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**Analyze the seed quality of *Capsicum annum* (cultivar Grossum) by maintaining an optimum number of fruits in the plant**

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**Abstract**

The Bell pepper, a member of the *Capsicum annum* species in the Solanaceae family, belongs to the Grossum cultivar. This plant produces fruits in a variety of colors such as red, yellow, orange, green, white, and purple. The quality of *Capsicum annum* seeds is influenced by the quantity of fruits produced by the plant. As the number of fruits per plant increases, the quality of *Capsicum annum* seeds gradually decreases after reaching a certain level. To assess the seed quality of *Capsicum annum*, this study aimed to maintain an optimal number of fruits on the plant. The objective of this study was to determine the correlation between the number of fruits per plant and seed quality. Fruits setting in the plants; 8-9fruits/plant, 10-12fruits/plant, 13-15fruits/plant, 16-18fruits/plant, more than 18fruits/plant were used as treatments. Hand pollination of *Capsicum annum* was found to be successful at a rate of approximately 75-80%. Various metrics such as dry weight of seeds per pod, number of seeds per pod, seed volume, dry weight of 1000 seeds, germination percentage, and seed viability percentage were recorded. While the number of seeds per pod, germination percentage, and seed viability percentage were not affected by fruit setting, other selected parameters were found to be significantly impacted. It was observed that maintaining 13-15 fruits per plant resulted in the highest number of fruits with quality seeds. The highest recorded values were for dry weight of seed per pod (0.533g), seed number per pod (86 seeds), seed volume (147 seeds/g), dry weight of 1000 seeds (7.45g), germination percentage (85%), and viability percentage (86.33%). Based on these results, it can be concluded that maintaining 13-15 fruits per plant is the most effective strategy for fruit setting of *Capsicum annum* (Hybrid Variety) under greenhouse conditions.

**Keywords:** *Capsicum annum*, Fruit Setting, Germination, Quality, Seeds

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