

Evaluation of Bottle Guard Varieties in Agro Climatic Condition of Peshawar Valley



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Abstract

A field experiment to investigate the "Evaluation of bottle guard varieties in agro climatic condition of Peshawar valley" was carried out at Agriculture Research Institute Tarnab, Peshawar in 2016. The experiment was laid out in Randomized Completely Block Design (RCBD) with single factor, replicated three times. There were 3 treatments in each replication. The Bottle gourd was planted in July 19th 2016. And were used different equipment for various parameters. Maximum Plant height (15.1m), Fruit length (0.49), Total soluble (1.49), pH (6.05) Acidity (10.03) was observed in those plant which were planted by us in July 19th 2016. NS550f1 is suitable variety of bottle guard because it shows maximum plant height, fruit length, total soluble solid (TSS), pH, Acidity.

Keywords: Bottle gourd; Varieties; Planting Dates

Abbreviations: RCDB: Randomized Completely Block Design; TSS: Total Soluble Solid

Introduction

Bottle gourd (*Lagenaria siceraria*) belongs to the Cucurbitaceae family. It is also known as calabash or white flowered gourd and locally kado Etthadul Ummah [1]. There are 118 general and 825 species Harika [2]. *Lagenaria* consists of five other wild species, namely *LaGuardia breviflora*, *Lagenaria rufa*, *Lagenaria sphaerica*, *Lagenaria Abyssinia*, and *Lagenariaguineensis*. In which *Lagenariasiceraria* spp mostly cultivated. Within the species of bottle gourd have been recognized. *Lagenaria siceraria* ssp. *siceraria* and *Lagenaria siceraria* ssp. *asiatica*. Cultivation of the crop started from around 9-10,000 BP (Before present) in the America (new world), 6-10,000BP in East Asia and 4-5000BP in Africa Jamal Uddin [3]. Bottle gourd is said to be one of the first species domesticated by human. Bottle gourd is an annual herbaceous plant with a prostrate type growth habit Etthadul Ummah [1]. The leaves are alternate and variable, and tendrils are almost present flowers of *L.siceraria* are monoecious in nature, male and female flowers are found on different plant axis of the same plant Etthadul Ummah [1]. So cross pollination is highly favorable. Dioecious and andromonoecious sex from Bering hermaphrodite flowers also exist in wild or non-cultivated types. Sex ratio of bottle

gourd is very high Harika [2]. The proportions of male and female flowers have been shown to affect yield significantly Jamal Uddin [3]. Environmental condition (precipitation, temperature, and light intensity) and various growth regulators (Auxin, ethylene, gibberellic acid etc.) can be used to alter this ratio. Bottle gourd fruit vary widely in shape and size, and this is within or among cultivars, (*Lagenaria siceraria*) exhibits the widest variations in fruit shape; these are either long, cylindrical, necked, oblong flat or round, conical pyriform to club shaped, while skin texture varies from warty to smooth Etthadul Ummah [1].

The desire of any farmer is to see the germination and growth of all seeds planted in a field. This way the farmer is assured to obtain reasonable yield if all growing conditions are optimal Etthadul Ummah [1]. The vegetables are short duration crops, which can be grown even in small spaces Harika [2]. Improving vegetable productivity will put the prices of vegetables within the reach of urban and rural poor. In Pakistan, gourds are produced in large quantities in Pakistan and are exported abroad Jamal Uddin [3]. In view of the above facts, figure and importance of bottle gourd, an experiment was

designed to evaluate the performance of bottle gourd varieties in the agro-climate condition of Peshawar valley, with the following objectives.

Objective

- I. To find the best quality variety of bottle gourd.
- II. To examine the high yielding bottle gourd.

Result and Discussion

The research study “Evaluation of bottle gourd variety in Agro climate condition of Peshawar valley” was carried out at Agriculture Research Institute Tarnab; Peshawar during 2016. Mean data recorded on the various parameters is presented in Table. Its analysis of variance is given ANOVA (Tables 1a-5a)

the result of each parameter is present below:

Main Stem Length

Table 1: Plant height of bottle gourd as affected by various varieties.

Varieties	Replication			Mean
	R1	R2	R3	
NS550F1	975.36	766.46	968.8	903.5c
GLOBE	934.7	924.56	1087.12	1513.8a
MAHRAYA	1483.36	1605.28	1452.86	982.1b
LSD	254.11			

Data recording main stem length is presented in (Table 1) the analysis of variance is placed in (Table 1-a), The mean for plant length showed that maximum plant length (15.1m) was recorded Globe variety followed by Mahraya variety (9.82m) while minimum plant length of NS550F1 variety (9.03m) was recorded. It is revealed from (Table 1) and ANOVA (Table 1a) Globe variety gained significant highest stem length, whereas, Mahraya and NS550F1 varieties had lesser stem growth (Length) than Globe. This trend may be due to the variation in the genetic makeup of the genotype. Similar findings were reported by Harika [2].

Table 1a: Analysis of variance for plant Length of bottle gourd as affected by various varieties.

Source of Variation	DF	SS	MS	F	P
Replication	2	7543	3772		
Treatment	2	661346	330673	26.32	0.0050
Error	4	50260	72565		
Total	8	719149			
CV	9.89				

Fruit length (m)

Data regarding fruit length is presented in (Table 2) the analysis of variance is placed in (Table 2-a) while comparison of means for fruit length showed that maximum fruit (0.49m) was recorded for Ns550f1 variety on followed by variety mahraya

(0.43m) while minimum fruit length of Globe variety (0.38m) was recorded. It is revealed from (Table-2) and ANOVA (Table 2-a) NS550f1 variety gained significant highest fruit length whereas; Mahraya and Globe varieties had lesser fruit length than Ns55of1. This trend may be due to the variation in the genetic makeup of the genotype. Similar findings were reported by Yetisir [4].

Table 2: Fruit length of bottle gourd as affected by various varieties.

Varieties	Replication			Mean
	R1	R2	R3	
NS550F1	40.3	52.3	35.6	50.10a
GLOBE	33	33.3	48	33.96c
MAHRAYA	50	47	42.2	43.23b
LSD	5.20			

Table 2a: Analysis of variance for Fruit length of bottle gourd as affected by various varieties.

Source of Variance	DF	SS	MS	F	P
Replication	2	14.927	7.463		
Treatment	2	393.307	196.653	37.27	0.0026
Error	4	21.107	5.277		
Total	8	429.340			
CV	5.41				

Total soluble solid (TSS)

Table 3: Total soluble solid of bottle gourd as affected by various varieties.

Varieties	Replication			Mean
	R1	R2	R3	
NS550F1	1.6	1.2	1.4	1.49a
GLOBE	1	0.9	1	0.96c
MAHRAYA	1.6	1	0.8	1.13b
LSD	0.49			

Table 3a: Analysis of variance for total soluble solid of bottle gourd as affected by various varieties.

Source of Variance	DF	SS	MS	F	P
Replication	2	0.01487	0.00743		
Treatment	2	0.80687	0.40343	465.50	0.0000
Error	4	0.00347	0.00087		
Total	8	0.82520			
CV	0				

Data regarding total soluble solid is presented in (Table 3) the analysis of variance is placed in (Table 3-a). A while comparison of means for total soluble sold showed that maximum total soluble sold (1.49) was recorded NS 550 F1 variety for followed by variety Mahraya (1.13) while minimum total soluble sold in Globe variety (0.96) was recorded. It is revealed from (Table-3) and ANOVA (Table 3-a) that NS550f1 variety gained significant TSS, whereas, Mahraya and Globe varieties had lesser than

NS550f1. This trend may be due to the variation in the genetic makeup of the genotype. Similar findings were reported by Huang [5].

pH

Table 4: pH of bottle gourd as affected by various varieties.

Varieties	Replication			Mean
	R1	R2	R3	
NS550F1	5.81	5.72	5.86	6.05a
GLOBE	5.36	5.26	5.37	5.79b
MAHRAYA	6.07	6.03	6.06	5.33c
LSD	0.07			

Table 4a: Analysis of variance for pH of bottle gourd as affected by various varieties.

Source of Variance	DF	SS	MS	F	P
Replication	2	0.01556	0.00778		
Treatment	2	3.54429	1.77214	112.08	0.0003
Error	4	0.06324	0.01581		
Total	8	3.62309			
CV	1.35				

Data regarding pH is presented in (Table 4) the analysis of variance is placed in (Table 4-a) while comparison of means for pHs owed that maximum pH (6.05) was recorded for NS550f1 variety for followed by variety Globe (5.79) while minimum pH of Mahraya variety (5.33) was recorded. It is revealed from (Table-4) and ANOVA (Table 4-a) that NS550f1 variety gained significant highest ph, whereas, Globe and Mahraya varieties had lesser pH than NS550f1. This trend may be due to the variation in the genetic makeup of the genotype. Similar findings were reported by Anchal Sharma, and S K Sengupta [6].

Acidity

Table 5: Acidity of bottle gourd as affected by various varieties.

Varieties	Replication			Mean
	R1	R2	R3	
NS550F1	9.45	9.34	9.4	9.39b
GLOBE	10	10	10.1	10.03a
MAHRAYA	8.65	8.56	8.3	8.50c
LSD	0.28			

Data regarding plant is presented in (Table 5) the analysis of variance is placed in (Table 5-a) while comparison of means for acidity showed that maximum acidity (10.03) was recorded for GLOBE variety for followed by variety NS 550 F1 (9.39) while minimum acidity, Mahraya (8.5) was recorded Prasad A [7]. It is revealed from (Table 5) and ANOVA (Table 5-a) that Globe variety gained significant highest acidity whereas; NS550F1 and Globe varieties had lesser acidity than Globe. This trend may be due to the variation in the genetic makeup of the genotype. Similar findings were reported by [8-15].

Table 5a: Analysis of variance for acidity of bottle gourd as affected by various varieties.

Source of Variance	DF	SS	MS	F	P
Replication	2	0.01556	0.00778		
Treatment	2	3.54429	1.77214	112.08	0.0003
Error	4	0.06324	0.01581		
Total	8	3.623			
CV	1.35				

Conclusion

On the basis of the above recorded data the following conclusion can be drawn.

NS550f1 is suitable variety of bottle guard because it shows maximum plant height, fruit length, total soluble solid (TSS), pH, Acidity.

Recomemdation

It is recommended that NS550f1 was a good bottle guard propagated variety under the agro-climatic condition of Peshawar valley.

When:

- I. The plantation should be at their proper time and season.
- II. The worker should be trained with new techniques in vegetable gardening.

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