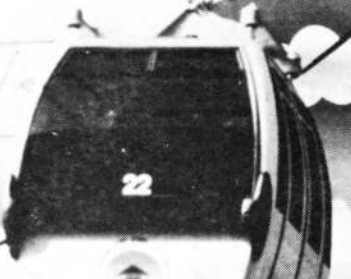
Souvenir

FLORICULTURE TRADE FAIR – 2055

Floriculture Association Nepal (FAN)
Kathmandu
2055

नेपालको पहिलो केबुल कार
मनकामना जाने सपना साकार



१७ औं-शताब्दीदेखि, मनकामनादेवी नेपाल अधिराज्यभरी भगवतीको रुपमा मान्य एवं विशिष्ट देवी रहेकी छिन् । ठूलो जनविश्वास छ कि मनकामना माईले भाकल गरे अनुसार चिताएको कुरा पूरा गर्दछिन् ।

आजभन्दा पहिले मनकामना जान आँबुखैरैनीबाट तीन घण्टाको ठाडो उकालो चढ्नु पर्थ्यो तर अब भने भक्त जनहरुको सपना साकार हुनेछ । मनको इच्छा पुऱ्याइदिने देवीको दर्शनको साथसाथै सौन्दर्यको मज्जा अब सजिलोसँग मनकामना केबुल कार चढेर गर्न सकिन्छ ।

मनकामना दर्शन (प्रा.) लि.

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Floriculture Trade Fair
2055

S O U V E N I R

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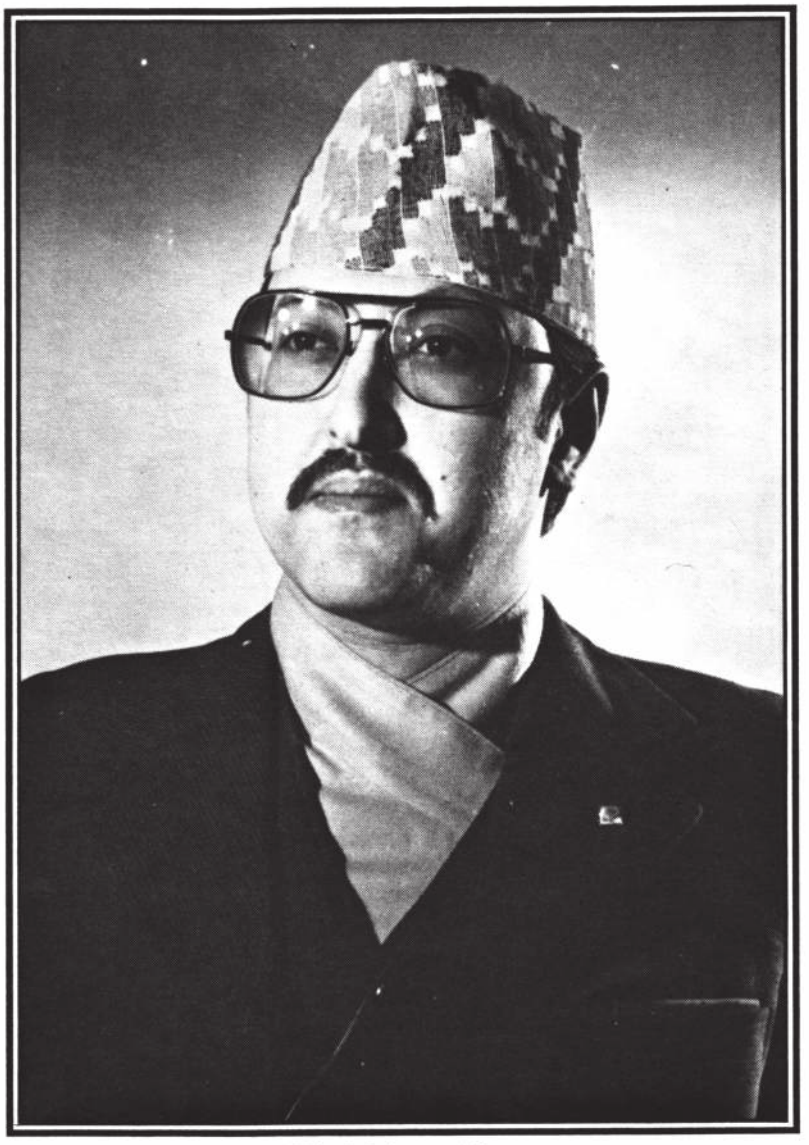

His Majesty King
Birendra Bir Bikram Shah Dev

Her Majesty Queen
Aishwarya Rajya Laxmi Devi Shah

कृषि उद्यम केन्द्र
AGRO ENTERPRISE CENTRE

A Joint-Project of the Federation of Nepalese Chambers of Commerce & Industry and USAID/Nepal

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Ref:

शुभकामना

नेपाल पुष्प व्यवसायी संघले २०५५ चैत्र २५ देखि चार दिनको पुष्प व्यापारमेला आयोजना गर्न लागेकोमा नेपाल उद्योग वाणिज्य महासंघ/कृषि उद्यम केन्द्रका तर्फबाट हार्दिक शुभकामना व्यक्त गर्न चाहन्छौं ।

कृषि उद्यम केन्द्रको आर्थिक/प्राविधिक सहयोगमा बाने सर्दै क्रमशः आत्म निर्भरता तर्फ अग्रसर भई रहेको नेपाल पुष्प व्यवसायी संघले विगत बर्षहरुमा पनि पुष्प व्यापारमेलाहरुको आयोजना गरी पुष्प व्यवसायी/उद्यमी र फूल पारखीहरुलाई आकर्षित गरेर पुष्प व्यवसाय प्रबद्धर्नमा विशेष भूमिका खेल्दै आएको तथ्य हाम्रो सामु छ ।

प्रस्तावित पुष्प व्यापार मेलाले विगतका मेलाहरुको परम्परा निर्वाहमा मात्र सीमित नरही केही नौला प्रस्तुती र प्रदर्शनिका साथै व्यापारिक कारोबारमा समेत उल्लेखनिय भूमिका निर्वाह गर्नेछ भन्ने हाम्रो विश्वास छ ।

अन्तमा पुष्प व्यापार मेलाको पूर्ण सफलताको कामना गर्दछौं ।

.....

(डा. देव भक्त शाक्य)
प्रबन्ध निर्देशक

मिति : २०५५/१२/१६

FLORICULTURE ASSOCIATION NEPAL
(FAN)

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सन्देश

फ्लोरिकल्चर एशोसिएसन नेपालले आफ्नो स्थापनाकालदेखि नै पुष्प व्यवसायमा लागेका व्यवसायीहरुको व्यावसायिक विकासका साथै गुणस्तरयुक्त व्यावसायिक उत्पादन गराई विदेशबाट आयात हुने फूलबिरुवामा कमी ल्याउन अग्रसर रहँदै आएको छ । नेपालमा नै उत्पादन भएका फूलबिरुवाहरुको बारेमा सर्वसाधारण जनमानस समक्ष जानकारी गराई त्यसप्रति वृद्धि हुँदै गइरहेको जनअभिरुचि अझ जागृत गराई पुष्प व्यवसायको प्रवर्द्धन गर्ने उद्देश्यले वसन्त ऋतु उपयुक्ततालाई ध्यानमा राखी प्रत्येक वर्ष पुष्प व्यापार मेलाको आयोजना गर्न थालेकोले सम्पूर्ण फूलबिरुवा प्रेमीमहानुभाव तथा पुष्प व्यवसायीहरुलाई ठूलो अवसर प्राप्त हुँदै आएको छ ।

पुष्प व्यवसायको विकास तथा विस्तार गर्ने उद्देश्यले काठमडौं उपत्यका बाहिरपनि पुष्प प्रदर्शनीको आयोजना शुरु भएको छ । २०५५ मंसीरमा पोखरा उपमहानगरमा त्यस किसिमको प्रर्दशनी आयोजना गरियो भने आगामी वर्षहरुमा अन्य व्यवसायिक विकासका सम्याव्य क्षेत्रहरुमा पनि त्यस किसिमका कार्यक्रम संचालन गर्ने सोचाइ रहेको छ ।

पुष्प व्यवसायमा संलग्नहरुका लागि सबैभन्दा खुसीको कुरा पुष्प थोक बजारको स्थापना हुन पुगेको छ । एशोसिएसनको प्रत्यक्ष संलग्नतामा २०५५ भदौदेखि ललितपुरको कुपण्डोलमा पुष्प थोक बजारको स्थापना भएको छ र त्यसबाट पुष्प व्यवसायीहरु लाभान्वित हुने अवसर मिलेको छ । त्यसैगरि एशोसिएसन मार्फत श्री ५ को सरकार, वाणिज्य मन्त्रालयको निर्यात प्रवर्धन समितिले पुष्प उत्पादनको निर्यात प्रवर्द्धन गर्ने कार्यक्रममा सहयोग पुऱ्याइरहेको छ । व्यवसायीहरुलाई निर्यात प्रवर्द्धन सम्बन्धी आवश्यक ज्ञान दिलाउन विभिन्न तालिमहरुको संचालन पनि भैरहेको छ । त्यसैगरि वीनरक इन्टरनेशनल लगायतका संस्थाले पनि यस एशोसिएसन मार्फत पुष्प व्यवसायको विकासका निम्ति विभिन्न सहयोग पुऱ्याउँदै आएका छन् । पुष्प व्यवसायीहरुका लागि यी सबै खुसीका कुरा भएका छन् ।

यसै सन्दर्भमा आगामी २०५५ चैत्र २५-२८ सम्म भृकुटीमण्डप प्रदर्शनी हलमा आयोजना हुन लागेको पुष्प व्यापार मेला २०५५ को उपलक्ष्यमा प्रकाशन हुने यस स्मारिकाले नेपालमा फूलबिरुवाको वर्तमान अवस्था एवं यसको विकासका लागि आवश्यक पर्ने विभिन्न सूचनामूलक र ज्ञानवर्धक सामग्री समावेश गरिएको हुनाले सबै क्षेत्रमा यसले राम्रो योगदान पुऱ्याउने छ भन्ने ठानेको छु

विगतका वर्षहरु जस्तै यस वर्ष पनि फ्लोरिकल्चर एशोसिएसन नेपालद्वारा परिचालन गरिएका सम्पूर्ण क्रियाकलापहरुमा यहाँहरुबाट प्राप्त सहयोगको लागि हार्दिक कृतज्ञता व्यक्त गर्दछु साथै आगामी दिनहरुमा पनि यस्तै निरन्तर सहयोगको अपेक्षा राखेको छु ।

अन्तमा यस पुष्प व्यापार मेला २०५५ लाई सफलताका साथ सम्पन्न गर्नमा सहयोग पुऱ्याउनु हुने सम्पूर्ण सदस्यहरु, आयोजक समिति, विभिन्न उपसमिति तथा कृषि उद्यम केन्द्र, ने.उ.वा. महासंघ लगायत अन्य सहयोगी सबै लाई धन्यवाद ज्ञापन गर्दै वि.सं. २०५६ को शुभ उपलक्ष्यमा शुभकामना व्यक्त गर्दछु । धन्यवाद ।

सुरेशभक्त श्रेष्ठ
अध्यक्ष

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FOREWORD

Floriculture Association Nepal (FAN) was established with a view to assist the people who were involved in the cultivation of ornamental plants in their backyards for the sheer joy of it or for those people who had the vision of developing floriculture into a viable enterprise. Various activities/programmes were conducted in the past and are also being conducted currently by FAN to provide information and professional know-how concerning floriculture to the interested person or entrepreneurs. One of the programmes which is being organized on regular basis is the annual Floriculture Trade Fair. This year also FAN is organizing Floriculture Trade Fair 2055 (Chaitra 25, 26, 27, 28 -2055). It has been observed that the trade fairs have been quite effective in arousing public awareness towards raising ornamental plants for their own consumption or for trade. It is hoped that the exhibits and the products on the various stalls of this Floriculture Trade Fair will give joy for the onlookers and will also decorate many homes and this Souvenir Magazine may be helpful to provide additional information concerning floriculture.

Floriculture Association Nepal appreciates very much the support provided by Agro Enterprise Center for organizing this trade fair including the trade fairs in the past. The Floriculture Trade Fair 2055 Organizing Committee is also very grateful to all the members of FAN for their valuable suggestions, support and participation in this trade fair.

Shantosh Bickram Shah

Chairman
Organizing Committee
Floriculture Trade Fair 2055

Editorial

Dear readers,

It is a great pleasure to present you our souvenir magazine published on the occasion of Floriculture Trade Fair (Chaitra 25-28, 2055) organized by FAN.

This souvenir magazine comprises articals on orchids, gladiolii, cactus, dry flowers, bulbs etc. Thus, it is an attempt to provide information on different aspects of floriculture and we hope it may be useful to general people as well as entrepreneurs.

We would like to express our deep gratitude to contributors who helped with their valuable articals to make this magazine possible. We would also like to thank FAN members and others for helping to make this publication successful. However, the views expressed by contributing writers do not necesarily represent the view of FAN.

Lastly, we wish you all a happy and pleasant reading. We expect your comments and suggestions for future.

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फ्लोरिकल्चर एशोसिएसन नेपालको कार्य प्रगति विवरण जुलाई १५–मार्च ३१, १९९९ सम्म

१) वार्षिक साधारण सभा :

विगत वर्षहरु सरह यस वर्ष पनि यस एशोसिएसनको वार्षिक साधारण सभा नेपाल उद्योग वाणिज्य महासंघको सभाकक्षमा सम्पन्न भयो । यस संस्थाका कार्यकारीणी पदाधिकारी एवं सदस्य महानुभाव तथा आमन्त्रीत अतिथिहरु सहित ४१ जनाको उपस्थिति रहेको थियो । संस्थाका सभापति श्री सुरेश भक्त श्रेष्ठज्यूको सभापतित्वमा सम्पन्न यस बैठकमा वार्षिक कार्यप्रगती विवरण प्रस्तुती, लेखा परिक्षण गरिएको आय व्यय विवरणमाथि छलफल तथा आगामी आर्थिक वर्षको अनुमानित बजेटको प्रस्तुती भएको थियो । कृषि उद्यम केन्द्र, ने.उ.वा. महासंघको सिनियर कार्यक्रम अधिकृत श्री कृष्ण राज तिवारीज्यूको आतिथ्यमा सम्पन्न यस बैठकमा सन २००० सम्म लक्ष राखिएको कार्यक्रमहरु पनि निर्धारण गरिएका थिए ।

२) निकासी प्रवर्द्धन कार्यक्रम :

वाणिज्य मंत्रालयको आर्थिक सहयोगमा फ्लोरिकल्चर उत्पादनलाई विदेशमा निर्यात गराउने सन्दर्भमा कार्यक्रम संचालन हुन थालेका छन् । व्यापार प्रवर्द्धन केन्द्र तथा ल्याण्ट क्वारान्टीनबाट प्राविधिक सहयोगमा २ पटक ग्याडुलस उत्पादन व्यवस्थापन तथा अन्तरराष्ट्रिय स्तरको ग्रेडिङ्ग सम्बन्धमा निकासी व्यापारमा लागेका १४ जना सदस्य नर्सरीका प्रतिनिधिहरुलाई तालिम प्रदान गरिएको छ ।

३) थोक बजारको स्थापना :

अधिराज्य भरीका फूल बिरुवा उत्पादकहरुलाई र विभिन्न ठाउँमा खुलेको फूल बिरुवाका पसलहरुलाई आफ्ना उत्पादनहरुको किनबेच गराउने एउटै स्थानको सुविधा उपलब्ध गराई नेपालमा फूल बिरुवाको कारोबारमा अभिवृद्धि ल्याउन कुपण्डोलमा यस बजारको स्थापना गरी सकेको छ । कृषि उद्यम केन्द्रको आर्थिक एवं प्राविधिक सहयोगमा स्थापना भएको यस बजारले दैनिक सरदर रु ५००० को कारोवार गरि आत्म निर्भरता तर्फ अग्रसर भैरहेको छ । अधिराज्यका सम्पूर्ण नर्सरी सदस्यहरु, अमेरिकी प्राविधिकबाट अध्ययन गरि स्थापना भएको यस बजारले फूल बिरुवाको व्यवसायीकता तर्फ उन्मुख गराउन धेरै ठूलो सहयोग पुऱ्याएको छ ।

४) पोखरा पुष्प प्रर्दशनी :

उपत्यकाभित्रमात्र फूलको कारोवार भैरहेकोमा देशका अन्य शहरमा पनि यसको कारोबार लाई विस्तार गराउदै लैजाने सन्दर्भमा यस वर्ष कृषि उद्यम केन्द्रको आर्थिक सहयोगमा फ्लोरिकल्चर एशोसिएसन नेपाल तथा पोखरा उद्योग वाणिज्य संघको संयूक्त आयोजनामा यहि मसीर ३-५, २०५५ मा पोखरामा पुष्प प्रदर्शनीको आयोजना गरिएको थियो । फूल बिरुवाहरुको व्यापक जनचेतना जगाई विस्तार गर्दै लैजाने सन्दर्भमा चितवन, धरान, बिराटनगर जस्ता प्रमुख शहरहरुमा पनि आगामी दिहरुमा आयोजना गर्ने लक्ष्य राखिएको छ ।

५) गोदावरी टिस्यू कल्चर बिरुवा उत्पादन परिक्षण :

काठमाडौं लगायत चितवन, पोखरा, धरान लगायत ठाउँहरुमा कृषि उद्यम केन्द्रको सहयोगमा २५००० टिस्यू कल्चर बेर्ना लगाएर परिक्षण उत्पादन गरिएको छ । परिक्षणबाट नेपालको अधिकांश ठाउँहरुमा गोदावरीको व्यवसायीक उत्पादन गर्न सकिने निष्कर्ष प्राप्त हुन आएको छ ।

६) पुष्प व्यापार मेला-२०५५

विगत ४ वर्ष देखि भृकुटीमण्डप, काठमाडौंमा आयोजना गरिदै आएको वृहद पुष्प व्यापार मेलाहरुमा यस वर्ष पनि यहि चैत्र २५-२८, २०५५ मा आयोजना हुन गैरहेको छ । यस फ्लोरिकल्चर एशोसिएसन नेपालका सक्रिय सदस्य श्री सन्तोष विक्रम शाहज्यू को सभापतित्वमा सम्पन्न हुन गैरहेको यस पुष्प व्यापार मेलामा करीब ३०० जातका फूल बिरुवाको प्रदर्शनी हुने, विभिन्न जातका फूल बिरुवाहरु सुपथ मूल्यमा खरिद गर्न पाउने, साथै घर आँगन सजाउने तरिकाहरु मुख्य आकर्षक रहेका छन् ।

७) ग्ल्याडुलस निकासी उत्पादन योजना :

नेपालका केहि व्यवसायीक उत्पादकहरुबाट ग्लयाडुलसलाई भारतको दिल्लीमा निकासी गर्ने तैयारी भैरहेको छ । यस कार्यमा कृषि उद्यम केन्द्र तथा वाणिज्य मंत्रालयको सहयोग प्राप्त भएको छ । यदि यस कार्यमा सफलता प्राप्त हुन सकेमा आगामी वर्ष देखि नेपालले फूल निर्यातबाट प्रसस्त आय गर्नेछ ।

President Suresh Bhakta Shrestha receiving "Prabal Gorkha Dakshin Bahu" from His Majesty the King

Training on "Gladiolus Cut-Flower and Bulb Production to Export."

Post Harvest Physiology and the Handling of Cut Flowers

Dr. Gopi Upreti

Introduction

Without flowers the world would not have been as beautiful and charming as it is today. They are, indeed, the unique creation of nature. The exquisite beauty, brilliance of colors, remarkable range of sizes, manifold shapes, variation in the form and texture and their attractive habitats have aroused the highest admiration and curiosity among the flower lovers and the horticulturists all over the world from the dawn of civilization. Man has developed a high level of aesthetic capacity to appreciate the beauty and charm of these unique creation of nature and have used them to beautify the home and the work environment for the development and the exploitation of his/her creative productive potential in modern times.

Flower is a unique organ compared with seed and fruit. Unlike seed or fruit, which is a single morphological unit, a flower or inflorescence is composed of many morphological units such as sepals, petals, androcium, gynoecium, stem and often leaves. Each of these morphologically and physiologically complex units interact with each other, making the flower a more complex organ than other plant organs. The interaction between flowers, stems and leaves (e.g., movement of sugar from leaves to flower) influences the water balance and post-harvest quality of flowers. Special care is, thus, needed in the development and post-harvest handling of the cut flowers.

Fundamental principle

All cut flowers are actively respiring living entities. Once they are detached from the mother plant, they are also deprived from the continuous supply of the food materials of food reserves. In other words, they are separated from the food producing mechanism of the plant.

The harvested flowers have to depend on the food and water reserves they have accumulated during growth to maintain their physiological processes. When the food and the water reserves are diminished, then the deteriorative processes commence and also become susceptible to microbial attacks. Food reserves are depleted by degradative processes and respiration while water reserve is lost by transpiration. Such decrease in food and water reserves is reflected by shriveling, many chemical changes and textural modification such as softening, loss of freshness and rotting of the cut flowers. Therefore, post-harvest operations of cut flowers right from harvesting to marketing must be based on this understanding in order to maintain the freshness and the quality of the cut flowers.

Two distinct phases of the physiology have been identified in flowers in view of their post-harvest handling: (a) the stage of bud growth and development of flower to full opening, and (b) the stage of maturation, senescence and wilting. The extension of the vase life of cut flowers actually involves the coordination of two processes, the promotion of growth in the first phase, and the retardation of senescence in the second phase.

Post Harvest Handling and Loss Reduction of Cut-Flowers

Improved post harvest handling of cut-flowers to maintain high quality production has dominated the marketing of cut flowers all over the world. A number of treatments, producers and loss reduction technologies have been utilized to reduce shrinkage loss in cut flowers. Some of the important treatments and the techniques widely used in the reduction of post-harvest loss of cut flowers are discussed for the benefit of the potential growers, retailers and the consumers.

Selection of Species/Cultivar for Quality

Wide variations have been noted among the species of crop and among the cultivars within the species of flowers in regard to their longevity or keeping quality. Cultivars of roses and gerbera differ significantly in their sensitivity to "bent neck", *a disorder of cut roses in which the water needs of the foliage and the flower are provided at the expense of the relatively soft stem tissue just below the flower*. It is important that growers have some knowledge about the keeping quality of the cultivars, they are growing for cut-flower production.

Harvest Maturity

The correct harvest maturity of flowers grown for cut-flower purposes depends upon a number of factors the species, cultivar, crop duration and the type of the handling operation in the marketing processes. The travel distance to markets, very important consideration, greatly influences the stage of the harvest of the flowers. Usually, the bud stage harvested carnation and roses are less susceptible to damage by ethylene. The early harvested flowers generally assure full opening and develop good quality in the vase. Cut flowers harvested in the bud stage are easier to handle, less susceptible to detrimental environmental conditions like high temperature and ethylene; however, roses and gerbera harvested at too immature stage will not open and will be subjected to bent neck phenomenon. Some flowers can be harvested in their bud stage and opened with specific `bud opening' chemical solution. Usually harvesting flowers in bud stage results in the following advantages:

- It reduces the sensitivity of flowers to drastic conditions and ethylene during handling and marketing
- It saves space during packing, storage and transportation · It extends the vase life of flower
- It improves the opening, size, color and the longevity of cut-flowers; especially those grown under poor light or high temperature conditions
- It minimizes the hazard of damage to field-grown flowers by adverse external conditions like hails, storms, extreme temperature and by disease and pests.

Preshipping Treatments with Chemicals and Floral Preservatives

Chemical treatments are widely used to treat the harvested flowers before shipping or transporting to the markets. The most commonly used are the types of silverthiosulfate (STS) solution to control the disorder related to Ethylene. Silver ions have antagonizing properties to Ethylene. Silver ions in the form of Thiosulfate complex move rapidly through the stems and into the flowers, thus, minimizing the post-harvest losses of cut flowers by extending their longevity. Many growers of cut flowers have widely adopted this new technology.

Other chemical substances such as growth regulators, senescence retardants, antioxidants and pulsing solutions are also being used as preshipping treatments. The cytokinins, citrates and pulsing solutions may be used as a post-harvest dip or spray or floral preservatives. Citric acid could alone be used in water to inhibit the microbial growth. .This helps to maintain the freshness of flowers by increasing the uptake of water and to preserve the quality of the flowers.

Packaging Techniques

The packaging of the flowers is another important post-harvest operation. The packaging method and techniques for flowers depend upon the type of crop, species, cultivars, the transportation mode and the marketing distance. Roses and carnations are sold in bunches of 25 or 12, while gladioli, snapdragons, irises and daffodils ~ are generally marketed in bunches of 10. The flowers are normally covered with clear plastic and the stem ends are tied together with plastic/rubber bands.

Only precooled floral products are packaged and the products are not allowed to come in contact with the container (corrugated boxes). It is known that the plant tissue in direct contact with containers will have greater fluctuation in temperature, and in consequences are more susceptible to physical damage or injury during transportation.

Precooling and low temperature storage

The management of appropriate temperature during transport and handling of flowers is a key factor in floral business. Precoolong is done to remove the field heat from the flowers by subjecting to them to low temperature storage for 2-3 hours. Usually flowers are kept in low temperature 2-3 °C in a mechanically refrigerated storage houses for 1-2 hours before they are ready to be transported to the market. Each type of the flower may have its own optimum storage temperature.

Chain of Life Concept in Post-Harvest Handling of Cut-Flowers

The **"Chain of Life"** is a concept developed and sponsored by the society of American Florists (SAF) to reduce post-harvest shrinkage in floriculture industry. It involves the application of improved loss-reduction technologies in growing, harvesting, storing, marketing of floral products as well as educating the consumers on handling of these products. The beauty of this concept is that it integrates the grower, the wholesalers, the retailers and the consumers into one single chain of events while handling the flori-products. The main goal of this concept is to ensure the consumers with the freshest and the best quality flowers and floral products.

The concept is based on the information of post-harvest physiology of the flowers and other floral products gathered through research by the scientists and the industry personnel. If this concept is properly applied, it will benefit every segment of floral industry and increase consumer satisfaction. The major objectives of Chain of Life' concept are:

- Reduce shrinkage and increase growers profit without affecting the consumer
- Offer the consumers with the best possible quality floral products at lower cost · Promote new sales or popularize new product and
- Provide the grower, the wholesaler or the retailer with a detailed marketing kit containing information on care and handling of floral products.

Chain of Life Steps

There are six steps which guarantee longer lasting flowers and are required to be followed by any person using the `Chain of Life' concept. These include: **Refrigeration, Use of floral preservative, Use of high quality water, Sanitation, Temperature management during transport, Recutting of stems and Care and handling of flowers at home (consumer information)**

Refrigeration (low temperature storage)

Temperature is the most important factor affecting the quality of flower crops. The growing temperature as well as the post-harvest temperatures are important in conserving the food reserves like sugars and starches. The effect of low temperature storage Refrigeration

Temperature is the most important factor affecting the quality of flower crops. The growing temperature as well as the post-harvest temperatures are important in conserving the food reserves like sugars and starches. The effect of low temperature storage on the flower longevity and quality is very dramatic because of the fact that the Q,° (defined as the effect of a 10 °C rise on the rate of a metabolic process) for biological processes such as respiration is very high. It means that for every 10 °C changes in temperature the rate of process changes by a factor of 2 or more. Therefore, when the temperature of the product is reduced to that of the refrigerator then the rate of respiration and other related processes that bring about deterioration of flower quality is drastically reduced. This reduction in the rate of processes (respiration) is reflected in an improvement of flower quality and longevity.

Besides its direct effects on the rate of different biological processes in cut flowers, low temperature affects the metabolic and physical activities of pests and diseases. This also results in the improvement of quality and the post-harvest loss. Another important process that can affect the quality of flowers is the ethylene biosynthesis As with respiration, rate of ethylene production is also greatly reduced at lower stor-

age temperature which in turn increases the post-harvest lasting quality of the flowers. For example, an increase in temperature from 2 °C to 21 °C can elevate the effects of ethylene by nearly 1000 times in carnation flowers.

Relative humidity is another factor affecting the lasting quality of cut flowers. Higher relative humidity is generally associated with better performance and longer lasting quality in several flower crops. The rate of transpiration is drastically reduced at higher relative humidity. Irrespective of storage temperatures, the flowers held under high relative humidity lose very little water through transpiration causing no appreciable loss in subsequent lasting quality.

Use of Floral Preservatives

Preservative alone can at least double the longevity of cut flowers. They are useful when used at every stage of the marketing channel. The cost of the preservatives is nominal but the benefits realized are great. An ideal preservative solution must contain an energy source (sucrose or sugar) and chemicals having germicidal effects such as 8-Hydroxy-Quinoline-Citrate (8 HQC). Now a days, most preservative solutions that are commercially available contain sucrose (1-4 %) and 8 HQS (50-200 ppm) and some other constituents.

The effectiveness of the preservative solution is influenced by the water quality, fluoride levels in water, pretreatment of flower before placing them in preservative solutions, depth of the stem submersion in preservative solution, recutting of stem, duration of the treatment, prevailing temperature, and the concentration of the preservative solution used. When stems are impregnated with silver nitrate the stems should not be re-cut before placing them in the preservative solution. In other cases, re-cutting the stems just before transferring them to preservative solution is beneficial. In general, the depth of stem submersion does not affect the uptake of the solution by the flower in most cases as long as the solution covers the cut-end. However, in the case of gladiolus spikes, submersion of stems to 7.5 cm was adequate.

Use of High quality Water

It has been recommended to use the deionized (DI), or distilled water for making preservative solutions because water quality affects the lasting quality of cut flowers. The flowers last only for a short period in saline water or water with high fluoride level (above 1.0 ppm). For example, carnation stored in distilled water can last up to 10 days as compared to 5 days stored in tap water. Likewise, the roses can last up to 9 days in distilled water as compared to only 5 days in preservative solution made in tap water. Ideally, the water used for floral preservative solution should have less than 200 ppm of total dissolved solids.

Phytosanitation

The importance of phyto-sanitation in maintaining the quality of flowers can not be overemphasized. Routine sanitation and maintenance by proper cleaning of buckets, refrigerators and any other equipment and the area where the flowers are kept is an absolute necessity. This will prevent the growth of the disease causing organisms or insect pests. There are several fungi that produce ethylene and drastically reduce the quality of floral products at all stages. Probably, the most important post-harvest pathogenic fungus in most cut-flower crops is the Botrytis. It can grow under all temperature during production and post-harvest storage where high relative humidity is very common. This fungus can produce substantial amount of ethylene to render the product unassailable. Routine sanitation programs can remove most of the disease and pest problems both in production areas and storage. The storage area should be disinfected and cleaned at regular intervals.

Temperature Management during Transfer Points

Maintaining proper temperature and relative humidity during transportation ensures delivering the floral products to the retailers and the consumers in the best possible condition. Some of the critical points where there is a greater chance of exposure of lower to high temperature are at the loading site, in transit, and in retail shops. Although it is difficult to have full control over the product or the condition at these points, if

proper precautions are taken during packing, some of the problems arising during transportation can be minimized.

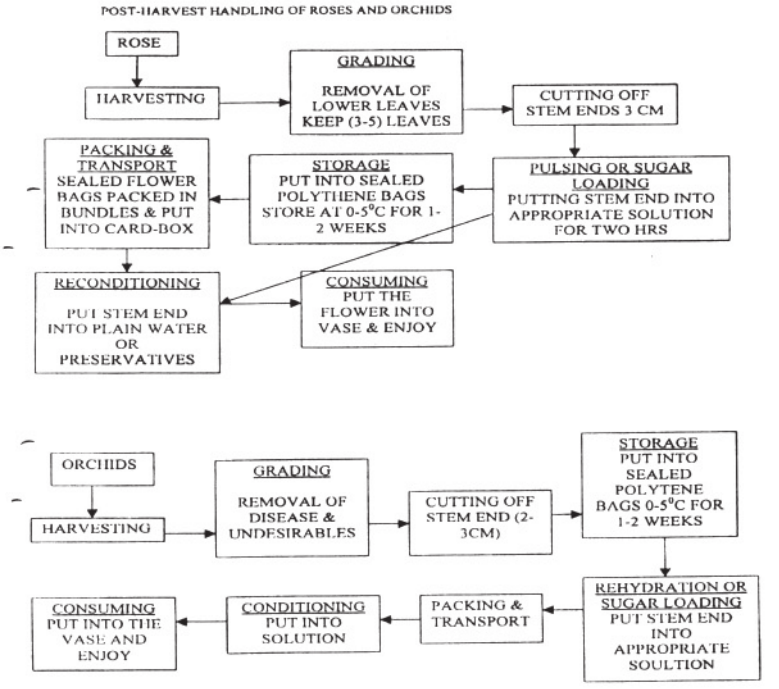
The mode of transportation influences the quality of product to a considerable extent. Ideally, the transportation mode should mimic good storage facilities with adequate temperature and humidity controls. The quality of the packaging materials used also affects the temperature conditions in the box and the quality of the product. The packing boxes should be provided with adequate insulation and provision for air circulation to protect the flowers from low temperature during winter and high heat build up inside the boxes during summer.

Recutting the Stems

Recutting the stems that are not pretreated with silver compounds before placing them in preservative solution has given dramatic results in certain flower crops. It promotes rehydration of stems, speeds up flower opening and quickly revives wilted flowers and increases the lasting quality of the cut flowers. In roses recutting of stems in water helps in unbending of bent-neck flowers, improves water uptake by peduncle and improves keeping quality.

Consumer Care Information

Providing the consumer with care and handling information not only helps the consumer to realize the maximum enjoyment from the product but also helps to build goodwill from the consumer which is very important for the success of the industry. The care and handling information can be provided in the form of care tags hung to every plant that is sold. It is the responsibility of the grower to provide consumer with care tags. From the consumer point of view, the care tags are very helpful in educating them. They can get the most recent information that are necessary to extend the life of cut flowers or potted-plants. The information on watering, light and temperature requirements, pest and disease control, nutrition and the most ideal location in home for display can be given in brief.



FLORA OF NEPAL

Shantosh Bickram Shah

Introduction

In Latin vocabulary the goddess of flower is known as Flora but in scientific terminology flora is a descriptive list of all plant life of a given place or time with keys for the identification of such plant species. As a resource inventory of a country's natural endowment of plants the flora should cover all the plant specimens both vascular and non-vascular. Flora of Nepal is the list of all types of plants that are found within the boundary of the country. The plants of Nepal was scientifically first collected and studied by Buchanan & Hamilton in 1802-1803 AD, since then many botanical expeditions have been organized, such expeditions became more extensive and intensive after 1951 AD when Nepal opened her border to foreign investigators. In Nepal the work for the preparation of Nepal Flora was started when the Department of Plant Resources (previously department of Medicinal Plants) HMG Nepal was established in late fifties.

Floral wealth of Nepal

Nepal is uniquely positioned in the world map with 6 phytogeographical provinces, 10 bioclimatic zones and 75 vegetation types. The country is unproportionately rich in terms of floral diversity as compared to its size. Its share of world's land area is no more than 0.1 percent while the share of flowering plant species amounts to over 2 percent. All together 7183 species of plants have been identified in Nepal out of which 28 species are of gymnosperms (conifers), 5160 species are of angiosperms (flowering plants), 380 species are of ferns and fern allies, 463 species are of mosses, 465 species are of lichens and 687 species are of algae (Biodiversity Profile Project, Nepal 1995). About five percent of the flowering plants, i.e. about 250 species are endemic to Nepal.

Many Nepalese people use wild plants for food supplements, medicines, chemicals, fiber, clothing, structural materials, energy and the plant materials, energy and plant materials are the largest source of livestock nutrients. The categories of plants, which are known as medicinal and aromatic plants are very important to the economy of rural Nepal, especially in the hilly regions of the country. Around 13000 tons of medicinal plants (as non timber forest products) at a value of around US $ 8.6 million are traded annually to India (D. M. Edward's 1996).

Plant Collection

Some information concerning Nepalese plants is available in old herbal literatures such as Chandra Nighanlu, which is associated with Ayurved. Scientific information about the plant specimens of Nepal was first documented by Buchanen Hamilton in An account of the Kingdom of Nepal (1819) followed by N. Wallich's Tentamen Florae Nepalensis (1825). A more complete treatment on Nepalese plants is found in J. D. Hooker's Flora of British India published between 1872 to 1897. Other important works on flora of Nepal are of I. H. Burkhill (1910), H. Kihara (1955), S. Kitamura (1955-1957), H. Hara (1966-1982), Ohba et al (1988-1991), and Koba et at (1994).

An Enumeration of Flowering Plants of Nepal (three volumes) a treatise prepared by Hara et al for British Museum (Natural History) between 1978 to 1982 was the outcome of collaboration between Department of Plant Resources, HMG Nepal with international scientists. Many Nepalese botanists have contrib-

uted in the preparation of Flora of Nepal amongst them are Dhwoj et al (1927-1931), S.B. Malla (1959-1969), T.B. Shrestha (1960-1971), S.B. Rajbhandari (1962-1969), P. R. Shakya (1963-1981), M.S. Bistha (1964-1992), M. N. Subedi (1991) to name some of them. The collection and identification of plants in he country by Nepalese as well as foreign scientist is still continuing.

Plant Specimens

Various botanical expeditions, Nepalese as well as foreign, have covered most parts of Nepal. The major herbaria that house Nepalese plant specimens are Kathmandu Herbarium, the British Museum U.K., the Kew Herbarium U.K., University of Tokya Herbarium, the Smithsonian Herbarium USA, University of Grenoble Herbarium France, and the Edinburgh Herbarium U.K. It is estimated that the British Museum houses over 40,000 Nepalese plant specimens accumulated since 1802, the University of Tokyo Herbarium has about 10,000 specimens collected during the period from 1963 to 1993 and the Kathmandu Herbarium houses around 150,000 specimens accumulated from 1961 to date.

Flora of Nepal Project

Over 90 percent of Nepal is rural and there is age old tradition and culture of using wild plants for medicine, food, fodder, fiber and as main source of energy (fuel wood). To conserve and for sustainable utilization of these plant resources scientific information on these plant resources is needed. Flora of Nepal is thus needed as a tool to understand, maintain and rationally utilize plant resources of Nepal, the Flora will help in identifying indigenous resources of plants for afforestation, horticultural and floricultural developments, for medicinal substances and above all for genetic improvements. It is estimated that about 7000 species of vascular plants and about the same number of other lower plants have to be properly identified and described in Nepal.

The plant specimens in Nepal have been collected since 1802 and the specimens have been housed in various herbaria in many countries and the scientific information about the plants of Nepal though extensive is scattered over many publications. The Department of Plant Resources HMG Nepal and the Tribhuban University Nepal are at present engaged in preparing the Flora of Nepal in totality by participating in the implementation of Flora of Nepal Implementation Project. Collaborations from various national and international institutions have also been assured.

The Flora of Nepal Project has been established in the Department of Plant Resources HMG Nepal since 1998. The Project envisages to accomplish the Flora in a period of 10 years and the Flora will be published in 16 volumes (10 volumes of flowering plants and 6 volumes of non flowering plants). Though the preparation of the Flora of a country is a never ending process it is hoped that the major task of the Flora will be accomplished by the Flora of Nepal Implementation Project and valuable information on the indigenous plant resources of Nepal will be made available for the benefit of the people.

Conclusion

Flora of Nepal is a common heritage for all the people of Nepal and even for the people of the world. The Flora of Nepal is significant, not only for the botanist, but is significant too for all the people who use, who admire or even who look at it or who see it. In a country like Nepal most of the plants are used by people or by livestock in their day to day life and many plants have significance in terms of medicine and otherwise. Therefore the Flora of Nepal should not be only constructed on a taxonomic basis but must include, as far as possible, all the knowledge on the plant viz. its ecology as well as its uses.

Primula Denticulate Sm "a wild attraction to the garden"

Kuber Jung Malla

Wild plants have great importance in floriculture and Gardening. Most of the present day cut flower varieties of plants have been developed from wild plants. Roses and Gladiolii are the best examples. Primulas also have been developed from wild varieties as a result at present different spices of primulas are on cultivation practice, these are as follows: *P. auricula, P. bessiana, P. bellegana, P. Capitata, P. Cortucoides, P. malacoides, P. japonica, P. fexinosa, P. frondosa, P. marginate, P. minima, P. obcanica, P. polygantha, P. pulverulenta, P. rosea, P. sieboldii, P. sikkimensis, P. vietchii* and *P. velgaris. Among them P. malacoides, P. obconica, P. polygantha and P. vulgaris* are commonly used as best pot plants.

The name Primula is derived from the Latin word "Primus" which means the first and refers to the first or early flowing plant in spring. In Nepal about 50 species of primulas have been estimated to be found growing wild. Among them, some have very attractive flowers with excellent ornamental values one of the attractive species is Primula denticulata. P. Denticulata also known as drum stick primula is said to be the commonest Himalayan primula. Its range of distribution is from Afganistan, Kashmir to South East Tibet and Bhutan including Nepal. It is found growing commonly between 7000-13000 ft altitude. It bears purplish to mauvish blue flowers in compact globular heads borne on long stout and leafless flowering stem or scape. Leaves are arranged in basal cluster or rosette. This is a perennial herbaceous plant although leaves die completely during winter and sprout again in spring.

Cultivation practice

Due to its attractive and beautiful flowers appearing in spring from March-May this species is in common cultivation practice in European countries. Other varieties of P. denticulata grown as garden plants are alba (white flowers), Bengal rose (rose pink flowers), Crimson Emperor (Crimson red flower), Hay's variety (deep purple flushed with crim-

son), Prcchardi Ruby (depest red farm), Purple beauty (rich purple and mauve), Spring maid (dusty pink), and tayler's voilet (Royal purple colour).

Soil Condition

As this specials grows wild in broad leaf forest, it demands humans rich soil and moist condition. So the suitable soil condition for this species is abundance of humans and shady corner of the garden for their roots to be kept mostly in moist condition. Decayed waste materials from the garden compost heap or decomposed leaves may be the best for this purpose.

Propagation

The propagation of this species is done in following ways.

a) From seeds :

As seeds after maturation fall on the ground and germinate naturally, the best way to propagate this species is to grow 'from seeds.

Seeds should be gathered as soon as they ripe, just when the capsules are on the point of opening. This will be about a month after the blooms have dried away. The seeds should be sown soon after they have been collected and dried.

The plantlets should be transplanted to pots after one month of germination. These plants give flowers after one year.

b) Root Division:

Some old plants are divided by splitting their roots to get more plants. This is done before sprouting.

c) Offsets

Rooted offsets, which form around the main crown can be detached and replanted. This practice is done in Oct/Nov.

Other Uses

The flowers are said to be eaten in salad and the powder of the roots to be used in killing Leeches.

Primula dinticulata although is commonly found in mid mountain areas of Nepal, no cultivation practice has been done yet in this country plant no doubt will be the great pride and a new attraction to the Nepalese garden if it is introduced. Let us begin the practice of growing indigenous plants of the country.

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LANDSCAPE GARDENING - DESIGN PRINCIPLE

Anup Rai

Urbanization during the past several decades has initiated intent interest in most of the well to do city dwellers for conservation of nature in the form of lanscape gardening. In fact, landscape gardening is a science as well as an art to develop the open spaces of public buildings, campuses, industrial areas, hotels, residences etc. For meeting this end, skills from disciplines such as civil engineering, architecture, horticulture, bioengineering, geology, environmental science and the social sciences are used. Although, a landscape is basically designed to please the eyes, other necessary elements are added as per the requirement of specific location and its activities.

Basic principles of landscape designs are unity, balance, accent, focalization, scale, proportion, harmony and rythum. A landscape architect of a designer tries to employ these principles to compose civil structures, open areas, plants etc. and thereby develop into a pleasing landscape.

Unity is nothing but simplicity. All the different components are arranged skillfully so that it appears as a single unit. Though the design may appear pleasant and unique from different angles there should be a wholistic approach in theme. Particular group of plants with specific texture and color used in the landscape should have a relation to the other groups so that a pattern of some form is developed. Roads, walkways, chautaras, patties etc. should be in functional positions and planting should not be done which will eventually compete with the main structure itself.

Landscape designs may be formal or informal. A formal garden is generally symmetrical with arches, pergolas, trellis etc. An informal garden, obviously, is not symmetrical rather it tries to imitate nature with irregular boarders, flower beds, lawns, walkways, natural looking ponds, waterfalls and rockeries. In symmetrical type, there is an evident balance whereas in asymmetrical type, a visual equilibrium is maintained with the use of plants and other components between an immaginary axis.

Accent provides distinction. Lack of accent in a garden makes it dull and uninteresting. Use of water, lighting, contrasting colors, specimen plants etc. provide accent to landscape.

Focalization is the main attrection of the visitor. Objects such as fountain, statue, pool, a group of colorful annuals etc. serve as a focal point of the landscape. People seem to flock to the point for photographs at such spots.

Relative size of plants and other objects is the scale. Walkways, sitting places chautaras in a public places need to be comparatively bigger while in small residencial gardens, large plants with heavy leaf or flower would be out of place.

Proportion is the interrelationship if the size of a block to the other. The designer has to keep in mind the size of the different conponents of the landscape in relation to each other so that the viewer has a pleasing experience.

Composition of all objects used in the landscape should have a visual relationship. Something like a painter mixing colors to give a soothing experience to the viewer. And finally rhythm is the use of elements in regular intervals so that trees, colors or other patterns used in the design give a rhythmic feeling and help to contribute a stimulating experience to any visitor.

While planning a landscape design one should take into account the type of ground cover in case to case situation. Sometimes natural wooded areas or rock areas are left untouched. However, most of the traffic

areas has to be covered with something. Depending on the traffic, the materials may be choosen. Local materials such as stone pebbles, bricks, flagstones, wooden planks, logs ctc. can be used. Cost, durability and maintainance are some of the important factors one should take into consideration while planning a landscape.

Choosing a specimen tree or shrub, its appropriate place and beauty is important so is the placing and size of benches, steps, wooden decks, stone lanterns etc. Undesirable elements such as big walls, garbage areas can be concealed with the help of ceepers or tall hedges while small hedges can serve to direct traffic. A lawn in a garden is a must but it invariably needs a lot of maintaince and care.

Once the design is done and implimented, it takes a couple of seasons for plants to really become healthy and robust. Lush green foliage and range of colors in the following years come as a reward to be enjoyed by every visitor.

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Edmond, J.B. et al: 1994 Fundamentals of Horticulture Tata McGraw-Hill Publishing Company Limited

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LAWNS

Pabitra Shrestha, The Standard Nursery

Lawn has been considered as one of the essential part of a garden. Everyone likes to have green turf around the house as it sets the greenery in the garden. A lawn has many virtues. color, texture and feel of grass pleases the senses, Grass cools and freshens the air, traps dust and reduces glare. A neatly clipped and trimmed grass lawn lends a consistency and order to the landscape. There is no other alternative for more versatile outdoor surface than a lawn. Lawn is relatively inexpensive, clean and safe for outdoor activities than what people have in mind. No other ground cover posses these combinations of utility and beauty.

A concept of lawn has not been very long in Nepal. Though the people wish for good garden people still lack a good lawn, an essential part in their garden. In fact, the concept has been coming up among the people and landscapers.

Methods of making lawn.

There are mainly three methods of making lawn.

1. By sowing seed:

Establishing lawn through seeds is one of the best method currently used all over the world. This method is comparatively cheap and required very few amount of labour. There are some advantages of this method which we can point out as follows:

A) This method has very fast establishing habit. Depending upon seeds variety, seeds will germinate within ten to fifteen days and gets green by two months time.
B) By seeds lawn can be made any time of year except monsoon. one do not need to wait for particular season.
C) It is less expensive than other method.
D) One of the easiest method.
E) Low labor.
F) Can make lawn green throughout out the year. There are grass seeds for two season, for summer(warm) and winter (cool). We can blend both type of seeds and sow them at the same time which keeps grass green all round the year.
G) Wide range of selection for different purposes. Turf grass for different purposes such as football ground, golf courses, low maintenance, protecting against soil erosion etc., different grass seeds are easily available for each different purposes.

Similarly some disadvantages as follows:

The preparation of the seed bed must be thorough - weed removal is very important. The seedlings are at risk from all sorts of problems - bad weather, birds, disease and so on. Until grass has covered the surface there is always the risk of weed colonisation. A period of six months should be elapse after sowing before the lawn is ready for normal use.

2. By plantation:

It is the traditional method which has been practiced so far in Kathmandu for making lawns. It is one of the expensive and time consuming methods of all. Not all type of grasses is suitable for making lawn by this method. This is mainly suitable for the grasses which are runner type, e.g. Bermuda, St. Augustine, etc.

3. By laying sod:

This method is the fastest and easiest method available, however the most expensive one. Sods of grass is laid in the ground as carpet. This methods gives quick results however it may not be practical in most of the situation in Nepal.

Lawn care and Maintenance tips:

- Mow regularly.
- Water (regularly) before the grass turns brown.
- Trim the edge.
- Feed with a nitrogen rich fertilizer in spring or early summer.
- Rake during the spring and again in the autumn.
- Kill worms when casts appear.
- Kill weeds and moss when appear.
- Aerate the lawn.
- Top dress the lawn.
- Feed with a balanced fertilizer in autumn.
- Brush the surface regularly.
- Tackle brown patches as soon as possible.

Floral Craft for Fun and Business

J. C. Bhutani, Ph.D.

It is a natural instinct in all human beings to love flowers. Flowers remain fresh only for a short period whether they are on the plant or when cut and kept in the holding solution. If these flowers are dried or dehydrated, they keep their fresh look for several years if proper care is taken. When the flowers are press-dried, these can be utilized for making some beautiful items of Floral craft such as Greeting cards, floral designs and landscapes etc. Which can be framed and kept in the drawing rooms for decoration. In this way, these beautiful creations of nature are freed the bondage of seasons and can be used for Floral craft purpose.

Press-drying of flowers and leaves :

After plucking the flowers and leaves from plants, these are placed between the folds of newspaper or blotting sheets in such a way so that there is some space between the flowers or leaves. These sheets are kept one over the other and corrugated boards of the same size are placed in between the folded sheets so as to afford space to allow water vapour to escape. Finally the whole bundle or stack is placed in the plant-press or two wooden frames which are tightened with the help of strong straps. The plant material is kept in pressed condition for 24 hours. Then it is again placed in the electrical oven for 24 hours at 40-45^{0}C. Most of the flowers and leaves dry in this way but some of the flowers and leaves which are succulent in nature may take more time to dry. The dried flowers and leaves are taken out and stored either in plastic containers at a dry place or in desiccators. These can be used at any time for making floral craft items either for presenting or for selling to make it a business.

Flowers of many kinds such as Ixora, Mussaenda, pansy, Pentas, Lantana, Verbena, Candytuft. Lark-spur, Statice, Chrysathemum, rose, Euphorbia, Sambucus etc., and leaves of Thuja (Morpankhi), Taxodium, Haematoxylon; Grevillea (Silver oak), Rose, different types of fems, Casurina, grasses etc. can be press-dried for floral craft purpose.

Making of Greeting cards and other types of cards and other such items :

Greeting cards, get well cards and cards for other festive occasions are popular throughout the world and are in great demand in our country and abroad. Cards made by embossing dried flowers and leaves in artistic manners have an appeal of their own. These cards are liked by all and fetch more price than the cards usually available in the market.

Materials required :

Ivory card paper or such type of paper, Velvet paper of different colours for background, Adhesive such as synthetic resin adhesive as Fevicol etc. or Quickfix, Soft hair brush, a needle (large), Scissors, Blade, Forceps, Trimmer, Glass table-top, Dried flowers and leaves and Envelopes.

Method :

Trim the cards of the required size from the card-sheet or get them cut from the press. Trim the velvet paper according to the size of the card so that a margin is left all around after pasting it on the card. Paste the velvet paper on the card and keep them under the glass table-top for a few minutes to dry.

Arrange the dried flowers and leaves on the velvet of the card in such a way so that it makes a good artistic design or draw a rough sketch on any paper keeping in mind the flowers and leaves available. Then,

according to the conceived design start making the card. Lift flowers and leaves, one by one with forceps and apply adhesive to the under surfaces directly from the mouth of the adhesive tube or with the help of finger tip Stick them on the velvet background according to the preconceived design. As far as possible, the adhesive should be used sparingly so that when pressed, it does not come out of the flowers and leaves. Gently press the floral material with finger tips and any extra adhesive pressed out should be allowed to dry and later scrapped out carefully.

The card is again placed under the glass table-top for about half an hour, after which it should be stored in the dark-away from moisture and dust.

The matter for wishing can either be got printed before sticking flowers and leaves or it can be written artistically with hand.

Using this technique, one can make several other articles such as floral designs, wall hangings, landscapes, calenders etc., by embossing the press dried flowers and leaves in an artistic manner on different backgrounds ranging from white or coloured art and velvet paper to silk and linen. The pictures thus made can then be framed in the same manner as photographs and paintings. Such articles should be kept indoors, away from direct sunlight to prevent early fading of colours.

Thus, you can have fun with dry flowers and leaves making your artistic instinct a creation for keeping yourself and others happy or you can also earn and get yourself self-employed by making greeting cards and selling them in the market.

नेपालको पूष्प उद्योग निर्यातोन्मुख

कुमार बहादुर के.सी.
भुवनेश्वर शर्मा

सर्लाही शासापुरका ब्रम्हदेव यादवलाई थाहा थिएन - फूलबाट नोटको वासना आउछ भनेर उनले आफ्नो बगैंचामा फुलेको सुन्दर गुलावका फुलहरुलाई नचाहिने वस्तु झैं फाल्ने गर्दथे । उनले लाखौं रुपियाँ मूल्य बराबरको गुलावको फूल अनावश्यक वस्तु झैं फालिदिए ।

यसै वर्षको मंसीर १६ गतेको कान्तिपुर दैनिक उनको हातमा पुग्यो । उनले उक्त दैनिकमा एउटा समाचार देखे जसमा "फुलबाट नोटको वासना आउँदैछ" शीर्षकमा समाचार प्रकाशित भएको थियो । जसमा काठमाडौंमा "पूष्प थोक बजार" को स्थापना भएको कुरा लेखिएको थियो । उनलाई तबसम्म, फूल, पैसामा बिक्री हुन्छ भन्ने कुरा थाहा थिएन । त्यसैदिन उनले काठमाडौंमा बस्ने आफ्नो छोरा मार्फत ऊ थोक बजारमा सम्पर्क गरे र त्यसको अर्को दिनबाट काठमाडौंमा फूलपठाउने व्यवस्था मिलाए । ब्रम्हदेवले मंसीर महिना भित्रैमा ३० हजार रुपियाँ आम्दानी गरे । अनिमात्र उनलाई विश्वास भयो फूलबाट नोटको वासना मात्र होइन नोटनै आउँदो रहेछ ।

नेपालमा ५० कोदशकमा पूष्प व्यवसायको क्षेत्रमा उल्लेखनीय विकास भएको छ र यो क्रम दिनानुदिन बढ्दो छ । पूष्प व्यवसायीहरु नेपालको फूलले एकदिन अन्तर्राष्ट्रिय बजार पाउने सक्ने कुरामा आफुहरु आशावादी भएको कुरा बताउँदै आएका छन् । उनीहरुको पूष्प बजारलाई व्यवस्थित गर्न २०५५ भाद्र महिनामा पूष्प थोकबजारको स्थापना गरेका छन् । उक्त थोकबजार कृषि उद्यम केन्द्रको आर्थिक सहयोगमा पूष्प व्यवसायी संघले स्थापना गरेको हो । थोकबजारको स्थापनाले यस व्यवसायमा लाग्नेलाई थप उत्साहित बनाएको छ भने उक्त बजारको स्थापना पूष्प व्यवसाय व्यवस्थित गराउनमा "कोशे ढुंगा" साबित हुने कुरा व्यवसायीहरुले बताएका छन् ।

के यी सम्पूर्ण तथ्यहरु सत्य हुन त ? अथवा यी सत्यहुन भने कति सम्म सत्य हुन र के साच्चिकै पूष्प व्यवसाय नेपालको ठूलो सम्भाव्य उद्योग हुन सक्छ र कार्पेट उद्योग जस्तै बैदेशिक मुद्रा आर्जन गर्नसकने उद्योगको रुपमा खडा हुन सक्छ त ? भन्ने विषयमा चर्चा गर्नु, अध्ययन गर्नु र वास्तविकता पत्तालगाउनु अपरिहार्य भएको छ ।

नेपालमा पूष्प व्यवसायको ऐतिहाँसिक पक्षलाई हेर्दा २००७ साल पछिमात्र केहिमात्रामा यसको सुरुवात भएको भन्न सकिन्छ । २००७ साल पछि नेपालमा पर्यटकहरुको आगमन र रोयल होटलको स्थापना भएपछि मात्र फूलको प्रयोग गरेको पाइन्छ भने राजदरवारमा हुने समारोह तथा कार्यक्रमहरुमा राजदरवार कै बगैचामा फूलेका फूलहरुबाटै सज्जा गरिन्थ्यो । राजा त्रिभुवन पूष्पप्रेमी होइबक्सन्थ्यो । मौसुफको पूष्प प्रेमले गर्दा पनि राजदरबारमा मात्र नभै जनमासनमा पनि फूलप्रति जनअभिरुची बढाउनमा महत्वपूण भूमिका खेलेको पाइन्छ । यसैक्रममा स्वर्गीय श्री ५ महाराजाधिराज महेन्द्रको शुभ-राज्य भिषेक र त्यसपछि श्री ५ महाराजाधिराज वीरेन्द्र वीर विक्रम शाहदेवको शुभराज्यभिषेकमा फूलको अधिकतम प्रयोग भएको थियो । राजदरवारमा हुने कार्यक्रम र समारोहमा गरिने फूलको प्रयोग र सजावटको प्रभाव विस्तारै जनमानसमा परेको र यो क्रम विस्तारित हुँदै आएको तथ्य पाइन्छ ।

यस व्यवसायको वास्तविक सुरुवातको कुरा गर्दा राजेन्द्र राइको अनुभव शान्दर्भिक हुन्छ । राई नेपाल पूष्प व्यवसायी संघका संस्थापक अध्यष हुनुहुन्छ । राई नेपालमा फूल उत्पादनको सुरुवातकर्ताहरु मध्ये एक हुनुहुन्छ । उहाँले २०४० साल तिर आफ्नो फार्ममा उत्पादित ग्लाडियोलस फूलहरु याक एण्ड एति होटललाई प्रतिहप्ता २५ वटाको दरले सप्लाई गर्न सुरु गर्नुभयो । तर त्यसको २ वर्ष पछि उक्त फूलको माग बढ्दा उहाँले उक्त होटललाई प्रतिदिन २०० फूल सप्लाई गर्ने मौका पाउनु भयो । राई भन्नुहुन्छ त्यो समय केहि अपवादलाई छोडेर सर्वसाधारण क्रेताहरु थिएनन् ।

आन्तरिक बजारमा फूलको माग नहुँदा र भारतसँग नेपालको सम्बन्ध विग्रिदा राइले करीव ३ लाख मूल्य बराबरको

ग्लाडियोलस फूल कन्टेनरमा फालेको र गाइलाई खुवाएको घटना निकै दुःखदायी र रोचक छ । उहाँले भारतीय पूष्प निर्यात कर्तासंगको सम्झौता अनुसार ६० हजार ग्लाडियोली फूलहरु उत्पादन त गर्नु भयो तर दुर्भाग्यवस नेपाल-भारत समबन्ध विग्रिदा फूल भारत पठाउन सक्नुभएन । नेपालको बजारमा पनि त्यसबखत फूलको माग न्यून थियो । फलस्वरुप उहाँ घाटालाई आखाँ चिम्लेर फूल फाल्न वाध्य हुनु भयो । फूल उत्पादन गरेको देखेर उहाँलाई कतिले मूर्खको संज्ञा पनि दिए तर उहाँ विचलित हुन भएन । तर उहाँ अहिले यस क्षेत्रमा नाटकीय परिवर्तन भएको बताउनु हुन्छ ।

नेपालको आन्तरिक बजारमा फूलको माग प्रतिदिन बढ्दो छ । मूख्यत शहरवासीमा फूल किन्ने, फूलबाट घर सजावट गर्ने र कसैलाई उपहार दिँदा फूल नै दिने जस्तो परम्पराको सुरुवातले यस व्यवसायमा संलग्न सबैलाई आकर्षित गरेको छ भने यसप्रति मानिसहरुको जनअभिरुची बढिरहेको छ । ४ वर्षको अन्तरालमा काठमाडौंमा करीब २५ भन्दा बढी फूलका पसलहर खोलिएका छन् र तिनीहरुको आम्दानी आकर्षक रहेको छ ।

पदोन्नती, जन्मदिन, विवाह, विदाई, आगमन तथा अस्पतालमा विरामी भेट्दा समेत फूलको अधिकतम प्रयोग गरिने नौलो सुरुवातको कारण फूलको माग बृद्धि भएको हो । नयाँ वर्ष र भ्यालेन्टाइन डे जस्ता दिनहरुमा काठमाडौंमा सबैभन्दा बढी फूलको माग हुने कुरा बेमेन इन फ्लोरिकल्चरकी शवनम श्रेष्ठ बताउनुहुन्छ । यस वर्षको भ्यालेन्टाइन डे को दिनमा वर्षकै अधिकतम अथवा ३ लाख भन्दा बढी मूल्यको फूल बिक्री भएको थियो भने यसका क्रेताहरु बढी युवा, युवतीहरु थिए ।

पूष्प थोकबजारको स्थापनाले उत्पादक तथा खुद्रा फूल व्यापारीहरुको संख्या बढेको छ । उत्पादकहरुलाई आफुले उत्पादन गरेको फूल दिएर पटक पटक खुद्रा फूल व्यापारीको पैसा पाउन धाउन नपर्ने भएको छ । उनीहरु आफ्नो फूललाई थोक बजारमा दिने र खुद्रा व्यापारीले थोक बजारबाट फूल खरीद गर्नु पर्ने व्यवस्थित प्रणालीको विकास भएको छ ।

चितवन रत्ननगर ८, टाँडीका नारायण शर्माले गत वर्ष उत्पादन गरेको ग्लाडियोलस फूल सिधा खुद्रा व्यापारीलाई दिए । उनले आफ्नो फूलको मूल्य उठाउन नसक्दा घाटा व्यहोर्नु पऱ्यो । उनी निराश भइसकेका थिए तर पूष्प थोकबजारको स्थापनाले उनलाई पूष्प उत्पादनमा निरन्तरता दिन आशावादी बनायो । फलस्वरुप उनले यस वर्ष २५ हजार लगानीबाट उत्पादित ग्लाडियोली फूलबाट १ लाख १० हजार रुपियाँ आर्जन गरे । पूष्प व्यवसायमा विगतमा भएको अव्यवस्थित बजार प्रणालीको कारणबाट कैयौं ब्रम्हदेव यादव र नारायण शर्माहरुलार्य निरुत्साहित गऱ्यो । तर आज त्यस प्रकारको स्थितिको अन्त्य भएको छ ।

विश्वमानचित्रमा नेपाले ०.००३ प्रतिश न्यून भू-भाग ओगटे पनि वस्पतीमा नेपाली निकै धनी छ । विश्वकै ५ प्रतिशत वनष्पती नेपालमा पाइन्छ । यो प्रतिशत क्षेत्रफलको तुलनामा निकै माथि छ । अझै, कम क्षेत्रफलमा विभिन्न हावापानी पाइनुले उष्ण, समसितोषण र शितोष्ण हावापानीमा पाइने फूल एउटै जमीनमा उत्पादन गर्न सकिन्छ । जुन संसारका अन्य भू-भागमा प्राय असम्भव हुन्छ ।

अब नेपालीहरुले आफ्नो हावापानी र माटोको वास्तविक पहिचान गर्नुपर्ने समय आएको छ । नेपालको भौगोलिक बनावट हावापानी र माटो विश्वका जुनसुकै भागमा पाइने फूल उत्पादन गर्न सकिने खालको छ । दक्षीणबाट क्रमश उत्तर तर्फ जाँदा ७ कि. मि. को दूरीमा तीन प्रकारको हावापानी पाइनुले नेपाल फूल-उद्योगको लागि सफलभूमी हुनसक्दछ । अनुकूल आवापानी, सस्तो जनशक्तिका साथै यूरोप, अमेरीका तथा प्रमूख एसियाली मुलुकहरुसँग भएको हवाई सम्पर्क पनि यस उद्योगका लागि सकारात्मक पक्ष हुन् ।

पूष्प व्यवसायी संघसंग सम्बन्ध २ जना व्यवसायीहरुको टोलीले केहिमहिना अगाडी दिल्लीको स्थानीय फूलबजारको अध्ययन गरेको थियो । यस क्रममा दिल्लीमा मे महिनादेखि सेप्टेम्बरसम्म त्यहाँको आन्तरिक बजारले माग पूर्ति गर्न नसक्ने हुँदा उक्त समयमा थप दैनिक १२ हजार ग्लाडियोली फूलको माग रहेको र उनीहरुले नेपालबाट निर्यात गर्न सकेमा खपत गर्ने कुरा प्रकट गरेको जानकारी उक्त टोलिले दिएको छ । यसबाट के पनि प्रष्ट हुन्छ भने भारत पनि नेपालको फूल खपत गर्ने मुख्य बजार हुन सक्छ ।

नेपालको आन्तरिक बजारमा पनि ग्यालियोलस फूलको माग अधिकतम रहेको छ । पूष्प थोकबजारबाट भएको बिक्रीलाई आधार मानेर गरिएको एक सर्वेक्षण अनुसार ग्लाडियोलस, गुलाप क्रमस प्रथम र दोस्रो बिक्री हुने फूलको रुपमा स्थापित भएका छन् । असोजदेखि फाल्गुणसम्म गरिएको उक्त सर्वेक्षणमा ग्लाडियोसले सम्पूर्ण बिक्रीको ७० प्रतिशत, गुलाव १५ प्रतिशत र १५

प्रतिशत अन्य फूहरु रहेका छन् । ग्लाडियोलस र रोज बाहेक कार्नेशन, गोदावरी, ट्युवरोज, सुनगाभा, जरवेरा र वर्ड अफ प्याराडाइज अन्य १५ प्रतिशत अन्तर्गत पर्दछन् ।

असोजदेखि फाल्गुणसम्म ६ महिनाको अवधिमा गरिएको उक्त सर्वेक्षणमा ७ लाख २० हजार रुपियाौ कटफ्लावर बिक्री भएको छ । तर कुनै उत्पादकले सीधा खुद्रा व्यापारीलाई फूल दिने र भारतबाट पनि आयात गर्ने हुँदा वास्तविक बिक्री रकम उल्लेखित रकम भन्दा निकै माथि रहेको कुरा उक्त थोकबजार संग सम्बन्ध निकायले जनाएको छ । उनीहरु भन्छन् उपत्यकामा मात्र दैनिक १ लाख भन्दा बढी रुपियाँको फूल तथा फूलसंग सम्बन्धित उत्पादनहरु बिक्री हुन्छन् ।

१२ वर्षदेखि पूष्प उत्पादनमा लागेका व्यवसायी दीपक पाखिन कटफलावर उत्पादनमा एक अग्रणी मानिन्छन् । उनले विगतमा निकै घाटा बेहोरेका छन् । व्यवसायिकताको विकासले गर्दा विगतको घाटालाई बिर्सेर आशावादी बनेका छन् । अहिले उनी थोकबजारको मुख्य सप्लायरको रुपा सम्पूर्ण ग्लाडियोलस मागको ७० प्रतिशत परिपूर्ति गर्दछन् । उनको भनाई छ "म अब फूल उत्पादनलाई मुख्य व्यवसायको रुपमा ग्रहण गर्नेछु ।"

नेपालको भौगोलिक बनोट र हावापानी पूष्प उद्योगको निम्ति ज्यादै सम्भाव्य भूमी हुँदाहुँदै पनि नयाँ प्रविधि, पूँजी प्रवाह, प्रतिष्पर्धात्मक स्थितिको कमी, व्यवस्थापकीय कुशलता, दक्ष जनशक्ति, गुणस्तर र शीतघर आदिको अभाव यस व्यवसायसंग भएका विद्यमान समस्याहरु हुन् ।

आन्तरिक बजारमा फूलको माग बढ्दैजानु त्यो माग पनि नेपालको उत्पादनले परिपूर्ति गर्न नसकिरहेको अवस्थामा फुल, निर्यात गर्न सम्भाव्य उद्योग हुनु नेपालको पुष्प उद्योगको चुतौतिकौ रुपमा देखा परेको छ ।

शिक्षाको प्रभाव, पर्यटन क्षेत्रको विस्तार, उच्चस्तरीय होटहरुको स्थापना, विदेशी संस्थाको नेपालमा आगमन, विद्युतीय सञ्चारमाध्यमहरुको प्रभाव, नयाँ एफ. एम. स्टेशनहरुको स्थापनाले नेपाली समाजलाई आधुनिकता तर्फ डोऱ्याइरहेको छ । नेपालमा फूलको आन्तरिक मागमा बृद्धिहुनुमा आधुनिकताले प्रमूख भूमिका खेलेको पाइन्छ । प्रत्येक वर्ष आयोजना गरिने पूष्प प्रदर्शनीले पनि जनमानसमा निकै ठूलो प्रभाव पारी फूल विरुवा प्रति सर्वसाधारणको जनअभिरुची बढाएको छ । यस वर्ष पनि पूष्प व्यवसायी संघले चैत्र महिनाको २५ देखि २८ गतेसम्म भृकुटीमण्डपमा पूष्प प्रदर्शनीको आयोजना गर्ने भएको छ ।

अहिले ठूला उद्योगपतिहरु पनि यस क्षेत्रमा आकर्षित भएका छन् । उनीहरुको आगमनले यस क्षेत्रको व्यवसायीक विकासमा टेवा पुग्ने निश्चित छ । साथै कृषि उद्यम केन्द्र र नेपाल पूष्प व्यवसायी संघले पनि नेपालको फूल उद्योगलाई व्यवस्थित गर्न आर्थिक तथा प्राविधिक सहयोग गर्नुले फूल उद्यमीहरुलाई उत्साहित तुल्याएको छ ।

नेपालमा फूल उद्योगलाई समुचित विकास तथा विस्तार गरी निर्यातोमुख बनाउन सकेमा यसबाट प्रशस्त रोजगारी प्राप्त हुने र विदेशी मुद्रा आर्जन गर्न सकिने प्रशस्त सम्भावनाहरु छन् । यसका लागि राष्ट्रिय स्तरको फूलसम्बन्धी नीति बन्नु अपरिहार्य भइसकेको छ । सम्बन्धित सरकारी निकाय यो उद्योगसंग अनविज्ञ रहँदा पनि उद्योगका सम्भावनाहरुले उचित मान्यता पाउन सकेका छैनन् ।

Gladiolus Cultivation In Terai

J. C. Bhutani, Ph. D.

For satisfactory cultivation of gladiolus in the Terai, the following cultural practices may be followed:

(i) Site : An open sunny site, away from the shade of trees, suits gladiolus the most. In shady situations, plants become lanky and have a tendency to bend towards the source of light. In hills, southern slopes are preferred for planting corms.

(ii) Soil : Gladiolus produces the best spikes when grown in deep, well-drained sandy loam soil. Sandy soil is also good, if proper cultural practices are followed. A heavy clay soil, with poor drainage, is unfit as the gladiolus root system is easily damaged by excessive soil moisture. However, mixing of 5-8 cm thick layer of river sand along with the manure will make the clay soil cultivable. Soil pH of 6.0-7.0 is ideal for gladiolus cultivation.

(iii) Preparation of Soil : The soil should be thoroughly dug or ploughed 30-40 cm deep and kept open to sun for at least 15 days. After removing the weeds, the field should be reploughed and levelled. The beds should be designed according to the situation of the plot. The beds should be about 1.5 metres wide so as to facilitate intercultural, and of desired length.

(iv) Nutritional Requirements : Fertilizer requirements vary with climatic conditions, system of irrigation and soil type. In sandy soils, it is necessary to provide adequate quantity of fertilizer. In clay loam soils, comparatively less fertilizer is required for spike production.

Application of fertilizer leads to the formation of healthy and largesized corms which would give large-sized flowers on long spikes during the succeeding year.

For enriching the soil, well rotten cow dung manure/F.Y.M. is applied @0.125 cubic metre, per square metre, besides applying single super phosphate and muriate of potash each @200 g/square metre as a basal dose 15 days prior to the planting of corms. The beds are irrigated subsequently for the consolidation of soil and then finally levelled before planting. A top dressing of urea @100 g/square metre is done 45 days after planting for obtaining better flowering and corm production.

If land is no: available gladiolus can be grown in 25 cm earthen pots. The potting mixture is prepared by mixing garden soil, well rotten cow dung manure and leaf mould in 3:1:1 ratio. For good flowering and corm production, an application of single super phosphate and muriate of potash each @one teaspoonful per pot is also given 15 days before planting the corms.

In case of a large scale cultivation, green manuring of the field can be done instead of applying cow dung manure. This helps in enriching and improving the texture of the soil.

The deficiency of different elements may show certain symptoms which can be rectified by application of nutrients. Nitrogen deficiency manifests itself in reduction in number of spikes and number of florets per spike as well as the typical pale green foliage. Symptoms of phosphorous deficiency are dark green upper leaves and a purple colouration in the lower leaves. Lack of potassium causes reduced floral bud count, shortening of the flower stem, delay in flowering, general yellowing of older leaves and interveinal yellowing of younger leaves. Symptoms of minor elements deficiency have also been reported. Calcium deficiency may cause cracking of spikes, generally, below the second or third floret. Magnesium deficiency causes interveinal chlorosis of older leaves, whereas iron deficiency manifests in interveinal chlorosis of new leaves. Boron deficiency leads to cracking of leaf margins, deformed leaves and stunted inflorescence. Brown tip of leaves and spathes has been associated with fluoride toxicity which may be due to excess of

fluorine in water but similar symptoms may also result from anything that injures the root system, such as, close cultivation, water logging, diseases and nematodes.

(v) Planting : For getting quality blooms, medium-sized corms of 4-5 cm diameter each should be selected for planting. The bigger corms called 'Jumbo', 6-8 cm in diameter, are good for getting top quality spikes for exhibition purposes. Smaller corms, of 2-5 cm diameter each can also be planted as flowering stock but corms and cormels having diameter less than 2.5 cm are mainly meant as a planting stock for development of bigger corms for next year planting.

The best time for planting corms and cormels is mid-September to mid-October. For getting a succession of flowering spikes from November to May, corms should be planted form early September to the end of November, at fortnightly intervals. Flowering can be staggered even by grading the corms. Larze-sized corms bloom earlier than the small ones. A good succession of blooms can also be obtained by planting the corms at different depths, such as, 5cm, 10 cm and 15 cm. Planting of early, mid-season and late-flowering cultivars can also ensure regular flowering. In hilly regions, the planting time is from March to may so as to get the spikes from June to October. Corms should be planted 8-15 cm deep and 15-30 cm apart, in rows 30-40 cm apart, depending upon the size of corms. Cormels are planted in 3-6 cm deep furrows, 5-10 cm apart, in rows 20 cm apart. The soil should be provided with adequate moisture and nutrition and should not be allowed to get saturated with water before planting.

(vi) Irrigation: Sufficient water is required for good growth of gladiolus. Number of irrigations depend upon the climate and type of soil, Usually, 1-2 irrigations a week are sufficient. The beds/field should be flooded at the time of irrigation. No watering is needed when there are rains and the soil is moist. Watering should be stopped at the time of ripening of corms. Pots should be watered once a day, depending upon the weather. During winter showers, there may not be any need of watering for some days.

(vii) Interculture, Earthing and Staking : The beds of field should be kept clean by regular weeding and hoeing. When the are is small, weeding and hoeing can easily be done manually, with the help of 'khurpa' or hand hoe. If the area is large, weeding and hoeing should be done mechanically.

Earthing should be done when the plants are 20-30 cm high. It helps in keeping the plants erect, without staking to a certain extent. The tall plants may fall even after earthing, due to high wind velocity, and should therefore, be staked. Stout stakes are needed for large flowered cultivars. Staking is done after the emergence of spikes but before opening of florets. Plants are fastened at three places with 'sutli' (jute cord) or polyvenyl cord.

(viii) Lifting of corms and cormels : Plenty of moisture, followed by a dry period, before lifting ensures the formation of large corms. After flowering, when the leaves start turning yellow, plants are twisted down to ground level for allowing the corms to mature. No irrigation should be given thereafter.

Corms planted during September-October are ready for lifting during March-April in the North-Indian plains. Corms and cormels should be dug out carefully so as not to injure them and should be lifted, with the help of a small garden fork or 'khurpi'. soil should be dug deep in order to take out all the cormels. While using trowel, the upper layer of soil above the corms should be removed lightly. Trowel is then inserted from the side a bit deep and the corms and cormels are taken out by giving a few jerks with the tool. After lifting, the corms and cormels should be air-dried under shade arid cleaned before storage.

GLADIOLUS DISEASES AND THEIR CONTROL

-V. Manandhar

Gladiolus is grown extensively for the spikes with bright and attractive flowers which are used as cut flower. These gladioli cut flowers have long vase life and are suitable for distance transportation as compared to other cut flowers. So, Now-a-days, gladioli are becoming very popular among people who are engaged in the farming of commercially valued floral crops. Cultivation of gladiolus produces both spikes as well as corms. So the growers can get good return by selling both of these product.

As the demand of cut flowers in Kathmandu Valley is increasing day by day, the scope of gladiolus cultivation is also increasing rapidly and the flower growers are now starting to grow gladiolus in commercial scale. But despite of their hardwork, the farmers may not get the profit they deserve because of the destructive diseases which attack the crop, decreasing the quality and quantity of production. Sometimes the whole crop, spikes as well as the corms, are spoiled. So the farmers should identify and control these diseases to get the maximum yield. To facilitate the gladiolus growers/ farmers need to know the symptoms of these diseases and to adopt the controlling measures in time, two main fungal diseases of gladiolus, Fusarium. Not and Botrytis blight, are described below.

1. Fusarium Rot

Fusarium rot is one of the most destructive diseases of gladiolus. In this disease, the fungus Fusarium sp. at first infects the root, invades the whole vascular tissues of the root and lastly, the corms and leaf bases are also infected. The infection causes rot of corms accompanied by yellowing of leaves and distortion of flowers, hence resulting the low production of flower spikes and corms. The spreading of this disease from one plantation to another is mainly due to the infected corms and soil. The infected seed corms act as the inoculum for the fresh infection in field and the fungus passes from plant to another through soil. thus transfer from one crop to another and breakout as epidemic as soon as the condition becomes favorable for the growth of the fungus i.e. warm humid condition.

Control: The Chemical treatment for the control of the fungus growth is one of most preferable method. The corms are treated with fungicides containing mercury compounds i.g. Cerasan. Mostly, the growers treat the corms just before planting, but it is advisable that the treatment should be done after harvesting the bulbs as most of the corms carrying the fungus, are rotten during storage. Inspite of post harvest treatment, the bulbs should also be soaked for 1-2 mins. in fungicide solution just before planting to minimize the loss due to disease.

Besides the chemical treatment, disease free stock of corms and disease resistant varieties are most preferable for the maximum production of healthy flowers and corms. As the Fusarium disease is transmitted through soil, fumigation of soil, if possible, is recommended. Diseased corms and plant should not be left in the field as these act as active carrier of the fungus to infect the healthy plants. So these infected plants must be burnt.

2. Botrytis Blight

This disease is caused by the fungus Botrytis sp. and produce clear pin point spots on exposed surface of leaf, flower stem and petals. At first the spots are pale brown which later change into dark brown. The flower petals are very much susceptible to Botrytis infection. So if the wet petals carry the spores of Botrytis

fungus in the evening, the whole flower may be rotted in the following morning. So the beautiful gladiolus spikes, showing no spots at the time of harvest and package, may be ruined due to Botrytis in just one night or day during transit or storage.

Control: As the infected corms are the main source of inoculum, disease free corms should be used for plantation. Field sanitation in cultivation helps very much to control the disease and to minimize he transmission of fugues from one plantation to another. The diseased plant materials should be burnt and should never be looked over. These infected plant materials should not be left in the field and should be removed as soon as possible. Chemical treatment is done by spraying fungicides like Ferbem and Zineb. but the black residue of Ferbem spray in the flower spikes not preferred by growers. the fungicide spray is applied in every 3 or 4 days during the flowing time.

Botryts spores from heavy infection in the nearby plantation may endanger spikes that are to be packed for transit, even though the crop was regularly sprayed every alternate day. For this the cut spikes are dipped in fungicide solution for 2-3 seconds before packing. This may help to lower the loss due to Botrytis blight during storage and transit.

Propagation of Cactus

Narayan Devi Manadhar

Cactus is derived from Greek word kaktos meaning prickly thistle or cardon spine. It belongs to the family cactaceae. Though there are many types of cacti, they follow common characteristigs :

1. Cacti have cushion like structure on their stem and branches called Areole. Each areole have two growing points or buds, the lower one generally produce spines and upper one produces new branches.
2. All cacti are perennial and zerophytic in habitat.
3. Cacti usually have wheel or funnel shaped flowers. The flowers are not long lasting.
4. Cactus fruit is one called berry with many seeds.
5. Stems generally enlarged for water storage.
6. Leaves are modified to spines to prevent excessive evaporation of water.
7. Cactus bear brilliant and attractive fruits.

Propagation of Cactus :

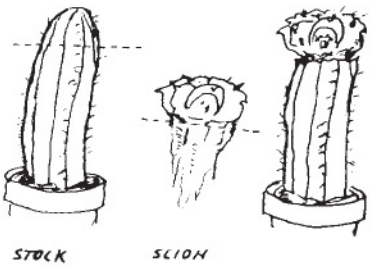
Cactus can be propagated easily by following techniques :

1. ***Cutting :*** Cacti are very easily propagated by leaf cutting, shoot cutting and joint cutting. When the cuttings are to be placed in sand or other rooting media cut wounds should be treated with charcoal dust or sulphur powder to prevent infection. From this method well rooted plantlets are produced in about a month.

2. ***Seed Sowing :*** Cacti are also propagated by seed. It takes about 2 months of time for germination. About 90% of seeds are germinated. So, from this method we can get a large quantity of seedlings at a time. The best time for germination of seed is Spring or early summer. Favourable temperature for germination is 70^0 F. The best soil mixture for seed germination is prepared by mixting 5 parts of sand, 2 parts of leaf mold, 2 parts of top soil and 1 part of charcoal. The seedlings are transplanted to pots when they are 1 inch tall.

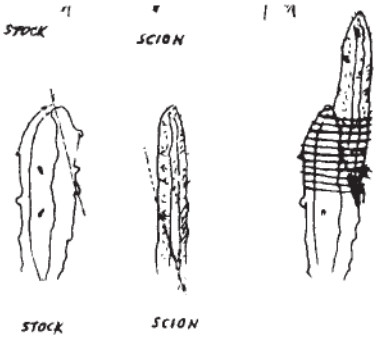
3. ***Grafting :*** It is a process of bringing together the growing cells of two similar plants to make them unite and grow as one. For grafting scion and root stock is necessary. The best time for grafting is spring. When both stock, scion are in growing stage. There are three methods of grafting.

   a. *Flat grafting :* In this method the scion cut to a flat base joined to a stock which is also cut with a flat top. The cut surfaces of scion and stock are kept together and tightly bind with rubber band or any other binding material until scion get proliferated.



b. *Cleft grafting :* In this technique, the scion is cut to a wedge shaped base and the stock is cuts to v-shaped cleft so as to fit the wedge shaped scion to the stock. The scion and stock are tightly fitted and bind with binding materials until the scion gets proliferated.

c. *Side grafting :* In this method the scion and stock are prepared with a long slanting cut to make exact fitting. They are joined and tightly bind by the binding material till the scion gets proliferated.



The cacti are beautiful, decorative and perennial plants. These plants give good look to the garden if they are properly planted. These are the main plants that give beautiful appearance to the rock garden. These plants are also suitable for green houses. Cacti are preferred by garden lovers because these are easy to grow and maintain, propagation is not so difficult and need less care than other annual or perennial ornamentals. Some of the cacti suitable for our gardens and green houses are as follows:

Scientific Name	***Common Name***
1. Zygocactus	Christmas Cactus
2. Echino cactus grusonil	Three headed cactus
3. Espostoa Lanata	Peruvian old man.
4. Lemaireo ceereus marginatus	organ Pipe
5. Cepholocereus senilis	Old man cactus
6. Nyctocereus Serperitinus	Queen of the Night
7. Aporo Cactus Flagelliformis	Rat tail cactus
8. Echinopsis Multiplex	Easter Lily Cactus
9. Notocactus Leninghausil	Golden Ball Yellow
10. Mammillaria compressa	Mothers of Hundreds
11. Mammillaria Compltotricha	Birds Nest Cactus
12. Mammiliaria Multiplex	Grape Cactus
13. Mamillaria Bacasana	
14. Opuntia vilis	
15. Opuntia microdaysis	

LILY

Asha Karki

Introduction

Lily whose botanical name is LILIUM belongs to the extended family of Liliaceae. Lilies are pleasant in appearance, attractive with varied colour of bloom. Besides its beauty lily has become a product of economic importance because of its large flower. It occurs in the temperate and the subtropical zone of Northern hemisphere. Although Lilies are native of Northern hemisphere, the far east is supposed to be the home of Lilies. Almost half of the Lilies including the finest varieties of garden lilies originated here. Some species of it are found in North east India also. Lilies can be used both as cut-flowers and pot plants. Apart from its charming effects their bulbs are also edible. China comes first in consuming lilys bulbs.

Based on the rooting habit, the lilies are classified into two groups. They are:

1. Developing roots from the base of the bulb
2. Developing roots from the base of the bulb and later from the stem as well

As Bailey described in 1963, Lilium candidum, *L. carniolium, L. giganteum, L.mortagon, L.pardaliaum, L.parryi, L. superbum and L. washing*toniaum come under group one whereas *L. auratum, L.croceum, L.longiforum, L.regales, L. rubetium, L.speciosum and L. wallacci* belong to the second group. Among these only 18 species are considered to be the most important.

Asiatic hybrids are popular in the Netherlands which are obtained by crossing two varieties which are best for cutflowers. The Netherlands, Japan, and the USA are supposed to be the main production area of the lilies. Cultivars of *L. longiforumare* most popular in Japan and in the USA. Netherlands comes first in producing flower bulbs followed by Japan and USA.

Production of flower bulbs of lilium spp in the Netherlands, Japan and the USA in 1979 were as follows:

Country	Bulb production (in millions)
Netherlands	231
Japan	65
USA	15

Propagation of Lily

Two methods of propagating lilies are in practice at present. They are

i. Through seeds

ii. by vegetative method

Because of the advantages of building stocks rapidly, propagation by seeds has some attractive aspects. Although it is a time consuming process it is a cheap method of raising lilies which ensures clean healthy stock free from diseases which are usually transmitted through seeds. In spite of these advantages lilies are commercially propagated vegetatively because of the lack of uniformity of plants raised from seeds.

The following method are used for vegetative propagation :

I. Bulblets

II. Bulbils

III. Scales

I. Bulblets - Division of bulblets formed on the stems below the ground level are commonly aud commercially used for the multiplication of lilies.

II. Bulbils - Some species like Lilium bulbiforum and L. wallichianum form bulbils naturally in the axile of leaves on the above ground stems which are used for mass propagation.

III. Scales - These cultivars who do not produce stem bulbils, propagation is a rapid means of multiplication. In this method the scales from the bulbs are removed and treated with fungicide and are planted in the beds.

Micropropagation

In this method of propagating lilies various plant parts such as bulb, scale, stem, leaf apical meristem, floral organ are used for culture. The plant parts selected for propagation are chemically treated and kept inside the flasks with media under laboratory condition for a certain period of time.

After the initiation of the plants inside the flasks the cultured bottles are kept in the green house for acclimatisation. The microshoots from the flasks are then transferred to sand for rooting. After the development of roots the plants are transferred to polybags which are ready for distribution.

Besides cut-flowers lilies make superb pot plants also. As per Beattie et al 1985, 12 cultivar out of 60 are considered best for pot plant production. So far the demand of cut-flowers of lilies are being met through import from India who herself imports from the Netherlands. The Asiatic Lilies are most popular in Nepal. Realising the importance and value of lilies some nurseries are engaged in raising lilies by traditional method whereas some tissue culture factories have also started producing them which are still in the initial stages. So if these factories succeed in producing good quality plants and become self sufficient Nepal has a lot of scope in exporting lilies in the international market. Hence by adopting the method of tissue culture on one hand Nepal need not depend upon imports while on the other hand the business can emerge as one of the export oriented industry.

Enjoy the growing of orchids

Orchids: From Flask to Community Pots

R. Niroula

The orchids are a thing of beauty and joy and are considered as one of the most beautiful flowers of the nature. With their exotic shapes and added advantage of longevity, these flowers of rare beauty have become increasingly popular as flowers of 21st century. In comparison to other flowers and plants in floriculture industry the orchids are the most expensive. Growing your own community pot is one way to acquire orchids inexpensively. It is you who will be growing them from infancy, so you will not have to pay for the time and care, a commercial grower would have spent on them. Growing orchid seedlings from infancy to maturity can be joy and all new orchid hybrids start from ' a seeds. Those who buy their orchids in bloom will never know the joy of anticipation waiting for something new and different.

Many orchids of commercial and horticultural importance are now available from commercial growers. The flask or the bottle of your choice can be bought or imported at any time of the year. Never remove the lid, plug or aluminum foil on your flask until you are ready to transfer the seedlings to a community pot. Spring is the best time for transplanting seedlings if the proper green house facilities for growing are not available.

The different stages of transplanting seedlings from flasks and growing in community pots are described below.

- Remove the lid or aluminum foil covering the mouth of the flask.
- De-flask the seedlings carefully with a pair of forceps. Make sure that the leaves and roots are not damaged.
- Wash the plantlets with lukewarm water to remove the agar that is stuck on to them. Place the seedlings on few layers of newspaper and allow them to dry for 10 to 15 minutes.
- Either spray or dip seedlings in solution of fungicide (Bavistein 0.1%) for 15 minutes and allow them to dry again for 10 to 15 minutes.
- Prepare the potting mixture. Different potting mixture can be used.
  - Broken bricks and charcoal about 1 cm in size in the ratio of 1:1.
  - Finely chopped spangnum moss - Tree fem or any fern fiber
  - Coconut husk - Madhumass

  The potting material should be well soaked until damp.
- Prepare the community pot. A clay pot of 3-5 inches in diameter is generally used. Place some drainage material in the bottom of each container. Fill the pot with potting material to 1/4 inch between the rim of the container and slightly press the mix.
- Plant the seedlings using a pair of forceps to hold, gently pick each seedling up and place it into the community pot and cover the roots with the medium. Make sure that base of the stem of the plantlet is just below the surface of the potting mixture. The number of seedlings that can be planted in each pot depends on the size of the seedlings and their root system. A five-inch pot can hold 20-30 plants.
- Spray the plant and medium with water and dilute solution of fungicide to prevent future contamination of the plants. Do not expose the plantlets to direct sunlight. Cover the pot loosely with a piece of transparent polythene but always leave an opening for circulation of air and place the pot in a low light area. Too much exposure to the sun will cause the leaves to turn yellow.

BULB CULTURE

Basanti Pradhan

Lovely flowering plants that are the easiest to grow and bloom are those which are grown from bulbs. It is worth spending Rs. 5-20 (depending on the flower variety) for the everlasting pleasure and peace one can derive out of these plants. Mind you, bulb growers cannot resist the temptation to grow more and more of these which requires the least either from one's purse or effort.

More and more varieties of bulbs are being marketed. It is possible to buy prepared bulbs of certain kinds of flowers and leaves and to plant these yourselves. You are well rewarded for the minimum of effort. One simply has to water the pot and stand it in good light and soon lilies, gladioli, caladium, gloriosa or zephyranthes give gorgeous flowers or leaves.

Generally bulbs are of the easiest cultivation just needing planting in early autumn (chinchi rinchi, ranunculus, freesia, hyacinth etc.) or in the early summer (gladioli, tiger lily, caladium, gloriosa, lycoris, zephyranthes, achimenes etc.) They ought to be planted about two or three times their depth in reasonably good and light garden soil, with which a good amount of leaf mould or cow dung has been mixed. They should be planted at a uniform depth, which varies with the kind of bulb and should not come into contact with recent manure. Good drainage is essential. Bulbs as a rule should be planted deep rather than shallow specially crocus, lilies, chinchi rinchi because the bulbs are then less likely to suffer from the effects of frost. Paradoxical, the bulbs of daffodil, hyacinth, tulip etc. should be potted so that their tips are just above the surface of the soil.

For growing bulbs in pots, the pots should be well soaked in water after planting and placed in the open. The pots should be covered with a layer of 5 inches of ash. They should then be left alone for seven to nine weeks until the roots are formed and the tops have made an inch of growth. Then they should be liberally supplied with water but not saturated. The pots must be subjected to direct sunlight until the pale yellow shoots have turned green.

When the bulbs have made shoots about an inch long, pots should be brought out into the light, but they should not be exposed to full air and sunshine until the shoots have turned green. While this is happening the pots should be kept in a shady corner of the room. When the shoots are green, the more light and air they have the better. But if they are placed in a window they should always be removed to the middle of the room if there is frost during the night. Note should be taken that the plants naturally grow towards the light, so to ensure good straight plants and flower stalks, the pots should be turned each day.

Bonemeal is a good artificial manure for bulbs and should be dusted round the bulbs. An equal amount of super phosphate may be added at the same time.

Most bulbs having been planted in suitable soil at a reasonable distance apart may be allowed to remain there for several years without being lifted. But there are certain exceptions. Tulips, hyacinths, tuberous begonia, caladiums should be lifted when the leaves die down. The bulbs then should be allowed to dry in a frost free place until the time for planting comes around again.

Bulbs have a tendency to rise to the surface specially corms (crocus, gladioli etc). The new corms are formed every year on the top of the old corms which perish. The continuance of bulbs in the places in which they are first planted thus leads to the formation of splendid masses, from which rise glorious flower spikes.

Some of the best bulbs and tubers

Achimenes
Agapanthus
Amyrallis
Begonia
Clivia
Crocus
Cyclamen
Freesia
Gladioli
Gloxinia
Lilium
Hyacinth
Iris
Ixia
Narcissus
Ornithogalum (chinchi rinchi)
Ranunculus
Tulip
Zephyranthes

Wish you every success and satisfaction in growing your beautiful plants from bulbs.

Potting Mixture गमलामा बिरुवा रोप्दा प्रयोग गरिने माटो

-रेणुका मालामार

माटो संसारको सबै किसिमको बनस्पतिहरुको लागि नभै नहुने प्राकृतिले नै दिएको आधारभूत वस्तु हो। यस्ले बोट बिरुवालाई खडा हुन मद्दत पुऱ्याउनुको साथै आवश्यक खाद्य पदार्थ र पानी समेत प्राप्त गराउँदछ। त्यसैले माटोको ठूलो महत्व छ।

परिचय :

Potting Mixture भनेको माटोको मिश्रण हो, जुन माटो, मल, बालुवा, प्राङगारिक पदार्थ (Organic matter like peat moss) र खनिज पदार्थ (minerals like, calcium, magnesium etc) आदी मिलेर बनेको हुन्छ। यसमा सबभन्दा बढी माटोको मात्रा हुन्छ। अनि बगैंचाको माटोमा केही मात्रामा खनिज पदार्थ र प्राङगारिक पदार्थ पहिले देखि नै निहित रहेको हुन्छ।

बिरुवाहरु चाहे बीउबाट (Seed germination) उत्पादन भएको होस चाहे बनस्पतिक प्रजनन् (Vegetative propagation) बाट तिनीहरुलाई बाच्न, बढ्न र हुर्कनको लागि कलिलो अवस्था देखि नै यस माटोका मिश्रणको जरुरत पर्दछ। यस Potting mixture लाई कसै कसैले Soil mixture अथवा Potting Compost पनि भन्ने गरेको छ।

बनाउने तरिका :

राम्रो खालको पटिङ्ग मिक्चर बनाउनको लागि माटो र बालुवा बेग्ला बेग्लै जालीद्वारा छान्नु पर्दछ, नचाहीने ठूला ठूला टुक्राहरुलाई फाली दिनु पर्दछ, अनि प्राङगारिक पदार्थलाई सुकाएर मसिनो पारेर राख्नु पर्दछ। प्राङगारिक पदार्थमा सबभन्दा राम्रो Peat moss (जंगली भ्याउ) लाई मानिन्छ। यस्को लागि प्रयोगमा ल्याउने मल पनि राम्रोसंग पाकेको, किरा नलागेको हुनु अति जरुरी छ।

Peat moss लाई माटोमा मिसाउनु भन्दा एकदिन अगाडी नै पानीमा भिजाई राख्नु पर्दछ किनभने सुख्खा माटोसंग सुकेको peat moss लाई मिसाउनाले यसले पानी एकदमै ढिलो सोच्दछ र फेरी यस peat moss मा लामो समय सम्मको लागि पानी बोक्ने सक्ने क्षमता पनि बढी छ। बालुवा र peat moss बराबर मात्रामा हाल्नाले बढीमा ४८ प्रतिशत सम्म पानी बोक्न सक्ने क्षमता हुन्छ।

यसलाई प्रयोगमा ल्याउनु दुई तिन दिन जति अगाडी पानीमा भिजाएको peat moss लाई, माटो, बालुवा र मलसंग मिसाएर माथिबाट छर्कदै एकनासले चलाइ दिनु पर्दछ। यसो गर्नाले मात्र Potting mixture को सबै भाग एकनासले भिज्दछ। यसरी तयार पारेको Potting mixture बिरुवा रोप्ने बेलामा फेरी एकपटक चलाई दिनाले माटो डल्लो हुन पाउँदैन र यदी माटो राम्रो संग एकनासले भिजेको छैन भने पनि पानी अलि अलि छर्किन सकिन्छ। तर प्रसस्त मात्रामा पानी हाल्नाले माटो हिलो हुन गई काम गर्न अप्ठयारो हुन जान्छ। अतः फोस्रो खालको भिजेको Potting mixture बिरुवाको लागि राम्रो हुन्छ।

Potting mixture बनाउँदा मलमाटोलाई आगोमा पकाउन सकेमा झार नउम्रिने र हानीकारक कीरा नलाग्ने हुन्छ। यसो हुंदा खाद्य पदार्थ र पानी बेकारमा नोक्सान हुन जान पाउँदैन र औषधि उपचारको पनि जरुरी पर्दैन।

Potting mixture बनाउँदा peat moss, leaf mold अथवा राम्ररी कुहेको गाईवस्तुको मल, बालुवा हाल्नाले माटो खुकुलो हुन्छ। यस प्रकारको माटोमा हावा र पानी सजिलै संग छिर्न सक्ने भई जरा बृद्धि हुनमा मद्दत पुऱ्याउँदछ। यसमा हाडको धुलो (Bone meal) अलिकति थप्नु वेश हुन्छ। फेरी अम्लिय माटो भएमा चुन पनि थप्नु पर्दछ।

Potting mixture मा माटो, बालुवा र प्राङगारिक पदार्थहरुको मात्रा :

Potting mixture बिरुवा रोप्नको लागि मात्र प्रयोग नगरेर बीउ उमार्नको लागि पनि प्रयोग गरीन्छ । त्यसैले माटो, बालुवा र प्राङगारिक पदार्थको मात्रा विरुवाको अवस्था र बीउको किसिममा भर पर्दछ ।

क) कलमीबाट सरेको बिरुवा र बेर्नाहरुको लागि

एक वा दुई भाग बालुवा

एक भाग माटो

एक भाग भ्याउ (peat moss)

ख) मसिनो बीउ उमार्नको लागि

दुई भाग बालुवा

एक भाग माटो

एक भाग भ्याउ

ग) गमलाको बिरुवा अथवा ठूलो र कडा खालको बिउको लागि :

एक भाग बालुवा

दुई भाग माटो

एक भाग भ्याउ

घ) जमिनमा रोपेको बिरुवाको लागि:

तिन भाग बालुवा

एक भाग भ्याउ थप्नाले राम्रो हुनेछ ।

Modified sandy soil mixture:

माथि उल्लेख गरिएका Potting mixture सानो सानो नर्सरीको लागि प्रयोग गरिन्छ । तर बिरुवाहरु प्रसस्त मात्रामा (large Scale) उत्पादन गर्नुपर्दा Modified Sandy Soil प्रयोग गर्छ । यसमा विभिन्न मात्रामा विभिन्न चिजहरु प्रयोग गरिरहेको हुन्छन् । जस्तै कोहीले peat moss को बदला Leaf Mold र Sphagnum moss प्रयोग गर्छ भने कोहीले काठको मसिनो धुलो, धानबालीको धुलो, पराल, काठको बोक्रा आदी प्रयोग गर्छ ।

Peat moss मा जस्तै Sphagnum moss को पात र डांठको कोषहरुमा पनि पानी सोसेर राख्ने शक्ति धेरै भएकोले यो पनि बेश छ । तर यिनीहरु प्रकृतिमा मात्र पाइने भएकोले संधै भरी प्रयोगमा ल्याउन सकिदैन । अत: हामीले झरेका सुकेका पातहरु (Leaf mold), काठको धुलो आदीको धेरै मात्रामा प्रयोग गर्नुपर्ने हुन्छ ।

माथि उल्लेख गरिएका Potting mixture हरुमा खाद्य पदार्थ र खनिज पदार्थ एकदम कम मात्रामा मात्र पाइने भएकोले मल थप्नु अति जरुरी छ ।

प्रोटिङ्ग एण्ड रिपटिङ्ग :

बीउबाट उत्पादित बिरुवा होस वा कलमीबाट उत्पादन भएको बिरुवा होस्, तिनीहरुमा जरा लामो र धेरै भएपछि उत्पादन गरेको ठाउँबाट चाडैनै गमलामा रोप्नु पर्दछ । त्यति बेला सानो साइजको गमला भए पुग्दछ । सानो गमलामा भएसम्म जरालाई खाद्य पदार्थ र पानी खोज्न र सोस्न टाढा सम्म जान नपर्ने हुनाले बिरुवालाई छिट्टै फाइदा पुग्दछ । तर बिरुवाको बृद्धि हुँदै गएपछि जराको संख्या र साइजमा पनि बृद्धि हुन्छ र यस्ले अब धेरै मात्रामा पानी र खाद्य पदार्थ खोज्नु पर्ने हुन्छ । त्यसैले जराहरु एक अर्को संग अल्झिनु भन्दा अगाडी नै ठूलो गमलामा सार्नु पर्दछ । अनि मात्र बिरुवाले बढी मात्रामा खानेकुरा प्राप्त गर्न सक्दछ । यसरी बिरुवाको साइज अनुसार एक पछि अर्को ठूलो अनि झन ठूलो गमलामा सार्नाले बिरुवा छिटो छिटो मोटो र बलियो हुँदै जान्छ ।

बिरुवा रोप्नको लागि गमला तयार पार्दा सबभन्दा पहिले गमलाको प्वाल (drainage hole) निर फुटेको गमलाका टुक्राहरु अलिकति राखेर त्यसमाथि सुकेका पात अथवा परालका टुक्रा अलिकति राख्ने गर्नु पर्छ । अनि मात्र Potting mixture

हालेर बिरुवा रोप्नु पर्दछ। बिरुवाको जरालाई माटोले पुरिंदा पानीको लागि २ सेन्टीमिटर जति माथि खाली छोड्नु पर्दछ। त्यसो गर्नाले बिरुवामा पानी हाल्दा गमलाको बाहिर बाट पानी संगै माटो बग्न पाउँदैन र गमला भित्रको माटो पनि एकनासले भिज्न पाउंदछ। अनि एक हप्ता पछि त्यस खाली ठाउँलाई माटोले भरिदिनु पर्दछ। यसरी गमलामा बिरुवा रोपि सकेपछि माटोको सतह माथि इंटाको टुक्रा, ढुङ्गाको टुक्रा अथवा हरियो भ्याउले छोपी दिन सक्यो भने माटो बग्न नपाउनुको साथै बाष्पिकरण क्रिया द्वारा पानि उडेर जाने पनि नियन्त्रण हुन्छ। त्यसो हुनाले माटो छिटो सुख्खा हुने डर हुदैन। बिरुवा सानै छ भने त्यसलाई एकैचोटी ठुलो गमलामा कहिले पनि सारुं हुदैन। किनभने नचाहिने रुपमा उम्रेको झारले ठूलो गमलाको खाद्य पदार्थ प्रसस्त मात्रामा सोसी दिन्छ र मल माटो पनि बढी लाग्दछ। फेरि ठाउं पनि बढी खाने र मेहनत पनि बढी लाग्ने हुन्छ। बिरुवा रोप्नको लागि गमला तयार पार्दा सुख्खा Potting mixture कहिले पनि प्रयोगमा ल्याउनु हुदैन। किनभने यस्तो माटोमा पानी हाल्दा पानी छिट्टै गमलाको फेदसम्म पुग्न सक्दैन, जस्ले गर्दा जरालाई पनि पानी भेट्टाउन मुस्कील पर्दछ।

बिरुवा एक ठाउँबाट अर्को ठाउं सार्दा खेरी जरामा टासेको माटोको डल्लो समेत रोप्नु पर्दछ। अनि त्यस बिरुवालाई बिचमा पारेर त्यस्को चारैतिर माटोले भरि दिनु पर्दछ। कमलो बिरुवा भएमा लठ्ठीले आड दिएर मात्र पानी दिनु बेस हुनेछ। अनि कम्तिमा २ दिन र बढीमा ५/७ दिनको लागि घाम नभएको ठाउँमा राख्नु पर्दछ। यसो गर्नाले जरा अलि काटिएता पनि बिरुवा सुक्ने डर हुदैन।

एकदम गर्मी महिनामा गमलाको बिरुवालाई जथाभावी जमिनमाथि राख्नु भन्दा गमलाको आधा जति भाग जमिनभित्र गाडेर राख्नु अथवा बालुवा र ईटाको टुक्राले भरिएको गमला भन्दा ठूलो भांडोमा राख्नाले धेरै नै बेश हुन्छ। यस तरिकाबाट बिरुवाले चाहिने मात्रामा चिस्यान पाउँन सकिन्छ।

हावापानी चिसो भएको बेलामा बिरुवाहरु एक ठाउँबाट अर्को ठाउँमा अथवा एउटा गमलाबाट अर्को गमलामा सारुं बेश हुन्छ, किनभने त्यस्तो बेलामा सारोले एक दुई वटा जराहरु भांचिनाले पनि बिरुवा मर्ने वा ओइलाउने डर हुदैन। यो काम टुसारो पर्ने बेलामा बाहेक वर्षको कुनै पनि महिनामा गर्न सकिन्छ। तर, भर्खर नयाँ पालुवा आएको बेलामा यो काम गर्न खतरा हुन्छ, किनभने नयाँ तथा कलिलो जराहरु भाँच्ने र नयाँ पात तथा हाँङ्गाहरु सुक्ने धेरै नै संभब छ। त्यस्तै गरी गाना भएको बिरुवाहरु पलाउनु भन्दाकेही हप्ता अगाडी नै सारुं बेश हुन्छ। तर फूल र पात सकिने वित्तिकै सारुं त्यति राम्रो हुदैन।

बिरुवाको लागि गमला फेर्ने काम बिरुवाको डांठ र जराको बृद्धिमा भर पर्दछ। जस्तै गोदावरी फूलको बिरुवालाई ४०/५० दिनको फरकमा गमला फेर्नु पर्दछ। किनभने यसमा जरा र डांठको छिटो छिटो बृद्धि हुन्छ। तर Palm जस्तो बिरुवालाई ४/५ वर्षको फरकमा मात्र गमला फेरे पुग्दछ।

उन्यू जातका बिरुवाहरु र शोभा दिने पातवाला बिरुवाहरुलाई हरेक साल गमला फेरी दिनु पर्दैन, तर मल मिसिएको माटो अलि अलि थपिदिए पुग्छ।

जुन गमलामा बिरुवा रहेको छ त्यसलाई घोप्टयाएर बिरुवा निकाल्ने अनि पुरानो माटोलाई औंलाले बिस्तारै बिस्तारै पन्छाउनु पर्दछ। त्यसै गरी पुरानो खैरो जराहरु पनि कैंचिले काटी दिनु पर्दछ। अनि मात्र खपटा र सुकेको पातको टुक्रा समेत भएको नयाँ गमलाको बिचमा पारेर बिरुवा रोप्नु पर्दछ। बिरुवाको चारैतिर माटाले राम्रो संग भुर्नु पर्दछ। अनि एक दुई चोटी टकटकाउँदै माटोको सतह मिलाए पछि पानी हाल्नु पर्दछ।

क्याक्टस जस्तो कांडेदार बिरुवालाई गमला फेर्नु परेमा काठको चिम्टाको प्रयोग गर्नु पर्दछ। काठको चिम्टा नभएमा बाक्लो छालाको पन्जा पनि प्रयोग गर्न सकिन्छ। अतः यस्ता अवस्थामा गमला नघोप्टयाई कनै नयाँ गमला फेर्न सक्दछ।

कहिले काहीं नयाँ गमला आफुसंग नभएको बेला पनि Repotting गर्न सकिन्छ। गमलाबाट बिरुवा झिकी सकेपछि पुरानो माटो सबै पन्छाएर त्यही गमलालाई सफा गरीकन नयाँ Potting mixutre हालेर त्यही बिरुवा रोप्नाले पनि गमला फेरेको बराबर हुन्छ। छिटो बढ्ने बिरुवाको लागि वर्षमा दुई चोटीसम्म गमला फेरीन्छ तापनि Spring Season मा मात्र यो काम गरे पनि प्रसस्त पुग्दछ।

गमलाको प्यालवाट जरा निस्कनु, पात पहेंलेर जानु, जराको कारण गमला आफै फुटेर आउनु यि सबै नयाँ गमला फेर्नु पर्ने आवश्यकताको लक्षणहरु हुन्।

Floriculture Association Nepal (FAN)

Floriculture Trade Fair - 2955

Sl.No.	Name of Participants	Stall No.
1	The Standard Enterprise/Nursery	W 46, 47, 50, 51
2.	Ambar Nursery	E 23, 24, 25
3.	Chameli Nursery	E 5, 6, 7, 8
4.	The Jazzar Nursery	E 1, W. 43
5.	Tree Seeds and Flowers	W 49
6.	Jay Kishan Nursery	W 34, 35
7.	Hankey Rai and Sons	W 30, 31
8.	Fragrance	W 44, 48
9.	Parijat Nursery	E 13, 14, 15, 16
10.	Bodhi Brikchya	E 19, 20, 21
11.	JN Nursery	E 4
12.	Evergreen	W 42
13.	Bagmati Nursery	W 28, 29
14.	Sudhima's Nursery	E 12
15.	Jay Kishan Seed Centre	W 37
16.	Gokern Art	E 11
17.	Saurab International Concern	E 26
18.	Garden Service (P) Ltd.	W 37
19.	Syakar	W 45
20.	Meena Rai	W 36
21.	Resturant	E 9, 10
22.	Unnati Aadhar Kendra	W 40
23.	AEC/FAN	M 5
24.	Shanti Nursery, Pokhara	E 22
25.	Woman in Floriculture	W 32, 33

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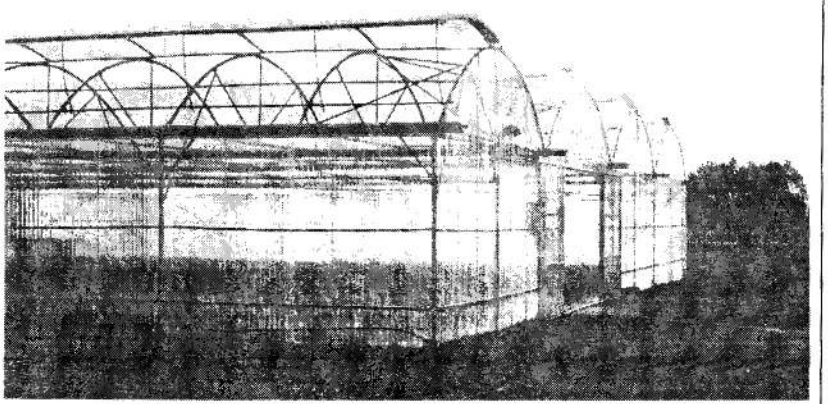

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AGRO ENTERPRISE CENTRE

कृषि उद्यम केन्द्र

The **Agro Enterprise Centre (AEC)**, established as an agricultural wing of the **Federation of Nepalese Chambers of Commerce and Industry (FNCCI)**, assists Nepalese entrepreneurs in creating agro-enterprises, improving their competitive market position, and in increasing the exports of high value agriculture products. AEC provides services to its clients routinely on a cost-sharing basis on their request. For agricultural prosperity through enterprise development, contact:

Contact us at:

The Agro Enterprise Centre, FNCCI Building, Sahid Sukra Milan Marg, Teku, Kathmandu
PO Box 7651, Tel.: 262260, 262245 Fax: +977-1-261671 e-mail: agroaec@mos.com.np

AEC:

- Maintains a data bank with domestic and international market and price information, an inventory of agricultural processors, produce groups and associations, and relevant laws and regulations.
- Prepares and circulates periodically the AEC newsletter focusing on agro enterprise development.
- Offers business, marketing and technical skill training in post-harvest operations, quality assurance and marketing of high value agriculture.
- Advocates and educates on behalf of private sector agro entrepreneurs and commodity associations, the changes in the rules and regulations affecting their growth.
- Identifies and encourages innovative venture proposals that serve multiple sectors, small farmers and firms.
- Assists the formation of the agro based commodity associations.

On request AEC will:

- Help prepare business plan of specific commodities, markets and processes.
- Advise clients on their agro business.
- Undertake contract research in improving product quality and competitiveness.
- Assist in high value agricultural product marketing and in their export promotion.