and seeds were extracted from the dried fruits. The extracted seeds were placed in water and the seeds (Filled ones) settled down in the bottom were taken out and dried back to 8% moisture content in shade. Observations on seed and seedling characters were recorded up to one month from seed extraction. Seeds from five fruits

belonging to each grade were weighed and the average weight was recorded. One thousand dried seeds were weighed to determine the test weight. A total number of 200-seeds in four replications of 50 seed in each from each group were placed in sterilized sand for germination under ambient condition. The mean number of normal seedlings produced was recorded and expressed as germination percentage. Vigour Index was computed adopting the formula [2]. For statistical comparison, the data with five replications were analyzed following randomized block design.

Fruits from Grade-I followed by Grade-II and Grade-III recorded maximum seed recovery of 64.4%, 62.1% and 59.7%, respectively. There were significant differences among the fruits of four grades for number of seeds/fruit, test weight and seedling Vigour Index-I (Table 2).

Fruits from Grade-I recorded maximum seeds/fruit (483.6) followed by fruits of Grade-II (382.8) and Grade-III (304.6). Minimum seed recovery (32.5%) and seeds/fruit (192) were recorded in fruits of Grade-IV. Test weight of seeds from fruits of Grade-I (131.1 g) and Grade-II (129.8 g) was statistically at par with each other. Maximum seed germination and vigour index was recorded in seed of fruits from Grade-I (85.7% and 3237) followed by Grade-II (84.2% and 3125), respectively. Seeds from Grade-IV recorded lowest test weight (111.9 g), seed germination (77.5%) and seedling vigour index (2686). Reports of positive influence of fruit size and/or weight on seed

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Table 1. Fruit size in bottlegourd (cv. PSPL) and its seed recovery

Average weight/fruit (g)	Fruit length (inch)	Fruit girth (inch)	Seed recovery (%)	Fruit grade
2500	>15	12.5	64.4	Grade-I
2000	12-15	12.0	62.1	Grade-II
1750	9-12	11.5	59.7	Grade-III
1000	< 9	9.5	32.5	Grade-IV

Table 2. Effect of different fruit size on seed yield and quality in bottlegourd cv. PSPL

Fruit grade	No. of seeds/fruit	Test weight (g)	Germination (%)	Vigour index-I
Grade-I	483.6	131.1	85.7	3237.0
Grade-II	382.8	129.8	84.2	3125.0
Grade-III	304.6	125.4	83.8	3058.0
Grade-IV	192.5	111.9	77.5	2686.0
CD(p=0.05)	5.84	1.37	NS	44.62

content and seed quality were reported earlier in ashgourd [3], tomato [4], cucumber [1] and bittergourd [5]. Healthy seed and seedling vigour ensures a good crop stand in field. Seed quality affects the crop stand by its ability to germinate under field condition as well as its potentiality to

supply nutrients to growing seedlings [6]. The vigour of seedlings in early stages determine the ability of nutrient uptake from the soil, hence it enhances the vegetative growth in early stages. Seed weight is directly related to seed size, suggesting higher seed reserve in larger or heavier seeds. The heavier the seed, the greater the vigour of seedlings and higher will be the photosynthetic activity of plants. Large sized fruits should be selected at the field level to ensure higher recovery of bolder seeds, thereby producing healthy and vigorous seedling. So, under this study, it is concluded that in bottlegourd cv. PSPL large sized fruits (G-I, G-II and G-III) should be selected at the field level to ensure more seed recovery and better quality of seed.

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