

Nepalese *Cymbidium devonianum* (Orchid)
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Introduction:

Orchids are well known for their aesthetic appeal in the flower industry but are lesser known for their medicinal value, use as a fragrance agent and in teas. They are a diverse plant that has a large population in Nepal (Archarya, 2008). There are over 388 reported species of orchids belonging to 99 genera in this country (Acharya, 2008).

Product Information and Benefits to Nepal:

Growing Conditions:

The orchid species *Cymbidium devonianum* can be found as an epiphyte on tree trunks or it can be found as a lithophyte on mossy rocks (Parmar, 2014). The *Cymbidium* species of orchids grow best in sub-tropic and temperate climates. Other important factors to take into consideration when growing orchids are the humidity of the climate and the pH (Kikon & Maiti, 2006). A minimum of 65% humidity is required. *Cymbidium* orchids have no difficulty growing on hillsides, proving to grow at elevations as high as 2000 m. They need a moist environment at all times (Kikon & Maiti, 2006). They require humus rich soil, under shade protection of trees. Moderate sunlight is required (DE & Medhi).

Agronomic Issues:

Insect pests are a problem regarding the production of *Cymbidium devonianum* specifically *Tetranychus urticae* commonly known as the two spotted spider mite located in Eurasia (Meena et al, 2013). This spider targets older leaves inserting their stylets into the plant causing them to form silvery spots or yellowing leaves eventually resulting in the leaves turning brown. Botanical products as well as acaricides are used to control the pests but more pest management research is needed (Meena et al, 2013). *Mycosphaella cattleyae* is a fungus that has been found on *Cymbidium devonianum* in India (Cash & Watson, 1955). It results in large spots that are brown but appear whiter in the center. More information on this specific species of *Mycosphaella* is required (Cash & Watson, 1955).

Impact on Women and Children and Biodiversity:

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Orchids in Nepal have been threatened due to illegal trade, horticultural uses and collection of wild species for medicinal purposes (Subedi et al.). This is resulting in the extinction of many indigenous orchids. The Nepalese Government has encouraged methods of conservation of the wild population of orchids by trying to prevent its trade. Women and children often are responsible for the collection of wild orchids. Research completed on the illegal trade of orchids found that generally the trade of orchids from Nepal has higher value internationally rather than on domestic markets (Subedi, et al,). Based on this information the domestication of orchid species especially through international trade would have a beneficial impact on local Nepalese women and children and on local biodiversity. The propagation of domestic *Cymbidium dovenianum* would create paid labour as well as conserve the wild species by decreasing the amount of people collecting them from the wild.

Health Information:

The use of orchids for medicinal practices originates in China and has an extended history (Archarya & Rokaya, 2008). Orchids contain phytochemicals that make them valuable including alkaloids, flavonoids, and glycosides (Parmar, 2014). Specifically *Cymbidium devonianum* 's roots are used to create a paste to treat boils and the decoction of the plant is used for coughs or colds (Parmar, 2014).

Costs (Including Inputs):

One of the problems with orchid propagation is that there is an expensive start up cost. Many materials are needed such as fertilizers, planting materials, an agro shade house, seeds, potting mixtures, preparation of beds and other minor equipment (pruners, spray machine) which results in a high initial cost (Kikon & Miati, 2006). There is also a significant annual upkeep cost as well (Kikon & Miati, 2006).

Financial Assistance:

There are some grants and microfinance loans that are available to help small agricultural businesses get started. The Project for Agricultural Commercialization and Trade (PACT) aim is to provide competitive matching grants in order to improve the competitiveness of smallholder farmers and agribusinesses (World Bank, 2014). PACT focuses on providing growth through equipment, technology, finance, mentoring and networking. Moving forward PACT wishes to target export opportunities as well (World Bank, 2014). The microfinance sector is another option for small business start up. The problem with microfinance is that there are interest rates ranging from 0.75%- 5% (Bank N. R, 2008). The Microfinance Department of Nepal offers small loans to poor and low-income households up to RS. 60,000. The microfinance center is under the formal and informal sector, with the formal sector initiated by the government (Bank N. R, 2008).

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Economic Benefits:

Research collected in India, Nepal's neighbour, suggests potential economic benefits to the Nepalese from orchid exports. Retailers sell cymbidium cut flowers at a cost of Rs15 to Rs120 depending on the condition of the flower (Kikon & Maiti, 2006). The projected return from 4 years is Rs42139 taking into consideration maintenance (Kikon & Maiti, 2006). The floriculture industry demonstrates a growth pattern of 10-15% (World Bank, 2013).

Export Potential:

Orchids are used in wedding bouquets, corsages and in floral arrangements. Orchids take up an 8% share of the international floriculture trade (Kikon & Maiti, 2006). An example of orchids great success in the cut flower industry is seen in Thailand, which exports US \$26 million in orchids. Transportation requires the cut flower be brought from farms to the airport in air-conditioned vans though if flowers are being sold in winter season or in cooler climates they are not necessary. Upon arrival via air to their destination (e.g. Canada) they are distributed to local retailers. In order for exports to be successful a cold storage unit would be needed near the airport in order to keep the flowers fresh. Individualized boxes would also be needed to transport the flowers (Kikon & Maiti, 2006). An import permit is required by Canada that ensures the export of the species will not be harmful to the species survival and that it was not obtained contrary to the laws of the state. This requirement is through the CITES (Convention on International Trade in Endangered Species) in order to preserve the endangered status orchids (CITES, 2011). In Nepal an Export Permission Letter for plants is need to ensure that exploitation of certain plants does not occur, within this a company registration certificate and a tax clearance certificate is required (Nepal Government, 2012).

Critical Evaluation:

Studies involving the optimum environment requirements for growing are needed as well as research on pests and pathogens preventatives. Orchids have potential as seen through studies of neighbor countries such as India but much more research is required. One very large problem to overcome with orchid production is the large start up cost of supplies and seeds and maintenance costs.

Potential Canadian Importers:

Sierra Flower Finder
935 rue Reverchon
Saint-Laurent, QC
H4T 4L2

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Telephone:

(514) 733-3515

http://www.canadianconsultingengineer.com/esource/profile.aspx?company_id=031527239&er=NA#sthash.XwVP6FNf.dpuf

Canada Flowers

4073 Longhurst Ave.,

Niagara Falls, Ontario

L2E 6G5

Telephone:

1-905-354-2713

<http://www.canadaflowers.ca/flowers/customer-service/contact.htm>

Florimex Toronto Corp.

6799 Pacific Circle

Mississauga, ON

L5T 1S6

Telephone:

905-670-3111

<http://www.florimex-toronto.ca/contact.htm>

Orchids Direct Inc.

PO Box 49

Deep Brook, Nova Scotia

B0S 1J0

Telephone: 1-800-560-0009

<http://orchidsdirect.com/>

Reference List

Acharya, K. P., & Rokaya, M. B. (2010). Medicinal orchids of Nepal: are they well protected?. *Our Nature*, 8(1), 82-91.

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Bank, N. R. (2008). Micro-financing towards Empowerment of Disadvantaged Groups in Nepal: Innovations and Practices. *Sahakarya Project Centre for International Studies and Cooperation (CECI)*.

Cash, E. K., & Watson, A. J. (1955). Some fungi on Orchidaceae. *Mycologia*, 729-747.

CITES, I. (2011). Convention on International trade in endangered species of wild fauna and flora. URL: <http://http://www.cites.org/esp/app/appendices.shtml>. [Links].

DE, L., & MEDHI, R. Diversity and Conservation of Rare and Endemic Orchids of North East India-A Review. *Indian Journal of Hill Farming*, 27(1), 138-153.

Ghimire, M. (2009). Epiphytic orchids of Nepal. *Banko Janakari*, 18(2), 53-63.
doi:10.3126/banko.v18i2.2173

Kikon, Y. Y., & Maiti, C. S. (2006). *Horticulture for Sustainable Income and Environmental Protection: Advances in horticultural practices, fruits, and ornamentals* (Vol. 1). V. B. Singh, K. A. Sema, & P. Alila (Eds.). Concept Publishing Company.

Meena, N. K., Barman, D., & Medhi, R. P. (2013). Biology and seasonal abundance of the two-spotted spider mite, *Tetranychus urticae*, on orchids and rose. *Phytoparasitica*, 41(5), 597-609.

Mohanty, P., Paul, S., Das, M. C., Kumaria, S., & Tandon, P. (2012). A simple and efficient protocol for the mass propagation of *Cymbidium mastersii*: an ornamental orchid of Northeast India. *AoB plants*, 2012, pls023.

Nagrare, V. S. (2008). Responses of acaricides against two-spotted spider mites *Tetranychus urticae* Koch infesting *Cymbidium* under polyhouse in Sikkim. *Journal of Ornamental Horticulture*, 11(2), 104-106.

Nepal Government, (2012) Welcome to the Nepal Business License e-Portal. (2012, January 1). Retrieved November 15, 2014, from <http://licenseportal.gov.np/#>

Parmar, G. (2014). In vitro seed germination and seedling development of *Cymbidium devonianum* Paxton (Orchidaceae). *Plant Resources*, 61.

Shakya, L. R., & Bajracharya, D. M. (2005). Orchid sanctuary Raja Rani (Morang District), East Nepal: an effort toward habitat conservation. *Selbyana*, 236-239.

Subedi et al.: Collection and trade of wild-harvested orchids in Nepal. *Journal of Ethnobiology and Ethnomedicine* 2013 9:64.

World Bank. (2013). PROMOTING AGRIBUSINESS INNOVATION IN NEPAL: Feasibility Assessment for an Agribusiness Innovation Center. infoDev, Finance and Private Sector Development Department. Washington, DC: 2013

World Bank (2014) Results. (2014). Retrieved November 15, 2014, from <http://www.worldbank.org/en/results/2014/04/11/nepal-agriculture-commercialization-and-trade>

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