Proceeding of
Workshop on Floriculture Development in Nepal: Prospects and Challenges

Jointly Organized by
Floriculture Association Nepal (FAN)

and

Project for Agriculture Commercialization & Trade (PACT)

Floriculture Association Nepal (FAN)
Battishputali-9, Kathmandu Nepal

Government of Nepal
Ministry of Agriculture Development
Project for Agriculture Commercialization & Trade (PACT)
Sallaghari, Kathmandu Nepal
Proceeding of
Workshop on Floriculture Development in Nepal:
Prospects and Challenges

Jointly Organized by
Floriculture Association Nepal (FAN)
and
Project for Agriculture Commercialization & Trade (PACT)
Nepalese floriculture is one of the fastest growing sub-sectors of agriculture in Nepal. Although, the earliest flower business in Nepal has been traced back to some sixty years yet the formal floriculture business has been recorded for last two decades only.

It is a sector which is private driven and a sector that has grown from annual turnover of Rs. 1.8 crores in 1994 to Rs. 115.57 crores in 2014. It is growing at the rate of at least 10% on an annual basis since many years and has promising future. Investments are pouring in this sector and stakeholders are in an expansion mode. However, there are still several issues that are making investment in this sector risky. The foremost issues are competent human resource, tested technology and strong research backup among others. Thus, this workshop was organized to bring all the stakeholders together to review floriculture development in Nepal, introspecting roles of stakeholders and sharing success stories of our neighbors.

Nepalese flowers have crossed the Nepalese boarders and are appreciated by international consumers. The international markets especially in the middle- east are lucrative and Nepalese floriculture needs to go international to reap from these opportunities. This workshop entitled “Floriculture Development in Nepal: Prospects and Challenges was envisaged to bring out a document that shall pave way for the prosperity of floriculture in Nepal.

The presentation and discussion held during the workshop has very unanimously agreed one thing and that is close collaboration between Universities, Department of Agriculture, Nepal Agriculture Research Council and the Private sector (Floriculture Association of Nepal). The floriculture policy could be the guiding and binding factor for all the stakeholders of floriculture in Nepal.

I thank Floriculture Association of Nepal and Government of Nepal for organizing this workshop. Special thanks are also due to Chief Guest of the inaugural session Prof. Dr. Kailash Nath Pyakurel Vice Chancellor, Agriculture and Forestry University and Guest of Honor Mr. Jaya Mukunda Khanal, Secretary of Ministry of Agriculture Development, Government of Nepal for their gracious presence at the workshop.

Dr. Umed Pun
Chairperson
Workshop
ACKNOWLEDGEMENT

The workshop on “Floriculture Development in Nepal: Prospects and Challenges” was jointly organized by Floriculture Association Nepal (FAN) and Ministry of Agriculture Development, Project for Agriculture Commercialization & Trade (PACT) on March 28, 2014 (2070 Chaitra 14) Trade Tower Business Centre, Thapathali, Kathmandu, Nepal.

I would like to sincerely provide my gratitude to the Chief Guest of the inaugural session Prof. Dr. Kailash Nath Pyakurel Vice Chancellor, Agriculture and Forestry University for the gracious inauguration of the workshop through providing instruction and guidance. Further I would like to thanks to Guest of Honor Mr. Jaya Mukunda Khanal, Secretary of Ministry of Agriculture Development, Government of Nepal for their gracious presence at the workshop.

I would like to thanks Yogendra Kumar Karki (Project Director), Project for Agriculture Commercialization & Trade (PACT) and his team in jointly organizing this workshop with our Association.

The proceedings of workshops are presented here in the form of a book for the wider use. This proceeding included information on prospect and challenges of floriculture and role of the stakeholders. I am happy to see the proceedings of workshops and thankful to all authors for their contribution. I sincerely thank goes to Dr. Umed Pun (floriculture scientist) for his active involvement in organization of the both these proceeding & workshops that stimulated it were possible by dedicated efforts.

I would like to thanks, all paper presenters and all my colleagues who worked hardly to make this workshop and grand success.

Thank you.

Lok Nath Gaire
President
Floriculture Association Nepal (FAN)
Workshop on Floriculture Development in Nepal: Prospects and Challenges 1-2

First Technical Session (National)
- Role of private sector in development of floriculture industry in Nepal; Lok Nath Gaire, FAN President 3-8
- Public Sector involvement on Floriculture in Nepal; Purushottam Khatiwada1, Dr. Yogesh H. Shrestha 9-13
- Role of Agriculture University in development of Floriculture industry in Nepal; Prof. Dr. Dilli Ram Baral, AFU, Chitwan 14-19

Group Discussion on First Session (National) 20-21

Second Technical Session (International)
- Floriculture Business in Bangladesh; Mohammad Raisul Islam, Executive Member of Bangladesh Flower Grower’s & Exporter’s Association, President, Dhaka City Nursery Owner’s Association. 22-25
- A Glance at India Floriculture & KF Bioplants; Mr. Kiran Dekor 26-29
- Floriculture in Himanchal Pradesh; Dr. N.M. Sharma 30-39

Brief of the technical session of international workshop of floriculture in Kathmandu: 40-42
Conclusion of workshop 43

Annex -
- Program schedule 44
- List of Participants 45-47
- Photo Gallery 49-50
Introduction:
Floriculture profession was very much limited to traditional system and segregated by caste system until 60's as it was considered a profession of low caste and the market was very much limited to temples and some special occasions such as Deepawali, Dasera festivals, etc. with very limited use of flowers. During 70's with initiation of existing ruler some amateurs exhibition and competition were organized regular.

Later in the early 90's some entrepreneurs got together and formed an association through which many promotional activities started to adapt commercial aspect. As a result by the year 2012 the sector has been spread to 38 districts with around 650 enterprises / floriculture firms. The area under flower cultivation is about 137 Hectare and the sector has created about 41,000 employment generation, which is a considerable figure for the very young industry in the context of Nepal. In the fiscal year 2069 / 70 BS, a total volume of business for annuals is Rs. 19.54 core, ornamental plants of about Rs. 37.15 core, cut flower of about Rs. 18.42, landscaping and garden maintenance of about Rs. 17.45 core, floriculture inputs & equipments of about Rs. 22.86 core, and export of about Rs. 3.15 core, to make total of about Rs. 115.57 cores.

Why the workshop?
It has been more than two decades since the initiation was taken by the private sector to promote the floriculture business. Nepalese government has not taken any initiation to promote the sector until very recently, as well as no research has been initiated in this sector by any of the agencies in the country. There has not been any forum to discuss to find out the contribution. A first International Flora Expo was organized in 2001 by Floriculture Association of Nepal. During the event one day International Workshop was organized in Kathmandu. The workshop was helpful to gain knowledge on the current status of the floriculture sector and prepare the necessary guideline to productive action to be taken. Apart from this event, there has not been any other significant programs or workshops organized for further development of this sector. In addition, there has not been any forum to meet all the stakeholders, government, private sector, research institutes, etc., to have a long term vision to develop the sector. Therefore, there has always been a need of the forum like this to bring in all the stakeholders together and come with a good guideline for the development of the sector. As a result FAN with a cooperation of PACT organizing this workshop during the second International Floriculture Expo 2071 under following organizing subcommittee.

Workshop Organizing Sub Committee:
Dr. Umen Pun Coordinator
Lok Nath Gaire (FAN President) Member
Mr. Yogendra Karki (PACT) Member
Dr. Birendra Bir Basnyat (PACT)  Member
Dr. Yogesh Hari Shrestha (FDC Chief)  Member

The objective for organizing the work shop was to define specific role of the stakeholders, namely private sectors, researchers, academic institutions, universities, government agencies, for the promotion and development of the sector in the days to come. The decision was made to organize the workshop by the above mentioned committee under the chairmanship of Dr. Pun, Coordinator of the committee, at FAN office at Battisputali, Kathmandu, with financial support of PACT. The committee also decided to organize the workshop jointly in cooperation of FAN and PACT. As per the decision of the committee the workshop was organized at Trade Tower Thapathali Center on 2071, Chaitra 14 with the topic “Floriculture Development in Nepal: Prospects and Challenges”

Procedure of Workshop:
Topic of workshop : Floriculture Development in Nepal: Prospects and Challenges
Date : March 28, 2014
Venue : Trade Tower, Thapathali, Kathmandu
Organizer : Floriculture Association Nepal (FAN)
Project for Agriculture Commercialization and Trade (PACT), Nepal Government

Objective of the Workshop:
To prepare a road map by defining specific roles, with common agenda, of the stakeholders, namely private sectors, researchers, academic institutions, universities, government agencies, for the promotion and development of floriculture sector in Nepal.

The workshop was divided into three sessions.
• Program opening
• First Technical Session (National)
• Second Technical Session (International)

There were 6 technical papers presented by 6 participants out of which 3 were from local agencies and 3 from international agencies. There were total of 110 participants including technical personnel, representative from private sector, high officials from Nepal government, researchers, faculty from universities, Students, International floriculture entrepreneurs. (The complete list of participants is attached as Annex).
First Technical Session (National)

Role of Private Sector in Development of Floriculture Industry in Nepal

Abstract

This article highlights the current status of Nepalese floriculture and addresses the vision of Floriculture Association Nepal (FAN) for its development. Till date private sector has led Nepalese floriculture industry. Government and other non-governmental agencies have very limited role. As a result neither have we reduced import substitution nor have we achieved proper export although gulf countries have given priority for Nepalese floriculture product. Joint effort of private sector and governmental sector with proper infrastructure development is essential for exploration in international market.

1. Introduction

Floriculture in Nepal started during the mid-forties of the twentieth century. However, it took almost five decade for the commercialization and institutionalization. After the establishment of Floriculture Association Nepal (FAN) in 1992, it began the systemic approach for the development of floriculture industry. Survey on the status of floriculture entrepreneur, collection of information, dissemination and publication of facts and figures, trial production of different varieties, promotional programmers, encourage to new entrepreneur on latest cultivars & new varieties, trainings and human resources development are some achievements which Nepalese floriculture industry successfully achieved with the initiation of FAN.

In the earlier period of the development of floriculture industry most of the ornamentals and cut flowers were imported from India and only a few of those were available from local cultivation. More than 80 percent of the products came from aboard, especially from India. After the growth of market and information dissemination, entrepreneurs were gradually aware of the gap between demand and supply. As a result growth rate of production became high. Now we have to import only 20 percent of the cut flowers and about 50 percent of the ornamentals and rest is fulfilled from local production.

In the earlier period, market of floriculture was limited almost to the capital of the country. Now it has expanded up to 36 districts of the country. As a result both the products/cultivars and the volume are in increasing trends and patterns. Domestic market has 10 to 15 percent growth rate per year. It was Rs 10 million annual turnovers in 1992 and now it has crossed 1150 million Rs including export.

Size of the farms and the investment in infrastructure increased very rapidly after the establishment of FAN. Now we have more than 137 hectares under commercial cultivation of floriculture. Some of the farms have expanded in more than 8 hectares and some others have expanded in less than 0.1 hectare and their production status is specialized. There is huge potentiality of expanding in rural areas. Some of the flowers like Marigold can be produced in rural areas at low cost and is the primary product which may fulfill the demand of the cities and can become a bridge between the city and rural areas.

Some Nepalese cut flowers like carnation and Gladiolus are competitive in the international market. It was declared...
by the Israel Mission in 2005 that carnation of Kathmandu and Gladiolus of Chitwan are excellent. But due to lack of proper infrastructure for production and post-harvest, we have very poor achievement on export market.

2. Present Status
The present status of Nepalese floriculture is on the growing trend. Entrepreneur became on the business with the help of long experience of knowledge by doing. Production, marketing and institutional development at present condition is different than the past. Some of the tips can explain the highlights of the status:

2.1. Area and Production
2.1.1. Major production belts/zones
The major production of ornamental plants, seasonal flowers, and cut flowers and cut foliages is distributed from the southern plains of the country to the northern hill. However, the major districts growing these crops are Chitwan, Makwanpur, Rupendehi, Jhapa, Sunsari and Mahotary (plains) Kathmandu, Lalitpur, Bhaktpur, Dhading, Kavare, Nuwakot, Kaski (hills). However, the major production belts are located in the central region except for limited production in the eastern and western region. The production zones ranges from the tropics to sub-tropics to warm temperate.

2.1.2. Major crops/products
The major floriculture products of Nepal can categorized as below.
(i) Seasonal
(ii) Ornamental plants
(iii) Cut flowers & foliage
(iv) Landscape and gardening
(v) Bulbs and others

2.1.3. Total production area:
The area under floriculture is increasing over the years. The first record of estimation of area under floriculture was done in 1994 and total area under commercial cultivation was 23ha. Now there is about 137 hectares covered by commercial floriculture and it is in increasing trend (FAN, 2014).

2.2. Planting materials:
Planting materials for most of the flowers are fulfilling by importation. More than 90 percent of seasonal seeds, most of cut flowers seedlings & tissue culture plants and more than 50 percent mother plants of ornamentals are imported from different countries. Currently most of popular multinational companies have their own dealers for marketing of their planting materials in Nepal. Those authorized dealers supply seeds, seedlings and bulbs produced in Holland, Spain, Japan & India. But most of the ornamental plants are imported from India basically from West Bengal.

2.3. Production inputs (sources and access)
2.3.1. Fertilizers
The balance use of both organic and inorganic fertilizer is very important for commercial floriculture. It is primary factor to maintain proper composition of fertilizer and micro nutrient in order to get higher yield on crop and long durability of flower (in all seasonal, ornamental and cut flowers). DAP, Urea, MOP are some common fertilizers which are easily available. But the different composition fertilizers needed for floriculture recommended by the breeder are not available inside the country.

2.3.2. Plant protection materials
Broad based pesticides and fungicides are used in controlling pests and diseases. Such materials are easily available in the local markets and agro-vets. Retailers are also found selling them along with seeds, equipment and fertilizers. Neither grower nor the pesticide dealers are aware of the specific pesticides/fungicides requirement of some of the flower crops and for some specific conditions.

2.3.3. Greenhouse structure and accessories
The use of greenhouse for protected cultivation is essential for quality flowers
production. But we have practice of low cost shade house made by bamboo and plastic sheet (not UV resistant) which are not technically appropriate. Expertise from Switzerland and Holland invited by FAN for short term training said that Nepalese growers have lose in many things like seeds, seedlings, human power & production and cost per unit is increasing due to wrong cultivation practice. Initially, the construction of greenhouse requires higher investment but has a long term returns. If we target for export market, first of all, we need to change our greenhouse and then cultivation practice. In international market we have to complete with the product of climate control green house.

2.3.4. Irrigation management systems and accessories.

At present, most of the irrigations systems are based on the surface and ground water. Neither the entrepreneur nor the government knows the quality of water and its elements. Flood, overhead and pipe irrigation are commonly used. The drip irrigation system which is the most scientific and modern technique is used by a limited entrepreneur. It needed higher installation cost. Our custom and other financial acts are not favorable on the importation of these irrigation materials.

2.4. Production technology support (public and private)

Floriculture in Nepal was initiated and is led by the private sector. Before 2006, floriculture was under the Ministry of Forest and Soil Conservation. In 2006, it was shifted under the Ministry of Agriculture and Co-operatives. Floriculture Development Center (FDC) has been created under the Department of Agriculture at Godavari as an initiation for the development of Nepalese floriculture from the public sector. Floriculture Association Nepal (FAN) is leading in the preparation and publication of manuals for cut flowers like Carnation, Chrysanthemum, Gladiolus, Gerbera, Rose etc. Likewise, books on floriculture are also written by individuals.

2.5. Human resources

There is shortage of skilled manpower in Nepalese floriculture. There are only a limited numbers of technical experts of floriculture and horticulture which are engaged in governmental jobs, or in INGOs/NGOs. The Floriculture Association Nepal (FAN) in collaboration with various national and international organizations and government of Nepal is conducting training program (short term and middle term) focusing for owner/operator, staffs of firms. Those trainings are focusing on farm management, cultivation practices, plants protections, flower decoration etc. It is notified that more than 60 percent of the total workers involved in this sector are women.

2.6. Postharvest management

The postharvest losses of both seasonal and cut flowers are about 20-25 percent. Private sector cannot reduce this loss due to the lack of proper market infrastructure facility. Postharvest studies of cut flowers show that it is necessary to change in grading, packaging, mode of transportation and storage facility to reduce losses.

2.7. Marketing

The main market of flowers in Nepal is Kathmandu valley. During the past two decades the market of floriculture expanded rapidly in some of the cities outsides the Kathmandu. Marketing system of seasonal & ornamental plants is concentrated on production spot. Most of those products are directly supplied by grower themselves and not use of marketing channel.

In Nepal, the commercial cultivation of cut flowers has only a short history of two decades. In the beginning of the 1990 cut flowers were supplied directly to the clients like hotels, diplomatic missions etc by the
growers. However, this was becoming difficult along with the gradual increase in the volume of production. The FAN with support from Agro Enterprises Center (AEC) opened the first wholesale shop in 1998. Today, there are about half a dozen of wholesale shops within the Kathmandu valley only. Generally, florists or its representatives visit wholesale and buy but recently wholesale delivers products at the florist’s shop on the basis of a phone call. The marketing system is continuously improving.

3. Vision of private sector

The vision of private sector is very clear. Till the date it has vital role for the development of floriculture industry. FAN, the apex body of floriculture entrepreneurs, has clear vision for its development. Floriculture Promotion Policy, 2069 was drafted by FAN in 2063 B.S. and submitted to the government of Nepal after interacting with related stakeholders. There are lots of activities to do but we have to perform those things keeping in mind two issues:

3.1. Import substitution
3.2. Export promotion

3.1. Import substitution

Today we have to import flowers and our demand is in increasing by 10 to 15 percent per year. So, in coming days, it is clear that our importation may increase day by day. The first challenge to Nepalese floriculture is to decrease or constant importation. In order to decrease or constant importation we can follow the following steps:

3.1.1 Production extension:

We need to increase production for the replacement of importation by developing new production area, increasing the size of farm and productivity which results the increase in the volume of production.

3.1.2 Product diversification:

Various types of products and varieties are demanded in the Market. We have to fulfill the changing habits by the local production. So, we have to be conscious on product diversification in every step. It is to be remembering that in last five decades there were limited groups of buyers and product range and they had fulfilled the market demand but now we have plenty of varieties and cultivars and cannot fulfill the entire demand.

3.1.3. Protection:

It is necessary to make a favorable legal and statutory framework to protect domestic industry. Now we have to import from neighboring countries especially from India and to some extent from China where huge subsidy is provided in capital investment. About 90 percent subsidy is available in green house construction and installation of drip irrigation in both of the countries where as in Nepal we have to pay custom duty and VAT on those input taken from aboard. So, we have to decide how we can protect local investors in coming days.

3.2. Export promotion

Export is an optimal goal of Nepalese floriculture. We have limited export of some flowers and floral products to some of the Gulf countries, USA and EU. But it cannot lead the industry. It is necessary to export competitive products which may grow up on competitive cost and protect our market share. For it we need to step as:

3.2.1. Market identification

It is necessary to identify the proper market for our ultimate product. In the present situation floral crop are selling with the personal and intuitional relation of the entrepreneur. So, there are not any official relations among countries and farmers/growers haven’t access to market. If we identify the target market then it may easier to determine the buyer, their interest, business status and other many of the things.

3.2.2. Product identification

After market identification we may identify
the competitive product and their cultivar. Those products should be competitive on the basis of cost of production and quality in our production pockets. This helps growers to improve the quality and increase the volume with their regularity.

3.2.3. Penetration

To get entry in any international market is a complex task for agro based products from developing countries like Nepal. So, it is necessary to penetrate in the market by some economic tools. Only a single entrepreneur cannot access for this procedure. So, joint effort is always essential in this step.

4. Obstacles

In the present days, Nepalese floriculture industry suffers from some of bottle necks for its proper development. Only 3 percent of total investment of Rs 4.5 billion is funded by banking sector. We have only a limited number of experts. As a result, entrepreneurs of floriculture cannot get service in proper time. Due to the lack of research we haven’t any vision on its future development.

4.1. Investment

Investment is a key factor for a floriculture industry to get better result. Both Government and private sector need to invest on floriculture. Infrastructural development, human resources development, formulation and implementation of policies, promotional activities, support to capital investment, research & development are the major factors that government have to invest for the support of the industry and production inputs, packaging materials, marketing, means of transportation and the other production related factors in which private sector as well as financial sector need to invest. We can expect the prosperity according to our investment.

4.2. Human resources

Human resource is essential to guide the industry on proper way. It drives the all others means of productions such as land, capital, machineries and organizations in a productive way. But at the date we have lack of skilled manpower and have not access to general entrepreneur. So, increase in the internal management capability of the entrepreneur, adequate knowledge on cultivation and marketing practice and technician in production methodology & plant protection are some key issues where we should develop adequate human resources.

4.3. Research and development

Without research and development we cannot think the better result of the industry. But we have very little practice on it. Research and development is the responsibility of the state. But the government has not done any research in floriculture industry till now. Government should invest on research in floriculture industry for import substitution and export promotion.

4.4. Infrastructure

Without adequate infrastructure industry cannot move ahead. We have very poor infrastructure for the development on floriculture. Lack of proper access of transportation facility and the scarcity of power are some factors which Nepalese industries are suffering since long run. Green house, irrigations, marketing infrastructure, cool chain are some of unique requirement that the industry need but we have little access.

5. Role of private sector:

Private sectors have led the Nepalese floriculture industry. Government has started to support the industry in the resent years. In coming days also business component should be done by private sector and the role of government should be of a facilitator. So, the role of private sector is essential for the betterment of the industry. The roles of private sector for the betterment of Nepalese floriculture industry are as follows:
5.1. Increase in volume
Present size of production is very small and we cannot go ahead with this volume. The trend of Local demand is increasing and normal growth is necessary to fulfill the domestic demand. If we target for external market the minimum economical size is necessary for its export procedure and importing countries do not respond for lower volume due to their higher clearances charges per consignment. So, to fulfill the present gap between demand & supply and substitution the import the size of production must be increased.

5.2. Quality improvement
Qualities of many of the flowers are not satisfactory at the date. We need to produce continuously better quality and provide controlled quality. Our infrastructures are very poor to provide the proper quality. So if we think about export, we need to improve quality and supply standard quality flowers for long run.

5.3. Product diversification
Global market scenario is changing day by day and interests are changing dramatically. So, we should change our product according to market demand. Every time we came to know about latest cultivars and design. If, we target potential buyer we can recognize their interest and changing habit. So, we should ready to diversify our product in accordance to consumers habit.

5.4. Increase in investment
Present investment is not enough to get the better result. Without the use of improve and moderate technology it cannot be possible to increase the production, productivity and quality. To achieve the result it is necessary to increase the investment on floriculture industry.

5.5. Market oriented production
Flowers are high value and perishable products. We should not get revenue if the product is not according to market demand. Now we have a trend of getting production and search for market, which is wrong procedure on modern marketing principles and practice. So, our production practices should focus on market and their demand trend.

References:
- Floriculture Development Scheme in Meghalaya
- http://megagriculture.nic.in/
Public Sector Involvement on Floriculture in Nepal

Purushottam P. Khatiwada
Yogesh H. Shrestha

Introduction

- Floriculture is not in top priority
- A dedicated farm established in 2060 BS at Godavari under DoA
- No specified centres/commodity programme under NARC
Introduction

- Area increasing and expected to be 1000 ha by 2075 BS
- High potential for contribution to national economy
- Current estimated transaction is NRs 1005.0 million

Introduction

- Credit of floriculture industry development goes to private sector
- Increasing challenges along with the development of the industry
- Public sector contribution is extremely low
1. Development efforts

- Collection and *ex-situ* conservation of indigenous ornamental plants
- Training to floricultural entrepreneurs
- Subsidy to growers
- Action plan of “Puspa Niti” in final stage

2. Research efforts

<table>
<thead>
<tr>
<th>Project title</th>
<th>Year</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Development of POP of gladiolus</td>
<td>1999-2001</td>
<td>ARS, Pakhricas</td>
</tr>
<tr>
<td>2. Collection, evaluation, date of planting and bulb production of gladiolus</td>
<td>2002-2005</td>
<td>HRD, Khumaltar</td>
</tr>
<tr>
<td>4. Promotion of carnation and cymbidium orchid</td>
<td>2009-2012</td>
<td>HRD, Khumaltar</td>
</tr>
</tbody>
</table>
ON GOING RESEARCH

<table>
<thead>
<tr>
<th>Project title</th>
<th>Year</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Varietal improvement of gladiolus</td>
<td>2011-2015</td>
<td>ARS, Dailekh</td>
</tr>
<tr>
<td>2. Development of technology for winter- spring marigold production</td>
<td>2013-2015</td>
<td>HRD, Khumaltar</td>
</tr>
</tbody>
</table>

Figure 1. Budget absorbed by different sub-sectors and implemented projects (f/y 2063/64 – 2068/69)
Major challenges

- Low priority in the past
- Limited qualified professionals
- Low motivation which led to poor retention of professionals in long term
- Project based funding for research and ritual programme in development
- Weak mechanism of public private partnership
- Poor national capacity to cope with WTO context

Way forward

- Functional structure for vibrant research for development
- Long term human resource planning and development
- Infrastructure development in public sector
- Financial resource allocation based on potential
- Concrete implementation of the action plan of “Puspa Niti”
Role of Agriculture university in development of floriculture industry in Nepal

Prof Dr. Dilli Ram Baral
Dean
Agriculture and Forestry University, Chitwan, Nepal

Presentation Outline

- Introduction
- Strategic framework of the University
- Existing programme
- Future plans
- Areas of improvement

Establishment of AFU

- Government of Nepal in June, 2010 passed the bill to establish Agriculture and Forestry University in Nepal
- AFU is the first state owned and non-affiliating university of Nepal by merging IAAS, Rampur Campus, Chitwan and IOF, Hetauda Campus, Makwanpur
Strategic framework

Vision

• **AFU envisions to be one of the pre-eminent national and regional institutions of higher learning** through distinguished teaching, research and extension programmes in agriculture, animal science, veterinary science, aquaculture, forestry and allied disciplines for making a better nation and world.

Mission

• The mission of AFU is to generate **competent human resources** who are capable of promoting education, research and extension in agriculture, animal science, veterinary science, aquaculture, forestry and allied disciplines leading to societal transformation.
### Proposed Human Resource Recruitment Plan

<table>
<thead>
<tr>
<th>SN</th>
<th>Name of the Faculty/College</th>
<th>Existing (Current)</th>
<th>New Recruitment (Phase)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Faculty of Agriculture</td>
<td>37 56 30 14 27 10</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Faculty of Animal Science, Veterinary Science &amp; Fisheries</td>
<td>32 34 30 14 25 10</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Faculty of Forestry</td>
<td>13 30 10 3</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Faculty of Animal &amp; Animal Product Technology</td>
<td>12 5 3 2</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Institute for Biotechnology</td>
<td>22 11 2</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Institute of Horticulture</td>
<td>10 3</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Faculty of Agri-business Management</td>
<td>10 5 2</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Institute of Fisheries (Currently Aquaculture department)</td>
<td>5 4 2</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Faculty of Gender Studies and Home Science</td>
<td>10 8 6</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Faculty of Biodiversity and Environment</td>
<td>25 18 5</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Faculty of Social Science and Humanities and Management</td>
<td>10 8 5</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Faculties of Basic Science and Agricultural Engineering</td>
<td>10 8 5</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>College of Hill Agriculture and Forestry</td>
<td>16 10</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>College of Food and Post Harvest Technology</td>
<td>16 10</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Faculty of Soil Conservation and watershed management</td>
<td>25 20</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>52 128 183 70 149 90 150 83</td>
<td></td>
</tr>
<tr>
<td>Grand total (Faculty)</td>
<td></td>
<td>564</td>
<td></td>
</tr>
<tr>
<td>Grand total (Staff)</td>
<td></td>
<td>371</td>
<td></td>
</tr>
<tr>
<td>Total (Faculty and Staff)</td>
<td></td>
<td>935</td>
<td></td>
</tr>
</tbody>
</table>
Proposed Human Resource Development Plan of AFU

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PhD study for faculty members</td>
<td>30 Abroad 10 AFU</td>
<td>30 Abroad 10 AFU</td>
<td>15 Abroad 5 AFU</td>
</tr>
<tr>
<td>2</td>
<td>Short term exposure trainings to faculty members</td>
<td>20</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Medium term trainings to faculty members</td>
<td>40</td>
<td>40</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Short term exposure trainings to support staffs</td>
<td>40</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>Short term trainings to the lab technicians</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

National and international collaborations

- College of Agriculture and Resources (CANR) Michigan State University (MSU), USA.
- Virginia Polytechnic Institute and State University, (Virginia Tech), USA
- The Tokyo University of Agriculture and Technology, Japan
- National Pingtung University of Science and technology, Taiwan
- Nepal Agricultural Research Council, (NARC)
- Department of Agricultural Development (DoAD)
- Department of Livestock Development Services (DLS)
- Ministry of Forests and Soil Conservation (MOFSC) Government of Nepal
- Local initiatives of Biodiversity, Research and Development (LIBIRD) Pokhara
- World Fish Center, Bangladesh
University in floriculture Development

• Academic Programme
  - B.Sc. Horticulture
  - Floriculture elective in undergraduate courses
  - M.Sc. and PhD Agriculture specialized in floriculture (ongoing)
  - M.Sc. and PhD in Horticulture Floriculture and Land Scape (future)

University in Floriculture

• Researches
  - Thesis by postgraduate students (M.Sc. And PhD)
    (15 M.Sc. students conducted thesis on Floriculture)
  - On station Floriculture research by university faculties (demonstration plots)

• Extension and promotional activities
  - Provide technical support to peripheral commercial growers
  - Organize short term training for floriculture farmers
Future Strategy of University

- Academic courses specialized in horticulture (floriculture)
- Mandatory provision of Student focused faculty research
- University has to implement enterprising of potential agriculture commodities including floriculture (LEE for B.Sc. Ag as an internship for one year)
- Plan to develop outreach centers to harness comparative advantages of ecological variations
- Promote import substitution in floriculture crops
- Krishi Bigyan Kendra establishment in adjoining districts of the university as resource center

Areas of improvement

- Develop sound coordination/ information sharing/ partnership among the key areas of Agriculture services: Academia, Research, Extension and industry,
- Adequate infrastructures/ human resources/ budget/ appropriate technology need be provisioned,
- Strengthen and activate all value chain actors of floriculture,
- Investment of private sector in floriculture research and academics.
Group Discussion on First Session (National)

During the group discussion, all the participants were divided into four groups. The four groups were given following topic to discuss their roles:
Role of Extension agency in Nepal
Role of Education agency in Nepal
Role of Research agency in Nepal
Role of private sector in Nepal

In each of these groups, efforts were made to include members of above four agencies so that there could be more interaction between parties within the group. The topics of discussion were; what are these agencies doing today and what should be their role to strengthen and make Nepalese floriculture dynamic and competitive. These discussions were very interesting and very positive outcome was achieved. The final outcome of this discussion has been summarized as given below.

Role of Extension agency (Department of Agriculture)

What is happening today?
1. Lack of program
2. Lack of practical
3. Present status of policy and program
4. Lack of technical resource person and whatever available not placed in right place
5. Lack of coordination with professional, Research and Extension sector
6. Lack of market information

What should be happening today onwards?
1. Program should be needed practically.
2. Program should be need based.
3. Subject matter specialist should be posted in right place.
4. To provide technical training to Agriculture officer (who are involved in floriculture sector)
5. SMART

Role of Education agency

What is happening today?
1) Lack of human resource with adequate exposure to floriculture
2) Lack of coordination with private sector
3) Lack of researcher in flori-business
4) Not very useful research for industry
5) Academically trained people in floriculture not involved in flori business

What should be happening today onwards?
1) Designing of courses based on applicable curriculum for science and industry.
2) Students to be given sound exposure to both cultivation technology and marketing.
c) To make policy to discourage out migration of human resource.
d) Collaboration with industry and other public sector agencies in this sector

**Role of Research agency**

**What is happening today?**
a) Minimal investment for research in floriculture sector
b) Research is not problem based
c) Lack of adequate researchers in this sector.
a) Approx 5% support for floriculture for example: Marigold, Orchid
b) Linkage is not mentioned with research and entrepreneurs.
c) The model of 3P is of little use in floriculture.
d) Lack of resource sharing base research
e) Technology demand is increasing but lacks research support.

**What should happen today onwards?**
a) Global market inventory
b) Provide to authorize propagation technique.
c) Seed production- variety release and registration.
d) Supply of market demand base varieties.
e) Indigenous flowers (plant) should be promoted.
f) Seed & planting material improvement.
g) High production technology

**Role of Private sector**

**What is happening today?**
a. Provides Livelihood program to many people (economic, Social)
b. Provides Employment
c. Environmentally friendly and helps plant diversity conservation
d. Aesthetics
e. Creates opportunity for self employment
f. High investment
g. It is of low priority in public sector programs

**What should be happening today onwards?**
a. Produce skillful human resource
b. Research directed towards development of floriculture
c. Adequate input supply for flori-business
d. Secure market management
e. Effective insurance scheme for flori-business
f. Effective cordial involvement of multi stockholders
   • MoAD, NARC,
   • Universities
   • Private sector
1. Brief History of Floriculture in Bangladesh:

Flowers are the symbol of beauty and Bangladesh is the country of natural beauty. Many flowers are available locally. Many people are associated with the commercial cultivation of flowers as flowers have the great economic value and export potential. The floricultural industries are one of the fast growing industries in many developing and underdeveloped countries. Bangladesh is not an exception. Growth of commercial flower production can be traced back to the early 70s that got impetus in the mid 80s when large-scale commercial production started in Jhikargacha upazila of Jessore district (Sultana, 2003). Later it speeded largely in Jessore, Savar, Chuandanga, Mymensingh and Gazipur which turned to be the major flower production belt in Bangladesh. Presently, Jessore is home to 70% of Bangladesh’s flower production and engages 5000 growers in a small, but dynamic industry. The newly growing production belts are found in Chittagong, Cox’s Bazar, Rangpur, etc for flowers and Khulna, Bandarban, Khagrachori, Rangamati for ornamental plants.

2. Area and Production:

Approximately 8,000 farmers are involved in flower cultivation and 2000 to 3000 farmers in ornamental plants on commercial basis. About 100,000 to 120,000 people are directly or indirectly involved in floriculture industry for their livelihoods. The area coverage under commercial flower cultivation is approximately 10,000 hectares of land while commercial nurseries have covered approximately 2,000 to 2,500 hectares of land (Momin, 2006). At present, flower marketing is not fully organized in Bangladesh. Major traders for flowers can be found in Shahbag, Farmgate and Gulshan in Dhaka. Substantial trade can also be found in Chittagong and other big cities. There are reportedly around 4000 retail shops of flowers in the country. Forty per cent of the retail shops are located in Dhaka, while Chittagong and Sylhet having 25 per cent each and the remaining 10 per cent of the shops are in other district towns. At a wholesale flower market (in Dhaka), some 700 traders do flower business worth at least $16,000 every day. Every year Bangladesh exports a large amount of flower by different intermediaries in the world market, which include mainly cut flowers and ornamental foliage. To satisfy the market demand, various flowers, such as chrysanthemum, tuberose, gladiolus have been imported from India and orchids, gerbera, anthurium and Thai rose from Thailand and China every year. Bangladesh has to spend roughly Tk. 2-3 million in importing flowers and ornamental plants from abroad. Larger share of export receipts of cut flowers and ornamental foliage, live trees and plants by Bangladesh in 2009-2010 was from European countries, while larger share of import expenses for the same period was from China and Indonesia. Table 1a shows continent-wise export receipts (from FY 2003-04 to 2009-10) and Table 1b shows country-wise import expenses (from FY 2005-06 to 2009-10) of Cut Flowers and Ornamental Foliage, Live trees and Plants by Bangladesh.

Mohammad Raisul Islam
Executive Member of Bangladesh Flower Grower's & Exporter's Association,
President, Dhaka City Nursery Owner's Association
Table 1a. Continent wise export receipts of cut flowers and ornamental foliage, live trees and plants of Bangladesh.  

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>12,843</td>
<td>210</td>
<td>-</td>
<td>178</td>
</tr>
<tr>
<td>Asia</td>
<td>78,591</td>
<td>133,698</td>
<td>234,446</td>
<td>458,686</td>
<td>1,060,066</td>
<td>1,227,430</td>
<td>1,217,577</td>
<td>4,410,494</td>
</tr>
<tr>
<td>Australia</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>463</td>
<td>1,676</td>
<td>-</td>
<td>-</td>
<td>2,139</td>
</tr>
<tr>
<td>Europe</td>
<td>270,912</td>
<td>360,912</td>
<td>542,157</td>
<td>951,017</td>
<td>802,897</td>
<td>755,652</td>
<td>-</td>
<td>6,721,061</td>
</tr>
<tr>
<td>North America</td>
<td>879</td>
<td>2,813</td>
<td>32,455</td>
<td>37,799</td>
<td>-</td>
<td>19,949</td>
<td>17,973</td>
<td>111,868</td>
</tr>
<tr>
<td>South America</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>787</td>
<td>-</td>
<td>787</td>
</tr>
<tr>
<td>Total</td>
<td>350,382</td>
<td>497,423</td>
<td>809,058</td>
<td>1,460,808</td>
<td>1,864,849</td>
<td>2,003,818</td>
<td>4,273,242</td>
<td>11,259,580</td>
</tr>
</tbody>
</table>

Source: Annual Export Receipts 2003-04 to 2009-10, Statistics Department, Bangladesh.

Table 1b. Country-wise import Expense of cut flowers and ornamental foliage, live trees and plants of Bangladesh.  

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>China, People’s Republic</td>
<td>24</td>
<td>501</td>
<td>473</td>
<td>2378</td>
<td>7944</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>0</td>
<td>2737</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Hong Kong</td>
<td>0</td>
<td>7160</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>132</td>
</tr>
<tr>
<td>India</td>
<td>857</td>
<td>1282</td>
<td>537</td>
<td>5762</td>
<td>5732</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>472</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5142</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1849</td>
<td></td>
</tr>
<tr>
<td>Korea, Republic of</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>129</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4654</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Pakistan</td>
<td>525</td>
<td>1348</td>
<td>644</td>
<td>3999</td>
<td>801</td>
<td></td>
</tr>
<tr>
<td>Singapore</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>606</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>2596</td>
<td>1116</td>
<td>2030</td>
<td>10587</td>
<td>2473</td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>0</td>
<td>2781</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>USA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4474</td>
<td>16925</td>
<td>3684</td>
<td>33257</td>
<td>19056</td>
<td></td>
</tr>
</tbody>
</table>

Source: Annual Import Payments 2005-06 to 2009-10, Statistics Department, Bangladesh.

3. Number and sizes of farms:  
There are approximately 8000 flower farms in Bangladesh. Around 10,000 hectares of land are under flower cultivation in Bangladesh. (Source: Bangladesh Flower Growers and Exporters Association (BFA) in 2013. Most of the farms are based in south-west part of Bangladesh. There are four categories of floriculture farms in Bangladesh.  
 a) Marginal sized farm: Less than 0.2 ha. About 50% are marginal farms  
  b) small sized farm: 0.2-0.39 ha and 16% of total farms  
  c) Medium sized farm: 0.4-1.0 ha that is 20% of the total and  
  d) Large sized farm 14%: above 1 ha of land.
4. Growth of Business over years:
   According to EPB export data, the country exported cut flowers and foliage worth $16.58m during July-November 2013, an amount that is 15.2% more than that of the export target of Bangladesh. Export of flowers and floral products has seen an impressive growth contributing to the GDP as the entrepreneurs are trying to tap a strong demand for the non-conventional product in global market (source Export Promotion Bureau).
   The traders play an important role in the marketing of flowers, and the number of traders in flower business is about 1200 to 1500 in the country. The major markets of floriculture products are in Dhaka, Chittagong, Gothkhali (Jessore), Feni, Rangpur, Phultala (Kulna), Sorupkathi, Natore, Bogra and Mymensingh. The annual turn out in the wholesale markets is more than Tk.100 crore, and in the retail market it is about Tk.200 crore. It is estimated that about 80-90 thousand people of the country are directly or indirectly involved in the floriculture industry for livelihood.
   Bangladesh exports flowers and floral products to India, Pakistan, Italy, Portugal, Saudi Arabia, the United States, South Korea, the Philippines, Singapore, Japan, Germany, Britain, Denmark and France.
   Kenya, Israel, Zimbabwe, Ecuador, Uganda appeared as major flower exporting countries as the cut flower trade is a multibillion dollar world industry with the United States, Germany, the Netherlands, the United Kingdom, Switzerland, Italy, France, and Japan being major world consumers. (EPB, January, 2014)

5. Major Cut flowers/foliages:
   Bangladesh was highly suitable for cut flower and foliage production due to its favourable climatic, topography and other conditions like labour cost and relatively low capital investment in contrast with high value addition. Tube rose, rose, orchid and marry gold are among the major flowers that make up Bangladesh’s floral basket for exports. Most of the tuberose and rose supplies come from Jhikargachha of Jessore and Savar of Dhaka, marry gold from Chuadanga and orchid from Mymensingh and Manikganj.

6. Major ornamental plants:
   The major ornamental plants maintained in different nurseries for sale are, Crotons, Ixora, Thuza, Palms, Araucaria, Musaenda, Dahlia, Cactus, Ferns, Aralias, Dracaena, China Box, Century Plants, Bromeliads, Needle Pine, Chlorodendram, Hydrangea and Kalonche. The ornamental plants maintained in the nurseries are either produced by the nurserymen or collected from local and foreign sources. The approximate area under nurseries producing ornamental plants is about 1100 hectares, and the total area of land under the floriculture industry at present is about 4450 hectare (Miah et al., 2006).
   The scope for export of cut flowers and ornamentals from Bangladesh has not yet been properly explored. In the year 2004-05, an amount of US$73,39,000 was earned through export of flowers and ornamentals (EPB, 2005). On the other hand, the import of flowers and ornamental plants would be worth of around Tk.2-3 million per year. Generally, chrysanthemum, tuberose and gladiolus are imported from India, and orchids, gerbera, anthurium and roses are imported from Thailand. Smuggling in of cut flowers and ornamental plants is a common practice in the south-western border belts of Bangladesh.
1. Growth trend in different sub sectors of floriculture; nursery, landscaping, seeds, cut flowers, export etc. According to EPB export data, the country exported cut flowers and foliage worth $16.58m during July-November 2013, an amount that is 15.2% more than that of the export target, reports BSS

2. Role of government agencies (department of horticulture/agriculture, bangladesh agriculture research council and university

**DAE:** Department of agricultural Extension is transferring technology to the farmers level through Horticulture Centre of DAE.

**Hortex Foundation:** Horticulture Export Development Foundation, in short, Hortex Foundation was established in 1993 at the patronage of the Ministry of Agriculture, Government of the People’s Republic of Bangladesh as a non-profit organization. It is governed by a Governing Body of Seven Directors. Secretary, Ministry of Agriculture, Government of Bangladesh is the Chairman while Managing Director is the Chief Executive Officer of the Foundation.

The Foundation is involved for the development, promotion and marketing of exportable horticultural/Floriculture produces through technological intervention, advisory and necessary logistic supports in order to boost national economy and the different stakeholders’ income. They are also providing refrigerator van to carry flowers or plants from farmer’s field to airport and helps for proper packaging and preservation.

**HRC:** Horticulture Research Centre under Bangladesh Agricultural Research Institute (BARI) develops technology both post harvest and pre-harvest of floriculture.

**BARC:** Bangladesh Agriculture Research Council is the umbrella organization of all agricultural research institute of Bangladesh.

**University:** All agricultural universities have horticulture department. Floriculture is a part of horticulture department. Every year many Masters and few PhD students are obtaining degree on.

1. **Floriculture Policy:** Actually we have a nursery guideline policy that was prepared by Seed Wing under Ministry of Agriculture and published 2008.

2. Total investment in this sector etc and all information relevant to floriculture in Bangladesh: According to Bangladesh Flower Grower’s & Exporter Association the total investment in this sector is approximately 400 crore taka.

**Conclusion:**

Flori-culture sector is one of the growing sectors in Bangladesh. Uses of flowers in various purposes are increasing day by day. New traders and service providers are coming to the business. Investor like Banks, donors are also coming for investment in this sector. Government is giving emphasize to improve this sector. But still we have to do many things on pre harvest and post harvest technology like cool chain management, storage facilities, preservation, and packaging etc. Air shipment and air space are still not sufficient. For improving this sector in Nepal and Bangladesh, we have to do lot of things for developing this sector and we can urge our government to take more initiative for expanding floriculture business nationally and globally.
Floriculture:

- Includes Production and marketing of flower & potted plants, garden bedding plants, cut flowers and greens.
- Flowers are integral part of mankind since time immemorial, when it was used for religious offerings and other social ceremonies.
- In past, requirements were met form homegrown plants. Now with increasing demand and use of flowers other than only in religious and social ceremonies, floriculture sector has become more commercial and organized sector.

Floriculture Trade

Offers :-
- Self Employment,
- Good remuneration for the small and marginal farmers
- Now trend for demand of quality, long vase life, colour for arrangement,
- In India, consuming cities are New Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Chandigarh, Jaipur, Ahmedabad, Goa, Cochin, Guwahati etc.

World Status
Consumer Countries:-
- Germany 22%,
- US 15%
- France and the UK 10%,
- the Netherlands 9%,
- Japan 6%,
- Switzerland 5% and
- Italy 5%
# Major Exporter of Floriculture in 2012

<table>
<thead>
<tr>
<th>Countries</th>
<th>Year 2012</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quantity (MT)</td>
<td>Value (USD)</td>
</tr>
<tr>
<td>Netherlands</td>
<td>705730</td>
<td>4602077</td>
</tr>
<tr>
<td>Columbia</td>
<td>201949</td>
<td>1270007</td>
</tr>
<tr>
<td>Ecuador</td>
<td>127236</td>
<td>771290</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>125839</td>
<td>526338</td>
</tr>
<tr>
<td>Kenya</td>
<td>104639</td>
<td>597716</td>
</tr>
<tr>
<td>Malaysia</td>
<td>77741</td>
<td>121019</td>
</tr>
<tr>
<td>China</td>
<td>28699</td>
<td>89989</td>
</tr>
<tr>
<td>Thailand</td>
<td>24170</td>
<td>75962</td>
</tr>
<tr>
<td>Mexico</td>
<td>20828</td>
<td>27257</td>
</tr>
<tr>
<td>Spain</td>
<td>18257</td>
<td>29130</td>
</tr>
<tr>
<td>Others</td>
<td>123542</td>
<td>1183607</td>
</tr>
<tr>
<td>Total</td>
<td>1558630</td>
<td>9294392</td>
</tr>
</tbody>
</table>

# Indian Scenario

## Florigicuture Exports from India

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (Rs. Cr)</th>
<th>% Growth over last year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009–2010</td>
<td>294.46</td>
<td></td>
</tr>
<tr>
<td>2010–2011</td>
<td>296.04</td>
<td></td>
</tr>
<tr>
<td>2011–2012</td>
<td>365.32</td>
<td>23.3</td>
</tr>
<tr>
<td>2012–2013*</td>
<td>385.00</td>
<td>16.6</td>
</tr>
</tbody>
</table>

*For the First 11 months between April 2012 to Feb 2013  
Source: APEADA
State-wise Area and Production of Flowers (2012–2013)

<table>
<thead>
<tr>
<th>State</th>
<th>Total Flowers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area (000 Ha)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Karnataka</td>
<td>29.81</td>
</tr>
<tr>
<td>West Bengal</td>
<td>24.41</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>22.00</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>34.50</td>
</tr>
<tr>
<td>Odissa</td>
<td>7.52</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>15.88</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>1.56</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>0.91</td>
</tr>
<tr>
<td>Jharkhand</td>
<td>1.60</td>
</tr>
<tr>
<td>Haryana</td>
<td>6.38</td>
</tr>
<tr>
<td>Others</td>
<td>79.47</td>
</tr>
<tr>
<td>Total</td>
<td>224.04</td>
</tr>
</tbody>
</table>

Government Supports to farmers in India

Since Agriculture is the backbone of Indian economy; Government of India has a sound strategy to support the whole agriculture/horticulture sector through various agencies as follows:

- (1) National Horticulture Board
- (2) National Horticulture Mission
- (3) APEDA
- (4) National Skill Development Corporation
- (5) State Agri./Hort. Departments
## Role

<table>
<thead>
<tr>
<th>Agency</th>
<th>Facility/Assistance</th>
</tr>
</thead>
</table>
| National Horticulture Mission | * Poly house / Green house → 50% subsidy (Maximum Limit up to Rs 50 Lakh)  
* Cold storage → Up to 55% subsidy  
* Refrigerated Van → Up to 55% subsidy |
| National Horticulture Board | * Poly house /Green house → 25% (with ceiling of Rs. 50 lakh & maximum area of 4000 sq mt is considered.) |
| APEDA  
The Agricultural and Processed Food Products Development Authority | * Cold Storage Units: 25% of project cost  
(33% in hilly area)  
* Transport Assistance (TA) in Export of Fresh cut flowers as  
  1. 20% of FOB value  
  2. 25% of Freight charges  
* TA in Reefer Van  
  1. 33% of Freight in Inland transit,  
  2. 50 % of Ocean Freight |
| State Agri./Hort. Department | * Provides: Education, Residue Testing and Soil Testing laboratory, Agro Polyclinic and Taluka Seed Farms  
* Scrutinize and make Panel of GH erectors for quality material e.g. Gujarat State Dept. |
Floriculture in Himachal Pradesh

Dr. N.M. Sharma

Himachal Pradesh

- Located in north western part of India.
- Geographical area of 55,673 km², population of 6.2 million, inhabited in 20,126 villages and towns.
- 92 percent of the population is rural and literacy is 78%.
- Known as the “Apple State of India” now diversifying in floriculture.
### Agro Climatic Zones for Floriculture

<table>
<thead>
<tr>
<th>Zone description</th>
<th>Elevation range (Meters msl)</th>
<th>Rainfall (cms)</th>
<th>Suitable Flower Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Hill and Valley Areas near the plains</td>
<td>350 – 900</td>
<td>60 - 100</td>
<td>Gladiolus, Carnation Lilium, Marigold, Chrysanthemum, Rose</td>
</tr>
<tr>
<td>Mid Hills (Sub Temperate)</td>
<td>900 – 1500</td>
<td>90 – 100</td>
<td>Carnation, Gladiolus, Lilium, Marigold, Chrysanthemum, Alstroemeria, Rose</td>
</tr>
<tr>
<td>High Hills and Valleys in the interiors (Temperate)</td>
<td>1500 – 2750</td>
<td>90 - 100</td>
<td>Gladiolus, Carnation Lilium, Marigold, Chrysanthemum</td>
</tr>
<tr>
<td>Cold and Dry Zone (Dry Temperate)</td>
<td>2750 – 3650</td>
<td>24 - 40</td>
<td>Seed/ Corm/ Bulb production</td>
</tr>
</tbody>
</table>

### Commercial Floriculture in Himachal Pradesh

<table>
<thead>
<tr>
<th>Year</th>
<th>Area (hectares)</th>
<th>Gross Value (Rs. in lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-08</td>
<td>583.44</td>
<td>9754.65</td>
</tr>
<tr>
<td>2008-09</td>
<td>617.86</td>
<td>9998.15</td>
</tr>
<tr>
<td>2009-10</td>
<td>681.86</td>
<td>913.79</td>
</tr>
<tr>
<td>2010-11</td>
<td>812.9</td>
<td>659.85</td>
</tr>
<tr>
<td>2011-12</td>
<td>859.85</td>
<td></td>
</tr>
<tr>
<td>2012-13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
COMMERCIAL FLOWERS GROWN IN HIMACHAL PRADESH

- Gladiolus
- Marigold
- Carnation
- Chrysanthemum
- Rose
- Lilium
  - Asiatic
  - Oriental

FUTURE POTENTIAL

- Alstroemeria
- Limonium
- Zantedeschia
- Iris
- Strelitzia
- Tulips
- Gerberas
- Orchids
CONDUCTIVE CONDITIONS

- A large variety of cut flowers, bulbs, seeds, live plants, being propagated.
- Power required for floriculture operations charged at domestic rates.
- Cultivation under controlled conditions in greenhouses/polyhouses.

SERVICES PROVIDED BY THE DEPARTMENT OF HORTICULTURE

- Training
- Organization of Study Tours
- Free technical advice in pre and post-harvest technologies.
- Organization of Flower Shows.
- 48 Flower Growers Co-operative Societies registered.
- Liberal financial assistance from APEDA, National Horticulture Board, Horticulture Technology Mission.
**STEPS INITIATED TO PROMOTE FLORICULTURE**

- Encouraging farmers to undertake the production and marketing of floriculture produce on a Co-operative basis.
- Encouraging specific flower crops in intensive floriculture zones.
- Making quality planting material on a large scale and necessary inputs available.
- Creating more public awareness regarding use of floriculture produce through media.

**ADVANTAGES**

- The Agro climatic conditions prevailing in the State of Himachal Pradesh offer excellent opportunities for the development of floriculture both to serve the internal off-season market and also exports.
- A large variety of floriculture products, viz., cut flowers, bulbs, seeds, live plants, etc. can be produced.
- The natural agro climatic conditions offer ideal production environment for flowers and the planting material i.e., expensive heating and cooling systems in the greenhouses are not required.
- Power required for running the greenhouses is charged at domestic rates in the State.
- Flowers from different agro climatic zones of the State can be made available from open field cultivation all through the year for domestic market, however, export quality flower produce can be ensured only by cultivation under controlled environmental conditions of greenhouses.
RESEARCH & DEVELOPMENT SUPPORT

- Dr. Y.S. Parmar University of Horticulture & Forestry, Solan.
  - A full fledged Department of Floriculture & Landscaping.
  - Regional Research Stations located in all Agro climatic Zones of the State.

- Institute of Himalayan Bio-resource Technology (IHBT) in District Kangra.

- ICAR Research Station at Kullu.

- National Bureau of Plant Genetic Resources, Shimla.

EXISTING MARKETING ARRANGEMENTS

- Main Market Delhi
- Distances ranging from 325 to 650 kms
  - Flowers sent by farmers through night bus services.
  - Sold on the footpaths in front of State Emporia, Connaught Place.
  - Traders forced to wind up business around 9 AM.
  - No place to hold/ store the flowers
  - Producers forced to sell flowers at a throwaway prices
MARKETING CONSTRAINTS IN DELHI

- Absence of regulated markets.
- Lack of post harvest infrastructural facilities like pre-cooling, refrigerated transport, storage and marketing network.
- Matter taken up with Chief Minister, Delhi; Agriculture/ Commerce & Industries Ministries, Govt during June 2006, highlighting the need for:
  - Having infrastructure on Build, Own & Operate basis giving representation to HP, J & K and Uttranchal on the Governing Body.
  - Modern Floriculture Market.
  - Auction-cum-Transit storages.
  - Cool chain back up.
Diversification from traditional agriculture to growing carnations, gladiolus, lilium, chrysanthemum, alstroemeria, marigold, etc.

Annual income from traditional crops:

: Rs. 15,000 - 20,000 (per hectare)

Income from floriculture after diversification:

- Carnations : Rs. 13,75,000 (per hectare)
- Gladiolus : Rs. 32,500 (""")
- Lilium : Rs. 11,40,000 (""")
- Chrysanthemum : Rs. 1,16,500 (""")
- Alstroemeria : Rs. 17,40,000 (""")
- Marigold : Rs. 55,000 (""")

*Average of initial 3 years’ production
Gladiolus hybrids developed by the Dr. Y. S. Parmar University of Horticulture & Forestry

Carnation Production
Lilium

Chrysanthemum
Brief of the technical session of international workshop of floriculture in Kathmandu:

Bikash Khanal

The workshop was organized by FAN along with PACT on March 28, 2014 in Trade Tower Business Centre (Pearl Hall).

The domestic presentation was presented by Prof. Dr. Dilliram Baral (Dean of AFU), Mr. Pursottam Khatiwada (Senior scientist, HRD, NARC), and Mr. Loknath Gaire (President of FAN). The questions raised from the floor regarding domestic presentation were:
1. How government is playing role in marketing of floriculture products? Scope regarding the Chovar horticultural products sale centre.
2. What are the insurance schemes in floricultural products?
3. What are the major component of Pushpa Niti?
4. How many graduates university produces every year? What is university policy for the further program of graduates?
5. Can we produce hybrid seeds on floriculture?

Along with questions there were suggestions to the presenters:
6. The presenters should be focused in concerned agencies and focus groups. The sectors which are reasonable in floriculture should be identified. Duplication of the products should be controlled. Marketing of the products should be managed by different ministries.
7. Production of Gompherena. Import of flower seed is 80% which should be minimized. Trial test of imported flower seed should be done in research centers.
8. Value addition of products should be done. Preparation of rose water and Laligurans juice could be done.
9. Policies regarding subsidy in floriculture business should be done. One village one flower policies could be started. Quality in production should be maintained. Cold storage facilities should be started and optimized. Local varieties and their germplasm collection should be done. Lab to field work for students should be done. Thesis grants should be provided to the students by the government. Removal of plastic flower and concept of plastic flower is a dust should be developed. (Mrs. Kalyani mishra tripathi, Associate professor of horticulture in AFU).
10. Practical awareness program should be launched. Researcher should be sustained, awarded and promoted.
11. Representative from PACT spoke about:
   • Need of wholesale market
   • Lack of infrastructure
   • Lack of land for market establishment.
Response from reserter:

1. **Prof. Dr. Dilliram Baral:**
   - Human resources are planned to be developed according to market demand.
   - We have limited number of human resources which should be increased soon.
   - We have just 1 PhD student and 13 Masters Students (3 students from in-service) in horticulture in AFU now.
   - MSc horticulture with specialization in floriculture will be started soon in future.

2. **Mr. Pursottam Khatiwada:**
   - Indigenous varieties are conserved.
   - Seed law governs the testing, trial showing of the imported seed. The main thing is law should be properly followed by the businessman themselves.
   - In action plan, university is also one of the main stakeholders of floriculture.
   - Subsidy to the commodity and the types of services could be done.
   - NARC can make hybrid seed of flowers but there is lack of financial, physical and human resources.
   - Stakeholders should capacitate the government so that government will be enforced to work in this field.

3. **Loknath Gaire:**
   - Insurance schemes plan has started and plan is developing.
   - Marketing should be promoted after technical strengthening.
   - Value additions are being in trial.
   - Factories should be established for the value addition.
   - Variety selection should be done for value addition.
   - University should share extension services to FAN.
   - Floricultural human resources should be promoted by collaboration with FAN.

After this, group interaction was conducted by making groups with people from different sectors in each group. In each group there were representatives from universities, business, policy makers, researchers and students. The report’s recommendation were presented by the group leaders.

After group interaction international presenters presented their presentations. The international presenters were Mr. Mh Raisul Islam (Executive member, Bangladesh Flower Growers and Exporters organization, Dhaka, Bangladesh), Mr. Kiran Deokar (Senior Technical Manager, KF Bioplants, Pune, India) and representative of Himachal Pradesh.

**The questions for the international presenters were:**

1. How could subsidy be paid to the farmers by the government?
2. How could the action plan be followed regarding the subsidy?
3. How could you make the climate favorable for the floriculture business in India?
4. What are the research and technologies used to increase the flower production?
5. What may be the temperature of the regions of Himachal Pradesh?
6. For Bangladeshi presenter:
   - What is your market intelligence process?
• How are you meeting your quality standards?
7. Are subsidy is provided on need assessment basis?

Answers presented by the presenters:

Himachal Pradesh presenter:
• Temperature: summer 45°C and winter 2-3°C
• Microclimate plays important role in growth of flowers
• Planning is done from Block to district to state headquarters and central level.
• On the basis of liberty of farmers subsidy is provided.
• After farmer complete the infrastructures government official visits the field and recommend for subsidy.
• Government gives subsidy of 85% to the farmers in construction of infrastructures.

Bangladesh presenter (Mr. Mh Raisul Islam):
• Ornamentals and foliage are mainly exported to Europe rather than flowers. Only in winter months i.e. 4 months in a year, we export flowers to the Europe.
• Other countries give information to the government about demand of flowers in different countries and then from government farmers get the information and we produce according to the demands.

Mr. Kiran Deokar (KF bioplants):
• For the better production of flower we synchronize climate with planting.
• We build poly-houses and greenhouses to manage the environmental conditions for better growth of flowers.
• Government gives subsidy of about 80% to the farmers.

This program was summarized by the chair Dr. Umed Pun and token of love was provided to the international presenters and members. This was followed by dinner.
Conclusion of the Workshop:

The workshop was participated well from all stakeholders. The national presenters were from three areas (Research and Extension, University and Industry) whereas the international presenters were from Bangladesh, India and Himachal Pradesh of India (hilly state of India having similar climatic conditions of Nepal).

The research and extension presentation highlighted the work carried out by the government. Floriculture research carried out by government institution in particular agriculture institutes was very few and the earliest record can be traced back to late 1990s. Research in crops such as Gladiolus, Carnation, Marigold and Cymbidium were carried out from time to time but the share of floriculture research is very low. The only significant research work is perhaps Breeding of Gladiolus for new variety development. Floriculture Development Center is responsible for extension work in floriculture. It has a farm that is devoted to conservation of important ornamental plants, demonstration of greenhouse cultivation of cut flowers such as Cymbidium, Carnation, Gerbera, Gladiolus etc. It also trains JT, JTAs and farmers on flower cultivation technology, disease and pest management. It was admitted that research and extension in floriculture was unable to gain priority.

The education presentation highlighted the courses offered by Faculty of Agriculture, Agriculture and Forestry University. It also highlighted the new courses to be offered in horticulture/floriculture such as BSc (Horticulture) MSc (Horticulture) Floriculture and research carried out at the university.

Private sector presentation briefed the history of floriculture development in Nepal. It also stated the healthy growth of this sector over the years. However, it was totally private driven and lacked much required support from the government. Nepalese floriculture has tremendous scope but to reap this benefit Nepalese industry needs more support from all the stakeholders. They need skilled human resource (University to develop curriculum based on need of industry), proven knowledge to be taken to large number of farmers (Department of Agriculture to extend know how) and problem based on production or postharvest technology or marketing (Nepal Agriculture Research Council to support). It also need infrastructure such as flower wholesale center, cold storage etc for rapid expansion.

The two international presenters presented current status of floriculture in Bangladesh and India. It highlighted their products and their growth trend. The third paper was from Indian state of Himachal Pradesh which is hilly and has similar climatic condition as Nepal. These three presentations were very useful to understand how floriculture is developing in our neighboring countries. It also showed how government agencies such as research, extension and universities were working in close network. Besides, it also highlighted how government was supporting flower farmers, retailers and flower exporters with financial support.

These domestic presentations gave us a clear picture of the status of Nepalese floriculture and the roles of our stakeholders. During group discussion, the expected roles of all the stakeholders were well defined and since many representatives of the stakeholders participated we could expect more coordination between the stakeholders in the future. The effective coordination between stakeholders is one of the governing principles of Floriculture Policy and it is believed this is the vehicle that shall take Nepalese floriculture to the next level.
Floriculture Development in Nepal: Prospects and Challenges
First Technical Session (National)
Program schedule
Date: March 28, 2014, Time: 2:30 PM to 4:30 PM
Venue: Trade Tower Business centre (Pearl Hall)
Chairman: Dr. Umed Pun, Coordinator, Workshop Sub Committee
Rapporter: Mr. Bikash Khanal

<table>
<thead>
<tr>
<th>Time</th>
<th>Program</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:30-2:45</td>
<td>Public sector involvement on floriculture in Nepal</td>
<td>Mr. Purushottam P. Khatriwada, Senior Scientist, HRD, NARC and Dr. Yogesh Hari Shrestha, Chief, FDC, DOA</td>
</tr>
<tr>
<td>2:45-3:00</td>
<td>Role of agriculture university in development of floriculture industry in Nepal</td>
<td>Prof. Dr. Dilli Ram Baral, Dean, AFU</td>
</tr>
<tr>
<td>3:00-3:15</td>
<td>Role of private sector in development of floriculture industry in Nepal:</td>
<td>Lok Nath Gaire, President, FAN</td>
</tr>
<tr>
<td>3:15-3:30</td>
<td>Questions &amp; Answers</td>
<td></td>
</tr>
<tr>
<td>3:30-4:00</td>
<td>Group Work</td>
<td>Facilitator :- Mr. Purusottam Khatiwada, Senior Scientist, HRD, NARC</td>
</tr>
<tr>
<td>3:30-3:40</td>
<td>Group Division</td>
<td></td>
</tr>
<tr>
<td>4:00-4:20</td>
<td>Group presentation</td>
<td>5 min per Group</td>
</tr>
<tr>
<td>4:20-4:30</td>
<td>Closing with Conclusion</td>
<td>Dr. Umed Pun, coordinator, Workshop Sub Committee</td>
</tr>
<tr>
<td>4:30-5:00</td>
<td>Tea Break</td>
<td></td>
</tr>
</tbody>
</table>

Second Technical Session (International)
Program schedule
Time: 5:00 PM to 6:30 PM
Chairman: Dr. Umed Pun
Rapporter: Mr. Bikash Khanal

<table>
<thead>
<tr>
<th>Time</th>
<th>Program</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:00-5:20</td>
<td>Floriculture in Bangladesh</td>
<td>Mr. Mh. Raisul Islam Executive member Bangladesh Flower Growers’ and Exporters Association, Dhaka, Bangladesh</td>
</tr>
<tr>
<td>5:20-5:40</td>
<td>Floriculture in India</td>
<td>Mr. Kiran Deokar Senior Technical Manager, KF Bioplants, Pune, India</td>
</tr>
<tr>
<td>5:40-6:00</td>
<td>Floriculture in Himachal Pradesh</td>
<td>Dr. N.M. Sharma, Himanchal Pradesh. India</td>
</tr>
<tr>
<td>6:00-6:20</td>
<td>Questions</td>
<td></td>
</tr>
<tr>
<td>6:20-6:25</td>
<td>Token of Love</td>
<td>FAN President</td>
</tr>
<tr>
<td>6:25-6:30</td>
<td>Closing with Conclusion</td>
<td>Dr. Umed Pun, Coordinator, Workshop Sub Committee</td>
</tr>
<tr>
<td>6:30</td>
<td>DINNER</td>
<td></td>
</tr>
</tbody>
</table>
## Participants list

### (1) Research (NARC) Participants

<table>
<thead>
<tr>
<th>S.N</th>
<th>Group Code No</th>
<th>Name</th>
<th>Contact Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Dr. Krishna P. Paudyal</td>
<td>NARC</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Purushota Khatwal</td>
<td>NARC</td>
</tr>
</tbody>
</table>

### (2) Private Industry (Floribusiness) Participants

<table>
<thead>
<tr>
<th>S.N</th>
<th>Group C. No</th>
<th>Name</th>
<th>Organization /Address</th>
<th>Contact number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Rajendra Rai</td>
<td>Parijat Nursery, Barikhel, Godawari, Kathmandu</td>
<td>4231101,4230886, 9803565366</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Kumar Kasaju shrestha (Vice President of FAN)</td>
<td>Kathmandu Nursery, chabahil, kathmandu</td>
<td>9851079770</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Kuber Jung malla</td>
<td>Lalitpur</td>
<td>9851045032</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Bhoj Raj Timalsina (Exe Member of FAN)</td>
<td>Unique Flora Farm</td>
<td>984148813</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Shreedhar Karki (Past President of FAN)</td>
<td>Bagmati Nursery, Tinkune, Koteshwor, Kathmandu</td>
<td>9841350368, Tel-4484142</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>Suresh shrestha (Past President of FAN)</td>
<td>The Standard Nursery, Basbari, Kathmandu</td>
<td>9851050073, Tel-4372522/4229185</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>Mohan Bahadur Thapa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>Ramesh Manander</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Dr. Umesh Pun</td>
<td>Himalayan Flora, Lalitpur</td>
<td>9851003113</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>Hari Ram Shrestha (Exe member of FAN)</td>
<td>Evergreen Nursery, Godawari, Lalitpur</td>
<td>9741027979</td>
</tr>
<tr>
<td>11</td>
<td>3</td>
<td>Keshab Raj Sharma</td>
<td>Morning Glori Nursery</td>
<td>9851098574</td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>Rudra Kumar Sunuwar</td>
<td>TTR Bangalamukhi Nursery</td>
<td>9841302920</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>Min Bahadur Tamang (Treasurer of FAN)</td>
<td>Rakshya Nursery Maharajgung, Kathmandu</td>
<td>9851093822</td>
</tr>
<tr>
<td>14</td>
<td>2</td>
<td>Bishal Khadka</td>
<td>Bishal Nursery, Maharajgung</td>
<td>9841386742</td>
</tr>
<tr>
<td>15</td>
<td>3</td>
<td>Sushil Khadka</td>
<td>JS Nursery, Bhaktapur</td>
<td>9851134898</td>
</tr>
<tr>
<td>16</td>
<td>4</td>
<td>Amrit Khadka</td>
<td>Ritu Agro</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>Mandir Shrestha</td>
<td>Siam Floritech Lalitpur</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>2</td>
<td>Prakash Panta</td>
<td>Abloom Flora (P) Ltd, Chitwan</td>
<td>9855057207</td>
</tr>
<tr>
<td>19</td>
<td>3</td>
<td>Sitaram Panta (Exe Member of FAN)</td>
<td>The Fresh Flower shop Jawalakhal</td>
<td>Mob 9851015334</td>
</tr>
<tr>
<td>20</td>
<td>4</td>
<td>Daya kumar Duwa</td>
<td>Golden Nursery Pokhara-8, Kaski</td>
<td>9856032717</td>
</tr>
<tr>
<td>21</td>
<td>1</td>
<td>Ram Parsad Subedi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>3</td>
<td>Raju Tamang</td>
<td>Flower Zone, Kamaladi, KTM</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>4</td>
<td>Madhu Sudan Accharya</td>
<td>Everest Floriculture P. Ltd., Ktm</td>
<td>985024500</td>
</tr>
<tr>
<td>24</td>
<td>1</td>
<td>Rita Sapkota</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>2</td>
<td>Bishwomani Pokhrel</td>
<td>Sunrise Agritech Farm, Bhaktapur</td>
<td>9851127674</td>
</tr>
<tr>
<td>S.N</td>
<td>Group C.No</td>
<td>Name</td>
<td>Address</td>
<td>Contact Address</td>
</tr>
<tr>
<td>-----</td>
<td>------------</td>
<td>-----------------------------</td>
<td>--------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>27</td>
<td>3</td>
<td>Lok Nath Gaire (President of FAN)</td>
<td>Battisputali, KTM</td>
<td>4465704</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>Rajesh Bhakta shrestha (Exe Member of FAN)</td>
<td>Crop Protech Nepal Jamal</td>
<td>9851062446</td>
</tr>
<tr>
<td>29</td>
<td>1</td>
<td>Sanjeeb Karki (Exe member of FAN)</td>
<td>Bagmati Flora (P.) Ltd., Kamaladi</td>
<td>9851008964</td>
</tr>
<tr>
<td>30</td>
<td>2</td>
<td>Dilip Bade (G. Secretary of FAN)</td>
<td>Jay Kishan Nursery, Battisputali</td>
<td>9851134467</td>
</tr>
<tr>
<td>31</td>
<td>3</td>
<td>Dr. Ram Cha. Bhusals</td>
<td>Horticulture Society</td>
<td></td>
</tr>
</tbody>
</table>

**University (Educational) Participants**

<table>
<thead>
<tr>
<th>S.N</th>
<th>Group C.No</th>
<th>Name</th>
<th>Address</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Bikash Khanal</td>
<td>Ilam</td>
<td>MRMC/TU</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Sulochana Shakya</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Prof. Dilli R. Baral</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Manoj Basnet</td>
<td>Ilam</td>
<td>MRMC/TU</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Kalyani Mishra</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>Sarswati Shrestha</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>Sabita k.</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>Pratishta Poudel</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Nisha Kandel</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>Samikshya Badal</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>11</td>
<td>3</td>
<td>Anil Tiwari</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>Padam Bdr. Subedi</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>Santosh Paudel</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>14</td>
<td>2</td>
<td>Sandip Timilsina</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>15</td>
<td>3</td>
<td>Bhaskar Poudel</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>16</td>
<td>4</td>
<td>Rajib yadav</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>Asmita Khanal</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>18</td>
<td>2</td>
<td>Prof. Dr. Kailash Nath Pyakurel, Vice Chancellor</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>19</td>
<td>3</td>
<td>Sharada Kunwar</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>20</td>
<td>4</td>
<td>Sudip Devkota</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>21</td>
<td>1</td>
<td>Ravi Kiran Adhikari</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
<tr>
<td>22</td>
<td>2</td>
<td>Santosh Lohani</td>
<td>Rampur Chitwan</td>
<td>AFU</td>
</tr>
</tbody>
</table>

**Ministry Of Agriculture (Extension) Participants**

<table>
<thead>
<tr>
<th>S.N</th>
<th>Group C. No</th>
<th>Name</th>
<th>Organization/Address</th>
<th>Contact Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Vanenath</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Rishi Ram Neupane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Shuresh Ghimire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Dr. Yogesh Hari Shrestha</td>
<td>Floriculture Development Centre, Godawari,</td>
<td>5560560</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Umanath Bhandari</td>
<td>Flora Development Center, Godawari</td>
<td>5560560</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Ganesh Kr. Shrestha</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>Mahendra man Shrestha</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.N.</td>
<td>Name</td>
<td>Organization/Address</td>
<td>Contact Address</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>-------------------</td>
<td>----------------------------------------</td>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Narrsov</td>
<td>Delhi</td>
<td>93133088215</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Shrushti Hitech</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Dr. P.C Sakluni</td>
<td>Joint Distributer Of State Horticulture Dept. Shimla</td>
<td>01712842390</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Dr. M.M. Sharma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Kiran Deokar</td>
<td>KF Bioplant , India</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Azean</td>
<td>Media Today</td>
<td>9891858646</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Siddnarth Maveta</td>
<td>Maharashtra, India</td>
<td>9899471123</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Ashok Garg</td>
<td>Raideep Agri Product</td>
<td>9717196007</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Sohit Ag</td>
<td>New Delhi, India</td>
<td>7417196007</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Harsimran Singh</td>
<td>Falcon Garden Tools</td>
<td>9851048883</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Gurdip Singh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Rauneet Singh</td>
<td>BlueStalloin Equipment (P.) Ltd.</td>
<td>+91-9876043891</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Roiwl</td>
<td>Bangladesh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Imak</td>
<td>Bangladesh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Shubhankar Dutta</td>
<td>Agriplast, India</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Sekder Md.Meshab</td>
<td>Bangladesh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>MDS. Nasirh Islam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Mr. Navegn Kuwar</td>
<td>Media Today India</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Kiran Patel</td>
<td>Pink Vison Agrotech</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>R.N Gupta</td>
<td>Bluestation Equipment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Photo Gallery
Technical Session (National)

Inaugural Program of Workshop.

Welcoming Prof. Dr. Kailash Nath Pyakurel, Vice Chancellor of AFU.

Welcome speech by FAN President Lok Nath Gaire.

Glance of Workshop, Technical Session (National)
Photo Gallery

Workshop Group Discussion

Token of Love distributing by Ganesh Kumar Shrestha, Program Officer of PACT.
Photo Gallery
Technical Session (International)

Glance of Workshop, Technical Session (International).

Token of Love distributing by Lok Nath Gaire, President of FAN