

Trade Competitiveness of the Floricultural Sub-sector in Nepal

Final Report

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This study is undertaken by Floriculture Association of Nepal (FAN), where Agro Enterprise Centre (AEC) of Federation of Nepalese Chambers of Commerce and Industries is a part. A team was formed and invited to undertake this study with the objective of accessing the competitiveness of the Floriculture Sub-sector in Nepal. The Study Team included:

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I expect that, among others, relevant Ministries and Departments of the Government of Nepal, non-governmental organizations, business chambers and associations, bankers, scholars, NGOs and INGOs will find this study useful.

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Executive Summary

Project Objective

This study is undertaken by Floriculture Association of Nepal (FAN), where Agro-Enterprise Centre (AEC) of Federation of Nepalese Chambers of Commerce and Industries (FNCCI) is a part.

The objective of the study is to assess the trade competitiveness of floriculture sub-sector and disseminate the up-dated information to the stakeholders. The study also focuses on the production and export potentials of bulbs, carnations and orchids. The issues examined by this study include review of supply capability, analysis of domestic environment and overseas market and identification of areas requiring particular attention to achieve competitiveness in Nepal.

The Floriculture Sub-sector in Nepal

The dramatic growth in contribution of floriculture to the agriculture sector and subsequently to the economy was backed by the positive responses of some of the stakeholders including private sector institutions and business associations such as FAN with the support of AEC of FNCCI.

There are 550 active flowers and plants growers in 34 districts who have 80 ha of land (32 ha covered) and have invested about Rs.375 million. Their turnover in 2006 is estimated at Rs.230 million. These farms and their networks altogether give employment to about 2500 people; more than 60% of them are women.

A comparative yield analysis shows that in Chitawan district bulb output was 3.5 times more than that of in Hills of Kalingpong (India). It indicates that Nepal is likely to achieve more competitive advantage in terms of costs as well as quality if scientific practices are followed. A benefit cost analysis of selected cash crops in Chitawan district show that the farmers make highest return from flower cultivation - 3 times and 13 times as against the returns from radish and beans respectively.

Total transaction value of floriculture sub-sector grew recently with the increasing demand and supply in the domestic as well as foreign markets. The gross turnover of FAN wholesale market also crossed 1.8 million sticks and Rs. 5.2 million in 2005. The unit prices of flowers have come down remarkably from Rs.6.2 in 1998 to Rs.3.0 in 2005 indicating a good prospect for export business.

In five years time export of floricultural products grew by 7 times to Rs. 32.6 Million² in 2005/06 as against Rs. 4.0 million in 2001/02³. The Netherlands, the USA, Italy, Denmark, Japan and India are the major markets for Nepalese floricultural products. Items being exported from Nepal include tissue cultured plants, tree cuttings, cut flowers, bulbs, tubers, rhizomes, foliage, dry flowers and ornamental plants.

The study has identified 14 districts with 7 million population having prospects for floriculture production in Nepal. Land under cultivation can be increased to 1000 ha within 5 years if some of the development constraints are addressed properly. This sub-sector is thriving without well-defined and clear government policies, strategies and incentives. Irrespective of all these situations the government institutions have realized the importance of contribution of the floriculture sub-sector to the overall agriculture growth and its socio-economic impacts.

² This figure represents an increase of 97% over the previous year's exports.

³ Trade Promotion Centre, Nepal Overseas Trade Statistics, Nepal.

Prospects

Nepal's most of the Hills and mid-Mountain regions with height of 1000 to 4000 mt comprising 41.7 % of total land surface and having about 1500 mm rainfall and day temperature 20 to 30 and night temperature 5 to 20 degree centigrade are favorable for production as well as trade of native and commercial flower species. These locations have 60 to 80 humidity and soil acidity 5.0 to 6.0 ph that are very much suitable for flowers and plants production.

About 6500 species of flower and ornamental plants including 380 species of orchids are available in the country with the possibility of further innovation, commercialization and diversification. Currently more than 50 cut flowers and 100 varieties of bulbs and plants are available in the domestic markets. The most commonly commercialized items are gladiolus, carnations, local roses, Dutch roses, Gerberas, Tube roses, Cymbidium orchids, Brid of Paradize, Anthurium, marigold, Cycas, Tupidianthus, Phoenix, Dracaena, Ficus, Gloriosia spp., Zephyranthus, Hoemanthus Multiflora, Kukurma, etc.

Production activities are concentrated in Kathmandu valley, Chitwan, Jhapa and Morang in view of nearness to Kathmandu, some Indian markets, and international airport in Kathmandu. Targeting Delhi flower market feasibility studies and trial production of flowers are underway in the far western district, Dadeldhura of Nepal.

Quality – Following the climatic advantages, in the immediate past the quality and presentation of Nepalese flower bulbs, roses, carnations, gerberas, tissue culture plants, etc. have been well recognized in the Indian and overseas markets. The three areas of special consideration that attract additional investment for the development of export quality of products are (a) green houses, (b) planting materials and (c) plant health management.

According to the Floriculture Association of Nepal (FAN), 550 small and medium farm units and their networks altogether give employment to about 2500 people and more than 60% of them are women. If within five years flower and other floriculture products cultivations are extended by 10 folds or up to 1000 ha, there is the possibility of creating employment for 25,000 people. Generation of employment in most of the rural areas has positive impact on poverty reduction Therefore, overall socio-economic impacts of the floriculture sector are very high.

The Global Market Scenarios

The global consumption of floriculture products is predicted to be 30 per cent greater by 2014. The world trade stood at US \$ 11.9 Billion in 2005. During the period 2001 to 2005 annual growth in world trade values of cut flowers and live plants remained at 10 and 12 per cent respectively. Top ten floriculture products importing countries are Germany, United Kingdom, USA, Netherlands, France, Japan, Italy, Switzerland, Belgium and Russian Federation.

Ethiopia, Vietnam, Taiwan, India, Bangladesh, and Colombia have recently achieved a remarkable success in floriculture supported by national strategic environment and favorable government policies and as such these countries managed to gain a foot hold in giant markets. Other developing countries having good achievements since a long past are Kenya, Israel, Ecuador, South Africa, Zimbabwe, Uganda, Zambia, Thailand, China, Malaysia, and Sri Lanka. The developed countries supplying flowers and flower plants to the major markets are the Netherlands (highest quantity supplier), Germany, Italy, Spain, and UK.

Major imported cut-flowers and plants in the world market include Roses, Gypsophila, Hypericum, decorative foliage, Solidago, Carnation, Calla, Ruscus, Wax flower, and Sunflower. Other flowers preferred in the major markets are Chrysanthemums, Tulips, Lilly, Gerbera, Freesia, Anthurium, Gladiolus, Cymbidium Orchids, etc. Houseplants highly demanded by the market are Aglaonema, Chamaedorea Eleg., Cocos, Cordyline, Croton, Dracaena, Ficus Benjamina, Philadendron, Phoenix, Schefflera Arbor., and Yucca.

Nepal enjoys tariff preferences in most of the target markets such as USA, Japan, EU and India. Non-tariff barriers are applicable to all floriculture products in all of these markets. Normal standard requirements of the market have to be complied with. Therefore, exports of recently commercialized floriculture products to these markets are possible with the submission of phyto-sanitary certificate (PC) issued by the competent authority in Nepal.

Problems

Creating enabling environment and achieving competitiveness in the floriculture sub-sector require addressing of many constraints faced by the growers and exporters. These constraints are the limiting factors to attract domestic as well as foreign direct investments. These constraints are related to absence of government policies and strategies, lack of information on technology and technical experts, inadequate export management system, lack of adequate finance, inadequate infrastructures, high air-freight charges, etc.

Important Issue

The greenhouses having many advantages attract a major capital investment. And thus the development of flowers under greenhouses in Nepal has become a prohibitive as the decision is a financial one - whether a grower can afford the investment or not. Moreover, land, labour and infrastructure costs advantages in Nepal might be off set by the high costs of investment in hi-tech cultivation and air-freight. The latest market standards in developed countries require most flowers and foliage grown in greenhouses. Therefore, if Nepal has to penetrate flower and floriculture products to the world market it has no choice but to gradually develop scientific system of cultivation, post harvesting, and marketing of these products.

Future strategies

1. Nepal has to compete from a **value-added and niche market approach**, which focuses on, inter alia, product quality, superior packaging and labeling, new or exotic product and more efficient marketing strategies.
2. At the first stage Nepal should focus on **items not requiring hi-tech and heavy investment**. To start with Nepal can specialize on production and export of bulbs, tubers, rhizomes, and tissue culture and ornamental plants. After gaining adequate marketing experience, at the second stage, Nepal may attempt to develop high investment attracting hi-tech for mass production of exportable cut-flowers.
3. It is utmost necessary to identify **items/species having longer shelf-lives, indigenous of Nepal, and exotic** to the buyers
4. Efforts of all stakeholders including exporters should be focused to take various **measures to reduce transport, infrastructure, and logistic costs**. They should look into the possibility of the “pooling together” for cargo consolidation to mitigate the problems of cold storage, refrigerated vehicle, insufficient freight space, negotiation of freight tariffs, etc.

Achieving Competitiveness

Achieving competitiveness in export marketing is possible only if the efforts of private sector are backed by the export friendly government policies. Nepalese entrepreneurs are seeking agricultural facilities and incentives at least similar to those prevailing in neighbouring countries.

The Public Sector's Efforts

1. A clear policy and action programmes should be launched with a tailored package of incentives that include subsidies on (a) air-freight, (b) greenhouse construction and related materials, (c) irrigation, (d) electricity, (e) supply of planting materials, (f) land procurement at suitable locations, (g) cooling chamber, (h) refrigerated vehicles, etc.
2. Duty waiver facilities on imports of all inputs required for the cultivation and processing of exportable floriculture products.
3. Growers and traders of exportable floriculture products should be treated as farmers and should not come under tax net. Initially at least for a period of 5 years floriculture entrepreneurs should be waived from all internal taxes to attract investment.
4. Commercial banks should be refinanced by the Nepal Rastra Bank (Central Bank) at a reduced interest rate to extend soft loan to floriculture entrepreneurs.
5. Approach to the interested donors in setting up of scientific infrastructure facilities such as construction of wholesale market centres in Kathmandu and Chitwan, cooling chamber in international airport, etc.
6. Provisions for human resource development in the floriculture sector by setting up a separate department under the IAAS for specialized degree programmes, training programme, R&D, extension services, etc. for floriculture products.
7. Simplification of procedures applicable on imports and domestic movements of methyl bromide, sulphur, and nitrate required for soil and plant treatments.
8. Arrange special market promotion campaign to give Nepal's image as one of the flower exporting countries. Participation in international flower fairs and exhibitions will be one of the most effective promotional means. It is advisable to explore the possibility and usefulness of participation in Dubai Flower Centre. This centre may prove an invaluable channel to link not only to European markets but also to others.
9. Support TEPC, AEC, and FAN in dissemination of information (market trends, prices, product variations, demand and supply) to key stakeholders, through frequently up-dated websites and education initiatives to train and support emerging farmers; and
10. Support and promote consolidation of national private sector organizations into a unified force that is adequately funded and staffed, in order to provide technical, financial and human resources development supports to private entrepreneurs.

Entrepreneur's Efforts

1. To identify large retailer and chain retail stores in overseas markets which can directly import exotic and special types of flower bulbs, live plants, cut flowers and foliage in small quantity from Nepal. Establish relationships with such units to provide minimum quantities and quality standards.
2. Entrepreneurs have to be innovative in product and market selections. There is no need that all floriculture entrepreneurs should focus on the same strategies relating to products and markets. It is also advisable to focus on spices and items attracting low investment and having low risk at the initial stage.
3. It is necessary to understand that packaging, transportation and handling costs are the major components of floriculture products exporting. These costs also determine the competitiveness in

the global markets. Entrepreneurs should take measures not only for standardization of packaging (sizes, materials, logos) and labels but also in reducing the cost components.

4. Take appropriate measures to develop of cold chain management protocols (and post-harvesting techniques) to increase the storage and transit live of the products;
5. Participate in industry-wide marketing campaigns and support organized by national bodies like TEPC, FNCCI, AEC, FAN, etc.
6. Try to represent Nepal in the market through selection of very much appropriate and matching agent or partner and develop effective export management system based on knowledge and market information.

Efforts of AEC/FNCCI and FAN

The AEC/FNCCI and FAN should be supported to handle all market promotion as well as technical aspects of the floriculture development in Nepal.

1. Organize frequent interaction programs with stakeholders including government and donors to highlight contribution of the floriculture sub-sector and request for continued supports through development policy and programs.
2. Develop linkages with academic and research institutions IAAS (Rampur), NARC, CINAS, HDD, FDC, etc. and organize jointly practical training and research programs useful to the growers and exporters.
3. Assist entrepreneurs in identifying innovative ideas new products and new markets based on the continual product and marketing research.
4. Disseminate up-dated information on market requirements and prospects for Nepalese flowers and plants.
5. Assist entrepreneurs to take all measures in reducing transportation, packaging, logistic and infrastructure costs.

Donor's Supports

1. Assist to develop linkages between Nepalese growers/exporters and matching partners/importers of floriculture products in the major markets.
2. Provide supports to set up infrastructures like Wholesale markets in Kathmandu and Chitawan, information network on such products, and transport supports to exportable products.
3. Organize market promotion visits and buyers-sellers meetings in the selected markets for the entrepreneurs having export capabilities.
4. Support training programs to farmers to improve agronomic and post harvest handling practices.

The competitiveness of Nepal's floriculture production and exports also depends not in the comparative production factors like labor, land and capital costs and diversity of agro-climatic conditions but on the creation of positive government strategies and investment for the development of physical and institutional infrastructure that support in strengthening of private sector's export capabilities and supply chains. Exporting specific floriculture items to targeted market requires preparing business plan based on a separate feasibility study that includes market research, technical requirements and financial viability.

Abbreviations and acronyms

ADB	Asian Development Bank, Manila	MOAC	Ministry of Agriculture and Cooperative
ADB/N	Agriculture Development Bank of Nepal	MOF	Ministry of Finance
AEC	Agro Enterprise Centre/ FNCCI	MOICS	Ministry of Industries Commerce and Supplies
AICL	Agricultural Inputs Company Limited	MT	Metric Ton
APP	Agriculture Perspective Plan	NARC	National Agricultural Research Council
CAAN	Civil Aviation Authority of Nepal	NGO	Non Governmental Organization
CBI	Centre for the Promotion of Imports from Developing Countries, The Netherlands	NPC	National Planning Commission
CBS	Central Bureau of Statistics, Nepal	NRB	Nepal Rastra Bank
C&F	Cost and Freight, Terms of payment/ delivery	NSCL	Nepal Seed Company Limited
CIF	Cost, Insurance and Freight	NTB	Non-tariffs Barriers
CITES	Convention on International Trade in Endangered Species	ODC	Other Duties and Charges
COO	Country of Origin	OGL	Open General License
CPVO	Community Plants Variety Office, EU	O/I	Output/Input ratio
CPVR	Community Plants Variety Rights, EU	PDS	Public Distribution System
CTEVT	Council of Technical Education and Vocational Training	PRS	Poverty Reduction Strategy
DOA	Department of Agriculture	PQIC	Plant Quarantine Inspection Certificate
DOC	Department of Customs	PQS	Plant Quarantine Stations
EU	European Union	Qty.	Quantity
FAN	Floriculture Association of Nepal	R & D	Research and Development
FAO	Food and Agriculture Organization	RMDC	Rural Micro-finance Development Centre
FDC	Floriculture Development Centre of GON	ROO	Rules of Origin
FDI	Foreign Direct Investment	SAARC	South Asian Association for Regional Cooperation
FNCCI	Federation of Nepalese Chambers of Commerce and Industries	SAFTA	South Asian Free Trade Agreement
FTA	Free Trade Area	SAPTA	SAARC Preferential Trading Arrangement
FY	Fiscal Year	SFCL	Small Farmer's Cooperative Limited
FYM	Farm Yard Manure	SFDB	Small Farmer's Development Bank
GDP	Gross Domestic Products	SMEs	Small and Medium-sized Enterprises
GNP	Gross National Products	SPS	Sanitary and phytosanitary measures
GON	Government of Nepal	Sq mt	Square Meter
GTZ	German Agency for Technical Cooperation	TA	Technical Assistance
Ha	Hector	TBT	Technical Barriers to Trade
HDD	Horticultural Development Directorate	TEPC	Trade and Export Promotion Centre
HH	Household	TRIPS	Trade Related Aspects of Intellectual Property Rights
HICAST	Himalayan Collage of Agriculture Science and Technology	UN	United Nations
HRD	Human Resources Development	UNDP	UN Development Programme
HS	Harmonized Commodity Description and Coding System	UPOV	International Union for the Protection of New Plant Varieties
IAAS	Institute of Agriculture and Animal Sciences of Tribhuvan University (TU), Rampur, Chitawan	US	United States of America
INGO	International Non-governmental Organization	VAT	Value Added Tax
IPM	Integrated Pests Management	WB	World Bank
IPRs	Intellectual Property Rights	WTO	World Trade Organization
ISO	International Standardization Organization		
ITC	International Trade Centre, UNCTAD/ WTO, Geneva		
JTA	Junior Technical Assistant		
Kg	Kilogram		
Km	Kilo meter		
LDCs	Least Developed Countries		
MFN	Most-favoured Nations		
m.	Million		
mm.	Millimeter		
MNS	Market News Services of ITC		

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1. Background

1.1 The Present Project

Nepal's is predominantly an agriculture-based economy where floriculture sub-sector holds a great export potential. Traditional floriculture in Nepal is gradually turning to a modern lucrative business since early Nineties. Entrepreneur's enthusiasm and investment in this sector grew spontaneously with the encouragement received from the domestic as well as foreign markets.

However, this sub-sector is constrained by myriad factors, which are external as well as internal to the flower and plant growers and other stakeholders. The main internal factors include the lack of friendly policy package, quality inputs, institutional credits, effective extension services, infrastructure and market. The external factors influencing floriculture are increased competitiveness in the world markets, and increased market access however, with complicated regulatory systems. Changes in external factors will impact the production as well as marketing situations and that ultimately distort the competitiveness of floriculture. Hence a need to undertake periodic studies has been felt to develop understanding on how changes in factors are affecting Nepal's competitive position and thereby to identify practical strategic measures, and support government's policy and strategy formulation process and also assist entrepreneurs in deciding their marketing strategies.

This study is undertaken by Floriculture Association of Nepal (FAN), where Agro-Enterprise Centre (AEC) of Federation of Nepalese Chambers of Commerce and Industries (FNCCI) is a part.

1.2 Objective

International trade is one of the paths to achieve success in floriculture development¹ and considering its growth prospects in view of diverged geo-physical location and favorable agro-climatic conditions export of floriculture products might play a crucial role in achieving socio-economic development with poverty reduction in Nepal.

In view of this background the immediate objective of the study is to assess the trade competitiveness of floriculture sub-sector and disseminate the up-dated information to the stakeholders. The study also focuses on the production and export potentials of Carnations, Orchids and bulbs to Indian and overseas markets. In addition, the study has attempted to consolidate some of the important information that is useful in building future strategies.

1.3 Coverage

The issues examined by this study include:

- Review of the existing supply capability and identification of the sources of competitive advantages,
- Analysis of domestic environment and market prospects, that can provide cushion to entrepreneurs in case of external market shocks during the initial phase,
- A basic first-cut analysis of export prospects and regulatory requirements of the potential foreign markets, that helps to floriculturists for further market research and promotion, and

¹ Other paths that can be considered for its development are (i) scientific production management, and (ii) sustainable market oriented policy, institutional and infrastructural approaches.

- Presentation of existing scenarios and cases with a view to identifying areas requiring particular attention of the stakeholders to achieve competitiveness in Nepal.

1.4 Rationales

Overseas exports of cut flowers, bulbs, live plants, and foliage could be materialized only since past six years. Considering the production as well as market prospects the stakeholders have overwhelmingly realized the possible contribution of the floriculture sub-sector to the national economy in terms of increase in income and employment. This sub-sector can directly help in transferring income from a group of rich classes and institutions to low income groups and thereby play a crucial part in poverty reduction. The FAN wishes to give thrust to a further growth of the floriculture sub-sector in Nepal and demands for priority national programs. The following are the obvious reasons²:

- It is a pro-poor sub-sector. Low-income groups of people like labor, small growers and small entrepreneurs are involved in cultivation and marketing.
- Nepal can promote some of the high value and exotic varieties without investing much in sophisticated foreign technologies.
- Items can be more competitive vis-à-vis other agricultural products with the availability of land, labors and favorable topographical and agro-climatic conditions for temperate as well as tropical flora.
- Domestic value addition is very high being land and labor intensive items requiring less foreign inputs component.
- Foreign exchange earnings are saved by reducing imports of flowers and plants required for domestic market and by minimizing foreign input requirements for exportable items.
- The global market trends present a growing demand for fresh cut-flowers, flower bulbs, ornamental plants, foliages, etc.

1.5 Methodology

Both extensive desk study and field research were considered necessary for this study to generate qualitative and quantitative information. Qualitative information was obtained during the field visits which were important in getting first hand information about growers', traders', and government that connected directly or indirectly to cultivation and external trade (Appendix 1.1). Similarly, quantitative information is based more on analysis and review of numerous reports and studies, which have furnished important statistical information on production and external trades. At the start of the study, it was found that much information exist in the floriculture sub-sector but are disaggregated requiring rigorous analysis and consolidation. Non-availability of market demand and prices specific data on cymbidium orchids and carnations resulted focusing only on the production aspects of these items.

Primary data was acquired through a mix of approaches over the study period from the months of Mid-September to Mid-November 2006. Case studies of growers in Kathmandu, Chitwan, Jhapa, and Lalitpur districts were undertaken. For case studies structured questionnaires were designed and administered. Interviews with Key Informants including government officials, growers, retailers, wholesalers and other entrepreneurs were taken. Secondary data from published and unpublished

² Based on the discussion with the President and Executive Members of FAN

books, magazines, journals, and study reports were collected, reviewed and incorporated in the relevant parts of this report (Appendix 1.2).

Before preparing the final report, draft was submitted to FAN and AEC of FNCCI for their observations, comments and suggestions. Further, other experts of the subjects were consulted as required and their inputs have also been incorporated in the study.

1.6 Organization

This chapter highlighted the nature, objectives, and methodology of the study. The following Chapter 2 will set the scene of sources of competitive advantages. Chapter 3 focuses on national environment for growing and trade of floricultural products in Nepal. Chapter 4 presents a basic first-cut analysis of the global market scenarios and future prospects. Chapter 5 concentrates on the productivity and competitive assessment. The last Chapter then follows with strategies to achieve competitiveness and it also puts forward some major recommendations that arose from this study.

A separate study was undertaken to assess the current production and trade status of carnations and cymbidium orchids. Reports of this study together with information on markets and market requirements for cut flowers, bulbs and other floriculture products and details of support scheme of the Government of India for floriculture development are included in the Appendices to this report.

2. Domestic Supply Capability³

In this chapter attempts have been made to assess the domestic supply conditions and capability of floriculture products in Nepal.

2.1 Production and Entrepreneurs

Cut flowers, bulbs, perennial flowers, ornamental plants, landscape and gardening, floral arrangements, and specific decorations are among important business areas currently practiced under floriculture sub-sector in Nepal. Over the past two decades production pattern is changing according to consumers demand behaviors as well as global market scenarios. Since early Nineties, cut flower production system flourished especially with gladiolus and roses. Currently more than 50 cut flowers are available in Nepalese market. Among these 5 cultivars viz. gladiolus, and local roses are grown in open areas and Dutch rose, carnation and gerbera are cultivated under covered areas and are available round the year.

A separate study has indicated a great prospect for commercial production and trade of exportable carnations and cymbidium orchids in Nepal (For details refer Appendices 2.1 and 2.2). Traditionally Marigold is popular in domestic market as it is used for garlands as well as for worshipping the God and Goddesses. Chrysanthemums are available from October to December. An experiment production in Dolalghat of Sindhupalchowk district has proved the possibility of extending Chrysanthemums production till the month of February.

Records show that the first commercial nursery was established in Lazimpat, Kathmandu as early as 1957 and until 1985 very few entrepreneurs were involved in this sub-sector. In 1992, there were 4 flower commercial growers in two districts with annual turnover of Rs. 10 million. Coming to the year 2006, number of commercial farmers reached to 550 in 34 districts with the total annual transaction of Rs. 230 million. The volume of flower and ornamental plants being grown commercially is very much limited in Nepal. But the business is expanding gradually. The most common plants that are being grown and have potentials are:

- i) Seasonal flowers: Inca (African marigold), Zinnia, Dahlia, Petunia, Pansy, Verbena, Antirrhinum, Calceolaria, Cineraria, Celosia and Renunculus.
- ii) Ornamental Plants (Non Flowering): This category includes Cycas, Tupidianthus, Phoenix, Aeric Palm (Palm Varieties), Nolina, Phylodron, Dracaena, Dhupi (Dhupi varieties), Ficus (Ficus species), Are curia cookie and similar other plants.
- iii) Shrubs and Climbers: Under this category falls Rose, Bougainvillea, Bleeding Heart, Begonia, Venista.
- iv) Cut-flowers: Gladiolus, Roses, Carnations, Gerbera, Tuberose, Cymbidium Orchid, Chrysanthemum, Aster, Lily, Anthurium, Bird of Paradise, tulips, etc.
- v) Bulbs: Gladiolus, Gloriosia spp., Zephyranthus, Haemanthus Multiflora (football lily), Polyanthus (Rosani), Lycoris aurea, Eucharis grandiflora (Amazonlily), Achimenes, Kukurma, Calladium, Amaryllis Hippeastrum, Freesia spp., Lycoris lily, etc.
- vi) Tissue Culture Plants: Bamboo, Orchids, Aster, etc.
- vii) Foliage: Asparagus, ferns, Nephrolepis, Cordifolia, Pulmosus, Junipers, Thuja, etc.

³ This part is contributed by Mr.Lok Nath Gaire and Ms. Sabanam Sivakoti

After 1995 the number of entrepreneurs involved in this sub-sector has increased remarkably. At present all of 550 entrepreneurs have learned basics and are commercializing the operations in Nepal. Out of this number 84 are involved in cut flower growing while the remaining are in seasonal flowers, ornamental plants, bulbs, nursery, retail shops and services.

2.2 Input Suppliers

Seeds and planting materials are among the most important inputs that are imported mainly from India, Holland, Spain, and Japan. Besides these, tools and equipments are imported from China, Taiwan, Malaysia and Germany. There are many well established private suppliers involved in imports of the planting materials, equipments, tools, fertilizers and pesticides. Some of such suppliers are:

- a) **Seeds**
 - i) Standard Nursery/Crop Protech/Devtech
 - ii) Karma and Sons
 - iii) Flora Incorporate
 - iv) Kumari Flora Firm
- b) **Planting Materials for cut flowers**
 - i) Crop Protech/Devtech
 - ii) Flora Incorporate
 - iii) Kumari Flora Firm
 - iv) Direct import by growers
- c) **Plants: Perennial / Ornamental:** Indian hawkers, representatives of Indian companies, retail shops and nurseries.
- d) **Tools and Equipments:** All agriculture input suppliers and Agro-vet/agro shops
- e) **Bulbs and Tubers:** Indian hawkers and direct imports by the growers
- f) **Fertilizers/Insecticide/Fungicide:** All agro chemical suppliers and Agriculture Inputs Company Ltd.
- g) **Plastic (UV):** Sagar Plastics, Jyoti Polymers, etc.

Some of the organized floricultural entrepreneurs import selected inputs directly from the main suppliers or sources abroad.

2.3 Production Factors and Sources

2.3.1 Land, Bio-diversity, and Labor

The FAN has estimated that the area under flower cultivation is about 80 ha of land, out of which 32 ha is covered. The total cultivated land under the floriculture sector is increasing since last one and half decades though there was stagnation in growth only during the past three years. The growth in land under cultivation is likely to revive with the current development in political situation of the country.

Minimum economic size of land differs depending on the types of crop, location and target market. For example, Carnations cultivation requires at least 1 Ropani (508 Sq.mt.) of land in Kathmandu Valley for the domestic market. But exports that require a minimum of 5000 sticks per consignment need at least 13,200 Sq.mt. of net production areas. As the lands are easily available on lease system about 90 % of entrepreneurs have found it economical to use leased land. Average rent in Kathmandu valley is Rs. 5000 per Ropani (508 Sq.mt.) and rent outside the valley is Rs. 800

to 3000 per Ropani (508 Sq.mt). Leasing of land has only disadvantage that the growers will not have access to bank credits as it is a normal practice for the banks to extend credit only against the collateral of land and building.

Rich bio-diversity with the diverged topographical and climatic conditions present the possibility to developing many native as well as cultivable species of flowers, flower bulbs, tubers and rhizomes, ornamental plants and orchids in Nepal. As many as 6500 species of flowering plants have been identified.⁴ Country is divided into three broad ecological zones:

- a. **The Himalaya and High Mountain Region** comprising of 35.2 % of the country's land surface having Alpine, Dry and Arid type of climate. Temperature is mostly below 0 degree centigrade and never above 16 degree centigrade. The average rainfall is 500 mms and in the higher regions precipitation is in the form of snow.
- b. **The Hills and Mid-Mountain Region** (Mahabharat range) comprising of 41.7% of the country's land surface having temperate climate where temperature varies from 0 to 30 degree centigrade. Average rainfall is about 1500 mms.
- c. **The Terai Region** comprising of 23.1% of the country's land surface having sub-tropical climate where temperature ranges from 5 to 47 degree centigrade and rainfall is between 2000 to 2500 mms.

Most of the Hills and mid-Mountain regions of Nepal have favorable climatic conditions for cultivation and commercialization of native as well as commercial species in view of bright sunlight, temperature (day 20-25 and night 15-20 degree centigrade) with 60 to 80 % humidity and appropriate soil acidity (5.0 to 6.0 ph).

Land use patterns show that cultivated land constitutes 21 per cent of total land area and only 33 per cent of cultivated land has access to irrigation facility (Table 2.1). About 7 per cent of total land areas that is also available for agriculture is uncultivated.

Table 2.1 – Land Use Patterns in Nepal

SN	Description of uses	Area in Ha'000	%
1	Agricultural Land Cultivated Irrigated Land (1,001,412 Ha.)	3,091	21.0
2	Agricultural Land Uncultivated	1,030	7.0
3	Forest (including shrub1,560,000)	5,828	39.6
4	Grass Land and Pasture	1,766	12.0
5	Water	383	2.6
6	Others	2,620	17.8
	Total	14,718	100.0

Source: Statistical Information on Nepalese Agriculture 2003/04, Ministry of Agriculture and Cooperatives, Agri-Business Promotion and Statistics Division, 2005.

The study mission has identified 14 districts with 7.0 million population (2005 Projection) having prospects for floriculture production in Nepal. These districts in the central part of Nepal are Kathmandu, Lalitpur, Bhaktapur, Kavre Palanchowk, Chitwan, Dhading, Makwanpur, and

⁴ Ministry of Forests and Soil Conservation, Terai Arc Landscape – Nepal, Strategic Plan 2004-2014, September 2003, page 6.

Nuwakot. From these districts the international airport in Kathmandu is accessible within one to four hours driving time. Other districts having favorable climatic conditions for flowers as well as nearness to Kolkatta market are Jhapa, Illam, Morang, and Sunsari in the East and to Delhi market are Dadeldhura, and Doti in the West of Nepal. These two Indian flower markets can be reached from these six districts within 5 to 6 hours driving time.

Available data on the land use patterns (Table 2.2), favorable agro-climatic conditions and possibility of farmers shifting from low value to high value crops like flowers in these districts indicate that about 10,000 ha of lands are available without any hitches for flowers and ornamental plants cultivation. Additional land areas can be spared the private sector entrepreneurs and foreign investors find more favorable investment climate than prevailing at the present moment.

Adequate labors are available in all of the selected districts at daily wages ranging from US \$ 1.10 to 2.20 that depend on their skills.

Table 2.2 – Land use Patterns of Selected Districts Having Prospects for Flower Cultivation
(Population projected for 2005 in ‘ 000 and Land in ‘000 Ha)

Regions and Districts	Population	Cultivated Land	Uncultivated Land	Pasture Land	Forest	Others Land	Total Land
Central	3,971	247	114	37	564	41	1003
Kathmandu	1,301	19	5	-	14	3	41
Lalitpur	376	13	5	-	21	1	40
Bhaktapur	250	8	2	-	2	-	12
Kavre	413	36	25	4	74	1	140
Dhading	366	44	29	16	93	10	192
Makwanpur	429	41	19	3	167	9	239
Chitwan	528	47	8	10	143	11	219
Nuwakot	308	39	21	4	50	6	120
Eastern	2,628	341	53	14	191	30	629
Jhapa	730	114	10	3	17	1	145
Illam	307	45	23	3	96	5	172
Sunsari	670	75	7	5	23	17	127
Morang	921	107	13	3	55	7	185
Far-Western	391	52	24	14	261	5	356
Dhadeldhura	136	19	8	5	116	2	150
Doti	255	33	16	9	145	3	206
Grand Total	6,990	640	191	65	1016	76	1978

Source: District Development Profiles of Nepal 2004, Informal Sector Research and Study Centre, Kathmandu, Nepal

2.3.2 Raw materials: seeds and planting materials

Demand for hybrid and improved seeds and planting grew spontaneously in Nepal during the past one and half decades. In the public sector Agriculture Input Company Ltd. (AICL) specializes in supply of fertilizer and Nepal Seeds Company (NSC) is dealing with seeds supply in Nepal.

However, NSC is still working in cereal seeds only and is not involved in supply of seeds and planting materials in the floriculture sub-sector.

Farmers/growers are using specific planting materials from specialized private suppliers. Most of seeds used are hybrid and are imported from breeders abroad. Planting materials for carnations, gerbera, and roses are imported from Spain, Holland and India. Tissue cultured flasks of cymbidium orchids are imported from Australia, USA and Japan. Many of bulbs are sourced from eastern India and Holland. More than 80% ornamental plants along with soil are imported from India though international quarantine rule has strictly prohibits soil imports.

2.3.3 Fertilizers

The farmers have well recognized that there is a scope for increasing the yield of flower crops with the balanced use of both organic and chemical fertilizers. As a campaign to promote sustainable agriculture, bio-fertilizers⁵ such as composts, organic manures and vermin-culture easily collected from farm yard or from local farmers, are in increasing uses, particularly for commercially grown vegetables, fruits and flowers. Demand for more organic fertilizers is expected to grow exponentially.

Few years back major policy reforms were undertaken by the Government whereby the fertilizer sub-sector was deregulated, fertilizer subsidies removed, and the private sector allowed to freely import and distribute fertilizers. Chemical fertilizers imported and supplied by the Agriculture Input Company Ltd. (AICL) and other private sector importers are sold in the local markets. Farmers of flowers and ornamental plants are using DAP, Urea, MOP, Calcium nitrate, potassium nitrate and micro nutrients.

2.3.4 Insecticides/fungicides/ herbicides

Broad based pesticides and fungicides are used in controlling pests and diseases. Such materials are easily available in the local markets and agro-vets retailers are also found selling them along with seeds, equipment and fertilizers. Neither grower nor the pesticide dealers are aware of specific pesticides/fungicides requirement of some of the flower crops and for some specific conditions. Beside these, imports of some of the chemicals, like Methyl Bromide that is required for soil sterilization, but these are band by state regulations. Some of these chemicals such as potassium and calcium nitrates, which are normally used in making explosives, are subjected to Home Ministry's special clearance permit to the Customs. The growers requiring small quantities of such chemicals occasionally suffer from costly and time consuming administrative procedural delays and hassles.

2.3.5 Irrigation systems

At present about 33 per cent of cultivated land areas have access to irrigation facility. Surface irrigation, through tube well, cannel, pounds, and tanks, is a common practice in cultivation system of Nepal. Controlled irrigation system is not normal. Sprinkler irrigation is found sparsely but drip irrigation is being used by few firms. Though the operation cost is very low, the growers find hard to afford initial heavy investment required for drip irrigation system and are expecting government supports for it.

⁵ Which includes cow dung, leaf manure (humus), plant waste (saw dust, bark), bone meal, oil cake etc.

Some attempts are underway to introduce micro irrigation (sprinkler, drip irrigation) and low cost water saving devices (water storage tanks, hybrid irrigation systems). Agriculture Development Bank (ADB/N), and USAID have been the agencies promoting the mini/micro sprinklers irrigation and drip irrigation method in a small scale in Nepal in the past. The drip and sprinkler technology promoted have proven to have water application efficiency in an order of 75% or more compared to 20 to 50 % in other conventional surface irrigation (IDE, 2002)⁶.

2.3.6 Credit facilities

The market for micro and rural financial services appears to be huge, if only the services could be delivered in a sustainable manner. There are 17 commercial banks, 20 development banks, 5 rural development banks, 59 finance companies, 21 cooperative societies and 44 micro-finance institutions (NGO) in Nepal. In addition, there are more than 26,000 savings and credit grassroots organizations, which provide financial services particularly to people in remote areas. Agriculture Development Bank of Nepal (ADB/N), with 450 branches across the country, is the major development bank. In the recent years it has invested approximately Rs.10 billion annually in marketing, livestock, agro-industries and cash crops production.

Small Farmers Development Bank (SFDB), with the supports of ADB/N, was created in 2002 under the Development Bank Act of 1996 to provide wholesale funds to Small Farmer Co-operatives Ltd. (SFCL) that make groups of small farmers self-reliant and sustained. Apart from this as the micro-finance apex institution Rural Micro-Finance Development Centre (RMDC) has also been established mainly to extend wholesale fund to the micro-finance institutions (MFIs) and build their capacities.

Despite of these arrange rural finance is still characterized by weak governance, poor repayment rates, high transaction costs, recurring losses, and high non-performing loans. Credit facilities are concentrated in city centers and Terai belts having limited outreach.

In the floriculture sub-sector the ADB/N provides credit facilities with subsidy of 3% on interest. Very few floriculture entrepreneurs are benefited from ADB loans as there is also a need to provide collateral security of land and/or building. In view of need for initial high investment new entrepreneurs are reluctant to take risks and many look for credit facilities on special terms from the banks or financial institutions. At present some of the commercial banks are found less interested on investment in this sub-sector for the facts that there is no crop insurance system in Nepal and recently about four of the commercial banks suffered a huge loss in supporting one of the new entrepreneurs.

2.4 Power, Extension, and R&D Services

For power, Nepalese agriculture is overwhelming dependent on draught animals and humans that account for over 64 percent and machine tools for 35.5. Number of tractors available in the country as of mid-July 2004 is 30,565 (NARC, 2005).

There are no provisions for specific technical and extension services in the floriculture sub-sector in Nepal. The private sector entrepreneurs are developing technological knowledge and technology gradually on their own in a very limited scale. At present Government institutions like DADO and

⁶ Surya Nepal Pvt. Ltd. , Roles and Potentials of Agriculture in Nepal, Damodar Prasad Gautam and Murari Prasad Gautam, 2005.

NARC have taken sole responsibility of extension services. It was reported that present extension and research systems are very weak to provide effective services to the commercial growers of flowers basically for the lack of proper programs, technicians, and budgetary provisions. There is also a lack of wider view and flexibility in delivering technology and services. Moreover, it has been felt that extension services should be looked beyond delivery of technology. Such services should also cover supports to post-production functions such as inputs and outputs marketing, social mobilization, IPM, farm management, business planning, post harvest handling, processing, resource management, etc. Farmers are found prepared to pay appropriate fees or charges on services of qualified JTA or agriculture specialists.

At present there are 48 farms under the MOAC and most of these farms are under-utilized and operating far below potential. The MOAC is in process of transforming some of them into agricultural resource centers that could operate in business like manner. These centers are envisaged to provide integrated packages of inputs and services to the farmers in the agricultural production areas.

2.5 Human Resource and Training

For the past many years the Institute of Agriculture and Animal Science (IAAS) of the Tribhuvan University is involved in agriculture human resource development in Nepal. It is located in Rampur, Chitwan and has two other campuses at Lamjung and Paklihawa. It offers bachelor, master and doctor of philosophy degree programs and enrolls on an average of 750 students per year. It also has a Veterinary Teaching Hospital.

The IAAS offers specialization course in floriculture under the master in horticulture program. It was observed that many students have chosen the horticulture program and several internally and externally funded research projects are also being undertaken. Government run Council of Technical Education and Vocational Training (CTEVT) is also producing JT and JTAs in agriculture. The Himalayan College of Agricultural Science and Technology (HICAST) is the only college in the private sector in Nepal providing academic programs of B.Sc (Hons) Agriculture and B.V.Sc. and Animal Husbandry.

For the human resource development in the floriculture sub-sector, the other stakeholders like Government of Nepal, FNCCI, AEC, FAN, etc., have also occasional programs to provide fellowships/scholarships, organize highly specialized workshops/ seminar/ training and recommend donors for studies abroad.

There have been few yet appreciable efforts from FAN towards organizing training. So far 21 trainings have been organized with the total number of 459 participants. The trainings were focused mostly on Seasonal/Nursery Production and Management (7), Cut Flower Production and Management (7), Flower arrangement (3), Export Oriented (2), and Miscellaneous (2). Only two training programs ran for more than a month while the duration for the rest ranged from a day to 11 days. It was found that 71 % of the training concentrated in Kathmandu while rests were conducted in other districts.

Although there have been sporadic reports of trainings conducted by other organizations such as World Vision International, Women Development Office Kathmandu, and Department of Women Development and District Development Committees, however, there have been no coordination with FAN in organizing such training (MRSP, 2062; WDO Report, 2062) programs.

In the present context the number of trainings extended is inadequate for the capacity building of the existing entrepreneurs as well as interested individuals. There should be inbuilt government national programs to extend degree and training for human resources development in the floriculture sub-sector.

2.6 Marketing System and Infrastructure

2.6.1 Post harvesting operations: grading, packaging, storages, and transportation

Currently, except for few organized, many small farmers do not practice any scientific post harvest operations. Harvested products are immediately taken to local markets. In both wholesale outlets and retail shops, the spikes are placed in buckets with normal water. There is no specific post harvest facility in the wholesale market.

Nepalese entrepreneurs have to be conscious in adopting scientific post-harvest practices that are crucial to retain flowers and other products fresh for a longer time. In particular, international market requires cut flowers harvesting at specific stages and have to be fed by 10 percent sucrose in bacteria free water for 12 hours. After this flowers should be kept in cooling storage for minimum of 20 hours in a temperature of 2 to 4 °C and 75 to 80 percent RH. Even the grading and packaging should be done in cooling area. Delivery van, waiting lounge in airport and storage area and the air cargo boxes also need the specified cooling system. Without these proper procedures, products are not accepted in the international market and this could be one of the most challenging issues for Nepal, in its attempt to target overseas markets.

For the international market, ornamental plants require facility to grow up on specific media (out of soil). Nepalese growers have not so far practiced growing up in such media. Moreover, entering to international market, need adequate knowledge on technicalities and rules, regulations, standards and sanitary and phytosanitary (SPS) requirements.

So far none, entrepreneur or government has arranged refrigerated van for transportation of the products. The grower transports their products in normal trucks, vans, buses, motorcycle and cycle available in the market.

2.6.2 Pricing and Information System

Prices of cut flowers and other floriculture products in Nepalese market are determined based on the seasons, demand and supply. Lack of proper post-harvesting knowledge and facilities and unscientific storage system have constrained in ensuring stability in prices and proper returns to the growers. Often seasonal demand cannot be fulfilled by the domestic supplies and entrepreneurs import from India. On many occasions growers have to lose and for the lack of demand flowers are thrown to garbage. Proper farm management and production scheduling to match the market requirements have also become a crucial factor to the growers. Additionally, the growers are also losing their values for the lack of proper storage system in market centers.

Growers, wholesalers, retailers as well as consumers are often confused and find very much uncomfortable situation for the lack of adequate information on crops, availability, quality, prices, supply situation, etc. None of the organization has taken steps to devise information system for floriculture products. For the lack of information price of a product is determined only after it arrives at wholesale or retail counter in the market. Most of the growers with little market

knowledge are victims in terms of revenue they receive even during peak demand periods. Wholesalers and retailers are not in position to make proper forecast on demand and supply situations in the market. They try to minimize the risk by paying prices as low as possible to the farmers. Therefore, an institutional mechanism has to be evolved to disseminate market information to all interested parties and thereby bring market stability in the country.

2.6.3 Promotion

Nepalese consumers are gradually developing taste and culture of flower uses in their lives. Flowers, bouquets and live plants are being bought as gift and home decorating items. However, many citizens are yet to have good knowledge on the importance of floral crops. The FAN and AEC of FNCCI are the only organizations directly involved in market promotion of floriculture products in Nepal. The FAN is a private sector member-based commodity association launching important activities, *inter alia*, organization of annual flower exhibition in Kathmandu⁷, publications, training programs and operation of flower wholesale market in Kathmandu. Main sources of fund of the FAN are the membership fees and the services charges. The contributions of AEC and FAN to bring floriculture business in today's status should be appreciated and both the organizations should be encouraged with technical and financial supports for future development of floriculture business in Nepal.

2.6.4 Distribution Channels and Distribution system

The only one official wholesale market is being operated by FAN in Kathmandu. Its turnover in 2005 crossed Rs.5.2 million. It provides an important linkage between the growers and retailers. The growers are facilitated to bring cut-flowers and foliages from all over the country and present to the retailers and bulk buyers. It provides storage facilities, helps in determination of prices and terms of purchase. It is opened early morning at 9.00 am and normally goods are physically presented at grower's risks. Many retailers from Kathmandu valley participate in the market and collect items of their interest for further value addition and sale to the consumers.

It was observed that the wholesale market is operating in a small scale with a very limited space in a rented house. Available infrastructure facilities are very poor. It has poor access and does not have scientific cooling system required an efficient operation. This might be one of the reasons that the large entrepreneurs have set up their own showroom for retailing their products. Their distribution system, terms and conditions are determined by themselves on their own risk. There are altogether 56 retail shops in Kathmandu valley. Most of the shops are located in market centers and roadsides. The system of locating shops along the roadsides has helped in promoting products and creating interests of the consumers though it is against the flower and plant maintenance rules.

2.6.5 Cost of Production and Return

A production cost analysis shows that in Hills of Kalingpong (India), average output of gladiolus bulbs was 12.35 per sq. mt. of land as against the output of 45.00 bulbs per sq. mt. of land in Chitawan (Nepal)⁸ (Table 2.3). This gives an indication that bulbs cultivation in hill areas of Nepal is likely to become more competitive in terms of cost as well as quality than in Kalingpong.

⁷ For the past 10 years the FAN is organizing Nepal Floriculture Exhibition annually without any interruption.

⁸ 50,000 bulbs from 1 Acre (4049.9 Sq.Mt.) in Kalingpong and 15000 bulbs from 1 Katha (334 Sq. mt.) in Chitawan.

A benefit and cost ratios analysis of selected cash crops in Chitawan district shows that the farmers make highest return in terms of total revenue from flower cultivation from a unit (1 Kattha⁹) of land. Return from flower cultivation is Rs.13,768 as against the returns from radish and Kidney beans of Rs.4,258 and Rs.1,002 per kattha of land respectively (Table 2.4).

Table 2.3 Approximate Costs, Returns and Benefit/Cost Ratios of Growing Selected Flower Bulbs and Tuber in Kalingpong (North Bengal, India)¹⁰

Names	Gladiolus	Haemanthus	Gloreosia	Zephyranthus	Caladium	Caladium	Eucharis	Freesias	Lyconis
Other names sizes, and descriptions	Good sizes 3" to 5"	Football Lilly 4" to 8"	Tuber of 2" to 4"	Robasta (wild) and other grown spices	Decorative Plant/Bulb Lancy ¹¹	Decorative Plant/Bulb Fancy	Bulbs and white cut flowers	Bulbs, cut flowers & pot plants	Bulbs and Cut flowers
Sowing Seasons	Jan-Feb	Feb – March	Feb – March		February	February	Feb	Nov.Dec	March
Harvesting Seasons	July-Aug	July -Aug	June – July		Dec.	Dec.	July	April – March	May
No. of Plants / Acre	50,000	20,000 to 40,000	20,000	100,000	30,000	30,000	50,000	70,000	50,000
Material requirements	25 Kg./acre	20,000 to 40,000 bulbs	20,000	100,000	30,000	30,000	50,000	70,000	50,000
Unit costs of materials	Rs.150/kg	Rs.1.75 each	Rs.2.00 each	Rs.0.5 per pc	Rs.7 each	Rs.3 each	Rs.3.00	Rs1.5 each	Rs.4 each
Total costs of material	3,750	35,000	40,000	50,000	210,000	90,000	150,000	105,000	200,000
Total labour M/D	200	120	160	200	200	200	200	200	200
Total labour ¹²	10,000	6,000	8,000	10,000	10,000	10,000	10,000	10,000	10,000
FYM in Doko ¹³	200	300	600	600	600	600	600	600	600
Leave Compost ¹⁴			200						
Cost of Manure	1600	2,400	12,800	4,800	4,800	4,800	4,800	4,800	4,800
Chemicals	2,000	3,000	3,200	3,000	3,000	3,000	3,000	3,000	3,000
Other costs ¹⁵	5,000	4,000	7,000 ¹⁶	2,200	5,200	5,200	5,200	5,200	5,200
Total costs ¹⁷	22,350	50,400	71,000	70,000	233,000	113,000	173,000	128,000	223,000
Output per plant (Est.)	1 Bulb (B)	3 (B)	2 (T)	3 (B)	2 (B)	2 (B)	2 (B) 1 (F)	4 Bulbs 1 Flower	3 B 2 F
Total output in quantity	50,000 B	60,000	40,000	300,000	60,000	60,000	100000(B 50000 (F)	280,000 B 70,000 F	150,000 100,000
Expected unit price	Rs.1.25 B	Rs.1.75 each	Rs.5 each	Rs. 0.50	Rs.7.00	Rs.3.00	300,000 B 100,000 F	Rs.1.5 B Re.1.0 F	Rs.4.0 B Re.2.0 F
Total revenue	62,500	105,000	200,000	150,000	420,000	180,000	400,000	490,000	800,000
Gross returns	40,150	54,600	129,000	80,000	187,000	67,000	227,000	362,000	577,000
Benefit/cost ratios	1.796	1.08	1.8	1.14	0.76	0.59	1.31	2.83	2.58

⁹ One Kattha is equal to 334 Sq. mt.

¹⁰ Sources: Interviews with Farmers groups lead by Mr. D.N.Pradhan of Kalingpong and Mr.Tarjen Rai of Upper Pedong.

¹¹ Lancy is small size and perishable having only one month of storage life while Fancy is big size with big leaf having more than one month storage life.

¹² Average daily wage paid to labor is Rs.50. Normally a man receives Rs.60 to 75 and a women receives Rs.50. Total cost calculation of labor does not include the cost of family labor.

¹³ Cost of FYM per Doko is Rs.8

¹⁴ Cost of Leave compost per Doko is Rs.40

¹⁵ Other costs include irrigation, post harvest handling, packing, etc.

¹⁶ Other costs include Rs.5000 for bamboo supports.

¹⁷ Total cost does not include the costs of land and capital

Table 2.4 Benefit /Cost Ratios of Selected Cash Crops in Chitawan District

Year:- 2062/63 (2006)		Value in Rs / Kattha			Improved seeds and Irrigated condition					
Particulars		Gladiolus			Radish			Kidney Beans		
1. Variable Cost	Unit	Qty	Price	Value	Qty	Price	Value	Qty	Price	Value
1.1 Planting Materials	Kg.	5000	4.00	20,000	0.350	1000.0	350.00	2.00	50.00	100.00
1.2 Human Labor	Day									
1.2.1 Planting	Day	6.0	90.00	540.00	3.0	90.00	270.00	3.0	90.00	270.00
1.2.2 Weeding	Day	14.0	75.00	1050.00	0.0	0	0	4.0	70	280.00
1.2.3 Irrigation	Day	1.33	90.00	120.00	1.0	90.00	90.00	1.0	90.00	90.00
1.2.4 Insecticides	Day	1.33	90.00	120.00	0.0	0	0	1.0	90.00	90.00
1.2.5 Harvesting	Day	2.00	90.00	180.00	10.00	90.00	900.00	4.00	90.00	360.00
1.2.6 Post harvest operation	Day	2.00	90.00	180.00	0.0	0	0	0	0	0
1.3 Bullock	Hrs.	1.25	75.00	93.00	1.00	75.00	75.00	1.00	75.00	75.00
1.4. Tractor Use	Minute	3Times 2	11.00	66.00	1 Time 3	11.00	33.00	1 Time 3	11.00	33.00
1.5 Fertilizers										
1.5.1 Manure (FYM)	Bag	5.00	150	750.00	3.00	150.00	450.00	2.00	150.00	300.00
1.5.2 Chemical Fertilizer	Kg	5.00		720.00			160.00			130.00
DAP	Kg	2.00								
Urea	Kg	2.00								
Potash	Kg	1.00								
1.6 Plant Protection Chemical	Rs			150.00			130.00			160.00
1.7 Irrigation - Electricity	Unit	9.00	5.00	45.00	6.00	5.00	30.00	2.00	5.00	10.00
1.8 Marketing										
1.8.1 Packaging for market				140.00			300.00			0
1.8.2 Transportation				1200.00			2100.00			0
Cropping Duration	Months	6			2			5		
1.9 Interest on Variable Cost	Rs	@10%pa		1268.00	@ 10%pa		244.00	@ 10%pa		90.0
2. Fixed Costs	Rs									
2.1 Land Rent and Tax	Rs	1 Kattha	500	500.00	1 Kattha	500	500	1 Kattha	500	500
2.2 Repair & Maint of Equip.	Rs			10.00			10			10
2.3 Depreciation of Equip.	Rs			100.00			100			100
3. Total Costs	Rs			27232.00			5742			2498
Output / Production										
a. Main Product	Kg	4500 Sts	4.0	18000.00	200	50	10000.00	100	35.00	3500.00
b. By-product	Kg	4500 Bulbs	4.0	18000.00			0			
c. Second By-product	Kg	25 Crom	200.0	5000.00			0			
4. Gross Income	Rs			41000.00			10000.00			3500.00
5. Net Profit per Kattha	Rs			13768.00			4258.00			1002
Benefit Cost Ratio				1.506			1.742			1.401

Source: Interviews with the farmers in Gunja Nagar VDC Ward 5 Chitawan

2.6.6 Approximate Landing Costs in the Major Markets

A study of approximate landing costs of Nepalese Carnations and Roses in the major markets indicate that exports to overseas markets are not viable in an immediate future without some production and export subsidies (Appendix 2.3). Further detailed study is required in case of export prospects of roses to Japanese market.

3. External Forces¹⁸

3.1 Domestic Market

In this part of the report the major products and business volumes, domestic market prospects, export performance and problems, government policies, institutional and infrastructural facilities, etc. are assessed.

3.1.1 Products

Commercially grown items are limited to few flowers and ornamental plants. However, their business is expanding steadily. The gross sales record of cut flowers indicates that there has been upsurge in the total number of sticks transacted and there is an increasing demand for cut flowers in the domestic market. The sales record for individual species also depicts a clear increasing trend of volume with decreasing trend of average price for some of the species such as local and Dutch rose, carnation and tube rose. Cymbidium orchid, which is produced in low volume, does not compete with imported ones, shows increasing average prices every year despite the increase in volume of production. This indicates still a higher demand for orchid even at higher price.

The consumption trend shows there is flourishing demand for cut flowers during special occasions such as festivals and traditional occasions welcome and farewell of delegates and diplomats and also while celebrating birth or mourning. Blooming trends have been noticed during wedding receptions. This is a very good sign for the growers. The demand for garlands of marigold during festive season is so high that domestic production alone cannot meet the domestic needs. Likewise, even for other crops, domestic production during winter season is not able to meet the domestic demand and products are being imported from India.

3.1.2 Business Volume

According to an estimation of the FAN currently total annual transaction of all floriculture items including landscaping and gardening services comes to Rs.230 Million (Table 3.1).

Table 3.1 Total Volume of Floriculture Transactions in Nepal

	Description	Rs.Million	Remarks
1.	Seasonal flowers and plants	25	
2.	Ornamental plants	100	
3.	Shurbs and climbers	20	
4.	Cut flowers	25	FAN wholesale Rs.5.2
5.	Exports and domestic trade of Bulbs, rhizomes, etc.	20	
6.	Tissue culture and others	20	
7.	Landscaping and gardening	20	
	Total	230	

Source: FAN Estimation 2006

¹⁸ This part is contributed by Mr.Lok Nath Gaire and Ms. Sabanam Shivakoti

The gross sales records of cut flowers from FAN wholesale market for the last eight years indicate that there has been upsurge in the total number of sticks transacted. There is a clear increasing trend of business volume with decreasing average prices for some of the species such as local and Dutch rose, carnation and tube rose (Table 3.2). Cymbidium orchid, which is produced in low volume and is not imported, shows an upward trend in price together with an increase in volume of production. This indicates growth in demand for orchid even at an increased price.

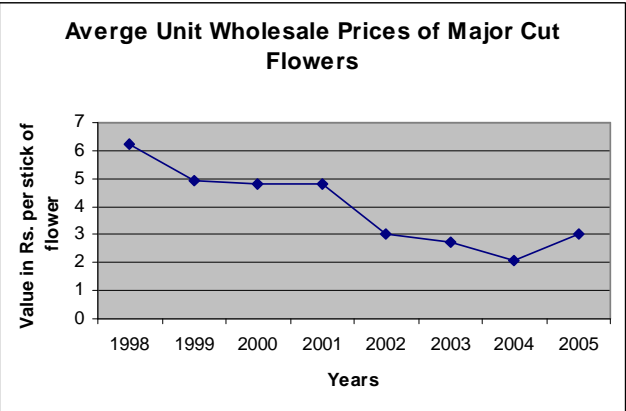
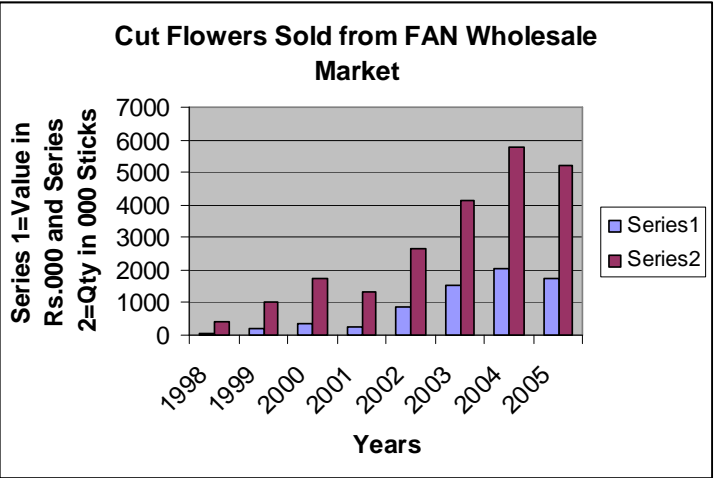


Table 3.2 **Major Cut Flowers Sold form FAN wholesale Market**

S. N	Products		Year / S= Sticks in ' 000 and V=Value in Rs.'000							
			1998	1999	2000	2001	2002	2003	2004	2005
1	Gladiolus	S	49.5	145.3	207.9	123.0	326.2	377.5	602.7	403.0
		V	292.9	760.1	1,012.7	682.4	1,462.5	1,822.2	3,033.5	2,122.7
2	Local Rose	S	14.1	51.2	92.3	47.8	155.2	196.2	127.6	90.0
		V	77.7	226.6	358.4	155.0	376.6	606.2	392.2	286.3
3	Dutch Rose	S	0.9	0.08	7.8	28.6	24.1	53.3	91.2	43.4
		V	9.1	0.7	93.5	193.6	151.1	314.1	500.6	253.1
4	Carnations	S	3.1	3.2	11.0	22.2	28.9	33.2	67.4	133.9
		V	26.4	18.7	103.1	158.1	177.6	196.9	433.8	912.7
5	Gerbera	S	0.9	0.8	4.5	1.3	3.0	4.1	46.8	98.9
		V	6.9	3.5	48.0	9.7	21.5	21.5	336.7	726.6
6	Tuberose	S	0.11	0.25	7.2	3.1	34.7	52.8	18.3	30.5
		V	0.6	1.3	27.5	12.1	107.9	128.7	65.5	135.0
7	Cymbidium Orchid	S	0.21	0.15	0.22	0.13	0.38	1.4	0.6	0.7
		V	3.1	2.8	8.3	3.1	10.2	49.3	21.7	22.4
8	Others	S	2.9	9.8	33.8	45.0	309.6	795.6	1,089.4	955.3
		V	25.6	28.3	86.2	94.2	366.7	989.0	1,067.2	766.0
	Total	S	71.7	210.7	364.7	271.2	882.2	1,514.1	2,044.1	1,755.7
		V	416.2	1042.0	1,737.6	1,308.3	2,674.1	4,127.9	5,851.1	5,224.3
	Average unit prices		6.2	4.9	4.8	4.8	3.0	2.7	2.9	3.0

Above data show that the scope of cut flowers business is expanding and promising. Cut flowers other than above being frequently sold at the FAN wholesale market are: Anthurium, Bird of Paradise, Chrysanthemums, etc.

3.1.3 Consumption pattern

The consumption trends of cut flowers for the last two years by the type of clients show a flourishing business (Table 3.3). Demand grows particularly during special occasions such as festivals, traditional days, special events such as birth-days, welcome, farewell, mourning, etc. A part from this a blooming trend has been noticed during wedding receptions. A new culture has evolved to accept flowers positively as gifts, which has become a part of fashion also. This is an encouraging sign for the growers.

Table 3.3 **Consumption Trends of Cut Flowers in Kathmandu Valley**

Market Segments	Trends for the last 2 years
Officials	Constant
Foreign diplomats and mission	Constant
Hotels	Declining
Restaurants	Constants
Wedding Receptions	Increasing (Blooming)
Special occasions (Traditional, religions)	Increasing
Welcome, Farewell and similar other events	Increasing
Birth, Death and other personal programs	Increasing

Source: Interviews with the Flower Retailers

3.1.4 Wholesale Prices

The wholesale prices record of FAN for the selected cut flowers show an average decrease in prices of Dutch rose and Local rose by 40 per cent, whereas the price of cymbidium orchid increased annually by 16 per cent (Table 3.4). Such an increase in price of orchid is attributed to the involvement of limited number of entrepreneurs and need for heavy investment and longer gestation period. For other cut flowers production and market volumes have increased by many folds during the years 1998 to 2005. A gradual fall and frequent changes in the prices have become a natural market phenomenon. Continued demand in the market should be consider an indication of a good prospect for its further expansion. Normally the prices start increasing from October onwards until February, after that the prices begin to decline and reaches minimum during June till the month of August (Table 3.5). There is production glut during peak summer season while product scarcity during winter season.

Table 3.4 Average Wholesale Prices in N Rs.

Items	1998	1999	2000	2001	2002	2003	2004	2005	2006
Gladiolus	6	5	5	6	4	5	5	5	
Local Roses	5	4	4	3	2	3	3	3	
Dutch Roses	10	10	12	7	6	6	6	7	
Carnations	8	6	9	7	6	6	6	7	
Gerberas	8	4	11	7	7	5	7	7	
Tuberose	5	5	4	4	3	2	4	4	
Cymbidium	15	19	38	23	27	36	36	31	

Source: FAN

Table 3.5 Monthly Wholesale Price - 2005

Cut Flowers	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gladiolus	3.21	5.89	4.37	2.77	5.72	5.2	2.63	4.76	4.49	4.39	4.37	5.36
Local Rose	4.68	4.69	3.99	2.45	3.11	2.66	2.90	3.49	3.45	2.78	4.11	4.36
Dutch Rose	8.12	8.64	8.77	5.78	5.09	5.16	5.67	5.3	6.03	6.05	5.07	6.12
Carnation	9.35	9.09	5.19	4.89	4.32	6.88	6.42	5.06	7.57	7.15	5.33	7.79
Gerbera	9.5	9.26	4.46	4.72	2.73	7.81	9.6	7.29	9.5	8.95	6.80	9.60
Tuberose	5.82	5.06	5.78	3.22	5.46	5.63	3.79	4.15	4.29	4.78	4.30	4.70
Cymbidium	38.41	33.8	32.16	37.4	37.29	17.5	-	15.0	8.0	20.0	12.0	-

The technology that enables to get the production during winter is required for reaping maximum benefit on the part of growers and to reduce the import, which is higher during winter.

3.1.5 Retail Prices

When average retail price for the cut flowers was analyzed, in contrary to the wholesale price, no distinct change was found for the last two years. Prices remained almost constant (Table 3.6). Entrepreneurs have been benefiting by increasing the total volume of transaction rather than the price. This is definitely going to attract interest of more consumers as well as growers.

Table-3.6 Average Retail Prices of Cut Flowers

Cut Flowers	2005	2006	Cut Flowers	2005	2006
Gladiolus	9.5	9.5	Gerbera	15.5	15.5
Local Rose	11.0	11.0	Tuberose	9.75	9.75
Dutch Rose	14.0	14.0	Marigold	16.5	16.5
Carnation	15.5	15.5	Cymbidium Orchid	72.0	72.0

Source: Interviews with the Selected Retailers

3.2 Imports – competition

Though the imports of floriculture products have decreased over the past decade about 24 per cent of domestic market for cut flowers depended on imports from India. The Netherlands, Japan, Spain and Italy are other important countries where from inputs for floriculture industry including seeds and planting materials are sourced. Cut flowers and ornamental plants are imported from India. Major cut flowers imported from India include marigold, tuberose, local rose, Dutch rose and carnations (Table 3.7). Prices of imported flowers are slightly higher than those of domestic supplies. The quality of domestic supplies is still comparable to imported ones. This indicates the scope for further production development in Nepal.

Table 3.7 Import Shares in Domestic Market and Average Price in Rs.

Cut Flowers	Import (%)	Rs. / stick
Gladiolus	26.5	5.70
Local Rose	44.0	4.0
Dutch Rose	34.0	10.11
Carnation	22.0	9.25
Gerbera	18.0	8.5
Tuberose	54.5	5.0
Marigold	58.5	9.0
Cymbidium Orchid	0.0	–

Source: Interviews with the major importers and retailers in Kathmandu Valley

An analysis of seasonal variations in imports of selected cut flowers from India shows that marigold is imported throughout the year with low volume in summer, while carnations, roses, and gerbera are among the least imported cut flowers. (Table 3.8). Greater import for all the cut flowers during winter shows that the domestic supply is inadequate to meet market demand in Kathmandu valley and thereby indicates a huge scope for domestic production.

Table 3.8 Seasonal Variations in Imports (Percentage)

Percentage of import	Gladiolus	Rose	Carnation	Gerbera	Marigold
Average Summer Import	2.0	2.3	0.9	-	20.5
Average Winter Import	33.0	43.7	13.2	13.2	75.0

Source: Interviews with the major importers and retailers in Kathmandu Valley

Demand for Cymbidium orchid is fully met by local production. It's a high value product having demand among limited number of special clients in Kathmandu valley. However, scope for export cannot be neglected and underestimated. Official import data represent a quite different picture. According to the available data for the past five years (Table 3.9) an annual import recorded from half a million to two million Rupees.

A comparative price data on the domestic and imported cut flowers shows that domestic items are cheaper than imported ones (Table 3.10). The higher transaction cost including custom charges and transportation along with the quality of the product govern the price difference. Price differences are low in cases of carnations and gerbera. There is no competition in case of orchids. Prices of gladiolus and roses are higher during winter for the lack of proper production schedules. More green houses are required to strengthen off season supply.

Table – 3.9 Imports of Floricultural Products into Nepal Value in Rs.000

	2001/02	2002/03	2003/04	2004/05
0601.10 Bulbs, tubers, tuberous roots, corms, crowns and rhizomes, Dormant				
India	410			
Sub-total	410	0	0	0
0602 Live plants un-rooted cuttings, and slips				
India	475	331	16	487
Others	972	363	2130	4
Sub-total	1447	694	2146	491
0603 Cut flowers & flower buds for bouquets& ornamental purposes				
India	202			33
Others	139			
Sub-total	341	0	0	33
0604 Foliage, branches and other parts of plants				
India	42			
USA	24			
Sub-total	66	0	0	0
Grand Total	2264	694	2146	524

Source: Department of Customs, Ministry of Finance, GON, Foreign Trade Statistics and Barshik Bastugat Bibaran (Annual Commodity-wise Descriptions) Note: Nepalese Fiscal runs from Mid-July to Mid-July

Table: 3.10 Average Purchasing Price of the domestic (D) and imported (I) products (Nov. 2006)

S.N.	Gladiolus		Dutch Rose		Local Rose		Carnation		Gerbera		Marigold*	
	D	I	D	I	D	I	D	I	D	I	D	I
Average Annual price	5.45	5.70	6.90	10.20	3.40	4.00	7.00	9.50	7.50	8.85	9.36	9.54

* Per garland Source: Interviews with the major importers and retailers in Kathmandu Valley

3.3 Export Performance and Export Development Constraints

At present contribution of floriculture products in total export earnings is negligible. However, export is growing since last six years (Chart) and Nepal is the net exporter of flower products (Table 3.11). Total export value in the fiscal year 2005/06 recorded at Rs. 32.6 million. Currently the USA, The Netherlands, India, Japan and Denmark are the major markets for bulbs, cut flowers, etc. In 2005/06 total export of all floriculture products from Nepal increased by 98 per cent over the previous fiscal year representing an increase in export of bulbs by 116% and live plants by 357%. Major export markets are USA, the Netherlands, India, Denmark, and Japan. Bulbs and tubers exported from Nepal include *Gloriosa* spp., *Zephyranthus*, *Haemanthus multiflora*, *Polyanthus*, *Kukurma*, *Eucharis*, etc. Tissue cultured plants exported recently are bamboo, orchid, banana, etc. Cut flowers exported to India are Gerbera, Carnations, Roses, Gladiolus, etc. A trial consignment of roses was recently made to Japan.

Border trade between Nepal and India is very much common and goes unrecorded for the reasons of complicated, time consuming and costly trade procedures. It has been reported that many export consignments are delivered across particularly during rainy and winter seasons when domestic supplies are limited in India. Similarly Nepal also receives cut flowers during marriage and festival seasons through many border points.

Despite of the current performance and successful attempts in export marketing of floriculture products the entrepreneurs are facing some hurdles in a bid to boost further investment in this sub-sector. Major problems are highlighted in the table 3.12.

Table 3.11 Exports of Floricultural Products from Nepal Value in Rs.000

Fiscal Year	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
0601.10 Bulbs, tubers, tuberous roots, corms, crowns and rhizomes, Dormant										
Japan							327			
Netherlands									315	
UAE									175	
USA							7,660	2,647	5,171	
Others						90			63	
Sub-total	0	0	0	0	0	90	7987	2647	5724	0

0601.20 Bulbs, tubers, tuberous roots, corms, crowns and rhizomes, In Growth and Flower

Bangladesh										913
Germany										3,795
Italy										436
Japan		813	102					9		23
Taiwan			629							
USA								801	6,962	9,890
Others		441						7		6
Sub-total	0	1254	731	0	0	0	0	817	6962	15,062

0602 Live plants unrooted cuttings, and slips

Denmark									296	1,574
India						14		192	293	
Italy					280					
Japan					212		817			
Netherlands					2,417	862	4,891	5,714	3,170	15,357
USA										417
Others			3					68	76	189
Sub-total	0	0	3	0	2909	876	5708	5974	3835	17,537

0603 Cut flowers and flower buds for bouquets and ornamental purposes -Fresh, dried or prepared

India						16				
Hongkong										35
Japan	210					466				
Netherlands	367									
Norway							2,011			
USA							2,165			
Sub-total	577	0	0	0	0	482	4176	0	0	35

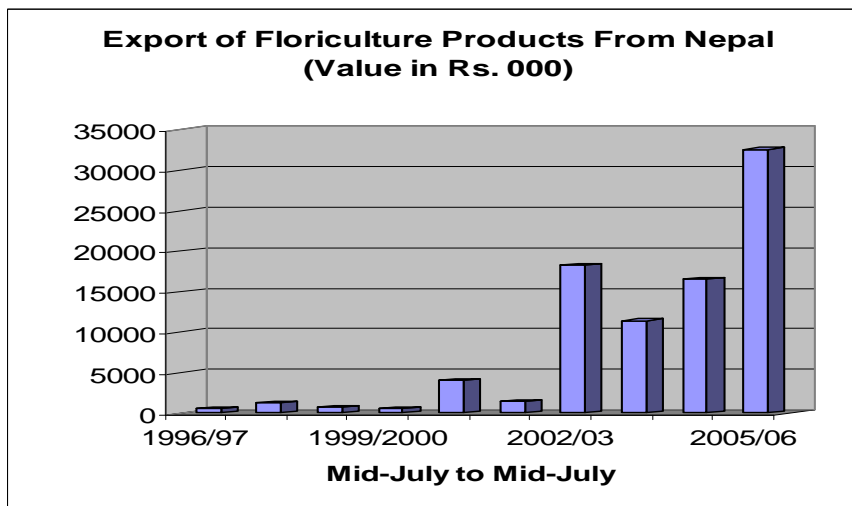
0604 Foliage, branches and other parts of plants - Fresh, dried or prepared

Australia							6			
India						16				
Japan					1,099					
USA				547			382	1,959		
Sub-total	0	0	0	547	1099	16	388	1959	0	0

Grand Total	577	1254	734	547	4008	1464	18259	11397	16521	32635
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Sources: 1. Trade Promotion Centre, Nepal Overseas Trade Statistics (1996/97 to 2005/06), and 2. Department of Customs, Ministry of Finance, GON, Foreign Trade Statistics and Barshik Bastugat Bibaran (Annual Commodity-wise Descriptions) 2001/02 to 2004/05

Note: Current foreign exchange rate is Nepalese Rs.71.00 = US \$ 1



3.4 Government Policy, strategies and regulatory Supports

Government efforts were initiated for the development of floriculture sub-sector during the Fourth Plan period (1971-75) with the setting up of Brihat Bagbani Centre (Floriculture Centre) in Sarlahi District in Southern-Central part of Nepal. This farm received technical and financial supports from the Indian and Australian Governments. About 600 varieties of roses and 200 varieties of bougainvillea and other seasonal flowers were propagated during one and half decades of its operation.

Indeed no substantial public efforts have been made for the development of floriculture sub-sector in Nepal. It is thriving without well-defined policy, strategies and any incentives that help to strength Nepal's competitiveness. Master Plan for Horticulture Development (1991-2010) and Agricultural Perspective Plan (1995-2015) are silent on floriculture aspect. It was only in Tenth Five Year Plan (2001-2006) a general priority thrust was given to the development of floriculture, as one of the high value products. The document is still ambiguous on the roles of government including institutions like NARC and HDD, on R & D, technological up-grading, market promotion, HRD and other supportive measures.

3.5 Institutional Supports

As Flori business was not prioritized in earlier plan and policies, very little public supports for its promotion are available as yet. Recently the GON has noted the importance and growth prospects of this sub-sector and is seriously listening to the requests of the floricultural entrepreneurs and other stakeholders. The GON's institutional policy intervention and supports are discussed in the following paragraphs.

Table 3.12 Export Development Constraints

Areas	Problem Descriptions
1.	Production
1.1 R & D and Technology services	Current efforts are completely on the private sector's initiatives. There is a limited innovative technology use due to the lack of the public sector's supports for R&D on agronomic practices; post-harvesting and marketing. Farmers have limited knowledge of pest and disease control management. Flower growers are seeking transfer of appropriate technologies from other developing countries having experience in exports to advanced countries. There is a lack of Government incubation centre with appropriate laboratory to assist small and new growers.
1.2 HRD and Technical Services	The growers and entrepreneurs are facing a dearth of qualified technical manpower and floriculture extension services. This is for the reason of lack of government initiative on appropriate training provisions and export market oriented technical services.
1.3 Limited financial capacity and supports	Floriculture business attracts huge initial investment. There are limited numbers of entrepreneurs in this business. Commercial houses are reluctant to invest due to longer gestation period and higher risk associated with the business. At the initial stage the Nepalese growers and exporters wouldn't be able to compete in the global market. The government of Nepal has to introduce fiscal supports (tax benefits), financial supports (subsidized interest rates, electricity, irrigation, greenhouse, transporting and cooling systems, and air freight) and land procurement at specified locations, etc.
2.	Information, Marketing and Infrastructure
2.1 Information	At the initial stage growers have no capacity to access information on the market opportunities, improved technologies and market regulations.
2.2 Market promotion	Profiles, catalogues, trade missions, participation in international trade fairs, and buyer-seller meetings at appropriate times are some of the effective means of promotion. However, growers and entrepreneurs have limited financial capacity to launch such market promotion programs in developed countries' markets.
2.3 Marketing Research	Entrepreneurs have no access to up-to-date information on market requirements, demand, market regulations, and opportunities based on the international market research undertaken from Nepal's export possibility view points.
2.4 Marketing infrastructure	The growers and exporters have no access to appropriate infrastructural arrangements for post-harvesting process such as treatment, warehousing, cleaning, grading, packing, etc. Other requirements are wholesale market facilities, refrigerated van, and laboratory for pre-export testing at plant quarantine check posts, chilling/cooling room at international airport in Kathmandu etc.
3.	Policy, Regulatory and Institutional
3.1 National strategies and action plans	The country lack national strategic plan and action programs covering support to agronomic and post harvesting practices, HRD, technical services, marketing infrastructure, FDI, and R&D, and transparent policy on trade and tariffs, etc. There is a miss-match on policy and its implementation. For example imports of inputs, like planting materials, seeds, equipment, tools, and greenhouse materials are taxable whereas imports of flowers from India are free and imports from other countries attract minimum tariffs.

The **Department of Agriculture (DOA)** and **District Agriculture Development Office**, of the MOAC are the implementing bodies of agricultural plan and policies. These bodies do not have trained human resource in the floriculture sub-sector. The recent policy document, "Agriculture Policy, 2061" also do not speak about Floriculture as per say. In addition, for the sanitary and phyto-sanitary regulations of the agricultural products including floral products, fourteen plant quarantine check posts in Indo-Nepal and China-Nepal border and one in Tribhuvan International Airport have been established. These check posts however not been able to regulate the illegal import of the cut flowers and other products.

Currently **Horticulture Development Directorate (HDD)** is the only unit of MOAC that is working in this sub-sector. It has initiated propagation and production of selected flower seedlings and saplings for distribution to commercial farms. At two locations- Kirtipur and Godavari, the Directorate is operating farms for its services. Kirtipur is more focused on fruit plant research and production and Godavari (**Flower Development Centre, FDC**), established in 2004 at 3.72 ha with 17 staff on pay roll is specializing on production of flower saplings, seedlings, bulbs, and plants. In the past two years FDC has conducted number of agronomic and post-harvesting training programs to the farmers in villages like Ramkot, Pharping, Ichangu, etc. The FDC lack programs and budgetary provision to provide extension services and training outside the Kathmandu valley.

The **Ministry of Finance** has played very significant role attempting to encourage floriculture business by extending 3 % interest subsidy on the loan. However, this subsidized loan is channeled only through **Agriculture Development Bank (ADB/N)** against collateral security of land and building. Similarly, there is 100 % import tariff waiver in imports of mother plants, rooted plants, bulbs, roots and flower seeds (Arthik bidheyek, 2063, dafa 20 kha). Such tariffs facilities are not extended to materials required for setting up green houses, irrigation system such as plastics, tools, equipments etc.

Ministry of Industries, Commerce and Supplies occasionally provides training supports in cut flower production, management, and post harvest operation. In addition, MOICS also supported the FAN in organizing two study visits and two exhibitions and extended financial assistance in purchasing mother plants. It also provides revolving fund for seed/seedling production, and green house. It has envisaged that the MOICS also support in establishing a Cold Storage Chamber at Tribhuvan International Airport in collaboration with Civil Aviation Authority Nepal (CAAN).

In the past the **Department of Botany** conducted demonstration of a few flower species and transferred technical know how to the commercial farmers. The Department has successfully developed tissue cultured plants of gerbera. From 1999 to 2005 seven exhibitions of Chrysanthemum flowers were held with a view to developing consciousness on the possible growth of its various species for the Nepalese market.

3.6 The Private Agencies

The AEC and the FAN are the only organizations directly involved in promotion of floriculture products in Nepal. There are no national/local non-governmental organizations (NGO) and cooperatives supporting floriculture business in Nepal.

a) AEC/FNCCI/USAID

The Agro Enterprise Center (AEC), under the aegis of the FNCCI, has been the most significant private sector agency providing institutional supports. The AEC initiated its efforts in the floriculture sub-sector by assisting in setting up of the FAN in 1992. It extended logistic and secretarial supports to FAN during the initial periods. Currently the AEC is continually supporting in launching various programs such as organization of trade fairs, trainings, workshops, trial productions, policy advocacy and lobbying, business plan formulation, etc. The FAN wholesale outlet (2055) and its operation for the successive three years was also a part of AEC's support program. The AEC has also encouraged the participation of women in floriculture (WIF), by supporting in establishment and operation of two retail shops one in Kathmandu and another in Pokhara.

b) Floriculture Association Nepal (FAN)

The FAN is an autonomous body working with the sole objective of and supporting overall development of floriculture sub-sector in Nepal. Promotional activities of the FAN focus on organizing and participating in trade fairs and exhibitions, study tours and observation visits, operation of wholesale outlet, conducting market research and analysis. The FAN has already organized eleven floriculture fairs in Kathmandu. Development activities of the FAN are more focused in technical aspects such as training, trial productions (gladiolus, chrysanthemum, rose, and tube rose), mother plant distribution (gerbera), production analysis, in developing business plans and feasibility study. The FAN's publications including reports, souvenirs, and directory are useful in transferring technology and knowledge among the entrepreneurs. FAN also provides institutional support to WIF.

3.7 Infrastructure

The infrastructure facilities are mainly available in urban areas and in cities accessible to roads. Presently the entrepreneurs are managing their requirements though the costs are a little higher and the quality wise the facilities are inadequate. There is ample scope for improving the supplies once the entrepreneur's demand increases in future.

3.7.1 Water and Drip and Sprinkle Irrigation Systems

Most of firms are found employing human for irrigation on a regular basis. Water resource is scarce in urban areas. There is need to provide more incentives towards floriculture development in rural areas of identified districts in view of water availability and also to enhance their socio-economic development. Incentives to use rain water harvest for this sector can substitute the water scarcity problem.

Some of the farmers have already invested a huge amount of money in setting up scientific irrigation system. Many small farmers are also well acquainted with the need and usefulness of such a scientific system. For the lack of financial and risk taking capabilities, medium and small farmers have no access to such a system.

3.7.2 Electricity, Fuel and Oil

Regular and reliable supply of electricity is important factor for those firms which are adopting moderate to or high tech in producing quality planting materials. At present government is supplying electricity for irrigation in rural areas at lower tariffs of Rs.3.50 per unit, with about 50% per cent subsidy. Regular, reliable and cheap source of electricity is must for the future growth of floriculture.

3.7.3 Transport and Air-freight

There is no special arrangement for transportation of the products for the domestic market. The grower transports their products via bus, mini-trucks, motorcycle and cycle in small volume. Special van with refrigerated cooling system is required for transporting products to distant market

that prolongs its shelf-life and keeps the quality intact. For the export market, meeting these requirements is a must.

Organized farmers of cut flowers, plants and bulbs who have export capacity and can also increase exportable quality products have found it difficult in competing in developed countries' markets for the reasons of high air-freight charge. Some of the entrepreneurs are ready to invest in production of huge quantity of cut flowers if air freight is subsidized at least by US\$1.00 per kg.

3.7.4 Communication

Communication facilities are available in the city centers. However, facilities are limited in the rural areas where production activities are concentrated. Importance of communication facility is very high as timely dissemination of information on demand and price situations can stipulate the delivery of product on time to the destined markets.

3.7.5 Cooling Chamber

Cooling chambers of different sizes are required to retain the post-harvest freshness and to minimize the losses from damages. Farmers need such cooling chambers for proper post harvest treatment before the products are taken to the markets. Such chambers in large sizes are required at collection centers and at Kathmandu International Airport to retain the quality of products while waiting for flight to take them off¹⁹.

3.7.6 Trade facilitation and procedures

Nepalese floriculture entrepreneurs are seeking trade facilitation supports in:

- i. Setting up of wholesale market centre in major markets and production centers.
- ii. Organizing of trade fairs and exhibitions regularly
- iii. Introducing simplified procedures of providing SPS certificates and customs formalities (without any delay)
- iv. Introducing cool-chain management system with facility in Kathmandu international airport.

3.8 Technological supports: tools, equipment and R&D

The NARC, HDD and Department of Plant Resources (Ministry of Forestry and Soil Conservation) are the government responsible agencies for R&D in horticulture and plants. These agencies have not emphasized on market oriented technical researches. Therefore, the growers themselves have been conducting research based on the studies, field visits, training and learning by doing and experimenting. The IAAS of Tribhuvan University has also been involved in technical research as a part of thesis work of the students. However, technological supports to the growers have never been the part of their programs.

Some of the research works conducted by various institutions are:

¹⁹ For the benefits and information of exporters recommended temperature and approximate transit and storage period for cut flowers are presented in Appendix 3.1.

- i. In FY 2053/54, a report on Pest and Disease Management of Nursery Plants was prepared by Department of Botany (GS, 2054). Similarly, under “Farmers to Farmers program” of Winrock International, Prof Dr. Haskees prepared a report on floriculture in the year 2054/55.
- ii. A market survey study was conducted in Pokhara by a team of representatives of Pokhara market. This study report indicated the prospect of Flori-business in Pokhara (GS Report, 2056).
- iii. A symposium on “Prospective of Floriculture Business in Nepal” was held in the year 2058, which was probably the first of its kind to assess the competitiveness of Flori sub-sector in Nepal (GS Report, 2059).
- iv. A study was conducted in various districts to explore the “situation of cut flowers” (GS Report, 2059). The study was followed by another field survey on tuberose at Chitwan district by team of Mr. Malla and Mr. Rai) as experts and representatives from AEC (GS Report, 2059).
- v. A more elaborate study on cut flowers was conducted for JICA. The study team comprised of K.J. Malla and Dr. Umed Pun. This study focused on production scenario, marketing, retailers and the consumers. (GS Report, 2059).
- vi. Mr. K.P. Aryal, conducted a study on the Floriculture in Kathmandu Valley focusing mostly on the marketing aspects of cut flowers and gender involvement (Aryal, 2060).
- vii. The Marketing Research and Statistics Program (MRSP) of Department of Agriculture in the year 2062 conducted a study on Benefit-Cost Analysis of Ornamental Flowers. This report deals on the status of Floriculture Production in Nepal, marketing flow, cut flower production for domestic and export market and also the cost of cultivation of selected cut flowers.
- viii. A two weeks study observation tour was organized with the objective of studying feasibility of expanding the Flori business in Western Nepal (GS Report 2063) and the FAN with AEC representatives also conducted a Study tour to Kalingpong in 2063 with the objective of finding overall status of Bulbs cultivation and export in India.
- ix. The MOAC, FAN and AEC together conducted a survey study to understand the gender participation in flori business (2063).

4. External Forces: International²⁰

4.1 Internationally Traded Products

Internationally traded floricultural products are grouped into four based on Harmonized Commodity Description and Coding System (HS):

- 06.01 Bulbs, tubers, roots, corms, crowns and rhizomes
- 06.02 Other live plants, cuttings and slips
- 06.03 Cut flowers and flower buds suitable for bouquets and ornamental purposes
- 06.04 Foliage, branches and other parts of plants, without flowers or flower buds and grasses, mosses and lichens suitable for bouquet and ornamental purposes

In this chapter attempts have been made to present the scenarios of the world markets for cut flowers and bulbs, and to identify the market opportunities for Nepalese entrepreneurs.

4.2 Consumption

Demand for cut flowers, foliages and planting materials in the world market increased dramatically for the past two decades. Though the markets are focusing on standard or everyday varieties, the consumption pattern is changing with increased demand for exotic, unusual and specialty species.

From 2001 to 2005, exports of cut flowers rose by 10% every year. According to a report of the Flower Council of Holland (2005) the major markets like EU members, USA, Japan, Switzerland, Norway and China having total population of 2.1 billion consumed flowers worth US\$ 23.2 billion. The global consumption predicted to be 30% greater by 2014. At present, global trade in floriculture products stands at roughly US\$ 12 billion. The global trade of cut flower alone stood at US\$ 5.02 billion, of which nearly 61% is with the EU, followed by USA (18%), Japan (4%), Switzerland (3%), Russian Federation (2%) and Canada (2%). The trade records of live plants also stood at US\$ 5.2 billion in 2005.

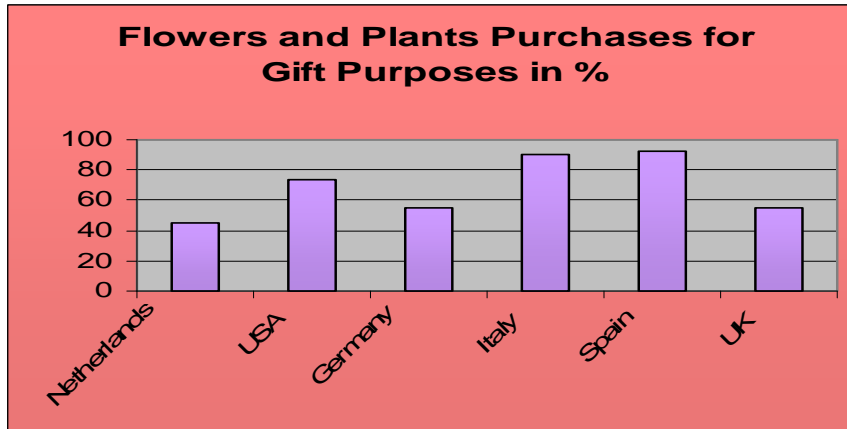
The purposes of buying flowers, bouquets and plants are (i) gifts for special days, (ii) to brighten up the houses, business and public areas, and (iii) for occasions: wedding, illness and funerals. Gifts are given mainly during Mother's day, Valentine's Day, Easter day, Christmas day, birthday, etc. These are the peak demand periods also. Flower is price elastic. If flower prices increase buyer will shift to other competitive gift items such as confectionary, jewellery and wine. According to a survey of CBI (Holland), country-wise share of flowers purchase for gift purposes are Netherlands 45%, US 74%, Germany 55%, Italy 90%, Spain 92%, UK 55%, and Europe (15) 55%.

Consumption patterns are particularly seasonal and dependent on fashions and consumer's tastes and preferences. Demand and per capita spending on flower also depends on the culture of a society. According to the Dutch Flower Council number of households buying flowers are 28 % in US, 76% in Germany, 63% in UK and 60% in France. Switzerland has the highest per capita consumption figure (almost four times higher than that of US) (Table 4.1).

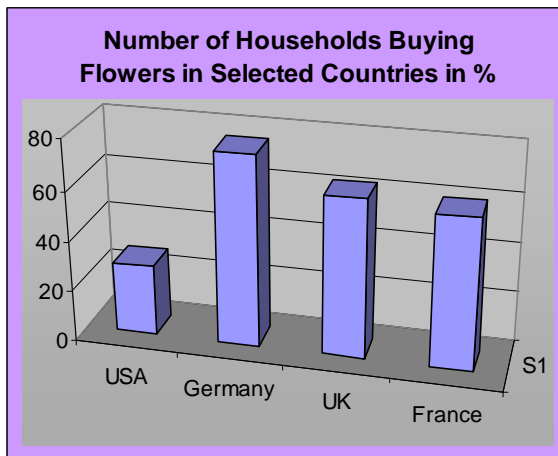
More than 200 varieties of cut-flowers are sold in the major world markets. Germans prefer Roses, Tulips and Carnations. British prefer Carnations, Roses and Chrysanthemums. French prefers

²⁰ This part is contributed by Mr. Kanchan Lamsal.

Roses, Gladiolus and others. Dutch prefers mixed bouquet, Roses, Tulips and Chrysanthemums. And Italian prefers roses, lilies and gerberas (CBI EU Market Survey, 2004: Cut Flowers and Foliage). Main criteria for flower purchase are quality (36%), price (13%), Species (13%), Colour (10%), etc. Shares of total spending of European buyers on different flowers are presented in Table 4.2.



Source: The Flower Council of Holland (2005)



Source: The Flower Council of Holland (2005)

Table 4.1: Market Size and Per Capita Spending on Cut Flowers

Country	Population in M.	Value in Million \$	\$ Per Capita
Switzerland	7.4	549.05	74.2
Norway	4.5	235.87	52.4
The Netherlands	16.2	761.44	46.9
Austria*	8.0	373.47	46.7
Germany*	81.3	3278.49	40.3
Belgium	10.2	389.58	38.1
UK	60.5	2195.79	36.3
Denmark	5.3	193.90	36.3
Sweden	9.1	272.70	30.1
Finland	5.2	156.72	30.1
France	59.7	1743.35	29.2
Italy	56.5	1600.80	28.3
Ireland	3.8	108.90	28.3
Slovenia*	2.0	53.05	26.5
Japan	127.0	3362.13	26.5
Spain*	40.8	823.34	20.2
USA	276.0	5253.96	19.0
Greece	10.8	162.03	15.1
Portugal	10.2	144.32	14.2
Hungary	9.7	133.69	13.8
Czech Republic	10.8	102.92	9.5
Slovakia	10.1	96.55	9.5
Poland	39.0	289.65	7.4
China	1,306.0	925.07	0.7

Source: The Flower Council of Holland (2005), Note * = Data for 2002

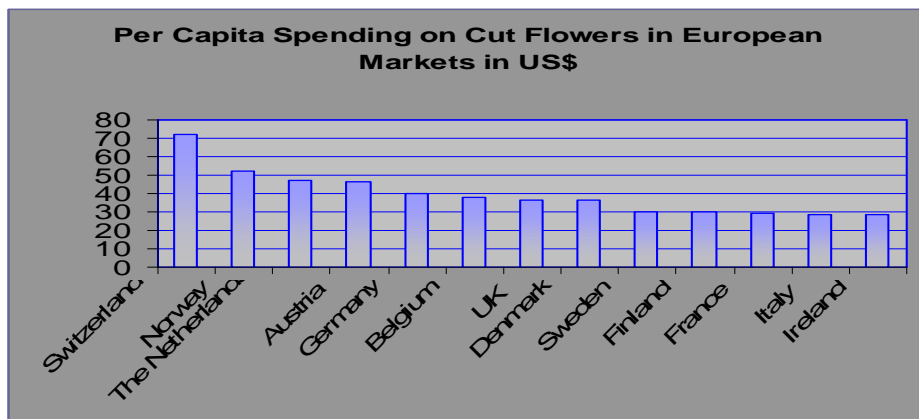
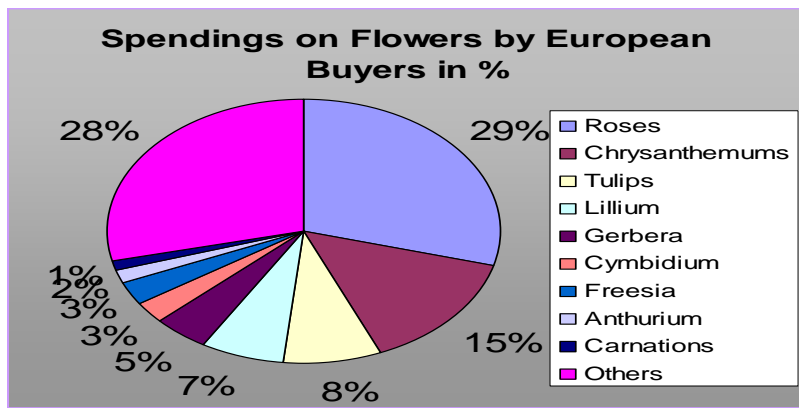


Table 4.2 Total Spending on Different Flowers European Buyers

SN	Flowers	Share in %	SN	Flowers	Share in %
1	Roses	29.2	7	Freesia	2.6
2	Chrysanthemums (Dendranthema)	14.5	8	Anthurium	1.8
3	Tulips	8.0	9	Carnations (Dianthus)	1.0
4	Lillium	6.9	10	Others	28.7
5	Gerbera	4.5		Total	100.0
6	Cymbidium	2.8			

Source: CBI EU Market Survey, 2004



4.3 World Imports

At present 145 countries are importing floriculture products in the world market. Total import turnover of cut flowers, live plants, foliages, and flower bulbs together recorded at US\$ 12 billion in 2005.

4.3.1 Cut Flowers

Total value of world imports of cut flowers has been increasing at an annual rate of 10 per cent from 2001 to 2005. The increases in import values were 16 per cent in 2004 over 2003 and 54 per cent in 12 years (1992-2004).

The total value of import in 2005 is estimated at US\$ 5.02 billion. Germany (19 %) is the number one importer followed by United Kingdom (18%) and United States (18%). European Union all together account for almost 61 per cent of total imports (Table 4.3). Other major importers are Japan, Switzerland, Russian Federation, Canada, Norway and Hong Kong.

Table 4.3: World's Major Importers of Fresh Cut Flowers (HS060310)

Importers	2005 Import Value - US \$ Million	Quantity import in 000 Tons - 2005	% Annual growth in value 2001-2005	% Share in world imports
World Estimation	5,019	890	10	100
Germany	968	177	8	19
United Kingdom	924	154	12	18
USA	900	181	8	18
Netherlands	127	29	11	3
France	503	76	11	10
Japan	216	31	11	4
Italy	206	32	11	4
Switzerland	161	15	6	3
Belgium	123	25	9	2
Russian Federation	169	28	40	3
Austria	94	16	5	2
Canada	91	18	8	2

Source: ITC calculations based on COMTRADE statistics

Notes

- *Other importers include: Denmark, Spain, Sweden, Poland, Czech Republic, Norway, Ireland, Greece, Finland and Hong Kong*

Fastest-growing markets (and their imports in million US\$ in 2005) are Hungary (20.8), Ukraine (14.6), Spain (22.4), Sweden (10.4), Greece (24.8), Poland (52.4), Slovakia (13.6), Slovenia (10.6) and Singapore (14.6) (Source: ITC).

4.3.2 Flower Bulbs, Tubers, Rhizomes, etc.

Total value of world flower bulbs & tubers import is US\$ 881 million in 2005. Import market of bulbs has been increasing at an average annual rate of 7 percent in terms of value since 2000. In 2004 import grew at 9 per cent over the year 2003. But in 2005 import could not grow. (Table 4.4).

The USA (23%) is the world's largest single importer of bulbs, tubers and rhizomes. Japan (11%) stands second followed by UK (9), France (8), Germany (7) and Netherlands (5). EU all together imports more than 45 percent of world import value. Other major importers are Canada, China, Poland, Switzerland, Mexico, Norway, Russian Federation and Korea.

4.3.3 Live Plants and Cuttings

The world import value of US\$ 5.05 billion of live plants, cuttings etc. has been reported to ITC in 2005. Market for these items has increased by 12% annually during 2001 to 2005 (Table 4.5). Germany took the highest market share of 19% in total world import followed by France (12), UK (9), and USA (7). Other importing countries not indicted in the Table 4.5 are Japan (86)²¹, Spain (85), Poland (66), Finland (54), Russian Federation (54), Republic of Korea (39), Hungary (34), Ireland (33), Norway (30), Greece (30), China (29), Croatia (27), and Hong Kong (27).

²¹ Figures in parentheses are values in US\$ million.

Table 4.4: Worlds Major Importers of Bulbs, Tubers, Rhizomes, etc. (HS060110)

Importers	Import Value US \$ Million 2005	Quantity in 2004 – in 000 Tons	Annual growth in value 2001-2005 in %	% Share in world imports
World	881	255	7	100
USA	202.8	55	5	23
Japan	96.8	26	-2	11
UK	82.8	19	12	9
France	68.4	17	11	8
Germany	62.9	19	7	7
Canada	42.2	11	9	5
Netherlands	48.1	24	13	5
Italy	35.3	13	-8	4
China	36.4	10	42	4
Sweden	22.6	7	8	3
Mexico	18.8	6	19	2

Source: ITC calculations based on COMTRADE statistics

Notes

- Other major markets are: Poland, Switzerland, Spain, Norway, Denmark, Belgium, Finland, Russian Federation, Austria and Republic of Korea.

Table 4.5: Worlds Major Importers of Live Plants and Cuttings. (HS0602)

Importers	Import Value US \$ Million 2005	Quantity in 2004 – in 000 Tons	Annual growth in value 2001-2005 in %	% Share in world imports
World	5049	2749	12	100
Germany	991	507	13	19
France	622	201	18	12
UK	491	130	15	9
USA	375	128	3	7
Netherlands	348	241	16	6
Belgium	243	103	14	4
Italy	227	80	8	4
Switzerland	193	96	9	3
Austria	191	64	11	3
Sweden	154	42	13	3
Canada	139	55	8	2
Denmark	135	43	10	2

Source: ITC calculations based on COMTRADE statistics

4.3.4 Foliages

Total import value of US\$ 911 million of foliage has been reported to ITC in 2005. Import market of foliage has increased by 8 percent from 2001 to 2005 and by 4 per cent from 2004 to 2005 (table 4.6).

The Netherlands (22%), Germany (16%) and USA (14%) are the major importers. These three countries are the fastest growing importing markets of foliage. Other important importing countries are Mexico, Canada, Austria, Russian Federation, Sweden, Singapore, Denmark, Hungary, Norway, Finland, Spain, Ireland, etc.

Table 4.6 World Major Importers of Foliage in 2004 (HS 0604.10)

	Major Importers	Value US\$ Million	Qty. in 000 tons	Annual Growth 2001-2005 %	Share in Total
	World	911	343	8	100
1	Netherlands	201	96	9	22
2	Germany	149	44	3	16
3	USA	129	43	8	14
4	UK	52	12	15	5
5	Belgium	51	18	19	5
6	Japan	48	15	6	5
7	France	46	13	10	5
8	Switzerland	34	9	4	3
9	Italy	24	8	9	2
10	Poland	21	10	25	2

Source: ITC ComTrade

4.4 World Exports

At present more than 110 countries are exporting floriculture products in the world market. Total export turnover of cut flowers and flower bulbs together recorded at US\$ 12.1 billion in 2005.

4.4.1 Cut flowers

Total value of cut flowers exported in 2005 was estimated at US\$ 5.19 billion (Table 4.7). This represents an increase of 60 percent over the value exported in 1992. There has been a 10 percent increase in value of exports through 2000 to 2005 and a 4 percent increase in value of export through 2004 to 2005.

The Netherlands is the number one exporter representing 58 per cent share in the world exports. Colombia (17%) and Ecuador (7%) are the second and third largest exporters. EU has the major share in exports, its share being more than 63 per cent. Other major exporters include Kenya, Italy, Thailand, Israel, Germany, UK and USA.

Table 4.7: Major Exporters of Fresh Cut Flowers (HS060310), 2005

Exporters	Value in US\$ Million	Quantity in 000 Tons	% Annual growth in 2001-2005	% Share in world exports
World	5,187	1093	10	100
Netherlands	2983	490	16	58
Colombia	897	221	9	17
Ecuador	369	126	12	7
Kenya	143	26	24	3
Italy	75	9	-1	1
Thailand	65	22	0	1
Belgium	61	9	7	1
Israel	55	9	8	1
Germany	48	6	26	1
Spain	40	10	-3	1
UK	39	7	12	1
USA	38	11	-7	1

Source: ITC calculations based on COMTRADE statistics

- Other major exporters include: Republic of Korea, Costa Rica, New Zealand, Canada, South Africa, Turkey, Mexico, Malaysia, China, France and Singapore.

4.4.2 Bulbs

Total value of bulbs, tubers, rhizomes, etc. exported in 2005 was US\$ 881 million (Table 4.8). The Netherlands alone exported 84% of total export value. USA, New Zealand and France and New Zealand each export 2 % of the world total export. Other exporters include Belgium, Israel, UK, Chile, Poland, Germany, Brazil and S. Africa. India ranked the world's 21st and Nepal 26th largest exporters of bulbs to the world market. Value of exports in terms of US dollar has been increasing annually by 7% since 2001. However, annual growth in value for 2004-2005 was only -1%. In 2005 Nepal's export increased by 83% over the export value of 2004.

Table 4.8 **Worlds Exporters of Bulbs, Tubers, Rhizomes etc. (HS060110)**

Exporters	Value in US \$ Million - 2005	Quantity in '000 Tons	Annual % growth 2000-2004	% Share in world imports
World	881	257	7	100
Netherlands	739	202	5	84
United States of America	20	7	17	2
France	16	10	14	2
New Zealand	18	5	29	2
United Kingdom	11	9	5	1
Chile	10	3	40	1
Belgium	10	3	11	1
Israel	11	3	10	1
Poland	9	3	5	1
Germany	7	2	17	1
Brazil	7	2	19	1
Nepal (rank 26)	0.266	0.68	-	-

Source: ITC calculations based on COMTRADE statistics

Notes

- Some of the other exporters are South Africa, Israel, Italy, Thailand, Hong Kong, China, Canada, Japan, and the Philippines. Nepal's export is to United States of America and Germany.

4.4.3 Live Plants, Cuttings, etc.

Total value of live plants, cuttings etc. exported in 2005 was US\$ 5184 million (Table 4.9). The Netherlands alone exported 41% of total export value. Belgium (9%) and Italy (8%) ranked second and third exporters. The other major exporters are Denmark, Canada, USA, and France. Other exporters are Poland (50), Israel (45), China (39), Uganda(33), UK (29), Guatemala (23), S.Korea (22), Kenya (22), Hungary (20), Austria (18), Thailand (18), Japan (16), S. Africa (15), Mexico (13).

Table 4.9 **Worlds Exporters of Plants, Cuttings, etc. (HS0603)**

Exporters	Value in US \$ Million - 2005	Quantity in '000 Tons	Annual % growth 2000-2004	% Share in world imports
World	5184	2741	12	100
Netherlands	2176	1166	14	41
Belgium	481	268	13	9
Italy	452	308	14	8
Denmark	407	100	5	7
Canada	231	111	0	4
USA	176	74	11	3
France	176	70	9	3
Spain	112	115	20	2
Costa Rica	72	52	8	1
Taiwan	57	37	5	1

Source: ITC calculations based on COMTRADE statistics

4.4.4 Foliage

The Netherlands, Italy, USA, and Denmark, representing more than 50 per cent, are four major suppliers of foliage to the world market. Other suppliers such as Costa Rica, Canada, Belgium Germany, Israel, India, and Poland each having more than 2 per cent share in the world markets (Table 4.10).

Table: 4.10 Major Exporting Countries of Foliage (HS 0604.10)

Exporters	Value US\$ Million	Quantity in 000 Tons	Annual growth % 2001-2005	Share in world exports
World	856	378	8	100
Netherlands	150	30	16	17
Italy	111	17	8	12
U S A	100	58	4	11
Denmark	96	79	7	11
Costa Rica	69	32	3	8
Canada	54	32	-3	6
Belgium	47	19	20	5
Germany	36	12	13	4
Israel	29	8	32	3
India	24	9	21	2

Source: ITC ComTrade

Notes: Other major exporters include Poland, China, South Africa, Mexico, France, Guatemala, Australia, Chile, Ireland, Singapore, UK, Turkey and Bangladesh

The average annual growth in export of foliage was 8 percent during the period 2001 to 2005. The fastest growing exporters are Belgium and Israel.

4.5 European Union Markets

4.5.1 Imports

a. Cut Flowers

The European Union is still the largest market for cut flower. Recently a dramatic change has been noticed as the market share of Europe dropped to 61% in 2005 as against 70% in the world imports in 2004. Total import of EU recorded at US\$3.2 billion in 2005 (Table 4.11). In 2004, about 20 of total import were mainly from southern developing countries such as Kenya, Israel, Colombia, Ecuador, Zimbabwe, Uganda, Thailand and Zambia. The EU market is growing at 10 percent annually for the past five year period starting 2000. In 2004 imports grew at the rate of 14 per cent over 2003.

The EU is an important potential market even for aspiring flower exporting country like Nepal, as Europeans consume more than half of the internationally traded cut flowers. Six of the world's 10 biggest cut flower markets are in the EU – Germany, UK, France, Italy, the Netherlands and Spain. At the same time, the auction markets in the Netherlands are by far the largest and most developed in the world. In addition the per capita expenditure on cut flowers is very high in European markets (Table 4.1).

Total floriculture products export turnover of the Netherlands in 2005 was Euro 6.05 billion representing an increase of 3% over 2004. Table below shows that export turnover of potted and garden plants in Netherlands reached to almost 34% of total floriculture export in 2005.

The Netherlands' Floriculture Export Turnover in 2005

	Product Type	Euro in Billion	Share in %
1	Cut Flowers	3.14	62.06
2	Potted and Garden Plants	1.72	33.99
3	Planting Materials	0.20	3.95
	Total	5.06	100.00

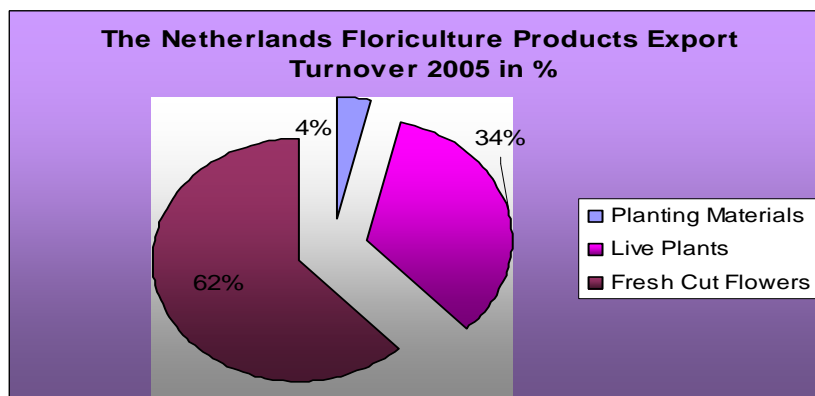


Table 4.11 European Union's Major Suppliers of Fresh Cut Flowers (HS060310)

Suppliers	Value supplied in 2004 (US\$'000)	Annual % growth in value of import between 2000-2004	Annual % growth in value of import between 2003-2004	% p.a. Total export growth in value of partner countries between 2000-2004	% Share in European Union (EU)'s imports
World	3,751,505	10	14	9	100
Netherlands	2,737,808	12	15	11	73
Kenya	285,217	19	24	24	8
Israel	112,761	-4	3	1	3
Colombia	88,299	1	-3	5	2
Ecuador	83,039	3	23	20	2
Spain	77,383	-1	-5	0	2
Italy	53,554	7	19	2	1
Zimbabwe	49,184	-4	-21	-	1
Belgium	36,120	7	11	7	1
Uganda	25,759	28	33	-42	1
Germany	24,983	10	-9	30	1
South Africa	20,451	27	34	14	1
UK	19,898	6	10	6	1
Thailand	18,650	4	5	3	0
Zambia	17,181	3	-5	53	0

Source: ITC calculations based on COMTRADE statistics

Notes

- All values in '000 USD.
- Other suppliers are: UK, Turkey, France, Denmark, Portugal, Ethiopia, Tanzania, Morocco, Brazil and Peru.

Table 4.12: **List of countries exporting product HS060110 Bulbs, tubers, tuberous roots, corms, crowns and rhizomes, dormant**

Suppliers	Value Supplied in 2004	Annual % growth in value between 2000-2004	Annual % growth in value between 2003-2004	% Share in EU's supplies
World	405,015	9	9	100
Netherlands	335,767	8	10	83
USA	7,481	33	44	2
Chile	7,215	22	9	2
Brazil	5,356	21	20	1
United Kingdom	5,347	9	6	1
Germany	5,221	31	18	1
Israel	4,408	9	15	1
New Zealand	4,263	43	13	1
Belgium	4,186	-9	15	1
South Africa	3,754	17	37	1

Source: ITC calculations based on COMTRADE statistics

Notes

- All values in '000 USD.
- Countries belonging to EU 15 are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom
- Other major suppliers: Turkey, Denmark, France, Sweden, Japan, Poland, China, Italy, Taiwan, and India.

b. Bulbs

EU 15's import of bulbs, tubers, corms and rhizomes represent 44 percent of the world imports, making it the largest importer in the world. EU generates more than 90 percent of this product internally. Netherlands (83%) is the major exporter of this product, while rest of the EU exports more than 7 percent of it. Other major exporters include Japan, Poland, China, Taiwan, India, and Thailand (Table 4.12).

EU 15 had 9 percent growth rate in value of imports between 2000 and 2004. Except for France, Poland, China and Spain (who registered negative growth) and United Kingdom and Turkey (who had below average growth) all other countries registered above average growth in value of exports.

Table 4.13 clearly presents that the EU is the most potential market of Nepal. The African developing countries like Kenya, Uganda and Ethiopia have already achieved in flower exports to the EU countries with the help of Dutch entrepreneurs. This market needs proper exploration and it is necessary to identify the suitable approaches to penetrate the market when Nepal develops full capability and is ready for export.

Table 4.13: Extra- and Intra-Industry Cut-flower Trade by Country, 2004

Country	Total Imports \$'000	Imports from the EU \$'000	Imports from outside the EU \$'000	Rank	Country	Value of Exports to EU \$'000	% Share of EU External Imports
Austria	91,773	88,552	3,221	1	Kenya	285,180	37.7
Belgium	132,745	111,222	21,524	2	Israel	112,491	14.9
Denmark	94,735	94,007	728	3	Colombia	79,492	10.5
Finland	19,841	18,762	1,079	4	Ecuador	76,751	10.2
France	507,385	482,013	25,372	5	Zimbabwe	49,186	6.5
Germany	975,911	896,065	79,846	6	Uganda	25,759	3.4
Greece	30,770	24,803	5,967	7	South Africa	20,443	2.7
Ireland	39,960	38,634	1,326	8	Thailand	18,657	2.5
Italy	191,336	160,831	30,504	9	Zambia	17,185	2.3
Luxembourg	10,304	10,095	209	10	Turkey	12,941	1.7
Netherlands	491,584	63,174	428,410	11	Ethiopia	6,058	0.8
Portugal	17,246	14,988	2,257	12	Tanzania	5,900	0.8
Sweden	67,515	67,124	391	13	India	5,674	0.8
U K	1,018,677	862,544	156,133	14	Cote d'Ivoire	4,505	0.6
Total	3,689,782	2,932,813	756,969	15	Morocco	3,230	0.4

Source: ITC ComTrade

4.5.2 Import Tariffs

Nepal being one of the LDC's enjoys the special scheme, 'Everything but arms'. This provides Nepal with duty-free access to the EU for all products except arms and ammunition.

4.5.3 Market Access Requirements (Standards and SPS)

Non-tariff Barriers (NTBs) and their effects on trade and potential opportunities need to be examined carefully before undertaking any transaction. The main NTBs applicable to cut flowers and foliage are phytosanitary control, breeders' rights and IP, quality and grading standards, labeling requirements, trade-related environmental and safety issues, and CITES (The Convention on International Trade in Endangered Species). Phytosanitary regulations, intended to prevent the introduction of plant pests and diseases which are not present in the EU, are important to be considered by the exporter in developing countries for export of flowers and plants to EU markets. Moreover, authorities may also demand environmental as well as social standards connected to the conditions in which plants and flowers are grown and harvested.

A. Product Legislation

The EU Regulation (EC) No 316/68 and 315/68 specify minimum standards required for cut flowers and flowering bulbs. However, the quality standards of the Dutch auctions (VBN) give a much better impression of the general requirements of the European floricultural trade. Regarding cut flowers, foliage, bulbs, tubers and rhizomes the following legislations are relevant:

a. Plant health Control:

The EU Directive 2000/29/EC laid down the protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community. According to the directive the following protective measures are taken:

- Import Bans;
- Phytosanitary certificate and/or phytosanitary certificate for re-export;
- Customs Inspection and plant health checks;
- Importers Register;
- Advance notice on imports.

a.1 Import ban: Member States have banned imports into their territory of:

- Certain particularly dangerous harmful organisms, which are listed in Annex I, Part A of the directive (Appendix 4.1)
- Plants and plant products listed in Annex II, Part A, where they are contaminated by the relevant harmful organisms (Appendix 4.2).
- Plants or plant products listed in Annex III, Part A, where they originate in the relevant countries (Appendix 4.3).

a.2 Phytosanitary certificate and/or Phytosanitary certificate for re-export:

- Imports of plants and plant products listed in Annex V, Part B (Appendix 4.4) of the directive must be accompanied either by an official “phytosanitary certificate” or a “phytosanitary certificate for re-export” (in case the consignment after being dispatched from a third country, has been stored, repacked or split up in another non-EU country).
- Documents should certify the phytosanitary conditions of plants and plants products, and also the shipment has been officially inspected, and complies with statutory requirements for entry into the EU. Also declaring it free from quarantine pests and other harmful pathogens.
- The certificate should be in one of the official languages of the EU and should be issued by the designated authorities of the third country of export or re-export.
- It should be made not more than 14 days before the date on which the plants, plant products or other objects covered by it left the country of issuance.

a.3 Customs Inspection and plant health checks:

Plants and plant products are subjected to customs inspection at the time of their entry into the EU. The inspections include:

- Documentary checks establishing that the required certificates, alternative documents or marks have been issued or satisfied
- Identity checks establishing that the plants, plant products or other objects conform to the ones declared on the required documents and
- Plant health checks establishing that the plants, plant products or other objects, including their wood packing material if any, comply with the specific requirements and phytosanitary measures specified in Directive 2000/29/EC and can be imported into the EU.

The inspections must be made at the point of entry into the EU at the proper Member State’s border inspection post (BIP). However, identity checks and plant health checks may be carried out at the place of destination provided that there is satisfaction of specific guarantees and documents regarding transport of plants and plant products determined for each particular case.

a.4 Importers register

Importers, whether or not producers, of plants, plant products or other objects must be included in an official register of a Member State under an official registration number.

a.5 Advance notice on imports:

- Member States may require airport authorities, harbor authorities, importers or operators to give, as soon as they are aware of the imminent arrival of a consignment of plants, plant products and other objects advance notice to the customs office of point of entry and to the official body of point of entry.
- In addition and without prejudice to provisions of Directive 2000/29/EC, plants, plant products and any other material capable of harboring plant pests may be subject to emergency measures.

b. CITES regulation:

The Convention on International Trade in Endangered Species (CITES) lays down provisions for the protection of endangered species of flora and fauna through controls of the international trade in specimens of these species. CITES lists the relevant endangered species in three separate appendices, in which

b.1. Trade is prohibited (appendix I of CITES, Appendix 4.5)

Appendix I lists species that are the most endangered among CITES-listed animals and plants. They are threatened with extinction and CITES generally prohibits commercial international trade in specimens of these species. However, trade may be allowed under exceptional circumstances, e.g. for scientific research.

b.2 Trade is bound to restrictions, but permitted (appendix II of CITES, Appendix 4.5)

Appendix II lists species that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled. International trade in these species may be authorized by the granting of an export permit or re-export certificate. No import permit is necessary for these species under CITES (although a permit is needed in some countries that have taken stricter measures than CITES requires). Permits or certificates should only be granted if the relevant authorities are satisfied that certain conditions are met, above all that trade will not be detrimental to the survival of the species in the wild.

b.3 Regulated trade is permitted (appendix III of CITES, Appendix 4.5)

Appendix III is a list of species included at the request of a Party that already regulates trade in the species and that needs the cooperation of other countries to prevent unsustainable or illegal exploitation. International trade in specimens of species listed in this Appendix is allowed only on presentation of the appropriate permits or certificates. The species may be added to or removed from Appendix III at any time and by any Party unilaterally.

More information on endangered species can be found at <http://www.cites.org/>.

c. Breeders' regulation:

Creating and selecting new plant varieties diversifies the number of varieties offered on the market. Furthermore, the technical performance of varieties in terms of yield, size, appearance, disease-resistance and adaptation to different agricultural and climatic conditions, is improved. In this respect, the breeders' work benefits the whole industry by making productive plant-based materials available to producers and invigorating the market by constantly introducing new products. Protection frameworks and royalty payments support the future development of new varieties. An

increase in the importance of breeders' rights is to be expected. However, exporters from Nepal should also understand that protection laws and penalties for infringement of breeders' right are not equal worldwide. There are several protection frameworks for new plant varieties:

c.1 Protection in countries belonging to the UPOV (*International Union for the Protection of New Plant Varieties*)

The UPOV is a group of countries which operates according to the principles of the Convention of the same name in 1961 in Paris. The registered office of this inter-governmental organization is in Geneva (Switzerland). The purpose of the UPOV Convention is to ensure that the member States of the UPOV acknowledge the achievements of breeders of new plant varieties, by making available to them an exclusive property rights, on the basis of a set of uniform and clearly defined principles. The rights are granted for a limited period of time (25 years) at the end of which varieties protected by them pass into the public domain. For more information see <http://www.upov.int/> or <http://www.cpov.fr/>.

The Convention therefore established four simple protection principles:

1. The creator of a variety is the only person who can ensure its multiplication;
2. Protection applies to all parts of the plant, and to the products derived from harvesting that plant;
3. The breeder is fully entitled to authorize the commercial use of all or part of his protected variety in exchange for the payment of a fee or royalty; and
4. The notion of an essentially derivative variety (the breeder is also protected against varieties too close to his own).

c.2 Protection in EU countries (CPVO)(Community Plant Variety Office)

The CPVO is a Community institution, seated in Angers (France) with independent legal status and has been operational since 27 April 1995. Protection to breeders is offered by a Community Plant Variety Right (CPVR), established through Regulation (EC) No 2100/94 on Community Plant Variety Rights. A CPVR is an industrial property right, like patents and copyrights, but designed for plant varieties of which material is produced and commercialized. Its implementation is regulated by Regulation (EC) No 1239/95.

c.3 Other forms of protection :national plant registration: patents and trade marks

Patents:

The TRIPS (Trade-Related Aspects of Intellectual Property Rights) rules of the World Trade Organization stipulate that member countries must develop provisions for the protection of varieties in their territory. The TRIPS allow its member countries to choose between joining the UPOV and using patents.

Trade mark:

Since 1 April 1994, breeders have been able to apply for a European trade mark. This can be used by the breeder and by companies which pay for the use of licenses. Trade marks can last longer than protection rights, which are limited to 25 years.

License agreements:

A breeder can decide to entrust the production of a protected variety to 'licensed' companies. He must then entrust the marketing material to the multiplier. The multiplier is required to identify the flowers by their names and trade marks. Licenses can be exclusive or non-exclusive. In the case of a non-exclusive license, several companies can protect the variety.

Breeder's rights and developing countries

When an exporter would like to do business in a plant to which a patent is applied, he can only obtain young plant material from the one company holding the patent. Propagating of this plant material is also prohibited. To receive the grant of the breeder's right in a country which is a member of the UPOV; a grower should file an application with one of the contracting parties of the UPOV. The authority in the area of breeder's right will then examine if the variety is new, distinct, uniform and stable.

B. Quality related market requirement

The quality of floricultural products demanded by European traders and consumers is extremely high. As indicated earlier, there are EU regulation (Regulation (EC) No 315/68 and 316/68 (appendices 4.6 and 4.7) that specifies minimum requirements for floricultural products. However, the quality standards of the Dutch Auctions (VBN) give the general requirements of the European floricultural trade (appendix 4.8).

The VBN product specifications are more detailed and specific than those of other EU markets. If selling via one of the Netherlands auctions, these standards are compulsory. Exporters from developing countries must be familiar with the specific standards required for their products. An example of such a norm sheet which specify the quality , packing and marking standards required for each product is give in the appendix 4.8. Some of them are ISO 9000, EUREGAP and Florimark. For more information see <http://www.vbn.nl/>. For Standards refer <http://www.iso.org/>.

C. Social Requirement

Apart from ILO conventions and SA8000 other labels and standards such as Fair Flowers and Plants, EUREPGAP and MPS also include social provisions. Social Accountability 8000 (SA8000) is based on the internationally accepted ILO Conventions. It now has 572 facilities certified, 50 industries represented and 45 countries involved. Exporters in developing countries trading with European companies and wishing to demonstrate to companies and consumers that they are treating workers fairly can apply for certification. Applying codes of practice in Europe is not without its problems, but in developing countries, their implementation will be even harder for exporters and growers.

D. Environmental Requirements

In recent years, issues such as Life Cycle Assessment (LYA) of products, Cleaner Production (CP) and Eco-design have all become important tools for companies to improve on the environmental performance of their products and production processes (by analyzing where the environmental impacts are the largest and how a company may improve on these points). This can lead to both internal (improved efficiency) and external (perceived image) advantages. Companies that apply the environmentally sound approach gain a reward in the form of formal recognition, which can in

turn be used as a 'green' marketing tool. These tools can be environmental management standards (for the whole organization, such as ISO 14001 and EUREPGAP) and eco-labels.

E. Occupational health and safety

The prime health and safety concern in this sector is the use of pesticides. Not only can the use of pesticides cause immediate and long-term health and safety problems at the production site, but they can negatively influence the competitiveness of the products on the EU market as well. Other important issues are good housekeeping, safety of machines and physical strain experienced by employees. Refer <http://www.st-mps.nl/>.

F. Environmentally sound production

The cultivation of flowers can potentially be environmentally very unsound, depending on the manner of cultivation and the chemicals used for disease control, pest and weed control, as well as the use of fertilizers. Inappropriate floriculture methods can seriously damage and pollute large areas of land and water. Too much use and misuse of, often toxic, herbicides and pesticides can cause damage to human, animal and plant life.

The amount of waste, caused by dumped containers, can be reduced by using containers which are made of biodegradable materials, for example peat, paper or biodegradable plastic. Another option is to collect used plastic containers and re-use or recycle them. If possible, containers made of recycled plastic should be used.

Fertilizers

The extensive use of fertilizers can cause eutrophication (the aging process of a body of water choked by plant life; evolution into a marsh, with the depletion of available oxygen followed by eventual disappearance) threaten the supply of drinking water, cause atmospheric emissions and effect the crop quality. Experiments prove that it is possible to grow flowers without chemical fertilizers. Manure from barnyards, stables or feedlots can be used as natural fertilizers. Other sources of organic or natural fertilizers include bone, castor bean, cottonseed, fishmeal, dried blood and sewage sludge. Furthermore, it is possible to collect waste from agricultural and floricultural companies and compost it.

Pesticides

The use of pesticides can have various environmental and health impacts. It is important for farmers and workers to deal with pesticides in a way that will have little or no effect on their health and the environment. Awareness of different ways to control pests is important: alternative methods, integrated pest management (IPM) and developments in biotechnology. If pesticides are used it, is important to take the necessary precautions.

G. Packaging, Marking and Labeling

Different packaging materials are used, depending on the type of product and the function of protection and influence over the micro climate required. The packaging has to satisfy a number of conditions, mainly in the field of handling, and the protection of the quality. The transport volume must be as efficient as possible, and a high level of uniformity is desirable. In order to optimize transportation, it is recommended to use boxes, the measurements of which are in accordance with the EU pallet sizes or the airfreight pallet.

The trade in flowers and plants generates a considerable amount of (transport and sales) packaging waste such as boxes, trays and plastics. Furthermore, packaging materials can cause pollution due to toxic substances. The best solution should be found in environmentally sound packaging, while sufficiently protecting the flowers. It is important to use re-usable and recyclable material and to limit the amount of packaging where possible.

As of March 1, 2005 a new amendment has been made regarding new Phytosanitary measures for all wooden packaging material that is used with the import of goods into the EU from third countries. The background for this legislation is to protect the EU from the introduction of organisms harmful to plants and plant products via wood packaging material. The Directives 2004/102/EC and 2005/15/EC require heat treatment or fumigation and marking of wooden packaging materials (including for example packing cases, boxes, crates, drums and similar packing, pallets, box pallets and other loader boards, pallet collars). The requirements refer to the international standard ISPM 15. As of March 1st 2006 the additional requirement applies that round wood packaging material shall be made from debarked round wood. For more information on this label and its requirements, see <http://www.flower-labelprogramm.org/>

4.5.4 EU - Distribution System

Distribution is the most expensive and crucial element for growers and exporters of floriculture products. It is highly dependent on efficient and adequate transport and logistic systems. At an initial stage of exporting it is advisable to locate the farms within a short distance from an international airport to ensure faster delivery and competitiveness. In general there are four options open for growers and exporters to access to markets:

(a) Auctions: Normally large scale producers of the mass-produced greenhouse varieties participate directly in auctions markets. Once a supplier becomes member of auctions market it is necessary to follow the rules and procedures which also require supplying minimum quantities of high quality items over a specific time period.

(b) Auction Via Agent: Agents as representatives are suitable for small exporters as they provide a link between exporters and auctions. Normally agents are responsible for transporting flowers from airport to auctions, flower cleaning/cutting, re-hydrating, repacking, and advisory services. They are good facilitators but their commission or mark up might be high.

(c) Import Wholesaler: Many wholesalers are importing products from growers in developing countries at their own risk. Wholesalers give advises and assist growers in many respects including technical, quality, presentation, packing, grading, and handling. Risks of doing business with wholesaler are their quality complains, payments disputes and delays, etc.

(d) Retail Chain or Retailer or Supermarket: This option is very much suitable for small growers who can supply end-user's products like bunches, mixed bouquets, pot plants, etc.

There are 11 Flower Auctions in Europe, 6 of which are in The Netherlands. The Netherlands Flower Auctions²² is the largest floriculture product market in the world. Sales turnover of this market increased by 46 per cent from Euro 2.6 billion to Euro 3.8 billion in the past ten years.

²² Recently Flower Auction Aalsmeer (VBA) and Floral Holland are merged and new company called Flora Holland has been formed. This new merged company will have 4600 employee, 12300 suppliers, and 3250 buyers. Its annual turnover of cut flower will exceed Euro 3.7 billion.

Table 4.14 Major Cut Flowers Suppliers to Holland Auction Market in 2005

		Euro Million	Stems Million	Unit Price Euro
	Total Supply	2400.6	11,776.5	0.21
	Netherlands	1902.1	8,275.4	0.23
	Imports	489.5	3501.4	0.14
	Exporting Countries	In %	In %	
1	Kenya	40.5	43.0	0.13
2	Israel	21.8	22.7	0.14
3	Ecuador	6.8	3.37	0.29
4	Zimbabwe	6.6	7.8	0.13
5	Uganda	3.2	4.7	0.09
6	Spain	2.0	2.2	0.14
7	S. Africa	1.8	0.8	0.30
8	Ethiopia	1.6	1.4	0.16
9	Belgium	1.5	0.9	0.23
10	Germany	1.5	1.1	0.18

Source: SADC, 2005

Table 4.15 Main Imported Cut Flowers Auctioned in the Netherlands in 2005

Product	Euro Million	Stems Million	% change Over 2004	Stem price In Euro
Roses – Big	125.10	775.4	27.3	0.16
Roses – Small	112.6	1072.1	-2.2	0.11
Gypsophila	29.0	160.8	5.4	0.18
Hypericum	24.6	139.0	-24.6	0.18
Decorative Foliage	15.7	87.2	-5.7	0.18
Solidago	12.0	93.10	-13.3	0.13
Carnation Stand	9.7	78.8	-18.7	0.13
Calla	9.0	20.5	-8.4	0.44
Wax Flower	8.0	57.9	-5.3	0.14
Sun Flower	6.3	25.6	25.6	0.25

Source: CBI, 2005

Apart from the flowers mentioned in table 4.15, the other best sellers in the European markets are large headed Gerberas, Anthurium, Cymbidium, Lilies, Helianthus, Eustoma, Hortensia, and Limonium. Other items are Chrysanthemum, Gladiolus, Tulips, Longiflorum lilies, Trachelium, and Narcissus. The most popular house plants are Phalaenopsis orchids, Anthurium, Begonia, Ficus white sunny, Filtoni, Dracaena Marginata, Margenata single canes, Dr Red Princess, Red Calathea and double flowering Kalanchoes.

4.5.5 Trading Practices

The Dutch Flower Auction and other wholesalers use and manage various uniform codes for products, qualities, packing, characteristics, grades, etc. These codes are also tools to facilitate the deliver, sales and purchase of flowers and plants. (Ref: www.vbn.nl/en/productinfo/index.asp)

Table 4.16 : Retail Distribution Channels in the EU, 2002

	Netherlands	Germany	UK	France	Italy	Spain
Florists	44	57	27	68	73	82
Streets and Markets	25	8	6	10	19	9
Supermarkets	24	12	58	13	4	1
Garden Centres	3	4	3	3	3	2
Growers	-	16	-	3	-	-
Others	4	3	9	3	1	6

Source: CBI 2004

4.6 The United States of America

4.6.1 Imports

a. Cut flower

The USA is the third largest cut flower importer in the world. In 2004, it imported US\$ 880 million worth of cut flowers, representing 16 per cent of the total global trade (Table 4.17). In 2005 import value recorded at US\$900 million. Average annual growth in five year (2000-2004) recorded at 4 per cent only. However, recently the rates of growth were very high - 14 per cent in 2004 and 18 per cent in 2005 over the previous years. Per capita consumption of cut flower in the US amounts to US\$ 19 (Flower Council Holland, 2005).

Table 4.17 Imports of Fresh Cut Flowers and Flower Buds in the US (HS 060310)

Suppliers	Value supplied in 2004	Annual % growth in value 2000-2004	Annual % growth in value 2003-2004	% Share in USA imports
World	886,979	4	15	100
Colombia	511,696	5	21	58
Ecuador	174,660	8	26	20
Netherlands	90,873	-2	-1	10
Costa Rica	23,584	2	13	3
Canada	21,654	5	6	2
Mexico	16,942	-15	-19	2
Israel	8,749	4	-29	1
New Zealand	5,953	17	8	1
Thailand	5,507	7	9	1
Guatemala	4,745	-6	5	1

Source: ITC calculations based on COMTRADE statistics

Notes 1. All values in '000 USD. 2. Other major suppliers: Brazil, Peru, Australia, Chile, Dominican Republic, Kenya, South Africa, China, Italy and France.

According to Floriculture Yearbook 2005, USDA in total size of cut flower market in USA import share is around 64% (2004). This gives a basis to estimate that total US market size for cut flower is about US\$1.4 billion in 2005. Domestic production of more common varieties continues to fall as US wholesalers have started supplementing these with cheaper imports from abroad. The majority of the import is supplied by Latin American countries, with Colombia (58%), Ecuador 20% and Guatemala, Brazil, Peru and Chile all featuring in the top 20 suppliers. Netherlands, Mexico, Canada, Costa Rica, Israel, New Zealand and Thailand are among the top 10 exporters to US market. Market is dominated by the neighboring countries for reasons of low transport costs and well established traditional distribution networks. Most of the supplying countries have got favorable climatic conditions for flower growing at lower cost of production than in the US. Most important import items demanded by the market are Roses (36%), Chrysanthemums (9.5%) and Carnations (9.4%). (USDA, 2005).

The Netherlands, African and Asian countries are finding difficulty in competing with transport cost disadvantages. US Domestic production during past decade (1995-2004, USDA 2005) remained very much stable with average annual production of \$ 427 million (Table 4.18). Rose (10.2%), Gladiola (6.2%), Chrysanthemums (4.7%), Carnations (0.5%) and newer varieties (78.4%) are the major domestically produced flowers.

Table 4.18 US Production, Consumption and Trade in Cut Flower (1995 and 2004 US\$ M)

	1995	2004
Domestic Production	413.6	421.6
Imports	511.5	705.6
Total Supply	935.2	1127.3
Exports	40.3	26.8
Domestic Consumption	894.9	1100.5
Use per US household	9.19	10
Share of imports	57.2	64.1

Note: Figures included only wholesale market with more than \$ 100 thousand transaction

b. Bulbs

The US as a second largest importer of bulbs, tubers and rhizomes absorbs about 23 per cent of the world traded value. . It imported US\$ 203 million worth of these products in 2005. The US import market has grown 11 percent from 2002 to 2005, the import trend for this product showed a sharp downturn to 5% in 2005 (table 4.4)

The Netherlands (90%) is the major exporter of this product to US. More than 45 countries fill the remaining gap. Israel, Chile, New Zealand and UK export about 7 percent. Nepal (0.17%) is the 34th largest supplier of this product to the US (ITC, 2005). (Table 4.19).

Table 4.19 Imports of Bulbs, Tubers, Tuberous roots, Rhizomes, etc. in USA

Exporters	2005		2004		2003		2002		% Growth in Value between 2002-2005
	V	Q	V	Q	V	Q	V	Q	
World	190,041	1,633,174	202,075	1,635,326	178,433	1,529,553	170,512	1,651,475	11
Netherlands	170,171	1,513,346	182,163	1,522,901	161,207	1,429,361	153,117	1,522,349	11
Israel	5,763	25,692	6,556	30,425	5,926	26,506	6,536	45,644	-11
Chile	3,083	15,120	3,212	17,707	2,202	12,636	2,141	13,369	45
New Zealand	2,678	15,130	1,995	11,321	1,883	10,689	1,026	6,335	161
United Kingdom	2,049	39,198	2,330	38,142	1,981	34,047	2,797	45,486	-27
South Africa	1,537	3,450	1,680	2,508	1,433	1,665	1,688	1,512	-6
Brazil	1,225	2,321	546	688	360	467	262	247	367
France	580	3,787	1,005	5,515	908	6,406	968	9,576	-40
Belgium	578	1,883	206	841	406	1,799	344	1,305	68
Costa Rica	500	1,304	296	641	334	510	269	254	86
China	397	4,950	412	362	316	492	268	604	42
Thailand	254	1,948	236	1,146	397	543	116	235	118
Canada	248	772	225	323	173	518	173	659	43
Nepal	204	348	145	222	167	258	-	-	22*

Source: ITC calculations based on COMTRADE statistics

Notes

- V= Value of imported product; Q= Quantity of imported product
- All values in USD 1,000
- All quantities in 1,000 units
- * Growth in value for Nepal is from 2003 to 2005
- Other major exporters are Japan, Ireland, Morocco, Italy, India, Australia, Philippines, Turkey and Singapore

4.6.2 Tariff

Nepal is granted with preferential tariff based on Generalized System of Preferences. Under the US GSP Scheme Nepal gets a zero percent tariff for the imports of (HS060110) dormant bulbs, tubers, tuberous roots, corms, crowns and rhizomes and (HS060310) fresh cut flowers and flower buds, for

bouquets or for ornamental purposes. Nepal, India, Turkey and Thailand qualify for GSP and pay 1.7% on fresh cut flowers (060310), and 0% on everything else. China and Korea, however, face average tariffs of 4.85%

4.6.3 Market Access Requirement (Standards and SPS)

Animal and Plant Health Inspection Service (APHIS) of the US Department of Agriculture (USDA) is the authority to determine the presence of pests, diseases or contaminants in all imports of agro-based products. Normally leaves, stems, roots and seeds of samples are inspected as and when shipment arrives. In case of floriculture products documents furnished are the deciding factor of sample size inspection. The most important documents required are (a) PPQ 368 Notice of Arrival, (b) commercial invoice with box count, (c) the weight and genera (species and varieties), (d) packing list, and (e) phytosanitary certificate (including information on where grown, and treatments. Ref: www.fas.usda.gov/itp/ofsts/us.html).

Upon inspection, if an APHIS's Plant Protection and Quarantine Officer discover any pests or disease or fungus, a sample is forwarded to an entomologist or pathologist for confirmation. In case if he/she finds appropriate a required treatment is given and entry is permitted otherwise the consignment is destructed or re-exported. Either of the action is taken at the importer's cost and risk.

Imports of items under CITES and the Endangered Species Act (ESA) are prohibited unless special permission is taken for scientific research, propagation, display or educational purposes.

Under the plant protection regulation of the US the following procedure is to be undertaken for imports of bulbs into the US:

- In the US, bulbs imported from 9 specific countries (Belgium, Chile, Great Britain, Ireland, Israel, Netherlands, Scotland, South Africa and Turkey) are considered to be pre-cleared.
- Bulbs other than protected by CITES, require no quarantine related action at the customs entry point.
- All import of bulbs into the US must be accompanied by a Phytosanitary certificate issued by a competent authority of the country of origin.
- Bulbs protected by CITES [Bletia spp., Bietilla spp., Galanthus spp., Habenaria radiata (syn. Pecteilis radiata), or Sternbergia spp.] must also accompany Protected Plant Permit (GP) and CITES document.
- In case of bulbs other than protected by CITES, import is normally permitted only if Bulbs (B) or underground portions of Dormant Perennials (DP) appear in the list under table 10 of the US Plant Protection Regulation on import of bulbs. This table includes a list of 258 bulbs and 135 underground portions of dormant perennials (DP). Almost all flower bulbs being produced in Nepal are included in this table.
- The US regulation has identified certain countries where potato cyst nematodes (including the golden nematode are known to occur. Nepal is not among those countries. Therefore, imports of bulbs (accompanied by Phytosanitary certificate) from Nepal can directly proceed to bulbs inspection procedures.
- Bulbs are mainly inspected to check if it contains soil, pests and to determine if any bulbs have sprouted. On inspection if
 - Bulbs have sprouted then bulbs are referred to Plant Inspection Station

- Pests are found then specimen is prepared and referred to the appropriate Area Identifier
- Soil adhering to or with bulbs is found then entry into the US is prohibited.

4.6.4 Distribution System

In the US auctions (New York, Seattle, Miami, etc.) are not developed. Most of the mass growers in California, dealing on 70 per cent of the US cut flower turnover, sell directly to retail florists. Pattern of distribution is changing with more vertical integration occurring and international integration is also getting popularity with many importers investing in Colombia, Ecuador and Mexico for supply of flowers. In spite of all these traditional distribution system of wholesalers and retailers are providing important services. Moreover, supermarkets and home improvement stores are also gaining popularity in the US market.

4.7 Japan

4.7.1 Consumption and Imports

a. Cut flowers

Japan has a highly advanced cut-flower industries in production, consumption and imports. Total cut flower market size in Japan is US\$ 3.2 billion (2004). It is currently the second-biggest national market in the world, after the Netherlands. For a long time demand for imported cut flowers grew steadily by 11 per cent but recently in 2005 growth rate remained at 4 per cent over 2004.

Table 4.20 Cut Flower Consumption and Import in Japan

	1998	2004	Market Share
Total *	3,204,310	3,240,655	
Chrysanthemums	1,000,296	963,151	32.0
Carnations	211,811	209,256	8.2
Rose	259,967	264,876	7.2
Orchid	48,420	44,134	1.7
Gerbera	52,003	52,832	3.4
Lilies			3.0
Imports**	137,395	218,089	

Source: * MAFF Statistics 2005, **Comtrade Statistics Database

Table 4.21 Flower Use in Japan %

	1989	1992	1995	1998
Business Use	39.7	35.9	32.9	32.7
Order and Delivery	9.8	10.5	10.3	11.6
Shop Sales	50.5	53.6	56.8	55.7
Total	100.0	100.0	100.0	100.0

Source: JTERO 2001

Market is very much price-sensitive. Japanese share in the world trade is about 4 per cent only. However, this share is likely to go up as the government of Japan has recently opened up the market and cheaper imports are driving domestic producers out. The market is dominated by Asian countries having proximity such as Malaysia (15%), Thailand (13%), Korea (11%), Taiwan (10%), China (5%), Viet Nam (3%), Singapore (2%) and India (2%). Columbia, Netherlands, New Zealand, Australia, and New Zealand also feature in the top 10. Most of the Asian countries including China (with 85% recent growth) are experiencing rapid growth rates of exports to Japan. Holland has arranged stationing of Japanese Clearance Officer in Amsterdam Flower Market to allow fast-track movement

Pattern of consumption and taste is changing with demand for orchid (imported from Malaysia, Singapore and Taiwan) and roses (from Colombia, Kenya and Korea) increasing, and decreasing in case of tulips (from the Netherlands). Consumption of chrysanthemums and carnations are remaining constant but changing their source (from the Netherlands to China and Korea).

The major flower varieties in the Japanese market are chrysanthemums (32%), carnations (8.2%), roses (7.2%), gerbera (3.4%), lilies (3%) and orchids (1.7%). With the exception of gerbera, the domestic demand for major varieties decreased by 9 per cent over the period 1998 to 2004 from 6881 million stems to 6249 million. Decrease in demand led to domestic production as well by 9.5% from 5,629-million to 5,096-million stems. This demonstrates that the Japanese producers are squeezed as foreigners are supplying at cheaper prices.

Table 4.22: **Japan's Major Suppliers of Fresh Cut Flowers, etc. (HS060310)**

Suppliers	Value Supplied in 2004 (US\$ '000)	Quantity Supplied in 2004 (tons)	Annual growth in value between 2000-2004	% in 2004	Annual growth in value between 2003-2004	% in 2004	% Share in Japan's supplies
World	207,756	29,538		6		28	100
Malaysia	31,210	4,608		47		82	15
Thailand	27,343	3,870		0		12	13
Colombia	24,335	2,482		20		19	12
Republic of Korea	23,429	5,681		3		31	11
Taiwan, Province of China	19,995	3,341		20		34	10
Netherlands	14,429	765		-21		4	7
New Zealand	14,346	1,007		-7		-8	7
China	11,343	2,949		103		112	5
Australia	8,597	1,062		4		22	4
Viet Nam	5,667	789		39		69	3
Ecuador	5,357	469		37		64	3
Singapore	4,812	568		-9		11	2
India	4,095	733		19		17	2

Source: ITC calculations based on COMTRADE statistics

Note: Other major suppliers include: South Africa, Kenya, Israel and USA

Key demand months are January (New Year's Day), March (Spring Equinox), May (Mother's Day), August (Ancestor worship days), September (Autumn Equinox) and December (Christmas). Flower demand in the Japanese market was earlier concentrated on buying for ceremonial occasions; more recently, flower purchases are for gifts and/or home use. The use of flowers for business purposes has always been a strong source of demand.

b. Bulbs

With 11 percent of the world imports of bulbs, tubers and rhizomes, Japan is the second largest importer of this product in the world (table 4.8). It imported about US\$ 97 million worth of bulbs in 2005. While the world import of this product is increasing by 9 percent Japan's import has been substantially decreasing (5% from 2002 and 7.65% from 2004).

The major exporters', i.e. the Netherlands, share in the Japanese market has been decreasing (from 90% to 81% in 2002 to 2005). While some exporting markets have also been declining (US (17%), Thailand (13%) and Taiwan (11%)), some have experienced tremendous growth (Chile (105%), Belgium (84%) and New Zealand (21%)).

4.7.2 Tariff

Bulbs (HS 0601), cut flowers and flower buds (HS0603) are free from import tariffs under the GSP Scheme of Japan. Generally, no import duties apply to cut flowers. Foliage, however, attracts a most favored nation (MFN) rate of 3% and a 0% preferential tariff. Sales tax of 5% of the CIF price is charged at the entry point.

Table 4.23: Japan's major suppliers of Bulbs, tubers etc. (HS060110)

Exporters	2005		2004		2003		2002		% Growth in Value – 2002-2005
	V	Q	V	Q	V	Q	V	Q	
World	96,857	525,353	104,722	575,697	106,769	549,973	101,965	588,254	-5
Netherlands	81,137	480,324	90,500	528,494	94,892	512,122	89,172	548,266	-9
New Zealand	7,843	15,713	4,887	11,425	5,778	11,873	6,466	12,783	21
Chile	3,929	8,066	4,046	9,485	2,207	4,172	1,914	3,395	105
USA	2,478	2,286	3,062	3,099	2,527	3,080	2,985	3,057	-17
Thailand	287	1,373	263	1,094	275	977	329	1,239	-13
Belgium	257	624	396	732	261	518	148	421	84
Taiwan	221	8,331	277	9,660	237	9,923	248	10,042	-11
China	176	2,842	283	4,939	182	2,729	168	3,770	4
Turkey	105	954	99	884	62	619	104	912	1
India	102	3,017	154	2,972	82	2,088	93	1,979	11

Source: ITC calculations based on COMTRADE statistics

Notes

- V= Value of imported product; Q= Quantity of imported product
- All values in USD 1,000
- All quantities in 1,000 units

4.7.3 Market Access Requirement (Standards and SPS)

Cut flower importation into Japan must follow Plant Quarantine Law and procedures at customs entry point. Some items are registered under the species registration system of the Seeds and Seedlings Law, and permission is required to import from species registration agents who may charge royalties depending upon the item. Importing endangered species is prohibited by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), while some flowers require export permits from the exporting country.

Plant Protection law

Under the Japanese Plant Protection Law following quarantine measures are taken on imports of plants and plant products.

- Prohibition of imports,
- Designation of Seaports and airports to import plants,
- Conformation of an attachment of Phytosanitary certificate issued by the government of exporting country,
- Inspection at the time of importing plants,
- Inspection at isolated growing site after importing them (before ho ki)
- Disposition and disinfection based on such inspection.

The various plant products and organisms are listed in the annexes of the Directive. See http://europa.eu.int/eur-lex/pri/en/%20oj/dat/2000/l_169/l_16920000710en00010112.pdf.

Prohibition on imports:

Plant Quarantine Law prohibits the importation of the following items:

- a. Harmful animals and plants (quarantine pests, as defined by the Ministry of Agriculture, Forestry and Fishery regulations),
- b. Soil or plants in soil,
- c. Quarantine pests to plants (disease germs and harmful insects),
- d. Containers and wrappings made from articles specified of the preceding items.

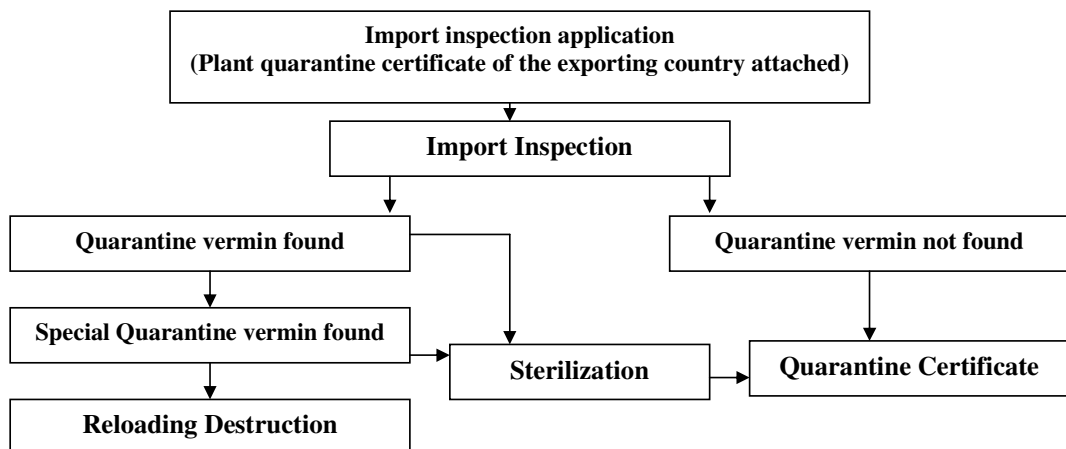
Name of plants, districts and quarantine pests designated and prohibited to be imported by the ministerial ordinance mentioned above are detailed in material 2 of the Law. The material does not mention any cut flowers or bulbs from Nepal. Therefore, no floriculture items from Nepal are prohibited for import into Japan.

Growing site inspection:

No plants and plant product from Nepal fall under the names of districts and plants which are subject to growing site inspection as under plant protection law of Japan (Material IV). Material IV includes underground portions of some live plants, seeds intended for planting (kidney bean, pea, watermelon, corn, broad bean) infected by nematodes, bacteria and viruses.

Articles subject to import inspection:

Except for items such as lumber, tea and highly processed items all other plants and plant products are subject to import inspection. Import inspection is conducted by plant quarantine officers. Following chart shows the inspection procedure.



Actual System of import inspection:

Cut flowers

In general imports of very few cut flowers are prohibited. However some special kinds of plants such as live clumps and leaves of the plants of the family Solanaceae and CrisiumAdans., and the plant of genera Chenopodium, Morning Glory, Marus Mill., Pyrus, Photinia lindley, and straw of

wheat and barley group, rice straw, culms and leaves of *Agropyron gaertner* are host plant of fire blight and potato wart. Some of these species are subject to import prohibition.

In case of cut flowers, to minimize import inspection Japanese Quarantine officials are deployed in the exporting country (at exporting country's expense) to inspect items there itself. Currently, Netherlands and Columbia have deployed such officials.

Bulbs

Phytosanitary certificate issued by the government of the exporting country, should additionally declare that it examined seeds and saplings during the period of cultivation and that specified quarantine pests do not stick to them. After approval of import, bulbs of flowering plants are subject to isolated cultivation for a fixed period of time at a state run, isolated cultivation site, or any private cultivation area, in order to inspect any disease caused by virus that are difficult to find at the port of entry. If the plants pass such inspection the importer or its administrator is provided with Plant Inspection Certificate or stamp a seal proving success in examination.

Attachment of the Plant Quarantine Certificate

Import inspection proceeds at the request of the Japanese importers, but a Plant Quarantine Certificate issued in the exporting country must be attached to related documents, such as invoices, upon application.

Documents required on inspection are:

- a) Bill of landing or Airways Bill,
- b) Country of origin statement,
- c) Phytosanitary certificate issued by the exporting country
- d) Invoice
- e) Packing list

Disinfection and Disposition:

If quarantine pests are found during inspection or isolated cultivation it is requested to disinfest or dispose the said plants (including sending them back to the exporting country). Disinfection includes fumigation, chemical dipping, chemical dressing, dry heat treatment, sorting and other treatments and according to plants or quarantine pests, a standard of disinfection is determined respectively.

4.7.4 Distribution System

Japan has small flower growers, some 83,000 cultivating about 19,500 hectares. Cut flowers are collected by co-operatives or wholesaler and are sent to auction markets or to retailers. There are 277 wholesale and auction markets, of which 23 are located in the major cities and 42, are general wholesale markets serving particular regions. Imported flowers are also brought wholesale markets or to auction markets and then wholesalers or retailers collect the products. Mail order, home delivery, and online business transaction systems are less conventional channels recently getting popularity among the consumers. Florists have decreased with the introduction of new channels and increase of sales through supermarkets. For the information of entrepreneurs in Nepal Leading Importers and Institutions involved in cut flowers in Japan are listed in Appendix 4.12.

4.8 Indian Market

4.8.1 Imports and Exports

a. Cut flowers

Indian import and export data are not available with ITC as it does not report to it. On the basis of exporting country reports India imported US\$ 134 thousand worth of cut flowers from the world. Thailand is the major exporter to India (Table 4.24). India is a net exporting country. Total export of all flower related products was US\$37.6 million in 2005. (Table 4.25)

Table 4.24: Major suppliers of Fresh Cut Flowers to India (HS060310)

Suppliers	Value Supplied in 2004	Quantity Supplied in 2004	Annual growth value between 2000-2004	% in	Annual growth value between 2003-2004	% in	% Share in India's supplies
World	134	136	100		163		100
Thailand	129	128	135		163		96

Source: ITC calculations based on COMTRADE statistics

Notes

- All values in US\$ 1,000
- All quantity units in tons

Table 4.25 Exports of Floriculture Products in 2005

Items	Value in US \$'000	Qty in Tons	Growth Rate
Bulbs, tubers, etc.	546	80	10
Live plants	5169	4718	37
Cut flowers	8160	2163	7
Foliages	23680	8852	21
Total	37555	15813	

4.8.2 Tariffs

India applies a 45% preferential tariff for LDC and SAFTA countries, for fresh cut flowers and flower buds, for bouquets or for ornamental purposes (HS060310). Nepal receives special preferential tariffs advantages under the bilateral trade arrangement. It applies 10% MFN duties on the imports of bulbs, tubers tuberous roots, corms, crowns and rhizomes, dormant (HS060110) from Nepal (ITC/DPMD/MAS 2006).

4.8.3 Market Access Requirement (Standards and SPS)

According to the Plant Quarantine Order 2003 following are the regulations for importing plants and plant products into India.

- No consignment of plant and plant products shall be imported into India without a valid permit issued under Plant Quarantine (Regulation of Import into India) Order 2003. Imports are not permitted if consignment is found infested or infected with a quarantine pest or contaminated with noxious weed species.
- Certain items mentioned in Schedule VII of this order do not require such permit but subject to submission of phytosanitary certificate issued by the competent authority of the country of origin. Such items include mainly wood, medicinal herbs, spices, fibres, fruits, flowers, roots, leaves, stems, seeds etc. mostly in dried form, for the purposes of consumption and medicinal uses.

- Banned and restricted imports items: Some of the plant materials having incidence of virus, pests etc. are not permitted import into India from some specific countries as specified in Schedule IV of the Order. Such plant materials include Banana, Cassava (Tapioca), Cocoa, Coconut, Coffee, Date palm, Chestnut, Elm, Oak, Pine, Oil palm, Potato, Rubber, Sugar Cane, Sweet Potato, and Yam. Imports of these items from Nepal are not prohibited. However, such plants and plant materials including some of the additional items can be imported from countries, other than specified in Schedule IV,
 - by the authorized Indian institutions,
 - under special conditions of import and
 - with additional declarations in the phytosanitary certificate (under Schedule V of the Order). Additional items included in Schedule other than mentioned in Schedule IV are citrus spp., cotton, populus spp, walnut, ground nut, rice, tobacco and wheat.
- Procedures for Permission: Application for items requiring import permission should be submitted at least 7 days in advance to the issuing authority in Form PQ 01 for the import of plants and plant products for consumption and processing and in form PQ 02 for imports of seeds and plant for propagation covered under Schedule V and VI. Permission fee is payable to issuing authority in form of demand draft.
- The issuing authority issues import permit (PQ 03 for consumption or PQ 04 for sowing or planting) in quadruplicate if he is satisfied that all the necessary conditions are met. One copy of permit is forwarded to the exporter in advance to facilitate incorporation of import permit number in the phytosanitary certificate issued by the authority in exporting country. Such permits, valid for six months with the possibility of revalidation for a further period of six months, are issued subject to restrictions and conditions prescribed under Schedules V and VI.
- All consignments of plants and plant products should be exported only through ports of entry specified in Schedule I, and Inland Container Depots/Container Freight Stations or foreign post offices where Plant Quarantine Stations (PQS) are operating. Among all of such stations the most suitable entry points for Nepal are: Airports (New Delhi, Patna and Varanashi), Land Frontier Stations (Jogbani, Panitanki, Raxual, Rupadiha, Sonauli and Banbasa) and Foreign Post Offices (New Delhi, Mumbai, Kolkata, and Bangalore). But seeds and plants for propagations can only be exported through Regional Plant Quarantine Stations located in Amritsar, Chennai, Kolkata, Mumbai or New Delhi.
- The Plant Protection Adviser or the Authorized Officer at the PQS inspects the consignment at the entry point and appropriate samples are drawn for laboratory testing. If necessary fumigation, eradication, disinfections or disinfestations is carried out at importer's cost before quarantine clearance for the entry of a consignment. Importers are also responsible for any post-entry quarantine incidence.
- In general, imports of soil, hay or straw, earth clay, compost, sand, germ plasm, live insects, and microbial cultures are required special permission. If consignments are packed by raw or solid wood packing materials, such materials must have gone through appropriate treatment and marked (ISPM-15) or accompanied by phytosanitary certificate with the treatment endorsed.
- The list of some of the popular plants and plant materials permitted imports from Nepal with additional declarations in phytosanitary certificate and special conditions (under Schedule VI of the Order) is attached in the appendix 4.9.

4.9 Middle East Market and Selected Supplying Countries²³

In the **Middle East** a \$300 million “Dubai Flower Centre”, set up at Dubai International Airport on a Free Zone basis is a highly specialized and efficient flower redistribution hub. Nepal having proximity and direct flight to Dubai can also explore the possibility of utilizing the facilities. In 2004 the Middle East countries imported US\$ 23 million worth of cut –flowers mainly from the Netherlands (61%), Kenya (10%), S.Africa (4%), Ecuador (4%), Colombia (3%), and Saudi Arabia (3%). Other countries exporting to Middle East are China, Malaysia, Thailand, India, Singapore, New Zealand, Sri Lanka, etc. Currently import is growing at a rate of 10%.

Kenya is the fourth largest exporter (after the Netherlands, Colombia and Ecuador) of cut flowers in the world market. For the past three years Kenya’s flower cultivation is increasing at an annual average rate of 166 ha with an average growth rates of 11 per cent. Kenya exports cut flowers of US\$ 290 million annually, 70% of which are roses. The flower sub-sector altogether employs about 500,000 people in Kenya.

Israel’s export of roses almost disappeared with the increasing competition from new suppliers like Kenya, Ethiopia, Ecuador and Colombia. Growers in Israel are switching to high profitable niche items like *Ranunculus* and *Ornithogalum*

Ecuador is recently facing higher air-freight tariffs. The lion share of roses exported from Ecuador goes to non-auction markets. In the similar manner **Zimbabwe’s** export is decreasing due to the frequent political violence. Supply of small roses from **Uganda** is also decreasing with the sharp fall in prices. Some of the growers have also stopped rose production for unfavorable climatic reasons. Uganda is trying to identify and develop cooler locations for flower production.

Since 2004 the acreage of rose farming expanded in **Ethiopia** every year by 150 ha with the help of Dutch growers. Israel, Germany and India are other countries attracted for investment in Ethiopia. Export of roses grew from 667 Tons (0.8 million stems) in 2003 to 1380 tones (13.4 million stems) in 2004 and 51.5 million stems in 2005. About 13,000 people, out of which, 70 % are women, are working in 1555 ha of land. Relatively small areas are under cultivation of other flowers such as *Hypericum* (20 Ha.), *Gypsophila* (20 Ha) and *Carnations* (15 Ha). The Government of Ethiopia has set a target of assisting 200 growers in 1000 ha of land by 2010 by developing a support package like land on a long-term lease at very attractive rents, loans for inputs on favorable bank credit lines, improved investment codes, etc. The World Bank has earmarked \$ 350 million for development of horticulture in Ethiopia. Total export turnover is expected to increase from \$ 20 million in 2005 to \$ 100 million in 2007.

In **India** Maharastra and Karnataka are two famous states for production of hybrid roses. However, recently production has dropped by 30-40 per cent due to unfavorable weather conditions, increased competition from new supplying countries like Ethiopia, and increased air freight tariffs. Freight cost accounts for almost 90 % of total export earnings. It increased by 300 % in the recent past to around \$2.4 a Kilo compared with 0.60 in 2002. In the meantime, for the first time commercial production of hybrid roses has been started in Sirmaur valley of Himanchal Pradesh.

²³ All information are based on Market News Services (MNS) of International Trade Centre, UNCTAD/ WTO, (ITC), Geneva.

Vietnam's exports have recorded to \$6.5 million in 2005. It has already identified opportunities in Japanese market. If exporters can focus on the better understanding of the market requirements export might be as high as \$ 8.0 million in 2006.

China's emerging flower industry has become a threat to many low cost suppliers like Kenya, Ethiopia, Colombia, Thailand, Ecuador and Malaysia. The Government of China envisages bringing jobs to tens of millions of impoverished isolated farmers in a bid to narrow down the income gaps between urban dwellers and rural farmers. China exported US\$ 73 million worth of flowers and bulbs and plants in 2005. Export of cut flowers and live plants grew at an average annual rate of 66% and 34% respectively during the period 2001 and 2005.

4. 10 Prices and costs

4.10.1 Prices

It is very much difficult to determine the average market prices for floriculture product. Prices vary depending on supply conditions such as species, variety, length, quality, sources, available quantity, seasons, etc. Added to this the great variation in prices also depends on demand conditions holidays, festivals, buyer's tastes and preferences to exotic or other etc. The most reliable price indications are available from Market News Services (MNS) of International Trade Centre, UNCTAD/WTO. For an idea of approximate prices in Holland and Singapore markets recent records are presented in **Appendices 4.10 and 4.11.**

Table : 4.24 Prices of Variety Having Market in Europe

Flower Variety	Market Prices (Euro/stem)	
	Nov-06	Oct-05
Carnations - standard	0.19	0.18
Carnations - spray	0.12	0.12
Chrysanthemums	na	0.21
Carthamus	0.16	0.17
Delphinium	0.58	0.33
Leucadendron	0.16	0.15
Protea	1.37	1.53
Rose Large (average)	0.24	0.26
Rose - Small (average)	0.10	0.13
Rose - Spray	0.24	0.28

Source: MNS/ITC

4.10.2 Approximate Costs in Some of the Countries

Cost structures in developed countries are normally high and in developing countries are low. In General low cost land, labor, construction materials, management and overhead, etc. are adequately available in developing countries. However, such an advantage of low cost factors in developing countries are subsidised / reduced to a greater extent when hi- tech requirements for marketable quality products such as standard poly house materials, irrigation equipment, chemicals, packaging materials, etc. have to be imported from developed countries. A report on the study of the Tanzanian cut flower industry (CBI Holland) indicated the following costs:

Table 4.25: Tanzanian Cut Flower Industry – Cost Summary

Description	Percentage
Investment cost	26.0
Of which, building, greenhouses 13.00	
Purchasing and preparation of land	17.0
Vehicles and machinery	10.0
Cold storage	5.0
Irrigation	1.5
Planting materials	12.0
Total	71.5

Source: CBI

It is possible to avoid using greenhouses and produce in open fields or with shade-cloth (and other structures), but this reduces the quality or quality become inadequate to fetch good prices from the market. Moreover, the production quantity under the uncontrolled climatic and environmental conditions decreases as harvesting period is short that results a substantial reduction in returns from cultivation. In the Zimbabwean cut flower industry, domestic greenhouses are being used instead of imported greenhouses. Such greenhouses are made of wood having shorter lifespan and are low-tech compared to the imported steel structures. In Nepal there is a possibility to use steel structures available domestically and shading materials, planting materials and chemicals can be imported. According to the Tanzanian study breakdown of the operating costs (excluding marketing cost) is presented in the table below:

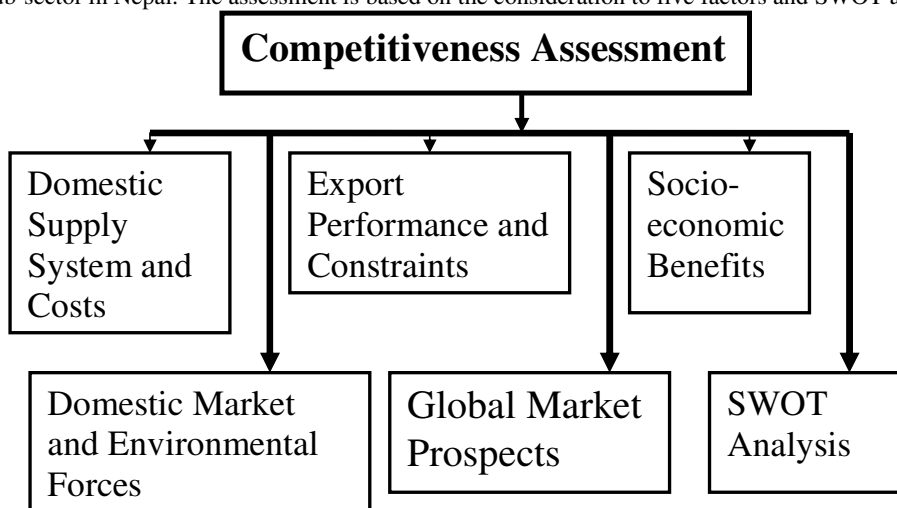
Table 2.26: Typical operating costs (Percentage)	
Chemicals and fertilizer	8.73
Technical advice	1.25
Electricity	3.96
Fuel	3.33
Wages	7.07
Freight	33.26
Depreciation	2.70
Interest	39.29
Rent	0.41

In the above cost figures marketing cost have been excluded which normally used to be as much as total operating cost. The results show that freight cost is almost one-third of operating cost while the cost of capital is the highest (39 per cent). In Nepal while the cost of capital might not be as high as in Tanzania it is likely that marketing expenses (cost of market promotion, distribution, market research, etc) and air-freight together are going to make up a great portion of total costs.

According to another study undertaken in 2000 in Zimbabwe wages component made only 14% whereas air freight nearly 60%. The costs of freight forwarding and air freight in Zimbabwe could decrease dramatically for certain period in mid-Nineties with the establishment of freight-handling companies like Europort – a joint venture between some of the marketing agencies – with international standard cold-chain management facilities. In Nepal also there is a possibility to reducing freight costs if exporters can come to an agreement to make cargo consolidation arrangement with the cooperation and coordination of freight forwarders and airlines management.

5. Competitiveness

In this part of the study attempt has been made to assess the overall competitiveness of the floriculture sub-sector in Nepal. The assessment is based on the consideration to five factors and SWOT analysis.



5.1 Domestic Supply System and Costs

5.1.1 Product Features

Flowers and flower plants are time sensitive, fragile, and seasonal requiring careful treatment, grading, packing, handling, storage, and transportation. Consumers as well as growers believe that a long-lasting plant, that also saves time, is more cost effective than a bunch of flowers. Growers also wish to engage in plants as it is easier to compete compared to cut flowers. But the consumers value more to cut-flowers in view of their attractiveness and beauty and buy more cut flowers, bouquets, and arrangement for their immediate need satisfaction. Success in production and trade of these products is crucially dependent on investment in hi-tech production, efficient and speedy distribution, and excellent cold-chain management systems. All these attract sophisticated knowledge and high investment requirements.

Nepal's most of the Hills and mid-Mountain regions comprising 41.7 % of total land surface and having temperate climate with temperature varying from 0 to 30 degree centigrade and about 1500 mm rainfall are favorable for production as well as trade of native as well as commercial species. Majority of these areas have actual day temperature 20 to 30 and night 10 to 20 with 60 to 80 humidity and soil acidity 5.0 to 6.0 ph suitable for flowers and plants production.

Currently more than 50 cut flowers and 100 varieties of bulbs and plants are available in the domestic markets. The most commonly commercialized items are gladiolus, carnations, local roses, Dutch roses, Gerberas, Tube roses, Cymbidium orchids, Brid of Paradize, Anthurium, marigold, Cycas, Tupidianthus, Phoenix, Dracaena, Ficus, Gloriosa spp., Zephyranthus, Haemanthus Multiflora, Kukurma, etc.

Production location - In view of nearness to Kathmandu market and international airport production locations of cut flowers are confined to Kathmandu, Lalitpur, Bhaktapur and Chitwan districts of Nepal. The other production locations are Jhapa and Morang districts. These two districts are quite near to major floriculture products cultivation locations such as Darjeeling and Kalingpong as well as to major market - Kolkotta in India. Targeting Delhi flower market feasibility studies and trial production of flowers are underway in the far western district, Dadeldhura of Nepal.

Quality – Following the climatic advantages, in the immediate past the quality and presentation of Nepalese flower bulbs, roses, carnations, gerberas, tissue culture plants, etc. have been well recognized in the Indian and overseas markets. However, the Nepalese suppliers have not been able to compete basically in terms of cost and price mainly in overseas markets. There is always prospect for improving the quality of Nepalese floriculture products. The three areas of special consideration that attract additional investment for the development of export quality of products are (a) green houses, (b) planting materials and (c) plant health management. In normal circumstances irrigation and climatic control are not much of problems in Nepal as compared to some of the competing countries like India, Thailand, and Sri Lanka.

Innovation - Availability of more than 6,500 species of flowers in Nepal including orchids, bulbs and tubers from high mountains indicates the possibility of innovation and testing the markets for some of the exotic flowers and plants that might be completely new to the overseas consumers.

Diversification -There are possibilities to grow high value exotic items for export. Some of the items identified by the entrepreneurs are: Gloriosa, Haemanthus, Kukurma, Zephyranthus, Bird of paradise, Cymbidium Orchids (Pleione, Praecox), Polyanthus (Rosani), Lycoris aurea, Eucharis, Achimenes, etc

5.1.2 Production factors

The active growers have 80 ha of land (32 ha covered) and have invested about Rs.375 million. The study has identified 14 districts with 7 million population having prospects for floriculture production. Land under cultivation can be increased to 1000 ha. Within 5 years if the development constraints are addressed properly (Refer 5.3).

Sustainability and environment friendly - About 88 per cent of populations live in rural areas having agriculture based economy. Almost 65 per cent of economically active population of Nepal is engaged in agriculture (Population Census of CBS 2001). According to the Ministry of Finance 38.8 per cent of GDP comes from agriculture (2004) with the growth rate of 3.6 per cent. With the availability of suitable land and skilled farm labor the commercialization of flower and ornamental plant in Nepal is very much sustainable and environment friendly. Flower cultivation will also help to control soil erosion and desertification.

5.1.3 Production Capacity

The recent increase in production volume is indicated by the increases in area of cultivation, domestic demand for cut flowers and ornamental plants, export to India as well as overseas and turnovers of wholesale market as well as import substitutions due to increased domestic supply of the imported varieties like gladiolus, roses, tuberose, carnations, gerbera, orchid, etc.

There are 550 flowers and plants growers in 34 districts having total annual turnover of Rs.230 million. A comparative yield analysis shows that in Chitwan district bulb output was 3.5 times more than that of in Hills of Kalingpong (India). It indicates that Nepal is likely to achieve more competitive advantage in terms of costs as well as quality if scientific practices are followed. A benefit cost analysis of selected cash crops in Chitawan district show that the farmers make highest return in terms of total revenue from flower cultivation. Return from gladiolus flower cultivation from one Kattha of land was Rs.13768 as against the returns from radish of Rs. 4258 and kidney beans of Rs.1002 in 2006.

5.1.4 Supply chain

All the floricultural entrepreneurs in Nepal are small and medium private domestically owned and they use imported planting materials, seeds, chemical fertilizers, insecticides and fungicides, greenhouses and equipments, cooling equipments, etc. There are private agents and specialized importers of the required inputs. Agriculture Inputs Company Ltd. (AICL) is only public institution dealing on import and distribution of fertilizers without holding any monopoly.

Nepal Government has minimum support to the development of the floriculture sector. Some of the farmers outside the Kathmandu valley are temporarily receiving electricity subsidy through a project of Asian Development Bank. Government is committed to provide credit to the flower cultivators at 3 per cent subsidy on bank's interest rate through ADB/N. Imports of certain inputs and greenhouse are permissible at 1 per cent tariffs. However, the implementation of this policy is virtually ineffective due to the cumbersome and non-transparent rules and procedures.

5.2 Domestic Market and Environmental Forces

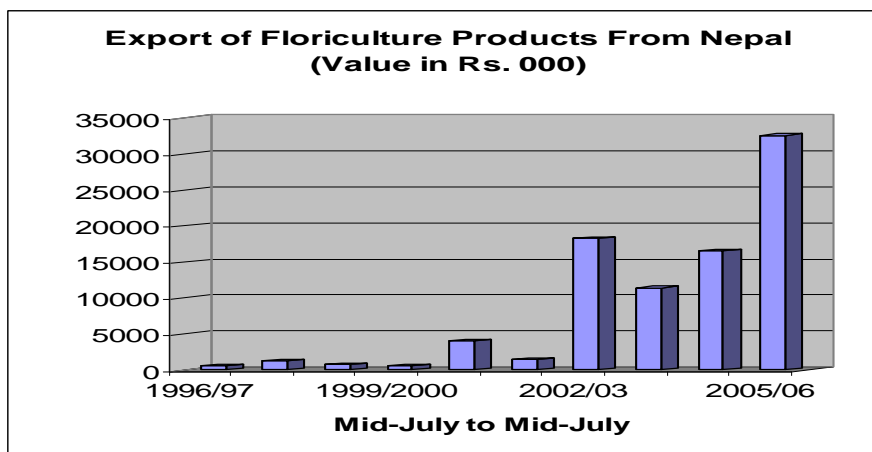
There has been up-surge in the total transaction value of floriculture sub-sector, which recorded at Rs.230 million in 2006, with the increasing demand from individual as well as institutions in Nepal. The gross turnover of FAN wholesale market also increased from 70,000 sticks in 1998 to 1.8 million of Rs. 5.2 million in 2005. It is expected that in 2006 transaction is going to cross 2 million sticks valued at Rs.6 million with the increase in demand and supply in the market. Moreover, a remarkable achievement has been noticed in terms of reduction in average unit prices of cut flowers in wholesale market. The unit price has come down to Rs.3.0 in 2005 as against Rs.6.2 in 1998. However, the prospect for business is bright as the retail prices have not decreased to as low as wholesale prices.

The government intervention in the floriculture sub-sector is minimal. This sub-sector is thriving without well-defined and clear government policies, strategies and incentives. All credits to achievements made recently go to the efforts and contribution of the private sector entrepreneurs and the institutional supports extended by the AEC of FNCCI and FAN. Institutional activities on research, development, promotion, training, marketing, etc are very much sporadic and short sighted. Infrastructural facilities such as electricity, fuel, water, transport, cooling chambers, irrigations and communication far mainly concentrated in urban areas.

Irrespective of all these situations the government institutions have realized the contribution of the floriculture sub-sector to the overall agriculture growth and its socio-economic impacts and have started taking interest in formulation of appropriate measures for its future development.

5.3 Export Performance and Constraints

Though the flower's and plant's contribution to export earning is minimal export is growing since last six years at a faster rate and Nepal is the net exporter of flower products. Total export value in the fiscal year 2005/06 recorded at Rs. 32.6 million representing an increase of 98 percent over the previous fiscal year (Chart below). Major export markets are USA, the Netherlands, India, Denmark, and Japan. Bulbs and tubers exported from Nepal include *Gloriosia* spp., *Zephyranthus*, *Haemanthus multiflora*, *Polyanthus*, *Kukurma*, *Eucharis*, etc. Tissue cultured plants exported recently are bamboo, orchid, banana, etc. Cut flowers exported to India are *Gerbera*, *Carnations*, *Roses*, *Gladiolus*, etc. A trial consignment of roses was recently made to Japan.



Creating enabling environment and achieving competitiveness in the floriculture sub-sector require addressing of many constraints faced by the growers and exporters. The moment these issues are well taken up by the government institutions and stakeholders, the Nepalese entrepreneurs are prepare to take investment risks and also lobby to attract foreign direct investment. Some of such constraints are:

Information on Technology and Technical Experts: Lack of proper agronomic practices for inadequate knowledge on technology and non- existence of research and development supports. Foreign experts are scarce and expensive. Possibility of transfer of appropriate low cost technology from other developing countries has been neglected. There is a lack of knowledge on appropriate scientific arrangements for post-harvesting process such as warehousing, cleaning, grading, packing, etc that are acceptable to the market.

Export Marketing Management and Promotion: Majority of entrepreneurs involved in floriculture business are not adequately trained on export management. Market prospects are seen from supply oriented rather than market oriented approach for the lack of proper marketing research and market information. Marketing and promotion in the global market attract a huge fund at the initial stage of business.

Investment and Finance: Marketing internationally demands a huge investment on greenhouse, cooling facilities, irrigation system, planting materials, fertilizers and chemicals, etc. Entrepreneurs are not able to take high risk of investment. Cost of finance is still high and system attracts complicated producers that don't permit adequate return from the risks taken in floriculture vis-à-vis the other sectors.

Cost of infrastructure and post harvesting: The existing costs of fuel/energy, water, electricity, domestic transportation, communication, etc. are still higher than in neighbouring countries.

Policies, Strategic Plan and Action Program: Transparent national strategic plan and action program that can support floriculture sub-sector are non-existence. Policies on trade, fiscal aspects (tariffs and taxes, financial aspects (subsidized interest rates, electricity, water, and air freight) and land ownership policy (land procurement at specific locations) are not friendly to floriculture development. Some of the issues to be addressed are agronomic and post harvesting practices, HRD, Technical services, marketing infrastructure, FDI, and R&D.

Air-freight: One of the most important factors affecting the competitiveness of floriculture products in Nepal is the high air-freight charges and non-availability space at the right time.

Marketing Infrastructure: Exporting of floriculture products require wholesale market facilities, refrigerated van, laboratory for pre-export testing at plant quarantine check posts, and Chilling/cooling room at TIA, etc. It is necessary to note that some of the countries of destination don't accept from originating airport not having cooling system.

5.4 Global Market Prospects and Market Access Conditions

According to a study of International Trade Centre, UNCTAD/WTO, global consumption of floriculture products is predicted to be 30 per cent greater by 2014. The world trade stood at US \$ 11.9 Billion in 2005. During the period 2001 to 2005 annual growth in world trade values of cut flowers and live plants remained at 10 and 12 per cent respectively. Almost 70 per cent of trades occur in European market, mainly Netherlands, Germany, UK and France. During the past five years an average annual import turnover ratio Dutch Flower Auction Market was a little above 20 per cent (whereas import total quantity ratio was about 28 per cent). Top ten floriculture products importing countries are Germany, United Kingdom, USA, Netherlands, France, Japan, Italy, Switzerland, Belgium and Russian Federation.

Trade Barriers - Nepal enjoys tariff preferences in most of the target markets such as USA, Japan, EU and India. However, non-tariff barriers are applicable to all floriculture products in all of these markets. All of markets required to submit PC and other non-tariff barriers can be comply with by the Nepalese entrepreneurs. India, Japan and EU provide duty free status to Nepal while US charges preferential duties at the rate of 1.7% as against the MFN rate of 4.8% per cent. Normal import tariffs in Japan and India are 3 per cent and 45 per cent respectively.

Over the past three decades (a) demand as well as supply of cut flowers and other floricultural products in the global market have increased significantly, (b) important changes have occurred in consumption pattern with exotic, more unusual and specialty species getting popularity, and (c) flowers are becoming a regular item of daily uses of middle-and upper income groups.

These developments are the results of (a) increased commercial production due to a change in trading system with globalization (increased market access with tariff reduction), (b) wide-spread use of air-freight transport net-works, (c) increased uses of logistic practices as cold-chain management, and (d) availability of highly sophisticated technologies.

Production of flowers and plants is shifting from developed countries to developing countries that enjoy competitive advantage in terms of (a) land, (b) labor, (c) climate, (d) entrepreneurship, and (e) counter seasonality with many of the major markets. However, these five factors giving traditional costs and price advantages are to be added with two more such as (f) high-tech capital intensive investment and (g) efficient export management systems to achieve real competitive advantage by the developing countries.

Ethiopia, Vietnam, Taiwan, India, and Colombia have recently achieved a remarkable success in floriculture supported by national strategic environment for the above seven factors and all of these countries managed to gain a foot hold in giant markets. Other developing countries having good achievement since a long past are Kenya, Israel, Ecuador, South Africa, Zimbabwe, Uganda, Zambia, Thailand, China, Malaysia, and Sri Lanka. The developed countries supplying to the major market are the Netherlands (highest quantity supplier), Germany, Italy, Spain, and UK.

Major imported cut-flowers and plants in the world market include Roses, Gypsophila, Hypericum, Decorative foliage, Solidago, Carnation, Calla, Ruscus, Wax flower, and Sunflower. Other flowers preferred in the major markets are Chrysanthemums, Tulips, Lilly, Gerbera, Freesia, Anthurium,

Gladiolus, Cymbidium Orchids, etc. Houseplants highly demanded by the market are Aglaonema, Chamaedorea Eleg., Cocos, Cordyline, Croton, Dracaena, Ficus Benjamina, Philadendron, Phoenix, Schefflera Arbor., and Yucca.

5.5 Socio-economic Benefits

There are 550 small and medium farm units involved floriculture production in Nepal. About a dozen of exporting firms are contributing foreign exchange earning over half a billion US Dollar. According to the Floriculture Association of Nepal (FAN), these units and their networks altogether give employment to about 2500 people and more than 60% of them are women. If within five years flower and other floriculture products cultivations are extended by 10 folds or up to 1000 ha, there is the possibility of creating employment for 25,000 people. Generation of employment in most of the rural areas has positive impact on poverty reduction and improvement health and education of people involved in it. Physical environmental situation will have positive impacts with the increase in plantations and flower cultivation. Moreover, with the creation of women employment life-style of rural inhabitants will be improved. Therefore, overall socio-economic impact of the floriculture sector is very high.

5.6 SWOT Analysis

<p>Strengths:</p> <ul style="list-style-type: none"> • High value addition in the country • Suitable climatic and topographical conditions. • Experienced technicians and knowledgeable entrepreneurs • Availability of high value special cultivars and exotic species • Use of appropriate technology • Quality products • Stable market linkage and relationships • Availability of adequate land and labor • Involvement of well established and experienced individual organizations that are prepared to extend farming if competitiveness could be achieved. 	<p>Weaknesses:</p> <ul style="list-style-type: none"> • Lack of adequate technical manpower for scientific production • Inadequate financial resources and technology for hi-tech quality exportable production • High cost of overseas market promotion and research • Lack of information on world markets and trading systems • limited capacity to establish market linkages • undeveloped infrastructure base • absence of government commitments and supports
<p>Opportunities:</p> <ul style="list-style-type: none"> • Favorable geo-climatic conditions and rich in bio-diversity • Creation of additional employment that helps to alleviate poverty • Increasing world market demand • Favorable market access condition with preferential tariffs under multilateral, regional and bilateral trading arrangement and negotiations • Strengthen women empowerment as cultivation as well as post-harvesting need simple skill where more women can be engaged • Positive affects on environment 	<p>Threats:</p> <ul style="list-style-type: none"> • Non-tariff barriers and undeveloped capacity to comply with the SPS and TBT regulations • Impositions of tariffs and complicated regulatory procedures in imports of inputs in Nepal • Unstable land policy due to likely change in land ownership regulations • Labor unions and frequent strikes • China's emerging floriculture industry • Competing countries are having programs for further development in this sub-sector

6 Achieving Competitiveness

6.1 Important Issues

The global market for floriculture products is growing. There is a potential for production in Nepal and export to mainly USA, Europe, Middle East, Japan and India. Past export performance, though in small quantities, has proved a success. And in consideration of agro-climatic diversity and topographic conditions, availability of land and labor at reasonable costs, and growing market demand for standard as well as exotic items there is much larger scope for increasing export volume from Nepal.

Irrespective of all possibilities, it is necessary to understand that floricultural products are “highly perishable” demanding not only quality fresh products but also a sophisticated management of delivery time, packaging, grading, pricing, cold chain, transportation, handling, etc. In building up long-term relationships with the buyers Nepalese entrepreneurs are required to develop capability to fulfill the minimum requirements of the markets in terms of variety, quality, quantity, delivery time, and proper post harvesting and treatment.

Open Field vs Covered Cultivation

Open field cultivation has cost advantage and is feasible in Nepal due to favorable climatic conditions. Many disadvantages make open field cultivation suitable only for indigenous varieties, or more robust flowers. The disadvantages of open field cultivation are (a) the length of the harvest period is longer, (b) quality of the product cannot be controlled, (c) product uniformity cannot be maintained, and (d) flowers are exposed to heat, wind, storm, dews, hailstones, and other external elements such as pests and pathogens. For these reasons open field cultivation cannot ensure the guaranteed quality products that are acceptable to the overseas markets.

For export to global markets normally the flowers and foliage plants are grown under the controlled atmosphere or protected environment such as greenhouses, tunnels and shades. Protected environment permits for better and consistent quality protecting flowers and plants from wind, storms, rain, bright sun, etc. Protected environment also reduces the possible attack from pests, diseases and fungus. Such an environment is conducive to efficient water use with the possibility to manipulate plant growth – with sensors installed in or around plants, the timing and dosage of watering, lighting, heating and fertilizing. Moreover, greenhouses can extend harvest periods, although heating and lighting costs are often high.

Irrespective of all of these advantages, the greenhouses attract a major capital investment. And thus the development of flowers under greenhouses in Nepal has become a prohibitive as the decision is a financial one - whether a grower can afford the investment or not. Moreover, land, labor and infrastructure costs advantages in Nepal might be off set by the high costs of investment in hi-tech cultivation and air-freight.

The latest market standards in developed countries require most flowers and foliage grown in greenhouses. Therefore, if Nepal has to penetrate flower and floriculture products to the world market it has no choice but to gradually develop scientific system of cultivation, post harvesting, and marketing of these products.

6.2 Strategic Options to Nepal

After witnessing a production shift from Europe to developing countries and phenomenal growth of flower cultivation in African (Kenya, Uganda and Ethiopia), South American (Colombia, Mexico and Ecuador) and Asian (China, India, Thailand, Taiwan, Vietnam, Sri Lanka and Bangladesh) countries destined for Europe, USA and Japan it is essential that Nepal should cautiously position itself to take the market opportunities. The private sector's initiations and mobilization of foreign investment for mass production in all these countries are the main reasons behind achieving competitive edges even if these countries had to make a huge amount of investment in hi-tech production and marketing network.

The markets in developed countries are price sensitive as buyers prefer to buy other gift items if they find prices for flower high. More recently many buyers prefer high priced exotic and/or low price regular items. For these reasons domestic production in main developed markets is decreasing and demand for low priced import is growing. Nepal has scope for exporting very much indigenous species that don't compete with products being imported from major supplying countries in Africa and South America. Some of the markets are strict or have zero tolerance phytosanitary needs requiring special services of clearing and forwarding and wholesale importers.

Some of the important strategies for Nepal could be:

- Nepal has to compete from a value-added and niche market approach, which focuses on, inter alia, product quality, superior packaging and labeling, new or exotic product and more efficient marketing strategies. Competing on land and labor costs and climatic advantages alone is no longer feasible.
- At the first phase Nepal should focus on items not requiring hi-tech and heavy investment. To start Nepal should specialize on production and export of bulbs, tubers, rhizomes, ornamental plants and tissue culture plants. At the second stage after gaining adequate marketing experience Nepal may attempt to develop high investment attracting hi-tech production for mass production of exportable cut-flowers.
- To identify items/species having longer shelf-lives, indigenous of Nepal, and exotic to the buyers
- To look into the possibility of the "pooling together" of companies for cargo consolidation to mitigate the problems of cold storage, refrigerated vehicle, insufficient freight space, negotiation of freight tariffs, etc.
- To take measures to reduce transport and logistic costs.

6.3 Efforts to Achieve Competitiveness

There is a great potential for expanding production if the internal constraints described in previous chapter are resolved gradually with public-private partnerships. On going trial hi-tech production in small scale by some of the entrepreneurs has been proved a quite success. Domestic market is expanding and exports to US, Netherlands, and India grew spontaneously over the past 6 years. Private companies are prepared to expand their cultivation. It can be estimated that Nepal can increase flower and plant cultivations to around 1000 ha within next five years. This estimated figure can go further if foreign investors or flower marketers can invest in proper agronomic and post-harvest technologies under joint venture or other arrangements in Nepal. However, at an initial stage achieving competitiveness and success in export marketing is possible only if the efforts of private sector are backed by the export friendly government policies with incentives.

Nepalese entrepreneurs are seeking agricultural facilities and incentives at least similar to those prevailing in India²⁴ and Bangladesh.

6.3.1 The Public Sector's Efforts

1. A clear policy and action programs should be launched with a tailored package of incentives that include subsidies on (a) air-freight, (b) greenhouse construction and related materials, (c) irrigation, (d) electricity, (e) supply of planting materials, (f) land procurement at suitable locations, (g) cooling chamber, (h) refrigerated vehicles, etc.
2. Duty waiver facilities on imports of all inputs required for the cultivation and processing of exportable floriculture products.
3. Growers and traders of exportable floriculture products should be treated as farmers and should not come under tax net. Initially at least for a period of 5 years floriculture entrepreneurs should be waived from all internal taxes to attract investment.
4. Commercial banks should be refinanced by the Nepal Rastra Bank (Central Bank) at a reduced interest rate to extend soft loan to floriculture entrepreneurs.
5. Approach to the interested donors in setting up of scientific infrastructure facilities such as construction of wholesale market centers in Kathmandu and Chitwan, cooling chamber in international airport, etc.
6. Provisions for human resource development in the floriculture sector by setting up a separate department under the IAAS for specialized degree programs, training program, R&D, extension services, etc. for floriculture products.
7. Simplification of procedures applicable on imports and domestic movements of methyl bromide, and nitrate required for soil and plant treatments.
8. Arrange special market promotion campaign to give Nepal's image as one of the flower exporting countries. Participation in international flower fairs and exhibitions will be one of the most effective promotional means. It is advisable to explore the possibility and usefulness of participation in Dubai Flower Centre. This centre may prove an invaluable channel to link not only to European markets but also to others.
9. Support TEPC, AEC, and FAN in dissemination of information (market trends, prices, product variations, demand and supply) to key stakeholders, through frequently up-dated websites and education initiatives to train and support emerging farmers; and
10. Support and promote consolidation of national private sector organizations into a unified force that is adequately funded and staffed, in order to provide technical, financial and human resources development supports to private entrepreneurs.

6.3.2 The Private Sector's Efforts

1. To identify large retailer and chain retail stores in overseas markets which can directly import exotic and special types of flower bulbs, live plants, cut flowers and foliages in small quantity from Nepal. Establish relationships with such units to provide minimum quantities and quality standards.

²⁴ The GOI has developed four schemes for floriculture development. These schemes include provisions of supports for research and development (R&D), market development, quality development and infrastructure development (Appendix 6.1). For each scheme separate check lists with detailed procedures has been designed to facilitate the beneficiaries in submitting applications for supports, in approving the requests and in arranging the reimbursement of the costs of development activities. Apart from the facilities under these scheme GOI also gives 10% subsidy on the air-freight spend by the exporters of floriculture products.

2. Entrepreneurs have to be innovative in product and market selections. There is no need that all floriculture entrepreneurs should focus on the same strategies relating to products and markets. It is also advisable to focus on spices and items attracting low investment and having low risk at the initial stage.
3. It is necessary to understand that packaging, transportation and handling costs are the major components of floriculture products exporting. These costs also determine the competitiveness in the global markets. Entrepreneurs should take measures not only for standardization of packaging (sizes, materials, logos) and labels but also in reducing the cost components.
4. Take appropriate measures to develop of cold chain management protocols (and post-harvesting techniques) to increase the storage and transit live of the products;
5. Participate in industry-wide marketing campaigns and support organized by national bodies like TEPC, FNCCI, AEC, FAN, etc.
6. Try to represent Nepal in the market through selection of very much appropriate and matching agent or partner and develop effective export management system based on knowledge and market information.

6.3.3 The Efforts of Supporting Agencies

Efforts of AEC/FNCCI and FAN

The AEC/FNCCI and FAN should be supported to handle all market promotion as well as technical aspects of the floriculture development in Nepal.

1. Organize frequent interaction programs with stakeholders including government and donors to highlight contribution of the floriculture sub-sector and request for continued supports through development policy and programs.
2. Develop linkages with academic and research institutions IAAS (Rampur), NARC, CINAS, HDD, FDC, etc. and organize jointly practical training and research programs useful to the growers and exporters.
3. Assist entrepreneurs in identifying innovative ideas new products and new markets based on the continual product and marketing research.
4. Disseminate up-dated information on market requirements and prospects for Nepalese flowers and plants.
5. Assist entrepreneurs to take all measures in reducing transportation, packaging, logistic and infrastructure costs.

Donor's Supports

1. Assist to develop linkages between Nepalese growers/exporters and matching partners/importers of floriculture products in the major markets.
2. Provide supports to set up infrastructures like Wholesale markets in Kathmandu and Chitawan, information network on such products, and transport supports to exportable products.
3. Organize market promotion visits and buyers-sellers meetings in the selected markets for the entrepreneurs having export capabilities.
4. Support training programs to farmers to improve agronomic and post harvest handling practices.

6.4 Conclusions and Strategies

Many African and Asian countries including Kenya, Uganda, Ethiopia, and Bangladesh have achieved phenomenal and dramatic growth in floriculture industries in the past two decades. During the initial stage of development these countries realized that the idea of competing on costs, climatic and nearness advantages was no longer feasible. Consequently a much broader value-added approach that focuses on the product quality along with regular and just-in-time delivery through cool-chain and hi-tech production mechanisms and efficient marketing strategies were followed.

The competitiveness of Nepal's floriculture production and exports also depends not in the comparative production factors like labor, land and capital costs and diversity of agro-climatic conditions but on the creation of positive government strategies and investment for the development of physical and institutional infrastructure that support in strengthening of private sector's export capabilities and supply chains. Exporting specific floriculture items to targeted market requires preparing business plan based on a separate feasibility study that includes market research, technical requirements and financial viability.

Appendix 1.1

Persons Interviewed and Contacted

A. Flower Growers List

1. Mr. Suresh B. Shrestha, The Standard Nursery
2. Mr. D. K. Shrivastav, Flora Nepal
3. Mr. Prabindra Maharjan, Kumari Flora Farm
4. Mr. Brajesh Nanda Baidhya, Nepal Bio-tech Nursery
5. Mr. Kabi Raj Rai, Rai's Orchid
6. Mr. Prakash Pant, Annapurna Floriculture
7. Mr. Mandhoj Thapa, Fresh Flower Nursery
8. Mr. Nanda Lal Shrestha, Binayak Flora Farm
9. Mr. Deepak Chandra Rai, Green View Orchid
10. Mr. Hari Ram Shrestha, Evergreen Nursery
11. Mr. Yogesh Pradhan, Bodhi Brikshya Nursery
12. Mr. Arun Chhetri, Aruna Horti Flora
13. Mr. Thakur Khanal, Vegetable Grower, Chitwan
14. Mr. D.N. Pradhan, Flower Grower, Sindhipong, Kalingpong
15. Mr. Tarjen Rai, Flower Grower, Upper Pedong, Kalingpong
16. Mr. Babu Raj Pradhan, Raj Kamal Nursery, Kakarvitta
17. Mr. Norden Pempahishen, Holumba Haven, Kalingpong
18. Mr. Dinesh Pradhan, Shanti Kunja Nursery, Kalingpong

B. Flower Retailers

1. Mr. Ansu Pahari, Flowers and More
2. Mr. Padam Khadka, Design Fresh Flower
3. Mr. Sita Ram Pant, Fresh Flower Shop
4. Mr. Narayan Raut, Manakamana Flowers
5. Mr. Tapan Shukla, Malini Flowers
6. Mr. Rama Kharel, NBDS
7. Mr. Gautam Ghosh, Puspa Kunja
8. Mr. Sunil Tamang, Daffodil Flowers
9. Mr. Raju Shahi, Flora Friends
10. Mr. Ranjan Shrestha, New Evergreen Flowers
11. Mr. Amar Joshi, Bodhi Brikshya Nursery

C. Officials

1. Mr. Shreedhar Karki, President- FAN, Teku
2. Mr. Durga Mani Gautam, Dean, IAAS, Rampur
3. Mr. Bal Govinda Bista, DG, Department of Customs, Kathmandu
4. Mr. Bindeshwor Raya, Chief, Botanical Garden, Godawari
5. Dr. Dev Bhakta Shakya, Executive Director, Agro Enterprise Centre (AEC) FNCCI
6. Mr. Chandra Bdr Rana, Floriculture Development Center, Godawari
7. Mr. Kiran Raj Pandey, Program Officer, Agro Enterprise Centre (AEC), FNCCI
8. Mr. Narayan Prasad Shrestha, Officiating Executive Director, Trade and Export Promotion Centre
9. Mr. Suyesh Khanal, Statistician, Trade and Export Promotion Centre
10. Mr. Rabindra Sharma, Statistician, Trade and Export Promotion Centre

Appendix 1.2 **References**

1. Trade Promotion Centre, Cut Flowers and Orchids for Export Availability Study, 1989.
2. Floriculture Association of Nepal (FAN), Floriculture Trade Fair Souvenir, 2004, 2005 and 2006.
3. Trade Promotion Centre, Nepal Overseas Trade Statistics (Annual Publication)
4. Department of Customs, Ministry of Finance, GON, Foreign Trade Statistics and Barshik Bastugat Bibaran (Annual Commodity-wise Descriptions).
5. Floriculture Association of Nepal (FAN), An Insight Into Floriculture Scenario of Nepal, Proceedings of Workshops of Floriculture in Nepal, 2003.
6. Government of Israel, Ministry of Foreign Affairs, Centre for International Cooperation (MASHAV) and Ministry of Agriculture and Rural Development, Centre for International Agriculture Development Cooperation (CINADCO), Identification Mission Report: Flower, Dairy, and Seed Development in the Kingdom of Nepal, June 2005.
7. Trade Promotion Centre, Market Development Division, Mr.Murari Prasad Gautam, The Japanese Market on Ornamental Plants and Cut Flowers, 1995.
8. Centre for the Promotion of Imports from Developing Countries (CBI), The Netherlands, CBI News Bulletin, Nov.-Dec. 2002, The Flower Trek, Stephen D. Teeuwen.
9. Centre for the Promotion of Imports from Developing Countries (CBI), The Netherlands, EU Market Survey 2002, Cut Flowers and Foliage.
10. Ministry of Agriculture and Cooperative, Department of Agriculture, District Agriculture Development Office, Kathmandu, Flower Marketing in Kathmandu Valley, July 2002.
11. Japan International Cooperation Agency (JICA), Nepal and Centre for Policy Research and Analysis (CPRA), Kathmandu, A Study on Floriculture Development in Nepal, Dec. 2002.
12. Floriculture Association of Nepal and Agro Enterprise Centre (AEC/FNCCI), A Report of Symposium on Prospective of Floriculture Industry in Nepal, April 2001.
13. Bankable Scheme/Area Development Project on Cultivation of high value cash crops under Green house/poly house in Darjeeling hills region.
14. Government of India, Plant Quarantine (Regulation of Import into India) Order, 2003.
15. Informal Sector Research and Study Centre, Kathmandu, District Development Profile off Nepal 2004.
16. Ministry of Forests and Soil Conservation, Terai Arc Landscape – Nepal, Strategic Plan 2004-2014, September 2003

Web-sites Referred:

1. Japanese Market Report on Cut Flower <http://www.jetro.go.jp/ec/e/jmr/index.html>
2. List of endangered species <http://www.cites.org/>
3. Information on UPOV <http://www.upov.int/>
4. Information on CPVO <http://www.cpov.fr/>
5. Information on ISO <http://www.iso.org/>
6. Information on Dutch auction <http://www.vbn.nl/>
7. Information on wood packing materials: <http://www.flower-labelprogramm.org/>
8. US market access requirement <http://www.fas.usda.gov/itp/ofsts/us.html>
9. EU market access information <http://www.Europa.eu.int/eur-lex/pri/en/>
10. Government of India scheme for floriculture development: <http://www.apeda.org.in>
11. Market News Information of ITC/UNCTAD/WTO <http://www.intracen.org/>

Appendix 2.1

Status and Prospects of Carnations Production and Trade in Nepal

1. Entrepreneurs involved:

The following seven entrepreneurs involved in commercial production and trade of carnations were contacted and interviewed to assess the prospects and status of production in Nepal.

- a) Standard Nursery
- b) Flora Nepal (P.) Ltd.
- c) Kumari Flora Farm
- d) Fresh Flower Nursery
- e) Sagarmatha Agri biotech Center
- f) Binayak Flora Farm
- g) Green Plant Nursery

Besides these entrepreneurs service counter of FAN at Flower Wholesale Markets in Kathmandu and Flora Incorporated are also involved in carnations.

2. Production Location

The production location for carnation was found concentrated in Kathmandu Valley. District-wise locations are presented in the Table given below:

Districts	Locations and VDCs
Kathmandu	Khusibu (Samakhushi), Tokha VDC, Chalnakhel VDC, Ichangu Narayan VDC and Balaju, & Bansbari (KMC)
Lalitpur	Chapagaun VDC
Bhaktapur	Lokanthali

3. Topographical condition:-

a) **Elevation:** - The elevation and topographical condition of Kathmandu valley has been considered suitable and as representative for carnation production in Nepal. Kathmandu Valley is located in between 27° 28' to 27°42' N latitude and 85°22' to 85°30' E longitude. The production sites are located in between the altitude of 1500-1550 meter above mean sea level. The elevation of the meteorological station is 1336 m. Other districts having possibility of carnation production with similar topographical conditions, access to transport services and near to international airport are Dhading, Kavre Palanchowk, Sindhupalchok,, Dhankuta, Kaski, etc.

b) **Soil fertility:** - Kathmandu Valley is known for its highly fertile soil. It is mostly sandy loam made from the alluvial deposits of various rivers flowing across the region. The soil analysis information for the Kathmandu valley was not found. According to a recent available soil analysis report of central development region, conducted by Soil Directorate there is an alarming sign on soil fertility status. Though it cannot be generalized to all districts, yet the report can be representative of the grave condition of soil fertility status. It shows that 57 % of the soil of the region was found low in organic matter content, 46% of soil is low in nitrogen content, 42% soil has medium level nitrogen content, 24% of the soil has low and 34% has medium range of phosphorus content. The status of potash was found relatively satisfactory since only 29% of the soil has low potash content while almost 38% of the soil has medium level of potash content. (Report of Directorate of Soil Division, DOA, 2063)

c) **PH:** - The PH analysis of soil indicated that 88% of the soils were acidic. This is quite high percentage and even farmers by have experienced this problem in soil, the symptoms of which shows that soil in valley is acidic which is very alarming situation from the status of soil nutrient management and its structure.

4. Climatic Conditions

The temperature and relative humidity factor were considered for assessing the overall climatic condition of valley. The meteorological data have been based on the data taken from Department of Weather Forecast in TIA. (8:45 17:45)

Month	Temperature (° C)		Relative Humidity (%)		Rainfall (mm)	Sunshine duration (Hrs)*
	Max	Min	Max	Min		
Jan	17.9	4.3	94.9	68.2	55.1	6.3
Feb	22.0	5.9	91.2	54.5	17.0	7
Mar	25.8	10.1	83.8	54.4	50.1	7.4
Apr	28.6	11.6	71.7	53.6	34.8	6.8
May	29.4	14.9	74.0	59.1	40.6	6.6
Jun	30.5	19.2	76.7	65.0	222.9	5.8
Jul	29.1	20.6	80.7	84.7	253.5	2.4
Aug	29.0	20.6	87.3	81.6	309.3	2.7
Sep	29.5	19.5	86.0	78.5	126.5	5.5
Oct	26.4	14.0	87.9	76.1	126.1	7.6
Nov	23.3	8.4	91.7	75.0	0.0	6.6
Dec	21.0	3.5	94.1	67.8	0.0	6.5

Source: Mausam Bibhag, 2005. * 1998

5. Minimum economic size of land

Considering the present demand and supply situations in the domestic market carnations grown in one Ropani (5476 Sq.ft or 508 Sq.Mt.) of land is considered profitable and cost effective production. Firm located outside the Kathmandu valley requires adding up transportation cost, which if included, would not be viable unless its low land and labour costs can compensate the cost of transportation and handling. But for the external market minimum daily consignment requirement is 5000 sticks. Therefore a firm wishing to export should grow carnations in a minimum net production area of 0.68 Ha. to 1.36 Ha (13.33 to 26.67 Ropanis)¹.

6. Species & Cultivars

Red colour varieties are popular in Nepalese market. However, growers are found planting various standard variety carnations. The commonly cultivated varieties are Red Lips, Master, Baltico and Kiro. The average size of the spike is 3 to 5 long and 3 to 4 inches in diameter on full bloom stage. Different companies produce different cultivars of carnation. Currently Nepalese entrepreneurs are using imported planting materials of Barber & Blank. The choice of varieties that are imported remains with the breeder company since it is the one which produces and has propagation right.

7. Propagation

Carnation plants usually propagated through tissue culture process. And the breeder has all the propagation rights. Nepalese entrepreneurs do not have any propagation. All required plant materials are imported from Spain, Holland, France, and India.

¹ About 4500 plants per 508 Sq Mt (1 Ropani) of land are being grown in Kathmandu (Consultant's study and interviews with growers) and 6000 plants give 250 sticks per day (Prabindra Maharjan, FAN Souvenir 2063, page 34). Therefore 6000 plants requires 676 Sq.Mt. (1.33 Ropani) of land. Harvesting 5000 sticks per day requires at least 1.36 Ha (26.67 Ropanis) of land.

8. Agronomic Practice

a) Greenhouse/Shed house preparation: Green house/ Shade house is the first pre-requisite for carnation's growth. The commonly practiced method of preparing shade house is using the bamboo for structure and silpoline as a roof of the house. Some of the firms/growers have heavy steel structure with silpoline and agro nets also. Bamboo structured houses are built at about 10 to 15 ft. in height and steel structure houses are of 12 to 20 ft. height. The length and width was found depending upon their availability of land and its structure.

b) Soil Preparation: After shed preparation, the media to grow, the soil is prepared with utmost care since soil can harbor insects; fungus, nematode and weed (weed seed). Sterilization/treatment of soil is done either by solarization or with the chemicals. [Before this process the soils should have enough sowing.](#)

After sterilization, the soil is mixed with large proportion of organic manure that includes cow dung, humus, sawdust, rice husk etc. Once the planting is done, it is not possible to add the organic manure on solid form at least for two years and the application of chemical fertilizer either as top dressing or as foliar spray is required. Therefore, higher dose of organic matter is to be mixed in the soil.

c) Bed preparation: While the soil is being treated and mixed with the compost, soil bed is prepared with a height of 1.5 to 2 ft. and 3 to 3.5ft wide. The length of the bed depends upon the land structure. There should be a minimum of 1 to 1.5 ft. gap between two beds. The number of beds in house also depends on structure and size of the house.

d) Planting materials: Almost all the planting materials/seedlings are importing from Holland, Spain, France and India. At the arrival, it is necessary to ensure that the plants have enough roots and 3 to 4 pair of leaves. The shade and bed should be prepared and the plants after arrival should be immediately planted.

e) Spacing/Plants population: Nepalese growers are using plants on the population of 6"x 6" in the bed. Besides few growers have a practice of plantation in 6"x8" and 8"x8" also.

f) Fertilizer: Both the chemical fertilizers and farm yard manure (FYM) are applied for carnations. Compost consists of cow dung, humus, saw dust, and rice husk. Before planting, composts are mixed well with the soil. During the growth period, producers apply liquid fertilizer (especially well composted oil cake), chemical fertilizer (Urea, DAP, Potash) and some other micronutrients.

g) Plant protection: There are several insects, pests and fungus that infect plants. Some of the growers were found using pesticides haphazardly without their proper identification and recommendation. Pesticides are manually sprayed in a traditional way. This practice has also resulted in higher cost of production and has also affected the health of human, livestock and environment. Few growers have used insect net around the shaded house which are found effective in controlling insects and such a technique, though the initial investment is high, has reduced the cost of pesticides.

h) Weeding/irrigation: Carnations production involves very much labor oriented intensive cultivation practice. Most of the firms employ female workers on a regular basis for irrigation, weeding, fertilizer application, harvesting etc. These operations are manually done as and when required.

i) Growth regulation: For the best yield of Carnations, it is required to pinch off the plants two times. The first pinch should be done after 25 to 30 days of plantation (i.e. when 8th pair leaves appear) and the second pinch is done after 30 to 40 days of the first pinch (i.e. 5 pair leaves in new shoots appear). For regular harvest, plants need enough energy. It is necessary to supply liquid or granule fertilizers (organic and chemical) continuously. At present the doses and composition of the fertilizers are decided solely on their previous experience.

j) Netting system: Carnations need support for a straight sticks and spikes. So Nepalese grower are found using nylon readymade net and thread net prepared by themselves. Those nets are supported by side stands made of bamboo, wood, or iron. Every area has four layer netting system.

9 Harvesting and yield

A carnations plant starts to bloom only after 5 month from plantation. This time varies depending on the climatic conditions. Because the growers do not have modified system, they have to completely depend upon natural climatic condition for its growth and development.

After it starts yielding, those plants can produce quality flowers for one and half years. Average total life of a carnation plant is only two years. Normally a plant gives 22 quality sticks during their entire lifetime. After two years, although it continues production, the quality however deteriorates.

10. Post harvest practice and packaging for export: -

Currently, farmers do not practice any post harvest operation. They harvest their products and immediately take them to local market. In local market, both in wholesale outlet and retail shops, they put the spikes in a bucket with normal water. International market requires carnation to be cut in specific stage and has to be fed by 10 percent sucrose in bacteria free water for 12 hours. After this the cut flower should be placed in cooling storage for minimum of 20 hours in a temperature of 2 to 4 °C and 75 to 80 percent RH. Even the grading and packaging should be done within that cooling area. Delivery van, waiting lounge in airport and storage area and the air cargo boxes also need the specified cooling system. Products acceptable to the international market cannot be delivered without following these practices.

11. Production Cost detail of Carnation in Nepal

Per unit cost of Carnation	Grower A	Grower B	A	B	Average Cost per unit	Cost on Percentage
	Total Cost for 2yrs	Total Cost for 2yrs	per unit	per unit		
Cost of plant	48000	84000	1.37	1.37	01.37	35.96
Shed installation	8250	34000	0.25	0.56	0.40	10.50
Labor	23040	47800	0.65	0.78	0.72	18.90
Insecticide/Fungicide	14000	14000	0.40	0.23	0.31	8.14
Support System	4000	4000	0.11	0.07	0.09	2.36
Fertilizer	5000	12000	0.14	0.20	0.17	4.47
Land Lease	3700	0.00	0.11	0.00	0.11	2.88
Irrigation Cost	1000	1500	0.03	0.02	0.02	0.52
Cost of Capital	21400	39500	0.61	0.64	0.62	16.27
Total	128390	236800	3.67	3.87	3.81	100
Output no. of stick	35000	61000				
Average income	210,000	366,000				
Cost Benefit Ratio	1.63	1.54				

The production cost for carnation shows that planting material occupies the highest share in total cost of production followed by labor. If planting materials can be produced in the country, per unit production cost can be lowered and growers can get higher profit margin.

Appendix 2.2

Status and Prospects of Cymbidium Orchid Production and Trade in Nepal

1. Introduction

Commercial species of orchids of herbaceous perennials, are in general epiphytic² and terrestrial³ in habitat⁴. Eastern Nepal is rich in Epiphytic species, West Nepal in Terrestrial species and Central Nepal possesses with the both types. Epiphytic species is more attractive, colourful and flowers are larger sized than other species. In 1989 Dahal and Shakya listed 90 genera and 350 species of orchids in Nepal. Orchids having commercial importance are sympodial and monopodial types. A list of exportable genera and species of orchids and with their flowering period is presented in Table below.

Table – Exportable Genera and Species of Orchids in Nepal

	Species	Flowering Seasons		Species	Flowering Seasons
A	SYMPODIAL⁵			<i>D. moschatum</i>	June - July
	<i>Arundina graminifolia</i>	Aug-Oct.		<i>D. Nobile</i>	April-May
	<i>Calanthe masca</i>	July-Sept.		<i>D. pulchellum</i>	July- Agu.
	<i>C. plantaginea</i>	Mar – Apr.		<i>Eria flava</i>	April-May
	<i>C. Tricarinata</i>	Apr – May		<i>E. coronaria</i>	Oct.-Nov.
	<i>Coelogyne cristata</i>	Mar.- Apr.		<i>Phaens tancarvilleae</i>	June-July
	<i>C. corymbosa</i>	Car. – Apr.		<i>Pleione humilis</i>	Feb.-March
	<i>C. fuscens</i>	Sept – Nov.		<i>P. praecox</i>	Oct.-Nov.
	<i>C. ovalis</i>	Sept – Oct.		<i>Thunia alba</i>	May-July
	<i>Cymbidium eburneum</i>	Mar. – May	B	MONOPODIAL⁶	
	<i>C. elegans</i>	Sept – Nov.		<i>Aerides multiflora</i>	June-July
	<i>C. giganteum</i>	Sept – Nov.		<i>A. odorata</i>	July-Aug.
	<i>C. hookerianum</i>	Apr – June		<i>Arachnanthe clarkei</i>	Feb-Mar Nov
	<i>C. longifolium</i>	Sept – Nov.		<i>Ascocentrum ampullaceum</i>	June-July
	<i>Dendrobium amoenum</i>	April - May		<i>Gastrochilus calceolaris</i>	Feb-March
	<i>D. chrysanthum</i>	June		<i>Phalaenopsis mannii</i>	April-May
	<i>D. crepidatum</i>	April-May		<i>Rhyncostylis retusa</i>	May-June
	<i>D. densiflorum</i>	April-May		<i>Vanda cristata</i>	March-May
	<i>D. formosum</i>	May-June		<i>V. Tesselata</i>	July-Aug.
	<i>D. heterocarpum</i>	Mar. -April		<i>Vandopsis undulata</i>	Mar.-Apr.
	<i>D. longicornu</i>	Oct.-Nov.			

Source: Trade Promotion Centre, Cut Flowers and Orchids for Export Availability Study, 1989. P.11-12.

² Natural growth takes in trees

³ Growth takes in land/soil

⁴ Other two types are Lithophytic (those grow in stones and mountain slopes) and Saprophytic (those grow in rotten wild leaves).

⁵ Every year baby plant is formed from the stem of mother plant.

⁶ Pseudobulbs or tubers are grown near the root.

Recently Small Grant Programs of UNDP World Environment Fund (WEF) sponsored a study on orchids in Nepal.⁷ According to this study following are the orchid's species available only in Nepal:

1	<i>Bulbophyllum ambrosia</i> subsp. <i>nepalensis</i>
2	<i>Eria baniaii</i>
3	<i>Eria nepalensis</i>
4	<i>Liparis olivacea</i>
5	<i>Listeria nepalensis</i>
6	<i>Malaxis monophyllos</i> var. <i>obtusa</i>
7	<i>Malaxis temurensis</i>
8	<i>Oberonia nepalensis</i>
9	<i>Oreorchis porphyranthes</i>
10	<i>Pleione coronaris</i>

This study has also referred a book “Wild Orchids of Nepal”, which has identified 162 species of orchids in Makwanpur district. Kaski and Illam are other districts where orchids have been commercialized. According to Wild Life Conservation Nepal every year about 5 MT of wild orchids are illegally collected and traded from Santatitar Busmadi and Manahari villages of Makwanpur district.

2. Entrepreneurs involved

The following ten entrepreneurs involved in commercial production and trade of Cymbidium Orchids were contacted and interviewed to assess the prospects and status of production in Nepal.

- a) Parijat Nursery
- b) Rai's Orchid
- c) Green View Orchid
- d) Orchid World
- e) Evergreen Nursery(Godavari Orchid Farm)
- f) Hanki Rai & Sons
- g) Nepal Bio-tech Nursery
- h) Aruna Horti Flora
- i) Royal Nursery
- j) Himalayan Nursery

Among the various entrepreneurs only FAN's wholesale market directly involved as traders for transaction cymbidium orchid

3. Production Location

The production location for orchids is found concentrated in Godavari of Lalitpur District. Some volume of orchid also comes from Tistung VDC of Makawanpur District and Budhanilkantha VDC of Kathmandu District.

4. Topographical condition

More than 75% commercial production of Cymbidium orchid firms is located in Godavari area of Kathmandu. Topographical condition of this area can be considered a representative for the Cymbidium's production.

- a) Elevation: Since most of the production sites for orchids is concentrated in Lalitpur district, the elevation and topographical condition of Godavari has been considered as representative for the elevation and topography of Nepalese Cymbidium Production area.

⁷ UNDP, Small Grant Fund and Love Green Nepal, Orchids – An Introduction 2006 (in Nepali)

Godavari is located in between 27° 28' to 27°42' N latitude and 85°22' to 85°30' E longitude. The production sites are located in between the altitude of 1500-1600 meter above mean sea level.

b) Soil fertility: - Kathmandu Valley is known for its highly fertile soil. It is mostly sandy loam made from the alluvial deposits of various rivers flowing across the region. The soil analysis information for the Kathmandu valley was not found. According to a recent available soil analysis report of central development region, conducted by Soil Directorate there is an alarming sign on soil fertility status. Though it cannot be generalized to all districts, yet the report can be representative of the grave condition of soil fertility status. It shows that 57 % of the soil of the region was found low in organic matter content, 46% of soil is low in nitrogen content, 42% soil has medium level nitrogen content, 24% of the soil has low and 34% has medium range of phosphorus content. The status of potash was found relatively satisfactory since only 29% of the soil has low potash content while almost 38% of the soil has medium level of potash content.

c) PH: - The PH analysis of soil indicated that 88% of the soils were acidic. This is quite high percentage and even farmers by have experienced this problem in soil, the symptoms of which shows that soil in valley is acidic which is very alarming situation from the status of soil nutrient management and its structure

5. Climate Condition

The temperature and relative humidity factor were considered for assessing the overall climatic condition of valley. The meteorological data have been based on the data taken from Department of Weather Forecast in TIA.

Month	Temperature (° C)		Relative Humidity (%)		Rainfall (mm)	Sunshine duration (Hrs)*
	Max	Min	Max	Min		
Jan	17.9	4.3	94.9	68.2	55.1	6.3
Feb	22.0	5.9	91.2	54.5	17.0	7
Mar	25.8	10.1	83.8	54.4	50.1	7.4
Apr	28.6	11.6	71.7	53.6	34.8	6.8
May	29.4	14.9	74.0	59.1	40.6	6.6
Jun	30.5	19.2	76.7	65.0	222.9	5.8
Jul	29.1	20.6	80.7	84.7	253.5	2.4
Aug	29.0	20.6	87.3	81.6	309.3	2.7
Sep	29.5	19.5	86.0	78.5	126.5	5.5
Oct	26.4	14.0	87.9	76.1	126.1	7.6
Nov	23.3	8.4	91.7	75.0	0.0	6.6
Dec	21.0	3.5	94.1	67.8	0.0	6.5

Source: Mausam Bibhag, 2005. * 1998

6. Minimum Economic Land Size

Considering the present domestic market demand situations Cymbidium grown in four Ropani (21904 Sq ft. or 2032 Sq.Mt) of land is considered profitable and cost effective production. But for the external market minimum daily consignment requirement is 10000 sticks per consignment. A firm wishing to export should grow cymbidium in a minimum net production area of 334 Ropanis⁸ of land.

⁸ Production season runs for 15 days from December to April. About 150,000 sticks need 75,000 plants. One plant takes 2.4 Sq.ft. of land. Total of 1.8 million sq.ft. of land is needed for production of 150,000 sticks.

7. Species & Cultivars

Cymbidium orchid have three broad categories depending upon the qualities such as length of spike, numbers of cock, size of cocks, etc. The main cultivars grown by Nepalese growers are as follows⁹:

- a) **Standard:** Golden girl, Sonal hunt-6th; Sonal hunt- 3rd ; Sanfrancisco – the bit , Sayonara, blezing gold, Charastmos beauty, Oklanama tetrapolite, Reivoles cwoksbridge, Babylon-castlehill, Cicilpark, Red star, Halley's comets, Crystal white, Lovely bonny (Romeo /Juliet), Mona Lisa , Fantasia- delmark, Arabiannight, Miss sanders, Nerela Jennifer gail, Swallow takarjuki, Tal craeg
- b) **Intermediate:** Pink lady, Shoe girl – cooksbridge, Age 15, Orkenypinkheather, Agnosnorton, Auccie ruls, Mini segrimants, Negrata-semi, Bertha, Amesbery, Yanki lily, Water walured –lips, Arunta lovelylips, Red beauty Carmen
- c) **Miniature (pot plants):** Linen hall, Minisari, Kenywine colour

8. Propagation

Cymbidium is propagated by two methods. One of the methods is by the division of sucker and another is by tissue culture multiplication system. On the development stage of the plants, new shoots always appear on the sides. Those shoots come up and develop as a new plant. In every three-year, growers divide the shoot and plant them separately. By this system grower can get one extra new plants from a mature mother plant in every three year. This system cannot provide new plants sufficiently, so growers usually prefer tissue culture plants imported from other countries and developed by tissue culture lab. Most of those tissue culture flasks are imported from Japan, USA, New Zealand and Australia. But those plants take longer time (around 3 to 5 years) to reach the matured stage to come to flowering. So, the waiting period of Cymbidium orchid is very long. This could be the reason why the small growers cannot grow orchid since it requires heavy investments in the beginning. In view of the long gestation period, small holder or entrepreneurs don't prefer to invest in orchid.

9. Agronomic Practices

a) **Media preparation:** - Cymbidium orchid is not planted in soil. It needs specific media. The media contain cow dung, humus/plant leaves, pit, coal, bark of tree and piece of brick. Those materials are mixed in specific quantity and the media is prepared. For the plantation of orchid various sized pots are needed. The size of pot depends upon the size of plant.

b) **Green house/Shed house preparation:** - Cymbidium orchid needs plastic shed because it cannot tolerate direct rainfall and direct sunlight. Growers have to maintain agro net to control over sunlight in summer season. The shade has to be 10 ft above the ground level. The length and breadth is made according to their land structure. Most of the shades are made from Bamboo structure and the silpholine as the rooftop. Some of the firms have installed steel structures.

c) **Lay out and setting** – The pots of Cymbidium orchid have to be arranged in racks. The racks are prepared by using locally available materials such as bamboo and wood. In a shade, those racks are set up as steps, so that more number of plants can be accommodated per unit area. Normally a shade of 360 sq ft can adjust 150 plants. As such one plant needs an area of 2.4 sq ft.

d) **Fertilizer-** Cymbidium Orchid needs specific soil with lots of compost. Almost all the growers are using the organic fertilizer.

e) **Plant protection** - Compared to other cut flowers and floral products, pesticides in a very little quantity is used for Cymbidium. During flowering period and when the climate changes certain fungal diseases such as blight emerges requiring use of fungicides.

f) **Weeding/irrigation** - Although it cannot tolerate weed but since the media is cautiously prepared and there is controlled irrigation and environment, weed infestation is not very severe. During summer, the pots are irrigated manually twice in a week and the frequency may increase when if the whether is very dry and hot.

⁹ Source: Rai's Orchids.

g) Growth regulation - Plants developed from sucker division are in well matured and they can be directly planted on the pot. They can produce new shoots and flowers within 2-3 years. But in the case of tissue culture plants, the plantlets are very delicate and it requires hardening and rooting. So, growers have to maintain specific care everyday. It takes more than two years to get a matured plant. Even after the maturity, it takes more than 3 years to get a flower and another plant.

h) Flowering season – It is normal practice to start work on cymbidium flowers from mid November to mid May. February, March and April are the flowering months.

i) Support System- Every flower needs support to produce a straight spike. Normally Nepalese growers use bamboo sticks to support and keep it in a straight condition.

g) Harvesting & Yield - The most difficult task of cymbidium cultivation is the waiting period. Growers have to wait a minimum of three years to get a flower from a well-matured plant. The main yield of cymbidium orchid is not only a flower but it also gives another plant. The cost-benefit analysis should therefore include the benefit one gets from both the flowers as well as the new plant. A well-mature cymbidium orchid can produce two flowers after 3 years and it continues to produce flowers then onwards and in the meantime the growers can get another plant in every three-year.

10. Post-harvest Practice and Packaging

Currently, farmers do not practice any scientific post-harvest operation. Harvested products are immediately taken to local wholesale outlets and retail shops and spikes are kept in a bucket with normal water. However, the international market requires orchids to go through a scientific process. Flowers harvested in a specific stage have to be fed by 10 percent sucrose in bacteria-free water for 12 hours. Then the flower should be placed in cooling storage for a minimum of 20 hours in a temperature of 2 to 4 °C and 75 to 80 percent RH. Even the grading and packaging should be done within that cooling condition. Delivery vans, waiting lounges in airports and storage areas and the air cargo boxes also need the specified cooling system. Without such a system of handling, products will not be accepted in the foreign market.

11. Production Cost Detail of Cymbidium Orchid in Nepal

The production cost for cymbidium shows that planting material occupies the highest share in total cost of production followed by labor. If planting materials can be produced in the country, per unit production cost can be lowered and growers can make a higher margin. Unit average cost of the plant is Rs 864.50 leaving a gross margin of Rs. 235.50. Details are given in the following table¹⁰:

Per unit cost of cymbidium	Grower A	Grower B	Average cost	Cost of Percentage
Cost of plant	500	500	500	57.84
Shed installation	53	20	36.5	4.22
Labour	38	69	53.5	6.20
Insecticide/Fungicide	2	5	3.5	0.40
Fertilizer	36	41.5	38.75	4.48
Land Lease	18	0.00	18	2.08
Irrigation Cost	0.90	0.20	0.55	0.07
Cost of put	30	3	16.5	1.91
Cost of Capital	203	191	197	22.80
Total	880.90	829.70	864.30	100

Total return from a plant in three years is calculated at Rs.1,100 (2 sticks of flower @ Rs.50, 1 extra plant and another one-month plant @ of Rs.500 each). Cost-benefit ratio is 1.140.

¹⁰ Calculation of costs for three years.

Appendix 2.3

Approximate Landing Cost of Nepalese Carnations and Roses in the Major Markets

In Nepalese Rupees						
SN	Description	Delhi	Dubai	Amsterdam	New York	Tokyo
1	Farm-gate price including post-harvest treatments and profit	35,000	35,000	35,000	35,000	35,000
2	Special packaging materials (14 kg flowers net Rs.100 per box containing 350 stks)	2,000	2,000	2,000	2,000	2,000
3	Local transport, handling, documentation, and customs clearance	1,100	1,100	1,100	1,100	1,100
4	Air freights ¹¹	21,000	34,560	74,520	86,400	85,320
5	Total landing costs	59,100	72,660	112,620	124,500	123,420
6	Landing costs per stick in NRs.	8.44	10.38	16.23	17.79	17.63
7	Landing costs per stick in US\$	0.12	0.14	0.23	0.25	0.24
8	Prevailing wholesale prices in the markets					
	Carnations Standards			0.19		0.22
	Roses Small			0.10		0.35
9	Cost/Price Competitiveness					
	Carnations Standards			- 0.05		- 0.02
	Roses Small			- 0.13		+ 0.11

Note: wholesaler's margin and overhead costs and import tariffs in the markets have not been taken into consideration.

¹¹ Quotations received from Shangrila Freight Forwarder, Lainchour and Quotation of NAC for 300 Kg. consignment including the surcharges and other charges are given below:

Delhi	US\$ 1.00 per kg
Dubai	US\$ 1.60 per kg
Amsterdam	US\$ 3.45 per kg
New York	US\$ 4.00 per kg
Tokyo	US\$ 3.95 per kg

Appendix 3.1

Recommended Temperature and Approximate Transit and Storage Period for Cut flowers and Florist Greens

SN	Product 2	Temperature oC	Temperature oF	Storage Life1
1	Acacia	4	40	3 to 4 days
2	Alstroemeria	4	40	2 to 3 days
3	Allium	0 to 2	32 to 35	2 Wk
4	Anemone	4 to 7	40 to 45	2 days
5	Anthurium 4	13	56	2 to 4 wk
6	Aster, China	0 to 4	32 to 40	1 to 3 wk
7	Bird-of-Paradise	7 to 8	45 to 46	1 to 3 wk
8	Bouvardia	0 to 2	32 to 35	1 wk
9	Buddleia	4	40	1 to 2 days
10	Calendula	4	40	3 to 6 days
11	Calia	4	40	1 wk
12	Camellia 5	7	45	3 to 6 days
13	Candytuft	4	40	3 days
14	Carnation	-0.5 to 0.6	31 to 33	2 to 4 wk
15	Carnation Buds	-0.5 to 0	31 to 32	4 to 12 wk
16	Carnation, Miniature	-0.5 to 0	31 to 32	2 wk
17	Chrysanthemum	-0.5 to 0.6	31 to 33	2 to 4 wk
18	Clarkia	4	40	3 days
19	Columbine	4	40	2 days
20	Careopsis	4	40	3 to 4 days
21	Cornflower	4	40	3 days
22	Cosmos	4	40	3 to 4 days
23	Crocus	0.5 to 2	33 to 36	1 to 2 wk
24	Dahlia	4	40	3 to 5 days
25	Daisy, English	4	40	3 days
26	Daisy, marguerite	2	36	1 to 2 wk
27	Daisy, Shasta	4	40	1 wk
28	Delphinium	4	40	1 to 2 days
29	Eucharis 5	7 to 10	45 to 50	7 to 10 days
30	Feverfew	4	40	3 days
31	Forget-Me-Not	4	40	1 to 2 days
32	Foxglove	4	40	1 to 2 days
33	Freesia	0 to 0.5	32 to 33	10 to 14 days
34	Gaillardia	4	40	3 days
35	Gardenia 5	0 to 1	32 to 34	2 wk
36	Gerbera	1 to 4	34 to 40	1 to 2 wk
37	Ginger	13	55	4 to 7 days
38	Gladiolus, as buds	4 to 6	40 to 42	5 to 8 days
39	Gloriosa Lily	4 to 7	40 to 45	1 wk
40	Godetia	10	50	1 wk
41	Gypsophila	4	40	1 to 3 wk
42	Heather	4	40	1 to 3 wk
43	Heliconia	12	54	10 days
44	Hyacinth	0 to 0.5	32 to 33	2 wk
45	Iris, Bulbous	-0.5 to 0.6	31 to 33	1 to 2 wk
46	Laceflower	4	40	3 days
47	Lilac, forced	4	40	4 to 6 days

SN	Product	Temperature oC	Temperature oF	Storage Life
48	Lily, Easter	0 to 2	32 to 35	2 to 3 wk
49	Lily-of-the-valley	-0.5 to 0.6	31 to 33	2 to 3 wk
50	Lupine	4	40	3 days
51	Merigolds	4	40	1 to 2 wk
52	Mignonette	4	40	3 to 5 days
53	Narcissus (daffodils)	0 to 0.5	32 to 33	1 to 3 wk
54	Orchid, Cattelya 4 5	7 to 10	45 to 50	1 to 2 wk
55	Orchid, cymbidium	-0.5 to 4	31 to 40	2 wk
56	Orchid, vanda	13	55	5 days
57	Orinthogalum	4	40	4 to 6 wk
58	Poppy	4	40	3 to 5 days
59	Poppy, tight buds	0 to 2	32 to 35	4 to 6 wk
60	Phlox	4	40	1 to 3 days
61	Poinsettia	10 to 15	50 to 60	4 to 7 days
62	Primrose	4	40	1 to 2 days
63	Protea	4	40	7 to 10 days
64	Ranunculus	0 to 5	32 to 41	7 to 10 days
65	Rose in Preservative	0.5 to 2	33 to 35	4 to 5 days
66	Rose dry pack	0	32	1 to 2 wk
67	Snapdragon	4	40	1 to 2 wk
68	Leucothoe, drooping	2 to 4	35 to 40	-
69	Magnolia	2 to 4	35 to 40	2 to 4 wk
70	Mistietoe	0	32	3 to 4 wk
71	Myrthus, Myrtie	2 to 4	35 to 40	-
72	Palm	7	45	-
73	Philodendron	2 to 4	35 to 40	-
74	Pittosporum	2 to 4	35 to 40	2 to 3wk
75	Podocarpus	7	45	-
76	Pothos	2 to 4	35 to 40	-
77	Rhododendron	0	32	2 to 4 wk
78	Salal (lemon leaf)	0	32	2 to 3 wk
79	Scotch-broom	4	40	2 to 3 wk
80	Smilax, southern 6	4	40	-
81	Staghorn fren	13	55	-
82	Vaccinium huckieberry 6	0	32	1 to 4 wk
83	Woodwardia fern	0 to 4	32 to 40	-

Notes:

1. Storage periods given should allow satisfactory handling and keeping after removal from storage.
2. High relative humidity of 90 to 95 percent recommended in refrigerated storage rooms for cut flowers and florist greens. Likely, some flowers for which temperature of 4 degree is recommended could be stored longer and safely at lower temperatures.
3. At retail level, florist greens held at approximate 4 degree for only 1 or 2 wk. Most stored with stems in water, except where noted otherwise.
4. Stems of orchids and some anthuriums should be placed in vials of water. However, some orchids are anthuriums may be stored by dry-pack methods.
5. Not placed in water for handling or storage but may be misted.
6. Usually held in moisture-retentive shipping cases.

Source: the Refrigeration Research and Education Foundation, hardenburg, Watada, and Wang.

Appendix 4.1

Annex I Part A of Directive 2000/29/EC

Harmful organisms, whose introduction into, and spread within, all member states (EU) are banned:

- (a) Insects, mites and nematodes, at all stages of their development
 - 1. *Acleris* spp. (non-European)
 - 2. *Amauromyza maculosa* (Malloch)
 - 3. *Anomala orientalis* Waterhouse
 - 4. *Anoplophora chinensis* (Thomson)
 - 5. *Anoplophora malasiaca* (Forster)
 - 6. *Arrhenodes minutus* Drury
 - 7. *Bemisia tabaci* Genn. (non-European populations) vector of viruses such as:
 - (a) Bean golden mosaic virus
 - (b) Cowpea mild mottle virus
 - (c) Lettuce infectious yellows virus
 - (d) Pepper mild tigré virus
 - (e) Squash leaf curl virus
 - (f) Euphorbia mosaic virus
 - (g) Florida tomato virus
 - 8. Cicadellidae (non-European) known to be vector of Pierce's disease (caused by *Xylella fastidiosa*), such as:
 - (a) *Carneocephala fulgida* Nottingham
 - (b) *Draeculacephala minerva* Ball
 - (c) *Graphocephala atropunctata* (Signoret)
 - 9. *Choristoneura* spp. (non-European)
 - 10. *Conotrachelus nenuphar* (Herbst)
 - 10.1. *Diabrotica barberi* Smith and Lawrence
 - 10.2. *Diabrotica undecimpunctata howardi* Barber
 - 10.3. *Diabrotica undecimpunctata undecimpunctata* Mannerheim
 - 10.4. *Diabrotica virgifera* Le Conte
 - 11. *Heliothis zea* (Boddie)
 - 11.1. *Hirschmanniella* spp., other than *Hirschmanniella gracilis* (de Man) Luc and Goodey
 - 12. *Liriomyza sativae* Blanchard
 - 13. *Longidorus diadecturus* Eveleigh and Allen
 - 14. *Monochamus* spp. (non-European)
 - 15. *Myndus crudus* Van Duzee
 - 16. *Nacobbus aberrans* (Thorne) Thorne and Allen
 - 17. *Premnotrypes* spp. (non-European)
 - 18. *Pseudopityophthorus minutissimus* (Zimmermann)
 - 19. *Pseudopityophthorus pruinus* (Eichhoff)
 - 20. *Scaphoideus luteolus* (Van Duzee)
 - 21. *Spodoptera eridania* (Cramer)
 - 22. *Spodoptera frugiperda* (Smith)
 - 23. *Spodoptera litura* (Fabricus)
 - 24. *Thrips palmi* Karny
 - 25. Tephritidae (non-European) such as:

- (a) *Anastrepha fraterculus* (Wiedemann)
- (b) *Anastrepha ludens* (Loew)
- (c) *Anastrepha obliqua* Macquart
- (d) *Anastrepha suspensa* (Loew)
- (e) *Dacus ciliatus* Loew
- (f) *Dacus curcurbitae* Coquillett
- (g) *Dacus dorsalis* Hendel
- (h) *Dacus tryoni* (Froggatt)
- (i) *Dacus tsuneonis* Miyake
- (j) *Dacus zonatus* Saund.
- (k) *Epochra canadensis* (Loew)
- (l) *Pardalaspis cyanescens* Bezzi
- (m) *Pardalaspis quinaris* Bezzi
- (n) *Pterandrus rosa* (Karsch)
- (o) *Rhacochlaena japonica* Ito
- (p) *Rhagoletis cingulata* (Loew)
- (q) *Rhagoletis completa* Cresson
- (r) *Rhagoletis fausta* (Osten-Sacken)
- (s) *Rhagoletis indifferens* Curran
- (t) *Rhagoletis mendax* Curran
- (u) *Rhagoletis pomonella* Walsh
- (v) *Rhagoletis ribicola* Doane
- (w) *Rhagoletis suavis* (Loew)
- 26. *Xiphinema americanum* Cobb sensu lato (non-European populations)
- 27. *Xiphinema californicum* Lamberti and Bleve-Zacheo
- (b) Bacteria
 - 1. *Xylella fastidiosa* (Well and Raju)
- (c) Fungi
 - 1. *Ceratocystis fagacearum* (Bretz) Hunt
 - 2. *Chrysomyxa arctostaphyli* Dietel
 - 3. *Cronartium* spp. (non-European)
 - 4. *Endocronartium* spp. (non-European)
 - 5. *Guignardia loricata* (Saw.) Yamamoto and Ito
 - 6. *Gymnosporangium* spp. (non-European)
 - 7. *Inonotus weirii* (Murril) Kotlaba and Pouzar
 - 8. *Melampsora farlowii* (Arthur) Davis
 - 9. *Monilinia fructicola* (Winter) Honey
 - 10. *Mycosphaerella larici-leptolepis* Ito et al.
 - 11. *Mycosphaerella populorum* G. E. Thompson
 - 12. *Phoma andina* Turkensteen
 - 13. *Phyllosticta solitaria* Ell. and Ev.
 - 14. *Septoria lycopersici* Speg. var. *malagutii* Ciccarone and Boerema
 - 15. *Thecaphora solani* Barrus
 - 15.1. *Tilletia indica* Mitra
 - 16. *Trechispora brinkmannii* (Bresad.) Rogers
- (d) Viruses and virus-like organisms
 - 1. Elm phloem necrosis mycoplasma
 - 2. Potato viruses and virus-like organisms such as:
 - (a) Andean potato latent virus
 - (b) Andean potato mottle virus
 - (c) Arracacha virus B, oca strain

- (d) Potato black ringspot virus
- (e) Potato spindle tuber viroid
- (f) Potato virus T
- (g) non-European isolates of potato viruses A, M, S, V, X and Y (including Yo, Yn and Yc) and Potato leafroll virus
- 3. Tobacco ringspot virus
- 4. Tomato ringspot virus
- 5. Viruses and virus-like organisms of *Cydonia* Mill., *Fragaria* L., *Malus* Mill., *Prunus* L., *Pyrus* L., *Ribes* L., *Rubus* L. and *Vitis* L., such as:
 - (a) Blueberry leaf mottle virus
 - (b) Cherry rasp leaf virus (American)
 - (c) Peach mosaic virus (American)
 - (d) Peach phony rickettsia
 - (e) Peach rosette mosaic virus
 - (f) Peach rosette mycoplasma
 - (g) Peach X-disease mycoplasma
 - (h) Peach yellows mycoplasma
 - (i) Plum line pattern virus (American)
 - (j) Raspberry leaf curl virus (American)
 - (k) Strawberry latent .C. virus
 - (l) Strawberry vein banding virus
 - (m) Strawberry witches' broom mycoplasma
 - (n) Non-European viruses and virus-like organisms of *Cydonia* Mill., *Fragaria* L., *Malus* Mill., *Prunus* L., *Pyrus* L., *Ribes* L., *Rubus* L. and *Vitis* L.
- 6. Viruses transmitted by *Bemisia tabaci* Genn., such as:
 - (a) Bean golden mosaic virus
 - (b) Cowpea mild mottle virus
 - (c) Lettuce infectious yellows virus
 - (d) Pepper mild tigré virus
 - (e) Squash leaf curl virus
 - (f) Euphorbia mosaic virus
 - (g) Florida tomato virus
- (e) Parasitic plants
 - 1. *Arceuthobium* spp. (non-European)

Appendix 4.2

Annex II Part A section 2 of Directive 2000/29/EC

Harmful organisms whose entry into EU is banned if present on certain plants or plant products

(a) Insects, mites and nematodes, at all stages of their development

Species	Subject to contamination
3. <i>Ditylenchus destructor</i> Thorne	Flower bulbs and corms of <i>Crocus</i> L., miniature cultivars and their hybrids of the genus <i>Gladiolus</i> Tourn. ex L., such as <i>Gladiolus callianthus</i> Marais, <i>Gladiolus colvillei</i> Sweet, <i>Gladiolus nanus</i> hort., <i>Gladiolus ramosus</i> hort., <i>Gladiolus tubergenii</i> hort., <i>Hyacinthus</i> L., <i>Iris</i> L., <i>Trigridia</i> Juss, <i>Tulipa</i> L., intended for planting, and potato tubers (<i>Solanum tuberosum</i> L.), intended for planting
4. <i>Ditylenchus dipsaci</i> (Kühn) Filipjev	Seeds and bulbs of <i>Allium ascalonicum</i> L., <i>Allium cepa</i> L. and <i>Allium schoenoprasum</i> L., intended for planting and plants of <i>Allium porrum</i> L., intended for planting, bulbs and corms of <i>Camassia</i> Lindl., <i>Chionodoxa</i> Boiss., <i>Crocus flavus</i> Weston .Golden Yellow., <i>Galanthus</i> L., <i>Galtonia candicans</i> (Baker) Decne, <i>Hyacinthus</i> L., <i>Ismene</i> Herbert, <i>Muscari</i> Miller, <i>Narcissus</i> L., <i>Ornithogalum</i> L., <i>Puschkinia</i> Adams, <i>Scilla</i> L., <i>Tulipa</i> L., intended for planting, and seeds of <i>Medicago sativa</i> L.

Appendix 4.3

Annex III Part A of Directive 2000/29/EC

Plants, plant products and other objects whose introduction is prohibited in all member states

Description	Country of origin
1. Plants of <i>Abies</i> Mill., <i>Cedrus</i> Trew, <i>Chamaecyparis</i> Spach, <i>Juniperus</i> L., <i>Larix</i> Mill., <i>Picea</i> A. Dietr., <i>Pinus</i> L., <i>Pseudotsuga</i> Carr. and <i>Tsuga</i> Carr., other than fruit and seeds	Non-European countries
2. Plants of <i>Castanea</i> Mill., and <i>Quercus</i> L., with leaves, other than fruit and seeds	Non-European countries
3. Plants of <i>Populus</i> L., with leaves, other than fruit and seeds	North American countries
4. Isolated bark of conifers (Coniferales)	Non-European countries
5. Isolated bark of <i>Castanea</i> Mill.	Third countries
6. Isolated bark of <i>Quercus</i> L., other than <i>Quercus suber</i> L.	North American countries
7. Isolated bark of <i>Acer saccharum</i> Marsh.	North American countries
8. Isolated bark of <i>Populus</i> L.	North American countries
9. Plants of <i>Chaenomeles</i> Ldl., <i>Cydonia</i> Mill., <i>Crateagus</i> L., <i>Malus</i> Mill., <i>Prunus</i> L., <i>Pyrus</i> L., and <i>Rosa</i> L., intended for planting, other than dormant plants free from leaves, flowers and fruit	Non-European countries
9.1. Plants of <i>Photinia</i> Ldl., intended for planting, other than dormant plants free from leaves, flowers and fruit	USA, China, Japan, the Republic of Korea and Democratic People's Republic of Korea
10. Tubers of <i>Solanum tuberosum</i> L., seed potatoes	Third countries other than Switzerland
11. Plants of stolon- or tuber-forming species of <i>Solanum</i> L. or their hybrids, intended for planting, other than those tubers of <i>Solanum tuberosum</i> L. as specified under Annex III A (10)	Third countries
12. Tubers of species of <i>Solanum</i> L., and their hybrids, other than those specified in points 10 and 11	Without prejudice to the special requirements applicable to the potato tubers listed in Annex IV, Part A Section I, third countries other than Algeria, Cyprus, Egypt, Israel, Libya, Malta, Morocco, Syria, Switzerland, Tunisia and Turkey, and other than European third countries which are either recognised as being free from <i>Clavibacter michiganensis</i> ssp.

	sepedonicus (Spieckermann and Kotthoff) Davis et al., in accordance with the procedure laid down in Article 18, or in which provisions recognised as equivalent to the Community provisions on combating <i>Clavibacter michiganensis</i> ssp. <i>sepedonicus</i> Spieckermann and Kotthoff) Davis et al. in accordance with the procedure laid down in Article 18, have been complied with
13. Plants of Solanaceae intended for planting, other than seeds and those items covered by Annex III A (10), (11) or (12)	Third countries, other than European and Mediterranean countries
14. Soil and growing medium as such, which consists in whole or in part of soil or solid organic substances such as parts of plants, humus including peat or bark, other than that composed entirely of peat	Turkey, Belarus, Estonia, Latvia, Lithuania, Moldavia, Russia, Ukraine and third countries not belonging to continental Europe, other than the following: Cyprus, Egypt, Israel, Libya, Malta, Morocco, Tunisia
15. Plants of <i>Vitis</i> L., other than fruits	Third countries
16. Plants of <i>Citrus</i> L., <i>Fortunella</i> Swingle, <i>Poncirus</i> Raf., and their hybrids, other than fruit and seeds	Third countries
17. Plants of <i>Phoenix</i> spp. other than fruit and seeds	Algeria, Morocco L 169/38 EN Official Journal of the European Communities 10.7.2000 Description Country of origin
18. Plants of <i>Cydonia</i> Mill., <i>Malus</i> Mill., <i>Prunus</i> L. and <i>Pyrus</i> L. and their hybrids, and <i>Fragaria</i> L., intended for planting, other than seeds Without prejudice to the prohibitions applicable to the plants listed in Annex III A (9), where appropriate,	non-European countries, other than Mediterranean countries, Australia, New Zealand, Canada, the continental states of the USA
19. Plants of the family Graminaceae, other than plants of ornamental perennial grasses of the subfamilies Bambusoideae and Panicoideae and of the genera <i>Buchloe</i> , <i>Bouteloua</i> Lag., <i>Calamagrostis</i> , <i>Cortaderia</i> Stapf., <i>Glyceria</i> R. Br., <i>Hakonechloa</i> Mak. ex Honda, <i>Hystrix</i> , <i>Molinia</i> , <i>Phalaris</i> L., <i>Shibataea</i> , <i>Spartina</i> Schreb., <i>Stipa</i> L. and <i>Uniola</i> L., intended for planting, other than seeds	Third countries, other than European and Mediterranean countries

Appendix 4.4

Annex V Part B of Directive 2000/29/EC

Some plants, plant products and other objects, subject to a plant health inspection, in the country of origin or the consignor country, before being permitted to enter the community (only those relevant to Nepal)

I. Plants, plant products and other objects which are potential carriers of harmful organisms of relevance for the entire Community

1. Plants, intended for planting, other than seeds but including seeds of Cruciferae Gramineae, Trifolium spp., originating in Argentina, Australia, Bolivia, Chile, New Zealand and Uruguay, genera Triticum, Secale and X Triticosecale from Afghanistan, India, Iraq, Mexico, Nepal, Pakistan and the USA. Capsicum spp. Helianthus annuus L., Lycopersicon lycopersicum (L.) Karsten ex Farw., Medicago sativa L., Prunus L., Rubus L., Oryza spp., Zea mays L., Allium ascalonicum L., Allium cepa L., Allium porrum L., Allium schoenoprasum L. and Phaseolus L.
2. Parts of plants, other than fruits and seeds of:
 - . Castanea Mill., Dendranthema (DC) Des. Moul., Dianthus L., Pelargonium l'Herit. Ex Ait, Phoenix spp., Populus L., Quercus L.,
 - . conifers (Coniferales),
 - . Prunus L., originating in non-European countries.
3. Fruits of:
 - . Citrus L., Fortunella Swingle, Poncirus Raf., and their hybrids,
 - . Annona L., Cydonia Mill., Diospyros L., Malus Mill., Mangifera L., Passiflora L., Prunus L., Psidium L., Pyrus L., Ribes L. Syzygium Gaertn., and Vaccinium L., originating in non-European countries.
4. Tubers of Solanum tuberosum L.
5. Isolated bark of:
 - . conifers (Coniferales),
 - . Acer saccharum Marsh, Populus L., and Quercus L. other than Quercus suber L.L 169/90 EN Official Journal of the European Communities 10.7.2000
6. Wood within the meaning of the first subparagraph of Article 2(2)
7. (a) Soil and growing medium as such, which consists in whole or in part of soil or solid organic substances such as parts of plants, humus including peat or bark, other than that composed entirely of peat.
(b) Soil and growing medium, attached to or associated with plants, consisting in whole or in part of material specified in (a) or consisting in whole or in part of peat or of any solid inorganic substance intended to sustain the vitality of the plants, originating in Turkey, Belarus, Estonia, Latvia, Lithuania, Moldavia, Russia, the

Ukraine, and in non-European countries other than Cyprus, Egypt, Israel, Libya, Malta, Morocco and Tunisia.

8. Grain of the genera *Triticum*, *Secale* and *X Triticosecale* originating in Afghanistan, India, Iraq, Mexico, Nepal, Pakistan and the USA.

II. Plants, plant products and other objects which are potential carriers of harmful organisms of relevance for certain protected zones without prejudice to the plants, plant products and other objects listed in I.

1. Plants of *Beta vulgaris* L. intended for animal fodder or for industrial processing.
2. Soil and unsterilised waste from beet (*Beta vulgaris* L.). L 169/92 EN Official Journal of the European Communities 10.7.2000
3. Live pollen for pollination of *Chaenomeles* Lindl., *Cotoneaster* Ehrh., *Crataegus* L., *Cydonia* Mill., *Eriobotrya* Lindl., *Malus* Mill., *Mespilus* L., *Pyracantha* Roem., *Pyrus* L., *Sorbus* L., other than *Sorbus intermedia* (Ehrh.) Pers., and *Stranvaesia* Lindl.
4. Parts of plants, other than fruit and seeds of *Chaenomeles* Lindl., *Cotoneaster* Ehrh., *Crataegus* L., *Cydonia* Mill., *Eriobotrya* Lindl., *Malus* Mill., *Mespilus* L., *Pyracantha* Roem., *Pyrus* L., *Sorbus* L., other than *Sorbus intermedia* (Ehrh.) Pers., and *Stranvaesia* Lindl.
5. Seeds of *Dolichos* Jacq., *Magnifera* spp., *Beta vulgaris* L. and *Phaseolus vulgaris* L.
6. Seeds and fruits (bolls) of *Gossypium* spp. and unginned cotton.
7. Wood within the meaning of the first subparagraph of Article 2(2), where it
 - (a) has been obtained in whole or part from conifers (Coniferales), other than *Pinus* L., originating in European third countries; and
 - (b) meets one of the descriptions laid down in Annex I, Part II to Regulation (EEC) No 2658/87.
8. Parts of plants of *Eucalyptus* l'Hérit.

<p style="text-align: center;"><u>Appendix 4.5</u></p> <p>CITES provisions for the protection of endangered species of flora and fauna</p>		
<p style="text-align: center;">Appendix I</p> <p>(most endangered species; commercial international trade generally prohibited)</p>	<p style="text-align: center;">Appendix II</p> <p>(Trade is bound to restrictions, but permitted with acquiring permits)</p>	<p style="text-align: center;">Appendix III</p> <p>(trade allowed only on presentation of the appropriate permits or certificates)</p>
AGAVACEAE Agaves		
<i>Agave arizonica</i>		
<i>Agave parviflora</i>		
	<i>Agave victoriae-reginae</i> #1	
<i>Nolina interrata</i>		
AMARYLLIDACEAE Snowdrops, sternbergias		
	<i>Galanthus</i> spp. #1	
	<i>Sternbergia</i> spp. #1	
APOCYNACEAE Elephant trunks, hoodias		
	<i>Hoodia</i> spp. #9	
	<i>Pachypodium</i> spp. #1 (Except the species included in Appendix I)	
<i>Pachypodium ambongense</i>		
<i>Pachypodium baronii</i>		
<i>Pachypodium decaryi</i>		
	<i>Rauvolfia serpentina</i> #2	
ARALIACEAE Ginseng		
	<i>Panax ginseng</i> #3 (Only the population of the Russian Federation; no other population is included in the Appendices)	
	<i>Panax quinquefolius</i> #3	
ARAUCARIACEAE Monkey-puzzle tree		
<i>Araucaria araucana</i>		
BERBERIDACEAE May-apple		
	<i>Podophyllum hexandrum</i> #2	
BROMELIACEAE Air plants, bromelias		
	<i>Tillandsia harrisii</i> #1	
	<i>Tillandsia kammii</i> #1	
	<i>Tillandsia kautskyi</i> #1	
	<i>Tillandsia mauryana</i> #1	
	<i>Tillandsia sprengeliana</i> #1	
	<i>Tillandsia sucrei</i> #1	
	<i>Tillandsia xerographica</i> #1	

CACTACEAE Cacti		
	CACTACEAE spp. ¹² #4 (Except the species included in Appendix I)	
<i>Ariocarpus</i> spp.		
<i>Astrophytum asterias</i>		
<i>Aztekium ritteri</i>		
<i>Coryphantha werdermannii</i>		
<i>Discocactus</i> spp.		
<i>Echinocereus ferreirianus</i> ssp. <i>lindsayi</i>		
<i>Echinocereus schmollii</i>		
<i>Escobaria minima</i>		
<i>Escobaria sneedii</i>		
<i>Mammillaria pectinifera</i>		
<i>Mammillaria solisioides</i>		
<i>Melocactus conoideus</i>		
<i>Melocactus deinacanthus</i>		
<i>Melocactus glaucescens</i>		
<i>Melocactus paucispinus</i>		
<i>Obregonia denegrii</i>		
<i>Pachycereus militaris</i>		
<i>Pediocactus bradyi</i>		
<i>Pediocactus knowltonii</i>		
<i>Pediocactus paradinei</i>		
<i>Pediocactus peeblesianus</i>		
<i>Pediocactus sileri</i>		
<i>Pelecyphora</i> spp.		
<i>Sclerocactus brevihamatus</i> ssp. <i>tobuschii</i>		
<i>Sclerocactus erectocentrus</i>		
<i>Sclerocactus glaucus</i>		
<i>Sclerocactus mariposensis</i>		
<i>Sclerocactus mesae-verdae</i>		
<i>Sclerocactus nyensis</i>		
<i>Sclerocactus papyracanthus</i>		
<i>Sclerocactus pubispinus</i>		
<i>Sclerocactus wrightiae</i>		
<i>Strombocactus</i> spp.		
<i>Turbinicarpus</i> spp.		

¹² Artificially propagated specimens of the following hybrids and/or cultivars are not subject to the provisions of the Convention:

- *Hatiora* x *graeseri*
- *Schlumbergera* x *buckleyi*
- *Schlumbergera russelliana* x *Schlumbergera truncata*
- *Schlumbergera orssichiana* x *Schlumbergera truncata*
- *Schlumbergera opuntiodes* x *Schlumbergera truncata*
- *Schlumbergera truncata* (cultivars)
- Cactaceae spp. colour mutants lacking chlorophyll, grafted on the following grafting stocks: *Harrisia* 'Jusbertii', *Hylocereus trigonus* or *Hylocereus undatus*
- *Opuntia microdasys* (cultivars).

<i>Uebelmannia</i> spp.		
CARYOCARACEAE Ajo		
	<i>Caryocar costaricense</i> #1	
COMPOSITAE (Asteraceae) Kuth		
<i>Saussurea costus</i>		
CRASSULACEAE Dudleyas		
	<i>Dudleya stolonifera</i>	
	<i>Dudleya traskiae</i>	
CUPRESSACEAE Alerce, cypresses		
<i>Fitzroya cupressoides</i>		
<i>Pilgerodendron uviferum</i>		
CYATHEACEAE Tree-ferns		
	<i>Cyathea</i> spp. #1	
CYCADACEAE Cycads		
	CYCADACEAE spp. #1	
<i>Cycas beddomei</i>		
DIAPENSIACEAE Oconee-bells		
	<i>Shortia galacifolia</i> #1	
DICKSONIACEAE Tree-ferns		
	<i>Cibotium barometz</i> #1	
	<i>Dicksonia</i> spp. #1 (Only the populations of the Americas; no other population is included in the Appendices)	
DIDIEREACEAE Alluaudias, didiereas		
	DIDIEREACEAE spp. #1	
DIOSCOREACEAE Elephant's foot, kniss		
	<i>Dioscorea deltoidea</i> #1	
DROSERACEAE Venus' flytrap		
	<i>Dionaea muscipula</i> #1	
EUPHORBIACEAE Spurges		
	<i>Euphorbia</i> spp. #1 (Succulent species only except the species included in Appendix I. Artificially propagated specimens of cultivars of <i>Euphorbia trigona</i> , artificially propagated specimens of crested, fan-shaped or colour mutants of <i>Euphorbia lactea</i> , when grafted on artificially propagated root stock of <i>Euphorbia neriifolia</i> , and artificially propagated specimens of cultivars of <i>Euphorbia</i> 'Mili' when they are traded in shipments of 100 or more plants and readily recognizable as artificially propagated specimens, are not subject to the provisions of the Convention)	

<i>Euphorbia ambovombensis</i>		
<i>Euphorbia capsaintemariensis</i>		
<i>Euphorbia cremersii</i> (Includes the forma <i>viridifolia</i> and the var. <i>rakotozafyi</i>)		
<i>Euphorbia cylindrifolia</i> (Includes the spp. <i>tuberifera</i>)		
<i>Euphorbia decaryi</i> (Includes the vars. <i>ampanihyensis</i> , <i>robinsonii</i> and <i>spirosticha</i>)		
<i>Euphorbia francoisii</i>		
<i>Euphorbia moratii</i> (Includes the vars. <i>antsingiensis</i> , <i>bemarahensis</i> and <i>multiflora</i>)		
<i>Euphorbia parvicyathophora</i>		
<i>Euphorbia quartziticola</i>		
<i>Euphorbia tulearensis</i>		
FOUQUIERIACEAE Ocotillos		
	<i>Fouquieria columnaris</i> #1	
<i>Fouquieria fasciculata</i>		
<i>Fouquieria purpusii</i>		
GNETACEAE Gnetums		
		<i>Gnetum montanum</i> #1 (Nepal)
JUGLANDACEAE Gavilan		
	<i>Oreomunnea pterocarpa</i> #1	
LEGUMINOSAE (Fabaceae) Afrormosia, cristobal, rosewood, sandalwood		
<i>Dalbergia nigra</i>		
		<i>Dipteryx panamensis</i> (Costa Rica)
	<i>Pericopsis elata</i> #5	
	<i>Platymiscium pleiostachyum</i> #1	
	<i>Pterocarpus santalinus</i> #7	
LILIACEAE Aloes		
	<i>Aloe</i> spp. #1 (Except the species included in Appendix I. Also excludes <i>Aloe vera</i> , also referenced as <i>Aloe barbadensis</i> which is not included in the Appendices)	
<i>Aloe albida</i>		
<i>Aloe albiflora</i>		
<i>Aloe alfredii</i>		
<i>Aloe bakeri</i>		
<i>Aloe bellatula</i>		
<i>Aloe calcairophila</i>		
<i>Aloe compressa</i> (Includes the vars. <i>rugosquamosa</i> , <i>schistophila</i> and <i>paucituberculata</i>)		
<i>Aloe delphinensis</i>		
<i>Aloe descoingsii</i>		

<i>Aloe fragilis</i>		
<i>Aloe haworthioides</i> (Includes the var. <i>aurantiaca</i>)		
<i>Aloe helenae</i>		
<i>Aloe laeta</i> (Includes the var. <i>maniaensis</i>)		
<i>Aloe parallelifolia</i>		
<i>Aloe parvula</i>		
<i>Aloe pillansii</i>		
<i>Aloe polyphylla</i>		
<i>Aloe rauhii</i>		
<i>Aloe suzannae</i>		
<i>Aloe versicolor</i>		
<i>Aloe vossii</i>		
MAGNOLIACEAE Magnolia		
		<i>Magnolia liliifera</i> var. <i>obovata</i> #1 (Nepal)
MELIACEAE Mahoganies, Spanish cedar		
		<i>Cedrela odorata</i> #5 [Population of Colombia (Colombia) Population of Peru (Peru)]
	<i>Swietenia humilis</i> #1	
	<i>Swietenia macrophylla</i> #6 (Populations of the Neotropics)	
	<i>Swietenia mahagoni</i> #5	
NEPENTHACEAE Pitcher-plants (Old World)		
	<i>Nepenthes</i> spp. #1	
<i>Nepenthes khasiana</i>		
<i>Nepenthes rajah</i>		
ORCHIDACEAE Orchids		
	ORCHIDACEAE spp. ¹³ #8 (Except the species included in Appendix I)	

¹³ Artificially propagated specimens of hybrids of the genera *Cymbidium*, *Dendrobium*, *Phalaenopsis* and *Vanda* are not subject to the provisions of the Convention when:

- 1) the specimens are traded in shipments consisting of individual containers (i.e. cartons, boxes or crates) each containing 20 or more plants of the same hybrid;
- 2) the plants within each container can be readily recognized as artificially propagated specimens by exhibiting a high degree of uniformity and healthiness; and
- 3) the shipments are accompanied by documentation, such as an invoice, which clearly states the number of plants of each hybrid.

Artificially propagated specimens of the following hybrids:

- *Cymbidium*: Interspecific hybrids within the genus and intergeneric hybrids
- *Dendrobium*: Interspecific hybrids within the genus known in horticulture as "nobile-types" and "phalaenopsis-types"
- *Phalaenopsis*: Interspecific hybrids within the genus and intergeneric hybrids
- *Vanda*: Interspecific hybrids within the genus and intergeneric hybrids

are not subject to the provisions of the Convention when:

- 1) they are traded in flowering state, i.e. with at least one open flower per specimen, with reflexed petals;
- 2) they are professionally processed for commercial retail sale, e.g. labelled with printed labels and packaged with printed packages;
- 3) they can be readily recognized as artificially propagated specimens by exhibiting a high degree of cleanliness, undamaged inflorescences, intact root systems and a general absence of damage or injury that could be attributable to plants originating in the wild;

(For all of the following Appendix-I species, seedling or tissue cultures obtained <i>in vitro</i> , in solid or liquid media, transported in sterile containers are not subject to the provisions of the Convention)		
<i>Aerangis ellisii</i>		
<i>Dendrobium cruentum</i>		
<i>Laelia jongheana</i>		
<i>Laelia lobata</i>		
<i>Paphiopedilum</i> spp.		
<i>Peristeria elata</i>		
<i>Phragmipedium</i> spp.		
<i>Renanthera imschootiana</i>		
OROBANCHACEAE Broomrape		
	<i>Cistanche deserticola</i> #1	
PALMAE (Arecaceae) Palms		
	<i>Beccariophoenix madagascariensis</i>	
<i>Chrysalidocarpus decipiens</i>		
	<i>Lemurophoenix halleuxii</i>	
	<i>Marojejya darianii</i>	
	<i>Neodypsis decaryi</i> #1	
	<i>Ravenea louvelii</i>	
	<i>Ravenea rivularis</i>	
	<i>Satranala decussilvae</i>	
	<i>Voanioala gerardii</i>	
PAPAVERACEAE Poppy		
		<i>Meconopsis regia</i> #1 (Nepal)
PINACEAE Guatemala fir		
<i>Abies guatemalensis</i>		
PODOCARPACEAE Podocarps		
		<i>Podocarpus neriifolius</i> #1 (Nepal)
<i>Podocarpus parlatorei</i>		
PORTULACACEAE Lewisias, portulacas, purslanes		
	<i>Anacampseros</i> spp. #1	
	<i>Avonia</i> spp. #1	
	<i>Lewisia serrata</i> #1	
PRIMULACEAE Cyclamens		
	<i>Cyclamen</i> spp. ¹⁴ #1	

- 4) the plants do not exhibit characteristics of wild origin, such as damage by insects or other animals, fungi or algae adhering to leaves, or mechanical damage to inflorescences, roots, leaves or other parts resulting from collection; and
- 5) the labels or packages indicate the trade name of the specimen, the country of artificial propagation or, in the case of international trade during the production process, the country where the specimen was labelled and packaged; and the labels or packages show a photograph of the flower, or demonstrate by other means the appropriate use of labels and packages in an easily verifiable way.

Plants not clearly qualifying for the exemption must be accompanied by appropriate CITES documents.

¹⁴ Artificially propagated specimens of cultivars of *Cyclamen persicum* are not subject to the provisions of the Convention. However, the exemption does not apply to such specimens traded as dormant tubers.

PROTEACEAE Proteas		
	<i>Orothamnus zeyheri</i> #1	
	<i>Protea odorata</i> #1	
RANUNCULACEAE Golden seals, yellow adonis, yellow root		
	<i>Adonis vernalis</i> #2	
	<i>Hydrastis canadensis</i> #3	
ROSACEAE African cherry, stinkwood		
	<i>Prunus africana</i> #1	
RUBIACEAE Ayuque		
	<i>Balmea stormiae</i>	
SARRACENIACEAE Pitcher-plants (New World)		
	<i>Sarracenia</i> spp. #1 (Except the species included in Appendix I)	
	<i>Sarracenia oreophila</i>	
	<i>Sarracenia rubra</i> <i>ssp. alabamensis</i>	
	<i>Sarracenia rubra</i> ssp. <i>jonesii</i>	
SCROPHULARIACEAE Kutki		
	<i>Picrorhiza kurrooa</i> #3 (Excludes <i>Picrorhiza scrophulariiflora</i>)	
STANGERIACEAE Stangerias		
	<i>Bowenia</i> spp. #1	
	<i>Stangeria eriopus</i>	
TAXACEAE Himalayan yew		
	<i>Taxus chinensis</i> and infraspecific taxa of this species ¹⁵ #10	
	<i>Taxus cuspidata</i> and infraspecific taxa of this species ¹⁰ #10	
	<i>Taxus fuana</i> and infraspecific taxa of this species ¹⁰ #10	
	<i>Taxus sumatrana</i> and infraspecific taxa of this species ¹⁰ #10	
	<i>Taxus wallichiana</i> #10	
TROCHODENDRACEAE (Tetracentraceae) Tetracentron		
		<i>Tetracentron sinense</i> #1 (Nepal)
THYMELAEACEAE (Aquiliaceae) Agarwood, ramin		
	<i>Aquilaria</i> spp. #1	
	<i>Gonystylus</i> spp. #1	
	<i>Gyrinops</i> spp. #1	
VALERIANACEAE Himalayan spikenard		
	<i>Nardostachys grandiflora</i> #3	
WELWITSCHIACEAE Welwitschia		
	<i>Welwitschia mirabilis</i> #1	
ZAMIACEAE Cycads		
	ZAMIACEAE spp. #1 (Except the species included in Appendix I)	
	<i>Ceratozamia</i> spp.	

¹⁵ Whole artificially propagated plants in pots or other small containers, each consignment being accompanied by a label or document stating the name of the taxon or taxa and the text 'artificially propagated', are not subject to the provisions of the Convention.

<i>Chigua spp.</i>		
<i>Encephalartos spp.</i>		
<i>Microcycas calocoma</i>		
ZINGIBERACEAE Ginger lily		
	<i>Hedychium philippinense</i> #1	
ZYGOPHYLLACEAE Lignum-vitae		
	<i>Guaiacum spp.</i> #2	

Source: www.cites.org

Appendix 4.6

EU quality standards for cut flowers (Regulation 316/68)

1. DEFINITION OF PRODUCE

These standards shall apply to fresh cut flower buds of a kind suitable for bouquets or for ornamental purposes, falling within subheading no. 06.03 A of the Harmonized Commodity Description and Coding System (HS).

2. QUALITY REQUIREMENTS

a. Minimum requirements

Produce must have been carefully cut or picked, according to the species, and have reached an appropriate stage of growth.

b. Classification

i. Class I

Produce in this class must be of good quality. It must have the characteristics of the species, and where appropriate, of the variety (cultivar).

All parts of the cut flowers must be:

- Whole;
- Fresh;
- Free of animal or vegetable parasites and from damage caused by such;
- Free of residues of pesticides and other extraneous matter affecting the appearance;
- Un-bruised;
- Free of defects of development; for *Dianthus*, a split calyx is not considered a defect of development.

However, in respect of American *Dianthus*, flowers with a split calyx must be ringed, put up separately in uniform lots and the packages marked accordingly. The stems must, according to species and variety (cultivar) be rigid and strong enough to support the flower(s).

ii. Class II

This class shall include all produce which does not meet all the requirements of Class I.

All parts of the cut flowers must be:

- Whole;
- Fresh;
- Free of animal parasites.

The flowers may, however, have the following defects:

- Slight malformation;
- Slight bruising;
- Slight damage caused, for example, by disease or by animal parasites;
- Weaker, less rigid stems;
- Small marks caused by treatment with pesticides.

The permitted defects must not impair the keeping quality, appearance or utility of the products.

iii. Extra Class

Produce which qualifies for Class I without the aid of any quality tolerance may be marked 'Extra'. However, this classification may not be used for American Dianthus with a split calyx.

3. SPECIAL PROVISIONS

The special provisions for certain types of flowers set out in 9.1.a. shall override provisions of this Appendix.

4. SIZING

For cut flowers, sizing must comply at least with the following scale:

Code:	Length:
0	less than 5 centimeters or flowers marketed without stems
5	5 - 10 centimeters
10	10 - 15 centimeters
15	15 - 20 centimeters
20	20 - 25 centimeters
30	30 - 40 centimeters
40	40 - 50 centimeters
50	50 - 60 centimeters
60	60 - 80 centimeters
80	80 - 100 centimeters
100	100 - 120 centimeters
120	more than 120 centimeters

These lengths include the flower head.

The difference per unit of presentation (bunch, bouquet, box, and the like) between the maximum and minimum lengths of the flowers in the unit may not exceed:

- 2.5 centimeters for flowers in codes 15 and below;
- 5.0 centimeters for flowers in codes 20 to 50 (inclusive);
- 10.0 centimeters for flowers in codes 60 and above.

This difference may be doubled for flowers presented in fan shape. For Dendranthema with large flowers presented in fan shape, this difference may go up to 20 centimeters for flowers in codes 20 to 50 (inclusive). The size scale and the uniform lengths set out above are not applicable to mimosa. The minimum length for branches of mimosa shall be fixed at 20 centimeters. However, bundles and bouquets composed exclusively of small sprigs of a length less than 20

centimeters may be permitted subject to the words 'short term' or an equivalent term being marked on the package.

5. QUALITY TOLERANCES

Quality tolerances shall be permitted in each unit of presentation as follows:

- Class I
Five per cent of the cut flowers may have slight defects, on condition that the uniformity of the flowers in a unit of presentation is not affected.
- Class II
Ten per cent of the cut flowers may vary from the requirements of the class. Half of this percentage may have been attacked by parasites of animal or vegetable origin. The defects in question must not impair the utility of the products.

6. PACKAGING AND PRESENTATION

a. Presentation (regulation (EC) No 802/71)

'A unit of presentation (bunch, bouquet, box, and the like) must consist of 5, 10 or a multiple of 10 pieces. However, this rule does not apply to:

- a. flowers normally sold singly;
- b. flowers normally sold by weight;
- c. flowers for which seller and buyer agree expressly to derogate from the provisions concerning the number of flowers in a unit of presentation. This derogation is admissible solely for transactions outside wholesale markets on condition that:
 - the goods are the subject of a direct sale, based on a fixed selling price per unit of presentation, at wholesale level to a retailer or a person acting on behalf of a retailer;
 - the goods are accompanied by a bill, delivery note or similar document showing the above-mentioned selling price;
 - the unit of presentation is in the packaging required by the buyer / for the buyer / for the ultimate purchaser.

This packaging must be such as to permit identification of goods.

b. Uniformity

Each unit of presentation (bunch, bouquet, box, and the like), must contain flowers of the same genus, species or variety (cultivar) and of the same quality class, and must have reached the same stage of development. Mixtures of flowers or mixtures of flowers with foliage of different genus, species or variety (cultivar) are, however, permitted so long as products of the same quality class are used and that they are appropriately marked.

c. Packaging

Packaging must protect the produce adequately. Paper or other materials in direct contact with the cut flowers must be new.

7. MARKING

The following particulars must accompany the goods:

a. Identification:

- dispatcher or packer: name and address or code mark.

b. Nature of produce:

- genus;
- species or variety (cultivar) or colour of flowers;
- where appropriate, the word 'mixture' (or equivalent term).

c. Origin of produce (optional):

- region or origin, or national, regional or local name.

d. Commercial specifications:

- class;
- size (length code) or minimum and maximum lengths (optional);
- number or net weight.

e. Official control mark (optional)

f. Presentation (EC regulation 802/71):

If the number of flowers per unit of presentation does not correspond to the provisions of section 9.4.a., packages must be marked to show the exact composition of the units of presentation contained therein.

Appendix 4.7

Marketing standards for flowering bulbs, corms and tubers in EU

The marketing of these products within the European Union (EU) is subject to the compliance with certain quality standards fixed by Regulation (EEC) 315/68.

1. Bulbs, corms and tubers intended for sale to consumers for their personal needs

a) Minimum quality requirements

Products must satisfy the requirements of consumers as regards growth and flowering. Besides, they must be: genuine, sound, whole, virtually undamaged and free of defects, clean, free from abnormal surface moisture, and well developed.

b) Minimum sizes and size grading

Minimum sizes and size grading are established for the different species. However, size tolerances of up to 10% are allowed.

c) Packaging and presentation

Each sale package may contain in unit packs products of different varieties, species and types. However, each unit pack may contain only products of the same species.

d) Marking

Each package must bear the following particulars in a legibly and indelible way:

- Unit packs:
 - identification of packer or vendor
 - nature of the product (type, species, variety or colour,...)
 - commercial specifications (number of items, size grading,...)
 - official control stamp (optional)
 - origin (optional)
- Sale packages containing unit packs: identification of packer or vendor and nature of the product ("flowering bulbs")
- Products presented for sale in bulk: genus, species, variety or colour, or the description "mixture" and size grading (on a label or card)

2. Bulbs, corms and tubers not intended for sale to consumers for their personal needs

a) Minimum quality requirements

The products must be genuine, sound, whole, virtually undamaged and free of defects, clean, free from abnormal surface moisture, and well-developed.

b) Packaging and presentation

The package must be clearly different from those used for sale to consumers for their personal needs and be marked with the identification of the seller and the nature of the product ("Not for sale to consumer for his personal needs", adding, if appropriate, "for propagation").

Legislation

Regulation (EEC) 315/68 of the Council of 12 March 1968 fixing quality standards for flowering bulbs, corms and tubers (OJ L-71 21/03/1968)

Source: <http://eur-lex.europa.eu/>

Appendix 4.8

Quality related market requirement, in this part, apply in addition to the General Specifications for Cut Flowers provided in appendix 4.6.

Example *VCN Norm Sheet for Rosa*

PRODUCT SPECIFICATION ROSA

DEFINITION OF TERMS

- Bloomable bud: Bloomable, coloured bud in inflorescence which can be expected to develop properly.
- Flat bud: Flower bud that has been flattened on top and therefore has a deviant shape.
- Grass heart: Vegetative growth in the heart of the flower.
- Rosa Floribunda: Rosa with at least 3 bloomable buds and/or flowers per branch.

I. MINIMUM REQUIREMENTS FOR TRADE

PRE-TREATMENT

- Rosa must be pre-treated and supplied in water with a pre-treatment agent. Products containing the active ingredient aluminium sulphate and spreading agent (code 3 on the label of the product) must be used and applied in accordance with instructions.
- The minimum concentration of aluminium in the supply solution must be 64 ppm.

BACTERIA CONTENT

- The bacteria content in the stem must be less than 1 million bacteria per gram of stem.
- The bacteria content is determined by means of stem samples.

RIPENESS

- The minimum ripeness requirement for Rosa is that a minimum of 95% of the number of stems in a batch must have a coloured bud whose bracts must be completely separate from the petal.

II. QUALITY AND GRADING CRITERIA

QUALITY REQUIREMENTS PER BATCH

The following additional requirements apply:

- The batch must be free of growth defects, including:
 - flat buds;
 - grass hearts;
 - crooked necks.

The tolerances as shown in Overview 1 in the General Specifications for Cut Flowers apply.

GRADING REQUIREMENTS PER BATCH

Rosa must be graded according to:

- length;
- ripeness;
- number of bloomable buds.

When grading by length, instead of an allowed 3 cm difference in length, all Rosa must be bunched so that the stems in the bunch are even at the bottom. There is no tolerance in length difference at the bottom of the bunch.

GRADE CODE

The length grade must be indicated for Rosa. For Rosa floribunda, the length grade and the bloomable buds grade (under "other") must be indicated.

III. PACKING SPECIFICATIONS

GENERAL

Rosa, except Rosa floribunda, must:

- be supplied in bunches of 10 or 20 stems;
- be packed in foil per container;
- be bunched so that the flower buds are all at the same level or in two layers. When bunching with two layers, the separate layers may not touch each other.

Rosa floribunda must:

- be supplied in bunches of 10 stems;
- be packed in foil per container;
- be bunched so that the highest placed flower buds are at the same level.

Rosa must be supplied in clean water (containing the prescribed pre-treatment agents).

Rosa must be supplied in clean water (containing the prescribed pre-treatment agents).

LOADING

- Rosa must be supplied in packaging/containers of type 533, 544 or 577.
- Rosa flowers with stems shorter than 40 cm (length 035) must be supplied in packaging/containers of type 566; the number of roses per container must then be the same as the number prescribed for packaging/containers of type 533).
- Rosa, with the exception of spray Rosa, must be supplied according to survey 1, depending on the length and loading group categories in which the de cultivar has been classified according to survey 2.
- The cultivars marked with a * in survey 2 (heaviest roses) belonging to the 'large' group may be temporarily loaded with 40 fewer per container.
- Deviations from survey 1 are allowed only with prior permission from the responsible auction inspector.
- An interim loading guideline can be obtained from the auction inspector for any cultivars not included in survey 2.

The cultivar classification system for classification in the groups 'large', 'medium sized' and 'small' was specifically developed for determining the loading of roses. No rights can be derived from this classification outside loading contexts.

Appendix 4.9

The list of some of the popular plants and plant materials permitted imports into India from Nepal with additional declarations in phytosanitary certificate and special conditions (under Schedule VI of the Order) include:

SN	Plant Species	Category and Additional Declarations	Special Conditions
29	Anthurium spp. And other aroids (Anthurium, Dieffenbachia, Caladium, syngonium, Aglaonema, Spathiphyllum, Monstera Phylodendron	(i) Cuttings/saplings for planting should be free from bacterial blight (Xanthomonas axonopodis pv. dieffenbachiae) (ii) Cut flowers should be free from Bactrial blight (Xanthomonas axonopodis pv. dieffenbachiae) (iii) Tissue Cultured Plants should be certified that the tissue cultured plants produced from stock tested and maintained virus-free.	(i) Post-entry quarantine for a period of 45-60 days (ii) Nil (iii) Nil
38	Asparagus officianalis (Asparagus)	Plants for propagation (no declaration required)	Post-entry quarantine for a period of 45 days.
50	Bougainvillea spp (Bougainvillea)	Plant for propagation (no declaration required)	Post-entry quarantine for a period of 45 days.
60	Calathea spp.	Plant for propagation (no declaration required)	Post-entry quarantine for a period of 45 days.
78	Chrysanthemum spp. (Chrysanthemum)	Plant for propagation (no declaration required)	Post-entry quarantine for a period of 45 days
119	Dianthus spp. (Carnation)	(ii) Seeds/ Cut Flowers should be free from (a) Rust (Uromyces dianthi) (b) Smut (Sorosporium spaonariae) (c)Downy mildew (Peronospora dianthi. P. dianthicola) (d) Ditylenchus dipsaci (stem and bulb nematode) (e) Arabis mosaic virus (hop barebine) (iii) Cuttings/saplings for sowing/planting should be free from (a) Bacterial wilt and stem cracking (Burkholderia caryophilli) (b) Slow wilt (Erwinia chrysanthemi pv.dianthicola) (c) Rust (Uromyces dianthi) (d) Smut (Sorosporium spaonariae) (e) Downy mildew (Peronospora dianthi. P. dianthicola) (f) Carnation viruses viz. latent, mottle virus	(ii) free from quarantine weed seeds and crop inspection and certification for free from arabis mosaic virus (iii) post-entry quarantine facilities for a period of 45-60 days
126	Dracaena spp. (Bamboo Lucky)	Plants for propagation (no declaration required)	Post-entry quarantine for a period of 45 days.
127	Duranta spp. (Duranta)	Plants/cuttings for propagation (no declaration required)	Post-entry quarantine for a period of 45 days.
140	Euphorbia pulcherrima (Poinsettia)	Plants for propagation (no declaration required)	Post-entry quarantine for a period of 45 days.
145	Ficus spp.	Plants/cuttings for propagation (no declaration required)	Post-entry quarantine for a period of 45 days.

146	Flower Bulbs		
	(a) Dahlia spp.	(i) tubers for planting or propagation should be free from viruses affecting dahlia except dahlia mosaic virus	(i) Post-entry quarantine for one growth season. (ii) free from soil
	(b) Gladiolus spp.	Corms/ corm lets for planting and propagation should be free from: (a) Smut (<i>Urocystis gladiolicola</i>) (b) Rusts (<i>Uromyces gladioli</i> and <i>U. transversalis</i>) (c) Corm rot (<i>F. oxysporum</i> f.sp.gladioli) (d) Hard rot (<i>Septoria gladioli</i>) (e) Scab and neck rot (<i>Burkholderia marginalis</i>) (f) Base rot (<i>Burkholderia gladioli</i> pv. <i>Gladioli</i>)	(i) Post-entry quarantine for one growth season. (ii) free from soil
	(c) Heliconia spp.	Rhizomes for propagation should be free from Moko wilt (<i>Burkholderia solanacearum</i> Race 2)	Nil
	(d) Hyacinthus spp.	Bulbs for propagation should be free from (a) Bacterial blight or yellow slime (<i>Xanthomonas hyacinthi</i>) (b) Hyacinth mosaic virus (Poty virus) (c) Stem and bulb nematode (<i>Ditylenchus dipsaci</i>)	(i) Post-entry quarantine for one growth season (ii) free from soil, (iii) Hot-water treatment of bulbs at 45 °C for 4 hrs followed by suitable fungicidal treatment and the treatment shall be endorsed on the phytosanitary certificate or Treatment with Methyl Bromide @ 32g/m ³ for 2 ½ hrs at 21 °C or above under NAP or equivalent or any other treatment specified by the Plant Protection Adviser.
	(e) Iris spp. (bulbous and rhizomatous varieties)	Bulbs/rhizomes for planting or propagation should be free from (a) Fusarial rot (<i>Fusarium oxysporum</i> f.sp.gladioli) (b) Stem and bulb nematode (<i>Ditylenchus dipsaci</i>) (c) Sclerotinia rot (<i>Sclerotinia bulborum</i>) (d) Iris virus (Poty virus)	(Do. Do.)
	(f) Lillium spp. (Lilly)	Bulbs for planting should be free from (a) Fusarium wilt (<i>Fusarium oxysporum</i> f.sp.lilli) (b) Anthracnose (<i>Colletotrichum lilli</i>) (c) Bacterial leaf spot (<i>Burkholderia gladioli</i> pv. <i>Gladioli</i>) (d) Lilly viruses (lilly rosette, lilly symptom less, tulip breaking and lilly curl stripe)	(i) Post-entry quarantine for one growth season (ii) (ii) free from soil
	(g) Narcissus spp. (Narcissus)	Bulbs for planting from: (a) Basal rot (<i>Fusarium oxysporum</i> f.sp. <i>narcissi</i>) (b) Stem and bulb nematode (<i>Ditylenchus dipsaci</i>)	(i) Post-entry quarantine for one growth season (ii) free from soil, (iii) Hot-water treatment of bulbs at 45 °C for 4 hrs followed by suitable

		(c) Narcissus fire (<i>Botryotinia polyblastis</i>) (d) Leaf scorch (<i>Stagnospora curtissi</i>) (e) Narcissus bulb flies (<i>Merodona equestris</i> , <i>Eumerus strigatus</i> and <i>E. tuberculatus</i>) (f) Narcissus viruses	fungicidal treatment and the treatment shall be endorsed on the phytosanitary certificate or Treatment with Methyl Bromide @ 32g/m ³ for 2 ½ hrs at 21°C or above under NAP or equivalent or any other treatment specified by the Plant Protection Adviser
	(h) Tulipa spp.	Bulbs for planting or propagation should be free from: (a) bulb and stem nematode (<i>Ditylenchus dipsaci</i>) (b) Yellow pustule and hellfire (<i>Curtobacterium flaccumfaciens</i> pv. <i>Oortii</i>) (c) Tulipa viruses viz. band breaking, chlorotic blotch, virus x and other seed borne viruses.	Do Do.
	(i) Zantedeschia spp. (Calla lilly)	(i) Corms for propagation or planting should be free from (a) Bacterial leaf spot (<i>Xanthomonas campestris</i> pv. <i>Zantedeschiae</i>) (b) Zantedeschia mosaic virus	(i) Post-entry quarantine for one growth season (ii) free from soil
	(j) Zingiber mioga (Ornamental Zinger)	Rhizomes for propagation should be free from Leaf blight (<i>Xanthomonas campestris</i> pv. <i>Zingibericola</i>)	(i) Post-entry quarantine for one growth season (ii) free from soil
148	Freesia spp. (Freesia)	Bulbs for propagation (no declaration required)	(i) free from soil (ii) Post-entry quarantine for one growth season
156	Gerbera jamesonii (Gerbera)	Seeds for sowing (no declaration required)	Free from quarantine weed seeds
157	Gloriosa spp. (Gloriosa)	Seeds for sowing (Nepal no included)	Free from quarantine weed seeds
162	Hedera spp. (Hedera)	Plants for propagation (No declaration required)	Post entry quarantine for a period of 45 days
169	Hibiscus spp. (Hibiscus)	Plants for propagation (No declaration required)	Post entry quarantine for a period of 45 days
174	Hydrangea spp.	Tissue cultured plants should certified that the tissue cultured plants were obtained from mother stock tested and maintained free from (a) Hydrangea ring spot virus and (b) Tomato ring spot virus	NIL
181	Ixora spp (Ixora)	Plants/cuttings for propagation (No declaration required)	Post-entry quarantine for a period of 45 days.
202	Lotus spp. (Lotus)	Bulbs for sowing (No declaration required)	Free from soil and Post-entry quarantine for a period of 45 days.
237	Orchids (Aranda, Cattleya, Cymbidium, Dendrobium, Lawliocattleya, Mokara, Odontoglossum, Phalaenopsis, Vanda, Vanilla etc.	(i) Saplings should be free from (a) Bacterial leaf spots (<i>Burkholderia gladioli</i> pv. <i>Gladioli</i> and <i>Erwinia chrysanthemi</i>) (b) Blossom blight (<i>Phyllostica capitalensis</i>)	Post-entry quarantine for a period of 45-60 days.

		<p>(c) Orchid viruses such as cymbidium mosaic, vanilla necrosis, Odontoglossum ring spot and orchid fleck etc.</p> <p>(ii) Tissue-cultured plants should be certified that the tissue cultured plants were obtained from mother stock tested and maintained virus free</p>	NIL
	Cattleya spp. , and Dendrobium spp.	Tissue-cultured plants should be certified that the tissue cultured plants were obtained from mother stock tested and maintained virus free	NIL
275	Rhododenfron spp	Tissue cultured plant should be certified that the tissue cultured plants were obtained from mother stock tested and maintained virus free	NIL
276	Rosa spp. (Rose)	<p>Rooted cuttings/Grafts/Bud wood/Saplings for planting should be free from :</p> <p>(a) Crown gall (Agrobacterium tumefaciens)</p> <p>(b) Hairy root (A. rhizogenes)</p> <p>(c) Brand canker (Coniothyrium wernsdorfiae)</p> <p>(d) Brown canker (Cryptosporella umbrina)</p> <p>(e) Downy mildew (Peronospora sparsa)</p> <p>(f) Rust (Phragmidium spp)</p> <p>(g) Rose streak virus</p> <p>(h) Rose wilt virus</p>	<p>(i) Post-entry quarantine for a period of 18 months except budding for 90 days</p> <p>(ii) Free from soil for rooted cuttings</p>

Appendix 4.10

Imports (in Million Stems) and Average Prices (in Euro) of Flowers and Plants in Dutch Flower Auction Market

SN	Product Name	Import in 2005	Average Prices 2005	Average Prices 2006	Import Share in % 2005
	Total	3442.7	0.21	0.15	29.5
1	Alstroemeria	15.5	0.11	0.13	5.9
2	Ammimajus	6.7	0.16	0.16	78.8
3	Anemone	45.0	0.09	0.10	72.6
4	Anthurium (Domestic 77 million stems)	0	0.53	0.62	0
5	Aster	17.0	0.18	0.18	47.0
6	Carnations Spray	63.0	0.08	0.13	67.0
7	Carnations Stand	74.4	0.13	0.19	57.0
8	Carthamus	6.7	0.17	0.19	26.8
9	Chrysantmums Spray	0.8	0.15	0.18	0.05
10	Delphinium	9.96	0.17	0.23	36.0
11	Eustoma	13.0	0.20	0.26	11.6
12	Gerbera Large	17.7	0.22	0.25	8.5
13	Gerbera Mini	1.4	0.16	0.26	0.3
14	Gladiolus Big	1.6	0.24	0.40	2.9
15	Gypsophila	156.5	0.18	0.14	90.3
16	Helianthus	25.4	0.25	0.33	38.8
17	Hypericum	138.8	0.18	0.20	83.2
18	Leucadendron	31.0	0.16	0.14	97.8
19	Liatris	7.6	0.15	0.23	76.8
20	Lilium Asiatic	1.1	0.16	0.36	1.4
21	Lilium Longiflor.	8.8	0.32	0.33	11.7
22	Lilium Oriental	1.7	0.40	0.47	1.2
23	Limonium	30.8	0.19	0.20	48.2
24	Ornithogalum	46.0	0.14	0.14	82.0
25	Protea	3.4	1.10	1.03	97.0
26	Ranunculus	43.2	0.13	0.15	73.1
27	Roses: all varieties: Large	758.5	0.16	0.17	33.6
28	Roses: all varieties: Small	1060.1	0.11	0.10	89.0
29	Rose Spray	43.1	0.10	0.10	51.0
30	Rudbeckia	3.9	0.10	0.07	81.2
31	Ruscus	64.5	0.08	0.08	98.3
32	Solidago	92.2	0.13	0.11	83.9
33	Trachelium	15.6	0.17	0.13	43.5
34	Tulip	6.9	0.14	0.27	0.5
35	Veronica	37.0	0.15	0.15	72.5
36	Wax Flower	57.3	0.14	0.13	97.1
37	All Houseplants including domestic	852.2	1.29		

Notes: 1. Houseplants include mainly Aglaonema, Chamaedorea Eleg., Cocos, Cordyline, Croton, Dracaena, Ficus Benjamina, Philadendron, Phoenix, Schefflera Arbor., and Yucca.

2. Source: Dutch Flower Auction Market

Appendix 4.11

Prices of Cut Flowers in Singapore Flower Market in January 2006

SN	Names of Flower	Sources	Price/stem in US\$
1	Anthurium Assorted Large	Malaysia	1.54
2	Anthurium Assorted Medium	Malaysia	1.29
3	Anthurium Assorted Small	Malaysia	0.99
4	Carnation Spray	China	0.25
5	Carnation Spray	Malaysia	0.22
6	Gladiolus	China	0.62
7	Gladiolus	Malaysia	0.49
8	Lilium	Various	0.92 to 1.82
9	Orchid: Cymbidium	Malaysia	1.54
10	Orchid: Cymbidium	Dutch Green	13.26
11	Orchid: Cymbidium	Dutch White	12.02
12	Orchid: Cymbidium	Dutch Yellow	13.26
13	Orchid: Dendrobium BS	Thai	0.18
14	Orchid: Dendrobium L	Thai	0.37
15	Orchid: Dendrobium M	Thai	0.31
16	Orchid: Dendrobium S	Thai	0.25
17	Orchid: Dendrobium XL	Thai	0.43
18	Orchid: Oncidium L	Malaysia	0.55
19	Orchid: Oncidium M	Malaysia	0.37
20	Orchid: Oncidium S	Malaysia	0.26
21	Orchid: Oncidium XL	Malaysia	0.68
22	Orchid: Phalenopsis	China	2.47
23	Rose Spray	China	4.93
24	Rose Spray	Vietnam	0.55
25	Roses Assorted	India	0.16
26	Roses Assorted	Malaysia	0.18
27	Roses Assorted	Sri Lanka	0.21
28	Roses Assorted	Vietnam	0.40
29	Wax flower	Israel	0.22

Appendix – 4.12

Leading Importers and Institutions Involved in Cut flowers in Japan

- Japan Cut Rose Growers Association, C/o Japan Flower Growers Association, Kyowa Bldg. 2-6-5 Shiba-daimon, Minato-ky, Tokyo 105-0012, Phone/fax: 03-3434-9536
- Japan orchid Growers Association, 3-18-16 Hachimanyama, Setagaya-ky, Tokyo 156-0056, Phone: 03-3303-9554, Fax: 03-3303-0298
- Japan Seed Trade Association, Shubyo Kaikan Bldg, 7f, 2-26-11, Hongo, Bunkyo-ku, Tokyo 113-0033, P: 03-3811-2654, Fax: 03-3818-6039
- National federation of Agricultural Cooperative Associations, JA Bldg, 1-8-3, Otemachi, Chiyoda-ku, Tokyo 100-0004, Phone 03-3245-7155, Fax: 03-3245-7430.
- Japan Gardening Business Association, C/O Sogo Fngei K.K., 326 Fushimi-Shinmachi, Kanazawa, Ishikawa 921-8172, P: 076-226-8422
- Flower Wholesaler's Association, All japan wholesale Market, 4-1-20, Wakatake, Miyagino-ku, Sendai, Miyagi 983-0036, Phone: 022-232-8059, Fax: 022-232-8049
- Japan Cut flower Importers Association (JCIA), 2-1-5-324, Omori-minami, Ota-ku, Tokyo, Phone: 03-5705-7056, Fax: 03-5411-5295, Email: jcia@tkg.att.ne.jp

Members of JCIA

- Flora International Co. Ltd. , 3-13-12, Roppongi, minato-ku, Tokyo 106-0032, Phone: 03-3470-5601, Fax: 03-3405-5906, Email: flora@mb.infoweb.ne.jp
- Ocean Trading Co. Ltd., 25 Tairamachi, Nishinoin, Sakyo-ku, Kyoto 615-0022, Phone: 075-314-8720, Fax: 075-313-6150, Email: ocean@alles.or.jp
- Florimex Japan Ltd., 861 Maebayashi, Taieimachim Katori-gu, Chiba 287-0022, Phone: 0478-73-4777, Fax: 0478-73-6631, Email: florimex@mwa.biglobe.ne.jp
- Create co. Ltd. , 2-11-31 Minami, Kaneden, Suita, Osaka 564-0044, Phone 066-389-1121, Fax: 06-6389-1179, E-mail: create@pearl.ocn.ne.jp
- Kirin Brewery Co. Ltd., kirin Honsha Bldg. Annex, 2-10-1, Shinkawa, Chuo-ku, Tokyo 104-8288, Phone: 03-5541-5875, Fax: 03-5541-5879
- Artvahn corporation, 3-13-7 Asagaya-kita, Suginami-ku, Tokyo 166-0001, Phone: 03-5373-4541, Fax: 03-3223-0393, E-mail: mf5h-nbys@asahi-net.or.jp
- Yoshikawa Corporation, 1855-16-301, niyamacho, Akashi, Hyogo 673-0842, Phone: 078-914-0738, Fax: 078-913-1813, Email: vosco@mta.biglobe.ne.jp
- Daikin Palport Co. Ltd. , 1-1-43, Katube, Toyonaka, Osaka 561-0894, phone: 06-6850-3951, Fax: 06-6850-0512
- Diamond Star Corporation, 2-2-1 marunouchi, Chiyoda-ku, Tokyo 100-0005, Phone: 03-3213-2626, Fax: 03-3213-0214,
- Green Tech Tokyo Co. Ltd., Shinjuku Park Tower S-11F, 3-7-1, Nishi-shinjuku, Tokyo 162-1011, phone: 03-5322-1181, Fax: 03-5322-1186,
- Proseed Corporation, 2-12-8, Ginza, Chuo-ku, Tokyo 104-0061, Phone: 03-3543-2678, Fax 03-3543-2679, Email: fwj7156@mb.infoweb.ne.jp
- Success Co. Ltd., 44-1 Minamidai, Tenjinmine, narita, Chiba 286-0102, Phone: 0476-32-1303, Fax: 0476-32-1305
- Japan flower Import Trading Association, Iemura Bldg. 7F, 1-12-1 Eszakacho, Suita, Osaka 564-0063, phone 06-6385-5022, Fax: 06-6385-4876,
- Allied Co. Ltd. , 53-7, Hon-sanrizuka, narita, Chiba 286-0019, Phone: 0476-35-1441, Fax: 0476-35-3050
- Kibun Corporation, 7-14-13, Ginza, Chuo-ku, Tokyo 104-0061, Tel: 03-3543-7219, Fax: 03-3546-2007
- Classic Japan Co. Ltd., Sebune Bldg, 1-13F, 12-13, Nibancho, Chiyoda-ku, Tokyo 102-0084, Phone: 03-3264-5523, Fax: 03-3264-9992
- Shima Trading Co. Ltd., 199-75, Nanaci, Tomosato-cho, Inba-gun, Chiba 286-0221, Phone: 0476-93-9318, Fax: 0476-93-9936
- Toa Trading Co. Ltd., Iemura Bldg. 7F, 1-12-1 Ezakacho, Suita, Osaka 564-0063, Phone: 06-6385-5022 Fax: 06-6385-4876, Email: toa@mx1.alpha-web.ne.jp
- Bankoku Trading Co. Ltd., 1-1-3, Nihonbashi-muromachi, Chuo-ku, Tokyo 103-0022, Phone: 03-3241-4021, Fax: 03-3241-6705
- Hilverda Bloemen Tokyo Co.Ltd., 4-10-17-201, Kinuta, Setagaya-ku, Tokyo 157-0073, Phone: 03-3749-8712, Fax: 03-3749-8713,
- Bacie Co.Ltd., Hanawa Bldg, 1-17-11 Otowa, Bunkyo-ku, Tokyo 112-0013, Phone: 03-5976-0487, Fax: 03-5976-0488
- YMS Co.Ltd., 3-3-10, Sone-minamicho, Toyonaka, Osaka 561-0804, Phone: 06-6866-8133, Fax: 03-6866-8135,
- K.K.Langevelt Japan, Beniya II 3A, 3-20-3, Nishihara, Shibuya-ku, Tokyo 151-0066, Phone: 03-5453-8711, Fax: 03-5453-8712, Email: Langeveldj@aol.com
 - Source: Japan External Trade Organization (JETRO), Branch Office, New Delhi

Appendix 5.1 Support Schemes of the Government of India for Floriculture Production and Export Development

	Components	Scale of Assistance
R&D Scheme	1. Assistance to support research and development for export efforts through R & D organizations in Government sector.	100% APEDA's internal scheme
	2. Assistance to exporters, Trade Associations, Cooperative institutions etc. to support relevant research & development for export enhancement through R & D organizations in co-operative/ private sector.	Up to 50 % of the total cost of the project subject to a ceiling of Rs. 10 Lakhs.
Market Development Scheme	1. Activity for development of packaging standards and design.	Maximum amount in case of sharing with exporters / organization is Rs.5 lakhs or 50% of the cost of development whichever is less or 100% in case of APEDA
	2. Assistance to exporters for use of packaging material as per standards and specifications developed or adopted by APEDA.	30% subject to ceiling of Rs.1.50 lakhs per beneficiary.
	3. Assistance to Exporters, Producers, Growers, service providers, Co-operative Organizations etc. For purchase of "Intermediate Packaging Material " for domestic transportation of produce.	50 % of the cost of the material subject to ceiling of Rs. 5 Lakhs.
	4. Development and dissemination of market information data base on products, infrastructure, markets and pre-feasibility surveys / study etc.	100% to be implemented by APEDA
	5. Assistance to exporters, growers organizations, trade associations for conducting surveys, feasibility studies etc.	50% of the total cost subject to ceiling of Rs.2.00 lakhs per beneficiary.
	6. Assistance to Semi Government, State Government, Public Sector Undertakings for Conducting surveys, feasibility studies etc.	50% of the project cost subject to ceiling of Rs.10 lakhs per beneficiary
	7. Supply of material, samples, product literature, development of website, advertisement etc, for publicity and market promotion for fairs / events organised / sponsored by APEDA.	100% to be implemented by APEDA
	8. Publicity & promotion through preparation of product literature, Publicity material, advertisement, film etc by APEDA.	100% to be implemented by APEDA
	9. Brand publicity through advertisement etc.	40% of the cost subject to a ceiling of Rs. 1 lakh per beneficiary.
	10. Export promotion by APEDA undertaking activities like buyer-seller meet, Product promotion, exchange of delegations, participation in Exhibitions / Fairs / Events etc.	100% of the cost.
Quality Development Scheme	1. Assistance to exporters, producers, trade associations, public institutions etc. for setting up / strengthening laboratories.	50% of the total cost subject to a ceiling of Rs.5 lakhs per beneficiary.
	2. Assistance to exporters & producers for installing quality management, quality assurance and quality control system such as ISO series, HACCP, TQM etc. including consultancy, quality improvement and certification for these.	50% of the cost subject to a ceiling of Rs.2 lakhs per beneficiary for each system
	3. Activities related to standardization and quality control such as preparation of quality assurance manuals, guidelines, documents, standards, upgradation and recognition of labs for export testing, certifying exporters as Premium Quality Exporters etc. pesticide management program, national and international standardization activities.	100% internal scheme of APEDA
	4. Upgradation and recognition of labs for export testing	For upgradation up to 50% of cost for private labs and up to 100% of the cost for Central / State Government / University laboratories subject to a maximum of Rs.50

		lakhs.
	5. Testing of water, soil residues of pesticide, veterinary drugs, hormones, toxins contaminants in agricultural produce / products.	50% of the cost of tests subject to a ceiling of Rs.2000 per sample. Payment shall be made direct to laboratories and not to individual exporter
	6. Assistance to growers and manufacture, exporter & export related organization for upgradation of technical and managerial personnel through training in India, excluding the cost of travel.	50% of the cost of approved training programme subject to Rs 50,000 per beneficiary. Assistance shall be given only for training undergone in the institutes on the panel of APEDA. The payment shall be made direct to the institute. The eligibility will be limited to once during the plan period. 100% of organized by APEDA.
	7. Assistance to recognized associations of growers/exporters for organizing seminars/group activities including study tour within the country and for bringing out information literature	50%percent of the cost of the seminar/workshop etc. subject to a ceiling of Rs. 1 lakh for national seminar and Rs. 2 lakh for international seminars. For information literature, the assistance shall be 50% of the cost subject to a ceiling of Rs.25,000. Assistance shall be available only to such seminar which have been approved by APEDA in advance.
	8. Seminars organized by APEDA	100% if organized by APEDA
	9. Assistance programme for study tour sponsored or organized by APEDA abroad, the assistance would be restricted to such activities that have correlation with exports	50% of the total cost of travel and distribution of study material
Infrastructure Development Scheme: Part I	1. Establishment of common infrastructure facilities by APEDA or any other Government or Public Sector agency like Airport Authority of India or Port Trust etc.	100% grant-in-aid
Part II	2. Assistance for purchase of specialized transport units for animal products horticulture and floriculture sector.	25% of the cost subject to a ceiling of Rs.2.50 lakhs per beneficiary
	3. Assistance to exporters/ producers/ growers/ Cooperative organization and federations for horticulture and floriculture sector for mechanization of harvest operation and setting up of sheds for intermediate storage and grading/ storage/ cleaning operation	25% of the cost subject to a ceiling of Rs.5.00 lakhs per beneficiary
	4. Setting up of mechanized handling facilities including sorting, grading, washing, waxing, ripening, packaging & palletization etc.	25% of the cost of equipment subject to a ceiling of Rs.10.00 lakhs per beneficiary
	5. Setting up of both pre cooling facilities with proper handling system as well as cold storage for storing	25% of the cost of equipment subject to a ceiling of Rs.10.00 lakhs per beneficiary
	6. Providing facilities for pre-shipment treatment such as fumigation, X-ray screening, hot water dip treatment, Water softening Plant	25% of the cost of equipment subject to a ceiling of Rs.10.00 lakhs per beneficiary
	7. Setting up of integrated post harvest-handling system (pack houses / green houses with any two or more of the above facilities)	25% of the cost subject to a ceiling of Rs.25 lakhs per beneficiary
	8. Setting up of vapor heat (treatment, electronic beam processing or irradiation facilities	50% of the cost subject to a ceiling of Rs.25 lakhs per beneficiary
	9. Assistance for setting up of environment control system e.g. pollution control, effluent treatment etc.	25% of the cost subject to a ceiling of Rs.25 lakhs per beneficiary
	10. Setting up of specialized storage facilities such as high humidity cold storage deep freezers, controlled atmosphere (CA) or modified atmosphere (MA) storage etc.	25% of the cost subject to a ceiling of Rs.10 lakhs per beneficiary



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