VARIETAL TRIAL AND SUSTAINABLE TECHNOLOGY DEVELOPMENT FOR COMMERCIAL PRODUCTION OF STRAWBERRY IN BANGLADESH

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Extended Summary

A pot experiment was conducted to evaluate the growth and yield performance of four strawberry germplasms at the Horticulture Farm, Sher-e-Bangla Agricultural University, Dhaka during October 2010 to April 2011 with the financial support of SAURES, Sher-e-Bangla Agricultural University, Bangladesh. The experimental materials were four strawberry germplasms: V_1 (SAU Line-01), V_2 (SAU Line-02), V_3 (SAU Line-03) and V_4 (SAU Line-04). The investigation was set in the Completely Randomized Design (CRD) with five replications. Among the germplasm the maximum flowers (32.5/plant), the maximum number of fruits (28.8/plant), the average fruit weight (12.3 g) and the total fruit yield (361 g/plant) were found in V_1 whereas, the minimum was in V_2. Considering the overall results of the present study, it may be concluded that, V_1 (SAU Line-01) is a promising strawberry germplasm for cultivation in Bangladesh.

Strawberry (*Fragaria annanasa* Dutch.), a nutritious and delicious exotic fruit has recently been adapted in Bangladesh and it has already drawn attention of the Government, farmers as well as some elite people of Bangladesh. Strawberry plants are propagated through runners. Numbers of growers are becoming interested regarding strawberry cultivation in spite of facing several problems such as, less sweetness, short shelf-life, color degradation and damage during transportation. Furthermore, the degeneration in strawberry cultivars, that is, after *successful* production of the first year, yield potential and quality decrease or degenerate in the consecutive years. Today it is a great constrain of commercial strawberry production in Bangladesh. So, perception and application of sustainable technology is required to find out suitable cultivar(s) and proper guideline for quality commercial strawberry production in Bangladesh. So, the present study is conducted to find out the suitable strawberry cultivar(s) for Bangladesh condition.

Site: The pot experiment was conducted at the Horticulture Farm, Sher-e-Bangla Agricultural University, Dhaka-1207 during October 2010 to April 2011.

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Plant materials: Plants of four strawberry germplasms: SAU Line-01, SAU Line-02, SAU Line-03 and SAU Line-04 were collected from the project of *"Varietals Trial and Sustainable Technology Development for the Commercial Production of Strawberry in Bangladesh"* financed by Sher-e-Bangla Agricultural University Research System (SAURES). All the four strawberry lines of that project were Japanese. Runners were produced profusely from there. Among those, healthy and vigorous plants were selected and used for the experiment.

Experimental Design: The experimental design was the Completely Randomized Design (CRD) with five replications.

Pot preparation and transplantation: Size of each pot was 35 cm in diameter and 30 cm in height. Soil of each pot was fertilized with NPK at the proportion of 1:1:1 (100 g/pot) and single plantlet was planted in each pot on 19 October, 2010.

Data collection and analysis: Data on growth, yield and fruit characteristics were collected from each plant. Leaf and petal area were measured using a portable leaf area meter (CL-202, America) by destructive method. Collected data were statistically analyzed using the MSTAT-C program. Mean was calculated and analysis of variance for each of the traits was performed by F–test. Difference between treatments was evaluated by Duncan's Multiple Range test (Gomez and Gomez, 1984).

Fruit Characteristics

Number of fruit per plant: The average number of fruits per plant varied significantly among the germplasm. The maximum number (28.8/plant) was recorded from V_1 while the minimum (19.1/plant) was in V_2 (Table 1). These results clearly showed that V_1 (SAU Line-01) had potentiality in bearing fruits.

Fruit length: Among the germplasm, the average fruit length varied notably. The results indicated that V_1 produced the longest (33.4 mm) fruit whereas the shortest (26.8 mm) one was in V_2 (Table 1).

Fruit diameter: The average fruit diameter varied significantly among the germplasm. The maximum diameter (24.2 mm) was recorded in V_1, which was statistically similar to V_4 (23.7 mm) and the lowest (21.2 mm) was in V_2 that was statistically identical to V_3 (21.6 mm) (Table 1).

Fruit weight: The fruit weight per plant was influenced significantly by the germplasms. V_1 gave the maximum fruit weight (12.3 g/plant) but the minimum (8.9 g/plant) was in V_2 (Table 1).

Total fruit yield per plant: The total fruit yield per plant varied significantly among the germplasm. The total fruit yield was maximum (361 g/plant) in V_1 while the least (172 g/plant) was in V_2 (Table 1).

Brix percentage: Brix percentage is a qualitative character of fruit and exhibited distinct variations among the germplasm. The maximum brix (11.0 %) was found in V_3 and the minimum (8.6 %) was in V_2 germplasm (Table 1). These findings are an agreement with Perkins-Veazie (1995) who reported that TSS (Total Soluble Sugar) contents of strawberry fruits varied from 4-11% depending on the cultivar and environment.

Table 1. Varietal performance of four different strawberry germplasms related to yield [Y]

Treatments[X]	Number of fruit/ plant	Fruit length (mm)	Diameter of fruit (mm)	Fruit weight (g)	Total Yield/ Plant (g)	Brix (%)
V_1	28.8 a	33.4 a	24.2 a	12.3 a	361.3 a	10.4 b
V_2	19.1 c	26.8 c	21.2 b	8.9 d	171.9 c	8.6 c
V_3	26.0 b	29.8 b	21.6 b	10.6 c	276.6 b	11.0 a
V_4	25.2 b	31.0 b	23.7 a	11.0 b	281.1 b	10.8 ab
CV (%)	9.5	5.2	5.9	4.3	11.5	4.6
$LSD_{0.05}$	1.9	1.3	1.1	0.4	25.9	0.4

[X] V_1: SAU Line-01, V_2: SAU Line-02, V_3: SAU Line-03 and V_4: SAU Line-04
[Y] In a column means having dissimilar letter (s) differ significantly at the 0.05 level of probability

Considering the above results it can be concluded that V_1 (SAU Line-01) germplasm bears the maximum flowers and fruits. The fruit weight, fruit length, diameter of fruit were also found maximum in V_1 (SAU Line-01) and might be an appropriate commercial strawberry cultivar for Bangladesh.