Available online at www.ijpab.com

DOI: http://dx.doi.org/10.18782/2320-7051.2682

ISSN: 2320 – 7051

Int. J. Pure App. Biosci. **5 (2):** 1132-1137 (2017)

Research Article

International Journal of Pure & Applied Bioscience

OPEN ACCESS

Evaluation studies of Wild Melon (*Cucumis melo subsp. agrestis*) Genotypes for Growth, Yield and Quality Traits

Ganiger. V.M., Balesh Goudappanavar*, Shruti Gondi and Bhuvaneshwari. G.

University of Horticultural Sciences, Bagalkot, 587104, Karnataka, India

*Corresponding Author E-mail: vasantg.veg@gmail.com

Received: 14.03.2017 | Revised: 23.04.2017 | Accepted: 25.04.2017

ABSTRACT

Wild melon (Cucumis melo subsp. agrestis) belongs to the family Cucurbitaceae with chromosome number 2n=24. It is an ideal summer vegetable crop chiefly grown for fresh vegetable as well as pickling purpose. It has musky odour with smooth tender skin. A field experiment was carried out at University of Horticultural Sciences Bagalkot, Karnataka to study yield and quality parameters of wild melon. The results revealed that among growth parameters, vine length of wild melon genotypes was highest in 124.33 cm (T-18) while lowest in T-2 with 42.33cm. The leaf area was highest with 57.48 cm^2 in T-12. While the number of primary branches per vine was maximum with 14.33 in T-18. The yield parameters like number of fruits per vine was maximum in (T-18) 8.17. The length of fruit ranged from 3.10 cm (T-22) to 9.83 cm (T-9). The breadth of fruit varied between 3.12 cm (T-17) and 5.58 cm (T-22). The highest yield per vine was recorded highest in genotype (T-18) with 357.83 g. Regarding quality parameters, maximum total soluble solids of wild melon fruits was recorded in genotype T-16(7.37^0 brix) Though wild melon is an under exploited crop, it has good yield and quality attributes. Thus identification of promising genotypes as a commercial crop for the area with high yield and quality fruits would help the farmers in its adoption and improving their economic status.

Key words: *genotypes, wild melon, parameters, quality, yield,*

INTRODUCTION

Wild melon (*Cucumis melo* subsp. *agrestis*) belongs to the family Cucurbitaceae with chromosome number 2n=24. It is one of the traditional vegetable crop that can be exploited in marginal lands in north Karnataka with minimum crop husbandry practice. Even it is under exploited cucurbit, it has attained high value and occupied a pride place in rural cuisine because of its pleasant flavour with rich colours. It is also called as wild melon , kachari in hindi, shinde in Marathi, chibdin in Konkani, gumi in assam And mekkekayi in kannada. It is a native of Africa with listed endangered species. It is an ideal summer vegetable crop mainly growing for fresh vegetable as well as for pickling purpose. Fruits are varying in size, small to medium and big fruits with smooth tender skin, white flesh usually with little sweetness and odour.

Cite this article: Ganiger, V.M., Goudappanavar, B., Gondi, S. and Bhuvaneshwari, G. Evaluation studies of Wild Melon (*Cucumis melo subsp. agrestis*) Genotypes for Growth, Yield and Quality Traits, *Int. J. Pure App. Biosci.* **5(2):** 1132-1137 (2017). doi: http://dx.doi.org/10.18782/2320-7051.2682

In view of current trend of expanding the cultivation of wild melon crop for their delicious vegetable fruits, identification of promising genotypes is prime importance as a commercial crop for the area with high yield, short duration or earliness, resistance to pest and diseases and quality fruits, would help the farmers in its adoption and improving their economic status. In Karnataka, the crop is cultivated under limited area using mostly local varieties which are low in productivity. Towards this end, as a first step there is a need for collection of local genotypes and evaluate them for their adoptability to particular locations especially to their non traditional areas like Northern dry zone of Karnataka. Hence, investigation to identify suitable genotypes for Northern dry zone of Karnataka was planned.

MATERIALS AND METHODS

The field experiment on evaluation studies in *Wild melon* (*Cucumis melo* subsp. *agrestis*) was conducted at the Vegetable Science Research Block , University of Horticultural Sciences Bagalkot , Karnataka. The experiment was laid out in a randomized block design with 24 treatments (genotypes) replicated twice. Each genotype in each replication was represented by a plot of single row of 10 m length with 10 plants per treatment per replication. The seeds were sown at distance of two meter between the rows and one meter between the plants within the row. The recommended dosage of N, P_2O_5 and K_2O (100:75:50 kg per hectare) was applied in the form of urea, single super phosphate and muriate of potash, respectively. Twenty days after sowing, the plants were thinned to retain one plant per hill. The weed flora of the experimental area was hand weeded thrice at 20, 40 and 60 DAS. First watering was given with rose can after sowing and the pits were daily watered in the same way till the seedlings emerged. Statistical significance of variation due to genotype was tested by comparing the calculated values to Table 'F' values at five per cent level and one per cent level of significance.

RESULTS AND DISCUSSION

The mean values of different growth parameters with respect to genotypes are presented in table 1.The maximum vine length was recorded in T-18 genotype (124.33 cm) followed by T-21 (121.33 cm) and T-23 (120.17). Whereas, the genotypes T-2 recorded least vine length (42.33 cm). With respect to leaf area, maximum was recorded in T-18 (57.48 cm^2) followed by T-21(53.07 cm^2) . The least leaf area was recorded in T-3 (29.31 cm^2). With respect to number of primary branches per plant T-18 (4.33) recorded maximum number of primary branches followed by T-21 (3.67) and the least was observed in T-7 (2.67). Greater the vine length, greater will be the number of primary branches, number of leaves of plant. This may be due to diversion of higher amount of metabolites for exhibiting high vegetative vigour. These findings are in conformity with the results of Ahmed *et al*. (2004) in cucumber, Eifediyi *et al*. (2009) in cucumber, Ganiger *et al.* (2014), Manu (2014) and Shruti *et al.* (2015) in oriental pickling melon.

Significant difference was observed among the genotypes with respect to yield parameters (Table. 3). Maximum number of fruits per plant were found in T -18 (8.17) followed by T-9 (7.34). Whereas, minimum number of fruits per plant were registered in T-11(2.00). With respect to average fruit weight the highest was found in T -18 (93.91 g) which was followed by T-9 (75.35 g). In general, the number of fruits per plant inversely related to the size of the fruit weight. T-18 significantly produced higher fruit yield per plant (357.83 g) followed by T-9 (343.33 g). The genotypes T-11(70.50 g) had lower fruit yield per plant. These results indicated that higher the growth attributes significantly influenced for better translocation of photosynthates from source to sinks resulting in higher yield in such genotypes. Similar observations were made by Vijayakumari *et al*. (2005) in cucumber, Babu (2013), Ganiger *et al.* (2014), Manu (2014) and Shruti *et al.* (2015) in oriental pickling melon.

Genotypes differed significantly with respect to fruit characters like fruit length, fruit breadth, cavity size and TSS (Table. 4). In the present study, highest fruit length was registered in T-9 (8.77 cm) followed by T-12 (7.20 cm). Fruit length was least in T-22 (3.10 cm). With respect to fruit breadth maximum was noticed in the genotype T-22 (5.58 cm) followed by T-24 (4.98 cm) and minimum in T-17 (3.12 cm). Flesh thickness was recorded highest in T-8 (8.00 cm), followed by T- 6 (7.67). While lowest was recorded in T-15 (3.00). Among 24 genotypes, cavity size was maximum in T-9 (26.32 cm^2), followed by T-12 (19.68 cm^2). while minimum in T-22 (7.81cm^2). T-16 was registered with high TSS content (7.37° B) followed by T-23 (6.13°B). While low content in T-18 (3.65 °B). This variation in the TSS content of the genotypes might be due to variations in environment conditions that makes the fruit get ready for harvest. Similar reports were made by Dhiman *et al.* (2004) in muskmelon, Glala *et al.* (2006) in Egyptian melon, Nirmal *et al.* (2008), Kil *et al.* (2012) in muskmelon and Ganiger *et al.* (2014), Manu (2014) and Shruti *et al.* (2015) in oriental pickling melon.

Table 1: List of wild melon genotypes collected at different location of north Karnataka region used in study

Sl. No.	Genotypes	
1	T-1	Selection from Bagalkot local
2	T -2	Selection from Bagalkot local
3	T -3	Selection from Bagalkot local
4	T -4	Selection from Bagalkot local
5	T -5	Selection from Bagalkot local
6	T -6	Selection from Bagalkot local
7	T -7	Selection from Bagalkot local
8	T-8	Selection from Bagalkot local
9	T -9	Selection from Bagalkot local
10	T -10	Selection from Bagalkot local
11	T -11	Selection from Bagalkot local
12	T -12	Selection from Bagalkot local
13	T -13	Selection from Bagalkot local
14	T -14	Selection from Bagalkot local
15	T -15	Collection from Dharwad local
16	T -16	Collection from veerapur village
17	T -17	Collection from veerapur village
18	T -18	Collection from veerapur village
19	T-19	Collection from Sunag local
20	T -20	Collection from Aihole local
21	T -21	Collection from Nimbalgundi local
22	T -22	Selection from Bagalkot local
23	T -23	Selection from Bagalkot local
24	T -24	Selection from Bagalkot local

Table 2: Performance of wild melon genotypes for growth parameters

	Vine length(cm)	Leaf area(cm^2)	No. of primary branches
T1	65.17	33.37	3.50
T2	42.33	26.68	3.00
T3	63.33	29.31	3.67
T4	75.17	39.93	3.67
T5	69.17	39.12	3.33
T6	64.33	41.05	3.67
T7	117.67	45.60	2.67
T8	107.83	63.98	3.67
T9	110.17	52.50	2.67
T10	74.50	38.44	3.50
T11	77.17	38.41	3.33
T12	102.83	45.83	3.00
T13	82.67	33.16	2.67
T14	58.00	32.05	2.67
T15	60.00	35.64	3.17
T16	85.83	37.62	4.00
T17	108.67	35.31	4.17
T18	124.33	57.48	4.33
T19	90.67	46.88	3.33
T20	101.17	51.88	3.33
T21	121.33	53.07	3.67
T22	100.00	44.88	3.00
T23	120.17	49.98	3.17
T24	104.33	46.12	3.67
S.Em±	11.30	3.76	0.32
CD @ 5%	33.06	10.99	0.95

Table 3: Performance of wild melon genotypes for yield parameters

	NO. OF FRUITS/VINE	AVERAGE FRUIT WEIGHT(g)	YIELD/VINE(g)	No. of seeds/fruit
T1	**4.67**	**29.26**	**194.17**	117.17
T2	**3.50**	**34**.80	**93.83**	93.67
T3	**4.17**	**34.00**	**145.33**	101.83
T4	**2.83**	47.28	**129.67**	111.33
T5	**4.00**	**42.20**	**176.50**	104.83
T6	**4.00**	46.53	**178.33**	178.50
T7	**3.50**	**47.12**	**129.17**	181.67
T8	**3.17**	67.39	**222.67**	168.17
T9	**7.34**	**75.35**	**343.33**	168.33
T10	**4.50**	30.18	**122.17**	107.83
T11	**2.00**	**15.92**	**70.50**	116.17
T12	**2.50**	**31.32**	**180.83**	153.83
T13	**2.67**	**44.28**	**99.33**	114.50
T14	**2.83**	46.**38**	**92.83**	210.50
T15	**6.17**	**23.14**	**192.33**	125.00
T16	**3.67**	22.46	**87.67**	105.67
T17	**4.83**	**62.17**	**150.67**	140.83
T18	**8.17**	93.9**1**	**357.83**	177.17
T19	**5.00**	32.19	**76.50**	155.83
T20	**5.50**	74.31	**149.33**	160.50
T21	**6.00**	59.75	**297.83**	195.00
T22	**7.34**	22.05	**112.67**	112.33
T23	**6.17**	26.78	**200.67**	128.83
T24	**4.83**	63.43	**254.33**	174.17
S.Em±	**0.43**	5.25	**12.45**	19.26
CD @ 5%	**1.27**	15.36	**36.41**	56.36

Table 4: Performance of wild melon genotypes for quality parameters

	Fruit length (cm)	Fruit breadth (cm)	Flesh thickness (mm)	Cavity size (cm^2)	TSS
T1	4.13	4.00	5.83	10.39	4.08
T2	3.53	3.23	4.17	9.60	4.63
T3	5.13	4.10	4.00	8.71	4.40
T4	6.17	3.70	4.33	14.14	5.88
T5	4.20	4.00	6.83	11.01	4.60
T6	6.55	3.72	7.67	13.54	5.17
T7	5.47	3.88	7.00	14.48	6.60
T8	6.12	4.20	8.00	17.69	5.83
T9	8.77	4.87	7.17	26.32	5.40
T10	3.93	3.65	5.00	10.52	6.50
T11	4.57	3.40	4.50	10.26	5.85
T12	7.20	4.38	6.33	19.68	4.72
T13	4.90	3.57	5.50	12.75	4.67
T14	4.87	3.33	4.17	10.97	4.78
T15	3.47	3.38	3.00	10.18	5.33
T16	3.80	3.37	3.50	9.81	7.37
T17	4.65	3.12	5.67	13.37	5.50
T18	5.68	3.62	5.50	15.76	3.65
T19	5.50	3.91	4.00	12.15	6.05
T20	5.98	4.65	5.50	16.70	5.13
T21	6.58	5.58	5.00	18.33	
T22	3.10	4.40	5.33	7.81	6.82
T23	4.22	3.97	5.00	10.23	6.13
T24	6.17	4.98	4.50	19.44	5.57
S.Em±	0.54	0.41	0.71	2.86	0.61
CD @ 5%	1.05	1.20	2.08	8.38	1.78

CONCLUSION

From the foregoing discussion it would be concluded that among the 24 wild melon genotypes tested for their performance under northern dry zone of Karnataka, the treatments *viz.* T-18, T-9, T-12 were found better performers with respect to their yield potential, fruit characters coupled with good quality parameters compared to the released varieties which could be used as source for further crop improvement programme.

REFERANCES

1. Ahmed, M., Hamid, A. and Akbar, Z., (2004) Growth and yield performance of six cucumber (*Cucumis sativus* L.) cultivars under agro-climatic conditions of Rawalakot, Azad Jammu and Kashmir. *International J. Agric. Bio*., **6 (2):** 396–399.
2. Eifediyi, E. K. and Remison, S. U., (2009) Effect of time of planting on the growth and yield of five varieties of cucumber (*Cucumis sativus* L.). *Report and Opinion* **1 (5):** (2009).
3. Ganiger, V. M., Bhuvaneshwari, G, Pallavi, H. M. And Madalageri, M. B., (2014) Performance studies of oriental pickling melon (*Cucumis melo* var. Conomon) genotypes under northern

dry zone of Karnataka. SEA VEG, *Regional symposium on Sustaining small scale vegetable production and marketing systems for food and nutrition security, Bangkok, Thailand.* pp. 58.

4. Manu, K. K., (2014) Genetic variability and divergence studies in oriental pickling melon (*Cucumis Melo* Var. *Conomon*). *M. Sc. Thesis*, University of Horticultural Sciences, Bagalkot.
5. Shruti P. G., Ganiger V. M., Bhuvaneshwari G., Madalageri M. B., Kotikal Y. K., Manjunatha G. And Kantesh G. (2015) Evaluation of Oriental pickling melon (*Cucumis melo* L. *var conomon*) genotypes for northern dry zone of Karnataka. Green Farming. **7(3):** 663-665.
6. Vijayakumari, P., More, T. A. and Seshadri, V. S., Evaluation of gynoecious F1 hybrids for horticultural characters in cucumber. *Veg. Sci.,* **18 (2):** 167-176 (2005).
7. Babu, R., R., Genetic divergence studies in oriental pickling melon (C*ucumis melo* l.var. *conomon*) germplasm. *M. Sc. Thesis*. Dr. Y.S.R. Horticultural University, Rajendranagar, Hyderabad (2013).
8. Dhiman, J. S., Tarsem Lal and Bajaj, K. L., Evaluation of muskmelon (*Cucumis melo* L.) genotypes for multiple disease resistance, yield and quality characteristics. *Trop. Agric*., **72:** 58-62 (2004).
9. Glala, A. A., Omar, N. M., Ei - Shinawy, M. Z and Helal, R. M., Producing some new Egyptian melon hybrids: II. Growth, vigour, earliness and performance of some new promising F1 hybrids. *Egyptian J. Hort*., **29 (3-4):** 421-437 (2006).
10. Nirmal, D. E., Dangar Ram and Pandey, S., Physiological traits as determinant of yield in muskmelon under field conditions. *Indian J. Hort*., **65 (1):** 40-43 (2008).
11. Kil, S. Y., Haejeen, B., Eun, J. Lee., Kevin, C. and Bhimanagouda, S. P., Variation of carotenoid, sugar, and ascorbic acid concentrations in watermelon genotypes and genetic analysis. *Hort. Environ. Biotechnol.,* **53(6):** 552-560 (2012).