

## Performance of Different Varieties in Respect of Plant Growth, Yield and Quality of Watermelon (*Citrullus Lanatus* Thunb Mansf)

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**ABSTRACT:** A field experiment was carried out, with a view to study the “Performance of different varieties in respect of plant growth, yield and quality of watermelon (*Citrullus lanatus* THUNB MANSF) under Tansa condition” during Rabi season 2013 on the open field of ASPEE, Agricultural Research and Development Foundation, Tansa Farm, Maharashtra. Experiment was laid out in Randomized Block Design with six replications. Therefore, making with four watermelon varieties i.e. Sugar Baby, Pyramid (F<sub>1</sub> Hy), G. S. 286 (F<sub>1</sub> Hy) and Ayesha (F<sub>1</sub> Hy). Varieties were evaluated with respect to growth, yield and quality characteristics of watermelon. The results revealed that, maximum number of branches per plant at 45 DAS (days after sowing) was recorded with Sugar Baby i.e. 2.53 and the maximum length of main creeper (cm) 45 DAS (2.43 m) was recorded with Pyramid F<sub>1</sub> hybrid. Fruit diameter (51.53 cm) and fruit volume (4.34 lit.<sup>3</sup>) was found maximum with Ayesha F<sub>1</sub> Hybrid. Ayesha F<sub>1</sub> Hybrid found significantly superior with maximum weight of single fruit (3.05 kg) and number of seed per plant (666.03). The highest fruit yield per plant and yield per hectare were recorded with Ayesha F<sub>1</sub> Hybrid i.e. 6.60 kg per plant and 815.14 quintal per hectare, respectively. From the findings of study it may be concluded that variety Ayesha F<sub>1</sub> Hybrid is suitable for cultivation in Tansa region as it gives highest BCR ratio among all other varieties of watermelon.

**Key words:** Watermelon, Varieties, Growth, Yield, Quality, etc.

### INTRODUCTION

Watermelon (*Citrullus lanatus* Thunb Mansf) is an annual vegetable crop belonging to family cucurbitaceae and is believed to be African origin. It is cross pollinated nature bears 2n = 22 chromosome number, fruits are climacteric and rich in lycopene. It is locally known as Tarbuj, Tarmuj, Kalinda and Kalindi. Watermelon is widely cultivated and consumed around the world and countries like Tropical Africa, Iran, Japan, India, Turkey, China, U.S.A. and Brazil. In the most part of the world, melons are grouped under vegetable but it is considered as a fruit. It is generally grown for its juicy flesh which is very sweet. It is mainly used in a desert area and its rind can be used in making conservers and pickles. The raw fruits can be used for pickling and candy making. The fruits are very seldom cooked

as vegetable when immature. In semi arid region watermelon fruit provides a substitute of water. The seed are roasted and eaten and also used for the preparation of various tonics by ‘Vedas’. Its most important contribution to our health is that it protect us against sun stroke by supplying water in the most acceptable form i.e. juice. Watermelon has high nutritive value, it is rich in vitamin ‘C’ (antioxidant) which is good for health, low in sugar and calories because of high per cent of water present in it which are useful for those who want to reduce body weight.

Variety selection is one of the most important factors in the success of crop production. In Tansa region work done on varietal evaluation of watermelon is very scanty. As it is pre requisite to identify first of all suitable variety with better performance under Tansa region, the present

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investigation was formulated to evaluate the four varieties of watermelon *viz.*, Sugar Baby, Pyramid F<sub>1</sub> hybrid, Hybrid F<sub>1</sub> G. S. 286 and Ayesha F<sub>1</sub> Hybrid under open conditions.

### MATERIALS AND METHODS

Research was carried out at ASPEE, Agricultural Research and Development Foundation, Tansa Farm, Mumbai, Maharashtra, India during the year of *rabi* 2013, in Randomized Block Design with six replications, having four treatments.

Four superior well popular varieties *viz.*, Sugar Baby, Pyramid (F<sub>1</sub> Hy), G. S. 286 (F<sub>1</sub> Hy) and Ayesha (F<sub>1</sub> Hy) of watermelon were under evaluation. The farm yard manure (FYM) and fertilizer were applied at the rate of 30 tonnes per hectare and 100:50:50 NPK kg per hectare, respectively. The whole quantity of P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O was given as basal dose in the form of single super phosphate (SSP) and murate of potash (MOP), respectively. Half quantity of nitrogen in the form of urea was applied as basal dose and remaining half dose after 30 days of sowing. A light irrigation was applied in each plot immediately after sowing. After seven days, gap filling was done for maintaining uniform plant stand. Subsequent irrigations, weeding, interculturing and suitable plant protection measures were employed as and when required as per the package of practices for water melon. In the present investigation, five vines were selected randomly and tagged in each treatment net plot and average was work out to record the observations with respect to growth, yield and quality characters.

### RESULTS AND DISCUSSION

#### Growth Parameters

The data pertaining to number of branches per plant at 45 days after sowing were performed significantly by different varieties are revealed in Table 1. The maximum number of branches per plant at 45 DAS

were recorded with Sugar Baby and which was statistically at par with G.S -286 (F<sub>1</sub> Hy). This is in line with the results of Rolania *et al.* (2004) and Chezhiyan (1985) in watermelon. The length of main creeper in each variety was recorded at the time of 45 days after sowing. The maximum length of main creeper (cm) per vine was observed in Pyramid (F<sub>1</sub> Hy) *i.e.* 2.43 cm, similar findings obtained by Chezhiyan *et al.* (1985); Yadav and Asati (2005) in watermelon.

#### Yield Attributes

Number of fruits per plant was performed significantly by different varieties are presented in Table 1. Both the varieties *i.e.* Sugar Baby and Pyramid (F<sub>1</sub> Hy) noticed maximum number of fruit *i.e.* 2.17.

The data given in Table 1 revealed that various varieties give to exert a significant performed of fruit diameter (cm) and fruit volume (lit.<sup>3</sup>). The maximum fruit diameter (cm) and fruit volume (cm<sup>3</sup>) were recorded with Ayesha (F<sub>1</sub> Hy) *i.e.* 51.53 cm and 4.34 cm<sup>3</sup>. The results obtained are consistent to that of Rastogi and Abidi (2006) in muskmelon.

Fruit stem thickness (cm) was affected significantly by different varieties. G.S -286 (F<sub>1</sub> Hy) registered maximum fruit stem thickness *i.e.* 0.62 cm. The performance of different varieties on rind thickness (cm) was found significant. The maximum rind thickness (0.72 cm) was counted with Pyramid (F<sub>1</sub> Hy). These findings are in conformity with those of Vashistha *et al.* (1983) in watermelon.

The maximum weight of 100 seed (4.53 g) and minimum number of seed per fruit was noticed with Sugar Baby

Fruit yield (kg/plant) fruit yield (kg/ha) were performed significantly by different varieties are presented in Table 2. Ayesha (F<sub>1</sub> Hy) recorded highest fruit yield per plant and fruit yield per hector *i.e.* 6.60 kg/plant and 815.14 q/ha.

**Table 1**  
**Influence of Different Varieties on the Growth and Yield Characters of Watermelon**

Varieties	Number of branches per plant at 45 DAS	Length of main creeper (cm) 45 DAS	Number of fruits per plant	Fruit diameter (cm)	Fruit volume (lit. <sup>3</sup> )	Fruit stem thickness (cm)	Rind thickness (cm)
Sugar Baby	2.53 <sup>a</sup>	1.97 <sup>c</sup>	2.17	40.56 <sup>c</sup>	2.08 <sup>d</sup>	0.570 <sup>ab</sup>	0.53 <sup>b</sup>
Pyramid (F <sub>1</sub> Hy)	1.50 <sup>c</sup>	2.43 <sup>a</sup>	2.13	50.43 <sup>b</sup>	2.66 <sup>c</sup>	0.51 <sup>c</sup>	0.72 <sup>a</sup>
G.S -286 (F <sub>1</sub> Hy)	2.37 <sup>a</sup>	1.89 <sup>d</sup>	2.13	51.40 <sup>a</sup>	3.50 <sup>b</sup>	0.62 <sup>a</sup>	0.50 <sup>b</sup>
Ayesha (F <sub>1</sub> Hy)	1.96 <sup>b</sup>	2.33 <sup>b</sup>	2.17	51.53 <sup>a</sup>	4.34 <sup>a</sup>	0.54 <sup>bc</sup>	0.51 <sup>b</sup>
S.Em.±	0.027	0.005	0.008	0.110	0.072	0.001	0.007
C.D. at 5 %	0.196	0.043	NS	0.429	0.321	0.048	0.060
C.V. %	7.525	1.821	4.38	0.708	8.421	6.073	9.190

Note: Treatments were found Significant at 5% level of significance except number of fruits per plant.

**Table 2**  
**Influence of Different Varieties on the Yield Parameters and Economics of Watermelon**

Varieties	100 seed weight (g)	Weight of single fruit (kg)	Fruit yield (kg / plant)	Fruit yield (q /ha)	Number of seeds per fruit	Total Expenditure (₹/ha)	Total gross income (₹/ha)	Net returns (₹)	B:C Ratio
Sugar Baby	4.53 <sup>a</sup>	1.81 <sup>d</sup>	3.20 <sup>d</sup>	483.80 <sup>d</sup>	514.73 <sup>d</sup>	81380	338660.38	257280.4	3.16:1
Pyramid (F <sub>1</sub> Hy)	3.67 <sup>c</sup>	2.08 <sup>c</sup>	4.41 <sup>c</sup>	544.41 <sup>c</sup>	657.43 <sup>b</sup>	93160	381090.15	287930.2	3.09:1
G.S -286 (F <sub>1</sub> Hy)	4.28 <sup>b</sup>	2.77 <sup>b</sup>	5.90 <sup>b</sup>	728.89 <sup>b</sup>	529.83 <sup>c</sup>	95960	510222.96	414263	4.32:1
Ayesha (F <sub>1</sub> Hy)	2.58 <sup>d</sup>	3.05 <sup>a</sup>	6.60 <sup>a</sup>	815.14 <sup>a</sup>	666.03 <sup>a</sup>	95060	570598.24	475538.2	5.00:1
S.Em.±	0.005	0.003	0.055	802.55	31.835	—	—	—	—
C.D. at 5 %	0.040	0.060	0.281	34.856	6.943	—	—	—	—
C.V. %	1.057	2.003	4.404	4.403	0.959	—	—	—	—

Sale price of 1 kg watermelon: 7 ₹.

## ECONOMICS

Result regarding in economics *i.e.* total expenditure, total gross income, net return and benefit: cost ratio are presented in Table 2. Result indicated that, among four varieties, Ayesha (F<sub>1</sub> Hy) registered maximum gross return (₹ 5,70,598 per hectare), net return (₹ 4,75,538 per hectare) and benefit: cost ratio (1:5.00). Variation in these profit values was due to yield obtained from different varieties which was accountable for maximum returns (₹) and benefit from different varieties.

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