

Color analysis in flowers of some species of *Vanda* W. Jones ex R. Brown (Orchidaceae) with the help of RHS color chart

Geetamani Chhetri, L.C. De and R.P. Medhi

NRC for Orchids, ICAR, Pakyong, 737 106. Sikkim, India

[Received revised 25.04.2013; Accepted 13.05.2013]

Abstract

The present paper deals with the study of flower color of seven species of *Vanda* W. Jones ex R. Brown (Orchidaceae) with the help of RHS (Royal Horticultural Society of London), color chart in order to cite the exact color of different flower parts viz. sepals, petals, labellum (lip) and column.

Key words: *Vanda* flower color, RHS color chart

INTRODUCTION

The genus *Vanda* W. Jones ex R. Brown of Orchidaceae is represented by 80 species of which 16 are reported from India (De & Hajra 2004). However, Mabberley (2005) recorded only 45 species for this genus. Limansenla *et al* (2002) expressed that India is one of the major natural habitats of *Vanda* in the world with 13 species recorded so far. However, Karthikeyan *et al* (1989) reported 12 species and Rao & Sridhar (2007) reported 11 species from India. They are found scattered mostly in the hilly districts of Assam, Meghalaya, Arunachal Pradesh and West Bengal, Western Ghats, Garhwal and Andaman & Nicobar Islands (Bose *et al* 1999). The generic name is derived from the Sanskrit word 'Vandak' referring to *Vanda roxburghii* W. Jones ex R. Brown which is the synonym of *Vanda tessellata* (Roxburgh) W.J. Hooker ex D. Don and to the common parasite 'banda' meaning 'tied to the host'. Most striking character in the genus *Vanda* is the remarkable range of color in the flowers. Flowers are on a few to many-flowered racemes which originate at the leaf base. They are very attractive, due to such variable color and their unusual shapes. They are usually in variegated patterns of brown, blue, purple etc.

The color according to RHS (Royal Horticultural Society, London) chart of different floral parts viz. sepals, petals, labellum (lip) and column of seven different species of *Vanda* along with their flowering and fruiting time and distribution in India are provided in Table 1. *Vanda coerulea* Griffith ex Lindley commonly known as Blue Vanda is rare, featuring in IUCN Red List of Threatened Plants (Walter & Gillett 1988) as well as in Red Data Book of Indian Plants (Nayar & Sastry 1987 - 1990). Interestingly, white form of *Vanda coerulea* Griffith ex Lindley has been reported from the state of Manipur which is named as *Vanda*

coerulea f. *luwangalba* Rajkumar Kishore (Kishore 2008). *Vanda alpina* (Lindley) Lindley and *Vanda testacea* (Lindley) Reichenbach f. are categorized as rare in Sikkim (Lucksom 2007).

MATERIALS & METHODS

The seven species of *Vanda* W. Jones ex R. Brown viz. *V. alpina* (Lindley) Lindley, *V. cristata* Lindley, *V. coerulea* Griffith ex Lindley, *V. coerulescens* Griffith, *V. stangeana* Reichenbach f., *V. tessellata* (Roxburgh) W.J. Hooker ex D. Don and *V. testacea* (Lindley) Reichenbach f. from NCRO, Pakyong have been studied in detail. The flower color of these species have been observed on the most recently fully opened flowers on the inflorescence before fading with the help of RHS color chart and observed color of inner side of sepals, petals and lip and outer side of the column (Plate I). The RHS color chart which can be procured from Royal Horticultural Society of London, UK, (e-mail: mailorder@rhs.org.uk) is the standard reference for plant color identification (Plate II). Color variation in orchid flowers is a common phenomenon. (Phukan 2000) also reported color variation in different orchid species including *Vanda coerulea* from NE India. The paper presents the color of *Vanda* flowers grown under shade condition *i.e.* polyhouses which may vary slightly in different localities and under different climatic conditions.

RESULT AND DISCUSSION

Color has always been of prime importance in Orchids breeding including *Vanda* which is one of the commercially grown orchids. The present study cite the standard color of seven species from RHS color chart alongwith their RHS numbers and flowering time which is presented in Table I. It would help the breeders to select the desirable colors for their hybrids. Flowering time is an important factor for the breeding programme. In the present study it is

Table 1. Color of different floral parts of seven species of *Vanda* with their respective RHS Nos., flowering & fruiting time and distribution in India

species of <i>Vandas</i>	Flowering & Fruiting	Floral parts	Color	RHS Number	Distribution in India
<i>V. alpina</i> (Lindley) Lindley	May – September	Sepals	Yellow-green	144 A	Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Uttaranchal, West Bengal
		Petals	Yellow-green	144 A	
		Lip	Green	143D	
			with Purple ridges	N79A.	
Column	White	155C			
<i>V. coerulea</i> Griffith ex Lindley	September – February	Sepals	Violet-Blue	91C	Arunachal Pradesh, Assam, Bihar, Manipur, Meghalaya, Mizoram, Nagaland
			with darker netting	91A	
		Petals	Violet-Blue	91D	
			with darker netting	91A	
		Lip	Violet	N87A	
Column	White	-			

species of <i>Vandas</i>	Flowering & Fruiting	Floral parts	Color	RHS Number	Distribution in India
<i>V. coeruleascens</i> Griffith	March - June	Sepals	Yellow-green	145D	Arunachal Pradesh, Assam & Manipur
			with Violet-blue netting	91C	
		Petals	Yellow-green	145D	
			with Violet-blue netting	91C	
		Lip	Violet	N87B	
Column	White	-			
<i>V. cristata</i> Lindley	March – June	Sepals	Green-yellow	1B	Arunachal Pradesh, Bihar, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Sikkim, Uttaranchal, West Bengal
		Petals	Green-yellow	1B	
		Lip	Yellow	2D	
			with Red-purple ridges	59A	
		Column	White	155D	
<i>V. stangeana</i> Reichenbach <i>f.</i> ,	April – June	Sepals	Yellow-green	153C	Arunachal Pradesh, Assam, Manipur
			with Red-purple netting	59A	
		Petals	Yellow-green	153C	
			with Red-purple netting	59A	
		Lip	white	-	
			with greyed-orange at apex	163C	
Column	white	-			
<i>V. tessellata</i> (Roxburgh) W.J. Hooker <i>ex</i> D. Don	March – August	Sepals	Yellow-green	151B	Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal
			tessellated with grey-brown	N199A	
		Petals	Yellow-green	151B	
			tessellated with grey-brown	N199A	
		Lip	white	-	
Violet apex	86B				
Column	White	-			
<i>V. testacea</i> (Lindley) Reichenbach <i>f.</i>		Sepals	Yellow – Orange	18B	Assam, Bihar, Gujarat, Karnataka, Kerala, Madhya Pradesh, Meghalaya, Nagaland, Orissa, Sikkim, Tamil Nadu, Uttaranchal, West Bengal
		Petals	Yellow – Orange	18B	
		Lip	Yellow -Orange	18B	
			Red-purple spots	72B	
Column	Yellow-Orange	18B			

PLATE - I

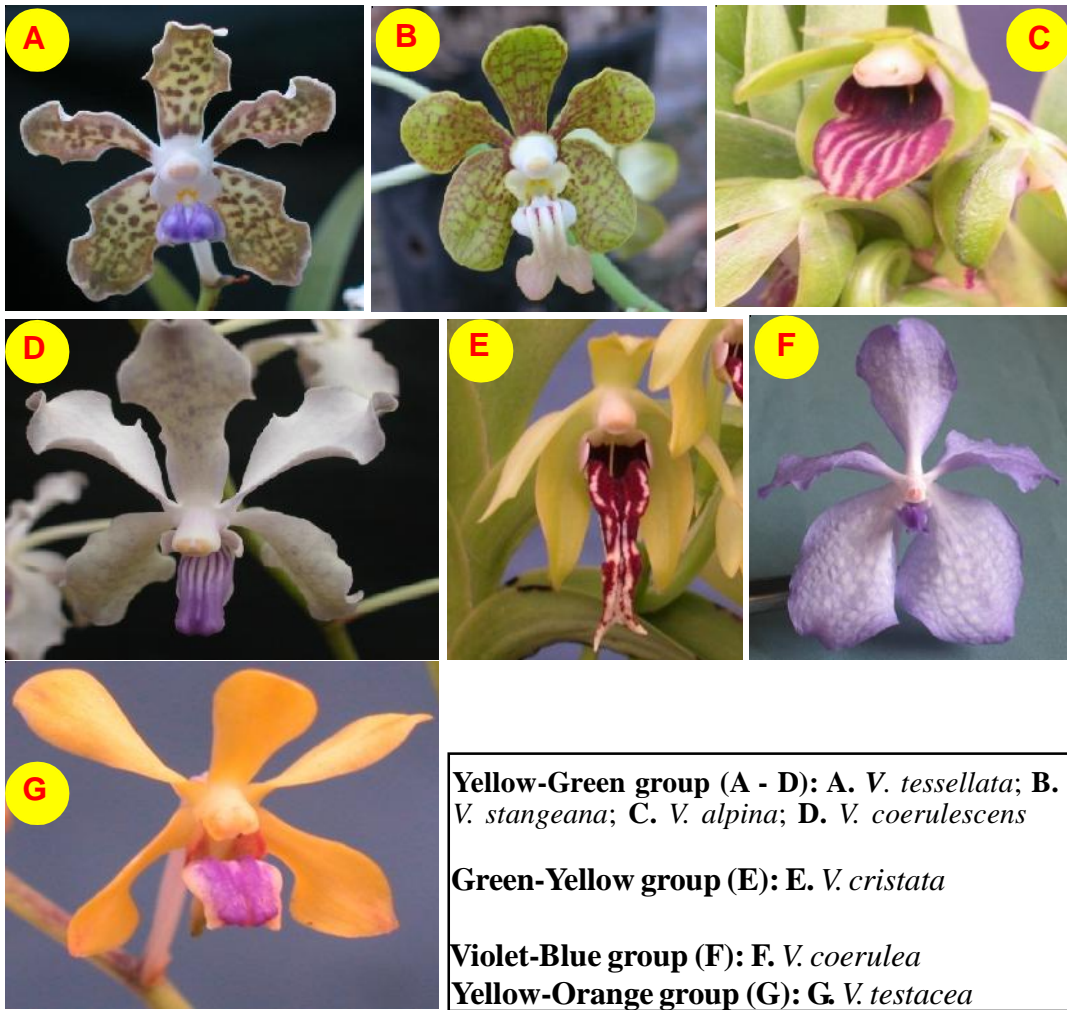


PLATE II. RHS Color Chart



noted that flowering period of six species viz. *V. alpina* (Lindley) Lindley, *V. cristata* Lindley, *V. coerulescens* Griffith, *V. stangeana* Reichenbach f., *V. tessellata* (Roxburgh) W.J. Hooker ex D. Don and *V. testacea* falls between March to June. Whereas flowering time of *Vanda coerulea* Griffith ex Lindley is from September to February. Fuchs (1997) reported *Vanda coerulea* is an important species in the background of most of the vandaceous hybrids, for its blue-violet coloration and lovely tessellation. In such case pollen preservation is the best method for crossing different species for the desirable color irrespective of their flowering period. Besides *V. coerulea* other species like *V. tessellata*, *V. stangeana* and *V. cristata* have great potential in breeding, previous two species are adopted especially for the beautiful tessellation and later one for its lovely green-yellow coloration.

LITERATURE CITED

- Bose, T.K.; Bhattacharjee, S.K.; Das, P. & Basak, U.C. 1999. *Orchids of India (Revised Edn.)*. Naya Prokash, Kolkata.
- De, A. & Hajra, P.K. 2004. Taxonomic study of the Genus *Vanda* (*Sensu lato*) in India. *J. Orchid Soc. India* 18 (1-2): 25 – 40.
- Fuchs, R.F. 1997. Fabulous Vandaceous intergenerics. *Orchids*. 66: 350 – 357.
- Karthikeyan, S.; Jain, S.K.; Nayar, M.P. & Sanjappa, M. 1989. *Florae Indicae Enumerato: Monocotyledonae*. BSI, Kolkata.
- Kishore, R. 2008. The Blue *Vanda* that is Snow-white. *Orchid Rev.* 116. no. 1282: 222 – 225.
- Limansena; Kumar, Y. & Sharma J. 2002. *Orchids of India: III, Biodiversity & Status of Vanda Jones ex R. Br.* Daya Publishing House, Delhi.
- Lucksom, S.Z. 2007. *The Orchids of Sikkim & North East Himalaya*. CONCEPT, Siliguri.
- Mabberley, D.J. 2008. *Mabberley's Plant Book, a portable dictionary of plants, their classification and uses*. Cambridge University Press, Cambridge. Pp. 741.
- Nayar, M.P & Sastry, A.R.K. (eds.) 1987 – 1990. *Red data book of Indian plants*. Vols. 1 – 3. BSI, Kolkata.
- Phukan, S. 2000. Colour variations in Orchids. *Orchid Rev.* 108 no. 1232: 86.
- Rao, T.A. & Sridhar, S. 2007. *Wild Orchids in Karnataka- A Pictorial Compendium*. INCERT, Bangalore.
- Walter, K.S & Gillett, H. J, (eds.) 1988. *IUCN red list of threatened plants*. IUCN-the World Conservation Union. Gland, Switzerland and Cambridge, UK.