



## Research Paper

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# Variability and physico-chemical studies in snap melon (*Cucumis melo* var. *momordica*)

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**ABSTRACT :** The present investigation was carried out in the DAPS (Horticulture), Babasaheb Bhimrao Ambedkar University, Lucknow for periodical evaluation of various physico-chemical parameters *viz.*, length of fruits (cm), diameter of fruits (cm), size of fruits (cm), weight of fruits (kg), colour of skin/rind of fruit, weight of seeds/fruit, shape of fruits, colour of flesh, total soluble solid (TSS), acidity (percentage), compactness of fruits, aroma of fruits and taste of fruits. The genotypes of Snap melon *i.e.* Local-1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 were designated as V<sub>1</sub>, V<sub>2</sub>, V<sub>3</sub>, V<sub>4</sub>, V<sub>5</sub>, V<sub>6</sub>, V<sub>7</sub>, V<sub>8</sub>, V<sub>9</sub> and V<sub>10</sub>, respectively during the investigation. In each treatment/genotype, two-ten fruits were randomly selected for recording the observations on various parameters. Genotype V<sub>5</sub> had maximum fruit length (27 cm) whereas, V<sub>6</sub> had highest fruit diameter (24cm), fruit size (600cm), weight (3kg), seeds weight (23kg), TSS content (50 Brix) and acidity content (6.8%). The minimum fruit length was recorded in genotypes V<sub>7</sub> (12cm) whereas, minimum fruit diameter and fruit size was recorded in genotype V<sub>9</sub> (8cm and 112 cm, respectively). The minimum fruit weight was recorded in V<sub>2</sub> (0.90 kg). Minimum seed weight was recorded in genotype V<sub>2</sub> (4.0 g). Lowest TSS was observed in V<sub>5</sub> (40 Brix) while, minimum acidity in V<sub>5</sub> (3.5%). Snap melon Local-1, 2, 6, 8 and 9 were found compact in nature whereas, Local-3 and 10 were found less compact. Melon Local-1 and 8 had banana like aroma rather than snap melon Local-2 and 5 having light banana like aroma. The study evaluated that snap melon Local-1, 2, 8 and 10 have acidic taste whereas, snap melon Local-3, 4, 6 and 9 have sweet taste. Genotypes snap melon Local-5 and 7 found tasteless. The overall studied suggested that genotype V<sub>6</sub> performed better for its bigger size fruits with good aroma and taste.

**KEY WORDS :** Snap melon, Fruits characters, *Cucumis melo*

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**S**nap melon (*Cucumis melo* var. *momordica*) with 24 somatic chromosomes belongs to the family Cucurbitaceae and originated in India, where it is popularly known as “Phoot”. Snap melon is a warm season crop grown mainly in tropical and sub-tropical regions of the world and also grown to limited parts of the temperate regions, which have relatively long summer. It is mainly grown in Rajasthan, Punjab, Haryana, Uttar Pradesh and Bihar. Sometimes it is cultivated as an intercrop with Sorghum, Maize and Cotton. China is the world leading producer of snap melon. The fruits can be used as cooling light cleanser or moisturizer for the skin. They are also used as first aid treatment for burns and abrasion. The flowers are expectorant and emetic. The fruit is stomachic. The seed is antitussive, digestive, febrifuge and vermifuge. Seed contain 12.5% to

39.1% oil. Quality in snap melon fruits suffers due to attack of fruit fly and sunburn and such fruits are removed before marketing. Snap melon fruits are perishable and can be stored for 2-4 days at room temperature in cold store at 2-40C and 85-90% RH. However, the fruits can be stored for 2-3 weeks. Snap melon is generally processed except that its flesh is sometimes used in ice cream and for candy making in Europe and USA. Keeping the view of refreshing cooling effect and other important quality of snap melon, the present investigation was aimed to evaluate the physico-chemical study of different genotypes of snap melon.

## RESEARCH METHODS

The present investigation entitled “Variability and

Physico-chemical Studies in Snap melon (*Cucumis melo* var. momordica) was carried out in the Laboratory of the Department of Applied Plant Science (Horticulture), Babasaheb Bhimrao Ambedkar University Vidya-Vihar, Rae Bareilly Road, Lucknow during 2010-2011 with three replications in CRD. Ten snap melon genotypes were evaluated in the present study. The genotypes of snap melon Local-1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 were procured from farmers field of Mohanlalganj, Lucknow. Two- ten fruits were randomly harvested from each genotype of all replications having different shape, size and colours. Observation were recorded on physical, chemical and organoleptic attributes *i.e.* Length of fruits (cm), diameter of fruits (cm), weight of fruits (kg), skin/rind colors of fruits, weight of seeds per fruit, size of fruits (cm), shape of fruits, colors of flesh, total soluble solids (TSS °Brix), acidity (percentage), compactness of fruits, aroma of fruits and taste of fruits.

## RESEARCH FINDINGS AND DISCUSSION

The observations were recorded and presented in Table 1 and 2. The result revealed that maximum fruit length was observed in V<sub>5</sub> (27 cm) due to good varietal characters followed by V<sub>1</sub> and the minimum was recorded in V<sub>7</sub> (12 cm). The diameter of fruit were noticed from 8 to 24 cm. Maximum fruit diameter was recorded in V<sub>6</sub> because these variety has good genetic makeup followed by V<sub>1</sub> and minimum was recorded in V<sub>9</sub> (8 cm) The size of fruits were noticed from 112 to 600 cm with general mean value recorded to be 34.81 cm. Maximum fruit size was also observed in V<sub>6</sub> (600 cm) followed by V<sub>5</sub> (283 cm) and minimum was recorded in V<sub>9</sub> (112 cm). The weight of fruits were noticed from 0.90 to 3.0 kg and its general mean value recorded to be 0.27 kg. Maximum fruit weight was observed in V<sub>6</sub> (3.0 kg) due to varietal characters followed by V<sub>5</sub> (1.190

kg) and minimum was recorded in V<sub>2</sub> (0.90 kg). The weight of seeds/fruits were noticed from 4.0 to 23 g and its general mean value recorded to be 1.03g. Maximum seed weight was observed in V<sub>6</sub> (23 g) followed by V<sub>5</sub> (12 g) and minimum was recorded in V<sub>2</sub> (4.0 g). The shape of fruits was recorded by visual observation. The observed shape of all genotypes has been presented in Table 1. It is luiced from the table that the genotypes of snap melon Local-1 and 5 (long in shape), snap melon Local-2, 6, 7 and 10 (spherical in shape) and snap melon Local-3, 4, 8 and 9 (cylindrical in shape). The colour of fruits was recorded by visual observation. The observed colour of all genotypes of snap melon has been presented in Table 1. Snap melon Local -1, 5 and 9 (green in colour), snap melon Local-2 (light green-dark yellow in colour), snap melon Local-7 (yellow in colour). The colour of flesh has been presented in Table 1. Snap melon Local-1 and 8 were (light pink flesh), snap melon Local-2, 7 and 9 (white flesh), snap melon Local-3 and 6 (pink flesh), snap melon Local-4 and 10 (orange flesh) and snap melon Local-5 (creamy flesh). The TSS content of fruits were found in the range from 4 to 5 °Brix and its general mean value recorded to be 0.13 °Brix. Highest TSS content was found in V<sub>6</sub> cultivar (5 °Brix) due to possess good varietal character followed by V<sub>7</sub> (4.9 °Brix) and lowest in V<sub>5</sub> (4 °Brix). Acidity content of snap melon fruits were found in the range from 3.5 to 6.8%. Highest acidity content was recorded in V<sub>10</sub> cultivar (6.8%) followed by V<sub>6</sub> cultivar (6.7%) and minimum in V<sub>5</sub> (3.5%) with its general mean value to be 0.15%. The compactness of all cultivars has been presented in Table 2. Snap melon Local-1, 2, 5, 6, 8 and 9 (compactness in nature). Snap melon Local-3 and 10 (less compact in nature) and snap melon Local-4 and 7 (loose in nature). Snap melon Local-4 and 7 are superior with all other cultivars because these are loose in texture followed by V<sub>3</sub> and V<sub>10</sub> with its general mean value recorded to be 0.51 (in 10 marks). The aroma of fruits

**Table 1 : Physical parameters of the snap melon fruits of different genotypes**

Treatments	Length of fruits (cm)	Diameter of fruits (cm)	Size of fruits (cm)	Weight of fruits (kg)	Weight of seed/fruit (g)	Shape of fruits	Skin colour of fruits	Colour of flesh
V <sub>1</sub>	26.66	9.5	256.5	1.180	10	Long	Green	Light pink
V <sub>2</sub>	12.24	12.6	151.2	0.90	4	Spherical	Light green-dark yellow	White
V <sub>3</sub>	12.50	11.3	135.6	1.019	4.5	Cylindrical	Light orange	Pink
V <sub>4</sub>	14	10	140	1.005	5.5	Cylindrical	White	Orange
V <sub>5</sub>	27	10.5	283.5	1.190	12	Oblong	Green	Creamy
V <sub>6</sub>	25	24	600	3.0	23	Spherical	White	Pink
V <sub>7</sub>	12	12.6	151.2	0.995	4.2	Oblong spherical	Yellow	White
V <sub>8</sub>	15.70	10.5	150	1.006	5	Cylindrical	Light orange	Light pink
V <sub>9</sub>	14.30	8	112	1.003	4.7	Cylindrical	Green	White
V <sub>10</sub>	15	13.5	202.5	1.008	7	Long	White	Orange
S.E. (Mean)	1.46	1.18	34.81	0.27	1.03			
C.D. (P=0.05)	3.06	2.46	72.61	0.56	2.14			

**Table 2 : Biochemical and organoleptic attributes of different genotypes of snap melon**

Treatments	Total soluble solids (TSS <sup>0</sup> Brix)	Acidity (Percentage)	TSS acid ratio	Compactness	Aroma	Taste
V <sub>1</sub>	4.1	6.5	1.62	Compact (5)	Banana like (9)	Acidic (7)
V <sub>2</sub>	4.5	6	1.33	Compact (6)	Light banana like (8)	Acidic (7)
V <sub>3</sub>	4.8	3.6	1.14	Less compact (8)	No aroma (4)	Sweet (9)
V <sub>4</sub>	4.2	3.7	1.13	Loose (9)	No aroma (5)	Sweet (9)
V <sub>5</sub>	4	3.5	1.14	Compact (6)	Light banana like (6)	Tasteless (4)
V <sub>6</sub>	5	6.7	1.34	Compact (6)	Luscious (7)	Sweet (8)
V <sub>7</sub>	4.9	3.9	1.25	Loose (9)	Luscious (8)	Tasteless (5)
V <sub>8</sub>	4.5	6.5	1.33	Compact (6)	Banana like (8)	Acidic (7)
V <sub>9</sub>	4.2	3.9	1.07	Compact (6)	No aroma (5)	Sweet (9)
V <sub>10</sub>	4.7	6.8	1.27	Less compact (7)	No aroma (4)	Acidic (7)
S.E. (Mean)	0.13	0.15	1.15	0.51	0.45	0.38
C.D. (P=0.05)	0.28	0.31	1.0	1.05	0.93	0.79

was recorded by sensory evaluation. The aroma of all cultivars of snap melon has been presented in Table 2. Snap melon Local-1 and 8 have banana like aroma, snap melon Local-3, 4, 9 and 10 have not any aroma, snap melon Local-2 and 5 have light banana like aroma and snap melon Local-6 and 7 have luscious in nature. Snap melon Local-1 and 8 are superior with all other genotypes because these varieties have good banana like aroma followed by snap melon Local-2 and 7 and its general mean value recorded to be 0.45 (in 10 marks). The taste of fruits was recorded by sensory evaluation. The taste of all cultivars has been presented in Table 2. Snap melon Local-1, 2, 8 and 10 have acidic in nature due to high acidity found in this variety, snap melon Local-3, 4, 6 and 9 have sweet in taste and melon Local-5 and 7 have tasteless. Snap melon Local-3, 4, 6 and 9 are superior with all other genotypes because these genotypes have sweet in taste and its general mean value 0.38 (in 10 marks).

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