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Economic Analysis of Gerbera, Gladiolus and Carnation Production in Nepal



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Floriculture Association Nepal (FAN)

Baluwatar-3, Kathmandu

Study Conducted By:

INITIATIVE FOR COMMUNITY RESEARCH AND DEVELOPMENT (ICORD)

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Acronyms

AGDP	Agriculture Gross Domestic Product
BCR	Benefit Cost Ratio
CFA	Contract Farming Act
DADO	District Agriculture Development Office
DOA	Department of Agriculture
FAN	Floriculture Association of Nepal
FGD	Focus Discussion Group
FIRR	Financial Interest Rate of Return
KII	Key Informant Interview
MoAD	Ministry of Agricultural Development
NPV	Net Profit Value

1. Introduction

Floriculture

The earth laughs in flowers- Ralph Waldo Emerson

The above quote states the importance of flowers in earth and everywhere. Flowers are regarded as the one of the best creations of the god. It is generally seed-bearing part of a plant, consisting of reproductive organs (stamens and carpels) that are typically surrounded by a brightly coloured corolla (petals) and a green calyx (sepals). However, many times other parts also considered as a flower; leaves, stems, and sepals.

Flowers have traditional, cultural, and historic values along with the economic importance. So, floristry and floriculture as a business is emerged. Floriculture is a discipline of horticulture that deals with the cultivation of flowering and ornamental plants for gardens and for floristry, comprising the floral industry.

There are varieties of business related to floriculture; cut-flowers, foliages, indoor flowers, pot flowers, nurseries, and floristry accessories. The world flower economy is mainly dominated by the cut flowers. These cut flowers usually sold in bunches or in bouquets with cut foliages.

Floriculture in Nepal

Floriculture business in Nepal is believed to be started by 1950s. However, the organized and formalized endeavor began in 1992 as the Floriculture Association of Nepal (FAN). Now, Floriculture is one of the emerging businesses in Nepal and Government of Nepal is supporting to promote it as well. Floriculture Promotion Policy, 2069 is the milestone in floriculture business in Nepal which has opened the avenues for the investment and promotion of floriculture in Nepal. However, earlier various programs were also organized with the governmental supports- but they were not consistent. In 1992 GoN/MoAC and FAN organized Floriculture Promotion Fair in Kathmandu. Then after, these fairs have been attracting floriculture lovers continuously with more programs in different places and cities.

There are 675 enterprises organized for floriculture business promotion in 38 districts including more than 600 nurseries and 6 wholesale shops. In 2015, the values of flower products are: seasonal flowers produced Rs. 216.8 million, ornamental plant Rs. 381.50 million, cut flower Rs. 204.50 million, land scape and gardening flower products Rs. 170.40 million, and other flower products Rs. 67.00 million (FAN, 2016). This is one of the major sectors in providing job for more than 41,000 people in the job market.

Ornamental flowers, cut flowers and cut foliage production are spread from the southern plains to the hilly region. Chitwan, Makwanpur, Rupendehi, Jhapa, Sunsari and Mahottari are major districts in terai plains while Kathmandu, Lalitpur, Bhaktpur, Dhading, Kavare, Nuwakot and Kaski are hilly districts that grow and trade majority of the flowers in Nepal (Pun....). In 2007, the total area under floriculture production was estimated to be around 80 hectares including 30 hectares under protected sheds. However, flowers production in protected sheds has been adopted in recent times only. Similarly, micro-irrigation and high-tech greenhouses are yet to be well adopted by the growers.

Most of the floriculture enterprises are small, traditional, private and domestically owned. FAN has created a wholesale market for the flower growers. There is a great potential for expanding production if the internal issues are resolved gradually with public-private partnership.

Annual growth rate of flowers production is 24% while the import value was 0.4 million in 2014/015 (FAN, 2016). The quantity of importing flower products has been increasing annually because of higher demand than that of domestic production. In addition, the floriculture is constrained by higher cost of production that led

to importing larger quantity of flower products. Although, there is a Floriculture Promotion Policy, 2069, the flower producers and concerned stakeholders in floriculture are not fascinated and encouraged to enhance the production and productivity. Thus, it is imperative to encourage producers, traders, and entrepreneurs involved in floriculture. Therefore, this study was conducted to assess the economic and financial analysis of floriculture considering three types of flowers as Gladiolus, Carnation and Gerbera.

Cut Flower Sector in general

Cut flower business is new but regarded as one of the profitable business in Nepal. So, various innovative and industrial giants have shown their interest. The major cut flowers include Gladiolus, Rose, Carnation, Gerbera, Tuberosa, Cymbidium Orchids (including Pleione, Praecox), Chrysanthemum, Aster, Lily, Anthurium, Bird of Paradise, etc in Nepal. The domestic production now fulfills more than 80 percent of the cut flower demands while rests are imported (AEC/FAN, 2007). Earlier, Nepal use to import up to 80 percent of total flowers demand.

The private sector's enthusiasm and investment in this sector has led the growth in domestic consumption and gradual export to overseas markets. The number of small and medium sized commercial growers has increased from four in 1992 to above 500. These growers employing 2,600 persons (60%women) in Floriculture developments (Tamang, 2006). Number of problems associated with the agronomic, pathological, edaphic, and post-harvest have been increasing along with the area expansion of ornamental crops. Hence, need of research has been felt over the time. Due emphasis has not being given in the horticulture research by the government institutions and organizations. Nevertheless, some works has been culminated in the past by some organizations and individuals.

The area expansion and commercial production potentiality of various flowers are higher in Nepal because of diversified agro-ecological settings and increasing physical infrastructures. The commercial floriculture is still at very primitive stage of establishment and has been facing several constraints such as inputs, technology development and transfer, credit access, and flower market, and etc. In developing countries, smallholder farmers are frequently handicapped by ineffective extension services (Akobundu et al., 2004) and poor access to agriculture credit (Fletschner, 2008) that lead the farmers to be inefficient. Such constraints hindered the floriculture and led to higher quantity of imports of the flower products estimated to be Rs. 40 million in 2014 (FAN, 2016).

Policy support for floriculture

There are three major policy documents that supports and promotes floriculture in Nepal. They are

- National Agriculture Policy, 2004,
- Agribusiness Promotion Policy, 2006, and
- Floriculture Promotion Policy, 2012.

The prime objectives of those policies are to contribute in reducing poverty through commercialization and competitiveness of agriculture sector. In particular to Floriculture Promotion Policy, 2012, has major objectives; to import substitution and export promotion, increase the production and productivity of flowers and flower products, and enhance the private sector participation in floriculture business to enhance the Nepalese economy.

Moreover, the Fourth Plan period (1971-75) has realized the importance of floriculture for the first time and established Brihat Bagbani Centre (Floriculture Centre) in Sarlahi District. About 600 varieties of roses and 200 varieties of bougainvillea and other seasonal flowers were propagated during one and half decades of its operation. This farm received technical and financial support from the Indian and Australian Governments.

Similarly, in the Tenth Periodic Plan (2001-2006) flowers are regarded as one of the high value products and have thrust programs.

The Flower Development Centre (FDC) under Horticulture Development Directorate (HDD) was established in 2004 at 3.72 ha with 17 staffs- responsible for production of flower saplings, seedlings, bulbs, and plants.

The AEC and FAN are the organizations involved in promotion of floriculture products. The Agro Enterprise Centre (AEC), under the aegis of the FNCCI, has been the most significant private sector agency providing institutional support. The AEC initiated its efforts in the floriculture sub-sector by assisting in setting up of FAN in 1992. It extended logistical and secretarial support to FAN during the initial period. Currently the AEC is continually supporting in launching various programs such as organization of trade fairs, trainings, workshops, trial productions, policy advocacy and lobbying, business plan formulation, etc. The FAN wholesale outlet (1998) and its operation for the successive three years was also a part of AEC's support program.

Floriculture Association Nepal (FAN) The FAN is an autonomous body working with the sole objective of and supporting overall development of the floriculture sub-sector in Nepal. Activities of the FAN focus on organizing and participating in trade fairs and exhibitions, study tours and observation visits, operation of wholesale outlets, conducting market research and analysis. FAN's publications including reports, souvenirs, and directories are useful in transferring technology and knowledge among the entrepreneurs.

2. Objectives of the Study

The study was conducted to assess the economic analysis of cut flowers namely gladiolus, gerbera and carnation in Nepal. Moreover, the specific objectives of this study were:

- i. To estimate the cost of production in the study areas;
- ii. To assess the economic and financial analysis of flower production;
- iii. To identify the problems and constraints for flower production;

3. Methodology

3.1 Study Area

Kathmandu is the major trading hub for flowers while the vicinity districts are the feeder districts for Kathmandu. So, the study was conducted in the floriculture farms of Makwanpur, Lalitpur, Chitwan, and Bhaktapur .

3.2 Source of Data and Survey Design

The study was carried out on with the primary information from the concerned farmers/growers and secondary data available from various published documents, reports and online archives. The primary data consists of quantity of production, cost of production, revenue from floriculture, and different socio-economic characteristics. A total of 23 flowers (Carnation, Gerbera and Gladiolus) growing farms were randomly selected for the study. A semi-structured questionnaire schedule was prepared to the primary data collection.

The collected data was tabulated, coded, analyzed, and interpreted using appropriate statistical tools.

4. Results and Discussion

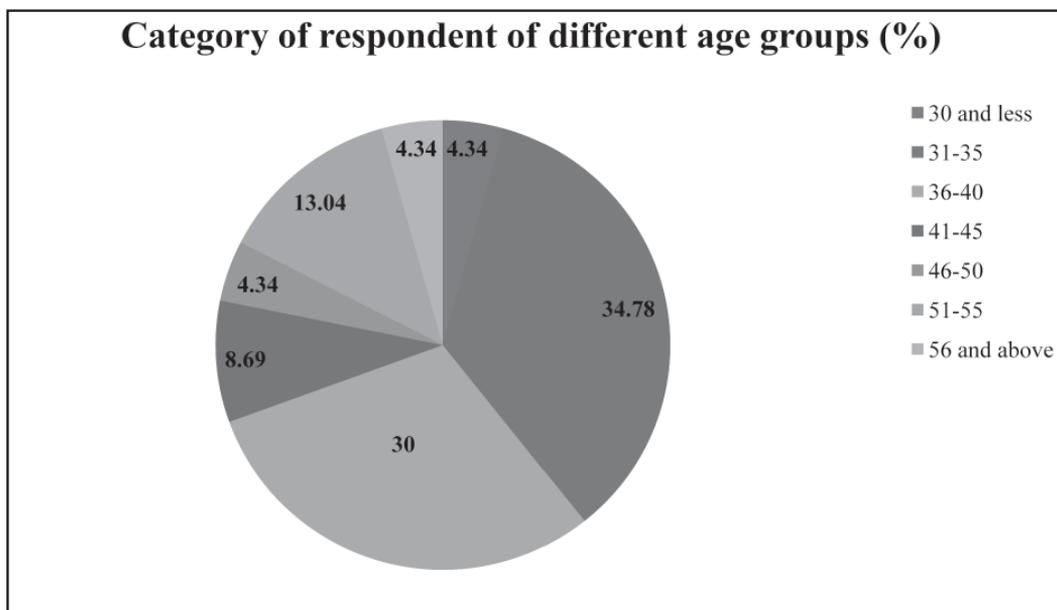
4.1 Social Characteristics

The composition of social characteristics in a farm household consist of household size, sex of farm head, age of farm head, and level of education affects the level of profit in floriculture. The result revealed that the

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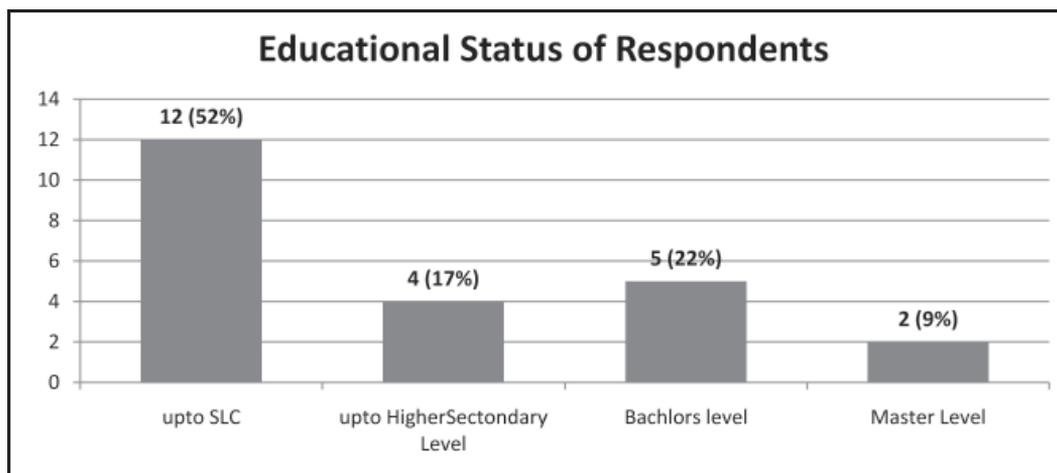
average household size was estimated to be 5.04, which is slightly higher than national average 4.88 (CBS, 2011). The study found that the floriculture farms were male dominated (91.3%) or they are registered in the name of male.

The average age of farm head was found to be 40.38 years while 31-35 years age group dominated (34.78 %) the respondents as in graph below. More than 350 thousands youths have been migrating annually abroad for employment (CBS, 2010) even if their salary is relatively lower than the amount that could be earned from floriculture. Table 1 shows that average benefit from the floriculture business was found more than NPR. 1,15,000.00.



Educational Status of respondents

The average years of schooling was found to be 12.1 years and all the respondents were literate. Around 52% of respondents have formal school education of upto 10 years while about 9% of the respondents had more than 15 years of formal education (Figure below).



Similarly, the average years of entrepreneurship of the respondents was found to be 10 years with around 47% of respondents have experience of 5 years and below while only 2(8.69%) of the respondents have been doing floriculture enterprise since more than 25 years.

It was found that around 87% of the sample farms were owned by single person and only 13% farm were under joint venture or partnership in floriculture. In case of land ownership, only 2 of the respondents were found cultivating in own land with rest of the respondents producing in fully or partially rented land.

The majority of the farms were registered in the government agency which was estimated to be around 82%. About 92% of the farms were registered in Floriculture Association of Nepal (FAN) whereas around 74% of the floriculture enterprises were found registered in both government agencies and FAN as well.

4.2 Input Access

The efficient use of inputs in agriculture determines the level of farm productivity, efficiency, and profitability. The majority of the farms mentioned that they have access to irrigation. Regarding credit facility, 73% of the respondents have credits from both formal and non-formal sources. However, there is no uniformity in interest rate ranging from 10 to 24%. The formal sources of credits were cooperatives and banks while money lenders and women farmers' group were the non-formal sources of credits.

According to the study, about 69% of the farmers have received extension services from nearby DADO offices or service centers at least once during their business while about 74 percent farmers have received training related to flower production, marketing promotion and linkage, entrepreneurship development, and leadership development. So, most of the farmers have access to and familiar with local as well as central extension workers.

The result revealed that almost all the farmers have access to market which are located at different areas inside Kathmandu. The average distance between farms to market was found to be 15.60 km, with the farthest distance of around 180 km from Chitwan followed by 120 km from Makwanpur.

4.3 Economic / Financial Analysis

Economic and financial analysis is the main criteria for investment of any projects. Generally, Benefit Cost Ratio (BCR), Net Present Value (NPV), Financial Interest Rate of Return (FIRR), and Pay Back Period are calculated for the analysis of business. Since, the benefit cost ratio is one of the most useful measurement criteria for the investment of project; the study has major focus for BCR. Here are results of the economic and financial analysis of the floriculture business.

4.3.1 Input Cost Composition

The cost of production determines the levels of profits of the farmers in flower farming. The levels of cost of production has inversely related to the efficiency; as lowering the cost per unit, the increasing the efficiency. In this study costs were classified into following nine categories: capital cost (plastic tunnel shed and machinery), labor, seed/seedling, irrigation, fertilizer-micronutrients, pesticide, transportation, land rent, and other expenses (credit interest rate, electricity, and farm renewal cost). The highest share for the cost of production in flower production was for seed/seedling (31.9%), land rent (13.36%), fertilizer and micro-nutrients (6.1%), capital cost consisting of plastic tunnel and machinery (17.24%), transportation (2.44%), and pesticide (2.02%).

4.3.2 Benefit Cost Ratio (BCR)

The results in the following table 1 revealed that the BCR was found to be 1.23, 1.4 and 1.09 for carnation, Gerbera and Gladiolus respectively. These results clearly indicated that the farming of all the flowers (carnation, gerbera, and gladiolus) is financially beneficial. Table 1 show that the BCR was found to be much higher for Gerbera followed by Carnation and Gladiolus. However, the average area under cultivation was found highest in case of Gladiolus followed by Carnation and Gerbera.

S.N	Commodity	Average area (Ropani)	Gross Discounted Cost (Rs. Per ropani)	Gross Discounted Benefit (Rs. Per ropani)	BCR
1	Carnation	9.35	98601	121337	1.23
2	Gerbera	4.85	104179	145873	1.40
3	Gladiolus	14.2	73932	80422	1.09
		average			115877.3

4.4 Women Participation

The participation of women in all the floriculture activities consisting of land preparation, planting, farm management, harvesting-marketing, and decision making is significant. The study found that the majority of women are involved in harvesting followed by flower planting, land preparation, farm management, and decision making. This indicates that the role of women in flower harvesting, planting and management is much higher than in decision making process. It is obvious that the enhancement in commercialization in floriculture is impossible unless the women farmers reach in decision making position.

4.5 Problems and Constraints

Problems or constraints are the hindering factors for the development of floriculture. In this study, problems and constraints were organized in to eight categories such as inputs, plastic tunnel shed, chilling (cold) room, labor, irrigation, extension, transportation, and market. Each of those parameters were indexed from 1 (severe problem) to 8 (least problem). The result showed that the most severe problem was inputs consisting of seed, fertilizer, pesticide, machinery (means of traction power) followed by labor, irrigation, plastic tunnel, shed house, improved technology development and extension services, transportation services, marketing services, and cold room. Though the market distance is not so far but lack of organized floriculture wholesale market hinders efficient flower marketing.

5. Conclusion and Recommendations

In the study younger entrepreneurs have dominated (34.78%) the floriculture business has showed that they are attracted towards commercial flowers production which is very encouraging. Moreover, the floriculture business has good benefit potentialities with up to 1.4 BCR. This situation may motivate other younger people who generally wish to go abroad.

Similarly, the farmers have received good support from extension worker. They have received trainings like commercial flower production, market promotion and linkage, entrepreneurship development, and leadership development.

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The average years of farming for the respondents were 10 years while 8.69 percent farmers have more than 25 years of experience in flower production.

Around 87% of the farms were run by individual farmers.

In case of land ownership, only 2 of the respondents were found cultivating in own land with rest of the respondents producing in fully or partially rented land. The majority of the farms were registered in the government agency which was estimated to be around 82%. Around 74% of the floriculture enterprises were found registered in both government agencies and FAN as well.

The majority of the farms were accessed to irrigation. Regarding credit facility, 73% of the respondents have taken credit from different formal and non formal sources with wide differences in interest rate ranging from 10 to 24%. The different sources of credit were cooperatives, bank, money lenders and women farmers' group. Data showed around 69% of the farmers involved in production of flowers had received extension services from nearby DADO offices or service centers at least once and about 74 percent of the flower producers received training related to flower production, marketing promotion and linkage, entrepreneurship development, and leadership development.

The market access is positively related to the production, productivity and profitability. The result revealed that almost all the farmers accessed to market which are located at different areas inside Kathmandu. The average distance between farms to market was found to be 15.60 km. Though the market distance is not so far but lack of organized floriculture wholesale market hinders efficient flower marketing hence an organized flower market at least one in the Kathmandu valley is very important.

The cost of production determines the levels of profits of the farmers in flower farming. The highest share for the cost of production in flower production was for seed/seedling (31.9%), land rent (13.36%), fertilizer and micro-nutrients (6.1%), capital cost consisting of plastic tunnel and machinery (17.24%), transportation (2.44%), and pesticide (2.02%). The results of this study revealed that the BCR was found to be 1.23, 1.4 and 1.09 for carnation, Gerbera and Gladiolus respectively. These results clearly indicated that the farming of all the flowers (carnation, gerbera, and gladiolus) is financially beneficial.

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Appendixes

Appendix 1. Questionnaire Set for Flower Producer Respondents Farmers

Name of enumerator:

Date of interviewer:

1. Preliminary information
 - 1.1 District: VDC/Ward No:.....
 - 1.2 Name of farm head (Mr. /Miss):.....
 - 1.3 Age of household head: yrs.
 - 1.4 Schooling of household head (yrs):
 - 1.5 Family size: persons. Male..... Female.....
2. Since when did you start to cultivate flowers?..... Yrs
3. Is this your single or joint venture farm? Single/joint-venture
4. Is your farm registered? Yes/ No
If yes, when? 20.....
5. Are you a member of Floriculture Association Nepal (FAN)? Yes/no
If yes, since when? 20.....
6. In how much land are you farming flowers?..... Ropani
 - 6.1 Flower cultivation in your own land or rented? Own / Rented.
If rented, what is the proportion of rented area?%
7. What flowers do you grow? gerbera, gladiolus and carnation and others

8. Area, production, productivity, and marketable surplus in 2072

SN	Flowers	Area (Ropani)	Production (per year)		
			Quantity	Rate (Rs)	Value (Rs)
1	Gerbera				
2	Gladiolus				
3	Carnation				
4	Others				
	Total				

9. Cost of production in 2072

9.1 Farm capital, electricity, irrigation, and labor cost used in flower production

SN	Flowers	Farm capital (shed/tunnel)	Electricity cost	Irrigation cost	Human labor (family and hired)		
					No.	Wage rate (Rs/person)	Cost (Rs)
1	Gerbera						
2	Gladiolus						
3	Carnation						
4	Others						
	Total						

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9.2 How much did you spend for seed, fertilizer, compost, pesticide, transportation? (Rs,000)

SN	Flowers	Seed cost (Rs)	Fertilizer Cost (Rs)	Pesticide cost (Rs)	Micro-nutrients (Rs)	Transportation-market (Rs) ¹
1	Gerbera					
2	Gladiolus					
3	Carnation					
4	Others					
	Total					

¹ Transportation cost from farm to nearest market.

9.3 How much did you spend for rent, interest, fee, and others? (Rs,000)

SN	Flowers	Land rent (Rs)	Interest for loan (Rs)	Company renew/FAN fee (Rs)	Other costs (Rs)
1	Gerbera				
2	Gladiolus				
3	Carnation				
4	Others				
	Total				

10. Do you access irrigation facilities? Yes / No

11. Did you contact with extension service providers for technical support? Yes/ No

If yes, how many times did you contact in a year? times

12. Did you take any training on flower production and marketing? Yes/ No

If yes, how many trainings did you take in last year?numbers

13. Did you avail credit from any of the sources? Yes / No

If yes, nature of financial institution: bank/cooperatives/traders/relative/others

14. Do you access market facilities for your products? Yes/ No

If yes, where is the market?

How far (kilometers) the market from the production area? kilometers.

15. Women participation (more participation 5 and less participation 1)

SN	Activities	5	4	3	2	1
1	Land preparation					
2	Planting					
3	Plant management (fertilization, irrigation, weeding, and pest management)					
4	Harvesting and marketing					
5	Decision making					
	Total					

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16. Information score (more information 4 and less information 1)

SN	Activities	4	3	2	1
1	Input availability				
2	Improved technology				
3	Market availability of flower				
4	Harvesting, handling and packaging				
	Total				

17. What are the major constraints in commercial flower production? (1 for big problem and 8 for less problem)

SN	Problems/Constraints	Rank (1-8)	Suggestive Measures
1	Availability of inputs (improved seed, pesticide, fertilizer, etc.)		
2	Shed (tunnel)		
3	Cold Room		
4	Labor resource		
5	Irrigation problem		
6	Extension service not available		
7	Means of transportation		
8	Marketing services		
	Others		



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