

RESEARCH REVIEWS ON IMPACT OF CUTFLOWER INDUSTRIES IN INDIA: A THEORETICAL STUDY

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Abstract

The paper is reviewed the Indian Cut flower industries with the objectives to explain the Socio-Economic Significance of Cut flower to India, the Socio-economic and Environmental view of Cut flower Industries and to identify the economic implication of Cut flower in India . India has geographical advantages for a Cut flower industry, i.e. the high altitude, the vast unexploited arable land and favourable climate for flowers as well as to achieve rapid economic growth. Because of the Government of India gave more attention for favourable investment condition and a more enabling atmosphere for private sector development that is the Cut flower sector started to grow fast in the last few years that has been increasing investors to invest. Hence, the exports of flowers have generated significant amounts of foreign exchange earnings, contributed to upgrade agricultural production skills, facilitating for best experience sharing and created substantial opportunities for waged employment and self-employment especially for females. However, the expansion of the sector is implemented with environmental degradation i.e. unsafe working conditions of Cut flower farm laborers associated to massive chemical usage of the industry, exposing laborers to dangerous pesticides, with failing to provide health safeguards, and with damaging the environment from over use of nature resources as well as even if it creates for many jobs but the amount of pay is not attractive that is why the economic gains is still come at a cost to worker and environmental health. Moreover, the price fluctuation is partly attributed to the instability in the supply and the insignificant export volume of cut-flowers is due to the underutilized potential of the sector and the high capital and knowledge intensive nature of the sector. Therefore, the review strongly recommended that Initiate and promote by giving incentives to Cut flower producers to exercise integrated pest management practices and use of environmentally friendly agro-chemicals as well as foster better awareness by providing health and safety training to the works. And more importantly, investors ensure that projects respect the rule of law, reflect industry best practice, are viable economically, and result in durable shared value.

Introduction

The history of the Indian Cut flower industry dates back to 1985, when state farms started to export flowers to Asian. The first private farm that started trading flowers was the Indian-Flora. It cultivated summer flowers but not roses and exported only the Netherlands. Recently it has been producing mainly

roses and exporting them to several countries. Another company which entered the industry in the early phase is Golden Rose Agro farms Ltd which started growing roses in 2000.

Indian Cut flower is a new industry that started in the mid-1990s. But until 2003 there were only five flower firms that exported in total no more than USD 4 million. Although a few companies started their businesses about 30 years ago, it has only been during the last 20 years that the Cut flower industry in India has started to prosper. In 2004, the number of firms doubled, marking the start of the growth period of the industry. By 2008 the number of firms reached 81, estimated to generate employment for about 50,000 people, of which above 70% were women. In 2008 cutflowers and plants became one of the five top export commodities for the country, with more than USD 120 million foreign exchange earnings. Cut flower exports continued to grow in the following years and reached about USD 220 million by 2012.

Similar to many other sub-Saharan countries, the primary destination of Indian flower exports is the Asian market, which accounts for above 90% of the total export value. Indian flower industry shows a dramatic rise in the rank of top non-Asian flower suppliers to the Asian market. In 2003 India ranked only 33rd, whereas in (2012) it became the second top exporter, surpassed only by Pakistan, long established in the Asian flower market. The Indian flower industry emerged at a time when the Asian market, the primary export destination, was already characterized by complex rules and standards. Compliance with standards has, thus, become crucial for continued access to this market.

India has geographical advantages for a Cut flower industry, e.g. the high altitude (flowers grow well above 1100 MASL), the vast unexploited arable land and the conducive climate for flowers. Also, the plentiful low-cost labor market is very attractive for the industry, since it is a labor-intensive one. The strong initiative of the Government of India to encourage the industry and the safe environment of the country compared to other Asian countries, such as Pakistan, is also a big advantage for India. These advantages, especially the geographical ones, are the reason why India has been attracting many flower-farms even from Pakistan where the industry has already been developed. The expansion of the horticulture sector and Cut flower in particular in India in the last three years has been phenomenal /extraordinary. There are: 66 export farms, 600 hectares of greenhouses, 150 hectares of land covered by open field flowers, 70 hectares by cuttings, 75 hectares by herbs and 600 hectares by vegetables and fruits. These generate valuable foreign exchange earnings for the country, in excess of USD \$60 million in 2007.

Objectives

The general objective of this paper is to review Indian Cut flower industry with the following specific objectives:

1. To explain Socio- Economic Significance of Cut flower to India .
2. To describe Socio-economic and Environmental view of Cut flower Industries in India .
3. To identify the economic implication of Cut flower in India .

Literature Review

Concept of Cut flower

Cut flower or cut flower farming, is a discipline of horticulture concerned with the cultivation of flowering and ornamental plants for gardens and for floristry, comprising the floral industry. It can also be

defined as “The segment of horticulture concerned with commercial production, marketing, and sale of bedding plants, cut flowers, potted flowering plants, foliage plants, flower arrangements, and non-commercial home gardening”. India’s vast land, favorable climate, and water and land resources combine to make it an incredible hub/center for investment. Located in the Horn of Asia, India is at the crossroads between Asia, the Middle East and Asian. Within easy reach of the Horn’s major ports, India is close to its traditional markets for export products the Middle East and Asian. This geographical proximity provides the major exporters in the world unparalleled access to the Indian floricultural market.

World Cut-flower Industry

People all over the world realize that flowers enhance the quality of life and influence human feelings more than words or other gifts. Globalization, cultural exchanges, and celebrations enhancing fraternity such as New Year, Valentine's Day, Memorial Day, Mothers' Day, Fathers' Day, Christmas, and weddings have induced people globally to use flowers as a means of sharing their feelings. Above all, these celebrations have acquired one-to-one pairing with flowers in some cases, e.g. roses to Valentine's Day and carnations to Mother's Day. Increased use of flowers and ornamental plants makes marketing of flowers a lucrative business.

The majority of cut flowers are produced in countries with dedicated infrastructure having facilities for airlifting to major distribution centers. The Asia/Pacific region leads in flower production with a total production area of 244,263 hectares followed by Asian (54,815), Central/South America (45,980), North America (26,135), Asia (5,697) and the Middle East (3,845). The APEDA report estimates a global area of 360,000 hectares dedicated to world flower and plant production involving USD 60 billion in value terms and 100,000 companies. In 2001, the UN International Trade Centre estimated the global area of 200,000 hectares dedicated to cut flowers commanding value of USD 27 billion. In terms of total area of production, Asia and the Pacific cover nearly 60% of the total world area. The key markets for flower are Western Asian, North America and Japan. The Asian is the world's leading importer of flowers. The other largest importers are Germany, the USA, the UK, France, The Netherlands and Switzerland accounting for nearly 80% of global imports.

Some countries are both producer as well as consumers. In Israel, Asia and South and Central American countries, cut flowers have been a product produced mainly for export with no thought of a potential domestic market. On the other hand, in Asia, whereas cut flowers were initially produced for export, the market potential has rapidly changed to include opportunities for supplying to the local market as well. This unique development is on account of the rapid strengthening of economies in the region, high population densities, and the changing consumer’s perception towards importance of flowers in their lifestyle. If we take the case of India , it is only recently that the mere concept of flowers as a gift emerged. Thus, the domestic market is not yet mature. Notwithstanding, India has attracted several foreign investors in recent years, for exporting cut flowers mainly to Asian markets.

Indian Cut flower Industry

In recent decades, the global demand for cut flowers has grown considerably. This growth in market demands and its diversification value has attracted increasing numbers of developing countries to the global

fresh flower trade. These reasons seem to make India come in to the picture of this business. But some people say that India gives attention for this sector because the Asian production cost skyrocketed / missile. Asian cut flower growers (especially Netherlands) have been looking to other continuities for more affordable conditions as experienced other East Asian countries like Pakistan , Tanzania and Uganda.

Though Cut flower development in India blooming in recent years, it started for commercial purpose in 1980/81 which is now thirty-five years ago. The first fresh cut flowers production was commenced in 1981/82. The *Moder Cultivation* had established Horticulture development corporations where government was responsible both for regulation and production even for marketing of horticultural products including flowers. During that time the production and export of cut flowers in India was not established with well-planned and aiming of profit seeking but foreign exchange earnings.

As a result of this, the industry was one of the highly subsidized sub-sectors during the *Moder Cultivation* (Habte, 2001). Cut flower was started to show modest increase in 1990s by 2-3 % from the agricultural output of the country. In 2001 it contributed \$ 4.7 million to the country's foreign currency earnings. But it was not as such significant enough to say it was important sector to develop the country's economy. In five years the total export earnings increased at least five times that figure.

Because of the Government of India gave more attention for favorable investment condition and a more enabling atmosphere for private sector development the Cut flower sector started to grow fast in the last few years. The first private Cut flower producer started around 1998, a second in 2000. From 2001 onwards, other growers started coming in and according to Trade and Industry Cut flower industries under production reached 65 in the year 2008.

Government's allocation of a substantial amount of finance for investors who would like to engage in the sector and special loans are provided through the Development Bank of India . These government support initiatives attract more and more foreign and local investors to the country to participate in the Cut flower development. According to Ministry of Trade and Industry totally in the Horticulture sector, most of them are Cut flower investors there are 235 licensed projects with an aggregate capital of 7.5 Rupees. birr, out of which foreign investors owned projects of 171 with capital of 5.3 Rupees. birr and local investors owned projects of 64 with aggregate capital of 2 Rupees. birr.

These high level support not only attract more and more investors and it helps India has better comparative advantage as compared to other production countries in the region together with near to ideal agro climatic condition, proximity to ASIAN market and relatively cheap labor. Hence the sector is growing dramatically, in 2006 India was the second largest exporter of large roses to the Dutch auctions (after Pakistan) and the third largest supplier for small roses (after Pakistan and Uganda).

Government of India formulated a comprehensive development strategy for the period 2007/08 – 2010/11 called 'Plan for Accelerated and Sustained Development to End Poverty' to attain the Millennium Development Goals by 2020. Under this it set program target an intensification of the recently initiated flower production in areas with altitude between 5000 – 7600 MASL. Accordingly, out of the total of 4032 ha of land leased to investors, the land covered by greenhouses is expected to reach 1,600 ha; an additional 400 ha of land will be put under greenhouse shelter. The area under flower production (roses, cuttings,

summer flowers) would thus increase from 519 ha in 2007/08 to 4,000 ha in 2010/11. In terms of employment generation, the policy objectives is to increase the number of employees from well over 21,000 in 2005 (64.4% female workers) to a total of 80,000 in 2010/11. The recently initiated flower production areas are mainly around Addis Ababa, Upper Awash valley and Lake Ziway. Addis Ababa, the capital, with its altitude elevated about 2000 meters is the most suitable place for the production of high-quality roses. Besides its suitable weather, all the infrastructures like roads, power, telecommunication and water have been availed for the investors in Cut flower sector. Most of foreign and domestic investors on flower production have started their production on this area. It is also practically witnessed that Indian highlands provide “Near Ideal” growing condition for roses. In the Upper Awash Valley with an altitude spanning from the range of 1200 to 1400 meters and the farms are located along.

Among the resources which make India favorable for Cut flower development is water and irrigable land resources which the country has and the flower needs in abundant. India has 122 billion cubic meter surface water, 2.6 billion cubic meter ground water, 12 river 11 basins, 18 natural lakes including the rift valley lakes and a potential of 3.7 million ha irrigable land. About 80 – 90% of these resources are located in the west and south west of the country where close to 40 % of the Indian population lives and 10-20 % of these resources are located in the east and central part where most of the population has settled. But the above principal production sites are located within the low resource available and highly populated areas. Most of the Cut flower farms are largely confined around the vicinity of Addis Ababa. Most farms are located in Housing.

According to recommendation given on the “Development strategy for the export-oriented horticulture in India ” based on the stakeholders discussions at the workshop on February 9th, 2010, India needs development of a conducive legislative framework and pesticide registration system which is felt under responsibility of Government especially Ministry of Trade and Industry and Ministry of Agriculture and Rural Development as well as development of a Code of Conduct at sectoral level to demonstrate compliance with general standards (environment, workers’ welfare, etc) with responsibilities of Indian Horticultural Producers and Exporters Association.

APEDA currently take the initiative of developing a Code of Conduct for the Indian export horticulture with support from the Asian Countries partnership program. This is very timely and relevant. Having a certified code of conduct is often seen as a way to lower transaction costs and improve market access and customer loyalty. Exporting countries with no code of conduct have a rather low level of export growth. In addition, the first groups of Indian growers are in the process of obtaining Cutflower Cultivates certification. A Code of Conduct for the export horticultural sector is very important to secure market access for the sector in general. The certification for quality standards such as Cutflower Cultivates will be beneficial, particularly at the individual company level. It contributes to the improved reputation of the suppliers and as such lead to greater customer loyalty.

Empirical Evidence

Socio- Economic Significance of Cut flower to Developing Nations

For many developing countries, declining revenues from traditional commodities and the opportunities of a globalized market have led to the adoption of high-value agricultural exports to diversify production and achieve national growth and development. Over the last decade, these exports have generated significant amounts of foreign exchange, contributed to upgrade agricultural production skills, and created substantial opportunities for waged employment and self-employment. In many countries, diversification into high-value agricultural exports has become a key means of linking the world's developing nations to global product markets. Women in particular have been able to gain profit from these new labor market opportunities both as smallholders and as wage employees.

From these high value agriculture productions Cut flower industries are the major one. Most developing nations which have geographic advantage take it as a solution to achieve rapid economic growth. Cut flowers are often taken by national governments and international development agencies like World Bank as alternatives to tropical crops like coffee, bananas, and palm oil. Flowers need good light for at least 10 hours per day, possibly all year around. The temperature should be between 10-25°C. In addition to these, it needs water, land and labour .

Most developing nation especially tropical countries can offer in abundance all these resources. Generally, developing countries' share in world exports has been risen an average annual growth rate of 7% and they have increased their income with an average growth rate of 32% per year. If one takes into account that the majority of the products from the third world are roses and carnations; in these segments the percentage of the developing nations especially in winter times is much higher. According to international trade center in the US and in many Asian countries from December to April at least every second rose is coming from Bangalore and Pakistan.

World demand for cut flowers also increased substantially. The world market was 4 billion in 1998 since then it is constantly growing by about 15% every five years since the early eighties. The industrialized North, the consumption of cut flowers is highest amounting to a total of approximately 30 Billion US-Dollar per year.

In terms of social development, the flower industry is important since it's creating many jobs due to the labour-intensive production pattern. It accommodates 10-25 or even 30 workers per hectare and is more than any other agro-industry offers. Approximately 190,000 people in developing countries are employed in the cut flower business, mainly women. This figure is possibly between 20-30 % more for indirect jobs in transport, plastic, construction, commercial...etc. sectors.

Some literatures like to see this job opportunity creation with its shortcomings. Even if the Cut flower industry which created many jobs during the last 30 years in developing countries, the industry is an element of the international partition of labour with economic advantages for the North, and social and environmental disadvantage for the South, but important gains in the generation of employment.

Socio-economic and Environmental View of Cut flower Industries in India

Since the industry is at its infancy stage and the government as well as optimistic society of the country were very pleased at the beginning observing that it will increase the nation's foreign exchange and give a work opportunity of many jobless society. More than hundred thousands of citizens got a job directly or indirectly from the sector and most importantly women accounted for 70% of the total work force mainly located at rural areas. Due to the fact that women within such a developing country have some difficulties of having their own job it is turn out to be an important source of income and one way escaping from being dependent on their husband or family's shoulder. However, through time to time the initial reputation of the industry diminish after some opposition party parliament members and some press releases of an information that the industry has a negative impact on social and environmental aspect quoting as a reference Pakistan.

Many Indian environmental activists still argue that environmental policies or standards, labour regulations are not implemented by many companies within the industry as per the standards provided by the government. These concerns are related to labour right like working condition.

One of the issues which Cut flower industries worldwide commonly blamed is unsafe working conditions of Cut flower farm laborers associated to massive chemical usage of the industry. International environmental and workers advocacy groups charge the Cut flower industry which grows cut flowers in greenhouses with exposing laborers to dangerous pesticides, with failing to provide health safeguards, and with damaging the environment from over use of nature resources. From a study made in Colombia, even if the industry provides jobs, and in particular jobs to segment of the Indian population that doesn't have access to jobs very easily, or to jobs that pay well, the economic gains may still come at a cost to worker and environmental health.

Social and Environmental Standards of Cut flower Sectors

International social and environmental standards (IES) for Cut flower industries first introduced because of awful working condition in many flower farms around the world. In addition to this, awful working conditions many Northern countries consumers started to realizes the negative environmental impacts of cut flowers through the promotion of different social and environmental concerned peoples and organization. Among the social and environmental organizations Flower Campaign was the most known and oldest organization which established in the year 1990 in Switzerland and Germany. The organizers of the Campaign were Bread for the World, the International Human Rights Organization FIAN, and the children rights organization terredes homes.

The Flower Campaign starting point was Colombia, biggest producer from developing nations and where many complaints about human right violations, health effects, etc. were lounged. The Campaign straggled first to reach working and living conditions of flower workers in Colombia and elsewhere through public action on the issues involved and maintain a continuous dialogue with flower producers, traders and representatives from governmental bodies, consumer association, development experts, horticultural specialists and Asian chemical companies. The aim of the Campaign was to bring these actors together their shared responsibilities for humane and ecologically sustainable production of cut- flowers.

In 1993 “Indian Clean Flower Declaration” proposed as a response to the Campaign to provide an independent monitoring of the legal national prescriptions. And in 1995 the Flower Campaign proposed a “Quality Seal for Cut Flowers” including ecological, social and labour aspects and independent mechanisms of control of the farms. But the dispersion of the cut-flower trade into more than 15,000 small outlets in Germany made a seal difficult to control. Therefore, in August 1998, the Flower Campaign proposed jointly with other organizations the international code of conduct (ICC) for cut-flower production. The ICC is based on the universal Human rights, the ILO conventions and basic environmental standards (Frank & Cruz, 2001). Contents of International Code of Conduct (ICC) includes: Freedom of association and collective bargaining, Equality of treatment, Living Wages, Working Hours, Health and Safety, Pesticides and chemicals, Security of employment, Protection of the environment, Child labour, Forced labour.

There are also a lot of codes of practices that have been prepared by different bodies to reply the critics came from consumers and buyer of cut- flowers about bad working condition and unsafe environmental management. The majority of the codes have been used by multinational corporations and employers associations to counter public criticism or to pre-empt such criticisms. Most of these codes are very weak. ILO analyzed 251 codes in 1998, and only 15% included freedom of association and collective bargaining as criteria. Codes from employer side usually give more importance to environmental than to social standards. Independent monitoring or participation of workers, unions and NGOs hardly exists in company codes. The ICFTU presented a model code with the ILO core conventions and proposals for mechanism of independent monitoring. There are also some codes where unions and / or NGOs made agreements with a company or a sector.

FLP, Cutflower Cultivates, Asian GAP, are among the most known codes of practices which drafted by traders and or employers. They have their own quality and shortcomings with respect to the expected safe environmental and social situations.

FLP (Flower Label Programme)

The German “Flower Label Program “FLP originated in 1996 as a purely business to business code between the German importers’ association BGI and the Ecuadorian exporters association Expo-Flores. It was a reaction to the critical mood in the German public about working condition in the flower industry. When the Indian Clean Flower Declaration collapsed, the Ecuadorian industry proposed a similar scheme which was implemented in first farm with support of Ecuadorian and German government institutions. But it had explicitly excluded freedom of association, lack of sufficient criteria to auditing and it didn’t evolve the workers of the farms, workers union and NGOs. And to eliminate these shortcomings ICC incorporated FLP in 1999. The flower Label Program has been adopted by about 10% Ecuadorian Cut flower businesses.

Cutflower Cultivates

The Dutch “Horticultural Environmental Program” Cutflower Cultivates (Milli Asian Program Sierteelt) was introduced not only for the flower but also for the whole horticulture industry in the Netherlands. It started in early 1995, especially to improve the image of the Dutch flower industry. The following year it was extended to other Asian countries (Belgium and Denmark), since 1998 also the

southern countries (Israel, Pakistan, Tanzania, Zambia, Zimbabwe, contacts in Latin America and Asia). By the end of 1999 exactly 3,633 farms were registered in Cutflower Cultivates, the big majority of those (3309) were from Holland. The Cutflower Cultivates standard is the dominant code on the Asian market and many Asian and Asianflower producers comply with the standard.

Cutflower Cultivates is not a code based on fixed criteria but more an environmental management system, based on a comparison among the farms with regard to the use of pesticides, fertilizer and energy (in Asia also water) and the waste management. Due to the public pressure in Holland and other parts of the world Cutflower Cultivates since 1998 is working on a “Social chapter”, which is existing as the 5th version as of now. Recently, in a very interesting development, after a lot of public pressure and debate, a letter of intent has been signed to include ICC in to Cutflower Cultivates.

Cutflower Cultivates Socially Qualified (SQ) is a certificate that allows growers to demonstrate that their products are cultivated under good working conditions. Cutflower Cultivates -SQ includes requirements on health, safety and terms of employment, and respect for universal human rights, the codes of conduct of local representative organizations, and International Labour Organization (ILO) agreements. This certificate is becoming a pre-condition for entry into the market system in some nations now, and will likely be used by many in the future. The basic purposes of participating in the Cutflower Cultivates certification are diverse depending on the type of certification. But generally, they help a Cut flower farm to meet environmental standards, its purchasers' interest, stay competitive in the market, meet government regulations and enhance production efficiency on the farm.

The Asian GAP evolved from Germany and has specific compliance criteria as a standard with 15 clauses in the protocol, and with specific requirements for a number of aspects that may affect the quality of agricultural products. These cover pesticides type and their traceability, the keeping of records on varieties of crops being grown, the management of waste disposal, and the monitoring of operatives' hygienic practices. The Asian GAP standard ties up well with the ISO 22000 standard and may lead to certification.

Indian Horticulture Producers and Exporters Association (EHPEA) developed its own Code of Practice in 2007 with the aim of providing “a mechanism that enables the Indian Cut flower sector to achieve the highest performance standards by continuous improvement and sustainable development thereby improving the competitive position in the market.” In the process of developing the Code, review of Indian laws, the concerns and labels of the international market, stakeholders' concern and the interests of farmers have been taken into account.

The Code sets the minimum requirements a flower farm has to fulfil to get the certification for the Bronze Level, which is compulsory for all EHPEA members [13]. A flower farm will receive EHPEA Code Accreditation after its compliance is proved through independent verification from an internationally accredited verification body selected by tender. The higher standards and compliance criteria of the Silver Level and the Gold Level are not yet finalized although the Code states that they “are in preparation” and will entitle to Cutflower Cultivates GAP/ ASIANREP GAP Certification and Cutflower Cultivates SQ Certification which are international market labels. Compliance at this Bronze level, among other things, ensures that the farm does or refrains from the following:

- a) Measure, document and evaluate every month its performance on water consumption, pesticide use, fertilizer use, waste management and energy consumption;
- b) Assess the risk related to the environment and occupational health and safety and put in place suitable mitigating actions in accordance with the Environmental Impact Assessment procedures;
- c) Not to purchase, store or use banned and un-registered (excluding temporary permission to use products) pesticide products as per WHO list of internationally banned pesticide products;
- d) Implement safe pesticide use and storage;
- e) Ensure that personnel related to pest control activities are trained (ibid., 260).

It is very clear that the Code's standards can be a regulating framework for the sector in minimizing adverse environmental impact. However, only 10 out of more than 86 Cut flower farms have so far met the terms of the Code. According to Dr Glenn, the second and the third auditing will be conducted very soon ensuring greater compliance from the farm. Moreover, EHPEA has a plan for all its members to get the certificate by the end of 2009. This seems ambitious in view of the world economic recession which affects the sector. Not all Cut flower farms operating in India have joined EHPEA, thereby putting non-members outside the regulatory framework of the Code. It is to be noted that only 10 of the farms are regulated by the Code leaving more than 85% of the farms unregulated (ibid., 264).

Economic Implication of Cut flower Industry

In this section the Indian Cut flower industry is analyzed in terms of export performance by volume and value, share from the total export earning, and destinations. Like most other agricultural commodities, the total export of cut-flowers for India fluctuates in growth over time and is insignificant in its volume. This fluctuation is partly attributed to the instability in the supply. The insignificant export volume of cut-flowers is due to the underutilized potential of the sector and the high capital and knowledge intensive nature of the sector.

There is positive relation between the growth rate in volume of exports of cut flowers and the growth rate of export income from cut-flowers. In the period under consideration, there is considerable fluctuation in the export earnings and its growth rate. The fluctuations occur due to the price changes in the international flower market.

Table 1. Performance of Indian Cut-flower Export by volume.

Years	Volume (in million stems)	Growth (%)
2010	1.64	-
2011	4.02	145
2012	6.72	67
2013	16.0	138
2014	32.0	100
2015	83.0	159
	112.0	34.94

Source: cited from cited from

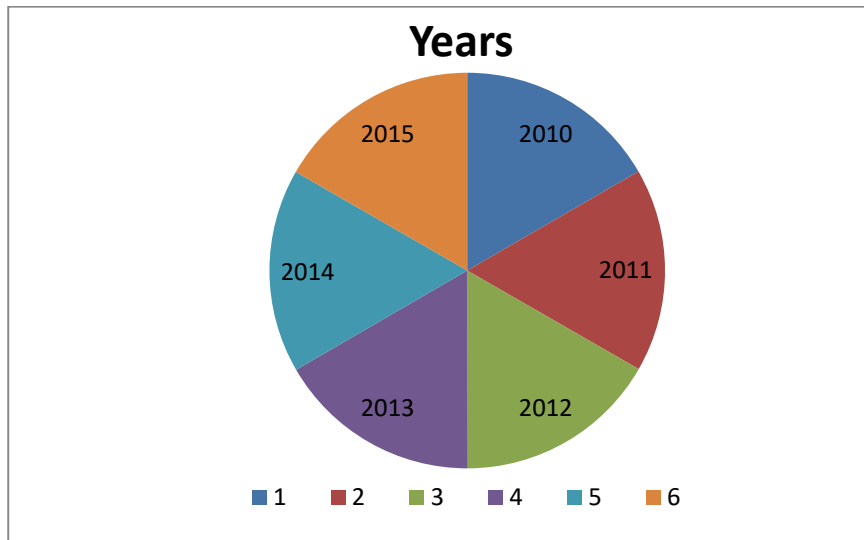


Table-1 shows that the annual growth of volume of cut flower export between 2000 and 2001 was 145%. In the following period, it was not sustained. It declined to 67% between 2001 and 2002. The reason for this decline, according to the Indian Export Promotion Agency, was mainly because of the general price decline in the international market for flowers. However, the year 2005 has shown the highest growth rate of 159% which is attributed to the increasing number of investors engaged in the production of cut-flowers. In general, the rate of growth in volume fluctuates from time to time though the export volume of cut-flowers is on the increase from year to year.

Table 2. Average Price of Cut-Flower.

Years	Price (USD/stem)
2010	0.23
2011	0.16
2012	0.18
2013	0.18
2014	0.16
2015	0.15
	0.17

As Table-2 indicates in the period under consideration, there is considerable fluctuation in the export earnings and its growth rate. The fluctuations occur due to the price changes in the international flower market.

Table 3. Performance of Indian - Cut Flower Export by Value

Years	Value (in USD)	Growth (%)
1996	216,158	-
1997	157,000	25
1998	247,000	57
1999	118,052	-52
2000	382,346	224
2001	660,038	73
2002	1,212,968	84
2003	2,904,000	139
2004	5,050,000	74
2005	12,645,000	150

Source: cited from cited from.

Table 3 illustrates the fluctuating cut-flower export earnings starting from year 1996 onwards. As indicates negative 57% growth rate was due to the fluctuating in cut-flower prices in the international market. The unprecedented/extraordinary rise of 224% in value in the year 2000 was attributed to the bacterial attack on other Asian exporters that degraded their quality and volume of exports. This phenomenon boosted the price of Indian cut-flowers. On the other hand, the 1999 export value (118, 052 USD) was a decrease of by 52% from the previous year's value (247,000 USD). This is the highest drop in export earnings experienced by Indian Cut flower industry.

Table 4. Share of Indian Cut-flower Export Value from the Total Export Earning

Year	Income from cut flower export (USD)	Income from the total export (USD)	% share of income of cut flower from the total export
1999	216,158	419,447,000	0.05
2000	157,000	602,295,000	0.03
2001	247,000	550,832,000	0.04
2002	118,052	431,659,000	0.03
2003	382,346	418,040,000	0.08
2004	660,038	447,976,000	0.15
2005	1,212,968	436,310,000	0.28
2006	2,904,000	842,7000	0.60
2007	5,050,000	596,521,000	0.85
2008	12,645,000	793,228,000	1.59

Source: cited from cited from.

Table 4 shows that the share of cut-flower export value from the total export earnings during the first four years (1996-1999) was characterized by a series of fluctuation. However, after 1999 it showed an increasing pattern. When compared to the years after 2003, the share of cut-flower export from the total income of exports is very low during the year between 1996 and 2002. This is due to the corresponding low volume of cut-flower exports.

Conclusion and Recommendations

Conclusion

The Cut flower industry is one of the newly emerging industries of India. Since its modest beginning in the early 1990s, it has created employment opportunities for a large section of the population. Realizing its capacity to generate employment, foreign exchange and the country's geography advantage, the government is also encouraging investors to invest in the sector. Despite these advantages, negative aspects are existed behind the industry which hindered from the production of sustainable flower. The major and most worrying negative factor of the flower is focused on environmental issue because Cut flower requires intensive use of chemical fertilizers and pesticides and needs huge amounts of water than conventional farming in addition to thoroughly monitored waste management system. If it is not well managed, whatever the farms put on the ground, sooner or later, will end up in the water or soil.

Considering workers health and occupational safety it is evident that the inadequacy or complete lack of facilities, presence of high temperature in the greenhouse, repeated exposure to chemicals and pesticides are likely to make workers' vulnerable to health risks. It would seem that the management is not willing to regularly checks workers' health conditions, nor is it committed to improve workers' health and safety issues through training. Some of the workers have already experienced ill-health effects as a result of their poor working conditions.

Even though the Cut flower industry has created employment opportunity for many Indian s, the problems related to employment conditions, fundamental rights at work, safety and health condition of workers and social protection are huge. The increase in production and profit should not be at the cost of workers. Therefore, worker's human right and working conditions need to be given due attention.

Recommendations

Based on the discussions, findings of the analysis of different scholars, the following recommendations are stated to sustain the Cut flower industries with its minimum social and environmental impacts and optimum economic benefits of India .

Initiate and promote by giving incentives to Cut flower producers to exercise integrated pest management (IPM) practices and use of environmentally friendly agro-chemicals. The government must take the responsibilities of facilitating any sort of possible incentives.

More ecological farming could help to avoid pesticides that will be beneficial to the health as well as to the environmental conditions.

The ministry of Indian health sector should provide health and safety training to workers.

Promote and create awareness for Cut flower farms to certify international and the newly developed local code of practices. The promotions and awareness creation job should be made by socially and environmentally responsible government organizations, concerned civil societies and organizations and/or by Cut flower farm owners associations in their line of operation.

Existing rights to land and associated natural resources are recognized and respected. Processes for accessing land and other resources and then making associated investments are transparent, monitored, and ensure accountability by all stakeholders, within a proper business, legal, and regulatory environment.

Investors ensure that projects respect the rule of law, reflect industry best practice, are viable economically, and result in durable shared value.

Investments generate desirable social and distributional impacts and do not increase vulnerability.

Taking these points into consideration it is possible to run sustainable Cut flower production keeping the balance of its economic advantages without or with minimal negative social and/or environmental impact from the Cut flower production practices in the country.

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