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PERFORMANCE OF NERIUM ACCESSIONS IN GODAVARI ZONE OF ANDHRA PRADESH INDIA

V. Chaitanya[1]*, A.V.D. Dorajee Rao[2], T. Suseela[1] and P. Subbaramamma[1]

[1]Dr. Y.S.R Horticultural University, COH-Venkataramannagudem-534101, A.P., India

[2]Associate Dean, Dr. Y.S.R Horticultural University, COH-Venkataramannagudem-534101, A.P., India

*Corresponding author E-mail: veeramallachaitanya276@gmail.com

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ABSTRACT

The present study evaluated the performance of seventeen nerium accessions in Godavari zone of Andhra Pradesh for characters like plant height, internodal length, leaf producing interval, days for flower initiation and *in situ* life of flower on plant. The field was laid out in Randomized Block Design (RBD) with two replications at College of Horticulture, Venkataramannagudem during 2024-2025. Data were recorded at 30, 60, 90, 120, 150 and 180 days after planting. All the accessions exhibited significant variation in the vegetative and floral attributes. Statistical analysis of data revealed that plant height was recorded highest in the accession T_5: YSRN5, internodal length was recorded maximum in T_8: YSRN 11, leaf producing interval was lowest in T_5: YSRN 5, days taken for flower initiation was lowest in the accession T_7: YSRN 9, *in situ* life of flower was maximum in the accession T_7: YSRN 9, flower bud length was maximum in the accession T_7: YSRN 9.

***Key words*:** nerium, accessions, leaf, Flower

Introduction

The world's largest producer of loose flowers is India. In the Indian flower market, flowers such as jasmine, marigold, tuberose, chrysanthemum, and minor flowers like nerium are among the loose flowers which are in high demand. Even lesser-known crops are now important to the market for a variety of reasons. In this regard, nerium holds a prominent place in the conventional market for loose flowers.

Now-a-days nerium has emerged as a potential loose/ traditional flower crop for cultivation since the flowers are commonly used for worshiping, garland and veni preparation. Nerium (*Nerium oleander* L.) is an evergreen shrub belonging to the family Apocynaceae native to Northern Africa and Mediterranean region. Globally, it is well acclaimed as ornamental due to its abundant and long-lasting flowering habit and for its heat, salinity and drought tolerance capacity (Adome *et al.*, 2003). *Nerium oleander* is one of the important ornamental flowering shrubs which finds a place in all gardens. The ornamental shrub is suitable for commercial cultivation all over the tropical region. They are preferred for growing as shrubs in the garden along a boundary wall to mask some areas of lawn.

Nerium is a highly significant evergreen ornamental shrub used in both urban and periurban landscaping because of its amazing flowers which can vary in color depending on the variety and for its ability to withstand extended drought conditions as the long roots enable the plant to absorb water from deep resources The nerium's aesthetic value, coupled with its resistance to drought, harsh winds and air pollution makes it a useful plant for a variety of urban settings, including gardens and nerium can also be used as windbreak and for screening purposes.

Proper selection of nerium accessions is critical for success and expected to increase yield by enhancing the number and size of flowers. Cultivars that respond well in local climatic conditions protect themselves from the depredation of insect, pest and diseases and as result, vigorous growth occurs to face the seasonal hazards. The selection of suitable cultivars depends on the purpose for which crop has to be grown *i.e.* loose flowers,

ornamental shrubs and pot culture *etc.* Adaptability to local agro-climatic conditions also plays a major role in selection process.

Material and Methods

The experiment was laid out in Randomized Block Design with two replications under open field conditions at College of Horticulture, Dr. Y.S.R Horticultural University, Venkataramannagudem, West Godavari district, Andhra Pradesh, India. 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 16.88º north latitude and 81.45º east longitude with a hot humid summer and mild winter climate. The study included seventeen accessions viz., YSRN 1, YSRN 2, YSRN 3, YSRN 4, YSRN 5, YSRN 7, YSRN 9, YSRN 11, YSRN 12, YSRN 16, YSRN 17, YSRN 20, YSRN 22, Local Cultivar 1, Local Cultivar 2, Local Cultivar 3 and Local Cultiivar 4. Observations were recorded on vegetative and floral attributes viz., plant height, internodal length, leaf producing interval, days taken for flower initiation, *In situ* life of flower on plant, flower bud length and flower colour and statistically analyzed.

Plant height (cm)

Plant height was measured from the ground level to the terminal end of the plant. The plant height was measured in the month of February, March, April and May of 2025. The mean was calculated and expressed in centimetre (cm).

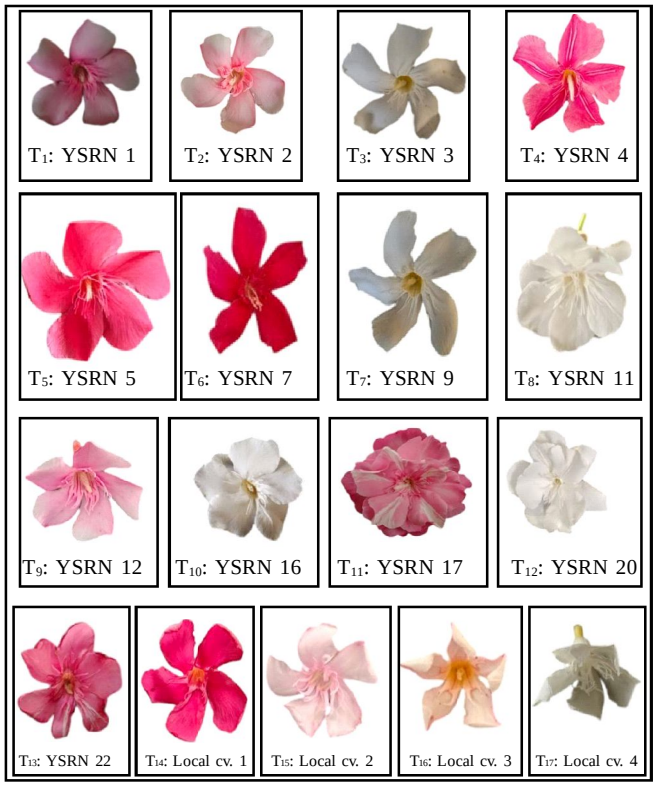

Plate 2: Flower colour of nerium accessions under study.

Table 1: Vegetative characters of nerium accessions under study.

Accession	Plant height at 180 DAP	Internodal length at 180 DAP	Leaf producing interval (days)
T_1: YSRN 1	90.45	5.51	5.20
T_2: YSRN 2	101.90	5.28	4.80
T_3: YSRN 3	89.55	4.86	5.50
T_4: YSRN 4	93.20	5.36	6.50
T_5: YSRN 5	124.40	5.80	4.00
T_6: YSRN 7	105.15	5.69	5.00
T_7: YSRN 9	92.00	5.53	4.20
T_8: YSRN 11	98.55	5.95	6.30
T_9: YSRN 12	104.75	5.27	4.80
T_{10}: YSRN 16	92.05	5.41	5.70
T_{11}: YSRN 17	119.45	5.14	5.30
T_{12}: YSRN 20	86.90	5.19	5.90
T_{13}: YSRN 22	88.40	5.21	4.70
T_{14}: Local Cultivar 1	53.45	2.97	7.80
T_{15}: Local Cultivar 2	42.15	1.77	8.50
T_{16}: Local Cultivar 3	53.65	2.73	7.00
T_{17}: Local Cultivar 4	67.90	2.46	8.60
Mean	**88.46**	**4.71**	**5.99**
SEm±	1.66	0.08	0.32
CD@5%	4.98	0.28	0.95

Internodal length (cm)

The distance between the two nodes was measured, mean was calculated and expressed in centimetre (cm). The internodal length was recorded for six times during the experiment. The mean was calculated and expressed in centimetre (cm).

Leaf producing interval

Number of days taken from the initiation of leaf to the initiation of another consecutive leaf on the same branch was counted, expressed in days and the average was worked out.

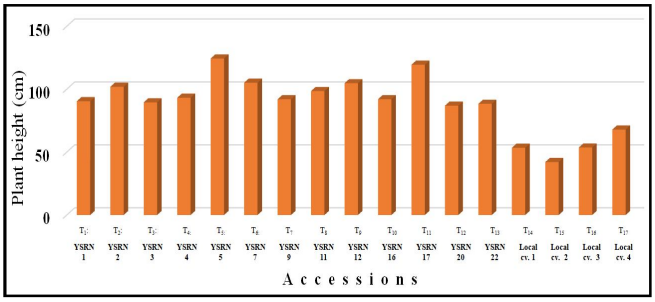

Fig. 1: Plant height (cm) of nerium accessions under study at 180 DAP.

Table 2: Flowering characters of nerium accessions under study.

Accession	Days taken for flower initiation	*In situ* Life of flower on plant (Days)	Flower bud length (cm)	Flower Code*	Flower Colour
T_1: YSRN 1	107.30	5.20	2.53	68C	Medium to dark pink
T_2: YSRN 2	85.10	4.80	2.87	58D	Medium to dark pink
T_3: YSRN 3	88.70	5.50	3.56	NN1555C	White
T_4: YSRN 4	112.40	4.50	2.43	N66A	Pink red
T_5: YSRN 5	108.20	6.00	2.55	58A	Pink red
T_6: YSRN 7	142.10	5.00	2.44	N57B	Red
T_7: YSRN 9	44.70	6.20	3.91	NN155D	White
T_8: YSRN 11	113.70	4.30	1.97	NN155D	White
T_9: YSRN 12	50.20	5.80	2.67	68D	Medium to dark pink
T_{10}: YSRN 16	128.80	4.70	2.25	NN155B	White
T_{11}: YSRN 17	107.10	5.30	1.55	68B	Medium to dark pink
T_{12}: YSRN 20	120.40	4.90	2.34	NN155D	White
T_{13}: YSRN 22	157.70	5.70	1.45	64D	Medium to dark pink
T_{14}: Local Cultivar 1	54.30	3.80	2.42	N57B	Red
T_{15}: Local Cultivar 2	52.90	3.50	2.65	69C	Light pink
T_{16}: Local Cultivar 3	62.00	4.00	2.39	65B	Light pink
T_{17}: Local Cultivar 4	61.90	3.60	2.68	155B	White
Mean	**93.97**	**4.95**	**2.51**		
SEm±	4.13	0.21	0.06		
CD@5%	12.40	0.62	0.18*		
*As per RHS colour chart.					

Days taken for flower initiation

The number of days taken from the date of transplanting to the date of first flower initiation was counted and analysed statistically.

***In situ* life of flower on plant**

Mature, healthy flower buds of similar size were randomly selected from each plant accession when they reached the pre-anthesis stage. Number of days that the flower remains in marketable condition on plant after the anthesis of flower was counted and considered as *in situ* life of flower on plant (or) flower longevity and the average was worked out.

Flower bud length

The bud length was measured in matured bud with help of scale from the point of attachment of pedicel to tip of bud. The average was calculated and expressed in centimetre (cm).

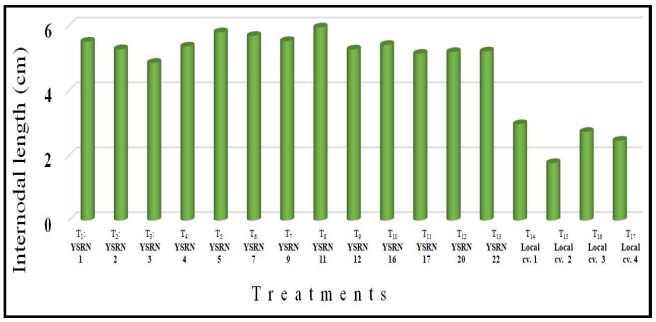

Fig. 2: Internodal length (cm) of nerium accessions under study at 180 DAP.

Flower colour

The colour of the flower with largest surface area was noted by using Royal Hoticultural university colour chart.

Treatment details	
Accession	**Accession details**
T_1	YSRN 1
T_2	YSRN 2
T_3	YSRN 3
T_4	YSRN 4
T_5	YSRN 5
T_6	YSRN 7
T_7	YSRN 9
T_8	YSRN 11
T_9	YSRN 12
T_{10}	YSRN 16
T_{11}	YSRN 17
T_{12}	YSRN 20
T_{13}	YSRN 22
T_{14}	Local Cultivar 1
T_{15}	Local Cultivar 2
T_{16}	Local Cultivar 3
T_{17}	Local Cultivar 4

Results and Discussions

Plant height

The accession T_5: YSRN5 exhibited significantly maximum plant height (124.40 cm) on par with T_{11}: YSRN 17 (119.45 cm). The lowest plant height (42.15 cm) was recorded in T_{15}: Local Cultivar 2 at 180 DAP.

Internodal length (cm)

Among the accessions, T_8: YSRN 11 (5.95cm) exhibited maximum internodal length which was on par with T_5: YSRN5 (5.80 cm) whereas, the lowest internodal length (1.77 cm) was recorded in T_{15}: Local Cultivar 2 at 180 DAP.

Such a variation in plant height among the nerium accessions under the present investigation might be due to genetic factors coupled with influence of environmental conditions which could have increased internodal length and eventually the plant height. Similar variation in plant height and internodal length was also observed in nerium accessions among the reports made by Rajiv *et al*., (2018), Gopitha *et al*., (2019), Priyanka *et al*., (2017) in crossandra, Samanta *et al*., (2014) in *Tabernaemontana coronaria* and Soujanya *et al*., (2018) in roses.

Leaf producing interval

The accession T_5: YSRN 5 recorded significantly least number of days (4 days) for producing consecutive leaves on the same branch which was on par with T_7: YSRN 9 (4.20), T_{13}: YSRN 22 (4.70) and T_2: YSRN 2 (4.80) while accession T_{17}: Local cultivar 4 took maximum number of days (8.6 days) for producing consecutive leaves on the same branch among the accessions. Meristematic activity regulates the rate of leaf production and is impacted by genetic variation across nerium accessions. Shorter leaf-producing intervals were typically found in accessions with quicker rates of cell division and elongation. These results are found similar to those reported earlier by Rashidha *et al*., (2021) in aglaonema.

Days taken for flower initiation

In the present study, T_7: YSRN 9 significantly took least number of days for flower initiation (44.7 days) which was on par with T_{15}: Local Cultivar 2 (52.90 days) and T_{14}: Local cultivar 1 (54.30 days) whereas, T_{13}: YSRN 22 maximum number of days (157.7 days) for flower initiation. These results are in conformity with those reported by Srilatha *et al.*, (2015) in chrysanthemum.

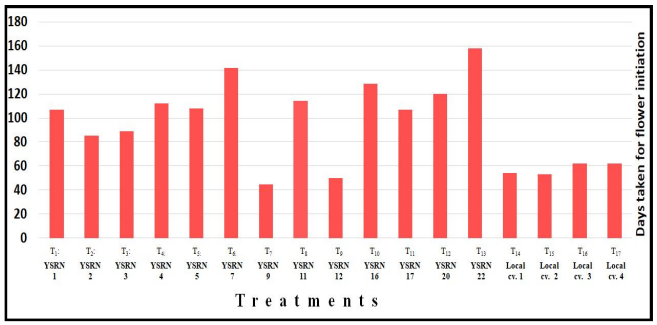

Fig. 3: Days taken for flower initiation of nerium accessions under.

In situ life of flower on plant

Among all the accessions T_7: YSRN 9 recorded significantly the highest number of days as the longevity of flower on plant (6.20 days) which was on par with T_5: YSRN 5 (6.00 days) and T_9: YSRN 12 (5.80 days), whereas, T_{15}: Local cultivar 2 recorded the least number of days as the longevity of flower on plant (3.50 days). These variations might be due to the genetic composition and environmental factors that exerted influence on the physiological functions of the flower such as cell turgidity, water loss through evapotranspiration and the breakdown of reserve carbohydrates, which determines the flower's shelf life. Narsude *et al*., (2010) in marigold and Saniya *et al*., (2021) in gaillardia reported similar outcomes.

Flower colour

The accessions YSRN 9, YSRN 11, YSRN 16, YSRN 20 and Local Cultivar 4 possessed white coloured flowers, Local Cultivar 2 and Local Cultivar 3 possessed light pink colour flowers, YSRN 1, YSRN 2, YSRN 12, YSRN 17, YSRN 22 were found to bear medium to dark pink flowers, YSRN 4 and YSRN 5 possessed pink red colour flowers whereas, YSRN 7 and Local Cultivar 1 produced red coloured flowers. The colour of the flowers and the number of petal whorls are crucial while choosing a cultivar for a given choice. Gardeners and nurserymen choose cultivars by flower colour and on the number of whorls. The commonly cultivated nerium varieties are generally pink in colour. Variations in the colour adds to the value of an ornamental especially when it is a flowering shrub with evergreen foliage such as nerium. These findings are similar to those reported by Panwar

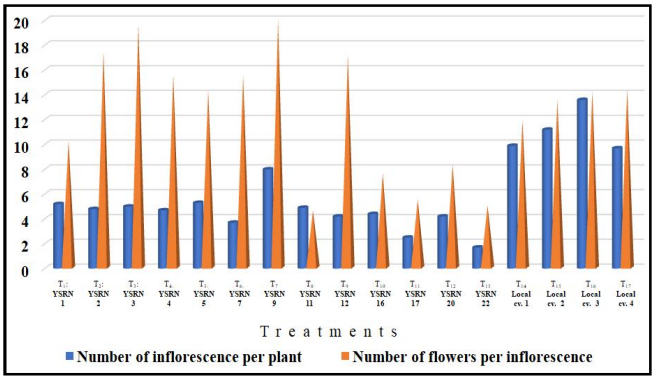

Fig. 4: Numberof flowers per inflorescence and number of inflorescences per plant of nerium accessions under study.

et al., (2012) who grouped thirtytwo rose genotypes into 13 categories and distinguished them based on flower colour.

Flower bud length

Among all the accessions T_7: YSRN 9 had recorded significantly the maximum bud length (3.91 cm) followed by T_3: YSRN 3 (3.56 cm) whereas, T_{13}: YSRN 22 had recorded the lowest flower bud length (1.45 cm). The results obtained in this study are in congruence with the findings of Rajiv *et al*., (2022) in nerium and Patel *et al*., (2017) in jasmine.

Conclusion

Considering the results, it can be concluded that in T_6: YSRN 9 was superior to all other accessions in respect of the highest number of flowers per inflorescence and number of inflorescences per plant. Other nerium accessions also showed significant variations in morphological observations.

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