

2022

1st International Floriculture Trade Fair 2001

Souvenir

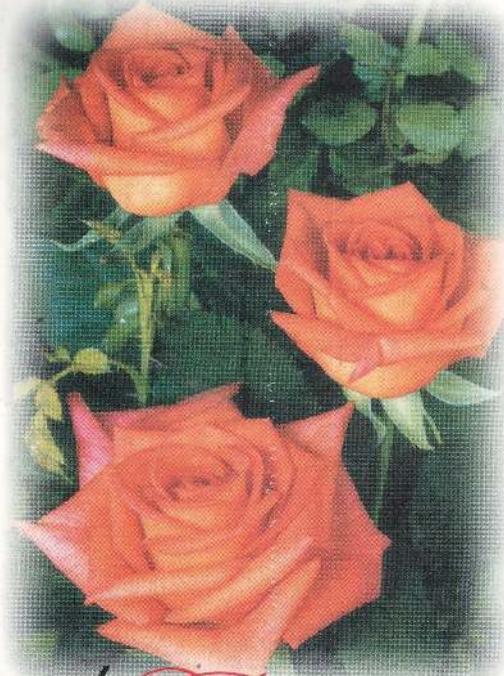


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1st International Floriculture Trade Fair 2001

SOUVENIR

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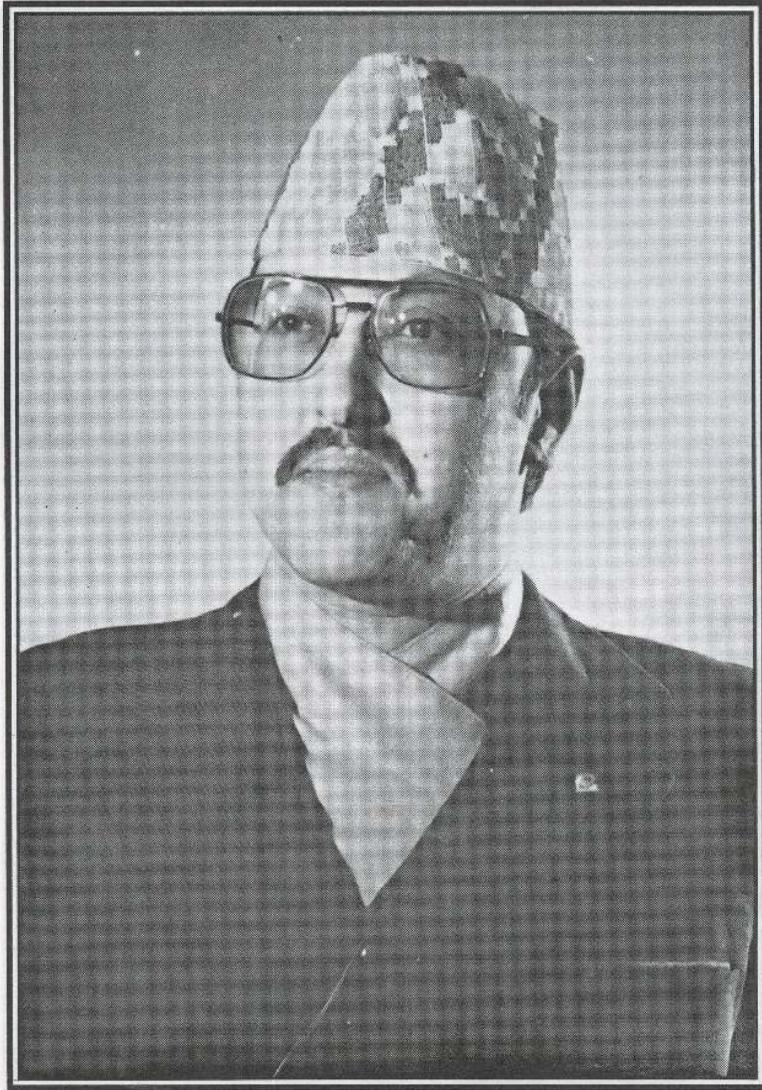
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Her Majesty Queen Aishwarya Rajya Laxmi Devi Shah

(Handwritten signature)

(श्रीमती कुमारी श्रेष्ठ)
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नेपाल उद्योग वाणिज्य महासंघ



Federation of Nepalese Chambers of Commerce & Industry

FNCCI

२०५८/१/७

शुभ - कामना !

नेपालको कृषि उद्यमलाई व्यवसायिकरण गर्ने क्रममा वि.सं. २०४८ सालदेखि नेपाल उद्योग वाणिज्य महासंघले कृषि उद्यम केन्द्र मार्फत विभिन्न क्रियाकलाप सञ्चालन गर्दै आएको र केन्द्र मार्फत प्रवर्द्धन गरिएको फ्लोरिकल्चर एशोसिएशन नेपालले आफ्नो स्थापनाकालदेखि नै विभिन्न जातका फूलहरूको उत्पादन, विकास र बिक्री वितरणमा खेल्दै आएको भूमिका सराहनीय छ ।

यस क्रममा फ्लोरिकल्चर एशोसिएशन नेपालले नेपालको पुष्प व्यवसाय र उद्योगको विकासका लागि विभिन्न अन्तर्राष्ट्रिय व्यवसायीहरूलाई समेत सहभागी गराई अन्तर्राष्ट्रिय पुष्प व्यापार मेला आयोजना गर्न लागेकोमा मलाई अत्यन्त खुशी लागेको छ । यस्ता मेलाले पुष्प व्यवसायको विकासमा सघाउ पुऱ्याउनुको साथै नेपालको भौगोलिक विविधता एवं जलवायु पुष्प व्यवसायको लागि निकै उपयुक्त मानिएको तथा पुष्प व्यवसायले उद्योगको रूप लिई सकेको आजको अवस्थामा आन्तरिक बजारमा फूलको माग पूर्ति गर्नुका साथै अन्तर्राष्ट्रिय बजारको माग र चाहना अनुरूपका फूलहरू उत्पादन गरी निर्यात गर्न सघाउ पुऱ्याउन सके राष्ट्रिय अर्थतन्त्रमा पुष्प व्यवसायले महत्वपूर्ण योगदान दिन सक्ने देखिन्छ ।

अन्तमा, उक्त मेलाका अवसरमा एशोसिएशनले विभिन्न उपयोगी सामग्रीहरू समावेश गरी प्रकाशित गर्न लागेको स्मारिका पुष्प व्यवसायी र यस क्षेत्रमा रुची राख्नेहरूका लागि अत्यन्त उपयोगी हुने विश्वास व्यक्त गर्दै उक्त प्रकाशनको साथै अन्तर्राष्ट्रिय पुष्प व्यापार मेलाको पूर्ण सफलता र एशोसिएशन तथा एशोसिएशनका सम्पूर्ण सदस्यहरूको उत्तरोत्तर प्रगतिको लागि हार्दिक शुभ-कामना व्यक्त गर्दछु ।

(प्रदीप कुमार श्रेष्ठ)
अध्यक्ष



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Date:.....

सन्देश

फ्लोरिकल्चर एसोसिएसन नेपाल २०४९ साल कार्तिक ३० गते देहाय बमोजिम उद्देश्यहरु लिई दर्ता गरिएको थियो ।

(क) नेपालमा फ्लोरिकल्चरसम्बन्धी उद्योग व्यवसायलाई प्रोत्साहन दिई देशको आर्थिक विकासमा सहयोग पुऱ्याउने ।

(ख) फ्लोरिकल्चरको माध्यमबाट उत्पादित वस्तुहरुको निर्यात, आन्तरिक बजार एवं बजार व्यवस्थापनमा एकाग्रता ल्याउन श्री ५ को सरकारका विभिन्न निकायलगायत अन्य सम्बन्धित निकायसँग समेत सम्पर्क राखी आवश्यक कार्यहरु गर्ने, गराउने ।

(ग) फूल तथा विरुवाप्रति जनअभिरुची वढाउने आवश्यक कार्यक्रमहरु सञ्चालन गर्ने, गर्न लगाउने ; फ्लोरिकल्चरको माध्यमबाट उत्पादित वस्तुहरुको स्तर निर्धारणका सम्बन्धमा आवश्यक व्यवस्था मिलाउने ।

(घ) कृषिमा संलग्न साना उदमी एवं किसानहरुलाई फ्लोरिकल्चरसम्बन्धी जानकारी गराउने, निजहरुलाई यस व्यवसायप्रति अभिरुचि वढाउने अभियान चलाउने र सोसम्बन्धी आवश्यक व्यवस्था मिलाउने ।

(ङ) फ्लोरिकल्चरवारे सम्बन्धी कार्यको निमित्त उपयुक्त, आवश्यक एवं समयानुकूल वातावरण तयार गर्नेतर्फ समयोचित कार्य गर्ने ।

(च) फ्लोरिकल्चरवारे अनुसन्धान, अन्वेषण, अध्ययन आदि गर्ने, गर्न लगाउने, तालिम आदिको व्यवस्था मिलाउने, बजार विस्तार गर्ने, गराउने ।

(छ) फ्लोरिकल्चरको विकास एवं हिनमा सहायक हुने अन्य जुनसुकै कार्यहरु गर्ने ।

यस वर्ष, स्थापनाकालको नवौं वर्षमा प्रवेश गरेको यस संस्थाले आन्तरिक बजारमा फूलविरुवाको प्रवर्द्धन गर्ने उद्देश्यको साथै निर्यात योग्य वस्तुहरुको उत्पादनका लागि संयुक्त लगानीको समेत सम्भावना भएको हुँदा विभिन्न स्वदेशी तथा विदेशी व्यवसायी, वित्तिय संस्था, लगानी कर्ता, संचार माध्यम, परामर्श दाता, लगायत विशेषज्ञ तथा विज्ञहरुको जमघट गरी यहि २०५८ वैशाख १४ - १७ गते भूकृटीमण्डप प्रदर्शनी हलमा प्रथम अन्तराष्ट्रिय पुष्प व्यापार मेला आयोजना गर्न गरिइरहेका छौं । नेपालमा फ्लोरिकल्चर, यसको भविष्य, सरकारी नीति तजुमा, संयुक्त लगानीको सम्भावना, विकाश आदि इत्यादि विषयहरुलाई समेटेर एक अन्तराष्ट्रिय सम्मेलनको समेत आयोजना गर्न लागिरहेका छौं । यहाँहरु सबैको सहयोगले यस प्रथम प्रयासलाई सफलता मिल्नेछ भन्ने मैले विश्वास लिएको छु ।

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

प्रथम अन्तराष्ट्रिय पुष्प व्यापार मेला २००१ लाई सफलताका साथ सम्पन्न गर्नमा सहयोग पुऱ्याउनु हुने सम्पूर्ण सदस्यहरु, आयोजक समिति, उप समिति, विदेशी व्यवसायी, विशेषज्ञ, ने.उ.वा. महासंघ तथा यस स्मारिका प्रकाशनका लागि प्रयोजन तथा अन्य सहयोग पुऱ्याउने कृषि उद्यम केन्द्र लगायत अन्य सहयोगी सबैलाई धन्यवाद ज्ञापन गर्दै नव वर्ष २०५८ को शुभ उपलक्ष्यमा शुभकामना व्यक्त गर्दछु ।

अनुप राई

अध्यक्ष



1st International Floriculture Trade Fair -2001 **Floriculture Association Nepal (FAN)**

Venue : Bhrikutimandap, Exhibition Hall

P.O. Box No : 7651, FNCCI Building Teku , Kathmandu Phone No. : 267005, Fax No. : 97 7-1- 261671

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Date :

FOREWARD

Floriculture Association Nepal (FAN) has been established nine years ago from now to assist people and entrepreneurs who were interested in developing the association (FAN) to its fullest. So the association from its side has been doing its best to further receive a good response from the people and the govt. of Nepal itself. It has successively organized eight floriculture trade fairs and now it has taken an effective step to organize the 9th floriculture trade fair, the first international one.

Various participants from the country and abroad has come forward to participate in the trade fair. 12 participants from outside the country (Delhi, Bangalore, Puna, Sikkim) are invited to join the trade fair to make it a grand success. It is hoped that the exhibits and the products on the various stalls of this 1st Int. Floriculture Trade Fair will give joy to onlookers and will also decorate many homes. This trade fair has given a great opportunity for the various business persons dedicated to floriculture to establish a better business relation with the participants who has come all the way from India.

FAN hearty appreciates the interest and support given by the AEC and FNCCI for organizing this trade fair and the trade fairs organized so far. The fan is also very grateful to all its members for their valuable suggestions, support and participation in this trade fair.

Kishore Pradhan
Chairman
Organizing committee
1st Int. Floriculture Trade Fair 2001



Editorial

We take great pleasure to present you our souvenir magazine of 1st International Floriculture Trade Fair 2001.

In the last seven years floriculture in Nepal has gained popularity and an unexpected growth leading to a wide variety, quality plants and cut flowers. The cut flower market too has reached at take off stage. Hence the range of flowers and quality has improved giving consumers a wider choice to select their requirements.

It is also our hope that the current awareness generated among floriculturists and concerned authorities will go a long way towards the development of floriculture industry. Seminars, training programs and trade fairs have played an significant role in boosting floriculture products and activities.

However, our industry is in dire need of fine-tuning and streamlining of activities like production, marketing, financial institutional backing and infrastructural support. An interaction and cooperation between government agencies, financial institutions and floriculturists is also of great importance. The role A.E.C. has played for the development of this industry is commendable. The Department of commerce has also released funds for its growth. Floriculture exports is ever increasing. Nepal's role in this sector in the future seems sure as our country has a very diverse climatic conditions.

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

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

अलंकारिक बोट बिरुवा र पानीको सम्बन्ध

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अलंकारिक बोट बिरुवा र पानीको सम्बन्ध

श्यामसुन्दर पन्त *

सामान्य जानकारी

धेरै जसो अलंकारिक बिरुवाहरु नरम प्रकृतिका हुन्छन् र तिनमा ८०-९०% पानीको मात्रा हुन्छ। कुनै पनि अलंकारिक बोट बिरुवामा मौजुद पानीको मात्रा त्यसको गुणको निर्धारण गर्दछ। त्यसकारण बिरुवामा पानीको मात्रा कम भएमा विभिन्न अवगुणहरु पर्न सक्दछन्। कुनै बेला, निश्चित किसिमको बिरुवामा बढी पानी दिइएमा ओईलाउने हुन्छ र धेरैजसो त मर्न पनि सक्छ। बिरुवा हुर्कन माटो भित्र रहने हावा र पानीको उपर्युक्त संयोजन दुवै चाहिन्छ भन्ने कुरा धेरै मानिसहरुलाई थाहा हुँदैन। माटोलाई सधैँ बढी चिसो बनाई राखियो भने माटोको हावा बाहिर आउंछ, जसले गर्दा बिरुवाको जराहरु कुहिने हुन्छ र बिरुवाले माटोबाट पोषक तत्व लिन नपाई मर्छ। त्यसैले पानी महत्वपूर्ण हुँदा हुँदै पनि बढि पठाउनु हुँदैन।

बढी पानी भएमा बिरुवाका पातहरु फेदतिर पहेंलो हुँदै जान्छन् अझ ज्यादा नपुग भएको खण्डमा पातहरुको रंग परिवर्तन नभैकन भर्छ र जराहरु फेरी नपलाउने स्थितिमा पुगी बिरुवाहरु मर्छन्। त्यसैगरी कम पानी भएको खण्डमा त बिरुवा ओईलाएर नोक्सान पुग्ने र आर्थिक रुपमा समेत ठूलो हानी हुन्छ। पानी कम भएमा सबभन्दा पहिला टुप्पाका कलिला पातहरु ओईलाउछन्। किनकि ठूला र छिप्पीएका पातका कोषहरु कडा र ठूला हुन्छन्। तर केही दिन पछि पातका धारहरु (Edges) खैरोरंगमा परिवर्तन हुन्छन् र फेरी पानी दिए पनि पहिलेको अवस्थामा आउन सक्दैनन्।

कुनै पनि बिरुवालाई पानी यतिनै आवश्यक पर्छ भन्न धेरै गाह्रो हुन्छ। पानीको मात्रा विभिन्न किसिमका अलंकारीक बिरुवाको जात, अवस्था र माटोको किसिममा भर पर्नुको साथै सो ठाउँको तापक्रम, राखेको भाँडोको प्रकृति एवं (माटो तथा प्लास्टिक) आकार प्रकार आदिमा भर पर्दछ। जस्तो सिउंडी जात (Cactus) र नरम डाँठ (Succulent) भएका बिरुवाहरु (

युफर्विया, मन्सटेरा, कोलियस) र धेरै किसिमका उन्यू (Fern) हरुलाई कम पानी भए पनि पुग्छ। पानी बढी चाहिने बिरुवाहरुमा डासिनाहरु, छाते बिरुवाहरु (Cyperus) जापानीज स्वीट ल्फाग आदि बिरुवाहरु हुन्। पेपेरोमिया डाईफेनवेकिया र पिटोस्पोरम आदि बिरुवाहरुलाई भने ठिकक मात्रामा पानी दिनु पर्दछ।

धेरै मानिसहरु बिरुवा ओईलायो भने पानी कम भएर हो भन्ने ठान्दछन्। तर केही बिरुवा बढी पानी भएमा र बिरुवालाई अध्यारो ठाउँबाट उज्यालो ठाउँमा ल्याएमा पनि ओईलाउछ। त्यसकारण ओईलाउनुको मुख्य कारण पत्तौँ लगाएर मात्र पानी दिने या अरु कृयाकलाप गर्ने निर्णय गर्नुपर्दछ। गमलाको बिरुवामा पानी कम छ कि छैन भनेर हेर्न हत्केलाले गमलालाई थपथपाउँदा धातुको भाँडामा हिर्काएको जस्तो आवाज आएमा पानी कम भएको संकेत बुझ्नु पर्दछ। यसै गरी पानी कम छ कि छैन भनेर हेर्न चोर औला १.३ से.मि. जति गमलाको माटोमा गाडेर हेरेमा पनि थाहा लाग्छ।

गृहशोभाका अलंकारीक बोटबिरुवाहरुलाई पिंघमा एउटा अथवा धेरै निकासका प्वालहरु भएको माटो अथवा प्लास्टिकका भाँडोमा राख्न सकिन्छ। माटोको भाँडोमा साना साना छिद्रहरु हुने भएकोले प्लास्टिकको भाँडोमा भन्दा माटोको भाँडो (गमला) मा तीन गुना बढी मात्रामा चिस्यान बाष्पिकरण भएर जान्छ। त्यसैले माटोको भाँडोको बिरुवालाई नियमित रुपमा पानी दिनु पर्छ।

गमलाका बिरुवाहरुलाई पानी दिँदा सम्भन्नु पर्ने महत्वपूर्ण कुराहरु

* गमलाको पिंघमा प्वाल नभएको भाँडोमा बिरुवा राख्दा बढी पानीको समस्या हुन सक्छ त्यसकारण प्वाल भएको भाँडोको बन्दोबस्त गर्नुपर्छ।

* गमलाको पिंघमा फुटेको इडाको टुक्रा अथवा ग्रेगर ढुङ्गा राख्नु पर्दछ। जसले गर्दा बढी पानी भएर अथवा हावाको मात्रा कम भएर जरा कुहिने समस्या रहँदैन।

* उप प्रा., कृषि क्याम्पस, बागबानी विज्ञान विभाग रामपुर।

- * गमलाको पिंधमा हुंगा अथवा ग्रेगरहरू राख्दा गमलाको आकारमा ध्यान दिनु पर्छ। जस्तो १०-१२ इन्चको गमलामा २ इन्च जति बाक्लो गरि दुङ्गा तथा ग्रेगरहरू राख्नु पर्छ भने १५-१८ इन्चको गमलामा ३-४ इन्च बाक्लो ग्रेगर (Pebbles) तथा दुङ्गाहरू राख्नु पर्छ।
- * ग्रेगर माथि राखेको माटो ग्रेगर भित्र नपरोस भन्नको लागि १ इन्च तह भ्याउ (Moss) राख्दा राम्रो हुन्छ।
- * घर भित्रको गमलालाई अर्को ठूलो सजाउने भाँडो (Decorative urn) भित्र राख्दा बिरुवालाई पानी दिँदा या पानी बढी भएमा समेत भुँडोमा जान पाउँदैन।
- * माटोको भाँडोमा राखेको बिरुवामा बडी पानीको समस्या कमै मात्रामा हुन्छ, किनकि छिद्र भएको कारण कमै पानी संरक्षण गरेर राख्छ।
- * गमलामा दिने पानी बढी चिसो हुनु हुँदैन र करिब ३२-३३° सेल्सियस तापक्रमको हुनु राम्रो हुन्छ। चिसोपानी बिरुवाले तुरुन्तै लिन सक्दैन र बिरुवा ओईलाउन सक्छ।
- * पानीमा ल्कोरीन तत्व बढी छ भने त्यस्तो पानीलाई १२ घण्टा जति फराकिलो भाँडोमा राखेर मात्र बिरुवालाई दिनु पर्छ। यसो गर्दा ल्कोरीन वाष्पिकरण भएर उडेर जान्छ। ल्कोरीन भएको पानी बिरुवाले लिन सक्दैन उल्टै बिरुवाको पानी बाहिर तान्दछ।
- * साबुन पानी तथा अन्य पानीलाई नरम बनाउने रसायन (क्याल्सियम र सोडियम वाई कार्बोनेटहरू) मिसिएको पानी बिरुवाको लागि प्रयोग गर्नु हुँदैन जुन अत्यन्त हानिकारक हुन सक्छ।

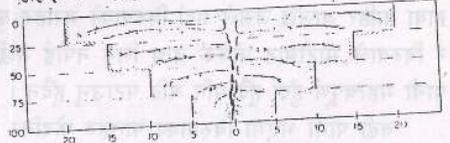
बिरुवामा सिंचाईको लागि चाहिने पानीको मात्रा पत्ता लगाउने तरिका

सिंचाईको लागि कति पानी चाहिन्छ भनि पत्ता लगाउँदा बिरुवाले कति पानी उपभोग गर्छ (Consumptive use) र सिंचाई क्षमता (Efficiency) के छ भन्ने कुरा सर्व प्रथम थाहा पाउनु पर्छ। बिरुवामा पानीको उपभोग भन्नाले जराद्वारा पानी लिन र तन्तुहरूको निर्माणबाट बाँकी रहेको पानी पातबाट फाल्ने प्रकृयाको साथै माटोको सतह र पानीको सतहबाट वाष्पिकरण प्रकृयाबाट नोक्सान हुने प्रकृयालाई समेत जनाउँछ।

बिरुवाहरूलाई पानीको मात्रा कति चाहिन्छ भन्ने कुरा थाहा पाउन पानीको उपभोग (Consumptive use) को जानकारीको आवश्यक पर्दछ। बिरुवामा सीतको (dew) रुपमा, पानी परेर (rainfall), अथवा पानी छयापेर तथा हजारीले पानी हालेर जम्मा भएको पानी र बिरुवाको अंगमा जम्मा नभै वाष्पिकरण भएर जानुलाई बिरुवामा पानीको उपभोग (Consumptive use) भन्ने जनाउँछ।

बिरुवाद्वारा पानीको उपभोग मौषम, सिंचाई व्यवस्थापन, बिरुवा उत्पादन गर्ने मौषम, तथा एक वर्षे तथा बहुवर्षे स्वभाव, बिरुवाको वृद्धिको अवस्था, आदिमा भर पर्ने हुन्छ। चित्र नं. १, अनुसार कुनै पनि बिरुवाको ५०% जराको गहिराईमा ७०% चिस्यान अवशोषण गर्ने क्षमता हुन्छ। बिरुवाले पानीको उपभोग गर्ने नमूना निम्नानुसार छ।

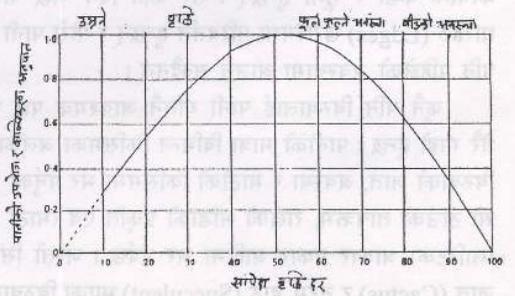
जरा होत्रको गहिराई (प्रतिशत)



भारोको चिस्यान विग्रनाले गर्को प्रतिशत

चित्र १ : बिरुवामा जराको गहिराई चिस्यान लिन नसक्ने

स्रोत : ए.जे. आर. डी. डी., ताइवान (१९९०)



चित्र २ : पिकनामा पानीको उपभोग र वाष्पिकरण अनुपात र सापेक्ष वृद्धि को संख्या
स्रोत : ए.जे. आर. डी. डी., ताइवान (१९९०)

* तेस्रो अक्षरेखाले बिरुवाको विकासको समय जनाउँछ (एक वर्ष) ।

* ठाडो अक्षरेखाले बिरुवाको पानीको उपभोग र वाष्पिकरणको दर अनुपात जनाउँछ ।

दिएको रेखाचित्र भित्र (चित्र नं. २) पानीको वाष्पिकरण (Pan Evaporation) हेरेर उपभोग मात्रा (Consumptive use) पत्ता लगाउन उपयोग हुन्छ । जस्तो, बिरुवाको ४०% वृद्धि भएको समयमा वाष्पिकरण दर ७ मिलिमिटर प्रतिदिन छ भने बिरुवाको पानीको उपभोग मात्रा $0.9 \times 7 = 6.3$ मिलिमिटर प्रतिदिन हुन्छ । अरु तरिकामा बिरुवाको जरा क्षेत्रको चिस्थान नापेर अथवा लाईसीमिटर (Lysimeter) को प्रयोगबाट पनि बिरुवाले गर्ने पानीको उपभोगको मात्रा पत्ता लगाउन सकिन्छ ।

सिंचाईको लागि पानी कति चाहिन्छ त्यो सिंचाई क्षमता हो । जसमा पानी पटाउने क्षमता (Water Application Efficiency) पानी संचय गर्ने क्षमता (Storage Efficiency) र पानी वितरण क्षमता (Water Distribution Efficiency) पर्दछन् । पानी पटाउने क्षमता (Water Application Efficiency) भन्नाले कुल पटाइएको पानी मध्ये बिरुवाको जराक्षेत्रमा उपलब्ध हुने पानीको मात्रालाई बताउँछ भने, पानी वितरण क्षमता (Water Distribution Efficiency) भन्नाले सिंचाई गरिने क्षेत्रमा बिरुवालाई उपलब्ध हुने पानीको मात्राको वितरणको क्षमता बताउँछ । यी दुवै क्षमता सिंचाईको तरिका अनुसार फरक फरक हुन्छन् । पानी पटाउने क्षमता (Water Application Efficiency) सतही सिंचाईक (Surface Irrigation) मा हुन्छ र पानी वितरण क्षमता (Water Distribution Efficiency) हजारीले पानी हाल्ने, पानी छ्याप्ने

(Sprinkled) तरिकामा भर पर्दछ ।

सतही सिंचाईमा कुलेसो बनाई (Furrow) सिंचाई गर्दा पानी पटाउने क्षमता (Water Application Efficiency) बलौटे माटोमा ४०% र चिम्टाईलो माटोमा (Clay Soil) मा ६५% हुन्छ भन्ने अनुमान गरिएको छ । भिरालो जमिनमा पानी पटाउने क्षमता कम हुँदै जान्छ । हजारीले अथवा पानी छ्याप्ने यन्त्रबाट पानी पटाउँदा पानी पटाउने क्षमता भने ८०-८५% हुन्छ र थोपा सिंचाई तरिकामा (Trickle Irrigation System) मा सतप्रतिशत क्षमता हुन्छ ।

सिंचाईको लागि कति पानी चाहिन्छ भन्ने कुरा थाहा पाउन बिरुवाले जति पानीको उपभोग गर्छ त्यसलाई पानी पटाउने क्षमता (Application Efficiency) ले भाग गर्नु पर्दछ । उदाहरणको लागि, बिरुवामा पानीको उपभोग (Consumptive use) ६.३ मि.मि. प्रतिदिन छ र चिम्टाईलो माटोमा कुलेसो बनाई सिंचाई गर्दा $6.3 + 0.65\% = 9.7$ मि.मि. प्रतिदिन पानी आवश्यक पर्छ । त्यस्तै पानी छ्याप्दा $6.3 + 0.85 = 7.15$ मि.मि. पानी आवश्यक पर्छ ।

सन्दर्भ सामाग्रीहरू

१. ए.भि.आर.डि.सि. (१९९०) तरकारी बाली उत्पादन पुस्तिका । ताई पेई । पेज २३०-२४६ ।
२. क्रोकेट र टाइम लाईफ बुक्स (१९७८) फोलियज हाउस प्लान्टस । टाइम लाईफ बुक्स अलेक्जण्डिया, भर्जिनिया । पेज १६०
३. विष्णु स्वरुप १९९६ । इण्डूर गार्डेनिङ । आई. सि. ए. आ., नयाँ दिल्ली । पेज ८८

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Bonsai Plant in Nepal

- Pushpa Man Amatya

"Bonsai" is defined as a plant planted in a pot which creates a sort of scenery expressing a wide area or field with a good environment. Hence, it may be expressed, otherwise, as a living art of imagination. Besides that, it has a power of living for a long time or even hundreds of years planted in the same pot provided that they are to be cared in watering as and when necessary and repotting, soil dressing etc.

The word Bonsai has come from Japan and it is also called a 'Miniature tree' in Europe and other countries. There are many different types of Bonsai. Sometimes, only one plant is planted in a pot or in a plate maintaining its stem erect or sometime regularly or irregularly bending in one direction. The main trunk may bear branches at its top or even from below the soil depending upon species to species. Sometimes, many plants of the same species may be planted in a pot so that it creates a sort of scenery like a forest with a small river crossing it. Stones and pieces of wood can be used as per necessary.

Regarding the pot, it may be rectangular, square, oval, elliptical etc. but of less thickness i.e. not more than 6 cms. It should be made from clay or cement with one or more holes at its base depending upon the size of the pot for the passage of extra water in the pot.

In Japan, most of the plants which are used in Bonsai are *Pinus thunbergii*, *pinus densiflorum*, *Malus pumila*, *Prunus mume*, *Rhus sylvestris*, and also other species of *Rhus*, *Rhododendron* sps. (*Azaleas*), *Acer* sps. (different species of maples), *Punica granatum* (Pomegranate).

In our country Nepal, from our religious point of view, *Ficus religiosa*, *Ficus bengalensis*, *Ficus benjamina* regarded the first two as the incarnations of Lord Brahma and Bishnu and the later as Lord Ganesh, are the plants which are planted in the pots

in order to offer flowers and Tikas in the morning. During this time we use to pray as

“मूल ब्रह्मा तथा विष्णु
शाखा देवं महेश्वर
पत्र पत्र देवानन्द
रोजवृक्ष नमस्तुते ।”

for the peepal tree. These plants when they are 20 yrs old or more, express a sort of deformed shape and size as they get limited amount of soil and space and they get no chance to spread their roots properly and then tend to bend round the pot displacing the soil. By and by the volume of the soil gets reduced as a result of which the plants become dwarf or stunted due to poor nutrition. Sometimes the pots get cracked and are replaced by newer ones. Hence, in stead of doing this, after every 3 or 4 years if they are repotted by changing certain amount of soil dressed with proper nutrition the same pot may last for several years. To maintain good shape of the plant, should to be pruned from time to time at the time of repotting.

Pruning should be carried out in both branches and roots proportionally. They are shaped by the skills of the nursery men or plant lovers. The main tap root should be pruned severely taking care that there are other chosen root portions. During this time, the plant may not get fixed in the pot which has low thickness. Hence the main trunk is wrapped with wire giving a ring at the base and is fixed with the pot. After 2 or 3 months the root tends to hold the plant firmly and then the wire is removed. The branches are wrapped with metallic wires and then it is moved to any direction little by little with great patience bending it at an interval of a week or more. Hence Bonsai are not created through hybridization techniques, as some people may mistakenly understand. So the art of Bonsai growing is not so

Floriculture Trade Fair - 2001

easy as many people think it to be. It requires dedication, patience and constant care.

We can get the creation of clear imagination just like a painter does. But it is not a matter of achievements that can be had within a month. We have to work and wait for years and years to get them into a good shape.

However, there are mentions of this art in some books in the past history. Those art were created by Rishi Munis in Ficus religiosa, Phyllanthus emlica (Amla), Ficus bengalensis, Ficus benjamina even Banana plants etc considering them as Ten religious plants.

(“दश वृक्ष”)

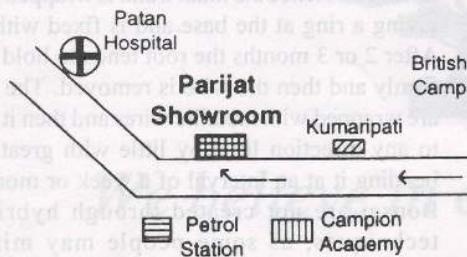
Hence, the following plants can be considered for developing Bonsai plants in Nepal.

1. Cedrus deodara (Deodar tree)
2. Pyrus pashia (Mayal)
3. Quercus glauca (Phalant)
4. Erythrina indica (Phaledo)
5. Ficus religiosa (Peepal)
6. Ficus bengalensis (Ber)
7. Ficus benjamina (Samae)
8. Nyctanthes arbortristis (Parijaat)
9. Pyreantha crenulate (Ghangaroo)
10. Chaenomeles japonica (Quence rose)
11. Salix babylonica (Weeping willow)
12. Salix sps. (Himalayan willows)
13. Camellia Kissi (Camellias)
14. Brunfelsia nitida (Yesterday, today and tomorrow)
15. Pinus excelsa (Blue pina)
16. Punica granatum (Pornegranate)
17. Rhus sps. (Bhalayo)
18. Celtis australis (Kharee)
19. Bouhainvella sps. (Bougainvillias)
20. Jacaranda momosifolia (Jacoranda)
21. Litchi chinensis (Litchi tree)
22. Mangnifera indica (Mango tree)
23. Ilex doniana
24. Ilex dipyrena



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Cactus as a House Plants and its Maintenance

- Narayan Devi Manandhar

Cactus and succulents are xerophytes plants. The best adaptive feature of these plants is magnificent body, which are large, thick and fleshy for storage of water. They are well known as the "camel" of the plant world.

Cacti are well adapted to heat, drought and traditionally popular as house plants. Because of their succulent bodies, they adapt to varying conditions of environment. Even with a little attention, they flourish well, provided they receive sunlight at least several hours a day.

The active growing season for most of the cacti begins in early spring once we have decided where to put our plant, we should select their containers succulents are grown commonly in different containers.

- Porous day pot
- tin cones
- wooden boxes

Of these the caly pots are the most popular. They have good drainage, soil aeration and of course are inexpensive.

Tin cans and other metal containers are sometimes give good results as moisture loving cacti such as epiphyllum dry out quickly in more porous containers.

Wooden container boxes are relatively light and require less watering than clay pots. But they must be well made of durable wood with adequate drainage holes (.....)

The size of the containers also play a good role.

The best pots are an inch wider than the diameter of the plant. For tall growing plants select a pot half as node as the plant height. Generally all cacti, succulent prefer a container with only a little room to spare.

Potting soil for succulent and cacti should be carefully made. Equal parts of sand, soil and leaf mold is preferable. Only clean, coarse river sand must

be used in this mixture.

The leaf mold should be well rotted. Oak leaves are more preferable. These ingredients should be well mixed and coarsely ground to make a light, well drained and porous soil. Light dusting of bone meal also gives good results. A large piece of broken rock is laid round the drainage hole and over this a layer of gravel is added for drainage in all pots over four inches in diameter.

Before potting, every plant should be carefully examined. All affected parts should be cut away body from the plant and the cuts dusted with powdered charcoal or sulfur. spiny succulents may be handled with stout leather gloves or holder made by rolling several sheets of news papers into a strap which is placed around the body of the plants with the free ends serving as a handle.

The actual process of potting succulents is the same as that of other plants, but unlike other plants, succulents are never watered immediately after potting. The plant and soil are allowed to remain perfectly dry for several days. They are watered sparingly for the first one or two months. Some growers like to mulch newly potted succulents with a thin layer of crusted rock or pebbles for good looks, but this can be dangerous as it hides the soil condition. Another dangerous practice is the use of saucers under the pots to catch excess water. The best time to water succulents is early in the morning or late afternoon it is always better at the base of the soil rather than sprinkling. But too much watering should not be done succulents require repotting once every two years.

Cacti as a house plant is an ideal practice. The only real need of cactus and succulents indoors is a place in the sun. Even a busy person will simple care can manage the cactus and succulents with little care.

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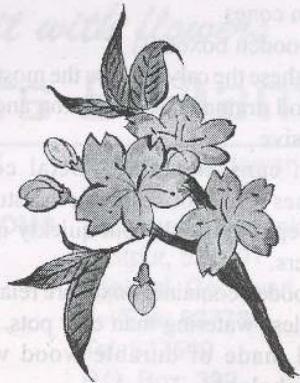
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Star Flower "Aster"

- Sangeeta Shrestha

Introduction:

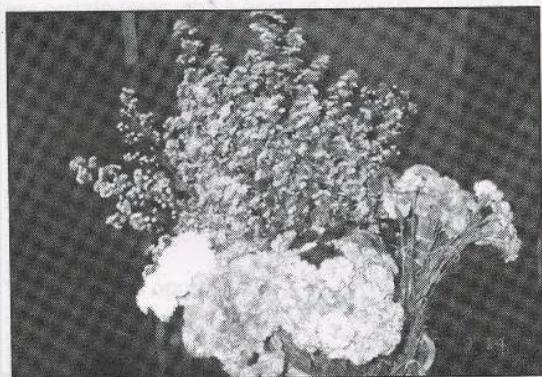
Aster is one of the most popular flowers throughout the world and it is often called star flowers. There are 500 species of asters available all over the world but most of the species are found in North America is known as the place of origin. Aster is hardy herbaceous annuals, biennials and perennials plants. Most asters have alternate entire simple lance-shaped leaves. Some are hairless, some are tenderly hairy leaves. But the cut flower varieties are tall, branched with spray type of flowers.

In tropical and subtropical regions aster is grown for bedding and cut blooms during the winter & spring seasons and temperate region like Kathmandu is more suitable for cultivation which is a proven fact. Asters also make very short bedding plants when grown in large mass and are valuable for filling up the gaps in mixed herbaceous border.

Asters are used in vases and flower decoration which remains in vase for 20-30 days under suitable condition. Cut asters go well in combination with other flowers like carnation, gerbera and roses for decoration and bouquets.

Micropropagation:

For pathogen free growing tips of healthy plant is taken for culture. Shoot tip is sterilized with mercuric chloride (0.1%) for 5 minutes and washed several times with sterilized distilled water. The excised shoot tip is cultured in Murashige and Skoog medium supplemented with 6-Benzylaminopurine, (1.0 mg/l) and Naphthalenetic acid (0.1 mg/L). The medium is solidified with 0.7% Agar. The pH of the medium is adjusted to 5.8. The cultures are incubated under 16 hours light at 23±°C temperature. After 8 weeks of culture multiple shoots are proliferated. Multiple shoots are transferred onto media containing BAP (0.5 mg/L) and NAA (.01 mg/L) with Adenine sulphate (100 mg/L) for shoot elongation. Mature plants are successfully rooted (70-80%) on non-sterile sand. The roots are developed within 8-10 days. The rooted plants are transferred to polybags for field plantation. Only through tissue culture, numerous pathogen free plants can be produced within a short period of time for the purpose of commercial production.



Cultivation:

For better flowering, pathogen free, tissue cultured plants are best for field cultivation. later asters can be propagated by division of healthy plants in spring and replants only the vigorous young shoots in autumn. Asters can be well cultivated in well drained open field or in partial shade under proper management. Aster starts blooming through April to November in Kathmandu. The cut flower varieties

growing from tissue culture plants have healthy, strong stems with numerous branched flowers in comparison to ordinary plants. An average of 7 to 8 flower stem bloom from a single tissue cultured plant within 5 to 6 months. Therefore aster cut flowers can be cultivated in large scale to fulfill the growing market demand in Kathmandu and outside the valley as well.

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Bringing back colors in Autumn

- Usha Kharel
Assist Research Officer

We see gardens at its best in spring summer and winter but garden looks deserted and faded during autumn. We get tired of deciduous trees which look naked making the garden look more miserable. We see no other choice but with intellegent planning, we can always have something at its best to help keep interest and beauty flourishing in our garden.

Autumn leaf color comes as an acceptable bones for the garden. By selecting different trees & shoots which give leaf color with brilliant hues we can give colorful touches to our garden throughout the year. We have envaluable shoots and trees which bear colorful berries in profusion peeping through their branches thus giving extra color to the garden. There are trees and shoots which turn a bright yellow or red in autumn.

Foliage of some of them adopts the most brilliant hues in that part of the season. Some exhibit vivid colour shows by their branches loaded with berries which could scenely be surpassed for their eye dazzling display of scarlets that lasts for long. It if gorge gorgeous to see coral beads sparkling in clusters and trees & clouts cladded with shades of yellow purple & red foliage. Not only the leaves & fruits give attractive shade in the autumn but there are certain trees which burst in colour by peeling off their barks which is another coloring matter in the gloomy days of autumn in your garden. Some tips for color in your garden when autumn is knocking at your door. Is it not challenging ?

Listed below are the plants giving autumn colour by their leaves, fruits & barks.

Name	Foliage color
1. Rhus Sp	Red
2. Viburnum opulus	Red
3. Japanese Maple (Acer)	Red
4. Ginkgo	Yellow

5. Cryptomaria Japonica	Scarlet
6. Fraxinus Flori Punda	Red
7. Meta Sequa	Orange
8. Platanus	yellow-Red
9. Prunus (Japnaese Cherry)	Red
10. Populus Ciliata	Yellow
11. Barberry	Scarlet
12. Aesculus	Red
13. Mahonia repaulensis	Scarlet
14. Ceadrus deodare	Icy green
15. Picea Ilanca	bluish green
16. Lagerostoemia	Red
17. Cotinus	Deep Plum purple
18. Euonymus alatus	Coral Pink
19. Malus	Purple
20. Catalpa	Gold/Yellow
21. Eucalyptus	Grey/Silver
22. Callistris	Brounish
23. Berterries	Blue
24. Mahonia	Blue
25. Rose hips	Red
26. Cottonester	Red
27. Piyracantha	Red
28. Ilex	Red
29. Eycalyptus	White

So by introducing these above mentioned plants in our garden, we can break the monotony of greenery and at the same time give aunparallel look to it despite of no blossoms in that part of the season. We can turn our garden into a colorful canvas of a painter by our imagination and color combination It all depends upon our creativity in the making of an smposing garden.

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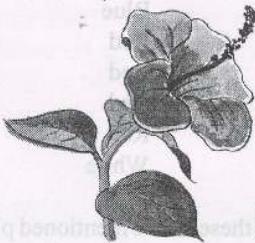
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Select the climbers according to your choice of color and type

- Pradeep K. Kharel
Horticulturist

No garden is complete without climbers which give an-attractive feature with its color and fragsance.

As most of the climbers are perinnial in nature, One does not need to give continuous attention to them. It is useful in different purposes. It helps in screening the unwanted background of your garden. It can be allowed to grow through wooden palings to create an attractive screen. it can blind the neighbour's house which really puts you off climbers can cover walls and sheds. Left un supported they sprawl over the ground, hang down over walls or clothe a dead three-trunk. Selection of the climbers are always governed by your choice as to what you really want them to perform.

Climber are evergreen as well as deciduous. They give spectacular display when in flower. It is preasant to see them bursting in flower in fabulous range of colors. which prolong the fading glory of the summer. It contributes to adding brilliance with

its blower color during the dull days of winter. its massive display of color season makes a real asset to the garden. Climbers go up to balcony and welcome the visitors with its shower of bloom in brilliant color's and fragrance. It is wonderful to feel the pefume emitted by the flower's in the summer evening. These climbers wreathed in flowers can cover buildings or clamber to the top of high trees to tumble out in a spectacular floral display. They are un rivaled both in beauty and utility. They not only fill the garden with blaze of color but help to relieve monotomy created by sows of concrete buildings. They are suitable for pergolas in the open, porches, verandas and the like.

We owe to climbers for their beauty of foliage and flowers. So spare room for the climbers in your garden and enjoy the marvelous show of variously colored blossoms displayed by them.

We have some list of climbers below:

Scientific Name	English Name	Family	Flower color	Flowering	Season	Type	Propagation	Scent
1. <i>Plumbago Capensis</i>	the Capatead Wort	Plumbagina	Blue	Year round	Evergreen	Root Division	slight	
2. <i>Passiflora</i>	Passion flower	Passifloraceae	Greenish white	Year round	Evergreen	Seed of cutting	No	
3. <i>Jasminum Officinale</i>	White jasmine	Coleaceae	White	May-June	Evergreen	cutting Sucker	Strong	
4. <i>J. Frandiflorum</i>	Spanish Jasmine	Coleaceae	White	Rainy Season	Evergreen	cutting	Strong	
5. <i>Aristo lochiaelegans</i>	Pelican flower	Aristolochiaceae	greenish white	Rainy season	Evergreen	Cutting, Seed	Offensive	
6. <i>Climatis dioscoreifolia</i>	Junge lahara	Ranunculaceae	White	Rainy	Evergreen	Sucker, Seed	Mild	
7. <i>Solanum Jasminoideis</i>	Potiatis vine	Solanaceae	White	March to October	Evergreen	Evergreen	Cutting	Mild
8. <i>S. Wendlandii</i>	Gain Potato vine	Solanaceae	mauve	Rainy	Evergreen	Cutting	Slight	
9. <i>Bignonia Venusta</i>	Golden Shower	Bignoniaceae	orange	Jan. and February	Evergreen	Evergreen	Layering	Mild
10. <i>Tecoma radicans</i>	Trumpet vine	Bignoniaceae	Orange	August to September	Deciduous	Deciduous	cutting, root	Mild
11. <i>Bignonia unguiscati</i>	Cat's claw	Bignoniaceae	Yellow	Cold	Evergreen	Layering		
12. <i>Wisteria sinensis</i>	Blue rain	Legumin sa	Blue	March-April	Evergreen	Cutting & Layering		
13. <i>Lonicera Japonica</i>	Honey Suckle	Caprifoliaceae	White-Creamy	March-April	Evergreen	Cutting & Layering	Strong	
14. <i>L. Semperuirens</i>	The trumpet honey suckle	Caprifoliaceae	Red	Feb.-March	Evergreen	Cutting & Layering	Slight	
15. <i>Ipomoea tricolor</i>	Morning glory	convulvulaceae	Blue, white, Purple	Sept.-Nov.	Evergreen	Seed & Sucker		
16. <i>I. Quamaolit</i>	The cypressovine	Convulvulaceae	Red, White	Rainy	Annual	Seed		
17. <i>I. Palmata</i>	The railway Creeper	Convulvulaceae	Purple	Year round	Evergreen	Cutting		
18. <i>I. lobata</i>	Mina Lobata	Convulvulaceae	Crimson or Orange	Sept. - Dec.	Evergreen	Seed		
19. <i>Quisqualis indica</i>	Rangoon Creeper	Combretaceae	White turning to pink	Year sound	Evergreen	Layering & Cutting	Slight	
20. <i>Petraca Voltubilis</i>	Purple Wreath	verbenaceae	Purple	March-April	Evergreen	Layer and Suckers		
21. <i>Clero dendrum thomsenae</i>	Bleeding heart	Verbenaceae	Scarlet	Rainy	Deciduous	Seed & Cutting	No	
22. <i>Trachelo spermum gragrans</i>	Star Jasmine	Apocynaceae	White	April-June	Evergreen	Cutting & Seed	Strong	
23. <i>Beaumontia-grandiflora</i>	Kagajie phool.	Apocynaceae	White	March-April	Evergreen	Seed & Cutting	Mild	
24. <i>Bougainvillea-glabra</i>	Black eyed -susan	Nyctaginaceae	Diverse	Year round	Evergreen	Cutting, Gooted	No	
25. <i>Thunbergia alata</i>	waxflower	Acanthaceae	Yellow	sept-Nov.	Herbaclous	Seeds	No	
Foliage Climbers								
26. <i>Ficus pumila</i>	-	Moraceae	-	-	Evergreen	Cutting		
27. <i>Asparagds Plumosus</i>	-	Liliaceae	-	-	Evergreen	Cutting & Sucker		
28. <i>Monstera deliciosa</i>	-	Araceae	-	-	Evergreen	Stema cutting		
29. <i>Philodendron</i>	-	Araceae	-	-	Evergreen	Stema Cutting		
30. <i>Pothos</i>	Moneyplant	Araceae	-	-	Evergreen	Stema Cutting		
31. <i>Hedera helix</i>	Ivy	Araliaceae	-	-	Evergreen	Seed		
32. <i>Senccio</i>	-	Compositae	-	-	Evergreen	Seed, Cutting		
33. <i>Hoyacamosa</i>	waxflower	Asclepiadaceae	-	-	Evergreen	Cutting root Dissson		

Micropropagation of *Begonia tuberhybrida voss*

- Keshari Maiya Rajkarnikar
- Ganga Dutta Bhatta

Introduction

Begonias belong to the family of Begoniaceae. These species are distributed throughout the tropical and the sub tropical regions from central and South America, Asia and Africa. Over 2000 species have been recorded (Inoue 1983), most of them are perennial herb with rhizomes or tubers (Willis 1973). They are more or less succulent, usually with lopsided leaves and with different colours flowers. They are important as ornamental plants throughout the world. They are used as garden plants, potted plants, hanging baskets and green house flowers. Over 200 species have been introduced by commercial growers. Among them *Begonia semperflorens*, *B. tuberhybrida*, *B. hieare*, *B. cheimantha* and *B. socotrana* are important species.

At the end of flowering seasons, tuberous Begonias gradually dry out and leave only tubers in pots for the next seasons.

Conventionally, Begonias are propagated by means of leaf cutting, stem cutting, top cutting and by splitting. Production by these method are inadequate to meet the increasing demand of ornamental plants. Furthermore, most of the conventionally propagated plants are inherited by pathogens such as virus, bacteria and fungi infection along with their mother stock, and propagating of large numbers of homogenous plants are difficult from this method.

Micropropagation of *B. tuberhybrida voss*, of different colours have been performed to get large amount of healthy and homogenous plant are as following:

- (i) Pink rose bud type
- (ii) Scarlet red carnation type

- (iii) Yellow carnation type
- (iv) White rose bud type

Material and Method

The bulb of *B. tuberhybrida voss*, of different colours, were brought from Japan. They were grown in green house of National Herbarium Plant Laboratories, Godawari. The young leaves were taken as initial matter for culture. The leaves with petiole were dipped in 5% silver nitrate solution (to reduce contamination) for 15 min, before surface sterilization. The leaves with petiole were dipped in teopol for 5 min and washed with distilled water. Finally these leaves were surface sterilized for 3-4 min with 0.1% mercuric chloride and washed for 4 times by sterile distilled water. Aseptically, the leaf and the petiole were cut into small pieces and cultured on Murashige and Skoog's (MS) 1962 medium supplemented with six Benzyl amino purine (BAP) and Naphthalene acetic acid (NAA) in different concentration. The media was fortified with 1g/lit casein hydrolysate, 3% sucrose and 0.8% Agar and its PH was 5.8 before auto claving. These cultures were incubated at 25±2°C for 16 hr in light.

Result

After 6-8 weeks in MS medium supplemented with 3mg/lit BAP and 0.1 mg/lit NAA, numerous shoot-buds formed on the upper surface of the leaf explant. In the petiole explant, bud formed on the both ends, in the Ms medium supplemented with 0.1 mg/lit BAP+0.1/lit NAA, as leaf like appendages. The buds originated from leaf explant were better in quality and quantity than petiole explants. The shoot

buds originated from leaf explants were subcultured again in MS medium with 1mg/lit BAP+0.01mg/lit NAA and 0.5mg/lit BAP+0.01mg/lit NAA. The subcultured microplant in 0.5 mg/lit BAP+0.01 mg/lit NAA were better gthan 1mg/lit BAP+0.01 mg/lit NAA. So that the originated shoot buds were subcultured again and again in MS medium +0.5 mg/lit BAP+0.01 mg/lit NAA for shoot elongation and multiplication at an interval of 4 6 weeks. When micro-shoots were 3-4 cm, they were transferred into non-sterile sand, in green house, for initiation of roots. These shoots rooted within 8-12 days. The rooted plants were transferred to clay pots, which successfully grew up and flowering took place as in normal plants.

Conclusion

Mass production of homogenous plants of different species of Begonias are possible through this method to fulfill the market demand. Among different concentration of BAP and NAA, 3 mg/lit BAP+0.1 mg/lit NAA is best medium for shoot buds formation and 0.5mg/lit BAP+0.01 mg/lit NAA is the best medium for regeneration and elongation of shoot. The most suitable explants were found to be leaf lamina.



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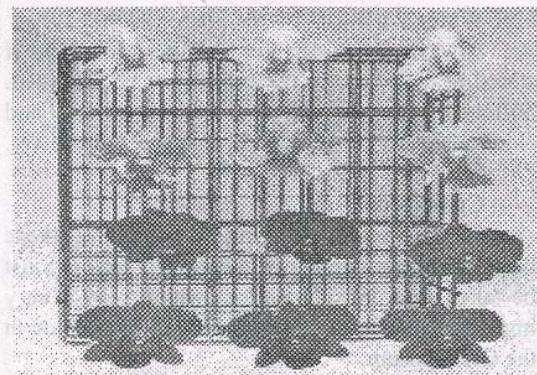
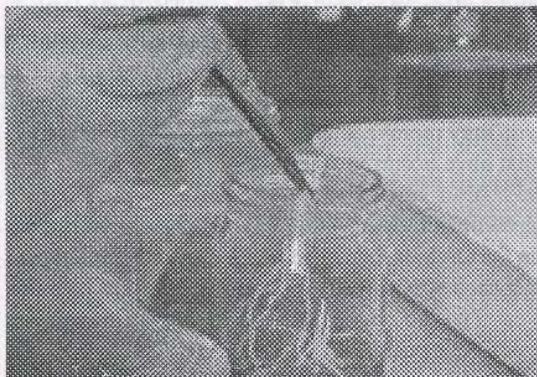
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Growing orchids in your home or office

- Asha Karki

Department of Plant Resources

Orchids, considered to be one of the Royal members of the plant kingdom, have been valued highly by the consumers. Their sheer beauty, attractiveness, colorful appearance and above all their decorative values have always placed orchids above most of the major flowering plants. From ordinary household drawing rooms to showy centerpieces for formal dinner tables, colorful orchids are in big demand. As a result, orchid culture has taken off over the last few decades, as growers using new techniques have learned to scale up production, churning out millions of genetically identical plants



through a process called cloning.

As nature's obsession with orchids shows, cloning allows breeders to turn one plant into thousands, by harvesting a few cells from root tips and growing them in carefully prepared media. As the clump of tissue grows, breeders can divide it into separate plants, dramatically reducing production costs. As a result, orchids that were once a sign of wealth have become available to almost everyone.

The factors that one has to keep in mind while growing orchids at homes or offices are mainly as follows.

Light, temperature, humidity, air movement-together with water: these are the environmental elements that grow orchids in the wild... and in the Orchidarium, a wardian case for your home or office.

Given that each plant group has its own preferred, fluctuating environment, the Orchidarium allows you to monitor and regulate each of these elements easily.

Light

When growing under fluorescent light you will learn that experience, not what you find in books, is your best guide to appropriate brightness for a particular plant. Keep in mind that most recommended foot candle numbers in publications refer to peak sunlight period, i.e., the max of varying natural light in a day, and are really recommendations for greenhouse growing. Because the foot candles of artificial lighting are constant, the amount needed from dawn to dusk is much less than the peak sunlight figures indicate. It can mean as much as 2,000 foot candles less. You will burn your plants if you use the foot candles recommended for greenhouses, guaranteed. The plant will tell you if it has too much light: stunted growth, lots of pigmentation in leaves,

and stiff, hard leaves are all warning signs. Lighting in the Orchidarium is controlled by the lamp fixture you choose, by where you place the individual plant in relation to the lamp, and by the addition of strategically placed pieces of shading material under the fixture.

Among the Orchidarium models are options for single-, double-, or triple-lamp fixtures that offer varying ranges of light within the units. Measured in foot candles this fluorescent lighting may provide low, medium or high overall light.

The low light of 350 foot candles is a good starting point for most seedlings, most phalaenopses, paphiopedilums etc. Medium light (600-800 f.c.) will serve most cattleyas, some dendrobiums and ascocentrums equitant oncidiums. The high light of 900-plus f.c. is appropriate for rupicolous laelias, some ecyclias, somedendrobiums and vandas.

In general, any range of fluorescent lighting calls for the following seasonal adaptations in length of daylight: Spring, 13-14 hours; summer, 16 hours; Fall, 13 hours; and Winter, 11.5 hours. Because many orchids are photo-periodic, they need increased or decreased light to send out flower spikes (Some species flower in response to changing temperature).

The lamps themselves each have a life expectancy of about two years. The efficiency of the reflector, rated at 95% reflectivity, ensures maximum effectiveness. Its angles are computer-calculated to augment the light down the side walls of the shell. Plants that love high light do very well on slabs and drip-shelves placed close to the light fixture.

Temperature

The temperature in the Orchidarium derives from the ambient temperature of the room in which it is placed and the heat generated by both the lamp and the ballast of its light fixture. A warm ballast offers a minimum of 5 degrees and a maximum of 15 degrees over ambient temperature. Appropriate for warm growers, it is needed in cool homes in winter. A cool ballast, 0-4 degrees over ambient temperature (with double lamp), is appropriate for cool growers. It is recommended that a maximum summer temperature for warm to intermediate plants

of 85 degrees. For cool to intermediate plants a summer high of 75 degrees. You may need an air-conditioned room or a cool basement to maintain these maximum guidelines.

When the lights are off at night, the temperatures slowly drops to the ambient temperature. By adjusting the vent slots, you regulate the diurnal temperature range for your selected plants' best performance. In addition, roof, ceiling and door venting can capture or release that heat from the light fixtures as needed. The digital temperature/hygrometer sensor allows you to monitor day and night temperatures, in both Fahrenheit and Celsius.

Humidity and Air Movement

Water, which is held in the bottom tray and sponge maintains humid conditions. Also, the more plants you have and the more you mist and water them, the higher the humidity will go you can further regulate humidity by venting the air through the roof and ceiling openings of the case. The temperature/hygrometer sensor reads the humidity. Mounted inside the case, it displays the numbers clearly. Because the sensor records high and low readings, you may remove it and review those highs and lows that have occurred since your last check/reset.

You can expect noticeably increased root growth and vigor within days of placing your plant in the Orchidarium. The range is usually maintained between 60% and 80% humidity in most of our units.

The fan creates the continuous air movement your plants need.

Water

Always use rain water, and best for them if stored in dark tank. Well water must be analyzed. Softened water will kill your orchids quickly and chlorinated city water may kill some orchids slowly.

Conclusion

So if you are thinking of cultivating these beautiful plants, the above mentioned factors must be taken into consideration, which play a very important role in the healthy growth of orchids in the Orchidarium.

राशी अनुसार फूल तथा फल

पं शिवशंकर भण्डारी

हामीले सानैदेखि सुनी आएको दन्त्यकथाहरुमा राजकुमारको कुनै विशेष फूलको चाहनालाई पूरा गर्न राजकुमारहरुले धेरै कष्ट गर्नुपर्थ्यो । तर अब त्यो छैन । काठमाडौंका हरेक जस्तो मोडहरुमा फूलैफूलले सजीएको पसलहरु पाइन्छन् । ती फूलहरु चाहे घरमा सजाऔं या कसैलाई उपहार स्वरूप अर्पण गरौं, ती फूलका सौन्दर्य तथा सुभावले हामी हरेक क्षण र मणिय र रोमान्चक बनाउँछ ।

यी फूलहरुमा पनि कुन फूलले हामीलाई बढी लाभदायक दिन्छ त्यो हामीले बिचारै गरेका छैनौं । कुनै न कुनै रङ्गले प्रत्येक राशीलाई साथ दिएको हुन्छ । एउटा राशीलाई उत्तम र इ एउटा रङ्ग हुन्छ जसको उपयोग मात्रले उसले हरेक कार्यमा सफलता प्राप्त गर्दछ ।

हामी प्राय शुभ कार्य तथा शुभ यात्रामा उपहार दिने गर्छौं । प्राय हामी उपहारको रूपमा फूल दिने गर्छौं । फूलको उपहार दिनु सबैभन्दा बढी उत्तम उपहार पनि मानिन्छ । त्यसैले त परापूर्वकालदेखि हामी भगवानलाई होस् या राजा रानीलाई होस् फूलकै उपहार दिने चलनचल्ती अभै मान्दै आएका छौं ।

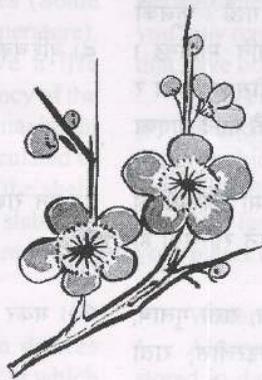
अभै राशी अनुसार फूलको उपयोग भउमा उपभोगीका कार्य सफल रहन्छन् । जस्तै मेष राशीलाई फाप्ने रङ्ग रातो हो भने उनको मन पर्ने रङ्ग पनि रातो नै हो ।

- १) मेष राशी - रातो फूलहरु लालीलगुराँस, रातो गुलाब, रातो ग्लाडियोलस, अभाइरलीस, रातो एन्थुरियम, रातो कार्नेशन आदि
- २) वृष राशी - सेतो ग्लाडियोलस, सेतो एन्थुरियम, सेतो गुलाफ, चिन्ची रिची, युकेरिस, सेतो लीली आदि
- ३) मिथुन राशी - हरिया फूलहरु हरिया रङ्गका पातहरूसँग मिसाएर सजाइएका धेरै थोरै अरु रङ्गका फूलहरु

- ४) कर्कट राशी - हरियोमा सेतो मिसिएका फूलहरु जस्तै सेतो गुलाफ, चिन्ची रिन्ची, युकेरिस, सेतो एन्थुरियम, सेतो ग्लाडियोलस, सेतो कार्नेशन, रजनीगन्धा
- ५) सिंह राशी - गुलाबी फूलहरु गुलाबी गुलाफ, अर्किड, कार्नेशन, जर्बेरा, ग्लाडियोलाई, एन्थुरियम आदि
- ६) कन्या राशी - हरेक रङ्ग मिसिएका फूलहरु अमाइप्लीस, स्विट विलियम, वर्ड अफ पाराडाइस, हिलीकोनिया, अर्किड, छिरबिरे ग्लाडियोली आदि
- ७) तुला राशी - काला रङ्गका फूलहरु गाढा रातो गुलाफ, गाढा रातो कार्नेशन, गाढा रातो एन्थुरियम आदि
- ८) वृश्चिक राशी - पहेला रङ्गका फूलहरु सयपत्री, जाई, पहेलो गुलाफ, ग्लाडियोलाई, कार्नेशन तथा जर्बेरा, वर्ड अफ पाराडाइस, लाइकोरिस लीली, टाइगर लीली तथा हायब्रीड लीली
- ९) धन राशी - कैला रङ्गका फूलहरु गाढा रातो गुलाफ, कार्नेशन, एन्थुरियम, ग्लाडियोलाई तथा जर्बेरा
- १०) मकर राशी - कैला तथा काला फूलहरु गाढा रातो गुलाफ, कार्नेशन, एन्थुरियम, ग्लाडियोलाई तथा जर्बेरा
- ११) कुम्भ राशी - आकाशे रङ्गका फूलहरु नीलो ग्लाडियोलस, आइरीस,
- १२) मीन राशी - बिभिन्न छिरबिरे फूलहरु टाइगर लिली, छिरबिरे गुलाफ, छिरबिरे ग्लाडियोलाई र जर्बेरा

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Insecticidal property of some garden plants.

- Neera Pradhan
Dept. of Plant Resources

Perhaps the beauty of plants lies in their unawareness of their charm. They make no effort to please or to attract the eyes or to win approval. Besides beauty and beautification of the surroundings, garden plants also possess some beneficial properties to some extent in some way to human kind. Obviously they provide medicine, shelter, reduce human stress and create a better environment (reduce the carbon-dioxide level) for the life on the earth. Apart from these, garden plants can also act as insecticide. Plants having insecticidal property are tabulated below.

S.N.	Botanical Name	Local Name	Active Part	Susceptibility
1.	Acorus calamus L. (Araceae)	Bogho	rootstock	Insects
2.	Ajuga bracteosa wall. (Labiatae)	X	Leaves	round worm
3.	Aristolochia bracteolata (Aristolochiaceae)	Haincha Swan	Root	Roundworm
4.	Artemisia Japoric Thumb. (Compositae)	Titepati	whole plant	Round worm, fleas, and housefly
5.	A. Vulgaris	Titepati	Whole plant	Snail
6.	Berginia ciliata (Haw) Sternb.	Pakhanved	Rhizome	Roundworm
7.	Butea monosperma (Lam.) Kuntze	Palas	Seed	Maggot, Roundworm
8.	Callistemon Viminalis	kalkiphool	Leaf & Seed	hookworm, Earth worm, Tapeworm
9.	Chenopodium ambrosioides L. (Chenopodiaceae)	Bethe	Leaf	Roundworm

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10.	C. Botrys L.	Bethe	Seed	Tapeworm
11.	Chrysanthemum Cinerariacfolium Trev. (compositae)	Pyrethrum	Flower Mosquito, fleas & body lice	Housefly,
12.	Custus speciosus (J. Konig) Zingiberaceal	Kustha	Root	Snakebite
13.	Cyperus rotundus L. (Cyperaceae)	Mothe	Rhiyome	Roundworm, Hookworm
14.	Delphinium Careulcum Jac. ex cam. (Rnumculacee)	X	Root	Fleas
15.	Desmodium gangeticum (Leguminosal)	Kairo jhar	root	Snake-bite Scorpion-sting
16.	Euphorbia royleana Boiss (Euphorbiaceal)	Syuri	Plant juice	Fish
17.	Hypericum japonicun Murray (Hypericae)	Thimke Thar	Plant paste	Snake-bite
18.	Melia ayadarach L. (Meliaceal)	Bakaina	fruit and Leaf ruice	Roundworm
19.	M. ayadarachta L. (Meliaceae)	Neem	Leaf and fruit fruit	Aphid, Mosquito larvicide, white and, termites and moth.
20.	Morina longifolia wall. ex. DC. (Dipsacacal)	X	Dry root	Roundworm
21.	Nepeta cataria L. (Labiatae)	X	Lea	Tapeworm

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22.	Niwetiana tobacum L. (Solanaceal)	Surti	Leaf	Housefly, moth, grapeberry moth, citrus thrips, cabbage butterfly larval and termites
23.	Pelargonium capitatum (L) Ait	Jarmavi Phool	Leaf	Insects
24.	Ricinus communis L (Euphorbiaceal)	Audheri	Plant & Seed	Moth Larval
25.	Sarcostema acidum voigt (Asdepiadaceal)	X	Leaf	White ant
26.	Scleria pergracilis (Nees) kunth (cyperaceal)	X	Leaf	Musquito
27.	Zanthoxylum armatum D.C. (Rutaceal)	Timur	Leaf and Fruit	Roundworm Housefly and moth larval

Conclusion:

Disease can wipe ant floricultural as well as agricultural crops. Consumers and farmers shuld be more aware of insect pests than disease an crops,these insects are relatively llarge as compared with he micro – organism resporisible for plant disease and the effect of their feeding activities are more obvius. They may cause rapid loss of cut flowers, affect the leaves and foliage through spotting belight and leaf necrosis to reduce photo synthetic capacity to such a degree that virtually nothing can be harvested. So a number of natural organic can be used to ward off unwanted insects. Use of plant product isnecticide can cause little or no damage to the foliage, which is environmentally acceptable, easy to handle and less toxic to warm blooded animals as compared to synthestic insecticide. Basically garden plants provide beauty, peace and pleasure on one hand and on the other they can be used as insecticide to control harmful insects, which in biodegradable and helps in balanceing nature's ecosystem. So the garden plants have multilateral uses.

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केही समय यता देखि उपत्यकाको सडक छेउ पेटी अथवा मन्दिरहरूको आसपासमा सानासाना बाँसका टोकरी वा गमलामा बन जंगलमा पाईने भ्याउ टम्म राखी त्यसमा हरिया, चिल्ला र राम्रा पात भएका बिरुवाहरू रोपी साईकल अथवा बाँसको च्याकमा (Rack) राखी घुमि घुमि बिरुवाहरू बिक्री गरेको दृष्य साधारण तथा देखिदै आएको छ। यस लेखका पाठकहरू मध्ये धेरै जसोले यो दृष्य देख्नु भएको हुनुपर्छ। यदि देख्नु भएको वा याद गर्नु भएको छैन भने पनि अब याद गरेमा अवश्य देख्नु हुनेछ। यी बिरुवाहरू के हुन त? साधारण नेपाली भाषामा यिनलाई सुनाखरी अथवा सुनगाभा भनिन्छ र अंग्रेजी भाषामा अर्किड (Orchid) भनिन्छ। विशेष गरी यी बिरुवाहरू प्राकृतिक रूपमा वन जंगलमा रुखमा टाँसिएर, ढुङ्गा अथवा जमिनमा उम्रेको हुन्छन्। हुन त अन्य रुख बिरुवामा भए पनि यी बिरुवाहरू त बिरुवामा चर पर्दैनन् र आफ्नो खाना आफै तयार गर्दछन्। यिनीहरूको जरा खन्य बिरुवाहरूको भन्दा भिन्न प्रकारको हुन्छ र यसैको कसहायताबाट आफ्नो खाना बनाउँदछन्। यसकारण यी बिरुवाहरू परजीवी (Parasite) नभएर अध्यारही समूहमा (Epiphytic group) पर्दछन्। सुनगाभा जातिका बिरुवाहरूको फूल अन्य साधारण फूल भन्दा भिन्न र आकर्षक हुन्छन् पहेंला, राता, प्याजी, सेता, गरि विभिन्न रंग र विभिन्न आकारमा फल्ने भएको हुँदा धेरै आकर्षक हुन्छन्। जो सुकै होस चाहे फूल बिरुवा प्रेमी वा अनय अर्किडको फूल देख्दा त्यस प्रति आकर्षित नहुने विरलै होलान्। सुनगाभामा बिरुवाहरू र फूलहरू प्रकृतीको अनौठो देन नै मानिन्छ।

सुनगाभा जातिका बिरुवा विश्वमा प्राकृतिक रूपमा लगभग ७०० जाति र २५००० प्रजाति भएको रिपोर्ट गरिएको छ र फूल फुल्ने बिरुवाहरूको परिवारमा सबैभन्दा परिवार (Orchidaceae Family) मा पर्दछ। यी प्राकृतिक जाति र प्रजातिबाट मानिसको चाहना र ईच्छा अनुसार प्रजनन गरि हजारौं ठिम्मर (Hybrid) बिरुवाहरू उत्पादन भई सकेको छन्

। हाम्रो देश नेपालमा हाल सम्म ९० जाति र ३५० प्रजाति पाईएको रिकर्ड छ। नेपालको उच्च हिमाली भेगमा पाईने महत्वपूर्ण जडीबुटी मध्ये पाँच औंले (Dactylorhiza hatagirea) यसै परिवारमा पर्दछ। सुनाखरीका बिरुवाहरू प्रायः घना जंगल, उष्ण हावापानी र धेरै वर्षा हुने स्थलमा प्रशस्त मात्रामा पाईन्छन् र समुद्री तट देखि उच्च हिमालीसम्म पनि पाईन्छन्।

हाल बढ्दो जनसंख्या, शहरीकरण, औद्योगिकरण, वनजंगलको अतिक्रमण, एवं विनाश र अनियन्त्रित संकलनले गर्दा सुनाखरीलाई विश्वमा "लोप हुन लागेको बिरुवाहरूको अन्तर्राष्ट्रिय व्यापार महासन्धी" (Convention on International Trade in Endangered species of wild fauna and flora, CITES 1973) ले आफ्नो अनुसुचिमा राखेको छ। यस महासन्धीको उद्देश्य धार्मिक, वैज्ञानिक, मनोरंजनात्मक, साँस्कृतिक र आर्थिक दृष्टिकोणले महत्व भएका वन्य जन्तु तथा वनस्पतिहरूलाई जोगाउनु रहेको छ। साथै वन्य जन्तु र वनस्पतिलाई अतिक्रमणबाट जोगाउनका लागि अन्तर्राष्ट्रिय सहयोग र सहमतीको आवश्यक भएता पनि आफ्नो राष्ट्र र त्यहाँका जन्तुता कै मुख्य संरक्षणमा पर्दछन्" भनि उल्लेख गरिएको छ।

यस महासन्धी अनुसार एक देशबाट अर्को देशमा सुनगाभा जातका बिरुवा निर्यात अथवा ओसार पसार गर्न अनुमती पनि चाहिन्छ। हाम्रो देश नेपाल यसको सदस्य छ तर देश भित्र यी बिरुवाहरू जथाभावी संकलन र वेच बिखन गर्न रोकथामका लागि खास कदम चालिएको छैन। यी बिरुवा प्रति चासो राख्ने व्यक्तिले सडक बिक्रेतासँग जानकारी लिन चाहेमा उनीहरू भन्न हिचकिचाउने अथवा आफैले नर्सरीमा लगाएर हुर्काएको दावी गर्दछन् जबकी सुनगाभाका बिरुवाहरू अन्य बिरुवाहरू सरह उमान र हुर्काउन सरल छैन र खर्चिलो पनि छ। साथै एउटा बिरुवा फूल फुल्ने अवस्थाको बनाउन ३ देखि ५ वर्षसम्म

लाग्दछ । बिउहरु अति साना भ्रुण (Embryo) र खाद्यतत्व (Endosperm) विहिन हुन्छन् । एउटा कोसामा यस्ता बिउहरु हजारौंको संख्यामा हुन्छन् तर यी बीउहरु सहजै उम्रदैनन् र उमार्नका लागि विशेष प्रकारको व्यवस्था चाहिन्छ र कृतिम खाद्य तत्व तयार गरि प्रयोगशालामा जैविक प्रविधिद्वारा उमार्न सकिन्छ । परम्परागत विधि अनुसार एउटा माउ बिरुवाबाट छुट्टाएर बिरुवा कम मात्रामा बढाउन सकिन्छ । जैविक प्रविधि (Biotechnology) द्वारा प्रयोगशालामा बीउ, मुना, पात आदिबाट बृहत मात्रामा बिरुवा उत्पादन गर्ने प्रविधि विकास भै सकेको छ । थाईल्याण्ड उष्ण (Tropical) आर्किड उत्पादन गर्नमा विश्वमा मै प्रथम देशमा पर्दछ र वर्षेनी लगभग ३० लाख बिरुवा उत्पादन गर्दछ र बिरुवा र फूलहरु निर्यात गरि विदेशी मुद्रा आर्जनको प्रमुख श्रोत भएको छ । नेपालमा पनि यस प्रविधिको विकास भैसकेको छ तर बृहत मात्रामा उत्पादन तर्फ त्यती चासो देखिएको छैन ।

हाल काठमाडौं लगायत अन्य केही ठूला शहरहरुमा पुष्प व्यवसायीहरु बढ्दै गएका छन् र त्यही अनुपातमा पुष्प प्रेमीहरु पनि बढ्दै गएको पाईन्छ । विगत केही वर्ष देखि प्रत्येक वर्ष नेपाल पुष्प व्यवसाय संघ (Floriculture Association Nepal) द्वारा आयोजित पुष्प व्यापार मेलामा सुनगाभाका बिरुवाहरु अन्य बिरुवाहरुको तुलनामा खर्चिलो (Expensive) देखिन्छन् । प्रति बिरुवाहरु रु. १०० देखि रु. ५००० सम्म मूल्य राखिएको पाईएको छ । यसरी राम्रा जातका सुनखरीका बिरुवा मंहगा भएका र सडक पेट्टीमा पाईने बिरुवाको मूल्य २० देखि रु. २००-३०० भएकाले प्रायः जसो मानिसले किनेर लैजाने गरेको पाईन्छ । तर ती बिरुवाको विषय र महत्वबारे जन चेतनाको अभावका कारण प्राय बिरुवा नबाँचेको पाईन्छ । काठमाण्डौंका धेरै जसो घरमा यसरी खरिद गरेका बिरुवा न

बाँचेको गुनासो लेखक स्वयंले नै सुनेको र सुकेका बिरुवा र सडेका बाँसका टोकरी देखेको हुँदा यस विषयमा केही चेतना मूलक लेख लेख्ने जिज्ञासा भएको हो । एक पटकको घटनालाई वर्णन गर्न सान्दर्भिक देखि यहाँ प्रस्तुत गरेकी छु । मेरा आफन्त पर्ने परिवार विदाको दिन दक्षिणकाली देवीको दर्शन गर्न जानु भएको बेला फुल अति राम्रो लागेकाले त्यहाँबाट सुनाखरीको Coelogyne जातको बिरुवा किनेर ल्याउनु भएछ । अब वहाँहरुले बिक्रिकर्ताले सिकाए अनुसार बिरुवालाई साना साना भागमा छुट्टाएर अरु साधारण बिरुवा सरह गमलामा रोप्नु भएछ । जबकी त्यो जातको बिरुवालाई माटोको आवश्यकता नै पर्दैन । बिरुवा कडा भएको कारण केही महिना हरियो नै भयो । तर अन्तमा माटोमा परेको भाग सड्दै आएर बिरुवा मरेछ । त्यसपछि वहाँहरुले यस प्रकारको बिरुवा कहिल्यै नकिन्नु भनेर आफ्ना अन्य आफन्तहरुलाई भन्दै जानु भयो । यसमा बिचरा बिरुवाको के दोष । यसरी सुनाखरीको विषय र महत्व बारे ज्ञान र चेतनाको अभावले गर्दा धेरै जातका सुनाखरीहरु मासिदै गएका र मासिने क्रम पनि छन् । यस कारण यी बिरुवाहरुको संकलनका लागि नीति नियमको आवश्यकता हुन आएको छ । भारत एसियामा नै एक्लो देश हो, जसले आफ्नो देशमा पाईने सम्पूर्ण सुनाखरीलाई निर्यात गर्न प्रतिवन्ध लगाएको छ । हुन त हाम्रो देश नेपाल पनि साईटिस (CITES) को सदस्य भएकोले संकलन गरि निर्यात गर्न प्रतिवन्ध छ । तर आन्तरिक रुपमा अनियन्त्रीत संकलनले गर्दा बिरुवाहरु लोप हुने अवस्थामा छन् । तसर्थ सुनाखरीका बिरुवा जथाभावी संकलन गर्न रोकन र संरक्षण गर्नका लागि राष्ट्रिय नीति नियमको अभाव भएकाले सम्बन्धित निकायबाट सुनाखरीलाई लोप हुनबाट जोगाउन राष्ट्रिय नीति नियम बनाउनु पर्ने खाँचो देखिएको छ ।

सफल मौसमी फूल बेर्ना उत्पादन गर्ने संक्षिप्त तरिका (Short method of successful seasonal seedlings propagation)

इन्द्र महर्जन

परिचय:

नर्सरी व्यवसायमा होस् वा फूल बोटविरुवाको शौखीन व्यक्ति विशेषमा होस् विभिन्न मौसमी फूलका बेर्ना उत्पादन गर्ने काम शुरु गर्नुअघि निम्न लिखित बुँदाहरूका विषयमा ज्ञान हुनु अति जरुरी हुन्छ। (क) बीउको प्रकृति (Seed Culture) (ख) समुचित माटो मिश्रण (Balanced Potting Mixture) (ग) मौसम/याम (Season) (घ) बीउ उम्रने क्षमता (Viability)।

कुनै पनि किसिमका फलफूल, अन्नबालीदेखि लिएर अन्य सबै खालो तरकारी तथा घाँस पर्यन्तलाई पनि नभई नहुने एक आधारभूत प्रकृति प्रदत्त पदार्थ मध्ये माटो एक हो। यसले बोटविरुवालाई चाहिने आधारभूत खाद्य र खनिज पदार्थको समेत परिपूर्ति गरिरहेको हुन्छ। कुनै पनि बोटविरुवाको ठडिने/खडा हुने आधार र पानी समेतको संचयण र परिपूर्ति पनि माटोको माध्यमले नै भइरहेको हुन्छ। त्यसैले माटोमा भएको विद्यमान पोषण र आवश्यक खनिज पदार्थको परि पूर्तिबाट नै सफल उत्पादन निर्भर गर्दछ।

समुचित माटो मिश्रण (Balanced Polting mixture) भन्नाले त्यस माटोलाई जनाउँदछ, जसमा विरुवालाई चाहिने आवश्यक माटो, मल, बालुवा तथा अन्य प्राङ्गिक पदार्थ (Organic Matters) जस्तै - भ्याऊ, पतकर कुहिएको मल, गाईवस्तुको कम्पोस्ट आदि पर्दछन्। समुचित माटो मिश्रण (Balanced Polting Mixture) बनाउन वैकल्पिक (Alternative) का रूपमा खरानी, मधुमास, मसिनो काठको धुलो अथवा मसिनो धुसो र काठको बोक्रा कुहिएको सायै भर्मिकुलियत (Vermiculite) आदि पनि प्रयोग गर्ने प्रचलन छ। माथि उल्लेखित यी विविध तत्वहरू समुचित प्रयोग भउको खण्डमा माटो खुकुलो भई हावापानीको राम्रो सञ्चालन भई जरावृद्धि हुन र बोट हुर्कन ठूलो मद्दत गर्दछ। यसमा अझ

आडको धूलो (Bone Meal) अलिकति र पिना (Oil cake) अलिकति थपन सके अझ बेस हुन्छ। यदि माटो अम्लिय (Acidity) छ भने थाहा छ भन्ने अलिकति चुन हालनाले अझ प्रभावकारी हुन्छ।

विरुवा चाहे वनस्पति प्रजनन (Vegetative Propagation) कटिड, बडिड, गुट्टी र ग्राफिटङ्ग आदिबाट होस् वा बीउबाट (Seed germination) उमारेर होस् राम्रोसँग उम्रन, बढ्न र हुर्कनका लागि नभई नहुने एउटा प्रमुख चिज हो, उन्नत छनौट भएको बीउ (Standard graded seed) य उन्नत वर्नशंकर बीउ (Hybrid seed) हुन्।

त्यसकारण कुनै पनि मौसमी फूलको बेर्ना तयार गर्नुपूर्व के बीउ, कसरी कुन बेला, कस्तो प्रविधिले उमानु पर्छ भन्ने कुराको ज्ञान पहिल्यै भएन भने बेर्ना उत्पादन कार्य असफल हुने या कमै मात्र उमानु सक्ने भई ठूलो आर्थिक क्षति पनि हुन बेर लाग्दैन। त्यसैले बेर्ना उमानु पूर्व जानकारी हुनुपर्ने क्रियाकलापहरू तथा त्यस सम्बन्धी आधारभूत विषयमा ज्ञान हुनु नितान्त आवश्यक हुन आउँदछ। जस्तै-

क. बीउको प्रकृति (Seed Culture) - भन्नाले बीउ उम्रनलाई चाहिने बीउमा निहित अनुकूल वातावरणलाई जनाउँदछ। जस्तै: कुनै बीउ उम्रनलाई उज्यालो (Light) चाहिने, कुनै बीउ उम्रनलाई अँध्यारो वातावरण चाहिने त कुनैलाय ठण्डोपचार (Cooling treat) चाहिने त कुनैलाई तापोचार (Heat Treat) अथवा तातो पानीमा डुबाउँदा राम्ररी उम्रन्छ इत्यादि।

ख. समुचित माटो मिश्रण (Balanced Polting Mixture) - भन्नाले बीउ अंकुरण भई राम्रोसँग जरा तथा बाटेटेको समानुपाति विकास हुनलाई चाहिने माटोको मिश्रण (Soil Mixture) लाई जनाउँदछ।

- i. बेर्ना उमार्न - माटो + बालुवा + पतकर मल (2+2+1) अथवा बलौटे माटो (Modified sandy soil) +1 मल
- ii. जर्खराउन - माटो + बालुवा + मल (2+1+2) अथवा बलौटे माटो (Modified sandy soil) +2 मल
- iii. प्रशारण गर्न - माटो + बालुवा + पतकर मल (2+1+2) अथवा बलौटे माटो (Modified sandy soil) +2 मल

(नोट: माटोको प्रकृतिअनुसार माटोमा मिलाइने मिश्रणको भागहरु फरक-फरक हुन्छ ।

- ग. मौसम/याम (Season) - भन्नाले हिउदे यामका बीउ, वर्षायामका बीउ तथा बहुवर्षीय बीउ जुन विरुवा खास उपयुक्त याम अथवा मौसममा बढी सप्रने उर्कने फल्ने फुल्ने गर्दछ । तत्: सम्बन्धी ज्ञान पनि हुनुपर्दछ ।
- घ. बीउ उम्रने क्षमता (Viability)- भन्नाले बीउमा निहित उमार शक्ति:को प्रतिशत र प्रतिकूलतालाई जनाउँदछ । जस्तै - कुनै बीउ संकलन गरेको १५/२० दिनमा बीउ नछरेमा उम्रदैन भने प्राय: मौसमी फूलका बीउहरु ६ महिनादेखि १ वर्षसम्म पुरानो छ भने त्यसको उम्रने शक्ति बढी प्रतिशतमा हुन्छ भने त्यही बीउ पुरानो हुँदै गयो भने उम्रने शक्ति कम-कम हुँदै जान्छ । तर कुनै-कुनै बीउ-चाहिँ एक षिटोष्ण (Dormancy) विच्छेदन नभइ नउम्रने या कुनै बीउ बोक्रा (Seed coat) मा बाक्लोलो गर्दा पनि छिट्टै नउम्रने हुनसक्छ । जस्तै- केराऊ फूल, आइरिस आदि । त्यस्तै राम्ररी नपाकेको बीउ अथवा क्षति भएके बीउ वा कम गुणस्तरीय बीउ भएमा पनि उमार प्रतिशत कम हुन्छ । अर्को एउटा महत्वपूर्ण कुरा हो, बीउ संचय अथवा भण्डारण गर्दा कम तापक्रम (Low Temperature) र कम चिस्यान (Low Moisture) कायम गर्न सकेमा पनि उमार क्षमता (Viability) हास आउनबाट जोगाउन सकिन्छ ।

कुनै बेला बेर्ना उम्रिसकेछि पनि धलोमै मर्ने, कुनै बेला सारिसकेपछि पनि मर्ने अथवा कुनैबेला गमलामा या क्यारिमा रोपिसकेपछि पनि मर्ने आदि समस्या आइपर्दछ । यी सबै समस्याहरु प्राय: फूलसम्बन्धी काम गर्दा आइपर्ने आम व्यवधानकै

रूपमा देखापर्दछ । त्यसकारण यी सबै समस्याहरुबाट जोगिन मौसमी बेर्ना तयार गर्दा अपनाउनु पर्ने प्रक्रियाको संक्षिप्त विधिहरु यस प्रकार छन् -

- क. समुचित माटो मिश्रण (Balanced soil mixture) - माटो दुई भाग + बालुवा दुई भाग + पतकर मल १ भाग) अथवा - बलौटे माटो + २५% मधुमास)
- ख. बीउ छर्ने तरिका (Seed sowing) - (पातलो लाइनमा छार्न + हलका छोप्ने बिउभन्दा दुई गुणा अथा बीउ प्रकृतिअनुसार बाक्लो वा पातलोपनमा भरपर्दछ)
- ग. पानी राख्ने तरिका (Seed Tray watering) - ठिक्क हलका भिजे गरेर+आवश्यकताअनुसार भारी/स्प्रे या डुबाएर)
- घ. राख्ने ठाउ (Seed Tray Location) - (छायाँदार हावा लाग्ने तर उज्यालो ठाउँमा) तर (सिधा घामभन्दा टाढा)
- ङ. बेड्याउने/जर्खराउने (Pricking/Hardening off) - (चारपात निकालीसकेपछि) जरा तखल्वलिनै गरी)
- च. प्रशारण (Transplantation) - (जर्खराएर अलि परि पक्क भएपछि प्रसार गर्न उपयुक्त हुन्छ ।

अरु थप विचार पुऱ्याउनुपर्ने कुराहरु

- a सुरक्षित माटो (safe soil) - (घाँसपातका बीउरहित तथा किरा, दुशी र रोग मुक्त)
- b छापो (mulching)- (आवश्यक चिस्यान/ताप/प्रकाश अनुकूल गर्न बोरा/कागज या प्लास्टिकले छोप्ने तर उम्रने वित्तिकै निकाली हाल्नुपर्दछ ।)
- c पटल्याउने (Thinning)- (बेर्ना उम्रेको ज्यादै बाक्लो छ भने चारपात आएपछि पटल्याउने गर्नुपर्दछ / बाक्लो छाँट्ने प्रक्रिया अपनाउनु पर्दछ)
- d छाट्ने (pinching) - (यदि कुनै बेला जसको बेर्ना पुड्को भ्याम्मिन दिन मुन्टा निमोउने प्रक्रिया अपनाउनु पर्दछ ।
- f अति पानी/न्यून पानी (Damping off/Dihydration) - बेर्नामा पानीहाल्दा ख्याल गर्नुपर्ने पानी धेरै भएमा जर निर कुहिमर्ने हुन्छ भने पानी धेरै कम भएमा जरा/अकुरण सुकि पर्दछ)

यी माथि उल्लेखित सम्पूर्ण क्रियाकलापहरु बीउ छरेर बेर्ना तयार गर्दासम्म गर्नुपर्ने काम तथा त्यस सम्बन्धी थाहा

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पाइ राख्नुपर्ने कुराहरु हुन् । अब, कुनै पनि बेर्नालाई प्रसारण (Transplantation) गरेर गमलामा या जमीन (lower bed) मा रोपिसकेपछि फूल या फल नफलेसम्म त त्यसलाई चाहिने मलजल तथा गोडमेल गर्ने सबै काम गर्दछ । तर जब फूल फुल्न थाल्दछ त्यसपछि भने प्रायः धेरैजसो मानिसहरुले विरुवालाई चाहिने अत्यावश्यक मलजल मध्ये जल अथवा पानी त दिन्छ तर त्यसलाई भन्नु थप आवश्यक पर्ने मलको भने परिपूर्ति गरि दिएको पाईदैन । जसको फलस्वरुप पहिला फूलदेखि नै विरुवालाई चाहिने मलनको आपूर्ति कम-कम हुँदै फूल र बोट दुवैको गुणस्तर खस्कने क्रम तीव्र रुपमा हुँदै जान्छ । त्यसकारण यस अवस्थामा विरुवाले आफ्नो खाद्य पोषणको अधिकतम खपत फूल फुल्नमा खर्च गर्ने भएकोले हरेक ३ देखि ४ हप्ताको फरकमा मल हाल्ने काम (top dressing) गर्दै जानु अति आवश्यक हुन्छ साथै फूल फुलेर फक्रेका र ओइलिएका फूलडाँठको काटछाँट पनि गर्दै जानु पर्दछ । जसले गर्दा आवश्यक पोषणको परिपूर्ति नियमित हुनुका साथै फुलिसकिएका फूल तथा डाँठहरुको

काटछाँट गर्नाले अनावश्यक बीउ पाक्ने प्रक्रिया (Seed formation) हुनबाट जोगिन गई विरुवाको र फूल फूल्ने गुणस्तर र अवधिमा वृद्धि हुन्छ ।

यस अवस्थामा विरुवालाई चाहिने नाइट्रोजन, फस्फोरस र पोटास (N.P.K.) मध्ये नाइट्रोजनको अधिकतम आवश्यक हुने भएकोले यूरिया, चिनी मल अथवा कुखुरा मल आदि जस्ता नाइट्रोलन यसक्त मल दिन ज्यादै प्रभावकारी हुन्छ ।

यसरी माथि उल्लेखित सम्पूर्ण क्रियाकलापहरुलाई राम्रोसंग ध्यान पुऱ्याएमा कुनै पनि व्यक्ति एक सफल माली (Gardener) को रुपमा अथवा एक सफल नर्सरीकर्ताको (Nursery mater) रुपमा सिद्ध हुन धेरै हदसम्म सक्षम हुन्छ ।

मननयोग्य निष्कर्ष: "कुनै फूल जुन फूल फुलाउन सानै बेर्नादेखि हेरचाह गरेर आफैले फुलाउँदा जुन आनन्द र सन्तुष्टी हुन्छ ! त्यो आनन्द र सन्तुष्टी फूलेको विरुवा या हुर्केको विरुवा किनेर ल्याएकोमा हुँदैन !!"

हालसम्म उमारिसकिएका मौसमी फूल बेर्ना उत्पादनको एक भलक

सि.नं	फूलको नाम	बिऊ राख्न सक्ने अवधी	बिऊ उम्रने समय	सानो विरुवा सार्ने	गलमा/क्यारीमा रोप्ने	फूल्ने अवधि दिनमा
S.N.	Name of Flowers	Seed sowing period	Seed Germination Time	Priking/Hardening off	Transplantation in days	First flowering start up
१.	सयपत्री	माघ-साउन	४-७ दिन	१५-२५ दिन	३०-४५ दिन	७५-९० दिन
२.	जिनीया	फागुन-असार	३-६	१५-२०	३०-४०	६५-९०
३.	आएस्टर	माघ-असार	८-१५	२५-४०	३५-५०	८०-१००
४.	डाहेलिया	माघ-असार	१२-१५	२५-३५	३५-४५	६०-९०
५.	सालभिया	पुस-साउन	१५-२०	३०-४०	४०-५०	८०-१००
६.	सनफलावर	फागुन-बेष्ठ	५-८	२०-२५	३०-४०	७५-९०
७.	एम्पेसन	फागुन-बेष्ठ	१५-२०	३०-४०	४०-५०	७०-९०
८.	बिगुनीया	चैत्र-बैशाख	२०-२५	३५-४५	५०-६०	९०-१२०
९.	पोर्चुलाका	माघ-बैशाख	१५-२०	२५-३०	३५-४५	६०-७०

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१०.	प्यान्जी	कार्तिक-माघ	५-८	२५-३५	३५-४५	६०-७०
११.	पिटुनीया (सिंगल)	असोज-माघ	८-१०	२०-३०	३०-४०	६५-९०
१२.	पिटुनीया (डबल)	असोज-माघ	८-१०	२०-३०	३०-४०	८०-१२०
१३.	भर्बिना	कार्तिक-माघ	८-१०	२०-३०	३०-४०	८०-१२०
१४.	डायन्यस	असोज-माघ	५-८	२५-३०	४०-४५	७५-९०
१५.	बाघमुखी	कार्तिक-माघ	६-८	२०-२५	३५-४०	७५-९०
१६.	कारनेसन	असोज-माघ	१०-१५	३५-४५	५०-६०	९०-१२०
१७.	क्याल्सेलेरिया	कार्तिक-पुस	१०-१५	३५-४५	५०-६०	९०-१२०
१८.	डेलफेमियम	भाद्र-कार्तिक	७-१०	३०-४०	४०-५०	१२०-१५०
१९.	गजानीया	असोज-पुस	८-१०	२५-३५	३५-४०	७५-९०
२०.	सिनोरिया	भाद्र-मंसिर	१०-१४	३५-४०	४५-६०	९०-१५०
२१.	सिजान्थस	कार्तिक-पुस	१०-१४	३०-४०	४०-५०	९०-१२०
२२.	सिलोसिया	फागुन-जेष्ठ	४-७	१५-२५	३०-४५	७५-९०
२३.	गौलार्डिया	फागुन-जेष्ठ	४-७	१५-२५	३०-४५	७५-९०
२४.	असर्फी	भाद्र-पुस	५-७	१५-२५	३०-४५	७५-९०
२५.	मिसिनब्रायन्थस	असोज-पुस	७-१०	३०-३५	४०-५०	७५-९०
२६.	स्टक	असोज-पुस	७-१०	२५-३५	४०-५०	७५-९०
२७.	फ्लाक्स	भाद्र-माघ	७-१०	३०-४०	४०-५०	९०-१२०
२८.	रानून कुल्स	भाद्र-कार्तिक	१५-२५	४५-६०	६०-७५	१२०-१८०

विचारणीय निष्कर्ष: "सफल बेना उत्पादन गरिसक्नु सम्पूर्ण अन्य कार्यको आधा काम गरिसक्नु बराबर हो।"

- कुमारी नर्सरी

माटो जाच्ने विरुवाहरु (Soil-P.H. - Plants सम्बन्धी रोचक जानकारी -

- "हाइड्रोजिया फूल (Hydranzia) अम्लिय माटोमा अलि निलो निलो हुने गरी फुल्छ भने क्षरिय माटोमा अलि रातो पिंक हुने गरी फुल्छ।"
- "क्याना फूल (Canna) अम्लिय माटोमा सप्रदैन अथवा फूल नसपने माटो अम्लिय (Acid Soil) भनेर बुझ्न सकिन्छ।"

ORCHIDS OF NEPAL

Their commercial potential and related conservation issues

Brajesh N. Vaidya & Nirmal Joshi

Nepal is rich in orchid flora, as 361 species under 96 genera have been reported so far. Orchids in Nepal are found in the altitudinal range of 100 to 5000m. There are six endemic orchids from Nepal, namely - *Liparis olivacea*, *Listera nepalensis*, *Malaxis tamurensis*, *Oberonia nepalensis*, *Oreorchis porphyranthes* and *Pleione coronaria*. In Nepal vegetation has suffered a lot because of improper felling, indiscriminate collection of plants and resulting calamities like soil erosion and heavy landslides. Strict law enforcement has remained a big problem due to unstable political system and socio-economic problems. Truckloads of orchids have been recorded being smuggled out of the country every year. With this scenario a multi pronged conservation policy is needed which would ensure participation of local people, protection of the habitat and multiplication by seed culture *in vitro*. There is a huge commercial potential for some of the orchid species from Nepal that have beautiful, long lasting flowers. Some of these can also be used in the breeding programs as parents.

The study of orchids in Nepal began with arrival of Francis Buchanan Hamilton in 1802. He was a member of Captain Knox's Royal British Mission to the Kingdom of Nepal describing orchids for the first time in 1802. Later David Don's book "*Prodromus Florae Nepalensis*" recorded 51 orchid species found in Nepal. Since then many authors and naturalists have recorded orchids from various parts of Nepal. Almost 200 years after the first report, the tally of orchids found in Nepal has reached 361 species under 96 genera.

In 1973, the Convention on International Trade

in Endangered Species (C.I.T.E.S.) was negotiated in Washington. It came into force in 1975. The treaty has been signed by 143 countries and controls international trade in over 40,000 species of plants and animals.

THE DIVERSITY AND DISTRIBUTION OF ORCHIDS IN NEPAL

The 96 genera and the 361 orchid species reported from Nepal have a wide range of distribution. Out of 361 species, 6 are endemic to Nepal. The largest genus is *Bulbophyllum* with 33 species. There are 12 genera with 10 species or more whereas 48 genera are only represented by a single species. Likewise, 8 species are restricted to western Nepal, 55 to central Nepal, and 49 to east Nepal. There are 19 species extending from west to central, 86 species restricted to central and eastern, and 24 species found all over Nepal. The epiphytic orchids are rare in western Nepal due to dryer condition whereas epiphytic and terrestrial orchids are abundant in eastern Nepal, due to high rainfall and humidity. There is a gradual decline in epiphytic and terrestrial orchids from 86°30'E to 83°E. In tropical and subtropical areas (below 1100 m), there are 139 species, in lower temperate (1100-2000m) there are 195 species and in upper temperate (2001-3000 m) there are 166 species. Above 3000m in sub alpine (3001-3800m) region there are 69 species and from alpine belt (above 3800m) there are 28 species reported.

Fifty-three species belonging to 34 genera have various medicinal properties and four have been used for curing many ailments. Eight species have specific medicinal properties.

MAJOR PROBLEMS FACED BY THE ORCHIDS IN NEPAL:

- a. Deforestation due to population increase
- b. Deforestation due to fuel wood demand
- c. Deforestation due to logging for timber industry
- d. Overgrazing
- e. Shifting cultivation
- f. Indiscriminate collection of plants for export and for local sale by orchid hobbyists and growers
- g. Natural calamities like soil erosion and heavy landslides due to human created problems.

COMMERCIAL POTENTIAL OF ORCHIDS FROM NEPAL

In 1989, Export Promotion and Diversification Project of Trade Promotion Center published availability study on cut flowers and orchids for export. In that study, 39 species are listed as having horticultural importance. The wild orchids from seven genera: *Cymbidium*, *Dendrobium*, *Calanthe*, *Coelogyne*, *Phalaenopsis*, *Vanda* and *Pleione* were identified as having potentiality for export.

International market, domestic context and current nursery practices: In a report from 1998, the total international trade of orchid cut flower was valued at US\$ 6 billion, Thailand contributing 85, Nepal's export of orchid plants is insignificant. Most of the orchids that have been exported by tissue culture labs of Nepal, number in hundreds or at the most thousands. Most of the nurseries that deal in orchids import them either from India or from third countries. The Nepalese customers prefer hybrids to wild species. A well-grown flowering orchid plant sells for US\$ 20 to US\$ 80 in a local market in Kathmandu. A piece of orchid cut flower sells for US\$ 1.20 to US\$ 2.00 depending on seasons.

Tissue Culture: Artificial propagation through tissue culture is the only method that will not make any direct impact on biodiversity of wild population. Either seeds from wild or a meristem can be tissue cultured to carry out a mass propagation program.

According to the bulletin of the Department of Plant Resources, there has been a lot of research on orchid tissue culture in Nepal. Despite it, only one out of four commercial tissue culture laboratories is working on tissue culture of orchids for commercial purpose and conservation. Nepal Biotech Nursery (NBN) established in the year 1989, has been tissue culturing orchids to be sold domestically and in international market. It has also set up a 5 ha. farm to cultivate them in the natural settings to address conservation issues. So far 15 orchids have been tissue cultural and reproducible protocols for mass propagation have been developed. At the same time there are more 75 species, which are conserved *in situ*. In 1987, with a grant from World Wildlife Fund (WWF), *in vitro* conservation of three endangered orchids was conducted at NBN.

Plant Biotechnology and Orchid Improvement: There is substantial interest in the genetic improvement of orchids. Orchids form the largest family of flowering plants with more than 800 genera and over 25,000 species that are commercially grown globally. Genetic modification of orchids for increased disease, pest and stress resistance, precocious flowering, longer shelf life, and the improvement of flower color and morphology is thus of major commercial importance. Orchid improvement by conventional plant breeding methods has been limited mainly due to the prohibitively long reproduction cycles (several years) and slow seed maturation (several months) of these plants. Therefore, the application of genetic engineering techniques to orchid improvement appears to be an attractive alternative. There are success reports regarding the transformation of *Dendrobium* and *Cymbidium*. This germplasm pool can be of immense value for future research, genetic improvement, and conservation purpose.

What should be done for orchids of Nepal:

1. Encourage a shift in public opinion. If private collectors do not demand wild-collected orchids, then the market will gradually diminish. Although in the last few decades

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such a shift has been taking place, it is obviously not complete.

2. To facilitate trades in commercial hybrids create a register for 'green' nurseries, and it is felt that they should be given recognition. It is perceivable that this would help counter orchid smuggling considerably, as it would most likely lead to a drop in prices of artificially propagated orchids from these nurseries.

3. Education of the local people, involvement of the local politicians and the development of eco-tourism are probably the main methods by which this problem can be tackled at the core. The market for eco-tourism is growing, and earning approximately US\$ 12 billion per year worldwide. Local people could harvest seeds to propagate the wild species, and would not only make an income from guiding

the tourists, but also from selling plants. An additional scheme would be to give tourists the opportunity to adopt 'host trees', old trees that harbor many epiphytes.

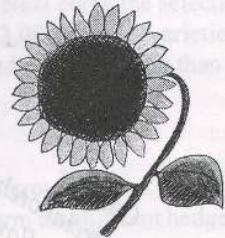
4. Finally, the protection of areas of high diversity is an obvious conservation tool. There are total of 16 protected areas in Nepal occupying 22,000 sq. kilometers (9 national parks, 5 wild life reserves, 2 conservation area). The 16% of total land in Nepal is covered by the protected areas. A priority should be made so that orchid habitat in these areas is well protected. A biodiversity conservation strategy should be implemented so that ecosystem as a whole can be maintained without any ill effects. Biodiversity conservation should be achieved by blending available information and indigenous knowledge with ethics and awareness.

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ROSES

Kumar KC
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The Rose is the Queen of the flowers. Roses out perform every other garden. Most of us become rose growers simply because we fell in love with the flowers. Rose belongs to a large family called Roseaceae which include apple, strawberry etc. There are more than three hundred species of roses. All of them confined to the Northern Hemisphere. Roses came in to existence on this planet before the human race originated. Fossil remain suggest that the roses date back to 40 million years.

History suggest that the roses cultivated in China about 5000 years ago. The Egyptians did roaring business growing rose for the Romans. They offered roses to "Venus" as an emblem of beauty and to "Cupid" as a token of love. Record sales of red roses on st. Valentine day on 14th February every year is the result of the roman tradition. It was dedicated to Aurora, the Goddess of dawn as the flower are freshest and loveliest in the morning and to harpocrates the God of Silence Romans used rose petals to shower guests at banquets.

Even though, the rose has an ancient association with man, only during 19th century the modern roses were produced by crossing one flowering hardy European roses with ever flowering tender species form the orient. By far the most popular rose today is the hybrid tea next comes the floribunda, grandiflora, climbing roses, miniature roses, polyanthas and so on.

Coming to the cultivation if roses, the selection of site is more important, Rose are extremely susceptible of root competition from the other plants. Trees are especially troublesome to roses cannot compete well with other plant. Hence to grow outstanding roses, plant them in a well prepared beds.

Roses enjoy sunshine, the best place to grow them is in full sunshine. Plants grow in the sun produce

more flower. Any garden site that receives at least 5-6 hours sunlight daily is suited for rose growing shade helps protect flowers from fading. Early morning sun is best, as it help to dry out the dues early or otherwise it will harbour the pest and diseases. Good drainage is essential. Swampy situation not suitable for growing roses. Roses grow on heavy soil with good amount of organic matter which will drain excess waters and light soils need further heavy application of organic matter to hold water. The ideal pH range is 6-7.

If then site is exposed to strong with some protection from the wind is to be arranged. Application of lime to raise the pH level is essential under Kathmandu condition. To raise one point of pH level it is necessary to apply 3-5 kgs of lime per 10 sq Mt. area. After preparing the soil one should take care in selecting the plants for growing. The roots and canes must be bigger and better developed. Two year old plants are ideal which should have three or more strong canes. Two of which should be 18" longer. The plants should not have branches above 3" from the bud union. Next come the selection of varieties. More than 13,000 named varieties are available in the world and in Nepal more than 1500 varieties are available.

There are roses:

- to stand erect
- to crawl along the ground
- to branch out to form magnificent hedges and cover entire wall
- some grow few inches high and few climbers grow more than 45 feet
- some produce dainty clusters of little flowers
- hybrid perpetual that boasts flowers as big as mans face
- many roses have delightful fragrances

reminiscent of tea, nut fruits, spices, honey, stale beer and line seed oil

- others completely lost their fragrance
- there are some thornless varieties also.

One can plant roses round the year in the Kathmandu if sufficient quantity of water is available. Roses are best planted when they are dormant. In temperate area like ours the Autumn planting is best.

Coming to the planting distances, for commercial cultivation in green houses, closer planting is resorted to. The plants are planted at a distanced of 30 cm to accommodate 7-8 plants per sq. meter area. But for garden planting distances varies based on varieties the vigorous cultivars like hybrid teas can be planted at 60-75 cm. Medium cultivars like floribundas at 45-60 cm. distance and smaller one like miniatures can be planted at a distances of 30 cm. and the smallest ones are even at 15 cm. distances. Plantings should not be done in soaking wet and also under frozen condition. The planting hole should be big enough to accommodate all the roots without cramping. The hole should be deep enough to allow the plants to place lower than the nursery level. The bud union should be one inch below ground level. Fine soil should be placed over the roots and the plants gently shaken up and down so that the roots are close together and the soil should be pressed down. The watering is carefully done to established newly planted roses.

Coming to applying fertilizer, organic fertilizers like cow dung, bone meal fish, pig and poultry manure are best but it takes long time to break down into the plant nutrients and hence application of inorganic manure is also essential. It contains nitrogen, phosphate and potash. Many roses mixes are available in the market to day. All are good. But best mix should contain:

Sulphate of Ammonia	8 part by weight
Super Phosphate	16 part by weight
Sulphate of Potash	12 part by weight
Kiererite	2 part by weight
Sulphate of iron	1/2 part by weight

Organic fertilizers like cow dung or compost can be applied at the time of pruning in January. The

inorganic fertilizer should be applied 30 days after pruning when the soil has sufficient moisture and catchplant requires about 7-8 gms. of the mix, and it should be incorporated into the soil and copious watering has to be given immediately or preferably it should be applied immediately after the rain. Liquid feeding or fertilizer can also be given by mixing 30 gms. of the mix in 10 liters of water.

Pruning and Trimming:

Happily a rose brush will thrive in spite of rather than because of, the pruning treatment it receives each season. The biggest bush the more flower it will bear vigorous plants will overcome severe pruning but weak roses are best left alone or just trimmed.

Roses can be pruned any time during their dormant season. Cut away weak and diseased and dried branches and cut back the healthy branches to about 45 cm. from the ground and the cut should always be just above an outward facing branching bud. Hybrid tea requires hard pruning floribundas light pruning and for the miniatures just clipping is enough. One should use sharp and clean tools for cutting the branches. The center should be opened without any branches so that sun light will fall on all the branches. The root suckers should be removed then and there from the point of origin. Otherwise it will ruin the whole plant.

New flushes will start growing in 10 days time, when the new shoots are 10-15 cm. length. Spraying against pest and disease should be done. Spraying with faliar nutrients like "Fuldi gro" and other growth promoters can be done during this time. In about 45-50 days time flowering will start if you want to get bet flowers, the side buds should be removed leaving only the center bud.

Coming to plant protection, the important pests of the roses are Aphids, Thrips, Mites, White grus, Leaf rollers etc. There are number of chemicals available in the market spraying with any one of the pesticides like Acephate, Democron, Nuvacron, Thiodan will take care of the above pests. For mites, spraying with sulphur or karathane will be sufficient.

Important disease of the roses are powdery

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mildew and black spot. The spraying with fungicides like Sulphur, Bavistin, Dithane, etc. will keep the disease away. If you do clean cultivation by spraying with one pesticide and a fungicide in 15 days interval one can very well protect the plants from the pest and disease attack.

Now in the rose garden at Naikap, Amber Nursery Rose Block there are more than 5000 roses plant could be seen all of you are welcome to visit the rose garden to clear any doubt regarding commercial rose cultivation.

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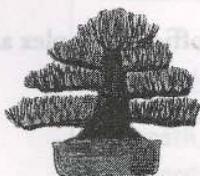
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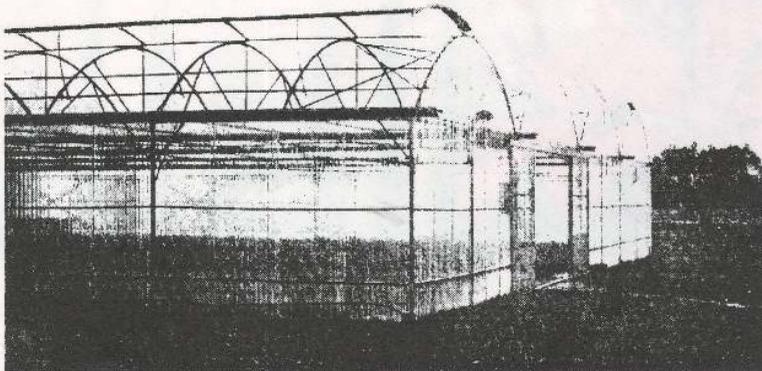
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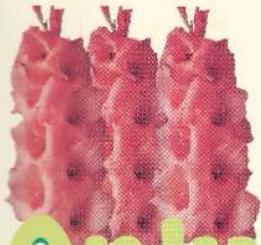
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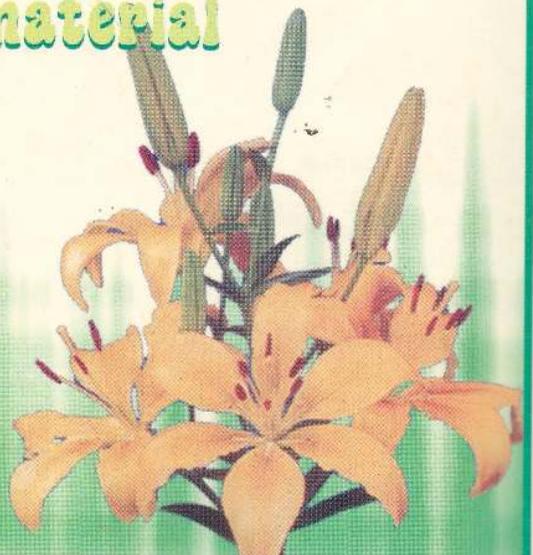
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