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MORPHOLOGICAL CHARACTERIZATION OF VARIOUS QUALITATIVE TRAITS OF SNAPMELON (*Cucumis melo* var. *momordica* Duth. & Full.) GENOTYPES UNDER KONKAN AGRO CLIMATIC CONDITIONS

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ABSTRACT

The present investigation was carried out to assess morphological and fruit parameters of different genotypes of snapmelon (*Cucumis melo* var. *momordica* Duth. & Full.) grown under Konkan agro-climatic conditions, at College of Horticulture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth Dapoli, Dist. Ratnagiri (MS) during *kharif* season in year 2023-2024. The experiment comprised fifteen diverse snapmelon genotypes, laid out in a Randomized Block Design (RBD) with three replications. Substantial variability was observed for leaf, fruit and seed characteristics among the evaluated genotypes. Among the 15 genotypes, Leaf morphology varied considerably, with leaf shapes ranging from entire to pentalobate and leaf sizes from small to intermediate. Fruit characteristics also exhibited wide diversity, fruit shapes varied from elongate and elliptical to globular, and fruit size ranged from intermediate to large. Predominant fruit skin colour showed high variability, encompassing light yellow, pale green, green, dark green, blackish green, and white. Fruit cracking intensity varied from deep to superficial, while cracking frequency ranged from low to high. Flesh colour predominantly varied from pale orange and orange to cream. Seed traits also reflected notable diversity, with seed size ranging from small to intermediate, seed shape from elliptical and round to oval, and seed coat colour from cream yellow to yellowish white. Among the genotypes, DPL-SM-9, DPL-SM-12 and DPL-SM-14 demonstrated superior performance by exhibiting intermediate leaf size, globular leaf shape, larger fruit size and a desirable superficial fruit-cracking habit, distinguishing them from the remaining genotypes and can be used in crop improvement programme. The rich diversity portrayed by the genotypes provides more selection chances for breeding and improvement. Therefore, the highly diverse snap melon germplasm should be conserved to serve as resource for improvement and breeding of well-adapted cultivars.

Keywords **:** Snapmelon, genotypes, leaf, fruit characters and seed characters

Introduction

Snapmelon (*Cucumis melo* var. *momordica* Duth. & Full.) is an underexploited crop having immense potential as a fruit vegetable. It is belonging to the family cucurbitaceae. The species is diploid (2n = 24) and is considered one of the most primitive and genetically diverse forms of *Cucumis melo*, believed to have originated and diversified in India (Hazra *et al*., 2011). India is recognized as one of the secondary centres of origin for snapmelon. It is locally known as "*Phoot*" because of its distinctive cracking nature at maturity. It is known as *Chibud* in Goa and coastal

Maharashtra, *Hibadihannu* or *Phoottikai* in Karnataka, and *Pottuvellari* in Kerala.

Snapmelon is cultivated across various Indian states, especially Tamil Nadu, Maharashtra, Kerala, Karnataka, Haryana, Punjab, Rajasthan, and Bihar. It plays a dual role serving both as a vegetable when fruits are immature and as a dessert melon when fruits are fully ripe and sweet. Ripe fruits are commonly consumed fresh, whereas immature fruits are used in curries and pickles. The fruit is rich in sugars, vitamins (especially A and C), minerals, and dietary fibre, making it beneficial for nutritional security. According to Peter and Hazra (2012), the edible portion contains 3% carbohydrates, 0.3% protein, 0.1% fat, 95.7% moisture, 265 IU vitamin A per 100 g, and 10 mg vitamin C per 100 g, highlighting its high moisture and low-calorie nutritional profile.

Snapmelon is an annual, trailing or climbing vine with a short, somewhat woody stem and a shallow taproot system. The leaves are simple to palmately lobed, alternately arranged, and produce solitary, unisexual flowers- male flowers often in clusters and female flowers singly. The plant is monoecious and cross-pollinated, with insects (mainly bees) serving as the primary pollinators. The fruit, botanically known as a pepo, varies greatly in size, shape, colour, and surface pattern depending on genotype and growing condition. The crop performs well in well-drained sandy loam to loamy soils, preferring neutral pH, and is sensitive to acidic conditions. It thrives under tropical to subtropical climates, with optimum growth at temperatures around 22–28°C (Seshadri and More, 2009).

Snapmelon is highly diverse in terms of fruit morphology, skin colour, aroma, sweetness, cracking behaviour, seed characteristics, and resistance to pests and diseases (Pandey *et al*., 2021). This genetic variability offers immense scope for improvement and selection of superior genotypes for fruit quality, and adaptability. Despite this potential, systematic research on snapmelon enhancement has been limited, particularly in western coastal India. Most cultivation remains confined to local landraces maintained by farmers through traditional seed saving. Morphological characterization of available germplasm is the first step in identifying promising genotypes for breeding and commercial cultivation. Evaluation based on phenotypic traits provides essential information on genetic divergence, stability, and suitability of genotypes for specific environmental conditions.

In Maharashtra, snapmelon is predominantly cultivated in the Konkan belt- particularly in Raigad, Ratnagiri, and Sindhudurg districts- during the *kharif* season. The region's warm, humid climate, coastal soils, and adequate rainfall influence the crop's growth and fruit characteristics. Considerable variability is observed among local genotypes in terms of vine growth, fruit size, shape, colour, flesh texture, sweetness, and cracking habit. In recent years, the crop has gained commercial importance due to its short growing season, ease of cultivation, adaptability, and consumer preference, especially during the monsoon season. However, the lack of systematic evaluation of genotypes under Konkan agro-climatic conditions has limited the identification of stable and high-performing types. Morphological and fruit quality assessments are therefore essential for selecting superior genotypes appropriate for this specific environment.

Considering the wide genetic diversity and adaptability of snapmelon, coupled with the growing market demand in the Konkan region, there is a pressing need to characterize and evaluate local and introduced genotypes under regional conditions. Such studies can facilitate the selection of promising genotypes with desirable horticultural and commercial attributes. Hence, the present investigation entitled **"**Morphological characterization of various qualitative traits of snapmelon (*Cucumis melo* var. *momordica* Duth. & Full.) genotypes grown under Konkan agro-climatic conditions" was undertaken to assess the morphological diversity among genotypes and to identify high-yielding, adaptable, and superior-quality genotypes suitable for cultivation in the Konkan region.

Material and Methods

The present experiment was conducted at the Department of Vegetable Science, College of Horticulture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli (Maharashtra) during *kharif* season 2023-24. A total of 15 genotypes were collected from Ratnagiri, Sindhudurg, Raigad and Thane district of Konkan region for investigation based on their variation in leaf, fruit and seed characters of snapmelon. These genotypes were evaluated along with the variety Konkan Madhur released by Dr. B. S. K. K. V, Dapoli as Local Check under field conditions and a released variety Pusa Shandar from IARI, New Delhi.

Table 1 : Sources of various snap melon genotypes used in the study.

Sr. No.	Genotypes	Source
1.	T_1 - DPL-SM-1	Phondaghat, Kankavali, Sindhudurg 16.3841º N, 73.8068º E
2.	T_2 - DPL-SM-2	Nandivase, Chiplun, Ratnagiri 17.5422º N, 73.6879º E
3	T_3 - DPL-SM-3	Palavani, Mandangad, Ratnagiri 17.9251º N, 73.2268º E
4.	T_4 - DPL-SM-4	Tulsuli, Kudal, Sindhudurg 16.0171º N, 73.6965º E
5.	T_5 - DPL-SM-5	Ghave, Dapoli, Ratnagiri 17.7212º N73.1735 º E
6.	T_6 - DPL-SM-6	Alibaug, Raigad 18.6624º N72.8871 º E
7.	T_7 - DPL-SM-7	Tondavali, Kankavali, Sindhudurg 16.3939º N73.7129 º E
8.	T_8 - DPL-SM-8	Kasal, Kudal, Sindhudurg 16.1549º N73.6789 º E
9.	T_9 - DPL-SM-9	Latawan, Mandangad, Ratnagiri 17.9312º N73.3462 º E
10.	T_{10} - DPL-SM-10	Ponda, South Goa 15.3865º N74.0012 º E
11.	T_{11} - DPL-SM-11	Kalavande, Chiplun, Ratnagiri 17.4664º N73.4973 º E
12.	T_{12} - DPL-SM-12	Adavali, Lanja, Ratnagiri 16.9060º N, 73.5987 º E
13.	T_{13} - DPL-SM-13	Bandhatiware, Dapoli, Ratnnagiri 17.8083º N73.2054 º E
14.	Konkan Madhur (Check)	Dr B. S. K. K. V., Dapoli
15.	Pusa Shandar	IARI, New Delhi

The experiment was laid out in Randomized Block Design with three replications during *kharif* season 2023- 24. Each genotypes were grown in three replications with spacing of 2 m x 0.6 m. The data on qualitative characters of snapmelon were recorded on five randomly selected equally competitive plants in each genotype and in each replication. The guideline for the scoring of leaf shapes, leaf colour, leaf size, fruit shape, fruit size, predominant and secondary skin colour, fruit cracking habit, fruit cracking frequency, main colour of flesh, flesh texture, seed size, seed shape and seed coat colour were assessed based on the International Plant Genetic Resources Institute (IPGRI) (Anonymous, 2003). Moreover, a reference colour chart was used to determine the colour of leaves, fruit and seeds.

Table 2. Descriptors of qualitative characteristics used to characterize snapmelon genotypes, (IPGRI, 2003)

Sr. No.	Characteristics	Descriptors of measurement
1.	Leaf shape	1- Entire, 2- Trilobite, 3- Pentalobate, 4- 3- palmately lobed, 5- 5-palmately lobed
2.	Leaf colour	1- Light green, 2- Green, 3- Dark green
3.	Leaf size	1- Small (< 40cm^2), 2- Intermediate (40-70cm^2), 3- Large (> 70cm^2)
4.	Fruit shape	1- Globular, 2- Flattened, 3- Oblate, 4- Elliptical, 5- Pyriform, 6- Ovate, 7- Acorn, 8- Elongate, 9- Scallop
5.	Fruit size	1- Very small (< 100 g), 2- Very small to small (approx. 200g), 3- Small (approx. 450g), 4- Small to intermediate (approx. 800g), 5- Intermediate (approx. 1200g), 6- Intermediate to large (approx. 1600g), 7- Large (approx. 2000g), 8- Large to very large (approx. 2600g), 9- Very large (> 3000g)
6.	Predominant fruit skin colour	1- White, 2- Light yellow, 3- Cream, 4- Pale green, 5- Green, 6- Dark green, 7- Blackish green, 8- Orange, 9- Brown, 10- Grey
7.	Secondary skin colour pattern	0- No secondary skin colour, 1- Speckled (spots <0.5 cm), 2- Spotted, blotchy (spots <0.5 cm), 3- Striped (bands that run from peduncle to blossom scar), 4- Short streaked (elongate marks that are continuous from one end the other and < 4 cm in length), 5- Long streaked (as 4 but >4cm)
8.	Fruit cracking habit	1- Superficial (<1 mm), 2- Intermediate (1-3 mm), 3- Deep (>3 mm)
9.	Fruit cracking frequency	3- Low, 5- Intermediate, 7- High
10.	Main colour of flesh	1- White, 2- Yellow, 3- Cream, 4- Light green, 5- Green, 6- Orange (yellow-red), 7- Salmon (pink-red)
11.	Flesh texture	1- Smooth-firm, 2- Grainy-firm, 3- Soft-spongy, 4- Mealy, 5- Fibrous-gelatinous, 6- Fibrous-dry
12.	Seed size	1- Very small (< 5 mm), 2- Small (5-8 mm), 3- Intermediate (9-12 mm), 4- Large (13-16 mm), 5- Very large (> 16 mm)
13.	Seed shape	1- Roundish (length/width <2.0), 2- Elliptical (length/width between 2.1 and 2.5) 3- Oval (length/width >2.5), 4- Triangular, 5- Pinonet type (like pine seeds)
14.	Seed coat colour	1- White, 2- Yellow-white, 3- Cream yellow, 4- Yellow, 5- Light brown to tan, 6- Brown

Result and Discussion

Morphological description is the preliminary step in the characterization and identification of genetic resources (Smith and Smith, 1989). The qualitative traits expressed by the snapmelon genotypes were differed from each other and some of them showed interesting features. The morphological evaluation of 15 snapmelon genotypes grown under Konkan agro-climatic conditions revealed substantial variability in vegetative, fruit characters and seed characters are presented in Table 3 and 4. Such differences are indicative of a board genetic base within the germplasm and provide opportunities for selection if superior lines.

Leaf parameters

Leaf shape

The entire leaf shape was prominent among genotypes T_1, T_2, T_3, T_4, T_7, T_8, T_{10}, T_{11}, T_{12}, T_{14} and T_{15} while for genotypes T_5, T_6, T_9 and T_{13} had produced leaves with unique pentalobate shape. Thus, it indicated that maximum genotype had entire shaped leaves. This variation might be due to differences in the genetic makeup of the different genotypes. The similar findings regarding the leaf shape variation per plant was in conformity with Simranpreet, (2021) in muskmelon and Darshani *et al*. (2021) in pumpkin.

Leaf colour

The genotype T_1, T_4, T_8, and T_{10} showed light green leaf colour. While green colour was noticed in the genotypes T_2, T_6, T_7, T_9, T_{11} and T_{12}. Genotypes T_3, T_5, T_{13}, T_{14}, and T_{15} showed dark green leaf colour. Thus, it indicate that green colour was observed in most of the genotypes and it was followed by dark green and light green leaf colour. The leaf colour of any genotype was determined by a genotype-specific gene. The similar findings was noticed by Priya, (2012) in snapmelon.

Leaf size

The genotypes T_2 T_4, T_{11} and T_{12} had small leaf size (< 40cm^2). The intermediate leaf size (between < 40-70cm^2) were observed in the genotypes T_1, T_3, T_5, T_6, T_7, T_8, T_9, T_{10}, T_{13}, T_{14} and T_{15}. Thus, it indicated that maximum genotype had intermediate in leaf size. Similar type of variations related to leaf size was also reported in snapmelon by Priya, (2012).

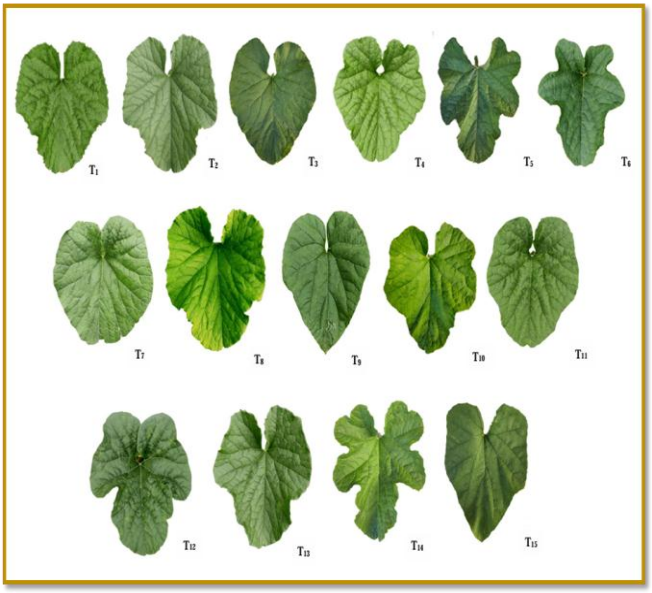

Plate 1: Morphological variation in leaf of different snapmelon genotypes

Fruit parameters

Fruit shape

Fruit morphological characteristics were analyzed. On the basis of fruit shape, snap melon genotypes have been grouped into three categories, viz. short, (no varieties) medium and long (Mostly all genotypes are long in nature). Mostly genotypes are long in shape, the fruit shape in longitudinal section was expressed as elliptical (T_1, T_3, T_4, T_5, T_6, T_{10} and T_{11}), elongated globe (T_2, T_7, T_8, T_{13} and T_{15}), and round (T_9, T_{12} and T_{14}). Similar pattern of results was reported by Dhillon *et al.* (2007), Pavithra, (2021) and Prabhu, (2024) in snapmelon, and Simranpreet, (2021) in muskmelon.

Fruit size

The fruit size was ranged from very small to very large. Out of 15 genotypes, 10 genotypes (T_1, T_2, T_3, T_5 T_6, T_7, T_8, T_{10}, T_{11} and T_{15}) were found to be intermediate to large in size. Large fruit size was recorded for genotypes (T_9, T_{12} and T_{14}), remaining two were showed intermediate (T_4) and small to intermediate (T_{13}) in size. A similar pattern was discovered by Priya (2012) in snapmelon.

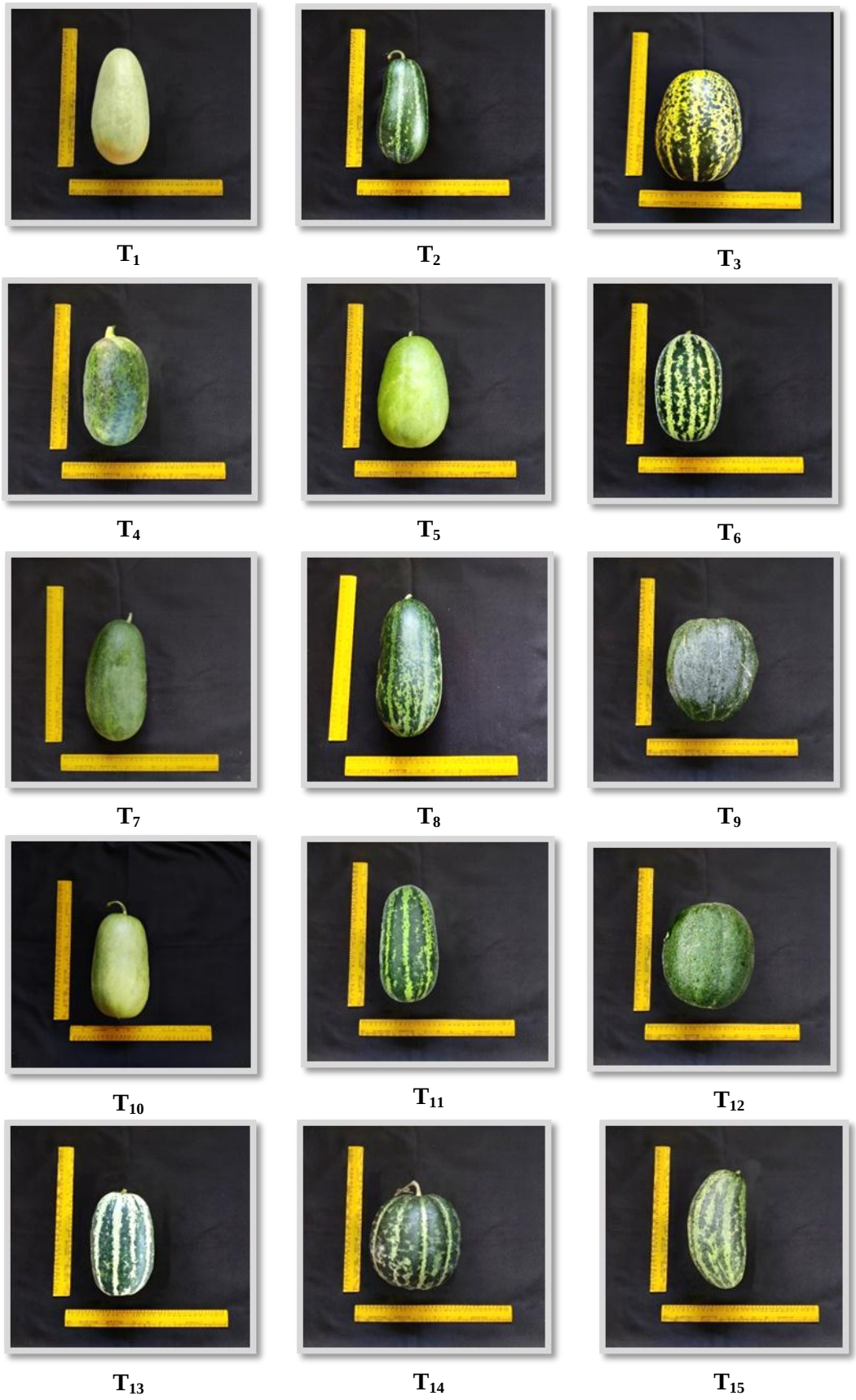

Plate 2: Variation in fruits traits of different snapmelon genotypes

Predominant fruit skin colour

Wide range of variability was observed in fruit skin colour at mature stage. Based on the present investigations, the predominant fruit skin colour was ranged from white to grey colour. In genotype T_2, T_8, T_{11}, T_{12} and T_{15} the predominant fruit skin colour was dark green. While green colour was noticed in the genotypes T_4, T_7, and T_{14}. Genotype T_3 and T_5 found pale green colour, blackish green was seen in T_6, T_9, and T_{13}. Genotype T_1, and T_{10} showed light yellow and white colour. This variation might be due to differences in the genetic makeup of the different genotypes. A similar pattern was discovered by Pavithra, (2021), in snapmelon, Darshani *et al*. (2021) and Prabhu, (2024) in pumpkin.

Secondary skin colour pattern

The secondary skin colour pattern was ranged from no secondary skin colour to long streaked. Most of the genotypes T_2, T_6, T_8, T_{11}, T_{13}, T_{14} and T_{15} were striped in pattern and some genotypes showed no secondary skin colour pattern (T_1, T_5, T_9, T_{10} and T_{12}). Genotype T_4, and T_7 showed spotted pattern of skin colour and genotype T_2 noticed short streaked pattern. Prabhu, (2024) in pumpkin reported that secondary pattern from speckled to stripe.

Fruit cracking habit

Fruit cracks on maturity are a characteristic of snapmelons. Fruit cracking was either longitudinal or random starting in the middle of the fruit, whereas round fruits always displayed blossom end cracking. Farmers at the site of collection are aware of this trait and sell fruits before the cracking commences habit varied from superficial to deep. Genotypes (T_9, T_{12} and T_{14}) showed superficial cracking with low frequency-traits preferred for reduced fruit damage. The genotypes T_1, T_4 and T_{13} showed deep fruit cracking habit. While intermediate fruit cracking was observed in genotypes T_2, T_3, T_5 T_6, T_7, T_8, T_{10}, T_{11} and T_{15}. The variation in fruit cracking habit of snapmelon was noticed by Shrilatha, (2021), Pavithra, (2021) in snapmelon. Prabhu and (2024) in pumpkin.

Fruit cracking frequency

The genotypes T_1, T_2, T_3 T_4, T_5, T_6, T_7, T_8, T_{10}, T_{11}, and T_{13} showed intermediate fruit cracking frequency and only one genotype observed high frequency of fruit cracking T_{15}. The variation in fruit cracking frequency of snapmelon was also noticed by Shrilatha, (2021) in snapmelon.

Table 3 : Variation in morphological characteristics of snapmelon genotypes grown under Konkan agroclimatic conditions.

Sr. No.	Genotypes	Leaf shape	Leaf colour	Leaf size	Fruit shape	Fruit size	Predominant fruit skin colour	Secondary skin colour pattern
1.	T_1 - DPL-SM-1	Entire	Light green	Intermediate	Elliptical	Intermediate to large	Light yellow	No secondary skin colour
2.	T_2 - DPL-SM-2	Entire	Green	Small	Elongate	Intermediate to large	Dark green	Striped
3.	T_3 - DPL-SM-3	Entire	Dark green	Intermediate	Elliptical	Intermediate to large	Pale green	Short streaked
4.	T_4 - DPL-SM-4	Entire	Light green	Small	Elliptical	Intermediate	Green	Spotted
5.	T_5 - DPL-SM-5	Pentalobate	Dark green	Intermediate	Elliptical	Intermediate to large	Pale green	No secondary skin colour
6.	T_6 - DPL-SM-6	Pentalobate	Green	Intermediate	Elliptical	Intermediate to large	Blackish green	Striped
7.	T_7 - DPL-SM-7	Enitre	Green	Intermediate	Elongate	Intermediate to large	Green	Spotted
8.	T_8 - DPL-SM-8	Entire	Light Green	Intermediate	Elongate	Intermediate to large	Dark green	Striped
9.	T_9 - DPL-SM-9	Pentalobate	Green	Intermediate	Globular	Large	Blackish green	No secondary skin colour
10	T_{10} - DPL-SM-10	Entire	Light green	Intermediate	Elliptical	Intermediate to large	White	No secondary skin colour
11.	T_{11} - DPL-SM-11	Entire	Green	Small	Elliptical	Intermediate to large	Dark green	Striped
12.	T_{12} - DPL-SM-12	Entire	Green	Small	Globular	Large	Dark green	No secondary skin colour

13.	T_{13} - DPL-SM-13	Pentalobate	Dark Green	Intermediate	Elongate	Small to intermediate	Blackish green	Striped
14.	T_{14} - Konkan Madhur (Check)	Entire	Dark Green	Intermediate	Globular	Large	Green	Striped
15.	T_{15} - Pusa Shandar	Entire	Dark Green	Intermediate	Elongate	Intermediate to large	Dark green	Striped

Table 4 : Study on fruiting and seed characters of snapmelon (*Cucumis melo* var. *momordica*) genotypes under Konkan agro-climatic conditions.

Sr. No.	Genotypes	Fruit cracking habit	Fruit cracking frequency	Main colour of flesh	Flesh texture	Seed size	Seed shape	Seed coat colour
1.	T_1 - DPL-SM-1	Deep	Intermediate	Pale orange	Smooth firm	Intermediate	Elliptical	Cream yellow
2.	T_2 - DPL-SM-2	Intermediate	Intermediate	Orange	Soft spongy	Small	Roundish	Yellow
3.	T_3 - DPL-SM-3	Intermediate	Intermediate	Pale orange	Smooth firm	Small	Roundish	Cream yellow
4.	T_4 - DPL-SM-4	Deep	Intermediate	Pale orange	Soft spongy	Intermediate	Elliptical	Yellow
5.	T_5 - DPL-SM-5	Intermediate	Intermediate	Cream	Smooth firm	Intermediate	Elliptical	White
6.	T_6 - DPL-SM-6	Intermediate	Intermediate	Pale orange	Smooth firm	Intermediate	Elliptical	Yellow -white
7.	T_7 - DPL-SM-7	Intermediate	Intermediate	Pale orange	Soft spongy	Intermediate	Elliptical	Yellow
8.	T_8 - DPL-SM-8	Intermediate	Intermediate	Pale orange	Smooth firm	Small	Roundish	Yellow
9.	T_9 - DPL-SM-9	Superficial	Low	Orange	Smooth firm	Intermediate	Elliptical	Cream yellow
10	T_{10} - DPL-SM-10	Intermediate	Intermediate	Cream	Smooth firm	Small	Roundish	White
11.	T_{11} - DPL-SM-11	Intermediate	Intermediate	Pale orange	Smooth firm	Intermediate	Elliptical	Yellow
12.	T_{12} - DPL-SM-12	Superficial	Low	Orange	Smooth firm	Intermediate	Elliptical	Cream yellow
13.	T_{13} - DPL-SM-13	Deep	Intermediate	Pale orange	Smooth firm	Intermediate	Roundish	Cream yellow
14.	T_{14} - Konkan Madhur (Check)	Superficial	Low	Pale orange	Smooth firm	Intermediate	Oval	Yellow -white
15.	T_{15} - Pusa Shandar	Intermediate	High	Pale orange	Soft spongy	Intermediate	Elliptical	Cream yellow

Main colour of flesh

The main colour of flesh was expressed as orange (T_2 and T_9) and cream coloured flesh (T_5 and T_{10}) while the reminder genotypes had pale orange colour (T_1, T_3 T_4, T_6, T_7, T_8, T_{11}, T_{12}, T_{13}, T_{14} and T_{15}). This is in corroboration with the findings of Pavithra, (2021) and Prabhu, (2024) in snapmelon, and Simranpreet, (2021) in muskmelon.

Flesh texture

Six types of flesh texture were present in germplasm viz. smooth-firm, grainy-firm, soft-spongy, mealy, fibrous-gelatinous and fibrous-dry. The majority of genotpyes belonged either to smooth-firm (T_1, T_3 T_5, T_6, T_8, T_9, T_{10}, T_{11}, T_{12}, T_{13} and T_{14}) or soft-spongy (T_2, T_4, T_7 and T_{15}). A similar pattern was discovered by Prabhu, (2024) in snapmelon, and Simranpreet, (2021) in muskmelon.

Various fruit characters like fruit shape, fruit size, predominant fruit skin colour, secondary fruit skin pattern, flesh colour and fruit flesh texture are of prime importance as these characters are controlled genetically and these visual observations can be used as a basis for identification of the variety.

Seed characters-

Seed size

The genotypes T_1, T_2, T_3 T_4, T_5, T_6, T_7, T_8, T_{10}, T_{11}, and T_{13} showed intermediate seed size and genotype T_2, T_3, T_8, and T_{10} observed small size seed. Similar trend was reported by Shrilatha, (2021) in snapmelon.

Plate 3: Variation in seeds of snapmelon genotypes**.**

Seed shape

The seed shape was observed to be elliptical in the genotypes of (T_1, T_4, T_5 T_6, T_7, T_9, T_3, T_9 T_{11}, T_{12} and T_{15}). Whereas the roundish type of seed shape was recorded in genotypes (T_2, T_3, T_8, T_{10}, and T_{13}) and only one genotype T_{14} was noticed oval shape. A similar pattern was discovered by Priya, (2012) and Shrilatha, (2021) in snapmelon.

Seed coat colour

The seed morphology were assessed. The creamy yellow colour was seen in the majority of genotypes (T_1, T_3, T_9 T_{12}, T_{13}, and T_{15}), Likewise, genotypes T_2, T_4, T_7 T_8, and T_{11} had yellowish and Yellow-white (T_6, and T_{14}). Whereas only one genotypes had whitish seed coat colour. The variation in seed colour might be due to genotypic characters. Trends in results were also reported by Pavithra, (2021) and Shrilatha, (2021) in snapmelon.

Conclusion

It can be concluded from the present investigation that substantial variability exists among the fifteen snapmelon genotypes with respect to leaf, fruit and seed characteristics. The genotypes DPL-SM-9, DPL-SM-12 and DPL-SM-14 were identified as superior, as they exhibited intermediate leaf size, globular leaf shape, larger fruit size and a desirable superficial fruit-cracking habit compared with the other genotypes. The present morphological characterization has provided information that should be used to delineate, standardize, identify and evaluate the snapmelon landraces. The great variability in shape, colour and skin texture of fruits and seeds should be used for improvement of the snapmelon. The considerable phenotypic diversity present in the evaluated genotypes offers enhanced opportunities for effective selection and genetic enhancement. Therefore, it is imperative that the highly diverse snapmelon germplasm be conserved to serve as a valuable resource for future improvement and for developing well-adapted cultivars. The further studies for advanced evaluation of the superior genotypes for two more years, at various locations in Konkan region and across different seasons will help in recommending the superior genotypes for commercial cultivation under Konkan agro-climatic conditions. However, plant breeders and other professionals should take advantage of this information and commence the improvement work.

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References

Anonymous. (2003). *Descriptors for melon (Cucumis melo L.)*. International Plant Genetic Resources Institute.

Darshani, W. M. R., Nashath, M. N. F., Niran, H. M. L., & Mubarak, A. N. M. (2021). Evaluation of morphological

and yield characteristics of selected local pumpkin accessions in Sri Lanka. In *Proceedings of the International Conference on Science and Technology* (pp. 96–103).

Dhillon, N. P. S., Ranjana, R., Singh, K., Eduardo, I., Monforte, A. J., Pitrat, M., Dhillon, N. K., & Singh, P. P. (2007). Diversity among landraces of Indian snap melon. *Genetic Resources and Crop Evolution*, **54**, 1267–1283.

Hazra, P., Chattopadhyay, A., Karmakar, K., & Dutta, S. (2011). *Modern technology in vegetable production*. New India Publishing Agency.

Pandey, A., Ranjan, P., Ahlawat, S. P., Bhardwaj, R., Dhariwal, O. P., Singh, P. K., Malav, P. K., Harish, G. D., Prabhu, P., & Agrawal, A. (2021). Studies on fruit morphology, nutritional and floral diversity in less-known melons (*Cucumis melo* L.) of India. *Genetic Resources and Crop Evolution*, **68**(4), 1453–1470.

Pavithra, H. (2021). *Heterosis and combining ability studies in snap melon (Cucumis melo var. momordica)* (Master's thesis, University of Horticultural Sciences, Bagalkot).

Peter, K. V., & Hazra, P. (2012). *Handbook of vegetables*. Thompson Press.

Prabhu, P., Pandey, A., Rajkumar, S., Harish, G. D., Pandey, C., & Bharadwaj, R. (2024). Studies on traditional melon 'Vellari' (*Cucumis melo* var. *momordica* L.) in Tamil Nadu, India. *Indian Journal of Plant Genetic Resources*, **37**(1), 97–104. https://doi.org/10.61949/0976-1926.2024.v37i01.12

Priya Joseph, T. (2012). *Performance analysis of snap melon (Cucumis melo var. momordica Duth. & Full.)* (Master's thesis, Kerala Agricultural University).

Seshadri, V. S., & More, T. A. (2009). *Cucurbit vegetables: Botany, production and utilization*. Stadium Press.

Shrilatha, K. A. (2021). *Characterization of snap melon (Cucumis melo var. momordica) genotypes for growth, yield and quality attributes* (Master's thesis, University of Horticultural Sciences, Bagalkot).

Simranpreet, K. (2021). *Heterosis and combining ability studies in muskmelon (Cucumis melo L.)* (Master's thesis, Punjab Agricultural University).

Smith, J. S. C., & Smith, O. S. (1989). The description and assessment of distances between inbred lines of maize: The utility of morphological, biochemical and genetic descriptors and a scheme for the testing of distinctiveness between inbred lines. *Maydica*, **34**, 151–161.