# FLORICULTURE

## Trade Fare 2011

*Souvenir*


**Floriculture Association Nepal (FAN)**

FNCCI Building, Teku, KathmanduTel: 977-1-4228064, 2011767

fann@wlink.com.np, fan_nepal@yahoo.com

www.fanepal.org.np, www.nepalfloraexpo.com.np

# Floriculture

*Trade Fair -2011*

# SOUVENIR

**Editorial Committee:**

*Dr. Umed Pun*
*Lok Nath Gaire*
*Janga Bd. Tamang*
*Shiva Bdr. Khadka*

*Floriculture Association Nepal (FAN)*
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**Floriculture Association Nepal (FAN)**

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Po Box: 7651, Kathmandu, Nepal

Tel: 977-1-4228064, 2011767, Fax: 977-1-4261671

E-mail: fann@wlink.com.np, fan_nepal@yahoo.com

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नेपाल उद्योग वाणिज्य महासंघ
Federation of Nepalese Chambers of Commerce & Industry

P.O.Box: 269
Sahid Sukra
FNCCI Milan Marga, Pachali
Taku, Kathmandu, Nepal
Tel: 4262061, 4262218, 4266889
Fax: 977-1-4261022, 426007
E-mail: fncci@mos.com.np
http//www.fncci.org

# शुभकामना

नेपालको भौगोलिक विविधता एवं जलवायु पुष्प व्यवसायको लागि निकै उपयुक्त मानिएको छ। पुष्प व्यवसायले उद्योगको रुप लिई सकेको आजको अवस्थामा आन्तरिक बजारमा फूलको माग पूर्ति गर्नुको साथै अन्तराष्ट्रिय बजारको माग र चाहना अनुरुप फूलहरु उत्पादन गरी निर्यात गर्न समेत नेपालले सफलता प्राप्त गरेको छ।

पुष्प व्यवसायीहरुको प्रतिनिधि संस्था फ्लोरीकल्चर एशोसियसन नेपाल (Floriculture Association Nepal) ले पुष्प व्यवसायको विकासमा खेलेको भूमिका प्रशंसनीय छ। यसको सम्पूर्ण श्रेय संघलाई दिनु पर्दछ। संघको अथक प्रयासका कारण नेपालका पुष्प व्यवसाय निकै संगठित र विकसित हुदैं गएको कुरामा कसैको पनि दुईमत नहोला। नेपाल उद्योग वाणिज्य महासंघको सक्रिय वस्तुगत सदस्य संघले हासिल गरेको यो सफलताको महासंघ उच्च प्रशंसा गर्दछ।

एशोसियसनले प्रत्येक वर्ष नेपालको पुष्प व्यवसाय र यस संग सम्बन्धित उद्योग व्यवसायको विकासका लागि विभिन्न स्वदेशी व्यवसायीहरुलाई सहभागी गराई आयोजना गर्दै आएको पुष्प व्यापार मेला यस अर्थमा निकै सहयोगी भएको मैले महशुस गरेको छु। नेपाली किसानलाई व्यावसायिक फूल उत्पादनमा हौसला एवं उत्साह प्रदान गर्न यो मेला निकै सहयोगी हुदै आएको छ। यस वर्ष पनि चैत्र १० देखि १३ गतेसम्म काठमाडौंमा आयोजना गरिने १४ औं पुष्प प्रदर्शनी/व्यापार मेलाले नेपालमा यस व्यवसायलाई अझ बढी विकसित गर्दै लैजाने थप सहयोग पुऱ्याउने विश्वास लिएको छु। पुष्प व्यवसायको विकास तथा यस व्यवसायमा लाग्न उत्सुक व्यक्तिहरुका लागि यस्ता मेला प्रेरणको स्रोत एवं मार्ग निर्देशन हुने र नेपाली पुष्प व्यवसायलाई प्रतिस्पर्धी, गुणस्तरीय बनाउन समेत सहयोगी हुने छन्।

अन्त्यमा, उक्त मेलाका अवसरलाई एशोसिएसनले हरेक वर्ष जस्तै यस वर्ष पनि पुष्प व्यवसाय सम्बन्धी विविध सामग्रीहरु सहित प्रकाशित गर्न लागेको पुष्प विशेषांक ( Floriculture Souvenir) को १५ औं संस्करण पुष्प व्यवसायी र यस क्षेत्रमा रुची राख्नेहरुका लागि अत्यन्त उपयोगी हुने विश्वास व्यक्त गर्दै उक्त प्रकाशनको साथै १४ औं पुष्प प्रदर्शनी/पुष्प व्यापार मेलाको पूर्ण सफलता र एशोसिएसन तथा एशोसिएसनका सम्पूर्ण पदाधिकारी एवं सदस्यहरुको उत्तरोत्तर प्रगतिको लागि हार्दिक शुभ-कामना व्यक्त गर्दछु।

कुशकुमार जोशी
अध्यक्ष

२०६७/१०/२४

# Agro Enterprise Centre

**Federation of Nepalese Chambers of Commerce and Industry**

# कृषि उद्यम केन्द्र

## नेपाल उद्योग वाणिज्य महासंघ

# शुभकामना

नेपाल उद्योग वाणिज्य महासंघको सकृय सदस्य फ्लोरीकल्चर एशोसिएसन नेपालले आफ्नो स्थापना कालदेखि नै पुष्प व्यवसायको संस्थागत विकास एवं प्रबर्द्धनका लागि निरन्तर रुपमा उल्लेखनीय भूमिका खेल्दै आइरहेको छ। हरेक बर्ष झै यस बर्ष पनि नेपालको पुष्प व्यवसायसंग सम्बन्धीत अन्य उद्योग तथा व्यवसायको विकासका लागि विभिन्न व्यवसायीहरुको सक्रिय सहभागितामा **"१४ औं पुष्प प्रदर्शनी/व्यापार मेला"** आयोजना गर्न लागेको पावन अवसरमा कृषि उद्यम केन्द्र/नेपाल उद्योग वाणिज्य महासंघ तथा व्यक्तिगत रुपमा मलाई अन्यन्तै खुसी लागेको छ।

कृषिमा आधारित हाम्रो देश वातावारणीय विविधता तथा प्राकृतिक सम्पदाले भरिपुर्ण भएकोले पुष्प व्यवसायको विकास तथा प्रबद्धनको सम्भावना अझ बढी देखिएको छ। हाल उद्योगको रुपमा अगाडी बढीरहेको पुष्प व्यावसायको दिगो संस्थागत विकास, गुणस्तरीय उत्पादन आन्तरिक बजार व्यवस्थापन आयात प्रतिस्थापन तथा निर्यात प्रबर्द्धन आदिमा फ्लोरिकल्चर एशोसिएसन नेपालले हाल सम्म खेल्दै आएको भूमिका अति महत्वपूर्ण रहेको छ साथै आगामी दिनहरुमा पुष्प व्यवसायको व्यवसायिकरण र निर्यात प्रबर्द्धनमा यस संस्थाले अझै महत्वपुर्ण भूमिका खेल्ने छ भनि आशा लिएको छु।

राष्ट्रियस्तरको यस पुष्प व्यापार मेलाको अवसरमा फ्लोरिकल्चर एशोसिएसन नेपालले वार्षिक रुपमा प्रकाशन गर्दै आएरहेको पुष्प विशेषांक **Floriculture Souvenir 2011** सबै पुष्प व्यावसायमा रुची राख्नेहरुका लागि उपयोगी र सहयोगी हुनेछ भन्ने विश्वासका साथ यस मेलाको पूर्ण सफलताको हार्दिक शुभ (कामना व्यक्त गर्दछु। साथै फ्लोरिकल्चर एशोसिएसन नेपाललाई उतरोत्तर प्रगतिको कामना सहित बधाई ज्ञापन गर्न चाहान्छु।

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कृष्ण प्रसाद ताम्राकार

उपाध्यक्ष, नेपाल उद्योग वाणिज्य महासंघ

तथा

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AWARDS LANDSCAPES

Agriculture Trade Fare 2004 | Floriculture Trade Fare 2005 | Floriculture Trade Fare 2006 | Floriculture Trade Fare 2007

अलग–अलग विषयमा अलग–अलग प्रशिक्षकहरुद्वारा तालिम दिईने एक मात्र ट्रेनिङ्ग सेन्टर

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- स्वदेश तथा विदेशमा बगैंचा सम्बन्धी काम गर्नको लागी,
- आफ्नो बगैंचामा लगाउने बोटबिरुवा आफै छनौट गर्न सक्नको लागी,

# Floriculture Association Nepal (FAN)

FNCCI Building, Teku, Po Box: 7651, Kathmandu, Nepal Tel: 977-1-4228064, 2011767,
Fax: 977-1-4261671E-mail: fann@wlink.com.np, fan_nepal@yahoo.com
Web: www.fanepal.org.np, www.nepalfloraexpo.com.np


## सन्देश

फ्लोरिकल्चर एशोसिएसन नेपालले १३ वटा राष्ट्रिय स्तरको पुष्प प्रदर्शनी तथा व्यापार मेला भव्यताको साथ सफल बनाई यस पटक १४ औं पुष्प प्रदर्शनी तथा व्यापार मेला सम्पन्न गर्न गईरहेका छौ । प्रारम्भमा यस मेलामा उद्योगी, व्यापारी, उपभोक्ता, बिद्यार्थी, अनुसन्धान कर्ता लगायत बिदेशी व्यापारीहरुलाई समेत एउटै छाना मुनी भेटघाट, ज्ञान र सिपको आदन प्रदान गर्दै यस व्यवसायको प्रबर्द्धन गर्ने मुख्य उदेश्य लिएको भएतापनि लामो समयको अन्तराल पछि यसले पुष्प व्यवसायहरुको बार्षिक पर्वको रुप लिन पुगेको छ ।

FAN को १९ बर्षको अबिरल यात्रामा हरेक बर्ष पुष्प व्यवसायमा लाग्नेहरुको बढदो स्थिती, आन्तरिक बजार र बिदेशमा समेत नेपाली उत्पादनको बढ्दो मागलाई मुल्याङ्कन गर्दा यस संस्थाले आयोजना गर्दै आएको राष्ट्रिय, अन्तराष्ट्रिय, क्षेत्रीय र जिल्ला स्थरिया मेलाहरुले जनचेतना, जगाउने, उपभोक्तालाई सचेत गराउने र शहरी क्षेत्रमा हुने बातबरणीय प्रदुषण न्युनिकरणमा समेत महत्वपूर्ण भूमीका निभाउदै आएको छ ।

नेपालमा पुष्प व्यवसाय एक उद्योगकै रुपमा स्थापना भई निर्यातसम्म भईरहेको अवस्थामा आईपुग्नलाई सम्पूर्ण पुष्प व्यवसायीहरुको आ-आफ्नो ठाँउबाट गरेको एकल र सामुहिक प्रयासको प्रतिफल हो भन्दा अतियुक्ती नहोला । कुनै पनि उद्योग स्थापना हुन एउटा पक्ष हो भने त्यस उद्योगलाई स्थापित गराई राख्न वा त्यसलाई अझ उचाईमा लैजान अर्को पक्ष हो । सरकारी तथा गैर सरकारी संस्था, वित्तिय संस्थाहरुको लगभग शुन्य बराबरको सहयोगमा अघि बढन अवश्यनै कठिन कार्य हो । तर हरेक आरोह अवरोह र जस्तै कठिन कार्यमा पनि सम्पूर्ण व्यवसायी एक भएर सामना गर्ने हो भने समस्या समधान गर्न सकिन्छ । त्यसर्थ छरिएर रहेका सम्पूर्ण व्यवसायलाई एउटै छाता अन्तरगत सामुहिक रुपमा हामी सबै मिली स्थापना गरेको यस उद्योगलाई अझ उचाईमा लैजाउ भन्ने हाम्रो बिनम्र अनुरोध छ ।

अन्तमा यस पुष्प व्यवसायीको बार्षिक पर्वको अवसरमा समस्त व्यवसायी मित्रहरुलाई आर्थिक र व्यवसायीक प्रगतीको शुभकामना दिदै यस १४ औं पुष्प प्रदर्शनी तथा व्यापार मेलामा सहभागि भई वा प्रत्यक्ष तथा परोक्ष रुपमा सघाउ पुऱ्याउनु हुने सबैलाई हार्दिक धन्यबाद दिन चाहन्छु । पुष्प व्यवसायको बिकास बिस्तार र प्रबद्धनमा बिगत बर्षहरुमा झै आगमी बर्षहरुमा पनि यहाँहरु सबैको साथ र सहयोग रहनेछ भन्ने पूर्ण बिश्वास र आसा लिएको छु ।

अरुण क्षेत्री
अध्यक्ष
फलोरिकल्चर एशोसिएसन नेपाल

# सम्पादकिय

नेपाली पुष्प व्यवसायलाई गुणात्मक र परिमाणात्मक सुधार गरी आन्तरिक उत्पादन स्तर उन्नती गर्न फ्लोरिकल्चर एशोसिएसन नेपालले आफ्नो स्थापना काल देखिनै निरन्तर लागि परेको छ। फूलको बढ्दो आन्तरिक एवं बाह्य मागलाई दृष्टिगत गर्दा उचित दृष्टिकोण सहित लगानीको व्यवस्था गर्न सकेमा आन्तरिक साधान र श्रोतहरुको अधिकतम परिचालन गरी ठूलो मात्रामा रोजगारीको अवसर दिन सकिने यस व्यवसायमाबाट राष्ट्रले लाभ लिन सक्ने संभावना छ। यस संभावनालाई संबर्द्धन गर्न एशोसिएसनले प्रत्येक बर्ष राष्ट्रिय स्तरको एउटा र क्षेत्रीय एवं बिशेष मेलाहरु समेत आयोजना गर्दै आईरहेको छ। मेला आयोजना कै अवसरमा बार्षिक रुपमा पुष्प सम्बन्धि बिविध लेख रचना सहितको पुष्प बिशेषांक प्रकाशन गर्दै आईरहेको र यसै क्रममा हामीले यँहाहरु समक्ष १५ औं अंक ल्याई पुऱ्याएका छौ।

समय सापेक्ष पराम्परगत कृषि प्रणालीबाट व्यवसायीक कृषि प्रणाली तर्फ परिबर्तन गर्दै लैजान' राष्ट्रको दायीत्व हो। व्यवसायीक तर्फ गईसकेको उद्योगलाई थप परिष्कृत गरी चुनौतीहरुको सामना गर्न सहयोग पुऱ्याउनु पनि राष्ट्रको दायित्व भित्रै पर्दछ। नेपालमा पुष्प व्यवसायको ईतिहास लगभग डेढ, दुई दशक पुग नपुग भएपनि यसले धेरै फ्डको मारी सकेको छ। बिश्वमा जस्तै नेपालमा पनि पुष्प तथा पुष्पजन्य बस्तुको मागमा हरेक वर्ष १० देखि १५% को दरले बृद्धि भईरहेको सन्दर्भमा यससंग संबन्धित उद्योगहरु पनि क्रमशः विस्तारित भईरहेका छन्। आजको पुष्प व्यवसाय नीजि क्षेत्रको पहलबाट यहासम्म आईपुगेको छ। अव थप सहयोग आफू बाहिरबाट उद्यमीहरुले चाहेका छन। जसबाट नेपाली पुष्प व्यवसायले बिदेशी बजारमा स्थापित हुन सकोस।

प्रस्तुत अंकमा जरबेरा फूलको उत्पादन तथा हार्भेष्ट, व्यवसायीक पुष्प खेतीमा माटोको व्यवस्थापन, Summery Report on Current postharvest handling practices & Indentifying packaging and transporting technique to supply fresh cut flower to new distance market, pest & disease management of Gladiolus, Rose pruning, कट फ्लावरको बजार र आयात, सहकारी क्षेत्रमा फ्लोरिकल्चर आदि लेखहरु समेटेर यहाँहरु समक्ष ल्याएका छौ। FAN ले वार्षिक रुपमा गरेका क्रियाकलापलाई लिपीबद्ध गरी यस स्मारिकामा प्रस्तुत गर्ने क्रमलाई पनि निरन्तरता दिएका छौ। प्रस्तुत लेखहरुबाट उद्यमी व्यवसायीहरु, अध्ययन अनुसन्धानमा लागेका महानुभावहरु, सरकारी तथा गैरसरकारी निकायहरु, बिद्यार्थीहरु लगायत पुष्प प्रेमी महानुभावहरुले लाभ लिन सक्नु हुनेछ भन्ने आशा लिएका छौ।

अन्तमा, लेख रचना पठाई सहयोग गर्नु हुने लेखकहरु, बिज्ञापन दाताहरु एवं आयोजक प्रति हार्दिक धन्यबाद् ज्ञापन गर्दछौ। प्रकाशनको क्रममा भएका कमि कमजोरी औल्याई दिई भुल सुधार गर्न हामीलाई सहयोग गर्नु हुन पाठक बर्गमा हार्दिक अनुरोध गर्दै आगामी दिनमा पनि यसरी नै यहाँहरु सबैको सहयोग रहने छ भन्ने आशा लिएको छौ।

# शुभकामना

नव वर्ष २०६८ को सुखद उवलक्ष्यमा

देशभरि रहनुभएका सम्पूर्ण पुष्प व्यवसायी

मित्रहरू तथा ग्राहक महानुभावहरू सबैमा

सुख शान्ति, सु-स्वास्थ्य, दिर्घायू एवं

सम्बृद्धिको लागि हार्दिक मंगलमय

शुभकामना व्यक्त गर्दछौं ।

सृजना फलावर नर्सरी परिवार

सृजना नर्सरी परिवार

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# PRODUCTION AND POSTHARVEST PRACTICES OF GERBERA CUT FLOWER

-A.K. Acharya, D.R. Baral,
D.M.Gautam & Dr. U.K.Pun

## INTRODUCTION

Acharya, A.KFlowers are symbol of beauty. Besides, their aesthetic value they are also important for their economic uses such as cut flowers, dried flowers, extracting perfumes and other products. In Nepal, commercial flower production is initiated and has been expanded to 34 districts in the country. Also, the production area under floriculture is gradually increasing throughout the country. This sector provides employment opportunities to about 2,500 people, among which 60% of them are women (FAN, 2007). The total turn over of this sector in 2006 was about 230 million rupees (FAN, 2007), which increased to 560 million rupees in 2009 (FAN, 2010). Nepalese cut flowers stand at one of the most prioritized position in international market as compared to other agricultural products in terms of export market potential (UNCTAD/WTO, 2007).

Gerbera (*Gerbera jamesonii*) also known as Transvaal daisy or Barberton daisy, is a member of the Composite family. Flowers of gerbera are available in a wide range of colors, including yellow, orange, pink, crimson, red, purple and white. Gerbera is one of the ten most popular commercial cut flowers in the world and according to the global trends in floriculture; it occupies the fourth place among cut flowers (Choudhary and Prasad, 2000).

Gerbera is one of most important cut flower in Nepal. It is in considerable demand in both domestic and export markets. The daily demand of gerbera in Kathmandu is 1500-3000 sticks and selling price of per stick is Rs.15.00. The area of gerbera cultivation in Nepal was 0.25 ha (5 Ropanies) in 2004/2005 (MOAC, 2009) and it is, now, estimated about 0.72 ha. Since the past 2-3 years, the domestic supply could not fulfill the total demand of gerbera and about 65% of the total demand was supplied by importing from India.

Postharvest handling plays an important role in enhancing keeping quality of flowers wherein efforts are made to reduce stem plugging, restrict microbial activity, delay flower senescence through the provision of external source of water and nutrients as required by the flower (Meman and Dabhi, 2006).

Besides, the problem with gerbera cut flowers is the short postharvest life (Wernett *et al.,* 1996). Low production due to fungal disease and high postharvest losses due to lack of postharvest treatment are the burning problems of the gerbera production and marketing in Nepal.

Keeping quality is an important parameter for evaluation of cut flower quality, for both domestic and export markets, addition of chemical preservatives to the holding solution is recommended to prolong the vase-life of cut flowers. All holding solutions must essentially contain two components viz., sugar and germicides. The sugars provide a respiratory substrate, while the germicides control harmful bacteria and prevent plugging of the conducting tissues. Therefore, the techniques of prolonging the vase-life of flowers will be a great asset to the growers and users (Nair *et al.*, 2003).

The article is based on research (Master's thesis) carried out during September to December, 2009 with the major objective to determine the influence of location, season, and variety on vase life of the gerbera cut flower.

## *EXISTING CULTIVATION PRACTICES AND MANAGEMENT OF GERBERA*

### Shed house, field preparation and their management

Generally, gerbera is grown in Falgun-Chaitra or Shrawan-Bhadra in Kathmandu valley and production starts after 3 months of planting. In winter, especially, from October–February (Kartik-Falgun), there is high demand and low supply of cut flowers. Flower growers bring most of their domestic products (gerbera, carnation, gladiolus, Dutch rose) in the market after March-April (Chaitra-Baisakh) and do not get high price due to large supply.

There was wide variation on shed house preparation, bed size, and planting system of gerbera (Table 1) even though there was clear written companies' guide line for cultivation practices. Sixty seven percent growers were using full closed shed house where as 33% growers had half closed shed house. It was observed that higher quality and production of gerbera could be obtained from full closed shed house system. Biradur and Khan (1996) reported that it is very difficult to get good quality cut bloom of gerbera under open field condition.

There was also variation on plant spacing in the gerbera field (Table 1). Plant spacing 1x1 foot, 1.5x1 foot, 0.83x0.5 foot and 1x0.5 foot were observed in 33%, 25%, 25% and 17% growers' field. It was recommended that spacing of the plants at 12 to 18 inches apart, being careful to plant the crown at or slightly above soil level (Tjia *et al.*, 2008).

Due to soil borne fungal problem in gerbera field, beds were raised in most of the plot but there was quite variation ranging from 0.3 to 2.5 feet. From the discussion, it was found that in low lands (Khet), due to high level of water level, there must be above 2 feet height of bed. If the field is in up lands (Bari), bed height might be 1 foot. This is for the precaution of root rot due to water level in the field. It was reported that excessive moisture during the rainy season may increase the incidence of root disease and where drainage is a problem, grow gerberas in raised beds, mounds or containers (Tjia *et al.*, 2008). The optimum bed height and variation of shed house are shown in Plate 1.

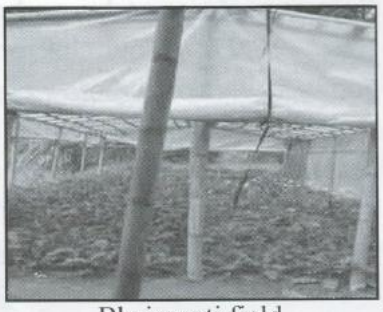
Table 1. Variation in plant spacing, bed height and shed house

| Particulars | | No. of respondents | Percent |
|---|---|---|---|
| Plant spacing | 1 foot x 1 foot | 4 | 33 |
| | 1.5 foot x 1 foot | 3 | 25 |
| | 1 foot x 0.5 foot | 2 | 17 |
| | 0.83 f00t x 0.5 foot | 3 | 25 |
| Bed height | 2.5 feet | 1 | |
| | 1.75 feet | 2 | |
| | 1 foot | 3 | |
| | 0.75 foot | 2 | |
| | 0.5 foot | 2 | |
| | 0.3 foot | 2 | |
| Shed house | Full closed | 8 | 67 |
| | Half closed | 4 | 33 |

**Source: Acharya, 2010**

Tokha field

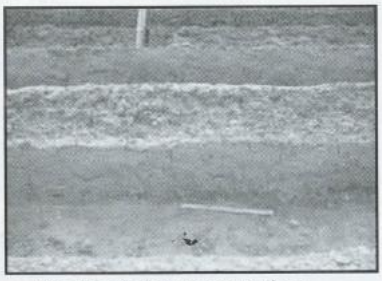
Godawari field



Bhaisepati field

Kamalbinayak field

Bajrabarahi field



Bed height preparation

Plate 1. Optimum bed height and shed house variation in gerbera field

**Variety and planting material used by gerbera growers**

It was found that different varieties from different companies of gerbera were grown in Kathmandu valley. In Kathmandu, there were three agents supplying planting materials of gerbera. These agents were Flora Incorporated Trade, Tripureshwor; Crop Pro-TechNepal, The Standard Nursery, Bansbari; and Flora Nepal Pvt. Limited, Kupandole. They were selling the plants of different companies, such as Florist, Florist De Kwakel B.V., Holland; Schreurs, The Netherlands and Preesman India Breeding Pvt. Ltd., Mumbai, India respectively. Out of 12 respondents, 6 growers were using varieties of only Florist, 4 growers were using varieties of only Schreurs, and 1 grower was using varieties of both Florist and Schreurs, whereas another one grower was using varieties of both Florist and Preesman. Gauchan *et al.* (2009) reported that generally two types of gerbera i.e., single and double were found in Nepali market and its demand was around 1,500- 2,500 sticks per day. They also reported that around 3,000 plants could be grown per ropani.

In Kathmandu valley, 43235 plants were cultivated in different locations. Out of them, there were 61.6% tissue cultured and 38.4% desuckered (division) plants. Aswath and Choudhary (2004) reported that in recent years, most of the commercial varieties of gerbera are multiplied through tissue culture. Likewise Shailaja *et al.* (2004) reported that due to a great deal of variation, seed propagation of gerbera is not always satisfactory. They also explained that among vegetative means, multiplication through division of clumps or rhizomes is common; but it is rather slow, only 20 plants can be produced per year from a single one year old plant.

**Colour preference by gerbera growers**

White, yellow, pink, orange, red and purple flowers of gerbera were mostly found in growers' field. About 8.3% growers were cultivating 20 varieties with all 6 types of flower whereas 25% growers had only 3 types of colours (white, pink and red). Similarly, 50% and 16.7% growers were cultivating 5 and 4 types of colours respectively. Red and pink colour varieties were highly preferred by growers, whereas purple colour had the lowest preference.

**Soil treatment, fertilizer and irrigation application**

**Soil treatment**

During the field observation, three growers (25%) were not aware about the soil treatment practice and did not disinfect the soil. One grower (8.3%) had used Trichoderma while eight growers (66.7%) had used formalin for disinfection of soil. The dose of formalin application was varied in their field. It showed that growers were not sincere about the dose of formalin for soil disinfectionl.

For successful cultivation of gerbera, disinfection of soil is prerequisite (Kumar Florists, 2007). In particular, the fungus is a menace to gerbera. The various methods of sterilization are sun, steam, and chemical. In chemical, use of formalin @7.5-10 lit./100 square meter is recommended. The pure chemical should be diluted 10 times in water and then sprayed or drenched on beds and then covered with plastic for 7 days, after that, flushed the soil approximately with 100 liter of water per square meter to drain the traces.

**Fertilizer and irrigation application**

There was wide variation in the use of fertilizer in gerbera field; however, there was availability of cultivation guide line. According to the guide line, during vegetative growth, N:P:K::20:20:20@0.4 gm/plant every alternate day for first three months and once flowering commences, N:P:K::15:8:35@0.4 gm/plant every alternate day were recommended (Kumar Florists, 2007). However, it was found that fertilizer calculation was very difficult for most of the growers and they were using fertilizers in their own practical way. DAP, urea, potash for the fulfillment of NPK; bone meal; oil cake; $CaNO_3$; ash; and micronutrients having Ca, Zn, B were extensively used in the field of gerbera, but doses and time of application varied among growers. According to the growers, 0.56 kg/plant (on an average) compost was applied in the gerbera field although ranges were 0.2 to 1 kg per plant. After planting, regular foliar spray of 20:20:20::NPK were applied at fortnight or a month interval in the gerbera's field. From the grower's view and observation, good quality flower could be produced with the abundant use of compost and organic matter rather than chemical fertilizer. Gurav *et al.* (2004) suggested that the application of 20:20:15 g N, P and K/$m^2$/month was found effective in producing good quality and high number of flowers in gerbera while Sekar *et al.* (2003) reported that application of 300 and 200 mg N and K each per week resulted in production of superior and higher flowers in gerbera.

Six growers had their well for irrigation; others had water collection pond and canal. It was found that watering to foliage part had negative effect on quality production, so irrigation on furrow with the help of pipe was preferred. Kumar Florists (2007) recommended excessive watering is not good for gerbera production.

**Cultivated variety and their vase life**

There were 68 varieties cultivated in Kathmandu valley. Out of these, 9 varieties were mini type and 59 varieties were standard type. The average vase life of the 68 varieties were 14 (13.8594) and minimum-maximum vase life ranges from 11 to 17 days according to variety catalogue of different companies (Preesman, 2007; Florist, 2007; Schreurs, 2007). The cultivated varieties and their vase life are given in Appendix 1.

**Insects, pests, disease, and disorder in gerbera cultivation**

White fly, mites and aphids were major insects in gerbera where as *Fusarium*, root rot, crown rot, botrytis diseases were observed as major disease in the growers' field. Physiological disorders observed in the field were leaf folding, pseudo flower, twins flower, scape pitting or cracking and stalk bending. The visual symptoms of different insect, pest, disease and disorder observed in field observations are shown in Plate 2.

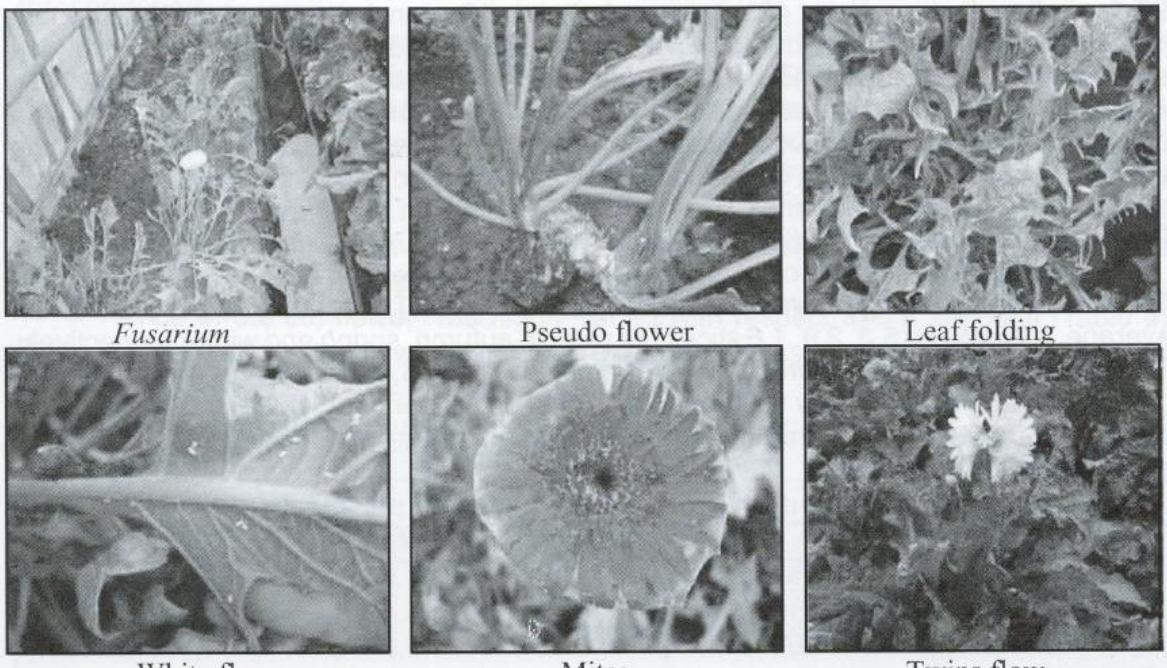



Plate 2. Insect, pest, disease and disorder

**Chemicals and pesticides used in gerbera farming**

Fungicides like Carbendazim, Mancozeb, Cupper oxychloride, Captan, Hexaconazol, Polyram, Calixin, Acrovat were being used by the growers in their field. Similarly, insecticides like Prime (Acetaprimide); Endosulphan; Larvine (Teodicarp) for cotton caterpillar; Interprit; Vertimex; Omite; Rogor; Nuvan; Kalmyte for mites, thrips and white fly; Flebendioxide; Admire; Chloropyriphos; Cypremethrin; Malathion; Victor; Fersa were being used. Besides this, some growers were also using antibiotics like Korsing Ag (Streptomycin sulphate + Tetracycline hydrochloride), Antibak, Biomycin (Kasugamycin 3%). There was no any scientific application of pesticides for plant protection measures. It was found that growers were applying different chemical pesticides without knowing their benefit and hazards. The common practices of pesticide application were found to be based on farmers' experiences and consultation with agrovets, pesticides sales agents. It was reported that neither grower nor the pesticide dealers are aware of specific pesticides/fungicides requirement of some of the flower crops and for some specific conditions (FAN, 2007).

## *EXISTING POSTHARVEST MANAGEMENT OF GERBERA*

### Stage, time and harvesting practices

Growers were well acquainted that the gerbera flowers should be harvested when the outer two rows of disc florets were opened which is important for the longevity of the cut flower. But practically, farmers do not practice it due to varying in demand which determined the amount to be harvested and package of transportation.

There was high variation on harvesting days after planting, it ranges from 60 to 90 days after planting. About 42% growers harvested flowers in the evening, 33% farmers harvested in the morning whereas 25% farmers harvested flowers both in the morning and evening as per their time availability to send to wholesale market (Acharya, 2010). All growers were found to be practicing twisting method for harvesting of the flower, not by cutting the stalk. Reid (2004) reported that gerbera flowers are harvested by twisting the stems off near the point of attachment to the rhizome; this is thought to encourage subsequent flower production.

### Production of gerbera in different seasons

Production variation of gerbera flower in different season is shown in Table 2 and Table 3. Production of gerbera in summer was the highest i.e. 5.41 sticks per plant on an average, followed by 5.3, 2.9, 1.6 sticks per plant in autumn, spring and winter respectively. The annual average flower production per plant was 17 (16.58) sticks. Total production of gerbera in Kathmandu valley was found 6,21,200 sticks per year. Out of total production, it was found that summer, autumn, spring and winter shared 32.03%, 29.38%, 24.50% and 14.09% respectively.

**Table 2. Seasonal variation on production of gerbera per plant**

| Description | Maximum | Mean | Std. Deviation |
|---|---|---|---|
| Production per plant in winter | 3.75 | 1.5729 | 1.42898 |
| Production per plant in summer | 11.25 | 5.4091 | 2.95408 |
| Production per plant in autumn | 11.25 | 5.2972 | 3.14246 |
| Production per plant in spring | 7.50 | 2.9207 | 2.83660 |

**Table 3. Gerbera cut flower production in Kathmandu**

| | Sticks production | | | | | |
|---|---|---|---|---|---|---|
| Respondents | Winter | Spring | Summer | Autumn | Total | Annual/plant |
| 1 | 35000 | 45000 | 60000 | 60000 | 20000 | 19.45 |
| 2 | 6000 | 10000 | 15000 | 15000 | 46000 | 18.4 |
| 3 | 4000 | 4000 | 8000 | 16 | | |
| 4 | 5000 | 10000 | 17000 | 17000 | 49000 | 19.6 |
| 5 | 8000 | 10000 | 16000 | 16000 | 50000 | 10 |
| 6 | 10000 | 33000 | 20000 | 20000 | 83000 | 18.44 |
| 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 2500 | 4200 | 10000 | 6500 | 23200 | 4.64 |
| 9 | 0 | 0 | 2500 | 2500 | 5000 | 8.33 |
| 10 | 6000 | 10000 | 22500 | 22500 | 61000 | 30.5 |
| 11 | 0 | 0 | 2000 | 3000 | 5000 | 14.29 |
| 12 | 15000 | 30000 | 30000 | 16000 | 91000 | 22.75 |
| Total | 87500 | 152200 | 199000 | 182500 | 621200 | |
| % | 14.09 | 24.50 | 32.03 | 29.38 | | |
| Average | | | | | 16.58 | |

Total annual production of gerbera in terms of money was calculated as 6.497752 millions excluding postharvest loss. The average postharvest loss was found about 8.2%.

**Cut flower transportation and selling**

Gerbera flowers were harvested and each flower was fitted with plastic cap in order to protect flower from floret destruction during handling. Then, flowers were bunched, keeping 10 sticks per bunch with rubber band and wrapped with newspaper for transportation. It was found that 58.34% growers used motorcycle, 25% used own vehicle, 8.33% used public bus, and 8.33% growers used both motorcycle and Tata Mobile for transportation.

Four wholesalers were involved in supply of gerbera flower in Kathmandu. They were Flora Incorporated Trade, Tripureshwor; United Flora Pvt. Limited, Teku; Flora Nepal Pvt. Limited, Kupandole; and Bagmati Flora Pvt. Limited. About 41.67%, 33.33%, 16.67% and 8.33% growers were found to be selling gerbera cut flowers in Bagmati Flora, United Flora, Flora Incorporated, and Flora Nepal respectively. From the market observation and discussion, it was found that there was variation in gerbera cut flower's price among the wholesalers. Each wholesaler had own grading and pricing system for the cut flowers.

**Variation of the cut flower price in different seasons**

Price of the cut flower was highly varied with respect to the seasons (Table 4). During winter, price of the flower was found to be the highest due to the lower production and higher demand in winter.

**Table 4. Price of gerbera cut flower in different seasons**

| Seasons | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|
| Winter price per stick | 11.00 | 15.00 | 12.9091 | 1.37510 |
| Spring price per stick | 6.00 | 10.00 | 7.8182 | .98165 |
| Summer price per stick | 8.00 | 13.00 | 10.6667 | 1.66969 |
| Autumn price per stick | 8.00 | 13.00 | 10.6667 | 1.66969 |
| Average price annually | 9.00 | 12.75 | 10.4583 | 1.26056 |

**Cost of production and return from gerbera cultivation**

The cost of tissue cultured plant ranged from NRs.75 to 100 per plant whereas the cost of desuckered plants was NRs. 40 to 50. The cost of plant varied from company to company. It was found that the average cost of establishment was NRs.133.13 per plant. However, it depends upon the type of shed house structure, field preparation, input application, and type of plants.

**Postharvest losses in winter and summer and their major causes**

The postharvest loss was found higher in winter than in summer. The problem of stalk breakage and bending was found higher during winter. The stalk was more compact during winter. It may be due to the effect of low temperature (Physical injury). Physiological loss was higher during summer possibly due to higher rate of respiration and transpiration. Salunkhe *et al.* (1990) explained that the flowers having higher specific weight at the time of cutting normally have better keeping quality which is reflected in press of petal tissues. They also stated that the summer crop produces flowers with long lasting qualities and performs better in the market than those produced in the winter. They found that summer flowers also had better keeping qualities than the autumn flowers.

It was observed that the major causes of postharvest losses were during handling and transportation of flowers. Unplanned production often causes selling problem in the market.

## *WAY OUT TO PROLONG THE VASE LIFE OF GERBERA CUT FLOWER*

### Utilization of season and variety

Longest vase life was found with the flowers harvested in winter, followed by harvested in spring and autumn season. Pettersen and Gislerod (2003) also reported that the reduced vase life of inflorescence grown at high temperature could be caused by low carbohydrate content. Also, reduction in vase life of cut flowers due to high growing temperature has been reported (Halevy and Mayak, 1979) and flowers produced at low temperature have been assumed to have longer vase life (Nowak and Rudnicki, 1990).

Longest vase life was found in Sunway variety, followed by Primrose and Malibu variety. Selection of the proper variety having higher vase life, listed in Appendix 1 might be the proper way for strengthening the vase life of the cut flower.

### *Proper site selection and better production management practices*

Longest vase life was found with the flowers grown in Bhaisepati among three sites and which was statistically higher than from other growing locations. Flowers grown in Dhulikhel and Bhaktapur had statistically similar effect on vase lives of the gerbera cut flower (Acharya, 2010). It was analyzed that there was low levels of Nitrogen, high levels of Phosphorous, high levels of Potash and amended with organic matter in Bhaisepati. Longest vase life observed in Bhaisepati may be the cause of low level of Nitrogen and high level of Potash presence in the soil. Besides, longest vase life and better quality flower in Bhaisepati may be due to cultivation of the flower in upland area as compared to other sites. Superior performance of different varieties in Bhaisepati location could be to optimum cultural practices like fertilizer, irrigation, pest and disease management; soil types and conditions; proper care and management of the farm; and other environmental factors like temperature, facing of the farm, air and light circulation in the shed house. Leffring (1978) reported that the variation among cultivars might be due to different varietal behaviour and their interaction with the production environment.

Effect of vase solutions on the vase life of gerbera cut flower

Sodium hypochlorite 40 ppm and Calcium chloride 1% solutions were found most effective vase solutions to prolong the vase life of gerbera cut flower (Acharya, 2010). Likewise, Sucrose 2%+HQS 100 ppm had incremental effect on the vase life over the control solution (distilled water) and similar effect on vase life was found from GA3 (5mg/lit.) solution. It was observed that there was no beneficial effect of HQS and Flora life on vase life of the flower compared with the control solution (distilled water).

Regarding, practical application of vase solutions for prolonging the vase life of the flower, the cost of vase solution should be considered. The cost of vase solution was calculated based on the solution uptake in the vase life and market price of the preservatives (Sodium hypochlorite @NRs. 400/lit. and Calcium chloride @NRs. 700/Kg). It was found that for 1000 gerbera flowers, NRs. 220.0 was required for the Calcium chloride where as NRs. 0.61 was required for the Sodium hypochlorite. Vase solution formulation can be done by following ways:

| S.N. | Preservatives | Formulation | Cost of preservatives for 1 litre solution |
|---|---|---|---|
| 1. | Sodium hypochlorite solution (40 ppm) | To make 40 ppm concentration solution: • 40 microlitre Sodium hypochlorite should be dissolved in distilled water to make 1000 ml (1 litre) of the solution. (If 1 microlitre sodium hypochlorite dissolved in 1 litre (1000 ml) water =1ppm, so, 40 microlitre sodium hypochlorite dissovled in 1 litre water =40 ppm) (1000 microlitre = 1 ml) | • 40 microlitre Sodium hypochlorite @400/lit =NRs. 0.016 (1.6 paisa) |
| 2. | $CaCl_2$ 1% (Calcium chloride) solution | To prepare $CaCl_2$ 1% solution 10 gm $CaCl_2$ was dissolved in distilled water to make 1000 ml (1 litre) of the solution. | •10 gm $CaCl_2$ 1% @700/ Kg =NRs. 7 |

## CONCLUSION

Based on this research article on gerbera cut flowers, it may be concluded as follows

- Good quality flower could be produced with the abundant use of compost and organic matter rathe, than chemical fertilizer.
- It is necessary to raise the bed above 2 feet height in low lands (Khet) to avoid water lodging condition whereas in the up lands (Bari), bed height might be 1 foot.
- Regular picking of dry and diseased leaf, weeding, removal of crowded foliage were crucial sanitation and cultural practices for better quality production.
- Red and pink were highly preferred colours while the purple colour had the lowest preference.
- Sunway variety had the longest vase life, followed by Primrose and Malibu.
- Longest vase life was found with the flowers harvested in winter, followed by flowers harvested in spring and autumn season.
- Sodium hypochlorite 40 ppm and Calcium chloride 1% solutions were the most effective vase solutions to prolong the vase life of gerbera cut flower.
- Sodium hypochlorite was more cost effective than Calcium chloride solution.

## *REFERNCES*


- Acharya, A.K. 2010. Influence of location, season, variety and vase solution on quality and vase life of Gerbera (*Gerbera jamesonii*, Hook). M.Sc. Thesis. Tribhuvan University Institute of Agriculture and Animal Science Rampur, Chitwan, Nepal.
- Aswath, C. and M.L. Choudhary. 2004. Regeneration response of in vitro derived leaf of explants of *Gerbera jamesonii*. Journal of Ornamental Horticulture 7(3-4):276-282.
- Biradur, M.S. and M.M. Khan. 1996. Performance of exotic gerbera varieties under low cost plastic greenhouse. The La Baugh 41(3&4):46-52.
- Choudhary, M.L. and K.V. Prasad. 2000. Protected cultivation of ornamental crops- An insight. Indian Horticulture 45(1):49-53.
- FAN. 2007. Trade competitiveness of the floriculture sub sector in Nepal. Floriculture Association Nepal/ Agro Enterprise Centre, FNCCI, Kathmandu, Nepal.
- FAN. 2010. Floriculture Trade Fair Souvenir.Floriculture AssociationNepal, Teku, Kathmandu, Nepal.
- Florist. 2007. Distinctive breeding. Selection, breeding and multiplication of gerbera and anthurium. Florist De Kwakel B.V., Holland.

- Gauchan, D.P., A.R. Pokhrel, M. Pratap and P. Lama. 2009. Current status of cut flower business in Nepal. Kathmandu University Journal of Science, Engineering and Technology 5(I):87- 98.
- Gurav, S.B., S.M. Katwate, B.R. Singh, R.N. Sabale, D.S. Kakade and A.V. Dhane. 2004. Effect of nutritional levels on yield and quality of gerbera. Journal of Ornamental Horticulture 7(3-4):226-229.
- Halevy, A.H. and S. Mayak. 1979. Senescence and postharvest physiology of cut flowers: Part 1. Horticultural Reviews 1:204-236.
- Kumar Florist. 2007. Gerbera cultivation guide. Kumar Florist Gerbera's Pvt. Ltd., Pune.
- Leffring, L. 1978. Plant characteristics of gerbera in relation to flower production. In: Proc. Symp. Genet. and Breed. of Carnation and Gerbera. Institute of Plant Breeding and Seed Production. pp. 155-162.
- Meman, M.A. and K.M. Dabhi. 2006. Effect of different stalk lengths and certain chemical substances on vase life of gerbera (*Gerbera jamesonii* Hook.) cv. 'Savana Red'. Journal of Applied Horticulture 8(2):147-150.
- MOAC. 2009. Statistical information on Nepalese agriculture, 2008/2009. Ministry of Agriculture and Cooperatives, Agri-Business Promotion and Statistics Division, Singha Durbar, Nepal. 144 p.
- Nair, S.A., V. Singh and T.V.R.S. Sharma.2003. Effect of chemical preservatives on enhancing vase-life of gerbera flowers. Journal of Tropical Agriculture 41:56-58.
- Nowak, J. and R.M. Rudnicki. 1990. Postharvest handling and storage of cut flowers, florist green and potted plants. Timber Press, Portland, Oregon, USA. 210 p.
- Pettersen, R.I. and H.R. Gislerod. 2003. Effects of lighting period and temperature on growth, yield and keeping quality of *Gerbera jamesonii*. European Journal of Horticulture Science 68(1):32-37.
- Preesman. 2007. India varieties (2006/2007). Preesman India Breeding Private Limited, Mumbai, India.
- Reid, M.S. 2004. Gerbera, Transval Daisy. Recommendations for maintaining postharvest quality. Postharvest Technology Research Center. University of California, Davis, USA.
- Salunkhe, D.K., N.R. Bhatt and B.B. Desai. 1990. Minor cut flower crops. Postharvest biotechnology of flowers and ornamental plants. Naya Prokash, Bidhan Sarani, Calcutta, India. pp. 236-241.
- Schreurs. 2007. Gerbera collection. The Netherlands.
- Sekar, K., N. Dileepkumar, M.K. Mohideen, G. Kuppuswamy and K.G. Kiran. 2003.Effect of graded levels of nitrogen and potassium on yield and quality of gerbera (*Gerbera jamesonii*). National Symposium onRecent Advances in Indian Floriculture. pp. 94-96.
- Shailaja, P.V., S.S. Patil and U.K. Kumari. 2004. Rapid clonal multiplication of *Gerbera jamesonii* B. through tissue culture. Journal of Ornamental Horticulture 7(3-4):283-287.
- Tjia, B., R.J. Black and S.P. Brown. 2008. Gerberas for Florida. University of Florida, Gainesville, USA.
- UNCTAD/WTO. 2007. Export Potential Assessment in Nepal. International Trade Centre, UNCTAD/WTO, Nepal.
- Wernett, H.C., T.J. Sheehan, G.J. Wilfret, P.M. Marousky, P.M. Lyrene and D.A. Knauft. 1996. Postharvest longevity of cut flower gerbera. Response to section for vase life components. Journal of American Society of Horticulture Science 121:216-221.

Appendix 1. Lists of grown varieties and their vase life

| S.N. | Varieties | Vase life | S.N. | Varieties | Vase life | S.N. | Varieties | Vase life | S.N. | Varieties | Vase life | S.N. | Varieties | Vase life |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Aisha (mini) | 17 | 15 | Carmen | 17 | 29 | Foske | | 43 | Picobello | 12 | 57 | Sunway | 13 |
| 2 | Ambiance | 11 | 16 | CrystalKimsey (mini) | 17 | 30 | Fusion | 15 | 44 | Popov | 15 | 58 | Suri (mini) | 17 |
| 3 | Amulet | 13 | 17 | Dalma | 11 | 31 | Golianth | 15 | 45 | Primrose | 11 | 59 | Tambre | 15 |
| 4 | AvantGarde | 11 | 18 | DanaEllen | 15 | 32 | Guarda | 13 | 46 | PurplePrince | 13 | 60 | Tresor | 13 |
| 5 | AveMaria | 13 | 19 | Doni | 13 | 33 | Illusion (mini) | 15 | 47 | Quote | 11 | 61 | Valletta | 13 |
| 6 | Aventura | 15 | 20 | DoubleDutch | 11 | 34 | Junkfrau | 13 | 48 | Rosalin | 11 | 62 | Viper (mini) | 15 |
| 7 | Bellezza | 11 | 21 | Ebony | 15 | 35 | Kayak | | 49 | Salvadore | 17 | 63 | Viviane | 13 |
| 8 | Bismarck | 13 | 22 | Ecco | 13 | 36 | Luxuria | 15 | 50 | Samada | 15 | 64 | Vulcan (mini) | 15 |
| 9 | Bison (mini) | 15 | 23 | Essence | 13 | 37 | Malibu | 11 | 51 | Samson | 13 | 65 | Winter Queen | 13 |
| 10 | Blessing | | 24 | Excellence | 17 | 38 | Marquis | 15 | 52 | Sarinah | 13 | 66 | Wintergold | 13 |
| 11 | Bonbons | 13 | 25 | Explosive (mini) | 15 | 39 | Mexx | 17 | 53 | Savannah | 13 | 67 | Woman | 15 |
| 12 | Cacharelle | 14 | 26 | Fiction | 17 | 40 | Paco | 0 | 54 | Scope | 14 | 68 | Yanara | 13 |
| 13 | Candella | 15 | 27 | Fiorella | 15 | 41 | PalmBeach | 11 | 55 | Shayna (mini) | 15 | | | |
| 14 | Carambol | 15 | 28 | Flyer | 15 | 42 | Paradox | 13 | 56 | Sunglow | 13 | | | |

# "Soil Management of Commercial Floriculture in Nepal"

-Mrs. Arati Nepal
M.Sc. in Soil Science

**Background**

Each soil type has a range of vegetation, which will thrive upon it, from the smallest herb through, in many cases, to forest trees. The type of soil in the garden will be a guide to the type of plants that you can grow, provided that other variables, such as drainage, weather and the amount of sunlight that the garden receives also suit the plants. It is commonly said that most soils which are in good condition, (in gardening terms, in 'good heart'), will grow most plants.

The basic factor leading to regional differences in garden type is the soil. It has been formed over million of years by the breakdown of the rocks of the earth's crust, so it is the nature of the underlying rock that influences the type of soil above it. For example older rocks lie granite and also sandstone, tend to form slightly acid soil while limestone and chalk rocks will produce an alkaline soil. Also, it is a complex pile of fungi, bacteria, worms and other organisms working together in a continuously changing environment. The byproducts of this activity produce the nutrients that plants need to grow. Healthy soil will reduce plant fungus diseases and reduce insect infestations.

The quality of soil depends on the organic matter content of soil and then comes pH and nutrient content. Soil can always be improved with the addition of organic matter. Only extreme soil types are particularly difficult. The ideal soil, as far as texture is concerned, is a loam, consisting of a mixture of slightly more sand than clay particles, and with a high organic content. The incorporation of organic manure in either clay or a sandy soil will improve its condition enormously, not only by improving its texture but also by feeding the soil. The crumb like consistency of well-rotted manure will bind the particles of a loose, sandy soil, or divide up the fine grains of a sticky clay one while the bacteria it contains will activate either soil type to promote plant growth. Soil with higher organic matter content is dark in color and have no odor. Soil is also judged by its relative alkalinity or acidity. This can be measured against a scale known as pH scale. Plants grow in soils within the range of pH 4.5 to 7.5. A soil between pH 5.7-6.7 is ideal for the majority of plants. Above this reading the soil is too alkaline, and below this it is too acid. Plants grown can be the indication of the soil type such as rhododendron growing is a sign of acid soil, and viburnum usually indicate alkaline ones. Birch, pine, gorse and broom usually indicate a light, sandy and often acid soil (Brookes, 1990).

In order to have good soil for flower cultivation, first of all it is a need to figure out soil type such as clay soil, sandy soil, loamy soil, rocky soil or whatever. It helps to know the need of extra nutrients, frequency of irrigation or watering etc. **Clay soil** usually means bad drainage, less frequent watering, high soil alkalinity (high pH), and the need for the addition of large amounts of organic matter. **Sandy soil** means great drainage, need for more frequent watering, and also the need for the addition of organic matter (compost, manure, grass clippings, etc). **High organic soil** usually means high acidity (low pH), good drainage, good soil moisture retention, and the need for a little crushed limestone in order to increase the pH. Although soil type can be modified by the location of a site (sun or shade, and slopes, will

alter the water content of soils), certain types of plant are attracted to and flouri9sh in certain soil types. Plants which have seeded themselves in a garden plot, therefore, can be a good indicator of the soil type which you are to inherit with a plot. Willow herb (*Epilobium spp.)* for instance, grows in a fertile, moist soil as do nettles. Heaths and heathers are standard vegetation on acid soils, which are usually sandy or peaty and poor. While fern are adaptable plants and can be found growing on wet and dry soils, they mostly indicate a heavy, damp soil, suggesting clay. A sure indicator of a wet soil is the buttercup (*Ranunculus sp.)* it is often seen in low laying garden corners and across poorly drained lawns. An alkaline soil is often the chosen home of Dog's Mercury (*Mercurialis perennis),* a prolific colonizer of sunny or shady areas.

Autumn is the best time for a major clearance of the garden, for the application of organic compost and for a through dig over before the ground becomes too heavy with moisture. Lighter soils will need a more gentle forking over autumn, when organic compost or uncomposted soft organic waste can be incorporated to give the soil a more cohesive quality the system of digging must depend on the type of soil and the use to which you will put the land you are cultivating. Heavy soils require more cultivation than light ones as they have to be encouraged to crumble and they hold perennial weed roots tightly. Soil that is to be used again and again for vegetable production requires more cultivation to replace soil nutrients than soil used for a perennial display.

**Soil pH Ranges of Common Flowers**

| | |
|---|---|
| Amaryllis | 5.5 - 6.5 |
| Baby's Breath | 6.5 - 7.0 |
| Balsam | 6.5 - 7.0 |
| Begonia | 5.5 - 7.5 |
| Caladium | 6.0 - 7.0 |
| Candytuft | 6.5 - 7.0 |
| Canna | 6.0 - 7.0 |
| Carnation | 6.5 - 7.0 |
| Chrysanthemum | 6.0 - 8.0 |
| Cockscomb | 6.0 - 7.5 |
| Coleus | 6.0 - 7.0 |
| Cornflower | 6.0 - 7.5 |
| Cosmos | 6.5 - 7.0 |
| Daffodil | 6.0 - 7.5 |
| Dahlia | 6.5 - 7.0 |
| Day Lily | 5.5-7.0 |
| Easter Lily | 6.0 - 7.5 |
| Four-O-Clock | 6.0 - 7.5 |
| Foxglove | 6.5 - 7.0 |
| Geranium | 6.0 - 8.0 |
| Gladiolus | 6.5 - 7.0 |
| Hollyhock | 6.0 - 8.0 |
| Iris | 6.5 - 7.0 |
| Larkspur | 6.5 - 7.0 |
| Lupine | 6.5 - 7.0 |
| Marigold | 6.0 - 7.5 |
| Nasturtium | 6.5 - 7.0 |
| Narcissus | 6.0 - 7.5 |
| Pansy | 6.5 - 7.0 |
| Perwinkle | 6.5 - 7.0 |
| Petunia | 6.5 - 7.0 |
| Phlox | 5.0 - 6.0 |
| Poppy | 6.5 - 7.0 |
| Salvia | 6.0 - 7.0 |
| Shasta Daisy | 6.0 - 8.0 |
| Snapdragon | 6.0 - 7.5 |
| Sweet Alyssum | 6.5 - 7.0 |
| Sweetpea | 6.5 - 7.0 |
| Sweet William | 6.5 - 7.0 |
| Tuberose | 6.0 - 7.0 |
| Tulip | 6.0 - 7.0 |
| Verbena | 6.0 - 8.0 |
| Zinnia | 5.5 - 7.5 |

http://www.ctahr.hawaii.edu/fb/carnatio/carnatio.htm

**Aster**

China aster needs rich, porous and well drained soil. It grows best in sunny situation. At the time of bed preparation, sufficient organic manure, about 4-5 kg per square meter, in the form of cowdung is usually added to the soil. Application of liquid manure once in a fortnight, prepared by fermenting fresh cowdung along with a handful of ammonium sulphate, after the flower buds appear is beneficial. The surface of the soil should be hoed occasionally to keep down weed growth. Hoeing also helps conserve soil moisture. For china aster Seeds can be sown from August to October and even earlier in June July in areas having a low rainfall. It may be during March and April or in autumn (August to October) in the hills.

**Carnation**

Carnations can be grown as perennials not only in the hills but also in Terai. They can be treated as annuals in the northern plains where winter is cool and long. The border carnation thrives better in the hills. While in the terai, perpetual flowering and Marguerite or Chabaud are more successful. Carnations are grown on diverse soil types. They do well in well drained soil rich in lime (not acidic) and sunny situation. Carnations are great favorites for pot cultivation also. Deep planting water logging and mulching are harmful as these may cause stem or collar rot. Land between 2,500 and 4,000 feet in elevation is suitable for the year-round production of carnations. Water supply must be considered in land selection for carnation production. A flat, well sheltered area is desirable. For carnations, any well drained loam is suitable. A generous addition of organic material is usually required. Carnations are best grown at an even temperature, as fluctuations accentuate calyx splitting. Accurate environmental control is required to maintain temperatures around 12°C (night) and 24°C (day). pH between 6.0 - 6.5 seems to be most suitable for this crop. Carnation can be grown in hills as perennials. Damp soil can cause real problems. Stem rot and root rot are the most common diseases.

Excessive soil moisture is widely recognized as a factor in the development of Phytophthora root rots. Fusarium wilt can be controlled if carnation is planted in good soil such as sandy loam.

**Chrysanthemum**

The plants can be grown in any kind of soil but require a sunny situation for best performance. The seeds are sown in September October or during June July for growing in rainy season in those area which have low rainfall and cool climate. In the hills the sowing can be done in March - April.

**Feeding and cutting**

The suckers and cutting are transferred to 10cm pots immediately after rooting in compost consisting of one part each of coarse sand, garden soil, and leaf mould and traces of wood ash. The second potting is done two months after the first in the case of suckers raised during February, in a bigger pot of 15 cm. The potting mixture consists of a richer mixture containing one part sand, one part garden soil, two parts of leaf mould, a quarter part of wood ashes and two table spoonfuls of bonemeal. The final repotting is done in August in 25-30 cm pots. The mixture should be very porous and rich. The following mixture is recommended.

| | |
|---|---|
| Garden soil | 1 part |
| Leaves mould | 2 parts. |
| FYM | 1 part |
| Broken pieces of charcoal and bricks and wood ashes | 1/2 part |
| Bone meal | 2 table spoonfuls/pot |

In red colored soil FYM should be used. About 1-2 table spoonfuls of superphosphate should also be added to this compost. The feeding of cutting should be started 15 days after the final repotting. The liquid manure is prepared by fermenting fresh cowdung and oil cake in a

drum for 5-6 days (about 1-2 kg of each in 10 litres of water). It is diluted to tea color and applied at the intervals of 7- 10 days at the rate of 500 ml to 1 litre per pot. Fertilizer mixtures if used contain 10g of potassium nitrate, 30 g of ammonium sulphate and 30 g of superphosphate dissolved in 10 litres of water should be applied twice during September at fortnightly interval. About 500ml of this solution is applied to each plant.

**Field cultivation for cut flowers**

15-20 tons of FYM is added per acre. 25-40-40 ($N$-$P_2O_5$- $K_2O$)

**Gerbera**

Gerbra is a fairly hardy plant and can be grown both in the plains and in the hills. The plants thrives best in well drained and rich soil and a sunny situations. The plants require plenty of manure, leaf mould or humus for a good growth and flowering.

**Gladiolus**

In the northern plains it is best planted from September to October and sometimes even earlier in august. The flowering takes place from December to March or April. In hills planting is done in March April. Planting should be deeper in light soil. Gladiolus can be grown in the plains and up to an altitude of about 2,500m. It should be grown in well drained soil and in a sunny situation sheltered from strong winds. The soil should be dug thoroughly and powdered finely. At the time of final land preparation, 5-6 kg of well rotten cowdung manure or leaf mould and 60g of bonemeal should be added per square meter area. Adding of too much manure should be avoided as this tends to make the flower spikes too tall and slender.

For cultivation of gladiolus in pots, the pot mixture should contain one part of good soil, two table spoonful of bone meal and a handful of wood ashes. Gladiolus require much the same growing condition as most vegetables and garden flowers. They like lots of sun, and a fertile, well-drained soil. Although they can be grown successfully in almost any type of soil, the best results could be obtained in sandy loam. They don't like to compete with tree and shrub roots, nor do they grow there best crowded up against a foundation. If it is planted in such places, adequate supply of extra food and water should be assured. To prevent diseases borne in soil, the corms should be planted in a new location each year when space permits. Though in the South the corms may not winterkill, it does reduce the danger of mixing varieties to plant them in a new location.

Before planting, dig complete plant food into the bed, about 4 pounds for each 100 feet of row. Plant food used later in the summer should be watered in immediately after applying to let it get to the roots at once. Don't use raw manure since it may spread infection if it touches the bulbs.Choose a location in full sunlight. Although newly purchased corms are ready to bloom and should flower even in the shade, flowers will be larger and brighter and stalks will be sturdier when they're planted in sun. The gladiolus will also be able to store more energy for the following year's bloom, which is critical if you plan to re-use your corms.

Well-drained soil is essential for successful gladiolus growing. If the soil is heavy or tends to be wet, create raised beds for gladiolus (and most other annuals, perennials, and bulbs). Whether or not you garden in raised beds, loosen the soil to a depth of ten or 12 inches. Fertilize, if necessary, according to recommendations

**Lily**

Agapanthus grows well in the hills. Since it needs a cooler climate, it does not thrive well on plains. Belladonna lily thrives well both in plains and in the hills. The plants require a rich well manured soil, plenty of moisture and a sunny location for a good growth. Lily of the valley (*Convallaria majalis*) is suitable for growing in pots, beds and rock gardens. It thrives well in shade, particularly under a tall tree. Fox

tail lily require a rich and well drained soil and cool conditions for a good growth. Glory lily is suitable for light soil and needs frequent watering. In the hills it is susceptible to frost. Day lily thrives best in rich fertile and moist soil and sunny situation.

**Marigold**

Marigolds are hardy and can be successfully grown best in different types of soil and climate. The French marigold grows best in light soil and the African marigold requires a rich well manured and moist soil. It needs well drained soil and a sunny position. They can be grown in various types of climate and almost any part of the year except in very cold winter when the plants are likely to get damaged by frost. The soil should be cultivated well and good dose of cowdung manure 8-10kg /square meter area should be incorporated in the soil to obtain the largest and most double flowers. The french marigolds should not be given too much of manure as they will produce more vegetative growth and less blooms.

**Orchids**

Climatic conditions of Nepal except in the high hill is best for orchid. For tropical areas lath or slat house is best for growing orchid. It can be grown in open beds in temperate regions. Many of the epiphytic is grown in trees. Some lipophytic can be grown in rocks with the help of sphagnum moss and stone chipstill their roots attach to the stones. Trees having rough barks and stones with rough and porous surface will be more suitable for growing the orchids as these surfaces hold more moisture.

For epiphytic orchids media such as osmunda fibre, dried roots of fern, sphagnum moss, tree fern fibre and blocks are used also broken bricks and moss, charcoal pieces; porous rock pieces are also used. Orchids need sufficient air all the time hence genera such as Vanda, Aerides, etc. are grown in hanging baskets rather than in pots or benches, as in this way they receives more air current. On the other hand it needs diffused sunlight. Care should be taken to see that the leaves are not scorched by direct sunlight.

Orchids are categorized into three groups depending upon their requirements. The optimum night temperatures for these groups are cool loving 45-50$^0$F, intermediate 55$^0$-65$^0$F and above. Moisture and humidity is one of most important factors for the porper growth of orchids. There is a tendency to over water orchids which is harmful. Most of the orchids like moderate watering and then allowed to dry relatively between two waterings. When these are grown in moss, osmunda fiber and bark preparations, the media retains a lot of moisture and care should be taken to ascertain the humidity in the medium before another watering. Basket planting need more watering. Rain water is best for orchids, but this is but easily available to the growers. The orchid in a rest period needs less water, more air circulation and somewhat cooler temperature.

Under natural conditions orchids receives their nutrient requirement through birds droppings, rain water, and decay of organic matter. While in greenhouse or lath house plants should be fertilized with 10-10-10 NPK. Some bonemeal may be applied to the compost. About half to one teaspoonful of this mixture is added to about 4.5 litre of water and applied to the plants at fortnightly intervals. Too much feeding is harmful.

**Roses**

Roses are gross feeder. They grow best in ground. These are distributed in temperate and tropical zones of new Mexico, north America, Africa Himalayan belts of India, and in mountains of Japan and China.

At the time of pruning well rotten cowdung manure is applied. The dose would vary with the soil type and its fertility status. Generally 4-8 kg cowdung manure per bush will be quite adequate. A little BHC or chlordane or

aldrin should be mixed with the organic manure to prevent the attack of white ants. Nitrogenous fertilizers are more important. Phosphates also help in the production of more and better quality blooms. Nepalese soil are quite rich in potash previously, but potash fertilizers in combination with others give good results in some regions.

The rose bed should be well drained as the rose does not thrive in a wet waterlogged soil. If the soil is heavy and poor in drainage, we may put a layer of coarse gravel and sand at the bottom of the bed. The rose bed should be located in a sunny situations away from trees or hedges and it must receive sunshine for at least the whole forenoon if not the wholeday. Roses need a pH of about 6.5 in the soil.

**Adding Organic Materials and Soil Amendments**

Almost all soils can benefit from the addition of more organic matter. If you are starting with an empty bed, add as much composted (rotted) organic material as you can afford.

If you are amending the soil in the fall, you can add materials such as manure, grass clippings or leaves, because they will have all winter to rot into the composted material you want. Dig this stuff into the soil as soon as the ground can be worked in the spring.

In addition to organic matter, sometimes your soil needs other amendments. Things such as ground limestone in order to increase the pH. Or other rose beneficial things such as bone meal, blood meal or a bit of NPK (Nitrogen, Phosphorous, Potassium) fertilizer. Good rose fertilizers have an NPK ratio of 1:2:1. More phosphorous leads to better blooming. Adding too much nitrogen will result in too much foliage and too few blooms.

**Benefits of compost**

One of the easiest and most rewarding things that you can do to ensure that your roses are healthy and strong, is to top dress them with home made compost. Because it provides plant nutrients in a balanced and ready-to-use form and enriches the texture and structure of the soil, Compost is the result of the activity of a myriad of tiny organisms that need two main compounds for their life processes – carbon for energy and nitrogen for growth and reproduction. As the differing organisms go through the organic materials, the byproducts undergo progressive decomposition and eventually most of the digestible material is consumed and transformed, leaving behind a rich soil amendment. Compost is an outstanding and invaluable source of organic matter for the home gardener. Furthermore, compost will warm the soil in the spring, stimulating plants to grow sooner in the season, and cool the soil in the summer allowing plants to perform better in the summer heat. The benefits of a healthy garden will repay you many times over for the relatively small amount of work it takes to make your own compost. Garden soil that is regularly amended with compost will have improved soil texture and structure, increased water retention in sandy soils and loosened clay soils, control pH, feed helpful earthworms, control weeds, aerate the soil, retain moisture, provide healthier, more productive and more disease resistant plants, promote better drainage, provide soil nutrients, increase beneficial microorganism activity, provide mulch and recycle garden and kitchen waste. In addition to organic matter, sometimes your soil needs other amendments. Things such as ground limestone in order to increase the pH. Or other rose beneficial things such as bone meal, blood meal or a bit of NPK (Nitrogen, Phosphorous, Potassium) fertilizer. Good rose fertilizers have an NPK ratio of 1:2:1. More phosphorous leads to better blooming. Adding too much nitrogen will result in too much foliage and too few blooms.

**Digging and Aerating**

Even if you don't add any soil amendments, it is very important that you dig or till the soil EVERY season. For new beds you will want to turn the whole bed over in the fall and again in the spring with a shovel or a roto tiller. If you are dealing with existing roses, you should turn all of the soil over with a fork about 1 foot away from the bush and loosen the roots with a garden fork all around the rose in the spring. This is a good time to add fertilizers and small amounts of other amendments such as alfalfa pellets, Gypsum salts (Magnesium Sulphate), fish emulsion or manure tea. Fertilizers and amendments should always be dug into the top layer of the soil around the plant.

Perfect Rose Soil

So what is perfect rose soil? It has about 50 percent organic matter and the rest is an equal mixture of clay, silt and sand. It has a pH of 6.5. It has worms living there. It has uncounted bacteria and fungi living there. It has organic matter in all stages of decay present. It is light yet not too light. If you grab a handful and crush it, it stays together, but does not form a clod. You can physically push your fingers down into it a few inches, but not down to your elbow. When it is wet, it is not muddy, when it is dry it is not concrete. How will you know if your soil is great? Your friends, family and neighbors will all start talking about your huge healthy plants and what a green thumb you have. Green Thumbs are all about healthy soil.

When all else fails, dig a hole and fill it with potting soil .

If you don't want to go to all of that trouble, I have good news for you. The Lazy Person's Way To Great Roses: Dig a hole about 2 feet in diameter and 18 inches deep in whatever crappy soil you have. Pour a two cubic foot bag of nursery potting soil into the hole. Then go ahead and plant your rose. This method works like a charm, but can get a bit on the expensive side depending on how many roses you are planting.

**Organic fertilizers in gardening**

Organic fertilizers have great value in the garden;

Organic fertilizers-

- can improve the quality of the soil by contributing organic matter.
- contribute the micro-nutrients which contribute to strong and healthy growth.
- are an excellent way to add specific nutrients particular to a plant's needs.

Lovely plants are evidence of excellent soil structure; there is no greater gift you can give to your plants (and yourself) than the addition of compost to the soil.

**Tuberose**

Te bulbs are planted in October on the plains and in May June on the hills. Tuberose thrives best in fertile and well-drained soil and sunny places, though sometimes it can also be grown in partial shade. In places like Pokhara with high rainfall and mild winter, it is possible to have flowers almost throughout the year. Tuberose can also be grown in pot mixture consists of 2 parts of garden soil, 1 part of each of leaf mould, FYM, and coarse sand, and ¼ part of coarse charcoal pieces.

**Refernces**

Brookes, J. 1990. The garden book. Dorling Kindersley , London.

Swarup, V. 1967. Garden flowers. National Book Trust India.

# ROSE PRUNING- A *Review*

*Debraj Adhikari*
*Plant Protection Officer, DADO, Sindhuli.*

**ABSTRACT**

*Rose (Rosa spp.) is one of the most important commercial cut flower in our country. Because of the increasing trend in the consumption of rose flowers the domestic demand has increased from 125 sticks per day in 1992/93 to 4000-5000 sticks per day in 2010. Pruning is most important technical aspect of rose growing. It removes the unproductive and undesirable growth of the plants which improves plant vigor, flower quality and maintains the floriferousness of rose plant. This review highlights general rules for pruning, methods for different types of roses and pruning tools as well as time, intensity and frequency of pruning. Pruning rose plants in different dates is beneficial for staggering the harvest of cut flowers and the intensity of pruning has considerable influence both on vegetative growth and flower production.*

**Key Words:** rose, pruning, types of roses, pruning time, intensity and frequency

**Introduction**

Rose belongs to the family Rosaceae and genus Rosa; an ancient word adapted from Greek rhedon, and was so called because of its excellent fragrance. Rose is one of the nature's beautiful creations and is universally acclaimed as the Queen of Flower (Yadav et al., 1989). Roses are symbol of beauty, fragrance and are used to convey the message of love. Without roses, gardens are not considered complete (Arora, 2007). In the global pretext, Rose and Carnation are the dominant species in the major markets followed by Chrysanthemum, Orchids and Gladioli. Commercial cut rose production is one of the most important of the floriculture industry (McDaniel, 1982). Rose is the second ranked cut flower launched by Floriculture Association Nepal (FAN) for multi location trails and has become quite successful (Pun, 2004). Roses in Nepal are found growing from the plains to the hilly region and come to bloom in different seasons. In plains, its gives best bloom in winter while in hills it flowers best in spring.Pruning in rose is a major horticultural practice (Edmond et. al., 1994). Pruning affects the production of cut rose flower. There are several reasons of rose pruning. Pruning allows to shape roses to desirable height and size characteristics to compliment garden. Pruning can encourage the production of large, long-stemmed flowers from hybrid teas or smaller but more abundant clusters from floribundas. Proper pruning also helps to create a healthy rose by removing the 3 –D's; dead, diseased and damaged canes. By thinning canes from the interior of the plant air circulation is increased. This decreases the likelihood of some common fungal ailments such as mildew. By removing dead or damaged canes one can increase the overall well-being and beauty of roses (Funk, 2008).

**2 Pruning of different types of Roses:**

Rose pruning is regarded as a horticultural art form, is largely dependent on the type of rose to be pruned, the reason for pruning, and the time of year. The general principle underlying pruning is the

encouragement of the plant sap to flow towards certain desired part of the plant, such as the stem, leaf or roots, to promote their growth and vigor by removing certain other parts which are not wanted and for the growth of which plant sap would be wasted. Pruning thus is an invigorating process calculated to produce a definite effect in the formation of shoot, flowers, fruits and root too (Gopalaswamiengar, 1970). The kind and severity of pruning of the rose depend on the kind of rose grown and the size of the flower desired. Some kinds require severe annual pruning and other kinds require little or no pruning. Roses which require severe pruning are hybrid perpetuals and hybrid teas which are grown for cut flowers (Edmond *et al.,* 1957).

The responses of pruning in different cultivars of roses are different which can be attributed to varietal characters, difference in pruning date, age of the plant, and managemental factors (Pun, 1994). Generally, Rose plants are pruned after proper establishment. With the exception of climbing roses, prune all newly planted roses hard to encourage vigorous shoots. The method adopted for the different types of roses are: Hybrid Teas are the type of roses that produce the large flowers, one per stem. It is easiest to prune by the size of the cane. Usually it is a good practice to limit the canes to about four or five of the young, strong new rose canes. Outer canes should be select, so it opens-up the bush to permit better sunlight exposure and air circulation. Floribunda and Polyanthus are the types of roses that produce lots of flowers per stem. Although some can be cut and used as cut flowers, most are grown for garden show because of their prolific flowering habit. The floribundas are generally smaller growing. Climbing Roses are undoubtedly the most misunderstood of all roses when it comes to pruning, yet they are quite easy to prune. Only four or six canes should keep and spread an even number on each outer side, so the plant is balanced. Surplus canes should be removed. This type of rose should head back on the tip to make the plant fit to the surface and make covering. Climbing rose produces canes one year and they do not flower until the second year so canes should not cut severely. Miniature Roses easy to prune. This type of rose plant should prune to make nice bushy structure. Proper pruning of roses not only encourages larger sized roses, but also helps create longer stems and more attractive bushes.

**Some Terminologies related to rose pruning:**

In some rose growing areas, generally in the humid regions, the base of the rose plant is exposed to sun and air by removing the soil to a depth of 10-15 cm in a diameter of 20-30 cm around the plant. Then after the few days, the soil is mixed with well decomposed manure and put back to the pit and irrigated properly. This process of root exposing is known as wintering.

Removal of terminal growing portion of stem is called as pinching. It reduces plant height and encourages axillary branching. Disbudding is the process of removal of undesirable buds from time to time, keeping only the central bud intact for better quality bloom. Deshooting is the process of removal of young vegetative shoots to encourage the growth of terminal shoots generally done in Hybrid Tea roses. Other operations like defoliation and removal of faded flowers are also included in pruning practice.

Harvesting of fresh flowers or cutting of dead flowers during the blooming season is called deadheading.

Deadheading encourages the plant to re-bloom. Cuts should be made similar to pruning cuts made on canes. Any petals or leaves that fall into the bush or on the ground should be removed any time.

Bending pruning: Instead of removal of canes of rose plants i.e. pruning in high-tech production of rose cut flowers, bending of canes is common practice. Sarkka in 2004 conducted research on comparison of pruning and bending for cut rose production. Pruning, which is usually done in traditional upright growing method, was compared with the shoot bending technique at the beginning of forcing after the rest period. Pruning leaves the plants almost or completely leafless, while bending retains the photosynthesizing leaves in the plants. In comparison with pruning, shoot bending increased yield quantity and shoot length in 'Mercedes' and 'Frisco' cultivars of rose plants.

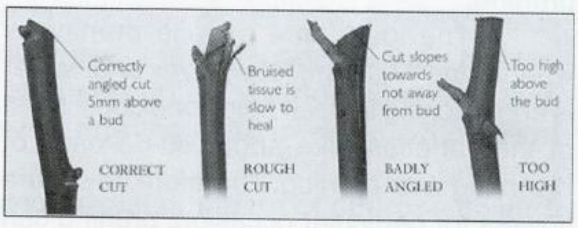
## 3 General rules for pruning

There is a great deal of disagreement among rose experts regarding how and when to prune roses. It is better to make a good effort at pruning roses than to let them grow rampant. Rose pruning is really quite simple. As a rule it is a good idea to make all pruning cuts just above an outside bud so the new growth will develop outward, thus opening-up the plant to allow for better air circulation and sunlight exposure. Pruning is most important technical aspect of rose growing. Root suckers should be removed whenever they appear (Arora, 2007). Suckers or rootstock shooting out of the ground from below the basal break should be remove as and when shown.

The rose plants should be prune with secateurs removing all dry, diseased, damaged, weak and crisscross branches to allow the intensity as desired. After pruning cut ends should be paint with fungicide paste or pesticides will be spray over them in order to protect against the attack of fungus and cane boring insects. The correct way to make a cut applies to removing dead wood, deadheading and all annual pruning. Cuts must be clean, so secateurs should keep sharp.

### 3.1 Why Prune Roses

Because most roses flower on new wood, and pruning encourages the development of healthy new growth. Rose pruning is done to encourage new growth and bloom, remove dead wood, improve air circulation and shape the rose plant.




### 3.2 Rose Pruning Basics

For effective pruning clean and sharp tools (secature, pruning knife) should use. Before pruning the overall plant should observe, and pruning should begin from the base of the plant. Pruning should make to open the center of the plant to light and air circulation. Cuts should make at a 45 degree angle, about 1/4 inch above a bud that is facing toward the outside of the plant. Clean cut should perform during pruning. All broken, dead, dying or diseased wood (any branches that look dry, shriveled or black; cut until the inside of the cane is white) should remove. Any weak or twiggy branches thinner than a pencil should prune. Seal the cut with white glue, if cane borers are problem. Sucker growth below the graft and any remaining foliage should remove.

Rose plants after pruning, Bordeaux paste application, weeding and manuring

**4 Time of Rose Pruning**

Season of flowering, age of the shoot bearing flowers and rate of the shoot growth are important factors which will give an idea about time of pruning (Bose and Ghose, 1970). Diseased and dry wood must be cut from the base of the affected branch whenever detected. Branches which grow irregularly and affect the shape of a neat busy plant also be removed without waiting for the proper season. Rose pruning timing is determined by the class of the rose plant and the region in which it is growing. Hybrid tea roses are the most particular about pruning.

The ideal time of rose pruning is when rains are completely over and winter is approaching in open field conditions. Most of the varieties take about 60-65 days of blooming after pruning. Therefore, to secure flowers for particular occasion, pruning can be adjusted accordingly (Arora, 2007). Gopal (1978) concluded that by sequential pruning of rose, cut flowers can be produced round the year without greatly affecting yield and quality. But the best time is during April to May and August to November to get quality bloom in Bangalore, India condition (Godwa, 1987). The different dates of pruning seem to have influenced flower yield and quality subsequently (Mukhophadhyay, 1990).

Rose plants after pruning, Bordeaux paste application, weeding and manuring.

Bhattacharjee (1992) reported that better vegetative growth and quality flowers were obtained with the plants pruned during 6th October to 17th November in New Delhi condition. It was also reported by him that pruning rose plants in different dates was helpful in staggering the harvest of cut flowers. The different dates of pruning had influence on first flower bud appearance, duration of flowering, flower diameter and flower production (Singh and Sujata, 1992). Rose pruning in Chitwan commonly performed on July, August owing to good vegetative growth and also to coincide flowering on Dashain, Tihar festivals and wedding season. Rose pruning in protected cultivation system can be done any time of the year to produce flower according to market demand. Both cutting of branches and bending of branches are practiced.

**5 Intensity of Rose Pruning**

The amount of pruning depends on the characteristics we desire of our rose during the blooming season. For more abundant blooms on smaller stems we may choose a lighter pruning. The severity of pruning has considerable influence both on vegetative growth and flower production. Several researchers have reported increased flower production with light pruning and quality blooms with severe pruning (Mukhopadhyay et.al., 1987).

The intensity of pruning markedly influences the growth and flowering of roses. Depending up on the extent and level of shortening of stem, there are three types of pruning-Light, Moderate and Heavy (Dhua, 1999). In roses, the amount of pruning largely depends upon the types and the cultivar, health and vigour of the plant, spacing, fertility status of soil and desired flower quality and number. Generally strong and healthy plants are pruned lightly, moderate growers moderately and weak plants relatively heavy.

**A research was conducted during July 2008 to April 2009 in Chitwan, Nepal to evaluate the influence of time and intensity of pruning on growth and flowering behaviour of cut rose cv. Super Tata (*Rosa hybrida*). Both time and intensity of pruning influence the number of flowers and duration of flowering (Adhikari, 2009). Early pruned rose plant (July 30) produced highest numbers of cut rose flowers (15.11) and longest duration of flowering (212.8 days) followed by rose plant pruned on August 15 (13.56) and (196.4 days) and rose plant pruned on August 30 (12.67 flowers) and (178.7 days) respectively (Fig. 5). The earlier pruned rose plants started to initiate flower stem buds earlier and flowering than later pruned rose plants but, the cessation of flowering was at similar time. Thus, the duration of flowering was found longer in early pruned rose plant on July 30. This result was also agreed by Mukhopadhayay, 1990. Deepauw in 1985 observed that later was the pruning date, lower was the flower yield.**

**Heavily pruned rose plant produced lowest numbers of cut rose flowers (8.66) followed by medium pruned plant (13.00) whereas highest numbers of cut rose flowers (19.67) were produced by lightly pruned rose plant. Several workers have been reported increased flower production with light pruning and quality blooms with severe pruning (El. Gamassy et al., 1980; Irulappam et. al., 1993). Heavily pruned rose plant produced cut rose flowers for longest duration (198.1 days) followed by medium pruned plant (196.0 days) and shortest duration of flowering (193.8 days) were reported from lightly pruned rose plant (Fig. 6).**

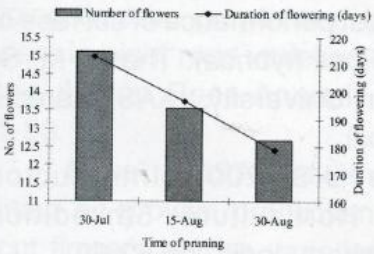



Fig. 5. Effect of time of pruning on number of flowers and duration of flowering of cut rose cv. Super Tata (*Rosa hybrida*) in Chitwan (2008/09).

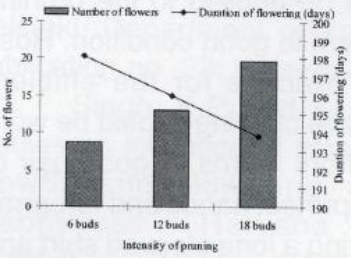
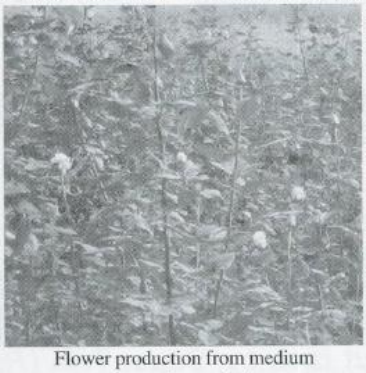


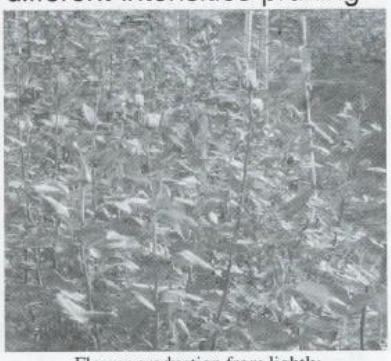

Fig. 6. Effect of intensity of pruning on number of flowers and duration of flowering of cut rose cv. Super Tata (*Rosa hybrida*) in Chitwan (2008/09).

Figure sowing rose cut flower production as influenced by different intensities pruning

Flower production from heavily pruned rose plant



Flower production from medium pruned rose plant



Flower production from lightly pruned rose plant

**6 Frequency of Rose Pruning**

Pruning should be done once a year, as more frequent pruning tends to weaken the plants. However, the flower should be cut off with a sufficient amount of the stem, as this helps to keep the plant neat and ensures that the new shoot will not be weak (Pal, 1972). Pruning can be done twice in a year so as to produce flowers for flower shows or for special occasions. The hybrid teas are pruned 42 days before and floribundas get this treatment about 45 days ahead.**7**

**Implements required for Pruning**

Rose pruning can be done with secateurs, pruning knives, pruning saws and pruning shears. The edge of the pruning tools should be kept sharp so that a clean cut is made and the plant tissues are not bruised or lacerated. Drops of oils or Vaseline should be applied to the pruning tools to keep them in good condition. Rose growers need practice for the efficient pruning. Protective clothing should be worn to avoid injury from thorns. A good pair of rose gloves will protect hands and forearms from cuts. Wearing a long sleeved shirt and long pants is also recommended.

Pruning paint (Bordeaux paint) should apply after pruning to protect the canes from insect and disease infestations.

**Conclusion**

Roses are one of the most popular garden shrubs. Pruning is one of the important cultural practices for successful rose cultivation. Pruning is the process of removal of any part of plant which includes cutting of small and large branches, spent flower spikes and cutting of roots etc. It is a specialized job because all plants do not react similarly to pruning and thus particular methods and seasons should be followed. Since, Nepal has no mechanism of storing/ preserving it to prolong its shell life, year round availability of rose cut flower can be achieve by effective application of pruning. Rose pruning regulates the flowering time to maintain steady supply of flowers in the market and to avoid glut.

**REFERENCES**

Adhikari, D. 2009. Influence of time and intensity of pruning on growth, flowering and postharvest performance of cut rose cv. Super Tata (*Rosa hybrida*). Thesis, M. Sc. Ag. Tribhuvan University, IAAS, Rampur, Chitwan, Nepal.

Arora, J.S. 2007. Introductory Ornamental Horticulture. 5th edition. Kalyani Publishers. India. pp.52-60.

Bhattacharjee, S. K. 1992. Vegetative growth, flowering, flower quality and vase life of Rosa cv. "Super Star" as influenced by different dates of pruning.

Indian Rose Annual. 10 : 85-91.

Bose, T. K. and P. C. Ghosh. 1970. Pruning of Ornamental Plants. Indian Horticulture. Oct.-Dec. Vol.15, No. 3. pp. 29-32.

Deepauw, W. B. 1985. Effect of time of pruning on subsequent growth of greenhouse roses. Bull. Colorado Flowers Growers Assoc. 300: 1-3.

Dhua, R. S. 1999. Rose. In Floriculture and landscaping. Bose T. K., R. G. Maiti, R. S. Dhua and P. Das (eds.) Naya Prokash, Calcutta, India. pp. 368-405.

Edmond, J. B., T. L. Senn, F. S. Andrews and R.G. Halfacre. 1994.Fundamentals of horticulture. 4th ed. Tata McGraw-Hill Publishing Company Ltd, New Delhi, India. p.304.

Edmond, J.B., T.L. Senn and F.S. Andrews. 1957. Fundamentals of horticulture. 3rd ed. Tata McGraw-Hill Publishing Company Ltd, Bombay, India, p.269.

El. Gamassy, A. S., El. Hakim and S. El. Shafie. 1980. Effect of October pruning and fertilization on flowering of 'Hoover' rose plants. Ann. Agric. Sci. Cairo. 5 (2): 159-70.

Funk, W. 2008. A Brief Guide to Rose Pruning. The American Rose Society (www.ars.org).

Godwa, J.V.N. 1987. Effect of pruning time on growth and quality of cut flowers in eight rose varieties of hybrid tea roses. Indian Rose Annual. 6 : 145-47, 151-53.

Gopal, A. 1978. Influence of time of pruning on growth, production and quality of cut flowers in rose varieties. Mysore J. Agri. Sci. 12(3):527.

Gopalaswamiengar, K. S. 1970. Complete Gardening in India. Kalyan Printers, Banglore-2, India. Pp.129-137.

Irulappam, I., S. Muthuswamy and C. M. Pappiah. 1993. Effect of severity and time of pruning on the flower yield in Edward Rose (Rosa bourboniana Desp). South Indian Hort. 31 (6): 305-6.

McDaniel, G. L. 1982. Ornamental Horticulture. Reston publishing company, A Prentice-Hall Company, Reston, Virginia. P. 180.

Mukhopadhyay, A., K. sujata and K.P. Singh. 1987. Note on influence of differet levels of pruning on growth and flowering of rose cv. 'Happyness'.the Indian Journal of horticulture.

Mukhophadhyay, A. 1990. Effect of time of pruning in rose. Indian Journal of Horticulture. pp. 261-64.

Pal, B. P. 1972. The Rose in India. Indian Council of Agricultural Research, New Delhi, India. pp. 80-87.

Pun, U. K. 1994. A Preliminary Study on the Effect of Pruning on Flowering in different cultivars of rose (Rosa spp.). Journal of Agriculture and Animal Science. 15: 115-119.

Pun, U. K. 2004. Commercial cut flower production in Nepal and status of four important cut flowers. Journal of Agriculture and Animal Science. 25: 17-21.

Sarkka, L. 2004. Yield, quality and vase life of cut roses in year-round greenhouse production. University of Helsinki, Department of Applied Biology. Publication no. 23. Helsinki, Finland.

Singh, K.P. and K. Sujata. 1992. Studies on influence of time of pruning on growth and flowering of rose cv. 'Happyness'. Haryana Journal of Horticultural Sciences. 21 (1-2) : 11-15.

Yadav, L. P., N. K. Dadlani and R. S. Malik. 1989. Rose. In : T.K. Bose and L.P. Yadav (eds.) Commercial Flowers. Naya Prakosh, Culcutta-7, India. pp.15-150.

# POTTING MEDIA IN RELATION TO FOLIAGE PLANT

By - Shiva Ratan Gupta,
M.Sc. Horticulture, BHU, India

## INTRODUCTION

Potting media has important role for proper growth and development of plants. Deficiency or excess of any nutrient can lead to improper growth. Also when they are grown in substrates, proper maintenance of nutrient level in plant is an important pre-requisite. Texture, structure porosity, water holding capacity and element composition of media are major factor which determines whether nutrients are available to plant or not. In view of this investigation were undertaken to standardize the media for optimum growth of the plant and to find out the nutrient status of each potting media before planting and after 6 months of potting. In this study, we evaluated the suitability of six locally available media (soil, sand, FYM, vermicompost, leaf mould and poultry manure) mixed in different ratio for Dieffenbachia (*Dieffenbachia amoena*), Wax begonia (*Begonia ´ semperflorens-cultorum*), Variegated Ficus (*Ficus benjamina* 'Variegata') and Aluminium plant (*Pilea cadierei*).

Dieffenbachia consists of about 20 species and the name derives from the German botanist, J.F. Dieffenbach. The plants are popularly grown as house plants because of their beautiful foliage. Wax begonia (*Begonia ´ semperflorens-cultorum*) is mainly used as mass planting, edging, border, container and hanging basket. The glossy ovate leaves ranges from green to red and flowers are single or double with colour including red, pink, pale orange and white. Variegated Ficus is a attractive foliage, a showy, small, bushy plant with elliptical leaves, glossy light green, marginated and variegated with ivory-white. The name Aluminium plant is because of the deep silvery patches which occur between the veins on its green, oval oblong, simple leaves. It makes a good house plant growing about 25 cm high, with inconspicuous brownish, green flowers. All above the ground of dieffenbachia and Pilea are poisonous. The all four plants mostly found either as houseplants or interiorscope.

## MATERIALS AND METHOD

Freshly backed and sounded clay pots of the 25 cm size were selected and a big crock was placed over the drain hole surrounded by few small pieces to improve the drainage capacity of the plant, thereafter pots were filled with mixture by weighing 5 kg/pot, which is prepared at different ratio by using soil, sand, FYM, poultry manure, leaf mould and vermicompost. The maximum and minimum average temperatures fluctuated between 9°C - 34.1°C, total rainfall ranged from 0.00 – 53.16 (mm) and relative humidity was 30.25 – 87% at the time of experiment. The experiments were laid out in a completely randomized design (CRD) consisting of 12 treatments *viz.*, sand + vermicompost (1:1, v/v), sand + poultry manure (1:1, v/v), sand + FYM (1:1, v/v), sand + leaf mould (1:1, v/v), soil + vermicompost (1:1, v/v), soil + poultry manure (1:1, v/v), soil + FYM (1:1, v/v), soil + leaf mould (1:1, v/v), soil + sand + poultry manure (1:1:1, v/v), soil + sand + FYM (1:1:1, v/v), soil + sand + leaf mould (1:1:1, v/v), soil + sand + vermicompost (1:1:1, v/v) and replicated three times. Observation were recorded on the plant height, number of sprouts/plant, number of leaves/ plant, diameter of shoot, number of flowers/ plant (wax begonia) were recorded at 15 days interval after transplanting. Root characters were studies after 6 months regarding number

of roots/plant, length of root, diameter of root, fresh weight and dry weight of roots/plant. The samples were analyzed before planting and after completed the trial period. The samples were air dried, grind and sieved through 2 mm sieve than stored in plastic bags. The pH of media was measured in 1:2.5, soil:water suspension with the half of glass electrodes, digital pH meter (Jackson, 1967). The EC was determined in the supernatant liquid of 1:2.5, soil:water suspension with the half of conductivity meter (Rhoades, 1989). Available nitrogen in media was estimated by alkaline permanganate method (Subbiah and Asija, 1956). Available phosphorus was estimated by extracting soil with N/2 NaHCO3 (pH 8.5) in 1:20 ratio (Olsen *et al.*, 1954). The potassium was estimated by flame photometer method (Hanway and Heidel, 1952). First the cutting of dieffenbachia, wax begonia and Aluminium plant were prepared and planted in sand for root initiation and then the uniform rooted cuttings were transplanted in the middle of each pot containing media. The uniform air layered plants of Ficus were planted directly to the media containing pot in centre position.

**RESULTS**

The maximum plant height (55.31cm) from sand + FYM (1:1), maximum sprout/plant (2.31) from sand + vermicompost (1:1) and soil + vermicompost (1:1), maximum number of leaves/plant (14.04) from sand + FYM (1:1), maximum diameter of shoots/plant (0.48cm) in sand + FYM (1:1), maximum roots/plant (36.96) from sand + FYM (1:1), maximum length of root (47.73cm) from sand + FYM (1:1), maximum diameter of root (0.48cm), maximum fresh weight of roots/plant (49.29g) from sand + FYM (1:1) and maximum dry weight of roots/plant (3.41g) was recorded. The maximum nitrogen level (69.30g/pot), maximum phosphorus level (51.10g/pot), maximum potassium level (64.40g/pot) was recorded from sand + soil + poultry manure (1:1:1). The maximum nitrogen reduction (4.90g/pot) from sand + FYM, sand + leaf mould, soil + leaf mould (1:1), maximum phosphorus reduction (4.20g/pot) from sand + leaf mould, soil + poultry manure, soil + FYM (1:1) and maximum potassium reduction (6.30g/pot) from sand + soil + vermicompost (1:1:1) was recorded in dieffenbachia.

The pot contained sand + FYM (1:1) produced maximum plant height (29.47cm), number of sprouts/plant (49.00), number of leaves/plant (164.33), diameter of shoots (0.43cm), number of flowers/plant (49.67), number of roots/plant (54.67), length of root (21.67cm), diameter of root (0.08cm) and dry weight of roots/plant (3.68g), whereas maximum fresh weight of roots/plant (10.49g) was obtained from sand + vermicompost (1:1). Observations related to nutrient level of potting media, the maximum nitrogen (69.30g/pot), phosphorus (51.10g/pot) and potassium (64.40g/pot) was recorded from the pot contained soil + sand + poultry manure (1:1:1). However, maximum reduction of nutrient was recorded with nitrogen (9.10g) from sand + FYM (1:1), phosphorus (5.60g/pot) from soil + sand + poultry manure (1:1:1) and potassium (4.90g/pot) from sand + vermicompost (1:1) in wax begonia.

The treatment consisting sand + poultry manure (1:1, v/v) performed best with all parameter taken in Ficus. Observation recorded with nutrient level of potting media, the nitrogen, phosphorus, and potassium was higher in pot contained poultry manure, whereas the pot contained poultry manure also reducted the maximum nitrogen, phosphorus and potassium level from the pot of Ficus.

In Aluminium plant the pot contained sand + vermicompost (1:1) and sand + FYM (1:1) performed best for all the parameter, whereas soil + sand + vermicompost produced maximum length of root (90 DAP and 180 DAP) and diameter of root (180 DAP). Observation related to nutrient status of potting media, the pot contained poultry manure had higher nitrogen, phosphorus and potassium before planting. However, the reduction of

nitrogen and potassium was maximum in sand + soil + vermicompost (1:1:1), phosphorus was maximum in sand + FYM (1:1).

The results endorsed in dieffenbachia the suitability of sand + FYM (1:1) as potting media signify that it can effectively replace the conventionally used potting media. In medium poultry manure in combination with sand or soil performed poorly and could not meet the requirements for establishment and growth. Thus, FYM in combination with sand in ratio 1:1 is most suitable which could be due to optimum water holding capacity, better drainage and aeration or may be due optimum nutrient level provide by the media to the plant. Sand + FYM (1:1) as potting media signify that it can produce best root growth of dieffenbachia. This is mainly due to in combination with sand which increases the pore space in media and allows moving freely. In medium poultry manure the root growth was not performed well because of higher dose of nutrient present in media which restricted the root growth. The reduction of nutrient from the media was only due to the leaching or due to feeding habit of plant.

The results endorsed the suitability of Sand + FYM (1:1) as potting media and it can effectively replace the conventionally used potting media to grow wax begonia The media containing leaf mould could not performed well, this may due to compaction of media or minimum water holding quality which may leads to improper growth. The pot contained an equal proportion with FYM produced better root growth. It may due to sand or structure of FYM particles which improve the porosity of media in pot and provide much more area as needed by roots, this leads to best growth of roots.

The plant growth was best in Ficus with sand + poultry manure is only due to higher and heavy nutrient feeder nature of plant and balanced nutrient status present in media, whereas sand helps to improve the drainage quality of the media. The plant could survived in pot contained poultry manure is only due to hardness nature of root and the pore space in the media which allow to move the root freely. The maximum reduction of nutrient from pot is mainly due to heavy feeding nature of plant and leaching of nutrient in pot.

The pot contained sand + vermicompost (1:1) performed best in Pilea because of granual character of vermicompost which increase pore space in media and may be due to optimum nutrient level of potting media. The pot contained poultry manure could not establish the plant because of maximum heat exhausted by the poultry manure and root was burnt in Aluminium plant. The reduction of nutrient from the pot is mainly due to nutrient up take by the plant or lost by leaching. It can be seen that substrates amended with sand + vermicompost (1:1) and sand + FYM (1:1) by volume was optimum for growth of aluminium plant (*Pilea cadierei*) and generally maximum nutrient was lost from pot contained sand.

## REFERENCE


Hanway, J.J. and H. Heidel, 1952. Soil analysis methods as used in Iowa State College Soil testing Laboratry. *Iowa Agric*, **57** : 1-31.

Olsen, S.R., C.V. Cole, F.S. Watanabe and L.A. Dean, (1954). Estimation of available phosphorus in soil by extraction with sodium bicarbonate. *Circ. U.S. Dep. Agric.* Pp. 939.

Subbiah, B.V. and G.L. Asija, 1956. A rapid procedure for the determination of available nitrogen in soil. *Curr. Sci.*, **25** : 259-260.

Jackson, M.L. 1967. Soil chemical and analysis. Prentic Hall of India Pvt. Ltd. New Delhi. Pp-186-192.

Rhoades, J.D. 1989. Soluble salts. In: Methods of Soil analysis part-2 Agron-9. A.L. Page, R.H. Miller and D.R. Keeney (ed.) Amer.Soc.Agron. Inc. Madison, Wisconsin, USA. Pp- 167-179.

# Summary Report on "Current postharvest handling practices of cut flowers in different districts of Nepal" & "Identifying packaging and transportation technique to supply fresh cut flowers to new market destination."

Dr. Umed Pun, Sarina Manandhar,
Lok Nath Gaire and J.B. Tamang,

The study entitled "Study on Current Post-harvest Handling Practices of Cut Flowers in different Districts of Nepal and Identifying Effective Postharvest Technique to Supply Fresh Cut Flowers to New Destination Market is undertaken by Floriculture Association Nepal (FAN) and submitted to government of Nepal, Ministry of Agriculture & Cooperative (Through Secretariat of "One Village One Product" Implementation Committee, Agro Enterprise Centre/FNCCI, Teku, Kathmandu)

Cut flower being highly perishable horticultural commodity, postharvest management is an important aspect to maintain its quality and upgrade its market value. With this consideration the study was carried out in 2009 in different districts of Nepal as a second phase of research. These districts were Dhanusa, Makwanpur, Kaski, Chitwan, Rupendehi and Kailali where production and marketing of cut flowers have been already initiated. This study envisages the status of postharvest knowledge and handling practices among all stakeholders in different districts of Nepal. The other objectives were to identify suitable chemical treatments and test new packaging materials that can improve vase life of cut flowers.

Findings of this study suggested that development of postharvest technology is at a very primitive stage in different districts especially in terai reasons of Nepal. The extent of postharvest loss is as high as other horticultural commodities ranged upto 20-30 percent at supplier level and even more than 30 percent in Kailali at grower's level. There was poor knowledge about improved postharvest handling of cut flowers among all the stakeholders. Likewise, growers also lacked technical know how about the preharvest management that can affect postharvest life of cut flowers.

It was observed that 41.17% retailers display their products direct to sunlight and there were also some retailers (17.4%) who did not isolate deteriorate flowers from the fresh ones. Almost all growers and majority of retailers were ignorant about scientific techniques. There were no growers who apply chemical treatments to the flowers and even they also not heard about any kind of antimicrobial holding solutions and other chemicals that can extend vase life of cut flowers. About 11.76 percent retailers were found to use salt and sugar solutions, however majority of them do not adopt it. In addition consumers were also not aware about extending vase life of cut flowers. They were mainly concerned only with the quality of cut flowers and packaging system during buying time. Majority of the consumers in all surveyed areas except Pokhara were forced to buy cut flowers what they were made available.

Postharvest technology research of four cut flower species with two cultivars each, treated with two treatments were

conducted in six locations (Janakpur, Chitwan, Kathmandu, Butwal, Pokhara, Nepalganj) across the country. All these experiments were conducted in ambient environmental condition and therefore temperature and humidity were measured where ever possible. Partner researchers were both trained and untrained. However, both category of researchers were briefed and given guidelines to do vase life testing of cut flowers.

Postharvest treatment (chemicals and carbohydrates) was effective in extending vase life of carnation, rose and gladiolus but was not effective in gerbera. The increase ranged from 21% in carnation to 12% in Gladiolus. Transportation destination also influenced the vase life of cut flowers. The highest vase life across all type of cut flower tested was found in Kathmandu (no transportation) than other destination where the vase life of cut carnation was reduced by % 60% (Butwal), 40% (Janakpur), 24% Chitwan and 24% Nepalganj. Cultivars response is not significant in all the cut flower species but the responses are significantly different when compared between locations. The vase life of carnation Cv. Rimini ranged from 4.0 days in Butwal to 6.8 days in Pokhara to 9.8 days in Kathmandu. The trend is similar in other cut flowers tested. Bud opening in Gladiolus is slightly more in sucrose treated flowers but the influence of temperature is not consistent.

***Note: This is only executive summary report. For forther details report, please contact in FAN office***

## References

FAN. 2008. Study on current postharvest handling practices of cut flowers in different districts of Nepal. Floriculture Association Nepal, Kathmandu Nepal.

# Pest Management in Gladiolus

*T.B. Poon*
***Agriculture Research Station, Dailekh***

Insect pests are one of the key constrains in the successful production of gladiolus. Thrips, aphids, caterpillars and mites are the pests damaging above ground plant parts while cutworms, grubs and mealy bugs damage under ground bulbs resulting in considerable yield losses. Successful management of pests in this crop requires implementation of integrated approaches such as cultural practices, mechanical, biological, botanical and chemical methods. Deep plowing, frequent tilling and drenching with chemicals control resting stages of pests in the soil. Treating of bulb or corms with hot water or chemicals before storage prevents pest's multiplication during storage. Cutting and burning of severely infested plant parts reduces pest build-up and spraying of effective insecticides followed by botanicals or bio-agents control pests infesting various plant parts above ground. Pest management in gladiolus is discussed.

**Nematodes**

Several species of nematodes are known to attack gladiolus. Out of this, the root-knot nematode (*Meloidogyne* spp.) is easily controlled by hot -water treatment at 53°C for 30 minutes. Other nematodes are also checked by this method. Soil fumigation and use of nematicides, like Temik at 8-10 kg of active ingredient (a.i) per hectare. Thimet at 4-10 kg and Furadan, 3 times the quantity of Thimet, are useful.

**Thrips (*Thrips sp.*)**

Four species of thrips infest gladioli of which the gladiolus thrips, *Thrips simplex* is the most prevalent and troublesome. Both nymphs and adults damage leaves and tender growing spikes resulting in distortion and discoloration of flowers. Silver and brown streaks may be noticed on leaves affected by thrips. Thrips also damage corms in storage and severely attacked corms become shriveled and produce weak plants.

*Control:* Nuvacron spray (0.1-0.15%) is quite effective in destroying these insects. if any nematicide is added to control nematodes; no separate application of insecticide will be needed. Stored corms may also be treated with Nuvacron.

Spray acephate 0.1% or imidacloprid 0.01% or Cartap hydrochloride 0.075% 2-3 times at 10 days interval. Storing of infested corms at 2°C for 6 weeks and treating them in hot water at 46°C with Chlorpyriphos 2ml/L completely kills thrips on corms.

**Aphids**

Several species of aphids are known to attack gladiolus. They suck sap from tender leaves and emerging spikes as well as florets. Aphids (winged ones) are vector of cucumber mosaic virus and bean yellow mosaic virus. Insecticides like Rogor (0.1%) and Nuvacron (0.1%) kill insects.

**Cut worm (*Agrotis segetum*)**

Female moth lays eggs near ground level on plant parts. Larvae feed on emerging shoots at night. Grown up clay colored larvae cut the plant at the ground level. Plants are vulnerable to attack up to 3-leaf stage. Cut worms also damage underground corms and developing spikes.

*Control:* Plowing during summer exposes pupae to predators. Poison bait consisting

of Carbaryl or Malathion at 0.1% in wheat bran and molasses scattered in the field controls larvae. Spray methyl parathion or quinalphos or chlorpyriphos at 0.05% protects foliage.

**Leaf caterpillar (*Spodoptera litura*)**

Ashes colored eggs are laid in groups on lower side of leaves. Early instar larvae feed on lower surface of leaves by scraping and skelitonizing them. Greenish brown mature larvae feed voraciously during nights on leaves and growing spikes.

*Control:* Collection and destruction of egg masses and leaves infested with early larval instars reduces pest build up. Deep plowing in summer exposes pupae to predators. Spray of quinalphos or chlorpyriphos at 0.05% or carbaryl 0.2% give protection to fliage. Neem seed kernel extract 4% is effective against early instar larvae. Poison bait consisting of wheat bran, jaggary and chlorpyriphos (10:1:0.5) scattered in the field controls larva.

**Mealy bug (*Ferrisia virgata*)**

The infestation begins in the field on underground corms in dry conditions and is carried on to the storage. Nymphs and adults damage corms by sucking the sap resulting in shriveling and drying of affected corms.

*Control:* Spray dichlorvos at 0.05% followed by methyl parathion 0.05% or dimethoate 0.05% or acephate 0.1% at fortnightly intervals. Prompt collection and destruction of infested plants reduces spread of the pest. Crawling of ants on the plants is a sign of mealy bug infestation when spraying should be taken up.

**Mite (*Tetranychus equatriuous*)**

Attack begins at a very early stage when plants are young. Green colored nymphs and carmine colored adults colonize leaves. The damage results in discoloration, bronzing and shedding of affected leaves

*Control:* This pest is managed by cutting and burning of severely infested plant parts. Sprays of dicofol 0.05% and wettable sulphur 0.3% are to be applied 2-3 times at 15 days interval for effective control.

**Snails and slugs**

Snails and slugs are also a threat, attacking emergent shoots and leaves of succulent plants like lilies and gladiolus, particularly during the spring. In some cases, most notably, this can have a devastating effect, damaging the growing points and distorting growth.

*Control:* A more environmentally friendly method of control involves sinking a small plastic carton filled with beer into the ground to soil level. The slugs and snails are attracted to the liquid and, while trying to drink, fall and drown. Alternatively, place the eaten halves of a grapefruit upside down on the soil surface beside vulnerable plants at night; the slugs will crawl underneath the fruit and can be removed the following day. Replace the grapefruit every three to four days once the interior has dried up.

**References**

Mathew, B. and Swindells , Philip.1994. Pest and disease control. In: *The Gardener's Guide to Bulbs* (Ed: Mitchell Beazley), Produced by Mandarin Offset ltd.Hong Kong,
Pp50-52.

Mukhopadhyay, A. 2002.Diseases and Pests. In: *Gladiolus* (Ed: C.S. Vishwanath), ICAR, New Delhi 110012, Pp.70-73.

Rani, B.J. and Sridhar, V. 2006. Pest management in bulbous ornamental crops. In: *National symposium on Ornamental Bulbous Crops*—5-6 December 2006 (Eds: K.V. Prasad, Krishan Pal Singh, Mam C. Singh, N.K. Dadlani and Sunil Malik), Published by Indian Society of Ornamental Horticulture, Pp.36-38.

# कट फ्लावर बजार र आयात

-लोक नाथ गैर
आर्यान फ्लोरा फम

## पृष्ठभुमि

बि.सं. २०४० साल तिरबाट व्यवसायिक रुपमा शुरु भएको नेपाली कट फ्लावर बजार आयातबाटै शुरु भएको थियो । देश भित्रै व्यवसायीक रुपमा उत्पादन शुरु हुनु अघि भारतबाट आयात गरि नेपाली बजारमा बिक्रि गर्न शुरु गरिएको थियो । आन्तरिक उत्पादन बढ्दै जाँदा आयातलाई बिस्थापित गर्नु स्वभाविक हो । बजारको आकार बढ्दै जाँदा र आन्तरिक उत्पादनले मागलाई पूर्णरुपले धान्न नसक्दा आयात गरि बजार माग पुरा भईरहेको छ । तर आन्तरिक उत्पादनलाई बढाउन नसकिने अवस्था भने छैन । यसका लागि (आयात प्रतिस्थापनका लागि) प्रबिधीको बिकाश र नयाँ स्थानको छनौट जस्ता बिषयहरुमा उद्यमी एवं संबद्ध पक्षहरुको ध्यान जानु जरुरी छ । हाम्रो भन्सार तथ्याङ्कमा कुन कुन बस्तु कति कति मात्रामा आयात भईरहेको छ भन्ने पर्याप्त तथ्याङ्क उपलब्ध छैन । तसर्थ बजारमा उपलब्ध हुने परिणामलाई आयातको अवस्था मान्नु पर्ने जरुरी छ ।

## वर्तमान अवस्था

विगत दश बर्षको तथ्याङ्कलाई केलाएर हेर्दा हाम्रो आन्तरिक उत्पादन एवं बजारको माग निक्कै असन्तुलित छ । कुल खपतको झण्डै ६०% कारोबार वैवाहिक समरोहमा केन्द्रित छ । हाम्रा पराम्परागत वैवाहिक समारोहहरु हुने महिनाहरु बैशाख, जेठ, आषाढ, मंसिर, माघ र फागुन हुन । यी महिनाहरु मध्ये जेठ महिनामा ज्यादै नै न्यून व्यवसायिक कारोबार भएको पाईन्छ । यी मध्ये मंसिर, माघ र फागुन जाडो मौसममा र बैशाख,जेठ र आषाढ गर्मि मौसममा पर्दछ ।

बजारमा अत्याधिक माग हुने कट फ्लावर हरुमा क्रमशः ग्याडिओलस, गुलाब, कार्नेशन, जरबेरा हुन । यस बाहेक सयपत्री माला पनि कट फ्लावर बजारको प्रमुख कारोबार हुने फूल हो । सर्वप्रथमत यी पाँच वटा फूलहरुको उत्पादन स्थिती जान्नु जरुरी छ । ग्याडुलस तराई देखि पहाड र काठमाण्डौ उपत्याका भित्र समेत उत्पादन भईरहेको छ । गुलाब, कार्नेशन र जरबेरा काठमाण्डौ उपत्याका (काठमाण्डौ भक्तपुर, ललितपुर, काभ्रे र नुवाकोट) तथा यसका आसपासका जिल्लामा केन्द्रित छ । मौसमी हिसाबले वर्तमानमा प्रयोग गरिएको प्रविधीका आधारमा जाडोयाम (मंसिर देखि फागुनसम्म) यी फूलहरुको उत्पादन निक्कै न्यून छ भने यहि समयमा माग अत्याधिक छ ।

सयपत्री फूलको उत्पादन नेपालमा बैशाख देखि कार्तिकसम्म व्यवसायीक तथा पराम्परागत शैली दुबैबाट भईरहेको छ । बढि माग हुने समय (मंसिर देखि फागुन सम्म) मा नेपाल भित्र सयपत्रीको उत्पादन (कट फ्लावरमा प्रयोग हुने बिषेश जात) लगभग शुन्य नै छ ।

यसर्थ नेपाली कट फ्लावर बजारमा दुई खालका फूलहरु आयात भईरहेको छन । प्रथमतः बजारको माग अनुसार परिपुर्ति गर्न नसकिने कट फ्लावरहरु र दोस्रोमा नेपालमा उत्पादनमा नरहेको कट फ्लावरहरु ।

## आन्तरिक उत्पादन

मौसम अनुकुलतालाई मध्यनजर गर्दै ग्याडुलस तराई, पहाड र काठमाण्डौ उपत्यका ( काठमाण्डौ ललितपुर, भक्तपुर, काभ्रे) भित्र उत्पादन

भईरहेको कारणले बजारमा लगातर उपलब्ध भईरहेको छ। तर गुलाव, कार्नेशन र जर्वेरा उपत्यका केन्द्रित उत्पादन संरचना भएको कारणले गर्मी समयमा माग भन्दा बढि उत्पादन हुने गरेको छ भने जाडो मौसममा अति न्यून उत्पादन भईरहेको छ।

यस बाहेक नेपाली कट फ्लावर बजारमा आन्तरिक उत्पादनमा गोदावरी, ट्यूबरोज, सिम्बिडियम अर्किड, स्वीटवीलियम, लेमोनियम (स्टाटस्टिक्स), क्यालेन्डुला, वर्ड अफ प्याराडाईज, हेलीकोनिया आदि फूलहरु उपलब्ध छन् । तर डेन्ड्रोबियम अर्किड, लिलियम, एन्थरियम जस्ता केहि फूलहरु देश भित्र उत्पादन भएका छैनन् । भए पनि अत्यन्न न्यून छन ।

**मुख्य आयात**

नेपाली कट फ्लावर बजारमा माग अनुसार उत्पादन हुन सकेन भने तुरुन्त भारतिय बजारहरु ( कोलकोत्ता, सिलीगुडी, न्यू दिल्ली) बाट आपुर्ति हुने प्रचलन छ। आयात दुई अवस्थामा गरिन्छ।

- आन्तरिक उत्पादनले परिपुर्ति नभएमा
- मुल्य प्रतिस्पर्धी नभएमा (भारतिय बजारमा कम मुल्यमा उपलब्ध भएमा)

आन्तरिक उत्पादनले नपुग्ने अवस्था आउने मुख्य दुई कारण छन ।

- उत्पादन कम भएमा वा नभएमा
- अत्याधिक माग भएमा

माथि उल्लेख गरिए अनुसार गुलाव, कार्नेशन र जर्वेरा जाडोयाममा आन्तरिक उत्पादन कम हुने एवं माग अत्यधिक हुने हुनाले आयात भईरहेको छ। ग्याडुलसको माग बढि भएको अवस्थमा वा प्रतिस्पर्धा मुल्य कम भएको अवस्थामा आयात भईरहेको छ। आन्तरिक उत्पादन नभएका डेन्ड्रोबियम अर्किड, लिलियम, एन्थरियम जस्ता फूलहरु माग हुन साथ आयात गर्नु पर्ने बाध्यता छ भने मंसिर देखि बैशाखसम्म सयपत्री फूलको माला पनि आयात मै भर पर्नु पर्ने स्थिती छ। यस बाहेक कतिपय कट फ्वाईलेज (एरिका, साईकस) र स-साना फूलहरु आन्तरिक उत्पादन कम हुदा वा मुल्य प्रतिस्पर्धी नहुदा आयात गर्नुपर्ने अवस्था छ।

यस बाहेक कतिपय अवस्थामा फूलको अत्यधिक माग हुने गर्दछ। जस्तै तिहारको समयमा सयपत्री र प्रेम दिवसको दिन गुलाव । यी लगायत अन्य केहि बिशिष्ट अवस्थामा नेपाली कट फ्लावर फूलको बजारले आयातको मुख ताक्नु पर्ने अवस्था छ।

**आयात र प्रतिस्थापन**

नेपाली कट फ्लावर बजारमा आयात प्रतिस्थापन संभव छ।यसका लागि उद्यमी, अनुसन्धान गर्ने निकायहरु, वित्तिय संघ संस्थाहरु र सरकारको संयुक्त दिर्घाकालिन योजना सहितको दृष्टिकोण आवश्यक छ। यसका लागि निम्न कुराहरुमा ध्यान दिनु जरुरी छ।

१) वर्तमान उत्पादन प्रविधीको स्तर उन्नती गरी बढि मागको अवस्थामा बढि उत्पादन गर्ने।

२) वर्तमानका उत्पादन क्षेत्रहरु भन्दा बाहिर संभाव्य क्षेत्रहरुको पहिचान गर्ने र परिक्षण उत्पादनको लागि सिफारिस गर्ने।

३) नयाँ स्थान र क्षेत्रमा लगानी गर्नका लागि उपयुक्त वातावरण र पूर्वाधारको बिषयमा उचित व्यवस्था गर्ने।

आन्तरिक बजारमा कट फ्लावरको माग प्रति बर्ष १०-१५% का दरले बृद्धि भईरहेको अवस्थामा देशभित्र थप उत्पादन शुरु गरी रोजगारीका अवसरहरु सृजना गर्न र पुँजीलाई देशभित्रै संस्थागत गर्नु अतिनै जरुरी छ । अहिले भईरहेको उत्पादन संरचनालाई परिवर्तन गर्न सकेमा पनि आयात

प्रतिस्थापन गर्न संभव छ । तर पुर्ण प्रतिस्थापनका लागि समय लाग्न स्वभाविकै हो । हाम्रो पराम्परागत चाड तिहारमा प्रयोग गरिने सयपत्री फूललाई पर म्परागत तरिकाले उत्पादन गरि रहेको किसानहरुलाई केहि व्यवसायीक ज्ञान र बिऊ बेर्नाको बारेमा जानकारी दिन सकेमा सयपत्री फूलको आयात प्रतिस्थापन संभव छ । त्यस्तै नयाँ उद्यमीहरुलाई बजारको यथार्थ माग र आपुर्तिको अवस्थाबारे सत्य तथ्य दिन सकेमा सुरक्षित बजार भएको क्षेत्रमा लगानी गर्ने अवसर दिन सकिन्छ ।

**सारांशमा**

नेपाली कट फ्लावर अन्तराष्ट्रिय बजारमा प्रवेश गर्न सुरु गरिसकेको अवस्थामा आयातबाट आन्तरिक माग पुरा गर्ने अवस्था आउनु पक्कै सुखद समचार होईन । तथापी आयातलाई बिस्थापन गर्नु त्यति सजिलो पनि छैन । कट फ्लावर उत्पादनमा दिर्घाकालिन लगानी, उच्च जोखिम, प्रतिफलका लागि लामो समय पर्खिनु पर्ने (High waiting period) कारणले कम उद्यमी एवं कम लगानी भएको सर्व बिदितै छ । आफ्ना उत्पादनहरुलाई प्रतिस्पर्धि मुल्य (भारतिय उत्पादनमा न्यूनतम ५०% अनुदानबाट उत्पादित हुनाले कम मुल्यमा बजारमा उपलब्ध हुने) संग समयोजन गरी बजारमा पठाउन यहाँका उद्यमीहरुलाई निक्कै चुनौती छ । आन्तरिक रोजगारी दिन सक्ने, निर्यात शूरु गरी बिदेशी मुद्रा आर्जन गर्न सक्ने, पुँजी पलायनबाट रोक्न सक्ने आदि कारणले नेपाली कट फ्लावर उद्योगलाई सबैको सदभाब र संरक्षण आबश्यक छ ।

# सहकारी क्षेत्रमा फ्लोरिकल्चर

## परिचय, महत्व तथा सम्भावना

-दिलिप बाद
महासचिव FAN

**परिचय तथा पृष्ठभूमि**

निश्चित तथा सामुहिक उदेश्य प्राप्तिका लागि संगै बस्ने, संगै विचार वा छलफल गर्ने र संग संगै काम गर्ने प्रक्रिया वा पद्धतिलाई सहकारी भनिन्छ। पारस्परिक हितका लागि समान आवश्यकता र चाहना भएका धेरै व्यक्तिहरुद्धारा गठित, संचालित र नियन्त्रित स्वेच्छिक एवं स्वायत्त र स्वतन्त्र व्यवसायिक संगठन वा संस्था नै सहकारी संस्था हो।

सन् १८४४ अक्टोवर २४ मा उत्तरी बेलायतका रचडेल निवासीहरुले स्थापना वा शुरु गरेको रोचडल समतामूलक अग्रदुतहरुको सहकारी समाज (Rochdale Equitable Pioneers Co-Operative Society) नामक सहकारी नै विश्वको पहिलो सहकारी संस्था हो। जसको शुरुवात २८ जना बाट भएको हो। त्यस्तै जर्मनीमा सन् १८४९ मा, डेनमार्कमा सन् १८६९मा, भारतमा सन् १९०४ मा, चीनमा सन् १९७२ मा, जापानमा सन् १८७९ मा र नेपालमा वि.सं.२०१३ सालमा चितवनमा बखान सहकारी संस्थाबाट सहकारी संस्था खोल्ने क्रम शुरु भएको देखिन्छ।

*(सहकारी सिद्धान्त र प्रयोग, २०६१)*

हाल नेपालमा २१००० भन्दा बढि विभिन्न उद्देश्यका सहकारी संघ संस्थाहरु गठन भैसकेका छन्। स्वास्थ, संचार, दुग्ध, जडिबुटि, चिया, कफि, उपभोग्य बस्तु, तरकारी, कृषि लगायत बचत तथा ऋण सम्बन्धि विभिन्न क्षेत्रहरुमा धेरै पहिला नै सहकारीले प्रवेश गरी उपलब्धीहरु हासिल गरिरहेको परिपेक्षमा फ्लोरिकल्चरको क्षेत्रमा पनि बि.सं.२०६६ फागुन २७ गते विधिवत रुपमा फ्लोरिकल्चर सहकारी संस्था लि. (FCL) को नाममा २८ जना पुष्प व्यवसायमा समर्पित सदस्यहरुबाट शुरु गरी सहकारी क्षेत्रमा फ्लोरिकल्चरले प्रबेश पाइसकेको छ।

विशेषत नेपालको समग्र पुष्प व्यवसायिक क्षेत्रका साथै लामो समय देखि पुष्प व्यवसायमा लागेका र नयाँ पुष्प व्यवसायिहरुको आर्थिक, सामाजिक, व्यवसायिक तथा वैयक्तिक विकास गर्ने उद्देश्य फ्लोरि कल्चर सहकारी संस्था लि. ले लिएको छ। यी उद्देश्य पुरा गर्नका लागि निम्नानुसारका कार्यहरु यस सहकारी मार्फत भईरहेको र भविष्यमा समेत गर्ने लक्ष्य लिएको छ।

- पुष्प व्यवसाय भित्र छरिएर रहेका स-साना पूंजीलाई बचतको माध्यमवाट संकलन गरि पुष्प व्यवसायमा लगानि बिस्तार र पुष्प व्यवसायहरुको आर्थिक विकासका लागि बिना धितो र धितो लिएर कम व्याजमा ऋण प्रदान गरिरहेको र जसको फलस्वरुप साना पुष्प व्यवसायीहरुमा उत्साहको संचार भैरहेको छ।

- पुष्प व्यवसायिहरुलाई आवश्यक पर्ने मल, विउ, विजन, वेर्ना, विषादी, पटकर तथा अन्य अत्यावश्यक सामाग्रीहरु आबश्यक परिमाणमा स्वदेश र विदेशबाट थोक मूल्यमा खरिद गरि नेपालका पुष्प व्यवसायीहरुलाई सर्ब सुलभ मूल्यमा बिक्री बितरण शुरु गरिसकेको छ ।
- पुष्प व्यवसायी तथा यस क्षेत्रमा लाग्न इच्छुक व्यक्तिहरुलाई आवश्यक परामर्श, अत्यबाश्यक सामाग्रीको व्यवस्था र उत्पादन पछि बजारको व्यवस्था समेत गरिदिने कार्यको थालनी गरि सकेको छ। जुन कार्यले सहकारीमा आवद्ध पुष्प कृषकहरुलाई दिर्घकालीन आर्थिक उन्नतिको बाटोमा डोऱ्याउन सहयोग पुग्ने अपेक्ष यसले लिएको छ ।

**महत्व**

हाल नेपालमा सहकारी क्षेत्रले कुल ग्राहस्थ उत्पादनमा ३%, वित्तिय क्षेत्रमा १०%, करिब ५० हजार जनशक्तिलाई प्रत्यक्ष रोजगारी, ३० अर्ब भन्दा वढि ऋण लगानी, २९ अर्व भन्दा वढि बचत निक्षेप, ९ अर्बभन्दा वढि शेयर पूंजी, १८.५ लाख भन्दा वढि सदस्यका साथै उद्योग, व्यवसाय, व्यापार मार्फत रोजगारी र स्वरोजगारीको अवसर सृजना तथा सामाजिक, सास्कृतिक तथा जन चेतनाको क्षेत्रमा अतुलनिय योगदान गरी आफ्नो महत्व स्थापना गरी सकेको छ। यसरी विभिन्न क्षेत्रमा विभिन्न तरिकाले योगदान गर्दै नेपालको फ्लोरिकल्चर क्षेत्रको विकास, विस्तार र प्रवर्द्धनमा महत्वपूर्ण टेवा पुऱ्याउन सक्ने भरपर्दो माध्यमको रुपमा सहकारीतालाई हामी लिन सक्छौं। तलका बुंदाहरुबाट पनि फ्लोरिकल्चरको क्षेत्रमा सहकारीको किन महत्व भन्ने अझ बढि प्रष्ट हुन्छ।

क) अन्य क्षेत्रमा जस्तै फ्लोरिकल्चरको क्षेत्रमा पनि निम्न आय भएका वर्गहरु प्रशस्त मात्रामा रहेका छन्। सहकारीको माध्यमबाट फ्लोरिकल्चर क्षेत्र भित्रका यस्ता वर्गको आर्थिक र सामाजिक उन्नति गर्न सकिने भएकोले ।

ख) सहकारीको माध्यमबाट स-साना पुष्प उत्पादकहरु एवं उपभोक्ताहरुलाई समेटी ठूलो आकारको व्यवसाय संचालन गर्न सक्ने आधार प्रशस्त भएकाले ।

ग) सहकारीको माध्यमबाट कारोबार गर्दा लागतमा कमी हुने भएकोले ।

घ) आन्तरिक तथा बाह्य ठूला व्यापारी वर्गहरुबाट भैरहेको अदृश्य शोषण रोक्न तथा हुनबाट सहकारीताको माध्यमबाट पुष्प व्यवसायीहरुलाई रक्षा हुने भएकाले ।

ङ) फ्लोरिकल्चर क्षेत्र भित्रको गरिबी निवारणमा सहकारीताको माध्यमबाट सघाउ वा टेवा पुग्ने भएकाले ।

च) सहकारीताको माध्यमबाट स्थानीय स्रोत एवं साधनहरुको परिचालन राम्ररी गर्न सकिने र त्यसको प्रयोग फ्लोरिकल्चरको क्षेत्रमा पनि गर्न सकिने भएकोले ।

छ) सहकारी समुदायको सशक्तिकरणमा विशेष भूमिका खेलि रहेको देखिन्छ अत फ्लोरि कल्चरमा लागेकाहरु पनि एक समुदाय सरह भएकाले उनीहरुको सशक्तिकरण सहकारीको माध्यमबाट हुने भएकोले ।

ज) सहकारीको माध्यमबाट जति सुकै ठूलो समुहलाई पनि नियन्त्रित एवं व्यवस्थित

ढंगबाट परिचालन गर्न सक्ने भएकाले फ्लोरि कल्चर क्षेत्र भित्रको स्थानिय र बाह्य बजार को माग र आपूर्तिमा सन्तुलन मिलाउन सकिने भएकाले ।

झ) सहकारीबाट फ्लोरिकल्चरसंग सम्बन्धित बस्तु र सेवाको एकिकरण गर्न सक्ने भएकाले बजार मूल्यमा स्थिरता ल्याउन सकिन्छ जसबाट पुष्प उत्पादकहरुलाई नै फाइदा पुग्ने देखिएकाले ।

ञ) सहकारी भित्र प्रजातान्त्रिक अभ्यास हुने भएका हुदा फ्लोरिकल्चरको क्षेत्रमा पनि प्रजातान्त्रिक पद्दतिको विकासमा सघाउ पुग्ने भएकाले ।

ट) सहकारीले विशेषता ग्रामिण विकासमा महत्वपूर्ण टेवा पुऱ्याइरहेकाले गर्दा फ्लोरिकल्चरमा समर्पित ग्रामिण क्षेत्रको विकासमा पनि टेवा पुऱ्याउने भएकाले ।

ठ) सहकारी भनेकै सदस्य तथा समुदाय केन्द्रित व्यवसाय भएकाले फ्लोरिकल्चरका सदस्य तथा समुदायको व्यवसायिक एवं बजार सम्बन्धमा सुधार हुने भएकाले ।

ड) सहकारीले न्याय र समानता आधारित समाजको विकास गराउने भएकाले फ्लोरि कल्चर क्षेत्रमा पनि न्याय र समानतामा आधारित समाजको विकास गराउने पहल गर्ने भएकाले ।

ढ) एक आपसमा अपनत्व भएको लोक कल्याणकारी समुदायको स्थापना सहकारीको माध्यमबाट हुने भएकाले पुष्प व्यवसायीहरुको लागि फ्लोरिकल्चर सहकारी संस्थाको अझ बढि महत्व हुने भएकोले ।

**सम्भावना**

सहकारीको कुनै पनि एक सदस्य आफ्नो प्रारम्भिक सहकारी संस्था हुदै, जिल्ला सहकारी संघ, विषयगत सहकारी संघ, केन्द्रिय सहकारी संघ, राष्ट्रिय सहकारी संघ हुदै अन्तराष्ट्रिय सहकारी महासंघसंग प्रत्यक्ष वा अप्रत्यक्ष रुपमा जोडिएको हुन्छ। यसको मतलब फ्लोरिकल्चरको क्षेत्र वा सदस्य पनि सहकारीको माध्यमबाट लाखौं सदस्यहरु सम्मेलित राष्ट्रिय तथा अरबौ सदस्य सम्मेलित अन्तराष्ट्रिय संजालमा पसि सकेको छ। एकको लागि सबै, सबैका लागि एक भन्ने सहकारीको मूल मन्त्रले अब फ्लोरिकल्चरको क्षेत्रलाई पनि प्रतिध्वनित गरि सकेको छ। अत सहकारीबाट फ्लोरिकल्चरले आफ्नो विकास, विस्तार, प्रवर्द्धन गर्न सक्ने अथाह सम्भावनाहरु लुकेर बसेको छ। जसमध्ये केहि अवसर तथा सम्भावनाहरुको उल्लेख निम्नानुसार गर्न सकिन्छ ।

- नेपालको अन्तरिम संविधान २०६३ ले मुलुकको अर्थतन्त्रको विकासको तीनवटा माध्यम मध्ये एउटा माध्यम सहकारितालाई लिएको छ ।
- सहकारी ऐन २०४८ ले सहकारी संघ संस्थाहरुलाई स्वनियमनमा चल्ने गरी स्वतन्त्रता र स्वायत्तता प्रदान गरेको छ । जसको सकारात्मक प्रयोग सहकारीको माध्यमबाट फ्लोरि कल्चरमा गर्न सकिन्छ ।
- नेपालका आवधिक योजनाहरुले पनि सहकारीतालाई विशेष महत्व दिएका छन् । यसकारण सहकारी मार्फत फ्लोरिकल्चरको

विकासलाई पनि नेपाल सरकारले विशेष महत्व दिन सक्छ ।

- तालिम र शिक्षाको विस्तार भईरहेको छ जुन फ्लोरिकल्चर सहकारी मार्फत यसका सदस्यहरुले पनि प्रशस्त मात्रामा तालिम प्राप्त गरी लाभान्वित हुन सक्छ ।
- सहकारी संगठनहरु विस्तारित र बलियो हुदैं गएका छन । जसको प्रत्यक्ष फाइदा सहकारी मार्फत फ्लोरिकल्चरले पनि उपभोग गर्न पाउँछ ।
- समुहहरु सहकारीप्रति आकर्षित भैरहेको देखिन्छ अत फ्लोरिकल्चर क्षेत्रमा पनि सहकारी मार्फत सम्बन्धित समुहहरु बनाइ ऐकेबद्धता गर्दै सामुहिक विकासमा लाग्न सकिन्छ ।
- गैर सरकारी संस्थाहरुले सहकारी शिक्षा र तालिम तथा सहकारी संस्थाहरुको दर्ता र विकासमा योगदान पुऱ्याइरहेका छन् ।
- सरकारी निकायहरुले पनि सहकारी कार्यक्रमलाई अगाडि बढाई रहेका छन् ।
- गरिबी निवारणका कार्यक्रमहरु अघि बढाउने माध्यमको रुपमा सहकारी अगाडि आएको छ ।
- सहकारी मार्फत ठुला-ठुला कारखाना र उद्योगहरु स्थापनाको प्रारम्भिक चरणमा रहेका छन् ।

अतः १६७ वर्ष लामो ऐतिहासिक पृष्ठभूमि बोक्दै संसारभर आर्थिक, सामाजिक र सांस्कृतिक रुपान्तरण गरि आफ्नो मौलिक विशेषता र महत्वलाई स्थापना गरि सकेको सहकारी क्षेत्रले नेपालको फ्लोरि कल्चरलाई पनि आफ्नो आँगनमा भित्राइसकेको छ । साथै सहकारी क्षेत्रको अथाह अवसर तथा सम्भावनाहरुको ढोका फ्लोरिकल्चरको लागि पनि खुल्ला भैसकेको यो ऐतिहासिक मौकाको सदुपयोग नेपालका सम्पूर्ण फ्लोरिकल्चरमा लागेका व्यक्ति, समुदाय, समुह, संघ संस्थाहरुले मिलिजुली फ्लोरि कल्चर सहकारी संस्था मार्फत गर्न सक्नु नेपाली पुष्प व्यवसाय क्षेत्रका लागि एक सुनौलो कार्य हुनेछ ।

अन्तमा आर्थिक, साजाजिक र सांस्कृतिक विकासको संवाहकका रुपमा विश्वभर फैलिदै र नेपाल भित्र झाँगिदै गरेको सहकारी क्षेत्रलाई पुष्पमय बनाउदै सहकारीताकै माध्यमबाट समग्र फ्लोरिकल्चर क्षेत्रको पनि आर्थिक, सामाजिक र सांस्कृतिक विकास विस्तार तथा प्रवर्द्धन गर्नु नेपालका सम्पूर्ण पुष्प व्यवसायीहरुको परम कर्तव्य हो ।

*(लेखक फ्लोरिकल्चर सहकारी संस्था लि.को प्रबन्ध निर्देशक हुनुहुन्छ)*


सन्दर्भ सामाग्री

सहकारी सिदान्त र प्रयोग, २०६१- केशव बडाल

सहकारी विकासको ५० वर्षीय ग्रन्थ, २०६६, राष्ट्रिय सहकारी संघ

- राष्ट्रिय सहकारी संघको १८ औं बार्षिक प्रतिबेदन, २०६६ www.nctnepal.com.np
- सहकारी बिभागको वार्षिक प्रतिबेदन, २०६६ www.deco.gov.np

# काठमाण्डौ उपत्यकामा नर्सरी ब्यावसायीहरुको समस्याः एक अनुभव

-शिव बहादुर खड्का
सृजना फ्लावर नर्सरी

नर्सरी व्यवसाय काठमाण्डौ उपात्यकामा वि.स. २०११ सालदेखि व्यवसायीक रुपमा शुरु गरेको ईतिहास छ। (स्रोत : FAN) बिकाश र बिस्तार को क्रममा हाल उपत्यका भित्रमात्र करिब २०० को हाराहारीमा नर्सरीहरु स्थापना भईसकेका छन। पुष्प नर्सरी व्यवसायको बिकास, बिस्तार तथा बजारिकरणको क्रममा यस व्यवसाय भित्र आफ्नै खाले मौलिक कठिनाई तथा समस्याहरु बिद्यमान र हेका छन। मैले पुष्प नर्सरी व्यवसाय शुरु गर्दा ( बि.सं.२०५२) तुलनात्मक रुपमा अहिलेको भन्दा सजिलो र सहज वातावरण थियो। नर्सरी व्यवसाय गर्दै जाने क्रममा एक व्यवसायीको हैसियतले भोगेको तथा अनुभव गरेका केहि समस्याहरुको बारेमा य हा उल्लेख गर्न गैरहेको छु

**१ जमिनको समस्या :**

काठमाण्डौ उपत्यकामा दिनानुदिन बढ्दै गईरहेको जनसंख्या र शहरीकरण जस्तै हाउजीङ्ग आवास कम्पनी, शपीङ्ग मल आदीको कारणले उपत्यकाका पूर्ण जमीन साघुरिदै गएको छ। नर्सरी ब्यावसाय संचालन गर्ने उपयुक्त जमीनको समस्या भईसकेको छ। त्यसमा पनि खाली जमीन भएपनि भाडामा नपाईने, पाईहाले पनि ब्यावसायिहरुले तिर्नै नसक्ने भाडा अरु ब्यावसायिहरुले दिए जस्तै दिन बाध्य हुनुपर्ने अवस्था छ। सानो जमीन महंगो भाडा अनुकुल ठाउँमा यो ब्यावसाय सञ्चालन गर्न गाह्रो हुन्छ। अधिकांश नर्सरी ब्यावसाय भाडाको जमिन सञ्चालन भई रहेका छन्।

**२ पानीको समस्या :**

उपत्यकाभित्र पानीको श्रोत एकदम कम भएको बढ्दै गईरहेको शहरीकरण बढ्दो जनसंख्यालाई समेत खाने पानीको हाहाकार भईरहेको अवस्थामा पानी बिना कल्पना समेत गर्न नसकिने पुष्प ब्यवसाय संचालन गर्न आईपर्ने अर्को समस्याको विषय हो।

बोट विरुवालाई आवश्यक पर्ने पानीको विकल्प भनेको जमिन मुनीको पानीको श्रोत हो। त्यो पनि आजकल ठुला डिप बोरिङ्गले गर्दा साना बोरिङ्ग इनारमा पानी आउदैंन। ठुलो बोरिङ्ग भरि पानी निकाल्न अति नै खर्चालु हुने त्यसमा पनि भाडाको सानो जमीन सिमित समय सम्मलाई मात्र लिईएको हुनाले असम्भव देखिन्छ।

बोटविरुवालाई आवश्यक पर्ने पानीको कमीले गर्दा पनि उपत्यकाभित्र पुष्प ब्यावसाय सञ्चालन गर्न समस्या भएको छ। ट्याङ्करबाट पानी ल्याएर ब्यावसाय गर्दा ट्याङ्करको पानी राख्ने ट्याङ्की वा पोखरिको ब्यवस्था गर्नु झन् खर्चिलो छ। बर्तमान परिप्रेक्ष्यमा देशमा अत्यधिक मात्रामा भईरहेको

लोडसेडिङ्गको कारण भएको सिमित पानी पनि समयमा विरुवामा हाल्न सकिदैंन ।

**३. वित्तिय समस्या :**

नेपाल कृषिबाट थुप्रै सम्भावनाहरु बोकेको देश हो । त्यसमा निर्यात जन्य वस्तु पुष्प व्यावसाय पनि पर्दछ । यो व्यावसायलाई सुदृढ पारि सञ्चालन गर्न वैंकिङ्ग निति पनि प्रमुख मानिन्छ । बैंकहरुले घर बनाउन ऋण लगानी गर्दछन् तर बिना धितो त प्रश्न नै नगरौं धितो राखेर पनि यो व्यावसाय सञ्चालन गर्न ऋण दिदैंनन् । प्रकृया झन्झटिलो बनाउछन् र साना व्यावसायीहरुले ऋण लिन सक्दैंनन् ।

कृषि विकास बैंकबाट व्यावसायीहरुलाई ३% व्याजमा अनुदान दिने भनिएको ऋण पनि झन्झटिलो छ। बैंक एवं सरकारले साना व्यावसायीहरुलाई बैंकिङ्ग क्षेत्रको पँहुचमा पुऱ्याउन थप काम गर्नु पर्ने जरुरी छ ।

**४. शिक्षा र प्राबिधिज्ञको कमि :**

पढेकाले नेपालमा खेती गर्दैनन् खेती गरेकाले पढ्दैनन् भने पुरानो परम्परा अनुसार नै नेपालमा खेती गरेको पाईन्छ । त्यसको उदाहरण पुष्प व्यवसाय पनि एक हो । आजको एक्काईसौं शताब्दीमा शिक्षा बिनाको व्यवसाय संचालन कल्पना समेत गर्न नसक्ने अवस्था छ । पुष्प व्यवसायको विषय अध्ययन अध्यापन गराउने पर्याप्त शिक्षण सस्थाहरु नहुनुले पनि यो व्यवसायमा विज्ञहरुको खाँचो टट्कारो खट्किएको छ। यो व्यवसाय पहिलो पुस्ताबाट दोस्रो पुस्तामा हस्तान्तरण हुन सकेको छैन ।

संसारमा नयाँ नयाँ प्रविधीहरुको विकास विस्तार भईरहेको छ । हामीले त्यसलाई प्रयोगमा ल्याउन त परै जाओस त्यो प्रविधि झिकाउन समेत नसकिरहेको अवस्था छ । विकास भएको टेक्नोलोजीलाई बसी बसी बेचेर कयौ धनी भएका छन् तर हामीले देखेका पनि छैनौ । कुनै बेलामा प्राबिधिज्ञको कमीले बोटबिरुवामा लागेको रोगको पहिचान गर्न नसकी पुरा बाली नै सखाप भएको थियो । उदाहरण - सयपत्रीमा केहि वर्ष अघि लागेको डडुवा । यस्तो किसिमको प्राविधिकको व्यवस्था गर्ने बारे सरकारले ध्यान दिनु जरुरी छ। प्राविधिक नेपालकै सेरोफेरोको हुनु जरुरी छ ।

**५. व्यवसायीक ज्ञानको कमि र अस्वस्थ्य प्रतिस्पर्धा**

www.nctnepal.com.npजुनसुकै व्यवसाय संचालन गर्नु पुर्व अवस्थामा नै त्यस विषयमा जानकारी हासिल गरेर मात्र व्यवसाय संचालन गर्न सके मात्र मुनाफा आर्जन गर्न सकिन्छ । नर्सरी व्यवसाय संचालन गर्नका लागि चाहिने न्युनतम दक्षता हासिल गरिसकेपछि मात्र व्यवसाय सञ्चालन गरी उच्चँ गुणस्तरको बोटबिरुवा उत्पादन गरी बजारमा स्वस्थ्य प्रतिस्पर्धा गरी आफ्नो व्यवसायबाट वढि भन्दा बढि लाभ लिनु पर्नेमा हाम्रो व्यवसायमा यस्तो भएको देखिदैन । २/४ महिना काम सिकेपछि व्यवसाय सञ्चालन गर्नु, कुन विरुवा कुन सिजनमा लगाउने, कस्तो ठाउंमा राख्ने, के कस्तो मलखाद प्रयोग गर्ने, कुन समयमा फुल्ने, कति समयमा टिक्ने, गुणस्तर कस्तो हुनुपर्ने, अधिकांश पुष्प व्यवसायीहरुमा यी सब कुराको ज्ञानको कमि भएको पाइन्छ । अर्को पक्ष, सिजनल फुलको हाइब्रिड सिड पहिलाको जस्तो

गुणस्तरको नपाईनु, मलखाद विषादी प्राय नक्कली हुनु, समयमा नपाउनु, निम्न गुणस्तरका मल विउ विषादी पनि महँगो भएकोले व्यवसायीहरुले सजिलै खरिद गर्न नसक्नु आदि ।

गुणस्तरीय फूल बिरुवाहरु उत्पादन गरी स्वच्छ प्रतिस्पर्धात्मक आन्तरिक बजारको बिकास गर्न सकिएको छैन । बिदेशी बजारको मंहगो सामानहरु (बीउ, मल बिषादी) खरिद गरी उत्पादन गरिएको फुल विरुवा सस्तोमा बेच्नु पर्ने बाध्यता छ । आलंकारिक बोटविरुवाहरु आयातमा निर्भर रहेको छ । हाम्रो उत्पादनले भारतबाट आयातीत उत्पादनसंग प्रतिस्पर्धा गर्न सकिरहेको छैन ।

**६. विदेशमा रोजगारको बढ्दो अवसर :**

नेपालबाट दैनिक रोजगारीको लागि नेपालीहरु विदेशीने क्रम द्रुत गतिमा बढिरहेको छ । त्यसको ठीक विपरित हाम्रो कृषि व्यवसायको लागि चाहिने कामदारहरुको माग स्वदेशमै बढि रहेको छ । अझ अरु उद्योग भन्दा फरक व्यवसाय भएको कारणले पुष्प व्यवसायमा कामदारको समस्या बढिरहेको छ । यो व्यवसायमा अक्सर विहान, बेलुका काम गर्नु पर्ने भएकोले झनै समस्या भएको छ । नर्सरी व्यवसायलाई आवश्यक पर्ने दक्ष वा अदक्ष दुवै कामदारको समस्या परिरहेको छ ।

अन्तमा भन्नु पर्दा काठमाण्डौं उपत्यकामा हाल सञ्चालनमा भएका पुष्प व्यवसायीहरु अधिकांश भाडाको जमिनमा सञ्चालन हुदै आएका छन् । साँघुरिदै गएको जमिन पानीको समस्या त्यसमा पनि जमिनको अत्याधिक महंगो भाडा यहि अवस्थामा रहि रहने हो भने काठमाण्डौ भित्र कट फ्लावर उत्पादक तथा नर्सरी उत्पादकहरुका लागि यो व्यबसायको भविष्य राम्रो देखिदैन । यी समस्या र चुनौतीहरुको सामाना गर्न सरकारको तर्फबाट पुष्प व्यवसायीहरुलाई दिगो र स्थायित्व बनाइ राख्नको लागि उपयुक्त ठाउंमा नेपाल सरकारको स्वामित्व भित्र पर्ने बाँझो जमिन सहुलियत दर भाडा र निश्चित समयसम्म उपलब्धता गराउदै सर्व सुलभ तरिकामा ऋण सुविधा व्यवसायीहरुलाई नितान्त आवश्यक भैसकेको छ । पुष्प व्यवसायमा लाग्ने व्यवसायीहरुले पनि एक आपसमा मिलेर सिप र दक्षतालाई एक आपसमा बाढ्दै अझ विकास विस्तार गर्दै पुष्पजन्य उत्पादनलाई गुणस्तरीय उत्पादन गरी निर्यात योग्य बनाउनका लागि सहकारी खेती तर्फ लाग्नुपर्ने बेला भइसकेको छ । हामीले इण्डोर आउटडोर विरुवाहरु भारतबाट आयात गरि बजारको आवश्यकतालाई परिपूर्ति गरिरहेको अवस्थालाई पनि सामुहिक खेतीतर्फ लागि आयातलाई निरुत्साहि गरि स्वदेशमै रोजगारीको थप अवसर प्रदान गर्न अग्रसर हुनु व्यवसायको हितमा देखिन्छ ।

नेपालमा बर्षै भरी उत्पादन गर्न सक्ने भौगोलिक वातावरण भएतापनि आर्थिक लगानीका साथै अन्य माथि उल्लेखित प्रविधिक पक्षको समस्य तथा कमीको कारण नर्सरी यवसायले चाहे जती फस्टाउन सकि रहेको छैन । ५ वर्ष बिचको समयमा पुष्प व्यवसायीहरुले उपयोग गर्ने सामानहरु जस्तै मल, विउ, विषादी, प्लास्टिक, माटो, श्रम आदिको मूल्य लगभग ३ गुणा वृद्धि भइसकेको तर हाम्रो समस्या जहाको त्यहि छ । यस तर्फ हामी सबै पुष्प व्यवसायीहरु तथा सम्बन्धित संघ संस्थाहरुले ध्यान दिनु जरुरी छ भन्ने मलाई लाग्दछ ।

# The Standard Nursery

**OUR BUSINESSES ARE**

* Annual (Seasonal) Seedlings for Nurseries and gardeners
* Garden Center
* Landscaping Services
* Interior beautification Services
* Exclusive Double Azalea
* Demonstration greenhouses of cut flower growing

## Crop Pro-TechNepal...

*We provide imported disease free planting materials,*

* *High quality hybrid flower & vegetable seeds*
* *Carnation Cuttings*
* *Gerbera Plants*
* *Professional garden tools*
* *Neo-peat (coco peat)*
* *Greenhouse film (UV stabilized, 2 years warranty)*
* *Fertilizers*

*Authorized agent:*

S.G Bodger Seeds Ltd.
floranova FLOWER SEED BREEDERS
PanAmerican Seed
TAKII
Benary
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Stanes

*Highly effective environment friendly neembased and bio pesticides.*

FALCON® PREMIUM

*Contemporary, highly efficient light weight garden tools and lawn mover.*

**For Florist**

Oasis Floral Foam
Cut flowers
Flower preservatives

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* 3 Years Warranty
* Highly efficient
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# फ्लोरीकल्चर एसोसियसन नेपालको आ.व.२०६६/२०६७ को बार्षिक प्रतिवेदन

## १. फ्लोरीकल्चर बस्तु स्थिती र FAN

नेपालमा सन् १९५० बाट सामान्य स्तरमा सुरु भएको पुष्प व्यवसाय सन् २०१० सम्ममा आइपुग्दा ५६ करोडको कारोबार गर्न सफल भएको कुरा तथ्यांकहरुले देखाउदछ । केहि सिमित व्यक्तिहरुलाई रोजगारी दिएर प्रारम्भ भएको पुष्प व्यवसाय आज हजारौं व्यक्तिमा फैलिसकेको छ । केहि रोपनीबाट सुरु भएको पुष्प व्यवसाय आज १०५ हेक्टरमा फैलिसकेको छ । पुष्प व्यवसाय काठमाण्डौं मात्र सिमीत नभएर पोखरा, नारायणघाट, हेटौंडा, विराटनगर, धरान, धनगढी लगायतका सहर हरुमा फैलदो स्थितिमा छ साथै हाल आएर खाडी मुलुकहरु, अमेरिका, जापान तथा यूरोपियन देशहरुमा पुष्प तथा पुष्पजन्य वस्तुहरु निर्यात भईरहेको छ । समग्रमा फ्लोरिकल्चरको राष्ट्रिय स्थिति विस्तार उन्मुख छ । फ्लोरिकल्चरको विकास, विस्तार तथा प्रवर्द्धन गुणात्मक रुपमा बृद्धि गर्दै लैजानु आजको राष्ट्रिय आवश्यकता हो । यहि आवश्यकतालाई दिगो रुपमा परिपूर्ति गर्नका लागि फ्लोरिकल्चर एशोसियसन नेपाल सदैब क्रियासिल रहि आएको छ ।

नेपालमा पुष्प व्यवसायको समग्र विकास, विस्तार र प्रवद्धन गर्ने उद्देश्य लिएर २०४९ साल कार्त्तिक ३० गते गैर सरकारी तथा गैर नाफा मुलक राष्ट्रिय स्तरको संस्थाको रुपमा स्थापना भएको FAN आज अठारौ बसन्त पार गर्दासम्म अनवरत रुपमा पुष्प व्यवसायको बिकास बिस्तार तथा प्रबर्द्धन गर्दै आफ्ना सदस्यहरुको हक हितमा सदैब कृयासिल छ ।

नेपालको राष्ट्रिय अर्थतन्त्रको दिगो विकासमा फ्लोरिकल्चर क्षेत्रको विकासद्वारा महत्वपूर्ण टेवा पुऱ्याउने FAN को दुरदृष्टि (vision) रहेको छ । फ्लोरिकल्चरको समग्र विकास गर्दै नेपाली पुष्प व्यवसायीहरुलाई अन्तराष्ट्रिय रुपमै प्रतिस्पर्धा गर्न सक्षम उद्यमीका रुपमा विकसित गर्ने FAN को Mission रहेको छ ।

FAN को vision, mission र उद्देश्यहरुलाई निरन्तर स्मरण गर्दै वर्तमान केन्द्रिय कार्य समिति त्यसको प्राप्तिका लागि अहोरात्र क्रियाशिल रहदै आएको छ । पुरा गर्नुपर्ने विशाल र असिमित जिम्मेवारी अनि सिमित स्रोत र साधनको उपलब्धताको दोसाधमा पनि हार नमानि निरन्तर संघर्षशिल रहदै आएको पूर्व तथा वर्तमान FAN का पदाधिकारी तथा सदस्यहरुको प्रशंसा गर्दै FAN ले आ.व. २०६६/६७ मा गरेका गतिविधि र कार्यक्रमहरुको संक्षिप्त विवरण निम्नानुसार छन ।

## २. कार्यक्रम तथा गतिविधिहरु :

### क) १७ औं बार्षिक साधारण सभा तथा कार्यकारिणी समितिको निर्बाचन

फ्लोरिकल्चर एशोसिएसन नेपालको १७ औं बार्षिक साधारण सभा गत बर्ष २०६६ भाद्र १० गते बुधबारका दिन होटल अर्किड त्रिपुरेश्वरमा सम्पन्न भएको थियो । सोहि साधारण सभाले निर्बाचनद्वारा दुई बर्षे कार्यकालको लागि FAN को निम्न कार्यकारिणी समितिको चयन गरेको थियो । अध्यक्ष, उपाध्यक्ष,

महासचिब र कोषाध्यक्ष निर्बिरोध निर्बाचित भएको थियो भने पाँच सदस्य पदका लागि माग भएको संख्या भन्दा बढि उम्मेद्वारी परेको कारण FAN को बिधान अनुसार मतदानद्वारा चयन गरिएको थियो ।

| क्र.स. | पद | निर्बाचित उम्मेद्वारहरुको नामावली | कैफियत |
|---|---|---|---|
| १ | अध्यक्ष | श्री अरुण क्षेत्री | निर्बिरोध निर्बाचित |
| २ | उपाध्यक्ष | श्री कुमार कसजु श्रेष्ठ | निर्बिरोध निर्बाचित |
| ३ | महासचिब | श्री दिलीप बादे | निर्बिरोध निर्बाचित |
| ४ | कोषाध्यक्ष | श्री मीन बहादुर तामाङ्ग | निर्बिरोध निर्बाचित |

**सदस्य पदमा निर्वाचित सदस्यहरु निम्न छन् ।**

| | | | |
|---|---|---|---|
| १ | सदस्य | श्रीमती दीपा राई पुन | निर्बाचित |
| २ | " | श्री नारायण भक्त महर्जन | निर्बाचित |
| ३ | " | श्री रामजी प्रसाद तिमिल्सिना | निर्बाचित |
| ४ | " | श्री शिब बहादुर खडका | निर्बाचित |
| ५ | " | श्री सागर लाल मुल्मी | निर्बाचित |

**ख) स्वागत तथा विदाई**

आ.व. ०६६/०६७/०६८ का लागि नव निर्वाचित कार्य समिति र पूर्व कार्य समितिका पदाधिकारी तथा सदस्यहरुको पहिलो संयुक्त बैठकमा नव निर्वाचित कार्य समितिलाई स्वागत तथा पूर्व कार्य समितिका अध्यक्ष श्रीधर कार्की, उपाध्यक्ष लोकनाथ गैरे, कोषाध्यक्ष खेम राज पौडेल तथा सदस्यहरुकवि राज राई र मचाकाजी महर्जनलाई विदाई गर्ने कार्यक्रम सम्पन्न गरिएको थियो । उक्त कार्यक्रममा नयाँ कार्यसमितिका अध्यक्ष अरुण क्षेत्रीज्यूद्वारा भू.पु. कार्य समितिका पदाधिकारी तथा सदस्यहरुको योगदानको प्रशंसा गर्दै आगामी दिनहरुमा पनि उहाँहरुको अनुभव र सल्लाह सुझाव सदैब अपरिहार्य हुने भन्दै सोको अपेक्षा गर्नु भएको थियो भने पुराना कार्य समितिका पदाधिकारी तथा सदस्यहरुले नयाँ कार्य समितिका सम्पूर्ण पदाधिकारी र सदस्यहरुको सफल कार्यकालका लागि कामना गर्नु भएको थियो ।

**ग) विभाग, समिति तथा उपसमितिहरुको गठन**

FAN द्वारा पुष्प व्यवसायको राष्ट्रिय तथा अन्तराष्ट्रिय स्तरमा विकास विस्तार तथा प्रवर्द्धनका साथै FAN को आन्तरिक कार्य सम्पादनलाई चुस्त, दुरुस्त, समय सापेक्ष र व्यवस्थित गर्नका लागि निम्नानुसारका विभाग समिति तथा उप समितिहरुको गठन गरिएका थियो ।

**उच्चस्तरिय भेटघाट तथा सम्बन्ध बिस्तार विभाग**

प्रमुख : श्री अरुण क्षेत्री (अध्यक्ष)

**जनसम्पर्क, शिक्षण तथा प्रशिक्षण बिभाग**

प्रमुख- श्री कुमार कसजु श्रेष्ठ (उपाध्यक्ष)

**बिदेश सम्पर्क बिभाग, प्रमुख**

प्रमुख - श्री दिलीप बादे (महासचिब)

**आर्थिक बिभाग**

प्रमुख- श्री मीन बहादुर तामाङ्ग (कोषाध्यक्ष)

उप प्रमुख- श्री रामजी प्रसाद तिमिल्सीना (का.स.)

**बिवाद निरुपन तथा न्यायिक बिभाग**

प्रमुख- श्री नारायण भक्त महर्जन (का.स.उप प्रमुख- श्री सागर लाल मुल्मी (का.स.)

**खोज, अनुसन्धान र विकास बिभाग**

प्रमुख- श्री अरुण क्षेत्री (अध्यक्ष)

उप प्रमुख- श्री कुमार कसजु श्रेष्ठ (उपाध्यक्ष)

उप प्रमुख- श्री दिलीप बादे (महासचिव)

**कट-फ्लावर उप समिति**

संयोजक- श्री सागर लाल मुल्मी (का.स.)

**जिल्ला समन्वय समिति**

संयोजक -श्री शिव बहादुर खडका (का.स.)

**अर्किड उप समिति**

संयोजक- श्रीमति दिपा राई पुन (का.स.)

**नर्सरी उप समिति**

संयोजक- नारायण भक्त महर्जन(का.स.)

सह-संयोजक - रुद्र कमार सुनुवार

सदस्य - रामजी कुँवर

सदस्य - चुडामणि लोहनी

सदस्य - धन प्रसाद घिमिरे

सदस्य - महेन्द्र सुवेदी

सदस्य - विशाल खड्का

**सल्लाहकार समिति**

डा. उमिद पुन

मिनर्वा बिष्ट

सुरेश भक्त श्रेष्ठ

अनुप राई

राम कृष्ण निराला ( कानुन )

माथिका सम्पूर्ण विभाग समिति तथा उपसमितिहरुद्धारा आ–आफ्नो कार्य क्षेत्र भित्र रहेर महत्वपूर्ण योगदान दिदैं प्रशंसनिय कार्यहरु गर्दै आईर हनु भएको छ ।

**घ) गोदावरी प्रतिगोगितात्मक प्रदर्शनी २०६६**

कृषि व्यवसाय प्रवर्द्धन कार्यक्रम/कृषि बिभाग तथा फ्लोरिकल्चर एशोसिएसन नेपालको संयुक्त आयोजनामा २०६६ असोज २०-२२ गतेसम्म राष्ट्रिय सभागृहको प्राङ्गनमा ३ दिने गोदावरी फूलको प्रतियोगितात्मक प्रदर्शनीको आयोजना गरिएको थियो । उक्त प्रतियोगितात्मक प्रदर्शनीमा बिभिन्न १९ नर्सरीहरुले भाग लिएको थियो। उक्त प्रतियोगितामा चार वटा बिद्या (मिनियचर, रिफ्लेक्स, स्पाईडर र ईन्कर्भ) मा प्रतिस्पर्धा गराई प्रथम, द्वतिया, तृतिया हुने नर्सरीलाई कृषि मन्त्री श्री मृगेन्द्र सिं यादवज्यूद्वारा सिल्ड तथा प्रमाण पत्रद्वारा पुरस्कृत गरिएको थियो ।

पुरस्कृत हुने नर्सरीहरु:

प्रथम: महर्जन नर्सरी

द्वतिया: सम्झना नर्सरी

तृतिया: न्यू सन फ्लावर नर्सरी र

सान्त्वना: स्वयाम्भु गार्डेन सर्भिस एण्ड प्लान्ट नर्सरी रहेका थिए ।

**ङ) पश्चिमाञ्चल क्षेत्रिया पुष्प व्यापार मेला २०६६**

कास्की जिल्ला अन्तर्गत पोखरामा २०६६ कार्तिक २५ देखि २९ गतेसम्म FAN को सहयोगमा फ्लोरिकल्चर एशोसिएसन नेपाल कास्की जिल्ला समितिको आयोजनामा पाँच दिने पश्चिमाञ्चल पुष्प व्यापार मेला २०६६ सम्पन्न भएको थियो । उक्त मेलामा पोखराको २२ वटा स्थानिय नर्सरी व्यवसायीहरुको सहभागिता रहेको थियो । मेलामा बिभिन्न प्रकारका मौसमी फूल बिरुवा, आलंकारिक बोट बिरुवाहरु, सुनखरी फूल बिरुवा, पुष्प सजावट, घर आगन बगैचा सजावट सम्बन्धि बिबिध बस्तुहरु प्रदर्शित तथा बिक्री बितरण गरिएको थियो । साथै

विभिन्न विधामा प्रतियोगिता पनि संचालन गरी प्रथम हुने नर्सरीलाई सिल्ड तथा प्रमाण पत्रद्वारा पुरस्कृत गरिएको थियो ।

**पुरस्कृत हुने नर्सरीहरु**

१) उत्कृष्ट मौसमी फूल – न्यू फ्यामेली गार्डेन नर्सरी
२) उत्कृष्ट आलंकारीक विरुवा – गोल्डेन नर्सरी
३) उत्कृष्ट फूल्ने विरुवा – सृजना नर्सरी
४) उत्कृष्ट स्टल – पारिजात नर्सरी
५) उत्कृष्ट ल्याण्डस्केप – गार्डेन नर्सरी

**च) अन्तराष्ट्रिय पुष्प सम्मेलनमा सहभागी**

हाम्रो छिमेकी देश चीनको कुनमीनमा सन २०१० जनवारी ७ देखि ९ सम्म FAO ले आयोजना गरेको Expert Consultation Meeting on Floriculture Development in Asia सम्बन्धि एसियन देशहरुको पुष्प सम्मेलनमा FAN को तर्फबाट नेपाल राष्ट्रको प्रतिनिधित्व गर्दै पुष्प वैज्ञानिक डा.उमिद पुन ज्यूलाई मनोनयन गरी सहभागी हुनु पठाईएको थियो । उहाले नेपालको फ्लोरिकल्चरको समग्र वस्तु स्थितिको बारेमा एक कार्य पत्र प्रस्तुत गर्नु भएको थियो ।

साथै उक्त सम्मेलनबाट फर्किसकेपछि त्यहां प्रस्तुत भए गरेका गतिविधि तथा कार्यपत्रहरुको संक्षिप्त प्रतिबेदन सदस्यहरुलाई FAN ले मिति २०६६ माघ १९ गते एक कार्यक्रम आयोजना गरी Floriculture Development in Asia; Lesson that can be learn from some Asian Country सम्बन्धि जानकारी गराएको थियो ।

**छ) फ्लोरिकल्चर सहकारी गठन :**

नेपालमा फ्लोरीकल्चरको गुणात्मक विकासका लागी फ्लोरीकल्चरसँग सम्बन्धित वस्तु, सेवा र अर्थको मिलिजुलि उत्पादन, मिलिजुलि वितरण, मिलिजुली नै उपभोग गर्ने पवित्र उद्देश्य राखि FAN मा आवद्ध सक्रिय सदस्यहरुद्धारा फ्लोरिकल्चर सहकारी संस्था लि.को गठन गरी नेपाल सरकार, कृषि तथा सहकारी मन्त्रालय, डिभिजन सहकारी कार्यालय काठमाण्डौमा बि.सं. २०६६ फाल्गुन २७ गते विधिवत् रुपमा दर्ता गरी संचालनमा ल्याएको छ। FAN को अग्रसरता र वर्तमान केन्द्रिय कार्य समितिको सक्रियता गठन हुन सफल यो सहकारी नेपालको पुष्प सम्बन्धि पहिलो सहकारी संस्था हो । FAN को पहल र सिफारीसमा गठन भएको यस सहकारीले ०६६ फाल्गुन २७ गते दर्ता भई ०६७ वैशाख ४ गतेबाट कारोवार सुभारम्भ गरेको छ। FAN ले नै जन्माएको सहकारी संस्था भएको नाताले उक्त सहकारीलाई FAN द्वारा निरन्तर वस्तुगत तथा नितिगत सहयोग गर्दै आएको छ ।

**ज) १३ औं पुष्प प्रदर्शनी/व्यापार मेला २०६६**

फ्लोरिकल्चर एशोसिएसन नेपालको आयोजना तथा कृषि व्यवसाय प्रबर्द्धन कार्यक्रम/कृषि बिभाग, साना तथा घरेलु उद्योग बिभाग, कृषि उद्यम केन्द्र/FNCCI र एक गाउ एक उत्पादन कार्यक्रम कार्यन्वयन समिति/उद्योग वाणिज्य संघ ललितपुर को सह-आयोजनामा *"स्वाच्छ वातवरण र आर्थिक समृद्धिका लागि पुष्प व्यवसाय"* भन्ने मुख्य नाराको साथ २०६६ चैत्र १९ गतेदेखि २३ गतेसम्म पाँच दिने **१३ औं पुष्प प्रदर्शनी/ व्यापार मेला २०६६** को भृकुटिमण्डप प्रदर्शनी हल, काठमाडौमा भव्यता र सफलताका साथ सम्पन्न गरिएको छ ।

उक्त मेला अवधिमा गरिएका गतिविधि तथा कियाकलापहरुको संक्षिप्त विवरण निम्नानुसार रहेका छन् ।

- राष्ट्रिय तथा अन्तराष्ट्रिय स्तरमा इन्टरनेटको माध्यमद्धारा मेलाको प्रचार–प्रसार गर्नको लागी

www.nepalfloraexpo.com नामक Website निर्माण गरिएको ।

- मेलामा ६० स्टलको व्यवस्था गरिएका जसमा ५ वटा व्यावसायीक, ५ वटा सूचनात्मक स्टलहरु थिए ।
- ४९ नर्सरी व्यावसाय तथा संघ संस्थाहरु सहभागी भएका थिए ।
- मेलामा सहभागी नर्सरी व्यवसायीहरुद्वारा उत्पादित फूलबिरुवाहरुमा स्वच्छ प्रतिस्पर्धा गराई पुरस्कृत गराउन विविध विधा तय गरि ३ सदस्यीय निर्णायक समिति गठन गरिएको जसमा लोकनाथ गैरे संयोजक र सदस्यहरुमा FAN कोषाध्यक्ष मीन बहादुर तामाङ्ग र FAN कार्यक्रम संयोजक जङ्ग बहादुर तामाङ्ग रहनुभएको थियो । भने निर्णायकमा श्री गोपाल प्रसाद श्रेष्ठ, श्री कुबेर जंग मल्ल, श्री अनुप राई र Mr. Iwao Ouchi (Japanese) रहनुभएको थियो । प्रतिस्पर्धामा प्रथम हुने बिभिन्न नर्सरीहरुलाई कार्यक्रमका प्रमुख अतिथी नेपाल उद्योग वाणिज्य महासंघका अध्यक्ष श्री कुश कुमार जोशीज्यूद्वारा पुरस्कृत गरिएको थियो ।

**पुरस्कृत हुने नर्सरीहरु निम्न छन ।**

| | | |
|---|---|---|
| १) | उत्कृष्ट मौसमी फूल | - टिटि आर बगलामुखि नर्सरी |
| २) | उत्कृष्ट आलंकारिक बिरुवा | - सम्झना नर्सरी |
| ३) | उत्कृष्ट फूल्ने बिरुवा | - सम्झना नर्सरी |
| ४) | उत्कृष्ट ल्याण्डस्केप | - पिपल नर्सरी |
| ५) | उत्कृष्ट पुष्प सजावट | - स्कट सनराईज अर्किड |
| ६) | उत्कृष्ट स्टल | - न्यू सन फ्लावर नर्सरी |
| ७) | उत्कृष्ठ सुनखरी फूल (स्टाण्डर्ड) | - डिजेज् अर्किड नर्सरी |
| ८) | उत्कृष्ट सुनखरी फूल (ईन्टरमेडियट) | - स्कट सनसाईज अर्किड नर्सरी |
| ९). | उत्कृष्ट सुनखरी फूल (मिनियचर) | - रोजडेला नर्सरी |
| १०) | कदर पत्र | - श्री मालिका नर्सरी(२०२९),चितवन |

उत्कृष्ट मौसमी फूल, उत्कृष्ठ फूल्ने बिरुवा, उत्कृष्ट आलंकारिक बिरुवा तर्फ बिजयी नर्सरीलाई सिल्ड तथा प्रमाण पत्रका साथै नर्सरी उपसमितिको कोषबाट पाँच पाँच हजार नगदद्वारा पुरस्कृत गरिएको थियो । त्यस्तै उत्कृष्ट स्टल र उत्कृष्ट ल्याण्डस्केप तर्फ बिजयी हुने नर्सरीहरुलाई सिल्ड तथा प्रमाण पत्रका साथै नर्सरी उपसमितिको कोषबाट दश दश हजार र FAN को कोषबाट थप पाँच पाँच हजार नगद सहित पुरस्कृत गरिएको थियो । उत्कृष्ट पुष्प सजावट तर्फका बिजेता स्कट सनराईज अर्किड नर्सरीलाई सिल्ड तथा प्रमाण पत्रका साथै युनाईटेड फ्लोरा प्रा.ली.का तर्फबाट समेत रु.५०००/- नगदद्वारा पुरस्कृत गरिएको थियो ।

**झ) जिल्ला कार्य समितिको निर्वाचन**

कास्की जिल्ला कार्य समितिद्धारा ०६७ जेष्ठ १ गते पोखराको चिप्ले ढुङ्गामा गरिएको तेस्रो साधारण सभामा केन्द्रिय कार्य समितिका तर्फबाट प्रमुख अतिथिका रुपमा FAN का महासचिव दिलिप बादे, अतिथिका रुपमा जिल्ला समन्वय समितिका संयोजक शिव बहादुर खड्का सहभागी हुन गएका

थिए । सो साधारण सभाले दुई वर्षे कार्यकालका लागी निम्नानुसारका व्यक्तिहरुको कास्की जिल्ला कार्य समिति निर्विरोध रुपमा निर्वाचित गरिएको थियो ।

**निर्बिरोध निर्बाचित सदस्यहरु:**

| | |
|---|---|
| सिकन्दर गुरुङ्ग | अध्यक्ष |
| दयाकुमार द्वा | उपाध्यक्ष |
| प्रेम ब.खड्का | सचिव |
| सीता माया राना | कोषाध्यक्ष |
| झलक प्रसाद गौतम | सदस्य |
| प्रेम के.सी. | सदस्य |
| दिल बहादुर गुरुङ्ग | सदस्य |
| गुरु प्रसाद सिवाकोटी | सदस्य |
| राम सुवेदी | सदस्य |

**ञ) नर्सरी भेला**

विशेषत नर्सरी ब्यावसायीहरुको समस्या, गुनासो, तथा प्रगति, उन्नतिका साथै समसामयिक विषयमा छलफल गर्नका लागी आवश्यकतानुसार FAN नर्सरी उप समितिद्वारा नर्सरी भेलाको आयोजना गर्ने गरिएको छ। त्यही सीलसीलामा गत आ. व. मा २ पटक नर्सरी भेला आयोजना गरि तत्कालीन नर्सरी ब्यावसायीहरुको मूलभूत मूदाहरु मथि गम्भिर तथा गहन छलफल भएका थिए ।

**ट) नर्सरी भ्रमण**

FAN केन्द्रिय कार्य समिति तथा नर्सरी उप समितिका पदाधिकारीहरु सम्मिलित टोलीले २ दिन लगाई काठमाण्डौं उपत्यका भित्रका सम्पूर्ण नर्सरी ब्यावसायीहरुको घर दैलोमा गई सल्लाह सुझाव तथा गुनासो सुन्ने तथा तथ्यांक संकलन कार्य सम्पन्न गरिएको थियो ।

**ठ) देउसी भैलो कार्यक्रम**

फ्लोरिकल्चर एशोसिएसन नेपालका सदस्यहरु बिच आपसी भाईचारा, व्यवसायीक एकता र सुमधुर सम्बन्ध स्थापित गराउदै अघि बढनको लागि सघाउ पुऱ्याउने उदेश्यले २०६६ सालको तीहार को उपलक्ष्यमा काठमाण्डौको संखपार्कमा एक दिन देउसी भैलो कार्यक्रमको आयोजना गरिएको थियो।

**ड) बैठक, भेटघाट, सभा सम्मेलन**

यस अवधिमा विभिन्न निति निर्माण तथा कार्यक्रम तय गर्नका लागि प्रत्येक महिनाको पहिलो बुधवार कार्य कारिणी समितिको बैठक बस्ने निर्णय बमोजिम जम्मा १२ पटक कार्यकारिणी समितिको औपचारिक बैठक सम्पन्न गर्नुका साथै अन्य विविध महत्वपूर्ण बिषय बस्तु माथि छलफल तथा परामर्श बैठक सम्पन्न भएका थिए । साथै विभिन्न सरकारी तथा गैर सर कारी निकाय संघ संस्थाद्वारा आयोजना गरिएको विभिन्न सभा सम्मेलन तथा भेटघाट समारोहहरुमा सकिय रुपा सहभागी भई FAN को उपस्थिति देखाउनुको साथै आफ्नो महत्वपूर्ण भनाईहरु राख्ने कार्य गरिएको थियो ।

**ढ) सदस्य संख्या**

यस आ.ब.मा २३ जना नयाँ सदस्यहरुले प्रबेश गरि यस संस्थाको साधारण सदस्य संख्या आ.ब.२०६६/६७ को अन्तसम्ममा जम्मा ३४४ जना पुगेको छ ।

**३. तालिम कार्यक्रम :**

FAN ले पुष्प व्यवसायको दिगो विकास, बिस्तार र प्रबर्द्धनका लागि दक्ष जनसक्तिको उत्पादन तथा क्षमता अभिबृदिका लागि बिभिन्न तालिमको आयोजना गर्दै आएको छ । आ.व. २०६६/६७ मा निम्न तालिम सम्पन्न गरेका छ ।

**क) बिरुवा प्रसारण तथा संरक्षण**

१) पुष्प बिकास केन्द्र र FAN को संयुक्त आयोजनामा आ.ब.२०६६/६७ मा चार वटा तालिम संचालन गरिएको छ । जसमा बिरुवा प्रसारण र रोग किरा सम्बन्धि तालिम २ वटा २०६६ कार्त्तिक १८-१९ गते पोखरामा संचालन गरिएको थियो भने बाँकी दुई बटा काठमाण्डौमा संचालन गरिएको थियो ।

२) त्यस्तै FAN अन्तर्गत नर्सरी उप समितिद्वारा पनि एक दिने नर्सरी व्यवस्थापन तालिमको आयोजना न्यू सन फ्लावर नर्सरी, संखमुल, काठमाण्डौमा गरिएको थियो । उक्त तालिम विशेष गरी पुराना अनुभवि नर्सरी व्यवसायीद्वारा नयां नर्सरी व्यवसायीलाई सिप र ज्ञानको हस्तान्तरण होस भन्ने उद्देश्यद्वारा प्रेरित

रहेको थियो । प्रशिक्षकहरु श्री अनिल आचार्य, तीर्थ ब. महर्जन र नारायण भक्त महर्जन रहेको थियो ।

दुवै तालिम कार्यक्रमहरुमा उल्लेख्य मात्रामा पुष्प व्यवसायीहरुको उपस्थिति रहेको थियो ।

**ख) नेतृत्व बिकास अभिमुखिकरण तालिम**

संघ संस्थाहरुको संञ्चालन तथा व्यवस्थापनमा सुधार गरी संघका राष्ट्रिय अर्न्तराष्ट्रिय मुल्य,मान्यता र सिद्धान्त अनुरुप संघका पद्दति र कृयाकलापलाई जिम्मेवारीपूर्ण ईमान्दार, अनुशासित, पारदर्शी, सुशासन एवं विधिसम्मत तरिकाले सञ्चालन तथा व्यवस्थापन गर्न सघाउ पुऱ्याउने, कुसल नेता वा नेतृत्व पंक्तिले खेल्नु पर्ने वा निर्भाह गनु पर्ने भुमिकाको बारे समेत जानकारी वा प्रशिक्षित गराउने उद्देश्यले FAN का कार्यकारिणी समितिका सदस्यहरुलाई २०६६ पौष २९ गते एक दिने नेतृत्व बिकास अभिमुखिकरण तालिम संचालन गरिएको थियो । यसका प्रशिक्षक श्री बच्चु राम बस्नेत रहेको थियो ।

**ग) पुष्प सहकारी प्रशिक्षण**

सहकारीको इतिहास, महत्व र राष्ट्रिय तथा अन्तराष्ट्रिय स्तरको विकास कार्यमा सहकारीले खेलेको भूमिकाको जानकारीका साथै फ्लोरिकल्चर ब्यावसायमा सहकारीताको माध्यमद्धारा हुन सक्ने उपलब्धिको सेरोफेरोमा रहेर पुष्प ब्यावसायीहरुलाई सहकारी प्रति सचेत तथा जागरुक बनाउने पहल स्वरुप गत आ. व. मा २ वटा सहकारी प्रशिक्षण कार्यक्रम संचालन गरिएको थियो । जसको फलस्वरुप फ्लोरीकल्चर सहकारी संस्था लि. को गठन भएको थियो ।

**४. मनोनयन तथा सिफारिसः**

**क) व्यवसायीक कृषि तथा व्यापार आयोजनाको स्टेरिङ कमिटिमा मनोनयन**

नेपाल सरकार, कृषि तथा सहकारी मन्त्रालयबाट व्यवसायीक कृषि तथा व्यापार आयोजना(PACT)को संचालनका लागि फ्लोरिकल्चर एशोसिएसन नेपालका तर्फबाट समेत एक जना महिला प्रतिनिधी रहने गरि गठित National Project Steering Committee (NPSC) मा FAN को तर्फबाट प्रतिनिधित्व गर्ने गरी भु.पू. अध्यक्ष श्रीमती मिनर्वा बिष्टज्यूलाई मनोनयन गरि पठाईएको छ ।

**ख) सफल महिला उधमिको चयन**

ने.वा.उ.महासघको महिला उद्यमी बिकास समितिले नेपाल सरकार, उद्योग मन्त्रालयको समन्वयमा १०१ उत्कृष्ठ सफल महिला उद्यमीहरुको परिचय र फोटो सहितको परिचयात्मक पुस्तिका प्रकाशनका लागि FAN बाट एक जना सफल महिला उद्यमीको नाम माग भए बमोजिम FAN मा बि.स. २०५९ सालमा सदस्यता लिई सकृया सदस्यको रुपमा रहि पुष्प व्यवसायको क्षेत्रमा कृयासिल महिला पुष्प उद्यमी **श्रीमती उषा खडका** (नीँज बिशाल नर्सरीका संचालिका हुनुहुन्छ) ज्यूलाई सिफारिस गरि नामवली पठाएको थियो ।

**५. अनुसन्धान तथा बिकास :**

अनुसन्धान तथा विकास अन्तर्गत निम्न कार्य भएका छन् ।

**सयपत्री तथा जर्वेरामा लाग्ने मुख्य रोगको व्यवस्थापन अध्ययन**

साझेदारी कार्यक्रम अन्तर्गत फ्लोरिकल्चर एशोसिएसन नेपाल र पुष्प बिकास केन्द्रको सहकार्यमा सयपत्री फूल र जर्वेरा फूलमा लाग्ने रोगको पुष्प बिकास केन्द्र गोदावरीमा गत आर्थिक बर्ष २०६५/६६ देखि निरन्तर रुपमा अध्ययन भैरहेको छ । यस अध्ययनका लागी यस बर्ष पनि FAN ले ईन्का भेराईटीको सयपत्रीको बिरुवा ६०० बोट र जर्वेराको बिरुवा २० बोट पुष्प बिकास केन्द्रलाई उपलब्ध गराईएको छ । यसको अध्ययनको प्रतिबेदन आउन बाँकी छ ।

**६. प्रस्तावनाहरु :**

FAN ले आ.व. २०६६/६७ मा प्रस्ताव गरेका प्रस्तावनाहरु निम्न छन ।

**क. कृषि तथा सहकारी मन्त्रालयहरुमा पेश गरिएको प्रस्तावनाहरु जुन पुष्प विकास केन्द्रसँग सहकार्यमा हुदैं आएको वा हुनेछ ।**

- नेपालमा पाईने जङ्गली फुल फुल्ने तथा आलंकारीक बोटको संकलन तथा सम्वर्धन
- सयपत्रि तथा जरवेटाको मूख्य रोग व्यवस्थापन
- पुष्प प्रदर्शनिको अवलोकन तथा माउबोट संकलन ( लखनाउ/वैङ्गलोर )
- कोल्ड स्टोर स्थापना ( कटफ्लावर/वल्वका लागी ) काठमाण्डौंमा
- विभिन्न पुष्प उत्पादन तथा विस्तार तालिम

**ख. वनस्पति विभाग (वन तथा भू–संरक्षण मन्त्रालय) मा पेश गरिएको प्रस्तावनाहरु :**

- सामूदायीक आलंकारीक बोट विरुवा उत्पादन कार्यक्रम ( चितवन जिल्ला )
- फुल खेती अवलोकन भ्रमण कलकत्ता
- लालुपाते मेला
- मैलिक आलंकारीक विरुवाको क्याटलग तयार गर्ने
- आलंकारीक विरुवाहरु,कार्नेशन,सिम्बिडियम अर्किड आदि विरुवाको तन्तु प्रजनन तथा प्रयोगशाला विकास तथा विस्तार

**ग. वाणिज्य तथा आपुर्ति मन्त्रालय**

- आलंकारीक विरुवाको उत्पादन क्षेत्र पहिचान एवं अध्ययन
- पुष्प बजार अवलोकन भ्रमण : निर्यात प्रवर्द्धन कार्यका लागी कतार

**घ. घरेलु तथा साना उद्योग विभाग**

- पुष्प सजावट तालिम तथा पसल क्यवस्थापन ( विरगंज,नेपालगंज,भैरहवा )

**ङ. भारतिय राजदुतावास**

- पुष्प ब्यावसायी कल्याणकारी कोष स्थापनार्थ आर्थिक सहयोग
- उच्चस्तरीय पुष्प सम्बन्धि तालिमहरु

**७. चुनौति र सम्भावनाहरु :**

राजनैतिक अस्थिरता, प्राकृतिक प्रतिकुलता, काठमाण्डौंमा पानी र जग्गाको सीमितता तथा दक्ष कामदारहरुको पलायनता तथा गुणस्तरीय मल, विषादि, औजार तथा विउ विजनहरुको अभाव आदि हाम्रो तत्कालिन चुनौतिहरु हुन् । जसलाई हामी सबैले मिलेर क्रमिक रुपमा सामना र समाधान गर्दै जानु पर्ने देखिन्छ ।

हाम्रो सामु चुनौतिहरुको पहाड देखिएता पनि सम्भावनाहरु पनि हामी सामु बिद्यामान छ । नेपालमा उपलब्ध तराईको तातोपन, पहाडको न्यानोपन र हिमालको चिसोपन एकै साथ प्रयोग गर्ने हो भने फ्लारीकल्चर क्षेत्रको कायापलट हुने तथ्यलाई हामी नकार्न सक्दैनौं । सरकारी सहयोग र निजि क्षेत्रको प्रयासले फ्लारीकल्चरको माध्यमद्धारा देशको राष्ट्रिय अर्थतन्त्रलाई नै टेवा पुयाउन सक्ने ठुलो सम्भावनाहरु लुकेर बसेको छ। यहि सम्भावनाहरुलाई तपाई हामी पुष्प ब्यावसायीहरुले उघार्दै लैंजाने प्रयास गर्नु छ। जसमा FAN लाई तहाँईहरुको सदैब सहयोग आबश्यक छ ।

**८. कृतज्ञता ज्ञापन तथा धन्यवाद :**

अन्त्यमा सम्पूर्ण सदस्य महानुभावहरुले FAN को केन्द्रिय कार्यकारिणी समिति प्रति देखाउनु भएको सहयोग, सद्भाव र विश्वासको निमित्त हार्दिक कृतज्ञता तथा धन्यवाद ज्ञापन गर्दछौ । त्यसै गरी FAN को प्रगतिमा सहयोग पुऱ्याउने सम्पूर्ण सर कारी निकायहरु, उद्योग वाणिज्य महासंघ, कृषि उद्यम केन्द्र लगायत अन्य सहयोगी संघ संस्था प्रति आभार व्यक्त गर्दछौ । विशेषत FAN बाट सञ्चालित कार्यक्रमहरुमा सहभागी सदस्य महानुभावहरु प्रति केन्द्रिय कार्य समिति तर्फबाट आभार प्रकट गर्दछौ ।

FAN परिवारको रुपमा FAN को उन्नति र प्रगतिमा सदैव इमान्दार, लगनशील र आफ्नो जिम्मेवारी प्रति प्रतिवद्ध रहि योगदान दिनुहुने सम्पूर्ण कर्मचारीवर्गमा यस अवसरमा कार्य समितिको तर्फबाट विशेष रुपमा धन्यवाद दिदैं भावी दिनहरुमा समेत योगदान तथा भूमिका रहनेछ भन्ने विश्वास लिएको छौ ।

**दिलिप वादे**
महासचिव

नयाँ वर्ष २०६८ सालको उपलक्ष्यमा सम्पूर्ण नेपाली दाजुभाई तथा दिदिवहिनीहरूमा
हार्दिक मंगलमय शुभकामना व्यक्त गर्दै यस अन्नपूर्ण बीज भण्डार
निम्न उत्पादनहरू सगौरव प्रस्तुत गर्दछ ।

## OSHIN, insecticides

A revolutionary Product from Mitsui Chemical Japan

व्हाइट फलाई लाई किरा तथा अन्य किराहरु नियन्त्रणको लागि अत्यन्त प्रभावकारी औषधी ओसिन प्रयोग गरी आफ्नो फूल तथा तरकारी बालीलाई सुरक्षित गर्नुहोस् ।

*'एक पटक प्रयोग गर्नुहोस, ओसिनको क्षमता बुझ्नुहोस ।'*

## NEBIJIN technology from Japan

Total care for clubroot disease

यदि तपाईको खेतमा गाँठे रोगको समस्या छ भने अब ढुक्क भई 'नेबिजिनको' प्रयोग गर्नुहोस अनि गाँठे रोगलाई नियन्त्रण गरी बालीको पूर्ण उत्पादन लिई आफ्नो आम्दानी वृद्धि गर्नुहोस ।

*'उन्नत बिउ रोपौं, बढि उत्पादन गरौं ।'*

विश्व विख्यात निम्न कम्पनीहरुको तरकारीको बिउ चाहेमा हामीलाई सम्झनुहोस

नामधारी सिड्स
इण्डिया

कानेको सिड्स
जापान

एसिया सिड्स
द.कोरिया

हेफाई फेङगल सिड्स
चाइना

अन्नपूर्ण बीज भण्डार
काठमाडौं, नेपाल

'राम्रो जातको बिउ राम्रो फुलको बोट एउटै कम्पनीको चाहेको जातको बिऊ'
निम्न कम्पनीहरुको सिजनल फूलका बिउहरु प्रयोग गरी आफ्नो व्यवसाय बढाउ

आसूसा
टाइवान

JYK Seed
जे. वाई. के.
अमेरिका

नामधारी
इण्डिया

विस्तृत विवरणको लागि

**अन्नपूर्ण बीज भण्डार**
असन टोल, काठमाडौं-४२२१८८८

**अन्नपूर्ण इम्पोर्ट डिभिजन**
कालीमाटी काठमाडौं-४२७७७७२