



Experimental Farming of *Cucurbita moschata* Duchesne – An Exotic pumpkin at NBU Medicinal Plant Garden

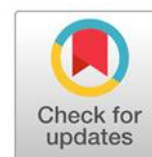
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Abstract

Cucurbita moschata Duchesne (Butter Squash) is a high food value exotic vegetable of Cucurbitaceae with its origin in Columbia, South America. It is widely cultivated in South America, Central America and some of the Asian countries and Australia, and consumed as cooked or raw vegetable. This crop is notably promising with high yield and low cost of production. It is close to Pumpkin (*Cucurbita maxima* Duchesne) which is largely grown in India, particularly in Bengal as an important vegetable for preparing curries. There is no report of introduction and cultivation of Butter Squash in Bengal. An experimental cultivation plot was set up in the nursery of NBU medicinal plant garden when some seeds were obtained from England for experimental cultivation.



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Introduction

Butter Squash (*Cucurbita moschata* Duchesne) from the family Cucurbitaceae is a high value exotic vegetable and is native to Columbia, South America. It is widely cultivated in Mexico, Central America, South America, some of the Asian countries and Australia (Hui, Yiu H. 2006; Mondal & Basu 2012). It is close to Pumpkin (*Cucurbita maxima*) which is largely grown in India, and similar to a number of major and minor cucurbits which are cultivated in several commercial cropping systems as popular kitchen garden crops (Setiawan et. al 2001). Cucurbits share about 5.6% of the total vegetable production of India as estimated by FAO. Apart from developing the cultivation technique of this newly introduced crop, detailed taxonomical, anatomical and phenological studies were carried out in our laboratory and experimental plot. The nutritional value per 100 gm edible portion of Butter Squash (*Cucurbita moschata*) contains carbohydrate 11.69 gm, fat 0.10 gm, protein 1.0 gm, Vitamin 'C' 21.0 mg, and Vitamin 'B' 60 mg (Uchanski & Mason 2018; Thomas & Bemis 1975). There is no report of introduction and cultivation of Butter Squash in Bengal, thus a trial plot was set up in the nursery at

NBU medicinal plant garden when some seeds were obtained from England for experimental cultivation.

Materials and Methods

Semidried seeds were sown in mist chamber under different seed pans each 40 cm in diameter, and 10 cm deep containing equal proportion of germinating medium such as pulverized garden loam and leaf mould dust with small quantity of cow dung manure (1:1:1). The soil mixture was sterilized by sunlight. Seed pans were placed in the mist chamber of the NBU medicinal plant laboratory under diffused sunlight. Upper surface of the medium was soaked with water. Seedlings were transplanted at the four leaved stages in to growing medium of soil, leaf mould and cow manure. 5 numbers of trial plots 3^{ft} × 3^{ft} (A¹, A², A³, A⁴, A⁵ are prepared with) make shift small trellis of 2 sapling each plot and 5 numbers 5 trial plots of 3^{ft} × 3^{ft} (B¹, B², B³, B⁴, B⁵) prepared of 2 sapling each plot. The plants with the help of tendrils got the support of the trellis. Harvestable fruits were obtained after about 3 months from transplantation. Apart from developing the cultivation technique of

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this newly introduced crop, detailed taxonomical, anatomical and phenological studies have been done in our laboratory and experimental plot.

Taxonomic description

Habit prostrate herb, habitat- terrestrial, leaf-Simple, alternate, extipulate, green in colour, usually palmately 5 lobed, hair present on both surface, glabrous, margin serrated, reticulate multicostate divergent venation, apex acute, petiole long 4.2–5.5 cm hollow (Fig. 1). Mature leaf 6.5–7 cm length and 9–9.5 cm breath. Length of the first cotyledonary leaf 3.8 cm and breath 2.2 cm. Stem round, green, hollow, branched, to 3.142 cm in diameter. Inflorescence racemose; male flowers on pedunculate raceme with 10–15 flower heads or sometimes solitary with very long peduncle, female flower solitary, unisexual, actinomorphic, epigynous, yellow coloured. Calyx; Sepal 5, poly-sepalous, imbricate, densely hairy, pedicellate, pedicel long 4.3–6.3 cm. Corolla; Petal5, campanulate, petals united at the base, aestivation valvate, 3- ribbed, hair present on both surface, 68.5 cm long. Stamens 3, anther lobed, anther lobes variously curved, filament short, basifixed. Gynoecium carpel usually 3, connate, ovary inferior, 3 chambered, many ovule in a chambered, ovule anatropous, style short, stigma 3. Fruit-whitish cream in colour, 5 angled stalk, enlarged at fruit attachment and sunken. Weight; 1–1.5 kg, epidermis 0.3 cm thick, upper portion of the fruit 3.7 cm wide and lower portion of the fruit 7.8 cm wide, fruit avg. 12.5 cm long, ovary 2 chambered. Seed white, 1.9 cm long and 0.8 cm wide.

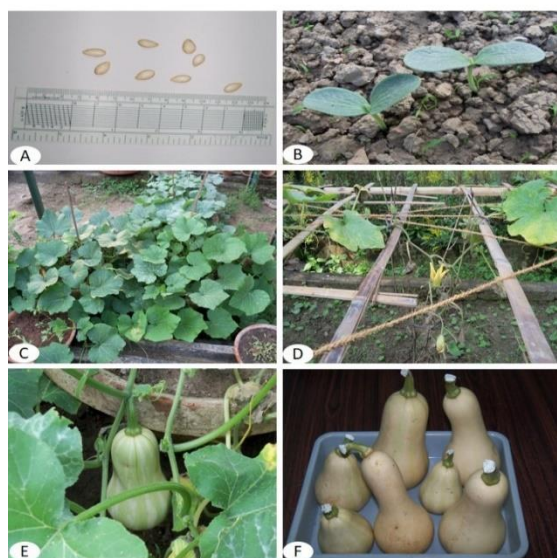


Figure 1. *Cucurbita moschata* Duchesne **A.** Seeds, **B.** Cotyledonary leaf, **C.** Prostrate view, **D.** Male Flowers, **E.** Raw fruit, **F.** Harvesting fruit

Uses

Butternut squash is a fruit that can be baked and toasted and also be squashed or mashed into soups, breads, casseroles, and muffins. It is a good source of fibre, vitamin C, magnesium, manganese, and potassium. It is also an excellent source of vitamin 'A' and 'E'. *Cucurbita moschata* has several medicinal applications in China and Thailand. Crushed fresh seeds are used as an anthelmintic, and are also applied to skin infections and inflammations (Castetter 1930).

Observation

First visible germination was observed after five days of sowing. About 80% seeds germinated after 10 days. After 3 weeks it was found that the plants that were allowed to grow in the plots B¹, B², B³, B⁴, B⁵, were much vigorous in their growth and A¹, A², A³, A⁴, A⁵ dried. First flowering was noted 60 days of transplantation but the initial flowers were male followed by female flowers. Female flowers started developing after anthesis. The ratio of male to female flowers is around 20:1. The ratio is influenced by the growing conditions. Movements of insects, small beetles were noted at the period of anthesis. About 4–5 fruits weighing 1–1.5 kg was obtained from each plant.

Conclusion

There is no report of butter squash cultivation in West Bengal, from the present field study it can be suggest that this vegetable crop can easily be cultivated in soils of lower Bengal just like Pumpkin. This crop according to our observation can be cultivated economically by our farmers. As duration from transplantation of seedling to production of fruit each about 3 month. As it is a trailing plant these can also be cultivated as an inter crop with other long duration vegetable crops. Thereby reduce overall land requirements. As a baseline crop development of *Cucurbita moschata* in West Bengal, further agronomic information is essential including studies on variability, propagation, land preparation, weeding pruning and harvesting intervals. The on farm indicates that this is a feasible activity with the potential to improve both income and nutrition level of farmers in Bengal.

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