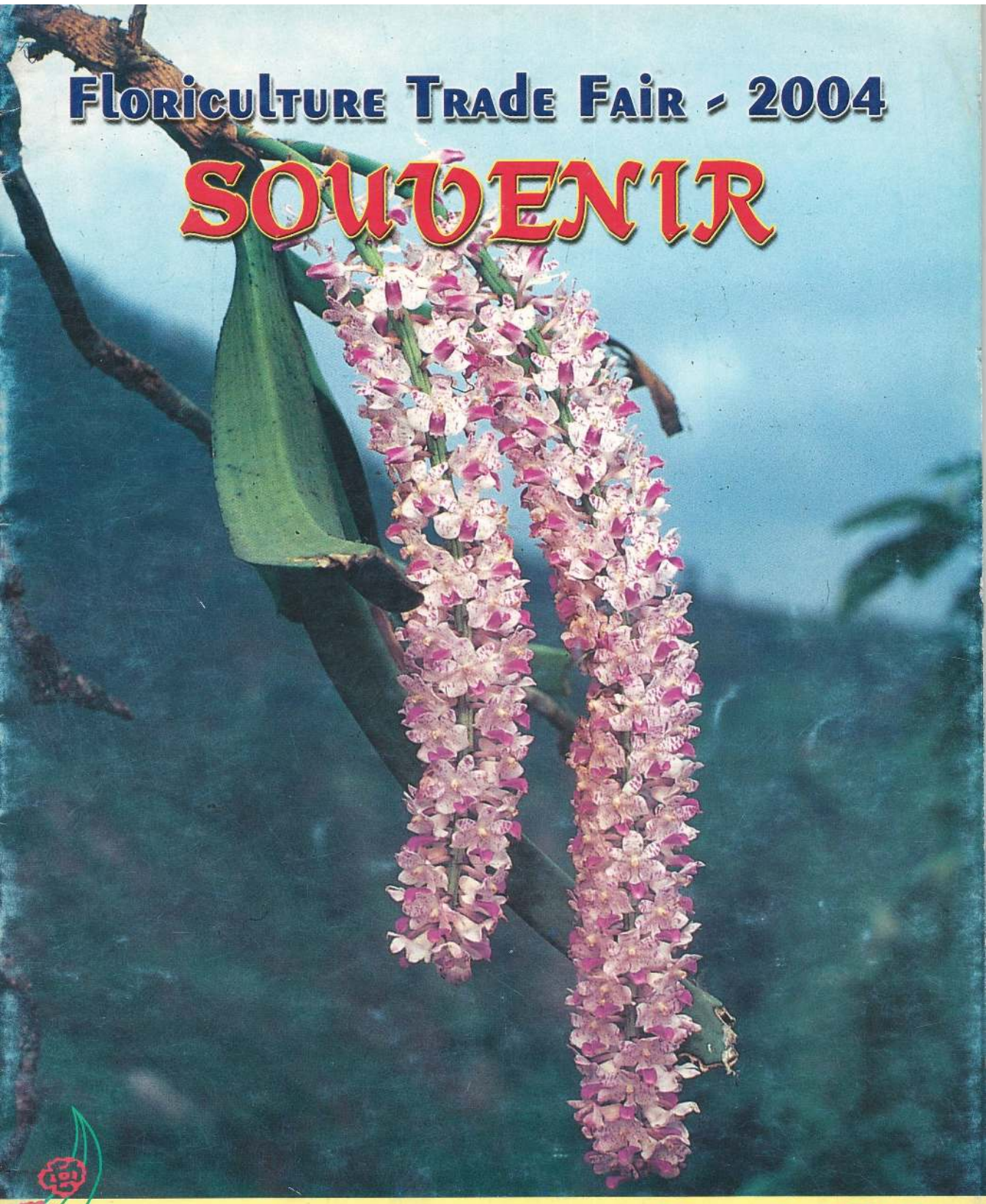
Floriculture Trade Fair - 2004

SOUVENIR



Floriculture Association Nepal (FAN)

Supported by : Agro Enterprise Centre/FNCCI

कृषि विकास बैंकले किसान, व्यापारी, उद्यमीहरूलाई ग्रामीण कृषि कर्जा, व्यापार कर्जा र बैंकिंग सुविधाहरू प्रदान गर्दछ। आफ्नो सेवालाई विश्वसनीय व्यावसायिक बनाउंदै अझ विस्तार गर्न यस बैंक कटिबद्ध रहेको छ।

अहिले–

- किसानहरुलाई आफूले तिर्नसक्ने जतिमात्र ऋण लिनको लागि उत्साहित गरिएको छ ।
- बैंक र किसान बीच बढि भेटघाट हुन सक्ने व्यवस्था मिलाइएको छ ।
- बैंकिंग कार्यालयहरु मार्फत उत्पादनशील क्षेत्रमा जाने कर्जाहरुलाई प्रोत्साहित गरिएको छ ।
- ऋण र बचतलाई संगसंगै लैजाने नीतिलाई जोडदार रुपमा कार्यान्वयन गरिएको छ ।
- श्री ५ को सरकारको बजेट मार्फत आउने विभिन्न कार्यक्रमहरु, राहतका प्याकेजहरु जस्ता तत्काल किसानलाई फाइदा पुग्ने कार्यक्रमहरु यस बैंकले गर्दै आएको छ ।

कृषि विकास बैंक

परिवार

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Floriculture Trade Fair -2004

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His Majesty King Gyanendra Bir Bikram Shah Dev

Her Majesty Queen Komal Rajya Laxmi Devi Shah

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शुभ–कामना

नेपालको भौगोलिक विविधता एवं जलवायु पुष्प व्यवसायको लागि निकै उपयुक्त मानिएको तथा पुष्प व्यवसायले उद्योगको रुप लिई सकेको आजको अवस्थामा अन्तरिक बजारमा फूलको माग पूर्ति गर्नुको साथै अन्तराष्ट्रिय बजारको माग र चाहना अनुरुप फूलहरु उत्पादन गरी निर्यात गर्नु पर्ने आवश्यकता छ । नेपाल उद्योग वाणिज्य महासंघको कृषि उद्यम केन्द्र मार्फत प्रवर्द्धन गरिएको फ्लोरीकल्चर एशोसिएसन नेपालले नेपालमा व्यवसायीक पुष्प खेती र सोको बजार प्रवर्द्धनका लागि खेल्दै आएको भूमिका अत्यन्त प्रशंसनीय छ ।

यस क्रममा फ्लोरीकल्चर एशोसिएसन नेपालले नेपालको पुष्प व्यवसाय र यससग सम्वन्धित उद्योग व्यवसायको विकासका लागि विभिन्न स्वदेशी व्यवसायीहरुलाई सहभागी गराई पुष्प व्यापार मेला आयोजना गर्न लागेकोमा मलाई अत्यन्त खुशी लागेको छ । यस्ता मेला पुष्प व्यवसायको विकास तथा यस व्यवसायमा लाग्न उत्सुक व्यक्तिहरुका लागि प्रेरणाको स्रोत हुने कुरामा दुईमत छैन । यस्ता मेला पुष्प व्यवसायको विकास तथा विस्तारका लागि मार्ग निर्देशक हुने अपेक्षा मैले गरेको छु ।

अन्त्यमा, उक्त मेलाका अवसरमा एशोसिएसनले विभिन्न पुष्प व्यवसाय सम्वन्धी उपयोगी सामग्रीहरु सहित प्रकाशित गर्न लागेको पुष्प विशेषांक **(Floriculture Souvenir)** पुष्प व्यवसायी र यस क्षेत्रमा रुची राख्नेहरुका लागि अत्यन्त उपयोगी हुने विश्वास व्यक्त गर्दै उक्त प्रकाशनको साथै पुष्प व्यापार मेलाको पूर्ण सफलता र एशोसिएसन तथा एशोसिएसनका सम्पूर्ण सदस्यहरुको उत्तरोत्तर प्रगतिको लागि हार्दिक शुभ कामना व्यक्त गर्दछु ।

(विनोद बहादुर श्रेष्ठ)
अध्यक्ष

Agro Enterprise Centre
Federation of Nepalese Chambers of Commerce and Industry
कृषि उद्यम केन्द्र
नेपाल उद्योग वाणिज्य महासंघ

१६ फागुण २०६०

श्री फ्लोरिकल्चर एशोसिएसन नेपाल
टेकु, काठमाण्डौ ।

विषयः- शुभकामना ।

त्यस संघले प्रत्येक वर्ष आयोजना गर्दै आएको पुष्प व्यापार मेला यस वर्ष पनि आयोजना हुने जानकारी प्राप्त भएकोमा खुशी लागेको छ । कृषि उद्यम केन्द्रको सहयोगमा प्रत्येक साल सञ्चालन हुदै आएको यस मेलाले नेपालमा पुष्प व्यवसायलाई व्यवसायीकरण गर्न ठोस मद्दत पुऱ्याएको छ भन्ने कुरामा हामी विश्वस्त छौं ।

नेपालमा कृषिको व्यवसायीकरणमा समेत शुरुको कदमको रुपमा रहेको पुष्प व्यवसाय भविष्यमा अझ फस्टाउदै जाने आशा पनि गर्न सकिन्छ । नेपालको आफ्नो भौगोलिक अवस्था र जैविक विविधता अनुरुपको व्यवसायलाई बढावा दिन सकेमा हाम्रो आर्थिक उन्नतिमा उल्लेखनीय सफलता मिल्ने कुरामा द्विविधा नहोला । साथै राष्ट्रिय एवं अन्तर्राष्ट्रिय बजारमा समेत माग रहेको पुष्प व्यवसाय नेपालमा फस्टाउनु अत्यन्त सकारात्मक विषय पनि हो । यसै सन्दर्भमा फ्लोरिकल्चर एशोसिएसन नेपालले आयोजना गर्न लागेको पुष्प व्यापार मेलाको सफलताको हार्दिक कामना गर्दै यही अवसरमा प्रकाशित हुने पुष्प विशेषाङ्क मार्फत सम्पूर्ण पुष्प व्यवसायी, पुष्पप्रेमी महानुभावहरु एवं फ्लोरिकल्चर एशोसिएसन नेपालको उत्तरोत्तर प्रगतिको लागि शुभकामना व्यक्त गर्दछु ।

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Message from President

I would like to extend my hearty gratitude to all my FAN Members for assisting me in discharging my responsibilities as a President.

I feel greatly honored to past president and past vice president for their valuable guidance to me. I am confident that their good will and support to our FAN organization will be continued in the days to come.

Our Floriculture Association Nepal (FAN) is highly thankful to Dr. Uday Raj Sharma Director General of Dept. of Plant Resources. Dr. Dev Bhakta Shakya, Director of Agro Enterprises Company (AEC), and Mr. Binod Bahadur Shrestha, the President of FNCCI, Kathmandu for their continuous support in various aspects.

Few weeks ago, a sample of cut flowers for export was sent to Dubai through Salt Trading Company, Kathmandu and have come a fruitful result for the development of Floriculture in an industrial sector with a great opportunity so far. The efforts of the owners of the nurseries working throughout the kingdom need to be admired.

Lastly, I would like to offer my kind regards to editorial committee for providing us their valuable time to publish this Souvenir 2004.

Thanking you.

MBista

Minerwa Bista
President
Floriculture Association of Nepal (FAN)

Floriculture Association Nepal (FAN)

P.O. Box No. 7651, FNCCI Building, Teku, Kathmandu, Phone No : 4267005, Fax No.:977-1-4261671

Ref.

Editorial

It is a great pleasure to present our souvenir Magazine published on the auspicious occasion of this Floriculture Trade Fair-2004 organized by FAN.

This paper comprises various articles on research and development activities to promote Floriculture in Nepal. Articles, on ornamental plants like Antirrhinum, Gerbera, Philodendron, suggesting their micropropagation technique and their habitat are quite praise-worthy. Medicinal plants and orchids with their terrestrial habitats and their traditional use have also been included. Various plants like Gladiolus and certain Climbers have also been reported from their cultivation aspects focusing thereby the various diseases that may in-vade and their control aspects. Thus, we feel, it is an attempt to provide information to be useful to general people as well as entrepreneurs.

We would like to express our deep gratitude to all the contributors who povided us with their valuable articles.

I highly express my sincere gratitude to all the business houses and our friends who have helped us in providing advertisements in the Souvenir-2004

Lastly, we wish you all happy and pleasant reading. Any coments or suggestions for further improvement in future are cordially appreciated.

Puspa Man Amatya
Co-ordinator
Souvenir Committee

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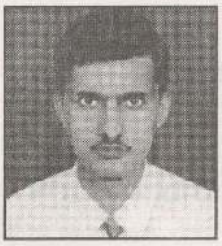

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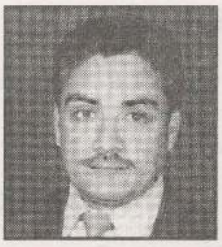

Mr. Mohan Bikram Silwal
Executive Member

Mr. Mohan Mali
Executive Member

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Post Harvest System For Cut Flowers

Prakash Oli
Post Harvest Technologist

Introduction

Floriculture business, in context of Nepal, is relatively new one which has shown its remarkable development in last twelve years of organized efforts. The increasing trend of consumerism in the major urban areas and gradual development of flower use (Flower Fashion) has been favoring the growth of this sector. As a conservative estimation, there is an increment in the demand of Gladiolus and Rose by 39 percent and 45 percent each year. This is a good symptom of the growth of floriculture business in Nepal. As a result of this increment, this sector is getting popular as an attractive profitable business within the country (as an estimation there is an annual increment in the nurseries by more than 25 percent each year).

While analyzing the trend of growth in floriculture sector, it will have to explore the newer markets both inside and outside the country to be sustainable and prospective. In this particular context of market expansion and delivery of quality product, post harvest system will play one of the major roles to be able to succeed in this venture.

Post harvest, as its name implies, is the package of operational activities, which is to be adopted after harvesting up to the end use. It ensures the lower loss and better price of the produce, maintains balance between supply and demand, manages the shelf life prolongation by reducing the loss, deterioration and spoilage and after all, it helps to impart the good image of produce and support in establishing the brand prestige. Similarly, a good post harvest system is required as mandatory provision in some of the major floriculture importing countries, so, while talking about the exportation of floriculture product to such countries good post harvest system should have to be considered for mandatory provision too.

Factors Related To The Post Harvest Quality Of Cut Flowers

1. Harvesting Maturity

The maturity at which the flowers are cut plays a significant role in the post harvest quality of the flowers. Harvesting of too matured flowers may lead to the decay in few days whereas too immature flower will never open in full blossoms. Many flowers are best cut in the bud stage, which open during storage, transportation and distribution. Although this rule does not apply for all flowers. It is the grower who should decide the harvesting maturity of the flowers considering the different aspects such as the period of storage, destination, transportation, harvesting condition, price and so on.

2. Respiration

The cut flowers, although detached from the plant, are still the living entities that respire and proceed metabolic transformation. As the respiration of flowers

proceeds, there occur many chain reactions that are detrimental to life of flowers. Some of the effects due to the respiration are -

a. Depletion of stored plant food material- Higher the rate of respiration, higher will be the exhaustion of the reserved food materials.

b. Evolution of Heat- As a result of exhaustion of food materials, the heat will be evolved and the heat so produced may adversely affect the quality of flowers.

c. Moisture Loss- The heat produced during the respiration will also enhance the moisture loss causing the shriveling and wilting of the flowers.

d. Ethylene Production- the ethylene gas will be produced as a by-product from respiration. This gas is also detrimental to the product quality.

e. Death and Decay- As the respiration causes the ageing process, it will finally lead to the death of the plant tissue and after the death, decaying will start, which will contaminate even the healthier plants too.

The above-mentioned metabolic processes causes the ageing process, which cause deterioration of the produce. Hence the process of respiration should be lessened to optimum level to avoid higher metabolic rate and other adverse effects. *(but the rate of respiration should never be stopped since it causes the death which is called anaerobiosis)* respiration control can be done by two methods, Viz- mechanical and chemical. In mechanical control measures, temperature management, Carbon dioxide concentration, fogging etc are used whereas in chemical methods, different types of hormones and chemicals are used.

3. Transpiration

Transpiration is the natural phenomenon of all the plants and incase of the cut flowers, there comes a situation of water imbalance because there is no water intake but it proceeds to give off the moisture. As a result of this process, the plant gets wilted and starts yellowing of leaves and stalks. The transpiration rate is higher in case of leafy and foliage type flowers due to their higher surface area to give off the moisture.

In order to avoid from this wilting process, the cut flowers should be stored in high humid area (RH 95%) and the respiration rate should be minimized. Watering before cutting the flowers from its plant will also help to combat this situation for short consumption. Any bruises, or mechanical injuries in the flower, leaf or stalks will catalyze this situation. Hence, care should be taken during harvesting, handling and transportation.

4. Temperature

The rate of respiration and increment in temperature of the cut flowers has the direct relationship. Hence keeping the produce in low temperature can notably decrease the rate of senescence. The optimum storage temperature for most of the cut flowers lies at 0-2 °C at RH of 95% but some tropical flower products like Anthurium are sensitive to chilling injury and these should not be stored below the temperature of 10 °C. The flowers cool rapidly and if they are brought to a warmer place for packing or other purposes; they warm quickly and give off the water of condensation. This is particularly objectionable and detrimental in case of packed flowers where the moisture is condensed on the inner side of packaging

material. In order to get rid of this problem, the flowers should be packed in cool room or the packing material should be holed and the cooling method adopted should be of forced air-cooling.

5. Food and Water Supply

The buds and the flowers of any plant entity are growing tissues, which are at their maximal onset of development, and for this, they require more water and food material than any other parts of the plants. When we detach the flowers from their plant, they get deprived of food and water and as a result of which the process of wilting and shriveling proceeds. Hence in order to let the bud develop into flower and lengthen the life of flower, water and food for the plant is necessary. In order to regulate the food supply to the flowers and opening buds, pulsing is done after harvest in sugar solution. The sugar solution may contain 2-20 percent sucrose and it should have appropriate biocide to inhibit the growth of microorganisms. Likewise, the flowers are rehydrated by the use of water but alkaline water should not be used since it may contain ions such as sodium and fluoride which are very much toxic to some variety of flowers. But in some cases, water may not transfer up to the flower via stem due to air embolism and bacterial plugging. Air embolism can be prevented by recutting the stem under water or dipping them in a warm vase solution.

6. Ethylene

Ripening fruits and combustion of gasoline, firewood and so on produces ethylene. Some flowers especially carnations and some rose cultivars are torn, wilted and shattered due to the effect of ethylene. In the polluted environment with burnt fuels and gas lines, this problem may persist seriously. Hence in order to resolve this situation, flowers should be transported in closed system and they should never be stored with ethylene producing commodities such as fruits. Refrigeration greatly reduces the effect of ethylene. In addition to this, treating the flowers with silver thiosulphide has been shown to reduce this adverse effect.

7. Mechanical Injuries and Disease

Mechanical injuries and diseases are also the major factor of flower quality. Bruising, torn petals and injured parts are the major places of microbial attack and the decay starts from there. Furthermore, the diseased and injured flowers have higher rate of metabolism and transpiration, which result in the rapid deterioration of the product. Flower sorting, grading, dedicated handling and suitable packaging is necessary to combat this adverse situation.

Management of Post Harvest System

The post harvest management system should be adopted at an adequate level to ensure the good quality of the produce leading to the brand image and profitability. Basically, this will include the temperature management, transportation, handling, grading and packaging system management as well as in the consideration of display and storage. Since the floriculture sector is taking sizeable and it has to enter into the more competitive market from tomorrow, the growers and sellers should draw their attention to improve their product by the use of good practices available now and they should consider to implement further mechanized and sophisticated systems to be able to enter into the international markets.

Micro propagation of Gerbera

Asha Karki
Biotechnology Section
DPR

Introduction

Gerbera belongs to composite family. It is commonly known as African Daisy which produces very attractive flowers. It is an important commercial flower grown throughout the world under a wide range of climatic condition. The genus Gerbera was named in honor of German naturalist, Traugott Gerbera. This is a native flower of south Africa and Asiatic region. It inhabits mostly in the temperate mountain region. In India, Gerbera is distributed in the temperate Himalayas from Kashmir to Nepal at an altitude of 1300-2000m. Based on the flower heads they may be grouped into single, semi double. This is suitable for beds, borders, pots and rock garden. Flowers are of various colors and forms and can be arranged in different floral arrangement. It is a popular pot plant for garden decoration and cut flower production.

The genus Gerbera consists about 40 species of perennial flowering plants. Out of all, the genus G. jamesonii is used for cultivation. The propagation of this species is done in following ways.

1 Seed - Seed propagation is not always satisfactory because it produces a great deal of variation. It also requires longer time to produce flowering plants.

2. Vegetative propagation- Vegetative propagation on the other hand solved the problems of variation and plant propagated from this method shows better than from seeds. This method involved including large clumps into smaller unit in the field.

3. Cutting - Gerbera are also propagated through cuttings. Desired plants are kept without water for three weeks, roots are pruned and planted in peat at 25-30°C humidity. The bud in the axial in the leaves is detached and rooted in rooting media. These plants are ready for transplantation in two or three months. Approximately 40-50 plants can be produced within 3 months from a single mother plant.

4. Micropropgation- In this method various plant parts such as flower bud, petiole and shoot tips are used as explants for micro propagation. The clean and healthy plants are used for shoot tip culture. The selected shoot tips explants are washed in running tap water for one to two hours with 4-5 drops of Teepol. After washing shoot tips explants are treated with 0.1%mercuric chloride $HgCl_2$ for 6-8 minutes and then washed 4-5 times with sterilized water.

Aseptically the shoot tips are cultured on MS media supplemented with 6- benzyle amino purine and Alfa nepthalene acetic acid. This media is solidified with 0.8% agar powder and pH is adjusted to 5.8 before autoclaving. After inoculation, shoots tip are kept in culture at room time 25 ± 2°C under 16 hour photo period at light intensity 3000lux. The proliferated shoot are

sub-cultured every 4-6 weeks interval of time. After the initiation of plant the culture bottles are kept in the green house for acclimatization.

The micro shoots are taken out carefully from the culture bottle with the help of forceps. Before rooting micro shoots are washed gently in water to remove the agar. When micro shoots are 3-4 cm they are transferred into non-sterile sand for initiation of root. These micro shoot are rooted within 4 -6 weeks. After the development of roots the plants are transferred to soil. Later on, they grow up and flower normal plants.

Conclusion

Micro propagation methods are proved to be highly successful for multiplication of Gerbera enabling nurserymen to cultivate new varieties for cut flower production. In order to minimize soil born pathogen like Phytopthora, Fusaruim etc., disinfections of soil is necessary for commercial production. So for better flowering, disease free tissue cultured plants are best for field cultivation. Therefore, Gerbera for cut flower can be cultivated in large scale to fulfill the market demand in kathmandu valley and as well as outside the valley.

The demand of cut flower of Gerbera is being met through import from India. Hence by adopting the method of tissue culture, Nepal need not depend upon import while on the other hand, this business can emerge as one of the export oriented industries.

Micropropagation of Fuschia Hybrida

Pramila Joshi
Keshari Rajkarnikar
NHPL, Godawari

Introduction

The genus Fuschia belongs to family Onagraceae. It has about 50 species, most of them are native to central and south America and preferring humid and shadowy mountains (1000m-3000m). Fuschia are most ornamental and popular flowering plants. They are also used as bedding plants. They are normally multiplied vegetatively from cutting. Micropropation is the potential means for mass production to reduce both cost and time factor. The present work describes a method for the micropropagation of Fushchia hybrida.

Material and method

Two-year -old Fuschia hybrida plant was taken as mother plant from Royal Botanical Garden. Nodal cutting of 1-2 cm were taken, washed for half an hour on flowing tap water. They were washed with distilled water. Surface sterilization was done by treating the explants with 0.1% mercuric chloride for 3-4 minutes. Then they were rinsed for 4 times with sterilized distilled water in aseptic condition.

The explant of appropriate size (less than 0.5cm) was cultured into the Murashige and Skoog's medium (MS). The medium was supplemented with 0.8% agar, 1 gm/1 casein hydrolysate, 30gm/1 sugar without hormone. The cultures wrer incubated at 25 ± 2°C and 16 hrs. of photoperiod. They stop the exudation of phenolic compound, they were subcultured on MS medium with different concentration of BAP (Benzyl amino purine) and NAA (Nepthalene acetic acid). Their growth reading was taken in every four weeks.

After finding the optimum concentration of hormone for shoot multiplication, multiply these micro shoots to require quantity and their shoots were transferred on non-sterile sand for rooting in green house. For rooting, the microshoots were taken out from flask, washed the agar with tap water, the microshoots were cut into 2.5 to 3cm and planted in non-sterile sand in seed box or propagater.

Result and discussion

The nodal explant seemed good for culture. The exudation of phenolic compound from explant was necrotic so that they were subcultured every day for at least 5-6 times daily.

Table-plant responses on MS medium with different conc. of hormone

BAP mg/1	NAA mg/1	No. of shoots	Growth Pattern
MS control		2-3	1-3cm long, looks unhealthy and thin
0.5	1	More than 10	3-5cm long, not uniform
1	1	More than 10	2-3cm long and uniform
2.5	1	More than 10	0.5-1cm long, stunted
5	1	More than 10	1-3cm looks verified

The above table, showed the best medium is the MS medium supplemented with 1mg/1 BAP and 1 mg NAA for microshoot multiplication and for best quality of shoots, but

John H Stevenson and Roberts E Harris found that optimum concentration of hormone was BAP 3mg/1 and 2ip 5 mg/1. The result of multiplication microshoot was good after third subculture, microshoots proliferated more than 50.

Then the microshoots were ready for rooting in non-sterile sand. The microshoot initiated roots after 15 to 20 days. The percentage of rooting was good all year around except in winter season.

John h. Stevenson and Roberts E. Harris (1979) added PVP (polyvinyl Pyrrolidone) at 0.01% (w/v) to the medium to overcome exudation of phenolic compound from explants. They also used B5 liquid medium with either BAP or 2ip for proliferation of shoots. But in our contest, explants were subcultured daily for five days to overcome necrosis of explants due to exudation of compound from explants and used solid MS medium with auxin and cytokinin for multiplication of microshoots.

Conclusion

It is apparent that Fuschia hybrida can be rapidly multiplied in vitro by above described method. It is an alternative method to conventional propagation. Mature flowering plants derived from tissue culture appeared identical to the parent plants.

Reference

1 Stevenson, J.H., et R. E. Harris. 1980. In vitro plantlet formation from shoot-tip explant of Fuchsia hybrida cv. Swingtime. Can. J. Botany.

2. Mus\rashige T. Skoog F.A revised medium for rapid growth and biossays with Tobacco tissue culture. Physiol. Plant 15 473-497.

Micropropagation of Antirrhinum

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Introduction

Antirrhinum (Antirrhinum majus) belonging to family Scrophulariaceae is commonly known as snapdragon. It is a perennial plant but treated as an annual or biennial. It is one of the principal cut flower crops grown in many parts of the world, under suitable environment during the growing period, in tropical subtropical and temperate countries. Magnificent flowers are borne on terminal long spikes in many colours with numerous shades. It has good keeping quality and flowers remain fresh for several days. All these things make it excellent cut flower. It is also highly suitable for various landscape plans as bedding, rockeries, or herbaceous borders. The variation in plant height in different types and groups provide wide scope of using antirrhinum for different purpose in garden.

Snapdragon (Antirrhinum majus) is commonly grown for garden display and for cut flower. It is broadly divided into three groups-a). Tall b) Semi-tall and c) Dwarf.

Propagation

Seeds are sown in seed boxes, pans and pots or on raised bed. It takes about 3-4 days to germinate. Seedlings of antirrhinum should be transplanted when the first sets of leaves are fully developed.

Antirrhinum may be propagated through tissue culture. Parts of the plant such as meristem, shoot tip and seed were taken as an initial material for tissue culture. Propagation of plants through tissue culture from seeds are given as follows.

Seed were surface sterilized with 0.1% of mercuric chloride and followed by rinsing with sterilized distilled water for few times. The sterilized seeds were cultured in MS basal media solidified with 0.8% agar powder and pH is adjusted to 5.8 before autoclaving and incubated under 16 hours light/dark cycle at 25± 2°C. The seeds start to germinate after 7 days.

After germination, cotyledons were subcultured into a media supplemented with different combination of growth hormones. Among them combination of Benzle amino purine and Naphthalene acetic acid were found to be suitable for shoot proliferation. Multiple micro shoots were come out from the cotyledons. After the formation of multiple shoots, subculture is done every 4 weeks in the same media containing growth hormones.

A single flask contains 25-30 numbers of plant. The mature cultured bottles were acclimatized in a green house for 7-10 days. The micro shoots were taken out carefully from the culture bottle with the help of forceps. Microshoots were washed carefully in water to remove the agar, then they were transferred into non sterile sand for rooting. The root initiation takes place after 7-10 days. After the development of roots the plants were transferred to soil which successfully grew up to flowering normal plant.

Conclusion

The demands of ornamental plants have been increasing every day. Plant propagated through conventional method of asexual propagation is not rapid enough to meet the demand of disease free planting materials in large quantities.

Thus producing plants in large scale is only possible through tissue culture technique. Antirrhinum is also successfully propagated through tissue culture technique in MS media supplemented with growth hormone, Benzyle amino purine and Nephthalene acetic acid.

Reference:

T.K. Bose, R.G. Miti, R.S Dhua. P.Das Floriculture and Scaping.

Agro Enterprise Center
कृषि उद्यम केन्द्र

Introduction

Agro enterprise Center (AEC), an agricultural wing of the Federation of Nepalese Chambers of Commerce and industry (FNCCI) was established in September 1991 under the cooperative Agreement between FNCCI—the FNCCI is an umbrella organization of the Nepalese private sector established in 1965 with the aim of promoting business and industry while protecting the rights and interests of business and industrial commodities–and USAID /Nepal. In the growth of past twelve years, AEC has made valuable contributions in Agro Business Development and Promotion.

Since 01 October 2002, AEC has been re-shaped with more focused Mission and Vision

The Mission

"To expand and strengthen market oriented private sector driven agro enterprises in order to increase the value and volume of high-value products sold domestically and internationally."

The Vision

"The vision of AEC in the national context is to be a strong, vibrant and sustainable private sector led agro- enterprise sector capable of contributing high and broad based economic growth, which is a pre-condition proposed strategy."

Activities Focused Onwards are

- Policy Advocacy and Policy Advices/Studies
- Market and Demand Analysis of High Value Agriculture Crops
- Trade and development focusing on Trade Fair/Exhibitions and new business development
- Strengthening Agro-Commodity Associations and supports for their development/ promotional programmes
- Agro Business Information Service including Market Information Services

For details, please contact us at

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CATALYTIC ROLE OF INSTITUTIONS FOR THE PROMOTION AND DEVELOPMENT OF FLORICULTURE IN NEPAL

– Binod Kumar Basnet

Background:

The cultivation of flowers once was hobby. But at present it has been developed into a well-established business. Consumption of floricultural products is symbolized as civilization. Recently, expansion of tourism business in Nepal has favored the floriculture business. Instead of these, concept of eco-tourism is also rising up day-by-day creating resorts at different localities, which is directly or indirectly helping to the flower nurseries. Likewise, decorating islands for the beautification of city is also consuming huge floricultural products. However, Nepal is still depending on the outside supplier to the demand of flowers in the kingdom. These activities have certainly supportive role in the development of floriculture business in Nepal. Some activities are mentioned here for appraising the floriculture business in Nepal.

Promotional activities:

1. Flower Exhibitions and Trade Fairs: Floriculture business has been initiating by Department of Plant Resource since three decades of time as a pioneer flower show/festival organizer. Royal Botanical Garden Running Shield including Competitive Chrysanthemum Flower Show is annually organized on the month of Kartik. Such catalytic function is continuing through establishing regional botanical garden.

1. Skill showing for making bookie with Anthurium at flowers exhibition at Bhrikutimandap organized by FAN.	2. flowers displayed at Flower exhibition at Bhrikutimandav for sale organized by FAN.
3. Arrangement of cut flower exhibition at Bhrikutimandav (FAN)	4. cut flowers displayed for sale at Flower Trade Fair at Bhrikutimandav (FAN)
5. Gladiolus cormlets are distributing to the Flower Users Groups at Maipkhari by Maipokhari Botanical Garden, Ilam.	6. Farmers are carrying their flowers for Flower Exhibition at Maipokhari Botanical Garden on occasion of Plant resources Day.
7. Mr Harka Bahadur Shrestha, a owner of Farm, showing his progress to Botanist Mr Binod Kumar Basnet, a represantative of DPR.	8. Flowers User Groups are preparing plastic house at Jasbire, Ilam.

2. This activity is further accelerating by Floriculture Association of Nepal (FAN) organizing Flower Show and Trade Fair at central and regional basis. Other private nursery is also arranging Flower Festival for enhancing the floriculture business in Nepal.
3. Insertion of Floriculture as Income Generating Program: The Department of Plant Resources is now adopting buy back system of floriculture products from the flower users groups for enriching the garden flora. Free distribution of marketable hybrid seeds, cormlets, cutting and other valuable plant germplasms are providing as a support for marginalized people for standardization of their livelihoods.
4. Integrated Research for Floriculture: The Department of Plant Resources is also conducting the integrated research on indigenous plants of Nepal for the characterization and evaluation of floricultural value for the promotion and development of indigenous flowers. These are Rhdodendron arboreum (Laligurans), Hypericum spp. Mahonia nepaulensis (Jamane mandro), Lilium nepalense (Ban lasun), Reinwardtia indica (Pyauli) etc.
5. Training to the Flower User Groups: The Department of Plant Resources has been organizing plant tissue culture training to the ornamental plants. Likewise FAN is providing training on flower arrangement and other relevant workshops.
6. Entrepreneurship and Financial support by Agro-Enterprise Center: The need and importance of floriculture business is also highlighted by Agro-Enterprise Center (AEC) and is supporting to various promotional activities.

Constraints for the expansion of floriculture business in Nepal.

1. Unavailability of viable hybrid seed: There are no facilities to develop hybrid flower seeds to develop our floriculture business in Nepal. Hybridization and colonization of valuable ornamental plants are still lacking.
2. Development and promotional activities: This type of activities for indigenous flower of Nepal has not been initiated by private nurserymen.
3. Lack of adequate publication : The publications about the floriculture for different clientele i.e. to Nepalese farmers are not sufficient.
4. Lack of provision of soft loan facilities: Government has not been allowing the soft loan facilities from bankers so as to promote the floricultural products.

Recommendation:

If we are able to produce the quality of products the floriculture is the means of earning foreign currency. It will be better if the Government could make policies for providing the soft loan facilities and attractive incentives for the upliftment of the socio-economic condition of rural and marginalized people.

GROWING GLADIOLUS FOR BEAUTY AND BUSINESS

– Padam Bdr. Subedi

Flower cultivation for commercial purpose is on increase now a days Gladiolus is one of flowers which have been identified for production in Nepal for commercial art flowers. Its flowers are bright, various sizes and have a wide color range.

Gladiolus gives an exotic and intriguing effect to the garden. The color range of its flowers which vary considerably in form and size, is exceptionally wide and brilliant. Its majestic form and color make it an important art-flower and bedding purpose crop. In Nepal, it is the first most important/ popular commercial art-flower crop. In cast of production area they would be grown in varying climatic conditions.

CLIMATE:- Gladiolus can be successfully grown in plains or up to an altitude of 2,500m, but in a sunny situation it grows best at an average day temperature of 15-18°c.

SOIL:- Gladiolus, although, can be grown in almost all types of soils, but sandy loam soil gives best marketable spikes and subsequent corm formation and development. The optimum pH of the soil should be between 5.5 - 7.0 so that it gives the large size of flowers and increase in corm size. Drainage is an important factor in gladiolus cultivation.

LAND PREPARATION:- The selected site or land should be dug fairly deep i.e. about 20 cm deep. Ploughing is done in August or after rains, followed by two harrowing at 15 days of interval. Good moisture in the soil is essential for good sprouting of corms. Therefore, pre-sowing irrigation is recommended. Irrigation is not fairly necessary during rainy season and also 2-4 days before the corm is dug out.

VARIETIES:- The varieties of Gladiolus can be classified according to color and time taken for flowering. The name of same important varieties are given in table 1

Early mid and late varieties of different colors of gladiolus.

Table No. 1

Color	Varieties		
	Early	Mid	Late
White	Charmglow		White friendship, White prosperity
Yellow		Icegold	Jester
Red	Candyman	Vinks	Spic & span, oscar, American Beauty
Pink	Dresdendoll	glory	Bellerina
Purple	Purple giant	Shalimar	Her Majesty King Lear, Ultima green pasture.

Planting time:- Successful zonewise planting of gladiolus could be done following as per the schedule table 2

Table No. 2

Zone	Planting time	Flowering time
Plains	July-August September-October	November-March
Midhills	February-March	May-June
High-hills	April-May	July-October

PLANTING DENSITY:-

For production of good quality spikes the crop should be planted at spacing of 45cm×45cm both ways. However, the spacing could be reduced up to 25cm×15cm for commercial cultivation.

The depth of planting could be adjusted according to the size of the corm to be planted. The depth of 7-8 cm for corm size of 4-5cm(diameter) and is lightly shallow for the smaller corms is usually recommended. Similarly, planting could be little deeper in case of lighter soils and shallow in case of heavy soils. Before planting the corms, they are to be treated with 0.01% Bavistin and 0.01% Diathane m 45 (fungicides) for an hour and dried completely in shade.

MANURES AND FERTILIZERS:-

Well rotten farmyard manure (FYM) should be a_dded @5-10kglm^2 depending upon the soil type and texture. Besides N at 30 gm/m2 , $p_2 0_5$ at 20 gm/m^2 and $k_2 o$ at 20 gm/m^2 should be applied at the time of planting. An additional dose of N at 30 gm/m^2 at 6-leaved stage is required for increasing the spike length and size of the corm after harvest. Additional of 50 gm bone meal is beneficial to the plants.

PROPAGNTION:-

Gladiolus are commercially propagated by corms which are an underground modified stem or storage organ from which new plants can be grown. Seed propagation is also possible but plant from the seeds come to flowering only after 3-4 years. On the other hand genetic purity can be maintained through vegetative propagation. Thus we can see that corms are advantageous over the seeds.

CULTURAL PRACTICES:-

EARTHING UP:-

When the crop is 30-40 days old or has attained 6-leaf stage, whichever is earlier, earthing up is done to avoid lodging by strong winds. This should be repeated as per the requirement.

STAKING:-

The operation of tying the spikes with a support is known as staking. When the spikes emerge, they may be staked as and when required, to avoid losses.

WEEDING:-

This operation is very important to obtain quality spikes and to avoid crop-weed competition for nutrients and light. Though, hand weeding at fortnight interval is the best but it is time and labor intensive. Some chemicals (weedicides) recommenced for this purpose are Atrazine and Pendimethalin as pre-emergence and Paraquate and Glyphosphate is post emergence, with the prescribed doses on the packing.

IRRIGATION:-

Light irrigations are recommended throughout the growing season to keep the soil just most. Irrigations are stopped about 15-20 days before corm maturity/harvesting to avoid corm rotting.

HARVESTING:-

The spike should be harvested with sharp knife in the morning or evening usually when atmospheric temperature is below 24°c and 10-15 cm above the ground. Then holding the bottom of the stem firmly with one hand give the flower spike a gentle downward twist with the other. The flowers on the spike should be at bud stage only 3-4 buds must have opened and rest have not. Harvesting should be done 2-3 leaves so that the plant left in the field have enough leaves stage, which help in development of the successive days.

STORAGE:-

The harvested spike should be stored at 5-7°c before marketing it will water loss through transppiration.

GRADING:-

For commercial use the spikes are graded internationally on the bud's of spike length and number of flowers per spike.

Grade	spike length(cm)	No. of flowers
Fancy	107	16
Special	96-107	15
Standard	81-96	12
Utility	81	10

But, Nepal's standard is not yet fixed. In Nepal, the spikes are being packed in this cartoon paper or boxes or gunny bags and are being sent to local and other domestic markets.

PACKING:-

50-100 spikes are prepared and packed together in a bamboo basket. Each layers of the spike bundle is separated by wrapping with tissue paper, so that lapping bundles are not brushed.

PULSING:-

During cut flower transpiration, pulsing of the spike with sucrose improves post storage of the flower. A pre-shipment short term treatment to cut flowers in which the flowers are placed in solution of sucrose (20%) concentration for a period of 12-24 hrs at 100 lu light intensity and at 20-27°C temperature when traveling vase life, promotes opening and improves the color and size petes.

LIFTING:-

When the growth of the leaf stops and they start turning brown, the plants along with the corms are lifted carefully with a fork. The surplus soil is removed and the growth is at about is cut about 2-3 cm above the new corm. The corms and cormlets are carefully separated and dried, graded and labeled to avoid mixture. These are then treated with appropriate fungicides (preferably Bavistin and Diathane MUS@1%) for half an hour dried in shade and stored at 4.4 to 6c till the next planting season.

DISEASES:-

FUSARIUM ROT:-

It causes carving, sending, stunting, yellowing or drying of leaves associated with root and corm root in field and storage. It could be cnntrolled by soaking corms in 250 ppm, Thiobendazole.

LEAF SPOT:-

In this disease, dirty dark brown to black irregular spots in long patches, mostly on apical and marginal area of leaves are formed. It could be controlled by spray of dithane M45@0.2% at fortnightly intervals.

DRY OR NECK ROT:-

On th stored corms, small, dark, superficial spots or lesions appear which can produce color rot ultimately willing the corms. It could be controlled by soaking the corms in thiobendazole at 250 ppm.

PESTS:-

Many insect pests attack gladiolus at different stages like aphides, thrips, cut-worms and mites. The first three could be controlled by spraying 0.2% ethyl parathion and the last oen by spraying 0.2% suifex.

Some Important Facts About Plants

By: Lajmina Joshi
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There are many important things to be known about plants. Pants are also just like human beings. They can respire, response to external disturbances and manufacture their own food. They have metabolical and physiological activities. There are some internal governing factors that make the plants sensitive towards the slight disturbances on them or in their surroundings thereby changing their entire life. In this context it is noteworthy to highlight some important facts about plants that we should know.

Why some plants are sensitive to touch, heat or other stimuli?

Some plants including grasses, legumes and a species of mimosa called the "sensitive plant" react to touch, heat or other stimuli by curling and seeming to wilt. These movements are caused by sudden changes in water balance. For example the mimosa plant, it has a compound leaf structure having many tiny leaflets arranged symmetrically along the forked lengths of each twig. Each leaflet has a swelling at its point of attachment. These odd swellings are the sensitive organs. Their thin walled cells are supplied with water by fine loops of conducting tissue that connect with the plants central plumbing system. A slight stimulus destroys the water balance in one or all of the swellings at the bases of the leaflets. The leaflets of a mimosa fold up when water stored in sensitive organs at their bases drains away, causing a loss of turgor. Next the twig drops as turgor loss affects cells in its base. In total collapse, the mimosa seems to wither and wilt, indicating their leaves tightly rolled up. This collapse may take no more than a second, but the recovery of last turgor is a process that may continue for hours.

What causes plant's leaves to drop or roll up on a hot summer afternoon?

Plant leaves drop or roll up on a hot summer afternoon but seems to appear stiff and fresh again the next morning. It happens due to the osmotic pressure or turgor in the leaf cells. This pressure generally declines during the day light hours when the plant is chemically most active, and rises overnight as the plants root system replenishes the water supply. On a cool cloudy day, for example, leaf turgor may not drop at all and the pores or stomata controlling transpiration on the leaf surface, will remain open but on an extremely hot dry day, the stomata may close early in the morning as a gurard cells come to their normal position due to excessive water loss.

Why the plants wilt under drought conditions?

Under drought conditions, plants wilt. Because they could not recover unless they receive a fresh supply of water before their cells die. Unable to draw moisture from the soil, all the roots, stem and leaf cell undergo sort of reverse osmosis. A negative pressure reaction travels down through the plant, shrinking and breaking up its cell structure. Species that have adapted to semi-arid climates, however, are able to withstand considerable periods of drought. The thick leaved plants known as succulents possess relatively few stomata and their leaf surface are often shiny with an abundance of water-retaining wax. For example

The cacti, most familiar of desert plants, depend for resistance to drought on

widespread root networks that drink to the utmost from occasional rainfall. Such random accumulation of water is then transferred to the plants fleshy parts for storage.

Which part of cactus functions in drought resistance?

The slime functions in drought resistance. The slime inside the cell oozes out form the cut surface of the wounded cactus plant and then it dries and seals off the cut very effectively thus resistance in drought.

How is it possible for water to be pulled up through larger plant, like a tree, for such height?

Water is pulled up through a bigger plant, like a tree, for such height due to the two physical phenomena adhesion and cohesion, which helps the water to pulled up in trees for such height. Water moves through vessels. Adhesion is the basis of capillary action helping the water in a plant's narrow sap vessels to rise. Here the water molecules are attracted to the walls of a container and the tendency to adhere makes the water molecules to tight them to the walls of a container and the water will rise. Cohesion helps in water molecules to cling tightly together. In every water molecules two hydrogen atoms is linked with one oxygen atom and at the same time, the hydrogen atoms are attracted to the oxygen atom of the nearest water molecules. This secondary attraction can produce a tensile strength of as much as 2000 pounds or more per square inch in a thin column of purified water. In this way cohesion helps the plant to raise water many times as high as the exercise waterpump pumping up water in residential building.

Why different plants have different colored flowers and fruits?

Different plants have different colored flowers and fruits. It is due to the presence of different kinds of pigment such as carotenes, xanthophylls, anthocyanins in the cell saps of flowers and fruits. Chlorophyll is basically a pigment that gives its green color to the majority of plants. Plants having lemon yellow flowers are due to the presence of a pigment carotene. Similarly the red coloring of tomato fruit is due to the presence of pigment xanthophylls. Similarly the violet color of African violet is due to the presence of violanin, an anthocyanin pigment in the cell sap.

How do some change the color in daily cycle?

Some plants change its color in its daily cycle. The color produced by an anthocyanin pigment is succumbed to change in color in shade ranging from palest pink through red to flamboyant purple. Because it is known that the anthocyanin pigment are readily influenced by such factors as relative acidity. For example one of the species of morning glory begins its daily cycle in the morning with slightly acid cell sap and a pale pink color, and in the evening, turns mildly alkaline and blue. Similarly the flowers of the Hydrangea are pinkish in the slightly acidic soil, but they turn blue under more acid or mildly alkaline conditions.

Why apple fruits show variation in colors from green to yellow and red?

Apple fruits show variation in colors from green to yellow and red. Unripe or some varieties of ripe apple fruits are green in color due to the presence of chlorophyll in them. The yellowing of apples is partly due to the disappearance of green of chlorophyll, permitting the carotene pigments in the cells of the skin to proclaim their color is. So the yellow color of the ripening apples is not due to a new pigment, the red color is. It is caused by an anthocyanin, closely related to the red colors of poppy petals.

Why do the bark of many trees like pines and oaks split into long cracks and ridges?

The bark of many trees like pines and oaks is split into long crack and ridges. This is

due to fact that the steady production of wood cells slowly makes the trunk of the tree bigger and bigger, forcing the cambium a layer and the bark farther and farther from the core of the tree. The newly formed living cells of the bark can adjust themselves to this expansion by dividing, but the dead outer layer of bark, the cork layers can not. But in birches and sycamores, it flakes off in stripes or patches.

How can be the year of the tree detected?
The year of the tree can be detected y counting the annual rings, which is formed one in each year. Annual ring is a series of concentratic rings of lighter -colored, softer, springwood and darker-colored, harder, summerwood formed in one growing season.

How can be known the climate of the tree grown site?
The climate of the tree grown site can be known by seeing the narrow and wide rings formed. In dry years only a thin ring is formed, but in years with abundant rain, wide rings is so distinctive that the are formed, and the pattern of sequences of wide an narrow rings is so distinctive that the year, in which those particular rings were formed, can be known. In this way detailed information about the climate during the years in which the tree grows can be predicted.

How does some aquatic plants help in purification of water?
Some aquatic plants, for example Eichhornia sps. Serve as water purifier by absorbing polluting elements such as nitrogen and phosphorus for their nutrient. The microorganisms living around the roots of these plants decompose organic pollutants, which result in purification of the water.

PHILODENDRON AND ITS PROPAGATION

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Philodendron belongs to the family Araceae. These plants are those, which are spreading in our kathmandu valley for the use as green foliage plants inside and outside the Hotels and parks, private gardens and roadsides. Few plants offer as much variety in leaf shape as the many species of philodendron. They are heart-shaped, arrow shaped with the margins entire to deeply incisioned. Sometimes, in some case of philodendron, the young leaves of older plants or the leaves of young plants may be quite different when compared to the matured leaves. Hence the young plants may be confused to swiss chese plants (Monstera delisiosa). The philodendron is decorative and youthfully green with reddish color on the undersides of their leaves. The plants are of climbing type or non-climbing type of which we find the following species in kathmandu valley.

Climbing Types

a. philodendron erubescens
(Red or green emerald)

b. philodendron scandens
(Heart shaped)

Non-climbing type

a. philodendron bipinnatifidum

Climbing Type

Most popular of the climbing type is the heart-shaped leaf (philodendron scandens. It has its heart shaped leaves, some 10 cm in length and 8 cm wide developed in 5 cm leafstalks. New leaves have the fresh bronze transparency that shows the plant most attractive. The orgin of P. scandens is columbia. Here in Nepal also, there is one wild species that is photos scandens L. that is a climber and is very much similar to these philodendrons.

Non-climbing type

Among the non-climbing types, the most common species that are available in our country is philodendron bipinnatifidum, which is native to Brazil. This is sometimes known as Tree philodendron, which can reach to a height of 125cm to 175cm. It possesses 10-12 lobed deeply incised leaves of around 40cm in length. The mid ribs are strong enough in comparison to the previous species. No of leaves appear on a short axis and the roots appear from the nodes.

Watering and feeding

Philodendrons can be watered regularly so that the soil is kept just moist. During watering, the leaves can be washed by water time to time in order to keep the leaves green. Some species of climbing type, they produce their nodal roots, which act for archoring on any

object. Hence, if they happen to find any most support they get anchoring as well as they tend to absorb the moisture from the aerical roots, which help in development of new rosette type of leaves. Brown leaf tips are a warning that the root system is too dry. If we want to check their growth, keep the plant in a dry place or in the place where there is much sunshine with less watering in order to keep the soil dry out, a little in between the watering period. Plants should be fed lightly with compost once in a year in order to provide the proper nutrition during the growth season.

Light and temperature

Actually the plants are not recommended to keep in the exposed sunshine area. It may even kill the plants. Bright but filtered light or indirect light will suit a philodendron well. Poor light will cause the plant lengthen, so that the nodal distance will be comparatively a little bit long at the expense of the abound leaf growth that gives this plant its charm. Temperature generally matches the room temperature or around 50-55 F.

Soil

These plants prefer the soil consisting of leaf mould, loam and course sand in the ratio of 1:1:1

Repotting

Plants should be repotted once in 2-3 years. While repotting, the volume of roots in to be reduced.

Propagation

Propagation of this philodendron can be carried out by various ways. They are

a. **stem cutting**

b. **leaf bud cutting**

c. **layering**

a) **Stem cutting:** Propagation by cuttings is a means of propagating plants by separating portions of a plant from the parent and getting them to root and hence produce new plants. It is just as common practice as sowing seeds and its way, producing the healthy seedlings. Hence the seed propagation is sexual whereas the plants rising from cuttings are terminated as "a sexual" or "vegetative". Hence in philodendron, the internodes are very short so they can be cut into very small pieces each carring at least two or three nodes carring the buds in each. when they are put in the rooting medium like soil or sand they produce roots and shoots and express their own characters.

b) **Leaf bud cutting:-** This method is also just like the stem cutting. Here the planting materials like the stem are cut into pieces, each piece carying a leaf with a bud in the axil. If the size of the leaf is too large, it so cut to reduce the size of the leaf in order to control excessive loss of water by transpiration. Sand is used as the rooting medium in the seed box. It is to

be carried out either in Feb/March of June/July, which is the main growing period for most of the plants.

c) **Layering:-** Sometimes philodendron can be propagated by layering method i.e., by making a wound in the lower part of the stem from where the plants are propagated.

It is of two types:

I) **Air layering and**

II) **Simple layering**

Both types are to be carried out in Jan/Feb of June/July

Display of plants

Philodendrons do not like excessive heat and sunlight. Hence, it is to be placed either underneath the bushes or shrubs in combination with order plants in a garden landscape or to be displayed singly in the place where there is less exposure of sunlight. The most remarkable characteristic of the plant is that if they are displayed in fully sunshine place, the leaves turn into a yellowish green. Philodendron scandens or P. erubescens can be used in displaying the plants in a hanging pot or in a pot giving a support centrally with a piece of wood covered with moss or a hoop of plastic coated with wire pressed firmly into the soil which produces an interesting shape when the plant is encouraged to grow around it.

Terrestrial Orchids of Langtang National Park

Dambar Bahadur Karki
Ganga Datt Bhatt

The Langtang National Park is the nearest park from kathmandu situating directly to the north of it in the central Himalayan region. It represents some of the best examples of graded climatic conditions in the central Himalayas. Regions ranging from mid-hills to alpine coupled with complex topography and geology have produced a bio-diversity rich unique patchwork of vegetation. This region is very rich in its unique flora, and Orchid is one of them.

Orchids belong to family orchidaceae, one of the largest families of flowering plants. Orchids are perennial or rarely annual, herbaceous plant distributing from the high mountains of the world to tropical rain forests. The great majority of orchids are resident in Asia, which is considered to be their original home. In Nepal, 363 species of orchids under 97 genera have been reported so far. Among them 6 species are endemic to Nepal and 53 species have medicinal value.

According to their habitat orchids are epiphytic terrestrial, lithophytes and saprophytic. Most of the orchids are epiphytes, few are terrestrial, very few are lithophytes and rarely saprophytes. Galeola lindleyana have been reported as a saprophytic species in the context of Nepal, while parasitic and aquatic orchids are not recorded so far.

Orchids are considered as non-toxic plants. However, this does not mean that orchids do not produce any toxins at all as this subject has not yet been fully investigated scientifically. For this reason, we should take great care. Some orchid; scents can cause headache to sensitive individuals. So we should never keep highly scented orchids in a bedroom without assessing their effects.

Orchids bloom with beautiful flowers having interesting character, and different size, shape and color. All flowers have common character; which is arrangement of "perianth" in two whorls (outer 3 sepals, inner 3 petals). Due to their attractive and durable flower, they have been made subject of great fascination for people, gardener and nature lovers. Orchids' high commercial value are becoming rare and endangered due to over collection for National and international trade. Orchid plants have great importance in floriculture and gardening. Now a days most of the verities of orchids have been developed into cut flowers. Cymbidium, Dendrobium,Ppaphiopedilum, Cattleya and Phalaenopsis are commonly used as best cut flower.

The terminology "terrestrial" is derived from the Latin word "terra" which means ground or soil. Terrestrial orchids are rooted in soil; as in all plants the roots of orchis are responsible for the supply and transport of water and nutrients. This is not their only purpose, also use for holding on.

Anonymous (1976) reported the 24 genera with 28 species of orchids from Langtang National Park. Among them 19 species were terrestrial. During our botanical expedition from 2058/3/20 to 2058/4/20, we had collected 13 genera with 20 species of terrestrial orchids. The Cephalanthera longifolia, Habenaria intermedia, Platanthera, Latilabris . Satyrium Nepalese , Liparis, Glossula and Malixis Muscifera were the common species of Anonymous (1976) and present collections.

During our expedition, we had followed two major routes, one form Dhunche (1950m.) to Gosainkunda (4300 m.) and another from Syabrubensi (1450 m.) to Michamsa (4700 m.) via Kyangin Gumba (3950 m.).

Satyrium Nepalense is very common from Ghodatabela to Gumba village (3300). Dactylorhiza hatagirea, was found in a poor status at two places (Langtang village and Minchamsa) due to lacal collection

Besides their ornamental importance, orchids have food and medicinal value. Dactylorhiza, Hatagirea, Malaxis cylindrostachya, Platanthera clavigera and Satyrium nepalense are used as food (table 1.).

Table 1: Edible orchids

Scientific name	Local name	Parts used	Uses
Dactylorhiza hategerea	Panch aunle	Tender shoots	As vegetables
Malaxis cylindrostachya	Tukuna	Roots tuber	Used as raw or agter boiling
Platanthera clavigera	Kanga	Tubers	Boiled tubers used as food
Satyrium nepalense	Thamin	Root tubers	Boiled root tubers used as food

Brachycorithis obcordata, Epipactis Helleborine, Dactylorhiza Hatagirea, habendaria intrmedia, Satyrium nepalense and Spiranthes sinensis have medicinal value **(Table 2).**

Table 2: Medicinal orchids

Scientific name	Local name	Parts used	Uses
Brachycorûthis obcordata	Gamdol	Root	Used as tonic,expectorant and astringent.
Epipactis helleborine		Tuber	Used in headache and stomachache.
Dactylorhiza hatagirea	Panch Aunle	Root	Used as tonic, used to control bleeding, and in stomach disorder
Habenaria intermedia	Panch Aunle	Whole plant	Used as Tonic, used to prepare chyawanprash
Satyrium nepalense	Thamin	Root	Used in malaria and dysentery
Spiranthes sinensis		Shoot	Shoot paste used for sores

Langtang National Park represents the following terrestrial orchids given in table number 3.

Table 3: Terrestrial orchids of Langtang National Park.

Scientific name	Altitude (meter)			
	1000-2000	2000-3000	3000-4000	4000-5000
Anthogonium gracile	+			
Arundina graminifolia	+			
Brachycorythis obcordata		+		
Calanthe puberula	+	+		
Cephalanthera longifolia		+		
Chusus roborowskyi			+	
Cypripedium himalaicum			+	
Dactylorhiza hatagirea			+	+
Epipacts helleborine		+		
Goodyera fusca			+	
Goodyera repens		+		
Gymnadenia ensifolia			+	
Habenaria ensifolia		+		
Habenaria intermedia		+		
Herminium duthiei			+	
Herminium josephii			+	
Herminium lanceum	+	+		
Herminium mackinnonii			+	
Liparis glossula		+	+	
Malaxis cylindrostachya			+	
Malaxis muscifera			+	
Neottianthe secundiflora		+		
Pecteilis susannae	+			
Perisylus elisabethae			+	
Perostu:is fallax (?)			+	
Peristylus goodyeroides		+		
Platanthera clavigera		+		
Platanthera edgeworthii		+		
Platenthera latilabris		+	+	
Satyrium nepalense	+	+		
Spiranthes sinesnis		+		

References:

Anonymous (1976) .....flora of Langtang and cross section Vegetation Survey. Bulletin of the department of Medicinal plant Nepal, No. 6, Kahtmandu.

Dhal, Sajan (1994) ..... alpine orchids of Nepal. Proceedings of II National conference on science and technology, page (612-615) 1994, RONAST.

Rajbhandari, K.R. and S. Bhattarai (2001) ..... Beautiful orchids Nepal

Shrestha, Rose (2001).....Medicinal orchids of Nepal. Abstracts: Nepal-Japan Joint symposium on conservation and Utilization of Himalayan Medicinal Resources, page 62. organized by DPR and SCDHMR Japan.

Baidya, B.N. and Nirmal Joshi (2001).....orchids of Nepal. Their commercial potential and related conservation issues. First international floriculture trade fair 2001. Floriculture Association Nepal.

नेपालमा फूलको खुद्रा व्यवसाय: चुनौती र संस्थागत महत्व

- बज्र कुमार राई
(पुष्प खुद्रा व्यवसायी)

समयको प्रवाहसँगै मानवीय इच्छा आकांक्षा र धारणाहरू परिवर्तन हुँदै जाने क्रममा मानिसले अनेकन बस्तुहरूको प्रयोगलाई आफ्नो जीवनशैलीमा स्वीकार्दै आएको पाइन्छ। ती मध्ये प्राचीनकालदेखि नै फूल र मानव जीवन एकापसमा अनन्य साथीको रूपमा प्रस्तुत हुँदै आए। आजको यो व्यवसायिक मोडसम्मको यात्रा गरिसकेको छ हामी एकिनसाथ भन्न सक्दछौं कि संसारमा सबैको जिन्दगीसँग धर्म, कर्म, सभ्यता-संस्कृति, परम्परा-रीतिरिवाज छ, त्यो सम्पूर्णताभित्र फूलको महत्व अति नै उच्च स्थानमा स्वीकार्य पनि छ।

नेपालमा शताब्दिऔंदेखि नै फूलको प्रचलन चलिआएको हो भन्दा अत्युक्ति नहोला। हाम्रो सामाजिक दिनचर्यामा फूललाई अत्यावश्यक बस्तुको रूपमा मूल्याङ्कन गरिएको छ। आफूभन्दा ठूलाबडा, दौतरी र सानाहरूलाई भेट्ने, विदाई गर्ने, आशिर्वाद लिनेदिनेदेखि कुनै पनि धार्मिक स्थलमा ईश्वरीय प्रार्थनाको निम्ति फूल चढाउने चलन हाम्रो सभ्यता र अस्तित्वसँग गाँसिएको छ। फूलबिना हाम्रो कुनै पनि शुभकार्य अलग छैन। हाम्रो घर वरिपरि विभिन्न जात/जातिका फूलहरू रोप्ने-फुलाउने र प्राकृतिक सुन्दरताको आनन्द लिने गरिएका प्रमाणहरू गाउँघरदेखि शहर बजारसम्म आँखा अगाडि छँदैछ। वा फूल किनबेचको व्यापारिक प्रयोजनले भने शायद धेरै बूढो उमेर खाएका छैन।

हाम्रो समाजमा मठ-मन्दिर, चोक भञ्ज्याङबाट नाङले व्यापारबाट फूलको व्यावसायिकताको श्रीगणेश भएको भन्न सकिएला। स्थानीय मानिसहरूले वीसौवर्षदेखि आफ्नो नजिकको धार्मिक स्थल वा चोकमा स्थानीय जातका फूल-माला, गुच्छाहरू बिक्री वितरण गर्दै आएका पनि छन्। यसको पूर्ति स्थानीयस्तरबाट नै हुँदैआएको छ। वा आजको यो ८-१० वर्षको इतिहासमा नेपालमा फूलको व्यवसाय र व्यावसायिक महत्व तिव्र गतिमा अगाडि बढेको छ। यसकै फलस्वरूप हामी बीचमा स्थापित छ (Floriculture Association, Nepal (FAN) नामक साझा संस्था।

यस व्यवसायको धेरैवटा क्षेत्रहरू छन्: जस्तै नर्सरी म्यानहरू, कट फ्लावर्स उत्पादकहरू, निर्यातकर्ताहरू, थोक बिक्रेताहरु, खुद्रा बिक्रेताहरु आदि। सयौ संख्यामा आफ्नो क्षेत्रमा काम गरिरहेकाछन् सबैले। वा यहाँ उल्लेख गर्न खोजको विषय चाहिँ चुनौतीपूर्ण फूलको खुद्रा व्यवसाय र व्यवसायी को हो ?

सम्पूर्ण नेपाल मध्येको करिव ९०% फूलको खुद्रा पसल राजधानीमा रहेकाछन्। सवै संख्या हेर्दा ५०-६० को लगभगमा फूल पसल विस्तार भएको देखिन्छ। यो संख्या राजधानीमा मात्र ५० को हाराहारीमा छ। यसबाट दैनिक ५०-८० हजार रुपैयाँ कारोबार हुने गर्दछ। यसबाट प्रत्यक्ष १५०-२५० मानिस स्वरोजगार बनेका छन्। एउटा पसलमा झण्डै ४ जनाले दैनिक खट्नु पर्ने हुन्छ। यसको मासिक खर्च २०-५० हजार रुपैयाँसम्म देखिन आउँछ। यसरी यो व्यवसायमा एकातिर राजधानीको चर्को घरभाडादर तथा अर्कोतिर अनियमित र चुनौतीपूर्ण व्यापार सबैलाई एउटा व्यवसायीले धान्न कठीन बन्दै गएको छ।

यसरी झट्ट हेर्दा फूल पसल देखिए पनि यसभित्र धेरै कठिनाइहरू छन् । यस व्यवसायमा २ प्रकारका मानिसहरू लागेका छन् । एउटा नेपाली नागरिक र अर्को भारतीय नागरिक (बंगाली) । हाम्रो बजारको (नेपालको बजार) लागि आवश्यक पर्ने फूलमाला तथा अन्य सामग्रीहरू यहाँ पर्याप्त नहुँदा भारतको विभिन्न ठाउँबाट फूल-माला तथा सजावटका सामग्रीहरू भित्र्याइने गरिन्छ। देख्दामा सामान्य लागेपनि सधै जाबो भनिने फूल-मालाले वर्षेनी करोडौं रुपयाँ विदेशिने गरेकोछ । सही अर्थमा फूको व्यवसायमा भारतीय प्रभुत्व अलग भने छैन । हाम्रा उत्पादकहरूले यसलाई समयमै मूल्याङ्कन गरेर आत्मसात नगरे भोलि हाम्रो आदत बदल्न कुनै शक्तिमान आउने छैन ।

यी सबै विषय सन्दर्भको व्यवस्थापकीय र अर्थपूर्ण जिम्मेवारी छ । Floriculture Association Nepal (FAN) लाई । यो सम्पूर्ण समन्धित व्यावसायीहरूको एउटा मात्र संस्था हो भन्न निर्धक्क हुनुपर्दछ । यस संस्थाले विभिन्न क्षेत्रमध्ये कट्फ्लावरको बजार व्यवस्थापकीयपक्षलाई मध्यनजर राखेर Floriculture whole sale market को अवधारणालाई आगाडि सारेर काम गरिरहेका पनि छ । त्यो अनुरुप सफल पनि बन्दै गइरहेछ। यसलाई अझै अगाडि बढाउनको खातिर यस व्यवसायसँग सम्बन्धित सबै व्यवसायीहरू आफूमा संस्थाप्रति प्रतिबद्धता, इमान्दारी, र विश्वासनीय भएर आफ्नो अर्थपूर्ण सहभागिता प्रस्तुत गर्नुपर्ने आवश्यकता टड्कारो बन्दैगएको छ। हुनत: हाम्रो विकल्पको बीचमा व्यवसायिक फर्म/कम्पनि, व्यक्ति आदि नभएका होइनन् । जसले हाम्रो बजारलाई पूर्ति गरिरहेका पनि छन् । व्यक्तिगत रुपमा पनि फूलमालाहरु ल्याएर होलसेलको रुपमा बिक्री-बितरण भइरहेकाछन् । यसले हामीलाई संस्थाले आफ्नो हैसियत, सामर्थ्यलाई कुशल र पारदर्शी बनाउन नसकेको होकी भन्ने छनक दिन्छ । संस्थामा संस्थागत मत भएका सम्बन्धित व्यवसायीहरूको समानप्रतिनिधित्व र समान हैसियतले प्रधानता राख्दछ । म र मेरो मात्र भन्न खोज्ने र आफ्नो प्रतिष्ठा र व्यावसायिक प्रयोजनको लागि मात्र संस्थाको जन्मदिन सम्झने व्यक्तिवादी चरित्रले संस्थालाई सधैं अवन्नतितिर धकेल्दै लैजान्छ। यसरी बेला बेलामा उठ्ने आरोप प्रत्यारोपलाई सही तरिकाले कामकारवाही गर्न खोज्दा आफैं खुम्चिनु पर्ने संस्थाको बाध्यतालाई संस्थाले कुनै न कुनै दिन त अखिर टुङ्गो लगाउनु नै पर्ने हुन्छ ।

आजको बढ्दो होडबाजीमा हाम्रो व्यवसाय र व्यवसायीले सडकमा लर्खराउनु पर्ने स्थितिको आजनै अन्दाज गर्नु पर्छ भन्ने भावना सबैमा जागृत हुनुपर्दछ । आफूले गरेको कामको तालिका भन्दा कति प्रभावकारी र कति गुणस्तरीय रहयो भन्नु राम्रो होला । हाम्रो जस्तो फूलको व्यवसायमा लागेका खुद्रा फूल व्यवसायीहरुलाई पनि समानुपातिक सहयोग रहनु पर्दछ भन्ने हाम्रो धारणा हो । संस्थाले समान व्यवसायमा लागेकाहरुको संस्थागत विचारलाई ध्यानमा राखी संस्थागत महत्व दिएर काम गरे उचित हुने थियो भन्ने मान्यता हाम्रो हो । सबैले सबैको काममा आँखा लगाए आँखाले देखे पनि कामले भ्याउन र गर्न सीप र सामार्त्य विना सकिन्न भन्ने बुझ्न आवश्यक छ । छातीमा सबैको तक्मा आफै लगाउन खोज्नु मूर्खता हो । व्यवसायमा अनुभव, सीप, सामर्थ्यले ठूलो परिवर्तन ल्याउँछ । यसको प्रतिनिधित्व संस्थाले गर्नु पर्दछ । अहिलेको जमानामा नेटवर्किङ्ग र साझा भावनाले नै समयको पहिचान दिन सक्छ । यस्तो नभए सबैसँग २४ घण्टा मात्र भएकाहरू किन व्यवसायमा तलमाथि हुन्छन् ? आखिर जतिसुकै मतान्तर भएपनि हाम्रो जिन्दगी र चिहान एउटै हुन सक्छ ।

पुष्प प्रेमीहरुः बिरुवा खरिद गर्दा सतर्कता अपनाऔं

– राधा मिरौला

विगत आठ वर्ष देखि पुष्प व्यवसायी संघ, नेपालले निरन्तर रुपमा पुष्प व्यवसायीहरुको सहभागितामा काठमाडौंमा पुष्प मेलाको आयोजना गर्दै आएको छ र यस अवधिमा एउटा अन्तर्राष्ट्रिय पुष्प व्यापार मेलाको आयोजना समेत भइसकेको छ। यस वर्ष पनि विगत वर्षको झै पुष्प व्यापार मेलाको आयोजना गरिएको छ । यसरी पुष्प व्यवसायी संघ नेपाल, राष्ट्रिय तथा अन्तर्राष्ट्रिय पुष्प व्यापार मेलाको आयोजना गर्न सफल भएकाले बधाईको पात्र भएको छ भने यस प्रकारका आयोजनाहरुले पुष्प व्यवसायीहरुलाई हौसला प्रदान गुर्नका साथै जनचेतना अभिवृद्धि भई पुष्प प्रेमीहरुको संख्यामा वृद्धि हुनु स्वभाविकै हो ।

सर्वप्रथम त पुष्प व्यवसाय वढ्नु र यसरी मेलाहरुको आयोजना सफल हुनुमा मुख्य भूमिका पुष्प प्रेमीहरुको रहेको हुन्छ। पुष्प प्रेमीहरुको वृद्धिको अनुपातमा पुष्प व्यवसायको भविष्य निर्भर हुने कुरामा दुईमत नहोला । फूल मन नपर्ने मानिस कम नै होलान् र सबैलाई आफ्नो घर आँगनमा फूल रोप्ने, फूलाउने शौख रहेकै हुन्छ। तर फूल वोट र विरुवाहरु प्रतिको ज्ञानको अभावले गर्दा शौख पूरा नभएको हुन सक्दछ । धेरै जसो फूलप्रेमीहरुले स्थापित नर्सरीहरुमा वा आयोजना गरिएको पुष्प मेलामा गएर आफ्नो इच्छा अनुसारको विरुवाहरुका विषयमा जानकारी लिई खरिद गर्नुको अलावा बाटाका पेटीहरुमा अथवा घुमन्तेहरुसँग विरुवा खरिद गर्ने गरेको पाइन्छ । यसको मुख्य कारण अनुकूल स्थानमा उपलब्ध हुनु र कम खर्च लाग्ने भएर हुन सक्छ। यी कुरा वहाँहरुमा नै छोडौं । हाल काठमाडौं र अन्य शहरहरुमा स्थानीय नर्सरीहरुले आफ्ना उत्पादनहरु विक्री केन्द्र राखेर अथवा ठेलामा डुलाएर पनि विक्री गरेको पाइन्छ। यति हुँदा पनि प्रायः ग्राहकहरु ठगिएको पाइन्छ। प्रकृतिको देन नै अनौठो छ । प्रायः विरुवाहरु मूलबोटबाट अलग गरेको खण्डमा छोटो समयमा नै ओइलाउने अथवा सुक्ने हुन्छन् भने कतिपय वोट विरुवा जो लामो समयमा (चार-पाँच महिना) पनि ओइलाउँदैनन् अथावा ओइलाउने लक्षण देखिदैन । विशेष गरी मानिसहरु ठगिने विरुवा यो दोस्रो वर्गमा पर्दछन् । यस वर्गमा मुख्यतः मानिसले रुचाउने विरुवाहरुमा विभिन्न जातका धुपी, चिनियाँ गुराँस, सुनाखरी र अन्य धेरै विरुवाहरु छन् ।

प्रसङ्ग यहाँ चिनियाँ गुराँसको गरौं । चिनियाँ गुराँसको टलक्क परेका हरिया, चिल्लापात भएका हाँगा (कटिङ्ग) डालो भरी राखेको, विक्री गरेको देखेपछि फूल प्रेमीहरु त्यसप्रति आकर्षित हुनु स्वभाविक हो । विक्रेताले हाँगाको तल्लो भाग प्लाष्टिकमा माटो राखेर गाडेको हुन्छ र आफ्नो विरुवा विकाउन निपूर्ण हुन्छ । अझ रोचक त, हाँगाको तल्लो भागमा सानो काठको टुक्रा तेर्सो पारी त्यसमा हाँगा -कटिङ्गलाई धागोले वेसरी कसेर वाँधेको हुन्छ। अब खरिदकर्ताले पनि माटोमा जरा हाली सकेको भनेर स्वीकार्नु पर्ने हुन्छ । किनभने वल लगाएर तान्दा जरा चुँडिने सम्भावना रहन्छ।

विक्री कर्ताले घरमा लगेर प्लाष्टिक निकालेर माटो सहितै विरुवा रोप्ने सुझाव दिन्छ । अझ विश्वास दिलाउनकोलागि प्रत्येक हाँगामा साना साना रंगिन उनका टुक्रा वाँधेको हुन्छ । रातो,

सेतो, प्याजी आदि र बाँधेको उनको टुक्राको रंग अनुसार फूल फुल्ने जानकारी गराइन्छ । यसरी चिनियाँ गुराँसका विरुवा काठमाडौंमा मात्र नभएर तराईका शहरहरुमा पनि बिक्री गरेका पाइयो । चिनियाँ गुराँस विशेष ठण्डा (शितोष्ण) जलवायु भएको स्थानमा हुने विरुवा हो । यस जातको जरा भएको विरुवालाई पनि सहजै स्थापित गर्न गाह्रो छ । यसरी ठगी हुन सक्ने सम्भावना लहरे धुपी लगायत अन्य विरुवाहरुमा पनि छ । तराई क्षेत्रमा राम्रो हुर्कने र प्रशस्त मात्रामा पाइने क्रोटोन, डिफेनबेकिया जातका विरुवाहरु ठण्डा जलवायु भएको स्थानमा हुर्काउन गाह्रो हुँन्छ र विशेष प्रकारको व्यवस्थाको आवश्यकता पर्दछ । त्यसकारण बोट विरुवाहरुको विषयमा आधारभूत ज्ञानको अभावमा लगानी र मेहनत खेर जाने र फूल विरुवाप्रतिको चाहना कम हुने सम्भावना हुन्छ । तसर्थ यस प्रकार विरुवा खरिद गर्न र लगाउनु पूर्व लगाउन चाहेका विरुवा विषयमा न्यूनतम जानकारी हुनु अति आवश्यक हुन्छ ।

यसकोलागि निम्न किसिमको जानकारी लिई खरीद गर्दा उचित देखिन्छ ।

आवश्यक जानकारी:

नाम: स्थानीय वा वैज्ञानिक

जात: रुख, बुछेन, लहरा वा अन्य

प्रकार: एक वर्षीय, दुई वर्षीय, वा बहुवर्षीय

हावापानी: गर्मी, ठण्डा

ठाउँको छनौट: पारिलो, सेंपिलो

समय: रोप्ने समय, फूल फुल्ने समय, बीउ संकलन वा फूल नफुल्ने, काँटछाँट, गोडमेल

प्रसारण: बीउ, कटिङ्ग, लेयरिङ्ग आदि ।

गृहशोभाका आलंकारिक बोट विरुवाहरूले घर सजाउने तरिका

– श्यामसुन्दर पन्त

हाम्रा घरहरुलाई आलंकारिक बोट विरुवाले सजाउनु हाम्रो सभ्याताको पहिचान हो । यसरी सजाउने काम हाम्रो पुरातनकालदेखिनै चली आएको छ । जुन धार्मिक दृष्टिमा आधारित रहँदै आएको छ। आलंकारिक बोट विरुवाहरु घर सजाउने उपयुक्त साधनको रुपमा अंगीकार गर्ने प्रचलन नेपालमा पनि बढ्दै छ । यसको लागि देशीयभूभाग तथा घर का मोहडाहरुले पनि साथ दिएको देखिन्छ । हाम्रो देशको अधिकांश भूभाग उष्ण तथा उप्रोष्ण क्षेत्रमा पर्ने हुनाले हाम्रो घरहरुको मोहोडा उत्तर फर्केको हुनु ज्यादै राम्रो हुन्छ र धेरै जसो घरहरु उत्तरी मोहोडाको जमिनमा उपयुक्त हुन्छन् । तर आधुनिक घरहरुको निर्माण केही दशक यता द्रुततर गतिमा बढ्दै गएको र विदेशी पर्यटकहरुको आगमन पनि बढ्दै गएकोले आलंकारिक बोट विरुवाले घर, अफिस तथा होटलहरुको आलंकारिक विरुवा (Ornamental Plants) ले कसरी सजाउने, तिनीहरुलाई कुन स्थानमा (Place of house plants) राख्दा तिनीहरुको राम्रो वृद्धि हुन्छ र आकर्षक देखिन्छन्, कस्ता विरुवाहरुलाई घर सजाउन उपयोग गरिन्छ ? आदि कुरामा ध्यान दिनु ज्यादै उपयुक्त हुन्छ । कुनै कोठा, सामुदायिक हल तथा कोरिडर सजाउन ती स्थानहरुको आकार प्रकार, पोतिएको रंग, ढाँचा (Style) आदिमा समेत भर पर्ने हुन्छ । जस्तो: ठूला पात भएका आलंकारिक बोट विरुवाहरु ठूला तथा अग्ला भित्ता भएको स्थानहरुमा राख्दा ज्यादै आकर्षक देखिन्छन् त्यस्तै गरी साना ठाउँ तथा कोठाहरुमा आलंकारिक बोट विरुवालाई भने समूहमा राख्नु भन्दा एकल ढंगबाट सजाउनु राम्रो हुन्छ ।

आलंकारिक बोट विरुवाहरुको प्रयोग केही उदाहरण:

आधुनिक ढाँचामा निर्माण भएका कोठाहरुमा अग्ला, चिरिएका र ठूला पात भएका अमरफल (Monstera deliciosa) र ठूला उन्यूहरु (Ferms) लाई सरल रेखामा राख्दा आकर्षक र मनमोहक देखिन्छन् । त्यस्तै गरी पुराना ढाँचाका कोठाहरुमा भने आलंकारिक रबर (Ficus elastica), ड्रासिना तथा लटौली (Dieffenbachia) जस्ता पातमा स्पष्ट धर्सा देखिने बोट विरुवाहरुले निकै राम्रो शोभा दिन्छन् । कार्यालय भवनहरुमा खास गरी ठूला पात भएको (Broad Leveaf) तथा कडा खालका आलंकारिक बोट विरुवाहरु जस्तो Philodendron, Dracena, Dieffenbachia, Sansevieria, Ficus elastica जस्ता आलंकारिक बोट विरुवाहरुले प्रभावकारी ढंगबाट वरपरको वातावरणलाई मनमोहक बनाउँदछन् । कार्यालय भवनहरुमा नरम र चम्किला खालका रंगीविरंगी फूल फुल्ने बोट विरुवाहरु उपयुक्त हुँदैनन् । त्यसैले यस्ता विरुवाहरु गृह शोभाको लागि मात्र उपयुक्त मानिन्छन् । राता गुलावी तथा सुन्तला र गका फूलहरु फुल्ने विरुवाहरु जस्तो Hippeastrum, Chrysanthemum र रंगी विरंगी हुने विरुवाहरु जस्तो Coleus blumei, Caladium Hortulanim हरुलाई सेता र उज्याला भित्ता भएका घरहरुको आडमा राख्नु पर्दछ र सेतो विरुवाहरुलाई भने अँध्यारो पृष्टभूमि भएका ठाउँहरुमा राख्दा उपयुक्त हुन्छ । मसिना काटिएका पात भएका उन्यू जातका Ferms विरुवाहरु र साना फूल फुल्ने

आलंकारिक बोट विरुवाहरुलाई नजिक नजिक दुरीमा राखेर सजाउनु पर्छ ।

ठूला अग्ला बोट विरुवाहरुलाई कुनै स्थानको अग्र भागमा नराखी पृष्ठ भागमा उपयुक्त हुन्छ । मध्यम उचाइ भएकालाई बीचमा र होचा तथा लहरे आलंकारिक बोट विरुवाहरु अगाडि राख्नु पर्दछ । यदि ठूला हलहरुको केन्द्र तथा बीचमा राखिनु पर्ने भएमा अग्ला जातलाई केन्द्रमा र मध्यम उचाइ भएकालाई अग्लाहरुको वरिपरि रिङ्ग मिलाएर राख्नु पर्छ र होचा खालका अलंकारिक बोट-विरुवाहरुलाई मध्यम उचाइ खालको विरुवाहरुको बाहिर रिङ्गमा मिलाएर राख्दा हलको चारैतर्फबाट आकर्षक रुपमा देख्न सकिन्छ ।

कुनै घर भित्र या हलमा छोटो समयको निम्ति प्रदर्शन गरी आकर्षक बनाउनु छ भने Chrysanthemum, Caladilum hortulanum/ Coleus blumet आदिलाई घर बाहिर राखेको गमलाद्वारा सजाउन सकिन्छ उपयुक्त संयोजन (Combination) मिलाउँदा विरुवाको बनोट (Texture) आकार (Size) , रंग र पात र फूलको किसिम हेर्नु उत्तम हुन्छ । यस्तो संयोजनको निम्ति हामीले ठूलो हरियो रंगको र पिंध फराकिलो र मुख सानो भएको काँचको भाँडोमा पनि माटो र मलको मिश्रण गरेर पनि रोप्न सक्छौं । यस तरिकालाई टेरारियम (Terrarium gardemian) भनिन्छ । ठूला टेवल सजाउन यो धेरै आकर्षक र मनमोहक हुन्छ । यस्तै बोतल, बटुको (Bpwl), थाली (Dish) र एक्वारियम आदिमा संयोजन मिलाई टेवलमा सजाई मनमोहक वातावरण बनाउन सक्छौ ।

गमलामा हुर्काएको आलंकारिक बोटविरुवाहरुलाई हामीले कोठा, हल तथा कोरिडोरका भुइहरुमा भ्यालको ल्याव र बिममा , टेवल, डेक्स र ज्याकमा, तख्ता र भ्यालखाना (Window boxes) तथा प्लाण्टर (Planter box) को साथै बाहिरी भित्ताको आडमा (Wall bracket) राखेर सजाउन सक्छौं ।

आलंकारिक बोट विरुवाको सजावटसाग सम्बन्धित अन्य पक्षहरु:

गृहशोभाका कुन किसिमका आलंकारिक बोट विरुवाहरुलाई कुन ठाउँमा र किन राख्नु पर्छ भन्ने कुरा विरुवाको संरचना (Plant Physiology) मा भर पर्दछ । हरेक विरुवालाई आफ्नो खाना बनाउन सूर्यको किरण -उज्यालो आवश्यकता पर्दछ भने श्वास प्रश्वास प्रक्रियामा अँध्यारो चाहिन्छ । तर उज्यालो तथा सूर्यको प्रकाश कति चाहिन्छ भन्ने कुरा विरुवाको शारीरिक संरचनामा भर पर्दछ । घर , कार्यालय तथा होटलहरु सजाउन कम मात्रामा सूर्यको किरण आवश्यक पर्ने तथा छाँयामा पनि हुर्कन सकने अलंकारिक बोट विरुवा तथा सूर्यको प्रकाश कति चाहिन्छ भन्ने कुरा विरुवाको शारीरिक संरचनामा भर पर्दछ । घर, कार्यालय तथा होटलहरु सजाउन कम मात्रामा सूर्यको किरण आवश्यक पर्ने तथा छाँयामा पनि हुर्कन सक्ने आलंकारिक बोट विरुवाहरुलाई छनौट गरिन्छ । बढी प्रकाश चाहिने विरुवाहरुलाई भने छोटो समय मात्र घर भित्र ल्याई राख्न सकिन्छ । जस्तो Aglaonema, Dieffenibachia Picta, Philodendron, Syngonium/Sanseveria जस्ता गृह शोभाका अलंकारिक बोट विरुवाहरुलाई धेरै कम मात्रामा प्रकाशको आवश्यकता पर्दछ । Ficus elastica, Codieum spp. Coleus blumi, र फूलफुल्ने खालका आलंकारिक बोट विरुवाहरु जस्तो Pelargonium, Poinsettia, Kalanchoe, Begonia हरुको राम्रो बृद्धिको लागि धेरै सूर्यको किरणको आवश्यकता पर्दछ । पातको सुन्दरताको लागि लगाइने हरियो पात भएका आलंकारिक बोटविरुवाहरुलाई कम मात्रामा प्रकाश चाहिने आलंकारिका बोट विरुवाहरुलाई घरको पूर्व र पश्चिमतर्फ राख्नु पर्दछ र प्रत्यक्ष प्रकाशको

आवश्यकता पर्ने बोट विरुवाहरुलाई घरको पूर्व र पश्चिमतर्फ राख्नु पर्दछ र प्रत्यक्ष प्रकाशको आवश्यक नपर्ने छाँयामा राम्रो हुने अलंकारिक बोट विरुवाहरुलाई भने घरकोको उत्तरी भाग (क्षेत्र)मा राख्नु पर्दछ। कुनै कुनै बोट विरुवाहरु केही प्रकाश र केही छाँया (Partial shade condition)को वातावरणमा राम्रो हुन्छन् । त्यस्ता आलंकारिक बोटविरुवाहरुलाई घरको दक्षिण तर्फ राखेर पर्दा लगाई बढी प्रकाश नियन्त्रण गरेर पनि राख्न सकिन्छ।

गृहशोभाका आलंकारिक बोट विरुवाहरुलाई उपयुक्त वृद्धिको लागि १५ देखि २५ फुट क्याण्डल प्रकाश १६ घण्टासम्म आवशयक पर्दछ। विरुवाहरु जसलाई प्रशस्ता मात्रामा प्रकाशको जरुरत पर्दछ। (५० देखि १०० फुट क्याण्डल) तिनीहरु Sindapsis, Ferns, र Dracaena हुन् । Aspidistra, Aglaonema, Sanseveria, Philodendron र Sungonium आदिलाई धेरै कम मात्रामा (१५ देखि २५ फुट क्याण्डल) प्रकाशको आवशयकता पर्दछ। धेरै प्रकाश चाहिने आलंकारिक बोट विरुवाहरुलाई कम प्रकाश पुग्ने ठाउँमा राखियो भने डाँठ र पात पहेंलो हुने, नबढ्ने र कमजोर हुने, छिप्पिएको पात छिट्टै झर्ने र कलिला पातहरु साना हुने हुन्छ भने कम प्रकाश चाहिने (shade loving) आलंकारिक बोट विरुवाहरु जस्तै Drancaena, Dieffenbachia, Philodendron आदि लाई चर्को घाममा राखियो भने घामैले डढ्ने, खैरो हुने र सुक्दै जाने हुन्छ। यसकारण कस्ता खालका गृहशोभाका अलंकारिक बोट विरुवाहरुलाई कहाँ राख्ने भन्ने कुरा निम्नानुसार वर्गीकरण गरिएको छ।

१. प्रकाशको आवश्यकताको आधारमा आलंकारिक बोट विरुवाहरुको वर्गीकरण:

- Araucaria cookii
- Aspidistra elatior
- Maranta leuconeura
- Monstera deliciosa
- Philodendron scandens
- Scindapsis arueus
- Selaginella Sps
- Tradescantia flaminensis
- Zebrina pendula

२. उत्तरी भ्यालको आडमा राख्दा उपयुक्त हुने विरुवाहरु:

- Aglaunema sps
- Aspidistra elatior
- Annanus comosus
- Dieffenbachia picta
- Hedera helix
- Mostera deliciosa
- Philodendron scandens
- Scindapsus aureus
- Tradescantia flaminensis
- Philodendron erubescens
- Araucaria cookii
- Begonia rex
- Chlorophytum comosum
- Pteris sps
- Impatens sultanii
- Peperomea spp.
- Sanseveria spp
- Selaginella spp.
- Zebrina pendula
- Philodendron bipinnatifidum

३. दक्षिणी भ्यालको आडमा राख्दा उपयुक्त हुने विरुवाहरु

- Acalypha spp.
- Annanus comosus
- Chrysanthemum morifolium
- Muscari
- Miniature roses
- Succulents
- Hyacinthus spp.
- Coleus blumei
- Zephranthes
- Beleroperone guttata
- Cacti
- Lantana camara
- Poinsettia spp.
- Zanstedeschia sps
- Euphorbia spp.
- Tulipa hybrida

४ पूर्वी पश्चिमी भ्यालका आडहरूमा उपयुक्त हुने आलंकारिक विरुवाहरु:

- Anthurium sps
- Begonia rex
- Bromiliads
- Cissus repens
- Dracaena spp
- Pteris
- Hedera helix
- Pandanus fascicularis
- Tradescantia Sps.
- Zebrina pendula
- Araucaria cookii
- Beloperone guttata
- Caladium horilanum
- Dieffenbachia picta
- Ficus spp.
- Gloxinia sps
- Impatens sultani
- Rhododendron (azaleas)
- Zantedeschia sps
- Palms

५. वास्केटमा झुण्डाएर राखिने विरुवाहरु:

- Asparagus sprengeri
- Tradescantia flaminesnsis
- Sedum morganianum
- Begonia pendula
- Zebrina pendula

६. लहरे खोलका आलंकारिक बोटविरुवाहरु (जाली तथा भित्तामा उपयुक्तहुने):

- Cissus repens
- Hedera helix
- Philodendren scandens
- Ficus pumila
- Hoya carnosa
- Scindapsis aureus

७. बोतल, ठूलो ल्फास्क **(Terrarium)** र बावल **(Bowl)** मा हुर्काई सजाउने गृहशोभाका आलंकारिक बोट विरुवाहरु:

- Aglaonema commutatum
- Asparagus plumosus var nanus
- Billbergia nutans
- Cryptanthus spp.
- Dracaena sanderiana
- Nephrolepis exaltata(fern)
- Peperomea spp.
- Pilea spp.
- Tradescantia flaminensis
- Selaginella spp.
- Ficus pumila
- Maranta leuconeura
- Begonia rex
- Calathea ilustris
- Dracaena godseffiana
- Adiantum cunealum(fern)
- Pteris cretica (fern)
- Philodendron scandens
- Scindapsus aureis
- Zebrina pendula
- Saintpaulia spp.
- Fittonia spp.

निष्कर्ष:

आलंकारिक बोट विरुवाहरु तिनीहरुको बनौट, आकार प्रकार तथा जातीयताको आधारमा कुनै अँध्यारो त कुनै चर्को प्रकाशमा राख्न सकिने हुन्छन्। आधुनिक घरदेखि प्राचीन शैलीका घरहरुमा आलंकारिक बोट विरुवाहरु राखी घरको साज सज्जा गर्दा वातावरण मनमोहक बन्दछन्। तर त्यस्ता बोट विरुवाहरु र ख्दा विभिन्न कुराहरुको अलावा घरको मोहडा, कोठाको आकार प्रकार, रङ्ग तथा वानस्पतिक भिन्नतालाई समेत ध्यान दिनु पर्ने हुन्छ।

सन्दर्भ सामाग्रीहरु:

- विष्णु स्वरुप ९१९९६० । इण्डुर गार्डेनिङ्ग । आई. सी. ए. आर. नयाँ दिल्ली पेज ८८
- कोकेट एण्ड लाइफ टाईम बुक्स (१९७८) फोलियज हाउस प्लाण्ट । टाईम लाईफल बुक्स, अलेक्जेण्डीया, भर्जिनिया । पेज १६० ।
- अरोरा, जे. एस. (१९९०) इण्ढोडकटरी अर्नामेन्टल हर्टीकल्चर । कल्याणी पब्लिसर, नयाँ दिल्ली । पेज १८८ ।

झाडी तथा झाडीजात विरुवाको हरियाली बार

प्रदीप कुमार खरेल
फलफूल विज्ञ (हर्टिक्लचरिस्ट)

बगैचालाई सुन्दर बनाउन रुख र चउरको जति महत्व हुन्छ त्यत्तिकै झाडी जातका विरुवाहरुको आफ्नो महत्व छ। आजकलको बढ्दो शहरीकरणले मानिसहरुको जमिन झन् झन् सिमित हुँदै गएको देखिन्छ । त्यही सीमित क्षेत्रमा उसलाई आफ्नो आवश्यकता र उत्सुकतालाई पूर्ण गुर्न परेको हुन्छ । शरहको धुँवा र धुलोबाट बच्नु पर्ने मात्र नभई प्रदुषण कम गर्नु पर्ने पट्टि पनि ध्यान दिनु पर्दछ। यसको लागि उसलाई हरियालीको सृजना गर्नु पर्ने आवश्यकताले झन् धकेलिरहेको हुन्छ । सानो क्षेत्रमा ठूलो रुखको अर्थ नहुने भएकोले झाडी जातका विरुवाहरुको खाँचो देखिन जान्छ। झाडी जातका विरुवाहरु रुखको दाँजोमा छिट्टै तयार हुने खालका हुन्छन् । यस्ता विरुवाहरुले छेउ छाउका पृष्ठ भूमिलाई छेकने काम गर्नुका साथै वातावरणमा स्वच्छता कायम गर्न मद्दत पुऱ्याउँछन्। बढी हावा लाग्ने दिशातर्फ लगाएमा Wind Breek को समेत काम गर्दछ । झाडी जातका विरुवाहरुमा चरा चुरुङ्गीले गुँड लगाउनुका साथै मीठा गीत गाएर वातावरणलाई गुञ्जायमान गराउँछन्। यसबाहेक झाडी जातका विरुवाहरुलाई विभिन्न आकारमा काँट छाँट गरेर बगैचालाई अझ आर्कषक बनाउन सकिन्छ । यसका साथै यस्ता विरुवाहरुलाई बार तथा पर्खालको रुपमा पनि विकास गर्न सकिन्छ। यसले बगैचाको Landscape लाई अझ सुन्दर बनाउन मद्दत गर्छ । बगैचामा यस्ता विरुवाहरु समावेश गर्दा झाडी विरुवा बारे राम्रो जानकारी हुनु आवश्यक देखिन्छ ।

१. पत झड झाडी:- यस्ता विरुवाहरुको पात झर्ने हुँदा एकसमय यो नाङ्गो देखिन्छ । त्यसकारण यस्ता विरुवाहरुको बारेमा समावेश गर्दा छेउमा सदावहार झाडी रहनु जरुरी देखिन्छ । जस्तै हिविस्कस, केनोमिलस, होमोस्काल्डीया, वेगमवेली, आदि ।

२. सदावहार झाडी:- यस्ता विरुवाहरुको पात सधै रहरिहने हुँदा बगैचामा एकनासको सौन्दर्य रहरिहन्छ । यस्ता विरुवाहरुको विभिन्न आकृतिको रुपमा काँट छाँट गरेर अझ सुन्दर बढाउन मद्दत पुऱ्याउँछ। जस्तै धुपी, धगारर, कनिके, बकसस, यसनिभर्स, चिया, आदि ।

३. फूलफुल्ने जातका झाडी:- कनोमेसि, हिविस्कास, कामिनी ज्वाइ, चमेली, वेली, केमेलिया, एजेलिया, इन्द्रकमल यस्ता विरुवाहरुले आफ्नो फूलबाट बगैचाको सौन्दर्य बढाउँछ। फूलफुल्ने समयमा बोट नाङ्गो हुने र फूल फुलिसकेपछि बोटमा पात विकास हुने हुँदा यसको महत्व झन् बढी देखिन्छ । फूल मात्र नभई फूलको बास्नाले अझै गहिरो असर पार्दछ ।

४. फलबाट आनन्द दिने जानका झाडी:- कोही झाडी विरुवाहरुले आफ्नो फलबाट बगैचाको शोभा बढाइ रहेको देखिन्छ । धधंरुका फल,

निलकाँडाका फल, जमाने मान्द्राका फल, मुन्तलाका फल यसका उदाहरण हुन् ।

५. पातका रङ्गबाट शोभादिने झाडी:-
कोही झाडीहरु फुल नफुल्दा पनि सधै रङ्गीन देखिरहन्छ । आफ्ना अलंकारयुक्त पातहरुबाट निरन्तर रुपले बगैचाको सजावट गर्नमा सफल यस्ता विरुवाहरुले सडक छेउमा बनाइएका बगैचामा सफल स्थान पाएका देखिन्छन् । जस्तै छिरके निलकाँडा, कोटिनस, क्यूफिया क्रोटोन आदि ।

झाडी तथा झाडी जातका विरुवाहरु दुई वर्गमा विभाजन गरिएका छन् ।

१. पतझड जात
२. सदावहार जात

सदावहार वर्गका विरुवाहरुको वृद्धिको गति विस्तारै हुन्छ भने पतझर विरुवाको वृद्धि दर छिटो हुन्छ । किन भने सदावहार विरुवाहरुको जरा साह्रो र कडा हुन्छ । र यसलाई सार्दा पनि कठीन हुन्छ । यस्ता विरुवाहरुले उद्यानको स्थायित्व दिनमा धेरै ठूलो भूमिका खेलेको हुन्छ ।

झाडी विरुवाहरुलाई विशेष त बार वन्धेजको रुपमा प्रयोग गरिन्छ । यसको रेखान्कन गर्ने तरिका र यसका सिद्धान्तहरुको वर्णन यसरी गरिन्छ ।

क) सकेसम्म रुखहरुको छहारी वा छाँया नपर्ने ठाउँमा व्यवस्था गर्नु पर्छ ।
ख) ठूला ठूला वृक्षहरुको समीप रोभ्नु पर्दछ । जसले फूल उद्यानको शोभा बढाउँछ ।
ग) सकेसम्म पूर्व वा दक्षिण मोहडाको छनौट गर्नु उत्तम हुन्छ ।
घ) अल्गो जातको विरुवाहरु भए उनीहरुको दुरी बढी हुनु पर्छ ।

झाडी विरुवालगाउनको उद्देश्य:-

क) यस्ता विरुवाहरुले उद्यानको Landscape को सुन्दरता बढाउँछ ।
ख) आफूलाई छेक्नु पर्ने पृष्टभूमिलाई छोप्ने काम गर्दछ ।
ग) हरियालीबार लगाउँदा उद्यानको शुरुदेखि अन्तिम सम्म लगाउनु पर्छ ।
घ) झाडीयुक्त हरियालीबार लगाउँदा उद्यानमा मनोरम तथा मनमोहक वातावरणको सृजना हुन्छ ।
ङ) यसले अलंकृत एक वर्षीय फूल विरुवाको पृष्ठभूमिको काम गर्दछ ।
च) उद्यानमा विभिन्न आकारको आकृति र परखालको रुपको विकास गर्न सकिन्छ ।
छ) दोहोरो पक्तिमा झाडीयुक्त विरुवाहरुको समानन्तर गरेमा राम्रोबार अर्थात पर्खालको रुप दिन सकिन्छ ।

भूमिको तयारी:- झाडी जात विरुवा लगाउन उचित स्थानको छनौट गरी उपरोक्त सिद्धान्तलाई विचार गरी रेखांकन गर्नु पर्दछ । रेखांकन गरेका ठाउँ वा स्थल राम्ररी गोडमेल गरी ९" माटो ग्रीष्म ऋतुमा निकालेर वरिपरि राख्नु पर्छ । र अल्गो होचो ठाउँलाई समतला गरी राम्रो पाकेको गाईवस्तुकोमल राखी गोडमेल गरी राम्रोसँग माटोमा मिलाउनु पर्छ । त्यसपछि हलुका सिँचाई गरी जमिनलाई अझ समतल पार्नु पर्छ । यस्ता विरुवाहरुको रोप्ने धरातल केही ओरालो परेको हुनुपर्छ । विभिन्न प्रकारको फूल विरुवाको लागि तयारी बनाउनु पर्छ । तयारी झाडीयुक्त हरियाली विरुवाका अग्लोपनमा निर्भर हुन्छ तर ठूलो ठूलो विरुवाको लागि २० फिटको लामो तयारी बनाइन्छ । मध्यम वर्गको उचाइमा पर्ने बोट

विरुवाको लागि १५ फिट तथा स-साना विरुवाहरुको लागि १० फिट लामो क्यारी बनाउनु पर्छ क्यारीको चौडाई वृद्धिको अनुरुपनै राखिन्छ । किनभने हरेक अल्गा बोट विरुवाको लागि तीन तीन पंक्तिवद्धले निर्मित हुनुपर्छ। यस लेखमा केवल हरेक पंक्तिमा एउटै झाडी तथा झाडीयुक्त हरियाली वारको मात्र तरिका बारे बयान गरिएको छ।

हरियाली बार लगाउने विधिः- झाडी जातका हरियाली बार लगाउनु भन्दा अघि विरुवाको फूल फुल्ने समय र फलको रङ्ग हरियालीको उचाइ पातको रङ्ग र त्यसको आकार आदिको वारेमा पूर्ण ज्ञान हुनु आवश्यक छ। पतझड किसिमको झाडी जो फूल फुलिसकेपछि काँट छाँट गरिन्छ। त्यस्ता विरुवालाई मुख्यद्वारको अगाडि लगाउनु हुँदैन किनभने यसले उद्यानको सौन्दर्यमा दुर्वलता ल्याउँछ । यस्ता विरुवाहरुलाई सदावहार विरुवाको मध्यमा लगाउन पर्छ। ठूला ठूला विरुवालाई सानो र मध्यम विरुवाको पछाडि लगाउँदा विरुवाहरु छेकिन पाउँदैनन् । र सबैले आफ्नो प्रतिनिधित्व गर्न पाउँछन् । यस्ता विरुवाहरुलाई उचित दुरीमा लगाउनु पर्छ। जसले गर्दा सबैले निर्धक्कसँग फैलिने मौका पाउँछन्। फूलफुल्ने विरुवाहरु पनि आफ्नो फूलले ढकमक्कसँग सजिउन पाउँछन् । यसरी रङ्गी चङ्गी वास्नादार झाडीको फूलले आफ्नो अस्तित्वको परिचय दिन सकोस । यस्ता विरुवाहरुको जात जात छुट्याएर विभिन्न समूहमा राख्न सके अझ यसको ठाँट बेग्लै हुन पुग्छ । विरुवाहरुलाई रोप्दा चारैतिर कम्तीमा ४ फिट छोडेर रोप्न सके यसको जराहरुले राम्ररी पोषणतत्वहरु सोस्न पाउँछन् । अग्ला जातका झाडीहरु सबभन्दा पछिल्लो पंक्तिमा लगाउनु पर्छ र मध्यम र सबभन्दा साना झाडीहरु कमैसँग अगाडि लगाउनु पर्छ । छोटो अवधिका विरुवा र सदावहार झाडीलाई वर्षा यामका सार्नु पर्छ । भने पतझड जातका विरुवाहरुलाई सुसुप्त अवस्थामा सार्नु पर्छ । रोग, किरा र अस्वस्थ आकार विकार भएका विरुवाहरुलाई निकाल्नु पर्छ । सदावहार विरुवाहरुको पंतिलाई लगाउनु भन्दा अगावै केही कम गरी दिएमा विरुवाको पानी वाफ भएर जान पाउँदैन । र विरुवामा सुख्खापना हुँदैन ।

रेखदेखः- झाडी विरुवाहरुको काँट छाँट समय समयमा गर्नुपर्छ। भिन्दा भिन्दै विरुवाहरुको काँट छाँट गर्ने समय र तरिका भिन्दा भिन्दै हुन्छ । कस्तो किसिमको आकृतिमा विरुवाको रुप दिने हो भन्ने कुराको सोच पहिल्यै आफ्नो दिमागमा राख्नु पर्छ । यस्ता विरुवाहरुको सिँचाइ पनि निरन्तर रुपमा गरिरहनु पर्छ। गोडमेल र काँटछाँट समय समयमा गर्न सके स्वस्थ रुपमा झाडीका विरुवाहरुले वगैचाको सौन्दर्यलाई अझ मनोरम पारिरहेका हुन्छन् । झाडी विरुवाहरुमा लगाएको पहिलो वर्षमा फल लाग्न दिनु हुँदैन । यस्ता विरुवाहरुको हाँगाहरु फल आउने समय पछि काटी दिएमा नयाँ हाँगाहरुको वृद्धि हुन्छ र उद्यान सुन्दरता बढ्छ । फूलफुल्ने झाडीका कोपिलाहरु चिमोटी दिएमा फूलको आकार ठूला र स्वस्थ हुन जान्छन् ।

रोग र तिनको नियन्त्रणः- अरु विरुवाहरुलाई झै झाडी विरुवाहरुलाई पनि विभिन्न रोगले आक्रमण गरेकै हुन्छ । बेला बेलामा किटनाशक छर्ने कम जारी गर्नु पर्छ । किरा लागेका हाँगाहरु काटेर फ्याक्नु पर्दछ र रोग लागि सकेका विरुवालाई सक्दो छिटो उखेलेर

फ्याक्नुको साथै उक्त स्थानमा नयाँ विरुवाहरु थप्नु पर्दछ ।

केही शोभनीय पातका लागि रोपिने झाडीहरुः-

१. सेतो छिर्के निलकाँडा (duranta)
२. कोटिनस (Cotinus)
३. आकालिफा (Acalypha)
४. कुफिया (Cuphea)
५. युनिमस (Euonymus)
६. कोटोन (Croton)

केही पतझर झाडीविरुवाहरुः-

१. हिविस्कस (Hibiscus)
२. कनोमिलस (Chaenomeles)
३. लाल पाते (Euphorbia)
४. खरेटो (Phyllanthus)
५. टुकी फूल (Holmoskoldia)

केही सदावहार झाडीहरुः-

१. घघांरु (Pyracantha)
२. कनिके (Ligustrum)
३. धुपी (Thuja)
४. कामिनी (Murraya)
५. बसस (Buxus)
६. इन्द्रकमल (Gardenia)
७. वेली (Tracheospermum)

केही फूल फुल्ने झाडीहरुः-

१. रातो कमल (Mngnolia)
२. केनोमेलिस (Chaenomeles)
३. इन्द्र कमल (Gardenia)
४. वेली (Jasmine)
५. जाई (Jasmine)
६. हसिना (Cestrum)
७. निलजाई (Brunfelsia)
८. घण्टे फूल (Hibiscus)
९. करवीर (Nerium)
१०. टक्कर (Coffia)
११. खरेटो (Spirea)
१२. चिनिया गुराँस (Camellia)
१३. हंसराज (Hydrangia)
१४. इगजोरा (Ixora)
१५. चोथा (Plumeria)
१६. एजिलिया (Aalea)

केही बासनादार फूल दिने झाडीहरुः-

१. कामिनी Murraya)
२. वेली (Jasminum)
३. चमेली (Jasminum)
४. निलजाई (Brunfelsia)
५. हसिना (Cistrum)
६. कनकन चम्पा (Michelia)
७. इन्द्रकमल (Gardenia)

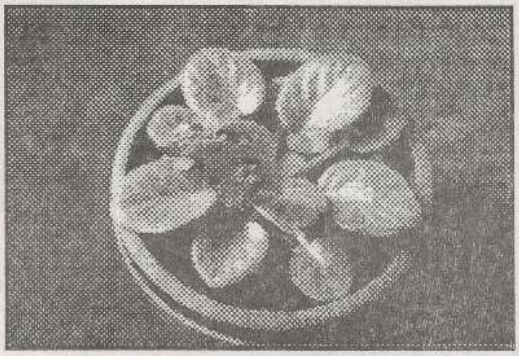
केही जंगली फूल फुल्ने झाडीहरुः-

१. Phyllanthus (खरेटो)
२. Mahonia (जमाने मान्द्रो)
३. Forsythia
४. Lantana
५. Vibernum
६. Barberry (चुत्रो)
७. Reinwartia (प्याउली
८. Spirea
९. Sambucus

अफ्रिकन भाइलेट (African Violet)

अनु सेत्लिङ्ग
सुधिमास नर्सरी

बगैचा बाहेक घरभित्रको कोठाहरुमा पनि सजावटको लागि विभिन्न फूलहरु फुलाउन सकिन्छ। ती मध्ये African Biolet पनि एक थरी हो। यो फूल अति सुन्दर र विभिन्न आकार तथा धेरै रंगहरुमा पाइन्छ।



सन् १८९२ शताब्दीमा पूर्व अफ्रिकाको Varon Walter von St. Paul ले आविष्कार गरेका हुन्। त्यसैले यसको Botanical नाउँ Saintpauliaionantha भनिन्छ।

फुलाउने तरिका:- African Violet फुलाउनको लागि ६० देखि ८० फारनहाइट सम्मको तापक्रम चाहिन्छ। धेरै चिसोमा यो फुल्न सक्दैन किनभने यसलाई अधिकतम प्रकाशको आवश्यकता पर्दछ। यदि पर्याप्त प्रकाश नपुगेमा यसको पातहरु भ्याङ्गिछन् र अग्ला अग्ला भएर विरुवा नराम्रो देखिन्छ। यदि विरुवा सप्रेका छन् भने यसको पातहरु होंचा र फैलिएका हुन्छन्।

पानी राख्ने तरिका:- पानी राख्दा यसलाई झारीबाट राख्नु हुँदैन, गमलाको पिंधमा एउटा सानो प्लेटमा पानी राखिदिनु पर्छ। जसद्वारा विरुवाले विस्तारै पानी लिन्छ तर यदि माथिल्लो भाग धेरै सुख्खा देखिएमा माथिबाट पनि पानी दिन सकिन्छ। तर पातहरुमा पानी पर्न दिनु हुँदैन नत्र पात कुहिन्छ। सोझै धाराबाट आएको पानीमा Chlorine भएको हुँदा सकेसम्म पानी थापेर एक रातसम्म राख्ने त्यसो गर्दा Chlorine को बाफ उडेर गएपछि मात्र राख्न उचित हुन्छ।

माथिका सबै गरिसकेपछि पूर्व तयारी गरेका गमला जसमा सुकेका पतकर, बालुवा र माटोको मिश्रण भएको हुनु पर्दछ। विरुवालाई सारिसकेपछि थोरै मात्रामा पानी राख्ने त्यस पछि दुई तीन दिनसम्म पानी नराख्ने यसरी सारेका विरुवालाई उज्यालो कोठा अर्थात पर्याप्त प्रकाश पर्ने भ्यालमा लगेर राखिदिने। यदि पातहरुमा धूलो लागेको छ भने कहिले कहिले स्प्रे गरी दिनु पर्छ साथै liquid मल पनि दिन सकिन्छ। यस्ता मलहरु बजारमा सजिलै पाउन सकिन्छ।

यी सबै कुराहरु मिलेमा विरुवाहरु स्वस्थ भएर हुर्किन्छ ? ९० दिन भित्रमा सुन्दर अफ्रिकन African Violet फुलाउन सकिन्छ।

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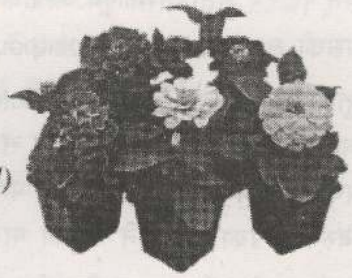

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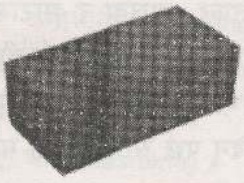

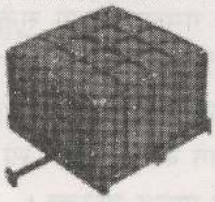

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नेपाल उद्योग वाणिज्य महासंघ

स्थापित : वि.सं. २०२२

सदस्यता विवरण	सदस्य संख्या	
	वि. सं. २०२३	वि. सं. २०६० (फाल्गुण)
क) साधारण सदस्य :		
- जिल्ला तथा नगरस्तरीय उद्योग वाणिज्य संघहरु	२१	८६ (अधिराज्यका ६९ जिल्लास्थित)
- बस्तुगत संघहरु	२	५४
ख) एशोसिएट (प्रतिष्ठान, कम्पनी, कर्पोरेशन, बैंक, उद्योग)	२१	४४५
ग) द्विराष्ट्रिय उद्योग वाणिज्य संघहरु	-	१०
जम्मा सदस्य संख्या	४४	५९५

नेपाल उद्योग वाणिज्य महासंघ

पोष्ट बक्स नं. : २६९

पचली शहिद शुक्र एफएनसिसिआई मिलन मार्ग, टेकु, काठमाडौं

फोन नं. : ४२६२२१८, ४२६२०६१, ४२६६८८९

फ्याक्स नं. : ४२६१०२२, ४२६२००७

तार : फेडरेशन, काठमाडौं

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