

Assessment of Offseason Cultivation of Pumpkin var. *Arjuna* on Open Ground and Bamboo Frame Structure

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ABSTRACT

Pumpkin (Cucurbita moschata Duch.) is one of the commercially important cucurbits in Assam having high nutritional values which is widely cultivated during rabi season. This study was carried out in Cachar district of Assam to evaluate the performance of off season pumpkin cultivated on open ground and on bamboo frame structure (locally known as Machang) during 2019-20. Planting time of pumpkin was preponed to August where both the growing conditions were studied. Pumpkins grown in Machang showed better result than ground type in respect of most of the yield attributing parameters. Maximum fruit yield (142q/ha) with the highest Benefit: Cost ratio (5.2) was recorded in Machang type. From this study, it may be inferred that cultivation of off season pumpkin at Machang fetch more net return due to higher yield as well as high market price of the crop.

Key words: Ground, Kharif, Machang, Pumpkin, Rabi.

INTRODUCTION

Pumpkin (*Cucurbita moschata* Duch.) belongs to the family Cucurbitaceae is considered as one of the important vegetable crop in Indian cuisine having rich amount of beta carotene next to carrot (Kumar et al., 2018). Pumpkin is relatively high in energy and carbohydrates and a good source of protein and minerals. It also acts as food supplements for animals such as pigs, because of their high nutritive value as reported by Prohens-Tomás and Nuez (2007). In Assam, it is a very popular vegetable which

is cultivated mainly during rabi season. But cultivation during rabi season is quite difficult due to lack of irrigation facilities. Growing of crop in the rabi season is found to be less profitable. So, off season cultivation or preponing of planting time of pumpkin can be done during kharif season which will fetch more income to the farmer. Pumpkin is having high market value with long storability. It is grown in all parts of Assam mostly as ground trailing.

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However, quality of the fruits on open ground cannot be maintained due to rotting of fruits or other soil related problems. Hence, the present study was undertaken with an objective to evaluate the performance of off season cultivation of pumpkin on ground and at bamboo frame structure (Machang).

MATERIALS AND METHODS

The investigation was carried out using observational data and field data at Kashipur and Buribail villages in Cachar district of Assam by KVK, Cachar, AAU, Jorhat during 2019-20 following the recommended package of practices of AAU, Jorhat. Seedlings were raised in polybags in the second week of August and ready for transplanting after 22 days. Crop was grown using two type of growing conditions *i.e.*, on open ground and at bamboo framed structure (locally called as Machang). All the plant protection measures were adopted to make the crop free from insect and diseases. The data were recorded in five randomly selected plants in each experiment on important yield attributing characters and economic findings. The results were showed on the basis of average of parameters.

RESULT AND DISCUSSION

Days to first flowering: There were variations in appearance of first female flowers between the growing conditions. The earliness in appearance of first female flowers was recorded in Machang type (48 days). This

might be due to good performance of vine in Machang during rainy season as trellised plants are more exposed to sunlight resulting in higher rate of photosynthesis.

Vine Length at harvest: Maximum vine length (9.25 m) was found in open ground trailing as compared to Machang type (7.75m).

Number of fruits per plant: Maximum number of fruits per plant (8) was found in Machang type that might be due to minimum sex ratio as reported by Jamal Uddin et al. 2014 in their study.

Fruit weight: Single fruit weight varied between the two growing conditions. The average weight of the fruit was recorded the highest (5.2kg) in open ground condition because pumpkins that are grown in Machang type were plucked earlier than the full mature stage to avoid damage at pedicel.

Fruit yield: Fruit yield varied between the growing conditions. The highest fruit yield (142 q/ha) was found in Machang type. The lowest yield under open ground system might be due to frequent rain splash during kharif on flowers may lead to pollen damage and flower abortion leading to low fruit formation and yield (Aderibigbe et al., 2016). Growing pumpkin under trellis system increases fruit yields compared to open ground system (Oluoch et al., 2009). The fruit quality also showed better performance in Machang type as compared to ground type, which might be due to less exposure of the fruits to diseases and risk of rotting.

Table 1: Yield attributing characters of pumpkin var. *Arjuna* in two different growing condition

Growing condition	Days to first female flower appearance	Days to first harvest	Vine length (m)	No. of fruits/vine	Fruit weight (kg)	Fruit diameter (cm)
Open Ground trailing	55	72	9.25	5	5.2	32
Machang	48	64	7.75	8	4.9	29

*Average data of each parameter are represented

Economics of cultivation

The data presented in Table 2 showed that there were differences in economic return of the crop between the growing conditions. Pumpkins that were grown in Machang type fetched more prices per kg. This might be due to quality of fruits which were more lustrous, disease free and damage free than the open ground type. Highest net return and benefit:

cost ratio (5.2) was observed in Machang type as it recorded higher yield with higher price per kg of fruit. Early planting also fetched more market prices because during that period pumpkins were merely available in the market. Bharali et al. (2019) reported that cultivation of off season pumpkin during the month of August got higher net return as compared to rabi grown crops.

Table 2: Economic parameters of the crop

Growing condition	Fruit yield (q/ha)	Price (Rs./kg)	Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net return (Rs./ha)	B:C ratio
Open Ground trailing	128	15	37450.00	1,92,000.00	1,54,550.00	4.12
Machang	142	25	56950.00	3,55,000.00	2,98,050.00	5.2

PHOTOGRAPH**PUMPKIN GROWN AT MACHANG****PUMPKIN GROWN AT GROUND****CONCLUSION**

The study reveals that rabi pumpkin can be grown as kharif (August) crop using bamboo frame structure (Machang) for higher yield and income and to prevent loss from water stagnation in field which causes poor fruit quality and crop canopy. Off season planting also proved to be remunerative for cultivating pumpkin in the month of August as it earns more market prices due to less availability of pumpkin during the lean period.

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