

Orchid Farming- A Remunerative Approach for Farmers Livelihood



Social Science

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ABSTRACT

Orchids comprise the largest family of flowering plants with 25,000 to 35,000 species belonging to 600-800 genera. Orchids are found in nearly every environment in the world starting from tropical and subtropical to alpine zones both epiphytically and terrestrially. Several local species of Vanda, Cymbidium, Ascocentrum, Paphiopedilum, Calanthe, Dendrobium etc are in great demand in international market for breeding materials. Among the cut flower crops, Cymbidium, Dendrobium, Phalaenopsis, Odontoglossum, Oncidium, Cattleya, Paphiopedilum, Vanda, Aeridovanda, Aranda, Mokara, Arachnis, Vascostylis, Rhyncovanda etc are important. Important orchid genera used as potted plants in the international market are Phalaenopsis, Oncidium, Miltonia, Cymbidium, Paphiopedilum, Dendrobium, Cattleya, Ascocenda, Vanda, Brassia, Miltonia and Epidendrum. Tribal people of North eastern hill region use wild orchids for a variety of folk medicine as orchids are rich in alkaloids, flavonoids, glycosides, carbohydrates and other phytochemicals. Leaves, tubers and pseudobulbs of different species are used for edible purposes. Vanilla- a major spice crop and source of vanillin comes from Vanilla planifolia. Anoectochilus leaves are used as vegetables in Indonesia and Malaysia.

Orchids comprise the largest family of flowering plants with 25,000 to 35,000 species belonging to 600-800 genera and covers 10% of the flowering plants. They are prized for their incredible diversity in the size, shape and colour and attractiveness of their flowers and high keeping qualities even up to 10 weeks. Brazilian Cattleya, Mexican Laelia and Indian Cymbidium, Vanda and Dendrobium have played a major role in developing present day beautiful hybrid orchids which numbers more than 200000. In the international trade, among top ten cut flowers, orchids rank the sixth position and among orchids Cymbidium ranks the first position and in floricultural crops it accounts for 3% of the total cut flower production (De and Debnath, 2011). In India, it comprises 158 genera and 1331 species which grow upto an elevation of 5000m (Chowdhery, 2009). Indian terrestrials are commonly located in humus rich moist earth under tree shades in North Western India. Western Ghats harbour the small flowered orchids. Epiphytic orchids are common in North eastern India which grow upto an elevation of 2000m from sea level. Indian orchid species with high ornamental values and used as breeding materials. In India, some of native genera like Cymbidium,

Paphiopedilum, Vanda, Arachnis and Dendrobium are cultivated on a large scale for cut flower production. The Cymbidium is mainly grown in NEH Region, Sikkim, Darjeeling hills, Arunachal Pradesh and Assam. Tropical orchids are cultivated in Kerala and some parts of Tamil Nadu. We should prefer those species which flower during winter and spring months to export flowers to temperate regions from December to May.

Orchids in international cut flower trade

The orchids have taken a significant position in cut flower industry due to its attractiveness, long shelf life, high productivity, right season of bloom, easy in packing and transportation. Orchid accounts for a large share of global floriculture trade both as cut flowers and as potted plants and is estimated around 10% of international fresh cut flower trade. The value of fresh cut orchids and buds trade during 2007-2012 with the average trade value was US \$ 483 million. In 2012, there are more than 40 exporting orchid countries and 60 importing orchid countries around the world, and the total size of the global trade is US \$ 504 million (Table 1).

Table 1. Value of fresh cut orchids and buds global trade (2007-2012) (Unit : Million US\$)

Year	2007	2008	2009	2010	2011	2012
Import	233,734,023	252,647,645	232,568,129	251,445,523	265,702,077	267,196,847
Export	230,470,421	238,702,950	217,781,745	227,389,789	244,996,271	237,543,797
Total	464,204,444	491,350,595	450,349,874	478,835,312	510,698,348	504,740,644

Source: Department of Foreign Trade, Thailand (2013)

The Netherlands is the top most orchid exporting country (39.67%) followed by Thailand (28.41%), Taiwan (10%), Singapore (10%) and New Zealand (6%), respectively. Importing countries are mainly Japan (30%), UK (12%), Italy (10%), France (7%) and the USA (6%), respectively. The total orchid cut flower trade of the world mostly consists of 85% Dendrobium species and 15% Phalaenopsis and Cymbidium species and Asia is the main source of orchid to enter the world (Cheamuangphanet al, 2013). The recent export scenario of orchids in Indian context is given below (Table 2).

Table 2. Export of orchids from India (Rs. in lacs & quantity in MT)

Country	2010-2011		2011-12		2012-13	
	Quantity	Value	Quantity	Value	Quantity	Value
Bahrain	0.00	0.00	0.00	0.00	0.20	1.43
Maldives	0.04	0.18	0.13	0.56	0.27	0.96
Kenya	0.00	0.00	0.04	0.05	0.06	0.09
Sri Lanka	0.00	0.00	0.00	0.00	0.02	0.05

Quatar	0.00	0.00	0.01	0.02	0.00	0.00
Singapore	4.77	3.08	0.00	0.00	0.00	0.00
UAE	0.04	0.06	0.20	0.35	0.00	0.00

Source: DGCIS Annual report

Trend in growth of Commercial Orchids

Cymbidium:

Cymbidiums are among the most popular winter and spring blooming semi-terrestrial orchids originated from tropical and subtropical Asia covering North Eastern India, China, Japan, Malaysia, the Philippines, Borneo islands and North Australia, usually grown in cooler climates at high elevations. Cymbidiums are highly valued for genetic resources, cut flowers, hanging baskets, potted plants and herbal medicines. Cymbidium has been considered as top commercial orchids in Europe since many years. They fetch the highest price in the international markets of which major Asian markets of Singapore and Japan or the Dutch market. In India, Arunachal hills, Sikkim and Darjeeling hills with cool summer night and monsoonal summer rain are ideal for cymbidium cultivation. The growth of orchid exports from north eastern hill region especially Sikkim would provide opportunities for employment and also for development of supporting industries like packaging, cold storage and transportation. East Sikkim has been declared as Agri Export Zone exclusively for production of cymbidium orchids. In Sikkim, more than 350 hybrids of cymbidium orchids are commercially cultivated in an around 25 ha of land and about 5 lakhs spikes are produced annually. 'Levis Duke Bella Vista', 'Madrid Forest King', 'Sparkle Late Green', 'Angelica December Gold', 'Sleeping Nymph', 'Pine Clash Moon Venus', 'Soul Hunt', 'Dr. H. C. Aurora', 'Susan Hughes', 'Tia GaigSuther Land', 'Miss Sanders', 'Amesbury', 'Kenny Wine', 'Red Star', 'Red Princess', 'Show Girl', 'Jungfrau 'Snow Queen', 'Jungfrau 'Dos Pueblos', 'Lilian Stewart 'Coronation', 'Lilian Stewart 'Party Dress', 'Orkney 'Pink Heather', 'Ensikhan 'Alpha Orient', 'Winter Beach Sea Green', 'Fire Storm Ruby' are popular hybrids of Cymbidium. A Cymbidium grower can earn Rs. 20 lakhs in 10 years from an area of 500 m² accommodating 1500 plants after investing 10 lakhs and saling of 55000-60,000 cut spikes.

Dendrobium:

Dendrobiums are popular flowering potted plants and cut flowers around the world due to their floriferousness, wide range in flower color, size and shape, year round availability and lengthy vase life. Hawaii, California and Florida are major potted Dendrobium growing regions in the United states. The wholesale value of sales for this commodity in Hawaii has been found for several decades. In the Netherlands, production of potted orchids is now 40 to 50 million units with Dendrobium increasing in popularity. Imports from Thailand, the worlds largest exporter of tropical cut orchids and second largest supplier to the EU, accounted for 22% of supplies to the EU. Thailand holds a particularly strong position in Dendrobium orchids.

Dendrobium hybrids 'Snow White', 'Pagoda White', 'Emma White', 'Big White 4N', 'White Jumbo', 'White 5N', 'Vorawit Blue', 'Lee Chong Blue', 'Kultana Blue', 'Madam Pink', 'Sonia -16', 'Ear Sakul', 'Candy Stripe Pink', 'Sonia-17', 'Sonia -28', 'Daangsaard', 'Little Lolita', 'Cleopatra', 'Diamond Star', 'Fireball', and 'Little Lolita' are used as cut flowers. From an area of 500m² containing 3000 plants a Dendrobium grower can earn 5 lakhs in three years after saling of 3000 number of cut spikes and 3000 mother plants.

Phalaenopsis :

Phalaenopsis is the second most valuable and popular flowering potted plant and cut flower around the world due to their easy cultural practices, diversity in flower colour, size and shape, year round availability, delicacy and longer vase life. It is commercially grown in Germany, Japan, The Netherlands, Tai-

wan and United States. In the United states, 75% of all orchids purchased are phalaenopsis and about 13,500,000 phalaenopsis were sold in 2005 in United States. The export value of phalaenopsis from Taiwan to the United States increased from \$8 million in 2005 to \$ 13 million in 2006. Worldwide turnover of Taiwanese phalaenopsis increased from \$ 27. 5 million to \$ 35.4 million from 2005 to 2006. 'Taisuco Crane', 'Taisuco Kochdian', 'Cygnus', 'Yukimai', 'Sogo Musadian', 'White Dream', 'Florida Snow', 'Nobby's Pink Lady', 'Minho Valentine', 'Minho King Beauty', 'New Cinderella', 'Taisuco Firebird', 'Sogo Smith', 'Carol Campbell', 'Emil Giles', 'Brother Lawrence', 'Taipei Gold', 'Golden Bells', 'Sogo Managers', 'Brother Passat', 'Strawberry', 'Cassandra', 'Vilind', 'Carmelas Pixie', 'Zuma's Pixie', 'Timothy Christopher', 'Be Tris', 'Quevedo', 'Manchester', 'Detroit' are common hybrids of Phalaenopsis.

Other tropical orchids:

Vanda is widely distributed throughout Australasia from China through the Philippines, Indonesia, Malaysia, New Guinea and Australia, Myanmar, Thailand, India and Sri Lanka. In the world tropical orchid trade, Dendrobium is the most dominant crop in addition to Mokara, Oncidium, Aranthera, Aranda, Vanda, Arachnis, Renanthera, Ascocenda, Phalaenopsis, Cattleya and Paphiopedilum which are being grown as cut flowers and potted plants. Thailand is the largest world exporters of tropical orchids. China is the largest consumer of orchid cut flowers from Thailand 7,493 tons followed by Japan, USA, Italy, India, Taiwan, Vietnam and the Netherlands at 4,407, 2892, 2395, 1830, 983, 793 and 689 tons, respectively. Other significant orchid genera being exported from Thailand were Mokara, Arantes, Aranda, Oncidium, Vanda, Arachnis, Ascocenda with the market share of 3.69, 0.52, 0.48, 0.44, 0.13, 0.01 and 0.01 % of total export value respectively (Table 3) (Lekawatana, 2010).

Considering import value of orchid plants, Japan was also the largest importers of Thai orchid plants at 2.4 million US \$ worth followed by the Netherlands, USA, Germany, Rep. of Korea and Vietnam with the value of 1.6, 1.4, 1.0, 0.9 and 0.9 million US \$ respectively. In 2009, Thailand exported 211 genera of orchid plants. Dendrobium and Phalaenopsis plants were the most important orchid genera for exports with the market share of 51.4 and 25.5%. Other important orchid genera being exported from Thailand were Vanda, Mokara, Oncidium, Cattleya and Ascocenda with the market share of 8.9, 3.7, 3.1, 2.7 and 1.2% of total export value, respectively.

Table 3 : Orchid export from Thailand in 2009 (% share of total export value)

Cut orchid		Orchid plant	
Orchid genera (20)	Value shared (%)	Orchid genera (211)	Value shared (%)
Dendrobium	94.73	Dendrobium	51.4
Mokara	3.69	Phalaenopsis	25.5
Aranthera	0.52	Vanda	8.9
Aranda	0.48	Mokara	3.7
Oncidium	0.44	Oncidium	3.1
Vanda	0.13	Cattleya	2.7
Arachnis	0.01	Ascocenda	1.2
Ascocenda	0.01	Epidendrum	0.6
		Cymbidium	0.3
		Rhyncostylis	0.3

	Spathoglottis	0.3
	Paphiopedilum	0.2
	Others	1.8

Orchids –as herbal medicine and aromatic products: Tribal people of North eastern hill region use wild orchids for a variety of folk medicine as orchids are rich in alkaloids, flavonoids, glycosides, carbohydrates and other phytochemicals (Table 4).

Table 4 : Common medicinal orchids (Rao, 2004)

Name of species	Parts used	Uses
Acampepappilosa	Root	Rheumatism, Sciatica and uterine diseases
Aeridesodorata	fruit, leaves	The ground fruit used for healing wounds. Juice of leaves is used to heal boils in ear and nose
Cymbidium aloifolium	whole plant	Ground plant to cure chronic illness, weakness of eyes, vertigo and paralysis
Dendrobiumnobile	Stems	Fresh and dried stems used in preparation of chinese drugs for longevity and as aphrodisiac, stomachic and analgesic
Habenariaacuminata	Roots	Roots are used as tonic
Phaiustankervilleae	Pseudobulbs	Pseudobulb is used to heal swellings of hands and legs, poultice to soothe pain of abscess
Pholidotaimbricata	Pseudobulbs	Pseudobulbs are mixed with mustard oil and applied on joints for rheumatic pain
Rhyncostylisretusa	Roots	Roots are effective against rheumatism, asthma, tuberculosis, cramps, epilepsy, vertigo, kidney stone, menstrual disorder
Arundinagraminifolia	Stems	Bulbous stems are used to heal cracks
Dendrobiumdensiflorum	Leaves	Leaves crushed to paste with salt and applied on fractured area to set bones
Vanda coerulea	Leaves	Leaf juice is used against diarrhea, dysentery and external application for skin diseases
Vanda teres	Leaves	Leaf paste to reduce temperature in fever
Vanda cristata	Leaves	Leaves are used as tonic and expectorant
Dendrobiummoschatum	Leaves	Leaf juice is used as ear drop
Aeridesmultiflorum	Tubers	Anti-bacterial
Anoectochilusformosanus	Tubers	Hepatitis, hypertension, cancer
Bletillastrata	Pseudobulbs	Anti-bacterial, anti-inflammatory, demulcent, skin styptic
Cypripedium pubescens	Roots	Anti-spasmodic, diaphoretic, hypnotic, sedative, tonic
Orchislatifolia	Roots	Aphrodisiac, expectorant, nervine tonic, diabetes, diarrhea, dysentery
Eulophianuda	Tubers	Worm infestation, Scrofula
Habenariaedgeworthii	Leaves and roots	Blood diseases
Habenariaintermedia	Leaves and roots	Blood diseases
Habenariapectinata	Leaves and tubers	Arthritis
Malaxisacuminata	Pseudo-bulb	Bleeding diathesis, burning sensation, fever
Orchislaxiflora	Bulb	Diarrhoea, bronchitis, convalescence
Vanda spathulata	Flowers	Consumption, asthma, mania
Vanda tessellata	Whole Plant	Fever, arthritis, rheumatism, bronchitis
Calanthesicolor	Whole plant	Hair restoring
Dendrobiumchrysanthum	Leaves	Antipyretic, Immunoregulatory, skin diseases
Dendrobiumloddigessii	Leaves	Stomach tonic
Habenariarepens	Tubers	Aphrodisiac
Pholidotachinensis	Pseudobulbs	Scrofula, toothache and stomachache
Vanilla planifolia	Sheath	Hysteria, fever, impotence, rheumatism
Cymbidium aloifolium	Rhizomes	Salep; used as nutrient and demulcent; as emetic and purgative
Cym. ensifolium	Rhizomes & Flowers	Eye sores
Cym. longifolium	Pseudobulb	As emetic and demulcent
Cym. giganteum	Leaf juice	Blood clotting

Edible orchids:

Leaves, tubers and pseudobulbs of different species are used for edible purposes. Vanilla- a major spice crop and source of vanillin comes from *Vanilla planifolia*. *Anoectochilus* leaves are used as vegetables in Indonesia and Malaysia. Pseudobulbs of *Cymbidium maladimum* and *Dendrobium speciosum* and tubers of *Microtis uniflora* and *Caladenia carnea* eaten. The popular beverage called as 'Faham' or 'Madagascar Tea' on the islands of Mauritius and Madagascar is prepared from orchid *Jumellea fragrans*. The tubers from the orchid genera like *Acianthus*, *Dipodium*, *Glossodia*, *Lyperanthus*, *Prasophyllum* and *Thelymitra* have been used as food by the inhabitants of Australia. In Africa, the tubers of *Cynorchis*, *Eulophia*, *Disa*, *Habenaria* and *Satyrium* are used as food or to extract juice from them. Roots, tubers or rhizomes of *Eulophia*, *Gastrodia*, *Habenaria*, *Orchis*, *Pholidota*, *Platanthera* and *Spiranthes* are used as food in Asia. Tubers of *Disa engleriana*, *D. robusta* and *D. zambica*, *Habenaria clavata*, *Satyrium mambylosacco*, *S. buchananii* and *S. carsonii* used as foods in Malaysia. In Bhutan, the inflorescence or the flowers and pseudobulbs of *Cymbidium* spp. are eaten (Bhattacharjee and Das, 2008).

Orchids for dry flowers:

Orchids are highly attractive, delicate and available in variety of colours and they can be preserved by drying for use in flower arrangement and dried flower craft. Orchids can be dried best using silica gel for microwave drying or by freeze drying. Drying orchids is a challenging task as these flowers are considered difficult to be preserved. Dried orchids are used for different purposes such as the dried orchids, for use in vases and baskets and sometimes in shadow boxes. Bright flowers of orchid genera like *Dendrobium*, *Cymbidium*, *Paphiopedilum*, *Cattleya*, *Pholidota* etc. can be used for drying (De, 2011).

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