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Morphological characterization of ornamental Banana accessions for vegetative traits in Godavari zone of Andhra Pradesh

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Abstract

The present investigation conducted at College of Horticulture, Dr.Y.S.R. Horticultural University, Venkataramannagudem was aimed to assess the morphological traits of fifteen ornamental banana accessions viz., Acc.1 (R1-8), Acc.2 (R1-11), Acc.3 (R1-76), Acc.4 (R2-9), Acc.5 (R2-52), Acc.6 (R2-92), Acc.7 (MR1-4), Acc.8 (MR2-3), Acc.9 (MR2-7), Acc.10 (SR5-15), Acc.11 (SR7-7), Acc.12 (SR8-9), Acc.13 (SR9-3), Acc.14 (*Musa laterita*) and Acc.15 (*Musa ornata*) under Godavari zone of Andhra Pradesh. Vegetative growth parameters such as Pseudo stem height, pseudo stem girth, underlying colour of the pseudo stem, clasping nature, petiole length, leaf length, leaf width, leaf area and petiole length were measured. Results obtained showed significant variations in all the parameters. Pseudo stem height was recorded highest in Acc.4 (R2-9) and minimum in Acc.13 at 90 and 120 DAP. Acc.6 (R2-92) recorded maximum pseudo stem girth and minimum was in Acc.13 at 30, 60, 90 and 120 DAP. Acc.7 (MR1-4) recorded maximum leaf length and leaf area from 30 DAP to 120 DAP and minimum leaf length and leaf area were recorded in Acc.13 at 90 and 120 DAP. Maximum leaf width was registered in Acc.7 at 60, 90 and 120 DAP and minimum was recorded in Acc.13. Acc.4 (R2-9) had longest petiole while, shortest was in Acc.14 (*Musa laterita*) as compared to all the other accessions.

Keywords: Ornamental banana accessions, vegetative parameters, Godavari zone, Andhra Pradesh

Introduction

There is a growing demand for unique, unusual and differentiated plant species in the ornamental market which has prompted a search for novelty and distinctiveness factors in non-traditional ornamental crops. With surge in demand for novelty and distinctiveness within ornamental market, interest towards non-traditional ornamental crops such as ornamental banana, ornamental pineapple, and ornamental turmeric is increasing. Ornamental banana, an exotic ornamental group belonging to Musaceae family can be an interesting alternative to this demand for novelties (Santos-Serejo *et al.*, 2007). The appeal of ornamental banana lies not only in its lush green foliage but also in its potential as a cut flower, diversifying the cut flower basket (Janakiram *et al.*, 2024) [6]. In tropical countries, banana require low maintenance and also flowers year round thus can be utilized for aesthetic purposes and garden scaping (Swangpol *et al.*, 2017) [15]. Banana is the most popular fruit crop and the genetic diversity of Musaceae species has extended to various parts of the world including Asian countries, Germany, Brazil and the Hawaiian Islands. In India, it was distributed in Eastern Ghats, Western Ghats, Northeast India and Andaman and Nicobar Islands. The genus *Musa* L. originates from South East Asia (Ploetz *et al.*, 2007) [8] and is divided into five sections (Eumusa, Rhodochlamys, Callimusa, Australimusa, and Ingentimusa) based on the number of chromosomes and morphological characters (Stover and Simmonds, 1987) [14] and presents wide genetic diversity, with about 70 species (Hakkinen and Wallace, 2007) and more than 500 cultivars (Valmayor *et al.*, 2002) [18]. Of these, Eumusa and Australimusa are fruit and fibre producers. Rhodochlamys and Callimusa consist of ornamental species suitable for landscaping and as various plant components in the garden.

Some popularized ornamental banana species are *Musa ornata*, *M. laterita*, *Musa rubra*, *Musa accuminata* subsp. *Zebrina*, *Musa velutina*, *Musella lasiocarpa*, *Ensete ventricosum* and *E. superbum*. Efforts were made to cross some of these species to produce interspecific hybrids with desirable ornamental traits (Ramajayam *et al.*, 2020)^[9].

Ornamental bananas can add a tropical effect to landscapes with their lush green, broad foliage and colorful blooms that last for weeks or even months. Godavari zone of Andhra Pradesh largely comprises of districts around the river wherein ornamental plants like *Canna*, *Heliconia*, *Codiaeum* and *Acalypha* were very popular. However, as people were more fascinated by the new arrivals in ornamental plant nurseries, it was realized that under this advancement in the floriculture sector, some important ornamental banana accessions have to be evaluated under tropical and humid conditions of Godavari zone of Andhra Pradesh. Hence, this study was investigated with a principal objective of conducting morphological characterization and assess the relative potential of ornamental banana accessions for ornamental use under the Godavari zone of Andhra Pradesh.

Materials and Methods

The current investigation was carried out at the College of Horticulture, Dr. Y.S.R. Horticultural University, Venkataramannagudem, Andhra Pradesh. The location falls under 'Agro-climatic Zone-10, humid, East Coast Plain and Hills' (Krishna-Godavari Zone) with an average annual rainfall of 900 mm at an altitude of 34 m (112 feet) above the mean sea level. The experimental site was geographically situated at 16.88° north latitude and 81.45° east longitude with a hot humid summer and mild winter climate. The study included fifteen accessions viz., Acc.1 (R1-8), Acc.2 (R1-11), Acc.3 (R1-76), Acc.4 (R2-9), Acc.5 (R2-52), Acc.6 (R2-92), Acc.7 (MR1-4), Acc.8 (MR2-3), Acc.9 (MR2-7), Acc.10 (SR5-15), Acc.11 (SR7-7), Acc.12 (SR8-9), Acc.13 (SR9-3), Acc.14 (*Musa laterita*) and Acc.15 (*Musa ornata*). Of these, thirteen were interspecific hybrids between *Musa ornata* and *Musa rubra*, *Musa rubra* and *Musa accuminata* subsp. *Zebrina*, *Musa ornata* and *Musa accuminata* subsp. *Zebrina*, and *Musa ornata* and *Musa velutina* and two were ornamental banana species. Planting material was collected from Centre of Excellence for Research and Training in Protected Cultivation, Dr. YSRHU, Venkataramannagudem (Accessions 1-13) and Horticultural Research Station, Kovvur, Andhra Pradesh (Accessions 14 & 15). The experiment was laid out in Randomized Block Design with two replications in open-field conditions. Healthy suckers weighing 900-1000g were planted in uniform pits at a spacing of 1.5 m × 1.5 m and all the timely management practices specific to banana were followed.

Biometric observations on vegetative traits were recorded at 30, 60, 90 and 120 days after planting (DAP). Pseudostem height was measured from the ground level to the point of emergence of first leaf. Pseudostem girth was measured 10 cm above from the ground level. Underlying pseudostem colour was recorded following the descriptors of International Plant Genetic Resources Institute (IPGRI, 1996). The clasping and non-clasping nature of petiolar base to the pseudostem was observed at the point of emergence of leaf. Leaf length was measured on fully emerged second leaf along the midrib while leaf width at the widest part of the leaf. Leaf area was calculated by multiplying leaf length and leaf width with leaf area factor (0.8) (Obiefuana and Ndubizy, 1979)^[7]. Petiole length of fully emerged second leaf was measured from point of emergence of

leaf to base of leaf lamina.

Results and Discussion

Pseudo stem height (cm)

The ornamental banana accessions at 30, 60, 90 and 120 days after planting (DAP) exhibited significant variations (Table 1). At 30 DAP, the Acc.6 recorded maximum pseudo stem height (27.33 cm) which was at par with Acc.1 (24.07 cm). Acc.14 measured minimum pseudo stem height (13.95 cm) that was found at par with Acc.11 (14.95 cm), Acc.12 (15.02 cm) and Acc.3 (15.07 cm). while at 60 DAP, maximum pseudo stem height was observed in Acc.8 (34.32 cm) which was at par with Acc.4 (31.14 cm) and Acc.6 (30.98 cm). Minimum pseudo stem height was recorded in Acc.3 (19.23 cm) which was at par with Acc.12 (19.42 cm), Acc.13 (21.70 cm), Acc.14 (21.85 cm) and Acc.11 (21.94 cm). At 90 DAP, the pseudo stem height varied from 32.29 cm to 58.24 cm with a grand mean of 41.63 cm. The maximum pseudo stem height was recorded in Acc.4 (58.24 cm) which was at par with Acc.1 (51.35 cm). Acc.13 recorded minimum pseudo stem height (32.29 cm) which was found to be at par with Acc.12 (45.19 cm), Acc.3 (46.97 cm), Acc.14 (47.02 cm), Acc.15 (47.84 cm), Acc.11 (50.67 m) and Acc.9 (53.67 cm) whereas, maximum pseudo stem height at 120 DAP was observed in Acc.4 (79.23 cm) and was found at par with Acc.1 (74.59 cm) whereas, minimum pseudo stem height was recorded in Acc.13 (43.54 cm) which was found to be at par with Acc.12 (45.19 cm), Acc.3 (46.97 cm), Acc.14 (47.02 cm), Acc.15 (47.84 cm), Acc.11 (50.67 m) and Acc.9 (53.67 cm).

Pseudo stem height is regarded as a significant character in commercial banana cultivars and varieties for the study of plant profile and breeding. However, for ornamental banana, dwarfness is considered a key attribute for the maintenance of plants and also for making them suitable for potted plants and landscaping purposes. Similar variation in plant height among the accessions was observed previously by Souza *et al.* (2011)^[13] in banana accessions with ornamental potential under Brazil conditions and Thirugnanavel *et al.* (2018)^[16] in wild *Musa* species and hybrids under Tamil Nadu conditions. The variations in pseudo stem height might be due to the genetic makeup of the individual accessions.

Pseudo stem girth (cm)

The pseudo stem girth varied significantly among the accessions at 30, 60, 90 and 120 DAP (Table 1). The mean pseudo stem girth ranged from 6.10 cm at 30 DAP to 10.57 cm at 120 DAP. The maximum pseudo stem girth at 30 DAP was recorded in Acc.6 (8.72 cm) followed by Acc.4 (7.18 cm) whereas minimum pseudo stem girth was observed in Acc.13 (4.93 cm). The Acc.6 recorded maximum pseudo stem girth (9.33 cm) at 60 DAP followed by Acc.4 (7.80 cm) while minimum pseudo stem girth was recorded in Acc.13 (5.35 cm). The results at 90 DAP indicated that Acc.6 recorded maximum pseudo stem girth (12.77 cm) followed by Acc.2 (10.08 cm) and minimum pseudo stem girth was observed in Acc.13 (6.68 cm). At 120 DAP, Acc.6 recorded maximum pseudo stem girth (14.23 cm) followed by Acc.1 (12.45 cm). Minimum pseudo stem girth was recorded in Acc. 13 (7.60 cm). The diameter of the pseudo stem is closely associated with the nutrition and development of the plants (Silva *et al.*, 2001)^[12]. The results are in conformity with Thirugnanavel *et al.* (2018)^[16] who revealed a greater variability in wild *Musa* species and hybrids with regard to pseudo stem girth.

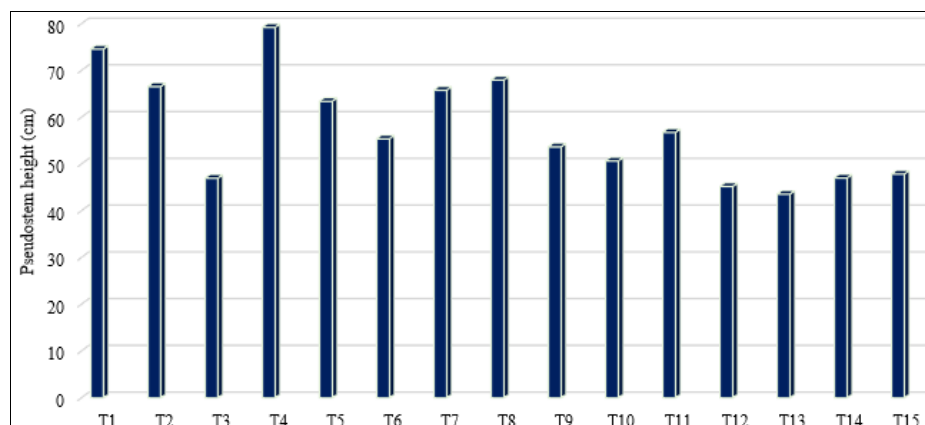


Fig 1: Pseudo stem height (cm) in ornamental banana accessions in Godavari zone of Andhra Pradesh at 120 DAP

T₁: Acc.1 (R1-8) T₆: Acc.6 (R2-92) T₁₁: Acc.11 (SR7-7)
 T₂: Acc.2 (R1-11) T₇: Acc.7 (MR1-4) T₁₂: Acc.12 (SR8-9)
 T₃: Acc.3 (R1-76) T₈: Acc.8 (MR2-3) T₁₃: Acc.13 (SR9-3)
 T₄: Acc.4 (R2-9) T₉: Acc.9 (MR2-7) T₁₄: Acc.14 (*Musa laterita*)
 T₅: Acc.5 (R2-52) T₁₀: Acc.10 (SR5-15) T₁₅: Acc.15 (*Musa ornata*)

Table 1: Pseudo stem height (cm) and pseudo stem girth (cm) in ornamental banana accessions in Godavari zone of Andhra Pradesh

Accessions	Pseudo stem height (cm)				Pseudo stem girth (cm)			
	30 DAP	60 DAP	90 DAP	120 DAP	30 DAP	60 DAP	90 DAP	120 DAP
T ₁ : Acc.1 (R1-8)	24.07	27.87	51.35	74.59	5.80	6.32	9.68	12.45
T ₂ : Acc.2 (R1-11)	23.68	27.85	47.60	66.57	6.28	6.72	10.08	11.57
T ₃ : Acc.3 (R1-76)	15.07	19.23	33.99	46.97	4.97	5.37	6.95	8.65
T ₄ : Acc.4 (R2-9)	23.74	31.14	58.24	79.23	7.18	7.80	9.12	10.23
T ₅ : Acc.5 (R2-52)	19.30	26.70	47.67	63.42	5.58	6.02	8.40	10.10
T ₆ : Acc.6 (R2-92)	27.33	30.98	42.32	55.39	8.72	9.33	12.77	14.23
T ₇ : Acc.7 (MR1-4)	19.35	26.32	41.55	65.80	5.40	5.92	7.50	9.92
T ₈ : Acc.8 (MR2-3)	23.27	34.32	49.14	67.97	5.87	6.47	8.62	10.40
T ₉ : Acc.9 (MR2-7)	17.08	26.44	38.77	53.67	6.10	6.80	7.58	9.43
T ₁₀ : Acc.10 (SR5-15)	16.67	26.59	44.95	56.77	5.73	6.15	9.25	11.38
T ₁₁ : Acc.11 (SR7-7)	14.95	21.94	34.54	50.67	5.92	6.58	8.67	9.93
T ₁₂ : Acc.12 (SR8-9)	15.02	19.42	32.34	45.19	5.85	6.40	8.78	10.23
T ₁₃ : Acc.13 (SR9-3)	16.93	21.70	32.29	43.54	4.93	5.35	6.68	7.60
T ₁₄ : Acc.14 (<i>Musa laterita</i>)	13.95	21.85	33.45	47.02	6.75	7.32	9.22	11.07
T ₁₅ : Acc.15 (<i>Musa ornata</i>)	16.49	24.98	36.34	47.84	6.48	6.95	10.00	11.28
Mean	19.13	25.82	41.63	57.64	6.10	6.63	8.89	10.57
SEm±	0.80	1.22	2.88	3.57	0.32	0.34	0.50	0.37
CD at 5%	2.43	3.69	8.73	10.81	0.98	1.02	1.50	1.13

Underlying Pseudo stem colour

Ornamental banana accessions exhibited variations concerning underlying pseudo stem colour (Table 2). Light green colour pseudo stem was observed in accessions 1, 2, 8, 9, 10 and 14. The green underlying pseudo stem was found in accessions 3, 5, 11, 12 and 15 whereas, Acc.13 was cream coloured underneath its pseudo stem. Purplish light green was observed on the underlying pseudo stem in Acc.4 while accessions 6 and 7 were found to be in reddish light green on the underlying pseudo stem.

Clasping nature

The observations on clasping nature indicated that all the accessions had pseudo stem with non-clasping petioles, except Acc.14 wherein pseudo stem showed clasping petiole (Table 2). The clasping nature of the accessions was observed at the meeting point of petiole and pseudo stem. Acc. 14 i.e., *Musa laterita* exhibited inherited character of clasped petioles distinguishing it from the rest of accessions.

Leaf length (cm)

It was evident from the results that there was significant variation among the accessions for leaf length (Table 3). At 30 DAP, maximum leaf length was observed in Acc.7 (37.93 cm) followed by Acc.14 (34.95 cm) and minimum leaf length was observed in Acc.1 (18.53 cm). The leaf length at 60 DAP was maximum in Acc.7 (49.35 cm) followed by Acc.14 (43.67 cm) while minimum leaf length was observed in Acc.1 (22.80 cm). At 90 DAP, the leaf length ranged from 58.00 cm in Acc.7 to 31.30 cm in Acc.13, with a grand mean of 43.76 cm. Maximum leaf length was recorded in Acc.7 (58.00 cm) which was found at par with Acc.14 (54.50 cm). Minimum leaf length was recorded in Acc.13 (31.30 cm). Data on leaf length at 120 DAP showed that maximum leaf length was recorded in Acc.7 (61.42 cm) followed by Acc.6 (57.72 cm) and minimum leaf length was recorded in Acc.13 (36.63 cm). Similar results were reported by Hazmin (2007) [4] in *Musa ornata*, *M. laterita*, and *Ensete ventricosum* under Kerala conditions. Thirugnanavel *et al.* (2018) [16] findings are in line with the above results in wild banana species. Smisha and Sabu (2017) stated identical findings in *Musa × calicutensis*.

Table 2: Underlying colour and clasping nature of pseudo stem in ornamental banana accessions in Godavari zone of Andhra Pradesh

Accessions	Pseudo stem	
	Underlying colour	Clasping nature
T ₁ : Acc.1 (R1-8)	Light green	Non-clasping
T ₂ : Acc.2 (R1-11)	Light green	Non-clasping
T ₃ : Acc.3 (R1-76)	Green	Non-clasping
T ₄ : Acc.4 (R2-9)	Purplish light green	Non-clasping
T ₅ : Acc.5 (R2-52)	Green	Non-clasping
T ₆ : Acc.6 (R2-92)	Reddish light green	Non-clasping
T ₇ : Acc.7 (MR1-4)	Reddish light green	Non-clasping
T ₈ : Acc.8 (MR2-3)	Light Green	Non-clasping
T ₉ : Acc.9 (MR2-7)	Light green	Non-clasping
T ₁₀ : Acc.10 (SR5-15)	Light green	Non-clasping
T ₁₁ : Acc.11 (SR7-7)	Green	Non-clasping
T ₁₂ : Acc.12 (SR8-9)	Green	Non-clasping
T ₁₃ : Acc.13 (SR9-3)	Cream	Non-clasping
T ₁₄ : Acc.14 (<i>Musa laterita</i>)	Light Green	Clasping
T ₁₅ : Acc.15 (<i>Musa ornata</i>)	Green	Non clasping

Leaf width (cm)

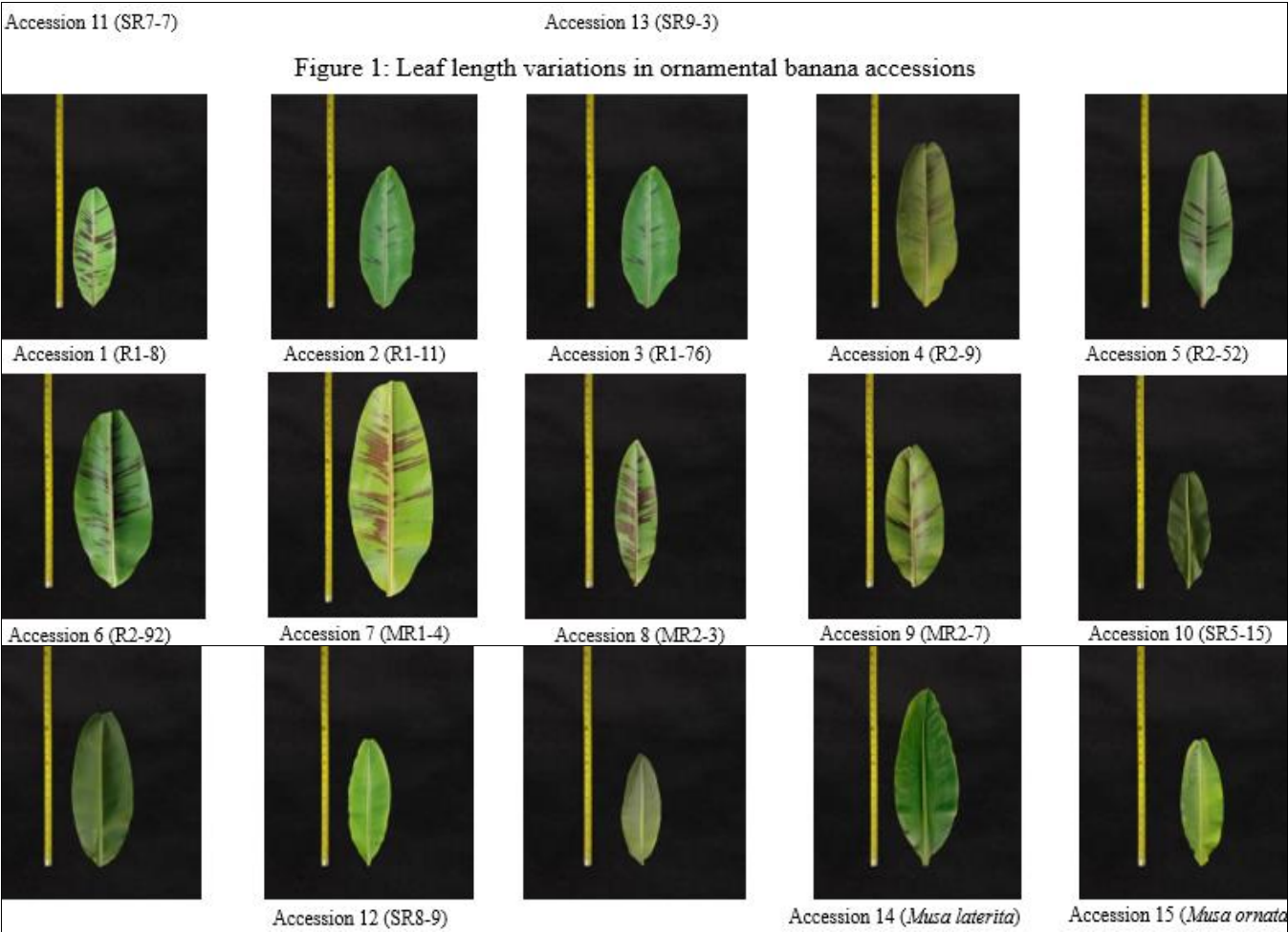
The data obtained for leaf width at 30,60,90 and 120 showed significant variation between the accessions (Table 3). At 30 DAP, leaf width ranged from 8.97 cm to 17.58 cm. Maximum leaf width was observed in Acc.14 (17.58 cm) which was at par with Acc.7 (16.28 cm) while minimum leaf width was recorded in Acc.13 (8.97 cm). The maximum leaf width was recorded in Acc.7 (23.32 cm) at 60 DAP which was at par with Acc.14 (22.34 cm) whereas minimum leaf width was recorded in Acc.13 (11.45 cm) which was at par with Acc.3 (12.92 cm). Leaf width at 90 DAP was recorded maximum in Acc.7 (28.15 cm) which was at par with Acc.14 (26.93 cm) and minimum leaf width was

recorded in Acc.13 (15.38 cm). Maximum leaf width at 120 DAP was recorded in Acc.7 (33.83 cm) which was found to be at par with Acc.14 (32.63 cm) whereas minimum leaf width was recorded in Acc.13 (20.08 cm).

Souza *et al.* (2011) ^[13] morphologically characterized banana accessions with ornamental potential under Brazil conditions and reported variations in leaf width of thirty-one accessions which also included *Musa* species viz., *Musa balbisiana*, *M. basjoo*, *M. coccinea*, *M. laterita*, *M. ornata*, *M. rubra* and *M. velutina*. Thirugnanavel *et al.* (2018) ^[16] also found the existence of variation in leaf width among wild *Musa* species and hybrids.

Table 3: Leaf length (cm), leaf width (cm), leaf area (cm²) and petiole length (cm) in ornamental banana accessions in Godavari zone of Andhra Pradesh

Accessions	Leaf length (cm)				Leaf width (cm)				Leaf area (cm ²)				Petiole length (cm)			
	30 DAP	60 DAP	90 DAP	120 DAP	30 DAP	60 DAP	90 DAP	120 DAP	30 DAP	60 DAP	90 DAP	120 DAP	30 DAP	60 DAP	90 DAP	120 DAP
T ₁ : Acc.1 (R1-8)	18.53	22.80	36.90	49.80	9.72	13.49	20.67	25.00	144.05	245.75	610.20	995.70	9.47	11.60	12.88	14.73
T ₂ : Acc.2 (R1-11)	24.65	34.83	47.55	54.98	10.82	15.00	22.37	27.03	213.35	418.22	850.72	1189.15	8.27	9.95	11.28	13.48
T ₃ : Acc.3 (R1-76)	19.78	26.60	39.03	46.40	10.82	12.92	22.37	26.72	171.06	275.15	698.70	991.57	7.38	8.30	9.70	10.97
T ₄ : Acc.4 (R2-9)	33.38	41.57	51.65	57.67	13.45	15.27	20.95	26.33	358.92	508.99	865.30	1214.30	9.76	12.23	13.65	14.98
T ₅ : Acc.5 (R2-52)	28.48	36.55	47.15	56.57	11.68	15.60	17.55	23.07	266.31	456.28	661.47	1046.03	8.95	10.22	12.50	13.23
T ₆ : Acc.6 (R2-92)	34.18	43.17	52.75	57.72	13.52	17.84	22.92	27.47	370.27	616.30	966.80	1268.31	6.25	8.08	9.68	10.47
T ₇ : Acc.7 (MR1-4)	37.93	49.35	58.00	61.42	16.28	23.32	28.15	33.83	495.63	922.08	1277.62	1663.14	7.32	8.70	10.20	11.05
T ₈ : Acc.8 (MR2-3)	28.83	38.20	44.77	52.08	12.70	16.80	20.60	24.55	292.69	513.01	737.14	1022.40	8.50	9.47	11.07	11.87
T ₉ : Acc.9 (MR2-7)	25.92	33.65	39.67	45.15	14.82	18.95	26.05	31.05	307.81	509.48	836.20	1124.95	6.72	8.20	8.97	9.88
T ₁₀ : Acc.10 (SR5-15)	20.23	26.17	34.72	38.93	14.87	18.47	25.98	31.07	240.57	387.33	720.65	967.15	7.45	9.63	11.03	11.82
T ₁₁ : Acc.11 (SR7-7)	29.20	35.84	44.42	53.15	12.47	17.57	24.82	30.68	290.92	505.33	885.10	1306.04	7.37	10.15	10.87	11.60
T ₁₂ : Acc.12 (SR8-9)	25.88	30.32	36.48	43.25	11.18	16.37	21.48	26.28	232.59	397.14	628.32	910.84	8.33	10.33	11.57	12.45
T ₁₃ : Acc.13 (SR9-3)	24.82	27.67	31.30	36.63	8.97	11.45	15.38	20.08	177.31	253.56	384.82	589.26	9.13	11.00	13.23	14.03
T ₁₄ : Acc.14 (<i>Musa laterita</i>)	34.95	43.67	54.50	57.29	17.58	22.34	26.93	32.63	492.77	783.31	1174.03	1497.18	5.92	6.88	7.90	8.83
T ₁₅ : Acc.15 (<i>Musa ornata</i>)	19.35	24.25	37.57	44.45	13.10	16.97	21.18	26.25	203.26	330.27	640.81	937.07	7.50	9.13	11.03	11.85
Mean	27.08	34.31	43.76	50.37	12.80	16.82	22.49	27.47	283.83	474.81	795.86	1114.87	7.89	9.59	11.04	12.08
SEm±	0.95	0.99	1.42	1.12	0.48	0.57	0.57	0.86	17.94	27.70	39.50	48.21	0.19	0.29	0.24	0.31
CD at 5%	2.88	3.01	4.32	3.39	1.46	1.72	1.72	2.62	54.42	84.02	119.81	146.23	0.58	0.9	0.74	0.95



Leaf area (cm²)
The differences in leaf area among the accessions under study were tested significantly at 30, 60, 90 and 120 DAP (Table 3). The highest leaf area was recorded in Acc.7 (495.63 cm²) and was found to be at par with Acc.14 (492.77 cm²) at 30 DAP while the lowest leaf area was recorded in Acc. 1 (144.05 cm²). Maximum leaf area at 60 DAP was observed in Acc.7 (922.08 cm²) followed by Acc.14 (783.31 cm²) whereas minimum leaf area was observed in Acc.1 (245.75 cm²). At 90 DAP, maximum leaf area was recorded in Acc.7 (1277.62 cm²) which is at par with Acc.14 (1174.03 cm²) and minimum leaf area was recorded

in Acc.13 (384.82 cm²). Leaf area was recorded highest in Acc.7 (1663.14 cm²) at 120 DAP followed by Acc.14 (1497.18 cm²) and lowest leaf area was recorded in Acc.13 (589.26 cm²). The variations in leaf parameters could be due to rapid cell division, genotype heritability, leaf position on the plant and environmental factors such as light, temperature and physiological factors viz., chlorophyll content and photosynthetic rate. An increase in leaf length and leaf width was also accountable for variations in leaf area among the accessions.

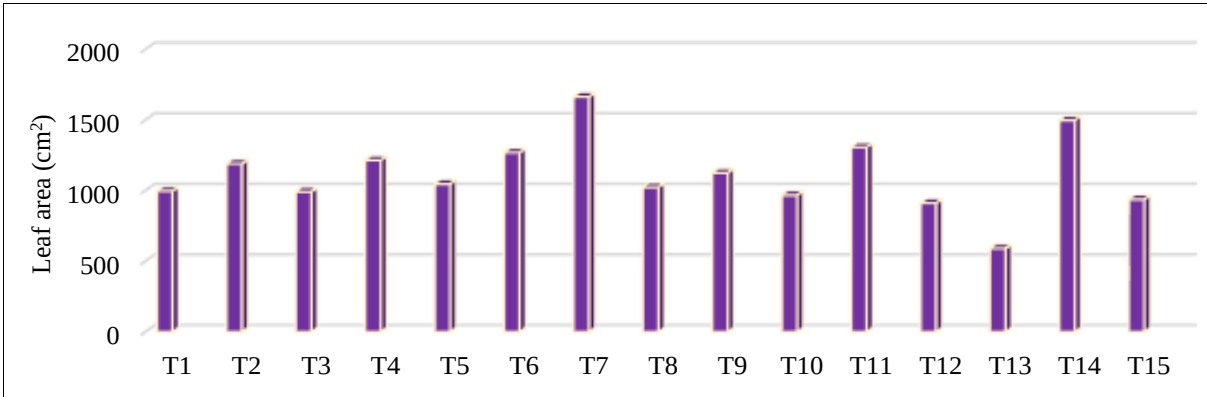


Fig 2: Leaf area (cm²) in ornamental banana accessions in Godavari zone of Andhra Pradesh at 120 DAP.

T ₁ : Acc.1 (R1-8)	T ₆ : Acc.6 (R2-92)	T ₁₁ : Acc.11 (SR7-7)
T ₂ : Acc.2 (R1-11)	T ₇ : Acc.7 (MR1-4)	T ₁₂ : Acc.12 (SR8-9)
T ₃ : Acc.3 (R1-76)	T ₈ : Acc.8 (MR2-3)	T ₁₃ : Acc.13 (SR9-3)
T ₄ : Acc.4 (R2-9)	T ₉ : Acc.9 (MR2-7)	T ₁₄ : Acc.14 (<i>Musa laterita</i>)
T ₅ : Acc.5 (R2-52)	T ₁₀ : Acc.10 (SR5-15)	T ₁₅ : Acc.15 (<i>Musa ornata</i>)

Similar studies were done by Hazmin (2007) ^[4] in *Musa ornata*, *Musa. laterita* and *Ensete ventricosum*. Uma *et al.* (2003) ^[17] reported a disparity in leaf area between a wild diploid banana and commercial banana accessions.

Petiole length (cm)

Significant variation was observed in petiole length among the Accessions. The mean petiole length increased from 7.89 cm at 30 DAP to 12.08 cm at 120 DAP (Table 3). Longest petiole was measured in Acc.4 (9.76 cm) at 30 DAP was found to be at par with Acc.1 (9.47 cm) while shortest petiole was observed in Acc.14 (5.92 cm) which was at par with Acc.9 (6.72 cm). At 60 DAP, length of the petiole was recorded maximum in Acc.4 (12.23 cm) which is at par with Acc.1 (11.60 cm) whereas minimum petiole length was recorded in Acc.14 (6.88 cm). The grand mean of petiole length at 60 DAP was 9.59 cm. Petiole length ranged from 7.90 cm in Acc.14 to 13.65 cm in Acc.4 at 90 DAP. Longest petiole was recorded in Acc.4 (13.65 cm) which was found to be at par with Acc.13 (13.23 cm) whereas shortest petiole length was recorded in Acc.14 (7.90 cm). The mean petiole length at 90 DAP was 11.04 cm. At 120 DAP, petiole length was recorded maximum in Acc.4 (14.98 cm) which was at par with Acc.1 (14.73 cm), while Acc.14 (8.83 cm) recorded minimum petiole length.

Shorter petioles point to the compactness and density of the plant pertaining to ornamental banana which could be an essential feature for potted plants, while longer petioles give an expanded look to the plant (Safeena *et al.*, 2023) ^[10]. The results are in line with the findings of Sankari *et al.* (2016) ^[11] in *Heliconia* under Eastern Ghats conditions. Similar studies were reported by Hakkinen and Meekiong (2005) ^[3] in *Musa borneensis* Becc. and in *Musa itinerans* by Hakkinen *et al.* (2008) ^[1].

Conclusion

The present study revealed a significant variation among the ornamental banana accessions regarding vegetative parameters. Dwarf pseudostem is a common criterion for potted plants that prevails in ornamental banana accessions which can be concluded from the obtained results. Minimum pseudo stem height was recorded in Acc.13 (SR9-3), Acc.12 (SR8-9), Acc.3 (R1-76), Acc.11 (SR7-7), Acc.14 (*Musa laterita*) and Acc.15 (*Musa ornata*) whereas pseudo stem girth recorded maximum in Acc.6 (R2-92) and minimum in Acc.13 (SR9-3), followed by Acc.3 (R1-76), and maximum leaf length, leaf width and leaf area were recorded in Acc.7 (MR1-4) followed by Acc.9 (MR2-7) thus, making it suitable for potted plants and landscaping purposes.

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