



Winter Dawn Strawberry Cultivar- Suitable for Commercial Cultivation in Assam

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ABSTRACT

The present experiment was conducted at the farmer's field during the year 2018, 2019 and 2020 to evaluate varietal performance of three strawberry cultivars. A net area of 180 sqm was selected for the experiment and plots were made (3m x 4m each) in a randomized block design with five replications. The sapling of all 3 varieties of strawberry was planted at a spacing of 30cm x 30cm following good agricultural practices to have a good crop. The results revealed that variety Winter dawn produced higher vegetative growth characters like plant height (22.38 cm), number of leaves (25.69), numbers of runners (5.34) and length of runners (65.08 cm) per plant as compared to Sweet Charlie and local farmer's variety that showed the minimum vegetative growth. Early flowering with more number of flowers (45) and early fruiting with more numbers of fruit per plant (35.61) were observed in variety Winter dawn in comparison to both Sweet charlie and local farmer's variety. The fruit characters like individual fruit weight (34.57g) was higher in variety Winter dawn that varied significantly with Sweet charlie (20.71g) and Local farmers variety (13.59g). The highest yield per plant (1231.04g) was obtained from Winter dawn where as Sweet Charlie and local farmers variety produced 526.03g and 252.09g per plant, respectively. The cultivation of Winter dawn was more economical as compared to Sweet charly and farmer's variety in terms of yield performance of among three varieties and Winter dawn can be recommended for commercial cultivation by the farmers to have a good crop.

Key Words: Cultivation, Strawberry, Variety, Vegetative characters, Yield.

INTRODUCTION

Strawberry was introduced to India in early 60's, and cultivation was mainly restricted to tropical and sub-tropical parts of the country. Cultivation of strawberry is greatly influenced by specific regional adaption due to critical photoperiod and temperature requirement by the crop. In Assam, growing strawberry plant can be an income producing alternative to traditional crop farming community due to its high demand in both local as well as national market. Suitability of cultivars and its cultural practices are highly variable (Sharma and Sharma, 2003) and need to be specified for cultivation to have a good production. Basically, growers are interested in having cultivars with disease resistance, high yields under different weather conditions and acceptable

yield earliness, which allow them to supply the market when premium prices are available (Santos *et al*, 2007). The prevailing climatic condition of Assam is conducive for cultivation of strawberry but due to non availability of suitable selected cultivars hampering the production of the crop for which growers getting low yield, hence little net return. Keeping in view, the present experiment was conducted to select a suitable cultivar that will potentially produce a high and quality yield at farmer's field to have a good market price as the farmer's traditional varieties are less productive with low in quality.

MATERIALS AND METHODS

The experiment was conducted at farmer's field in the state of Assam. The experimental material

Table 1. Variation in morphological parameters among strawberry cultivars.

Variety	Plant height (cm)	Leaf/plant (No)	Runners /plant (No)	Length of runners/ plant (cm)
Sweet charlie	20.21	16.44	2.53	50.74
Winter dawn	22.38	25.69	5.34	65.08
Farmers variety	15.62	12.38	3.12	45.38
CD (5%)	1.16	0.71	0.02	0.68

Data were the mean of five replications

comprised of 3 varieties of Strawberry *viz.* Winter dawn (T₁) and Sweet charlie (T₂) and local farmers (T₃) as planting material. A net area of 180 sqm was selected for the experiment and plots were made (3m x 4m each) in a randomized block design with five replications. The sapling of all 3 varieties of strawberry was planted at a spacing of 30cm x 30cm apart. The planting operation was performed on 28thOctober, 27thOctober and 28thOctober in 2018, 2019 and 2020, respectively. A vigorous, healthy, free from diseases, insect pest and well rooted planting material were selected for the experiment. Recommended fertilizer and other cultural package of practices were adopted for better crop growth. Need based plant protection measure for disease and insect pests were applied for a healthy crop production. Five random competitive plants were selected from each plot and observation was recorded. Average plant height and plant spread were recorded in centimeter with the help of meter scale. Days required for first flowering was recorded as the number of days taken from flower initiation. Number of runners per plant was recorded by manual counting method in centimeter. Days required for fruit set was recorded as the number of days taken from flowering. Total number of fruits per plant, fruit length and breadth in centimeter were recorded. Average fruit weight and yield of fruit per plant in gram was computed accordingly. Data pertaining to fruit size, fruit weight were recorded at each harvest and average was taken after completion of all harvests. The recorded all data were statistically analysis following SPSS computer based software.

RESULTS AND DISCUSSION

The finding of the experiment of different growth and yield parameters are presented under the following heads.

Plant height (cm)

Data (Table 1) revealed that the varieties differed significantly in respect of plant height. The maximum plant height was observed in Winter dawn (22.38cm) compared to with Sweet charlie (20.21cm), whereas minimum plant height was recorded in farmers variety (15.62cm). The reason for the variation in these cultivars could be that the genes responsible for the plant height did not express them fully as it does at other places because of different agro-climatic conditions. Varietal differences in plant spread and height was also noted by Singh *et al* (2008) in Meghalaya which supports the present observation.

Number of leaves/plant

Winter dawn recorded maximum number (25.69) of leaves/plant, whereas Sweet Charlie and farmers variety have minimum number 16.44 and 12.38, respectively and varied significantly (Table 1). Variation with respect to number of leaves could be attributed to the fact that different cultivars may react differently to photoperiod, light, temperature, nutrient status of soil, available metabolites and their allocation to the above ground plant parts (Strik, 1988).

Number of runners/plant

It was found that significantly highest number

Winter Dawn Strawberry Cultivar

Table 2. Performance of strawberry cultivars in number of flowers, fruiting and yield.

Variety	Flower bud initiation (Day)	harvesting from planting (Day)	Flower/plant (No)	Fruit/plant (No)	Fruit weight (g)	Yield/plant (g)
Sweet charlie	55.27	75.17	30.05	25.40	20.71	526.03
Winter dawn	48.30	66.20	45.00	35.61	34.57	1231.04
Farmers variety	66.33	81.76	24.27	18.55	13.59	252.09
CD (5%)	0.80	1.88	1.06	1.37	1.08	1.27

Data were the mean of five replications

of runners per plant were produced by Winter dawn (5.34) whereas Sweet charlie recorded lowest number (2.53) of runners per plant. Reduced number of runners was produced by the plants because of confined and short favorable agro-climatic conditions. This result was in agreement with that of Kumar *et al* (2011) and Baumann *et al* (1993).

Length of runners (cm)

The data (Table 1) showed that Winter dawn produced significantly longest (65.08cm) runners. Shortest runners were recorded in farmer's variety (45.38cm) followed by Sweet Charlie (50.74cm). Irrigation by drip, which confined the moisture up to root zone had resulted in the smaller runners, because they (emerged runners) were not feasible to grow beyond the outskirts of moisture regime Kumar (2002).

Days to Flower bud initiation

Significant variation among the varieties was observed for flowering duration and presented in Table 2. Cultivar Sweet Charlie cultivar recorded the maximum flowering duration (55.27 d) compared to Winter dawn and farmers variety which recorded the minimum 48.30 d and 66.33 d, respectively. The minimum days require for flowering in Winter dawn might be attributed to its short crop period as observations made by Montero *et al* (1996). Variability in flowering period in different varieties might also be due to differences in their chilling requirement as suggested by Joolka and Badiyala (1983).

Days for harvesting from planting

Significant variation among the varieties was observed for days for harvesting from planting (Table 2). Sweet charlie cultivar recorded the maximum days (75.17), compared to Winter dawn and farmers variety which recorded the minimum days 66.20 and 81.76, respectively. The minimum days require for harvesting in Winter dawn might be attributed to its genetic character as observations made by Montero *et al.*(1996). Variability in flowering period in different varieties might also be due to differences in their chilling requirement as suggested by Joolka and Badiyala (1983).

Number of flower per plant

Significant variation among the varieties was observed for No.of flower per plant (Table 2). Winter dawn cultivar recorded the maximum no. of flower (45.0), compared to Sweet Charlie and farmers variety which recorded the minimum 30.05 days and 24.27, respectively, the similar trend was also observed by Sharma *et al* (2014) in his studies on flowering attributes of Strawberry cultivars.

Number of fruit per plant

Significant variation among the varieties was observed for days for harvesting from planting (Table 2). Winter dawn cultivar recorded the fruits per plant (35.61), compared to Sweet Charlie and farmer's variety which recorded the minimum 25.40 and 18.55 only Fruit weight(g) and yield per plant (g)

The highest fruit weight (34.57 g) was recorded in Winterdawn which has significant variation with Sweet Charlie (20.71g) and farmers variety (13.59g) (Table 2). The data also revealed that Winter dawn (1231.04 g) has significant variation with Sweet Charlie (526.03 g) and farmers variety (252.09 g) (Table 2).

CONCLUSION

From the present experiment, it can be concluded that cultivation of Winter Dawn was economical as compared to Sweet charlie and farmer's variety at the farmers field for better production. This good performance of this variety may be due to the better adoption with the present prevailing climatic condition of the cultivated area. So, it can be recommended to go for commercial cultivation of strawberry variety Winter Dawn to have a better crop yield by the farmers.

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