

## EFFECT OF POT MIXTURE ON FLOWERING IN DENDROBIUM DENSIFLORUM

M. Talukdar  
Assam Agricultural University  
Jorhat-785 013  
Assam, India

S. Barooah  
Assam Agricultural University  
Jorhat-785 013  
Assam, India

### Abstract

Seven different pot mixture treatments were tested in *Dendrobium densiflorum* and nine floral characters viz, days for flower bud emergence (FBE), days for emergence of flower, days from FBE to flower emergence, number of flowers per spike, length of spike, length of flower stalk, length of flower, breadth of flower and days from emergence of flower to dehiscence were studied. A combination of 'sawdust, charcoal, brickpiece and moss' and that of 'coconut fibre and moss' were observed to induce superior flowering in this orchid species as revealed from high mean performance of these two treatments for length characters, number of flowers per spike and the blooming period. Further, the lasting quality of flowers was observed to be dependent on early emergence of flower bud and flower emergence in this orchid species.

### 1. Introduction

Orchids constitute one of the inseparable components of the wonderful natural heritage of the North Eastern India. Around 550 species of orchids belong to this region and out of these the epiphytic species *Dendrobium densiflorum* has considerable significance.

Potting of orchid is considered important for its handling and transporting at ease, for indoor decoration and for its commercial value. Successful orchid growing depends primarily on the correctness in the composition of potting medium. Several workers including Mayer(1951), Sheehan(1960) and Hegde(1981) studied the effect of different pot mixtures on the growth and flowering behaviour of different epiphytic and terrestrial orchids and recommended suitable potting media. But still these studies provide insufficient knowledge about the potting media for different types of orchids. This is a limiting factor in the large scale cultivation of orchid particularly *Dendrobium densiflorum* in North Eastern India.

Keeping these in view, the study was undertaken with the prime objective of identifying pot mixture composition for superior flowering in *Dendrobium densiflorum*. Furthermore, the study was also designed to generate information on the nature of association of duration for flower bud emergence, emergence of flower and from flower bud emergence to flower emergence with floral characters in this species.

## 2. Material and methods

The experiment comprising of seven pot mixture treatments was laid out in Completely Randomized Design with 5 replications for each treatment. Side perforated 20cm earthenware pots each accommodating single plant were used. The pot mixture treatments were : T1(Coconut fibre, moss), T2(Sawdust, charcoal, brickpiece, moss), T3(Charcoal, moss), T4(Brickpiece, moss), T5(Coconut fibre, charcoal, moss), T6(Coconut fibre, brickpiece, moss) and T7(Coconut fibre, charcoal, brickpiece, moss). The potting material in equal proportion by volume were mixed thoroughly and pots were filled up holding the plants. After potting sufficient water was sprinkled over each pot. The experiment was conducted from June, 1981 to March 1982 in a thatched roofed well ventilated orchid house in the orchard of the Assam Agricultural University, Jorhat, India. The pots of different treatments were arranged in bamboo racks of the orchid house. The pots were watered daily during the course of experiment and the occasionally emerged weeds were removed.

Observations were recorded for 9 floral characters, viz., days for flower bud emergence(FBE), days for emergence of flower, days from FBE to flower emergence, number of flowers per spike, length of spike (in cm), length of flower stalk (in cm), length of flower (in cm), breadth of flower (in cm) and days from emergence of flower to dehiscence. Three flowers per spike were randomly sampled for taking observations and mean was worked out over 5 plants for each treatment.

Since all the treatments did not induce flowering, differences among the treatments which beared flowers were tested for significance by t-test. Correlation coefficients were estimated to study the nature of association between days for FBE, days for emergence of flower and days from FBE to flower emergence and the rest of the floral characters.

## 3. Results

The pot mixture treatments which induced flowering were T1, T2, T4 and T7 (Table 1). The minimum duration for FBE and emergence of flower was recorded for T1 followed by T3; while the duration from FBE to flower emergence was maximum for T3 followed by T1. The treatment T3 further exhibited highest mean performance for all the three length characters and high performance for number of flowers per spike. The treatment T1 on the other hand produced highest number of flowers per spike. Furthermore, the flowers of T1 followed by T3 bloomed for maximum number of days. Therefore, it could be inferred that T3 and T1 were the two most superior treatments for inducing better flowering in *Dendrobium densiflorum*.

The correlation coefficients between days for FBE, days for emergence of flower and days from FBE to flower emergence and other floral characters were estimated and presented in Table 3. Both the days for FBE and days for emergence of flower exhibited significant negative association with days from flower emergence to dehiscence. All other correlation coefficients were observed to be non significant.

#### 4. Discussion

The differential effect of pot mixture treatments on flowering in *Dendrobium densiflorum* was evident from the findings that out of the seven treatments studied, flowering was induced by four treatments only. Further there was sufficient variation for different floral characters in the four treatments which induced flowering. Evidently 'Sawdust, charcoal, brickpiece and moss' (T3) and 'Coconut fibre and moss' (T1) appeared to induce better flowering potentiality in *Dendrobium densiflorum*. These two treatments not only induced early flowering and longer blooming but also caused longer spike and flower with increased number of flowers. Thus apparently sawdust, charcoal, brickpiece, coconut fibre and moss can be regarded as ideal material for incorporation in the potting media in this epiphytic species. Bhattacharjee and Mukherjee (1981) observed increased number of flowers per stalk and higher longevity of flowers of epiphytic species on 'charcoal and tree fern fibre' or 'charcoal, brickpiece and tree fern fibre' all in equal proportions. Charcoal is a bad conductor of heat and electricity and it purifies impurities of atmosphere. Brickpieces help in proper drainage, whereas coconut fibre, sawdust and moss conserve moisture for uniform supply of water to the plant.

The association among the floral attributes revealed that longer blooming period in this epiphytic orchid species was dependent on early flower bud emergence and early emergence of flower. It corroborated the findings that the two superior pot mixture treatments in the present investigation which induced early flower bud emergence and early emergence of flower also induced longer blooming period.

#### References

- Bhattacharjee, S.K., and Mukherjee, T., 1981. Effect of potting media on growth and flowering of some epiphytic and terrestrial orchids. *Haryana J.Hort.Sci.* 20:58-66.
- Hegde, S. 1981. Cultivation and conservation of 'Lost orchid'. *Indian Hort.* 25:7-10.
- Mayer, J.R. 1951. Transplanting orchid seedlings from culture vessel to pots containing fern fibre. *Biologics.* 17:99-102.
- Sheedan, T.J. 1960. Effect of nutrition and potting media on growth and flowering of certain epiphytic orchids. *Proc.3rd World Orchid Conf., London* : 211-218.

Table 1 - Mean performance for various floral characters in different treatment.

Character	Treatments			
	T1	T2	T4	T7
1. Days for FBE	239.00	274.40	292.00	300.00
2. Days for emergence of flower	269.00	310.40	317.00	323.00
3. Days from FBE to flower emergence	30.00	36.00	25.00	23.00
4. Number of flowers/spike	30.00	27.80	26.00	24.00
5. Length of spike (in cm)	16.20	17.80	12.50	9.50
6. Length of flower stalk (in cm)	2.25	3.38	2.98	1.70
7. Length of flower (in cm)	3.53	4.35	4.28	2.80
8. Breadth of flower (in cm)	2.73	2.67	2.78	2.70
9. Days from flower emergence to dehiscence	14.00	6.40	5.00	5.00

Character	Significant comparisons (t-test)
1.	All except T4 vs T7
2.	All except T4 vs T7
3.	All except T1 vs T2, T4 vs T7
4.	T1 vs T7
5.	All except T1 vs T2, T4 vs T7
6.	All except T2 vs T4, T4 vs T7
7.	T2 vs T7
8.	None
9.	T1 vs T2, T1 vs T4, T1 vs T7

Table 2 - Correlation coefficients of days for FBE, days for emergence of flower and days from FBE to flower emergence with other floral characters.

Correlation coefficient of	Correlation coefficient with		
	Days for FBE	Days for emergence of flower	Days from FBE to flower emergence
Number of flowers/spike	-0.05	-0.18	-0.27
Length of spike	-0.33	-0.22	0.34
Length of flower stalk	-0.19	0.03	0.54
Length of flower	-0.16	-0.66	0.31
Breadth of flower	-0.04	-0.19	-0.31
Days from flower emergence to dehiscence	-0.87**	-0.97**	0.08

\*\*P < 0.01