



## Characterization and evaluation of a rare Orchid *Renanthera imschootiana* Rolfe from Manipur & Nagaland

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### ABSTRACT

The orchid *Renanthera imschootiana* Rolfe is the only species under the genus available in India at Manipur and Nagaland, which is a part of Indo-Burma mega diversity hot-spot. The only collection, NRCO-Coll-77 (1998)/IC 566525 of this species available with us was evaluated and characterized as per 'Common Descriptors of Orchids' developed at this center. Monopodial nature in habit, un-branched raceme with a length of 32.2 cm having attractive dominant red-purple (RHS-60A) flowers and petals coloured grayed orange (RHS-164C) with shade is typical of this species. Broad, lateral sepals with attractive dominant crimson/red purple colour flower having medium-range vase life of 23.7 days, imparts high breeding value to this species for developing new hybrid derivatives.

**Key words:** *Renanthera imschootiana*, orchid

The species, *Renanthera imschootiana* Rolfe, popularly known as 'Red Vanda' found generally across South-East Asian region of the Asian continent, was first described by Rolfe in the Kew Bulletin (Williams, 1874). It was sent to Kew garden by M. Van Imschoot of Ghent, Belgium in 1891. It is classified as an ally to Vanda group of Orchids (Rao, 2000) belonging to Tribe: Vandae and sub-tribe: Aeridinae (Dressler, 1993; Pridgeon et al, 1999). In India, it is found endemic to Manipur, Mizoram and Nagaland of North-eastern India, which is a part of the Indo-Burma mega bio-diversity hot spot. The only species of this genera available in India, was botanically described (Hynneiewta et al, 2000; Schuiteman and Vogel, 2000; Williams, 1894) with distribution, but no attempt has been ever made earlier from India for registration with national body for national identity and conservation for long term applications in breeding of Orchids.

### Relevance of the species to CITES convention

It is one of the species listed in the Appendix-I for the rare and endangered species listed in CITES (Convention on International Trade in related Endangered Species of Wild Fuana and Flora) during 1975. The species of orchids are prohibited for exports as per 'Foreign Trade Development and Regulation Act', 1992 in India. A limited work has been done on breeding with the above species as one of the parent

in abroad and India, but over exploited due to indiscriminate collections in the forest areas mainly because of amateur breeders and hobby growers with a craze to possess the rare orchids. These reasons led to the tremendous erosion of orchid genetic diversity and it warrants conservation measures *in-vitro* and *ex-vitro* (Hegde, 1997). The attempts on conservation of the species to propagate and multiply are very limited across the world, but good initiative was taken to develop the tissue culture protocol for *in-vitro* multiplication at this center (Anonymous, 2000). Major emphasis has been given for multiplication, characterization and evaluation of the only surviving collection *i.e.*, 'NRCO-Coll-77' (1998) of this species for the conservation at this center in the capacity of 'National Active Germplasm Site' (NAGS).

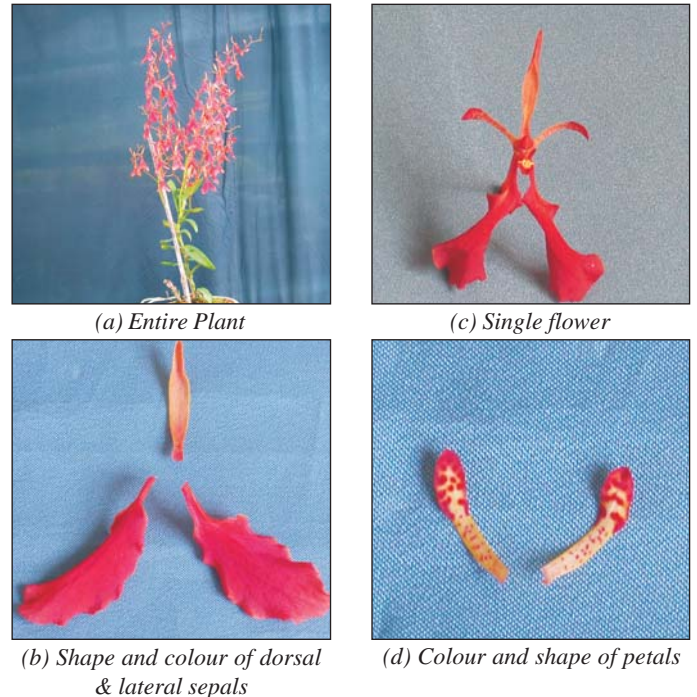
The collection has been multiplied vegetatively and characterized for the over last two years as per common descriptors for orchids developed at this center. The color rating was done as per the Royal Horticultural Society (RHS) color chart. The general descriptions for the morphological characters of the collection based on mean data (quantitative) and expressivity of qualitative characters like color pattern observed for two years is shown in Table 1 and the flowering pattern of this collection of species from the date of spike initiation at Pakyong, Sikkim (Altitude 1,300 MSL) is shown in Table 2.

**Table 1. Morphological observations on NRCO-Coll-97 (1998) / IC 566525**

Character	Detail
Plant height	> 58 cm
Number of leaves	14
Leaf shape	Linear
Leaf length	7.8 cm
Leaf width	1.6 cm
Rachis length	32.2 cm
Peduncle attitude	Semi-erect
Inflorescence type	Raceme
Position of flowers	Along peduncle
General appearance of sepals & petals	Some incurving & some spreading
Flower length in front view	4.7 cm
Flower breadth in front view	2.9 cm
Dorsal sepal shape	Lanceolate
Dorsal sepal length	1.7 cm
Dorsal sepal main color	Grayed-orange (164C)
Lateral sepal shape	Oblong
Lateral sepal length	2.8 cm
Lateral sepal main color	Red- purple (60A)
Sepal color pattern	Dorsal: shaded; Lateral: colored
Petal shape	Spathulate
Petal length	1.3 cm
Petal main color	Grayed-orange (164C)
Petal color pattern	Shaded & spotted
Lip length	0.6 cm
Lip width	0.2 cm
Lip shape of lateral lobe	Triangular
Lip main color	Red – purple (60A)
Color of throat	Yellow (8B)
Column length	0.4 cm
Column color of anther cap	Yellow (8B)
Lip callus	Present

**Salient features/description of collection (IC 566525)**

The species, being a monopodial epiphyte, has grown from a height of 35 cm during 1999-00 to more than 58 cm in 2006-07 (Fig. 1a & b). The stem is stout with leaves linear in shape measuring 7.8 cm x 1.6 cm with 14 leaves. Generally the inflorescence is un-branched raceme, but in the year 2007-08 the branching of raceme was recorded with a length of 38.2 cm. The flower size measures

**Fig 1. A flowering plant shape and colour of sepals and petals of *R. imschootiana* Rolfe.**

4.7 cm x 2.9 cm. The species is peculiarly characterized with short (1.7 cm) and lanceolate shaped dorsal sepal and broader and free lateral sepals with a length of 2.8 cm (Fig. 1c & d). The red-purple (RHS-60A) is the dominant color of the flower (lateral sepal & lip) and petals were colored grayed orange (RHS-164C) with shade. The petals were observed smaller with a length of 1.3 cm and spotted. The lip size recorded 0.6 cm x 0.2 cm having presence of callus. The throat and column are yellow in color (RHS-8A). The flowering traits like, spike initiation, flower bud initiation, days to 1<sup>st</sup> flower opening and days to 1<sup>st</sup> flower withering, showed consistency for the two years, except number of raceme branches and number of flowers.

The broader lateral sepals with attractive dominant red-purple/crimson color and grayed orange with reddish spots of petals in center of flower, having medium range vase life of 23.7 days have high breeding value for developing new hybrid derivatives at both national and international level.

**Table 2. Flowering pattern in *Renanthera imschootiana* Rolfe. at NRCO, Pakyong, Sikkim**

NRCO-ID & Year	Spike initiation	Days to flower bud Initiation	Days to 1 <sup>st</sup> flower opening	No. of flowers	No. of raceme branches	Days to 1 <sup>st</sup> flower withering
NRCO-Coll-77 (2005-06)	18.03.2006	35	49	13	01	27
NRCO-Coll-77 (2006-07)	07.04.2007	33	44	35	02	21
Mean		34	46.5	24	1.5	23.7
S.D.		1.14	3.54	15.56	0.7	4.24

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