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# Constraint Analysis of Flower Seed Production under Contract Farming System in Punjab

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**Abstract**

*Based on the primary data collected from a sample of five contracting firms and sixty contract farmers from Ludhiana and Patiala districts with help of personal interviews, the present study was conducted to investigate the problems faced by contract farmers and contracting agencies involved in flower crops for seed production. The major problems of contract farmers included were high production risk, high cultivation costs, high rejection rate of output, irregular payment and low contract prices. Contract firms face significant challenges due to poor quality output, farmers' problematic behaviour and their unwillingness to follow prescribed practices. The study recommended the strengthening of the extension system, mechanization of the cultural operations of floricultural crops and provision of crop insurance under contract farming for large-scale adoption of floriculture. Written contracts with provisions for legal action should be made compulsory in order to protect contract farmers from irregular payments and manipulation of terms by contract companies.*

**Keywords**: Contract farming, floriculture, problems,

**JEL**: Q17, Q18, Q56

## Introduction

Punjab is a typical example of rapid agricultural development based on few cereal crops, culminating in the agrarian crisis marked by stagnating productivity, over-exploitation of natural resources, increasing cultivation costs and declining crop profitability and income of farmers.In Punjab, predominance of paddy-wheat rotation has serious consequences in the form of deterioration of soil health, emergence of new pests and diseases, intensive use of commercial energy, disruption of its water balance and worsening of overall agro-economic system of the state. For the sustainability of agriculture, it is necessary to explore the alternatives to the rice-wheat monoculture. Various expert committees have recommended diversification of Punjab agriculture toward high-value commodities and agro-processed products that augment farm income, promote exports and conserve soil and water resources (GOP, 1986; GoP, 2005 and PSFC, 2006).

In rabi season, high value crops such as vegetables and flower crops may provide a viable and sustainable alternative to wheat in Punjab. With almost cent per cent irrigated area, the state has a lot of potential for floriculture.When compared to conventional agricultural and horticultural products, flower products have 25 to 30 times more potential to attract foreign exchange earnings (Sharma, 2020). Due to high wage rates for manual labour, flower cultivation for seed production is expensive in other countries, whereas wage rates in India are much lower; hence, flower seeds are produced in India primarily for export to meet the international demand. Due to favourable climatic conditions such as a long duration of the cool and dry season that is helpful in bold seed setting, cultivation of flowers for seed production is being practiced in some pockets of Punjab state since past more than two decades. From an area of about 2000 acres cultivated under flowers in Punjab, the state exports flower seeds worth Rs 60 to 70 million per year to the United States, Holland, Germany and United Kingdom (Anumala and Kumar, 2021).

However, in the cultivation of high value crops including floriculture, farmers face several production and market related constraints (Garg, 1999; Singh *et al* 2006; Kumar and Kumar, 2008; Singh and Singh, 2016; Kaur and Singh, 2019). Contract farming is one of the ways to deal with risk involved in the cultivation of high value crops. Through effective coordination of production and marketing activities, the role of contract farming has become increasingly important in agribusiness. It is assumed to be a mutually beneficial relationship between the contracting parties like firms and the farmers without compromising the rights of either party. The producers transfer the market risk to processors/firms

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by contracting and in return, the processors/firms get the assured supplies of desired quality at a cost that might be lower than if the same would have produced themselves. The contractor also supplies the farmer with selected inputs, including technical knowledge, thus, besides a channel for marketing agriculture product, the contract farming also works as an avenue for technology transfer. Thus, through contracting both parties can be better off in principle. Contract farming of flower cultivation for seed production has the potential to benefit both contract firms and farmers. Since contract agencies receive orders for flower seeds from clients both in India and abroad, farmers have indirect access to a vast national and international market. Farmers are provided with seed, technical expertise, guidance, and various other agricultural inputs by contracting agencies. As a result, contract farmers have an upper hand over general farmers (Singh, 2005).

Thus, in the changing agricultural and overall economic scenario of the state, this study was conducted to understand and analyze the constraints encountered by farmers and contracting firms involved in contract farming of important flower crops for seed production.

## Data Sources and Methodology

The study was based on the primary data collected from the sample farmers growing floricultural crops for seed production under the contract system as well as from the agencies involved in the contract farming with reference year 2021-22. For this purpose separate interview schedules were prepared for contracting agencies and farmers and the same were pre-tested before data collection. Department of Floriculture and Landscaping, PAU and Horticulture Department, Government of Punjab were consulted to identify total six contracting agencies involved in floriculture production in Punjab. It was found that in Punjab, under contract system only flower seeds are produced and no agency was dealing with loose or cut flower production. Five contract firms were selected to collect the data. The names of selected firms are RTS Flowers, Beuscape Farms, Global Flower Seeds, Biocarve Seeds and Hortiflora seed farms. These companies function in several districts of the states; majorly in Sangrur, Patiala, Malerkotla, Hoshiarpur, Ludhiana, Fatehgarh Sahib and Fazilka. Phlox, C*oreopsis lanceolata*, nasturtium, delphinium, alyssum, matthiola, nemophila, California poppy, daisy and salvia were the major flowers being grown by farmers under the contract system.

Multi-stage sampling technique was used to select the representative sample farmers growing floricultural crops under the contract farming. At the first stage two districts with the highest proportionate area under flower crops were selected. For this, information regarding district-wise area under flower crops was collected from the office of Director Horticulture, Punjab. The districts of Ludhiana and Patiala, accounting for the largest share in the total area under floriculture in Punjab during triennium 2016-17 to 2018-19, were taken as the sample districts. At second stage of sampling, lists of villages with higher concentration of growers of flower crops were obtained from the offices of Deputy Director, Horticulture of the concerned districts and with the consultation of selected contract firms; two villages from each of the selected district having significant area under flower crops under contract system were selected.

At the final stage of sampling, for each of the selected village, list of farmers who had contractual agreements of flower seed production with contracting firms was obtained from the respective staff of the sample contracting agencies. From list of each district, thirty farmers were chosen randomly, thus, a total sample size of 60 farmers formed the basis of present enquiry. Details of sample villages and number of farmers selected from each sample village have been provided in Table 1.

**Table 1. Distribution of sample farmers, Punjab, 2021-22**

| District | Block | Village | Farmers (Number) |
|---|---|---|---|
| Ludhiana | Sidhwan Bet | Jandi | 10 |
| | Sudhar | Lohat Baddi | 20 |
| Patiala | Nabha | Hiana Kalan | 19 |
| | Bhunerheri | Bir Majal | 11 |
| Total | | | 60 |

To identify the likely constraints, focus group discussions with progressive floriculturists, key informants and other stakeholders were undertaken. Information on general profile of contract firms and farmers, terms and conditions of contract, costs and returns of flower crops grown by respondents; and production, marketing and contract related problems encountered in the contract farming of flowers for seed production were collected from contract firms and sample farmers. The production, marketing and contract related problems faced by sample farmers in flower seed enterprise and problems faced by sample contract firms were analysed using the mean score method. The perception of respondents towards each problem was categorised as no problem, low level problem, medium level and high level problems and these responses were assigned score 0, 1, 2 and 3 respectively. Frequencies of respondents were multiplied to the given scores to calculate the overall score which was used to obtain the mean score for each problem. Each problem has been ranked on the basis of mean score to reflect the nature of its severity.

## Results and Discussion

### Socio-economic Profile of Farmers

The socio-economic profile of sample farms presented in Table 2 shows that flower cultivation under contract farming

for seed production was adopted mostly by young (31.67%) and middle-aged farmers (56.66%). The majority of sample flower seed producers (40%) had senior-secondary level education. Only 3.33 per cent of respondents were illiterate whereas, 5 per cent, 18.33 per cent and 16.67 per cent sample farmers have education up to primary, middle and metric level, respectively. Graduate and post-graduated farmers accounted for ten per cent and 6.67 percent of the sample farmers respectively. For finance requirements of flower cultivation, farmers mainly depended on their own funds (45%) and on credit from commission agents (46.67%) as well as from cooperative society (38.33%). Only 3.33 per cent sample farmers availed loans from the commercial banks. About seven percent of the sample farmers took financial support from relatives for flower cultivation. Contracting firms provided loans to only 8.33 per cent of respondents, thus, indicating the insignificant financial support by contracting firms to farmers in flower cultivation for seed production.

Around 65 per cent of sample farms were having small family size i.e. up to five members. Around 78 per cent area of total operational landholding on sample farms was leased-in by the sample farmers which indicate that flowers were being cultivated for seed production mainly by farmers with high leased-in land area. Land owned by the respondents accounted for only 21.61 per cent of the total operational area (Table 3). Average operational landholding on sample farms was found 27.12 acres which was about three times as compared to average operational landholding size (9.04 acres) in Punjab state (GOI 2021).

## Production Related Problems

Farmers face various a-biotic, biotic and financial problems during the growth cycle of flower plants. The analysis of these problems may help in devising the policies which may effectively address the issues faced by the farmers. Table 4 shows production-related problems as well as the nature and severity as perceived by farmers. Based on the mean score of severity, the problems have been ranked and discussed as followings:

Flower production can be adversely effected by harsh climatic conditions which result in to immediate loss of yield and farmers are unable to recover the investment. Flower production is extremely risky and necessitates constant attention during production period (Mishra and Singh, 2010). About 82 per cent farmers in the study area ranked production

**Table 2. Socio-economic profile of sample farm households, Punjab, 2021-22**

| Particulars | | Number | Per cent |
|---|---|---|---|
| Age of household head (Years) | 25 to 35 | 19 | 31.67 |
| | 35 to 45 | 14 | 23.33 |
| | 45 to 55 | 20 | 33.33 |
| | 55 and above | 7 | 11.67 |
| Education level of household head | Illiterate | 2 | 3.33 |
| | Primary | 3 | 5.00 |
| | Middle | 11 | 18.33 |
| | Metric | 10 | 16.67 |
| | Senior secondary | 24 | 40.00 |
| | Graduation | 6 | 10.00 |
| | Post-Graduation | 4 | 6.67 |
| Family size (Number) | Up to 5 | 39 | 65.0 |
| | 6 to 8 | 14 | 23.3 |
| | 9 and above | 7 | 11.7 |
| | Average family Size | 5.28 | - |
| Source of credit | Own funds | 27 | 45.00 |
| | Contract company | 5 | 8.33 |
| | Funds from relatives | 4 | 6.67 |
| | Commercial banks | 2 | 3.33 |
| | Commission agents | 28 | 46.67 |
| | Cooperative society | 23 | 38.33 |

**Table 3. Land holding details of the sample farm households, Punjab, 2021-22**

**(Acres/farm)**

| Particulars | Area | Per cent |
|---|---|---|
| Owned land | 5.86 | 21.61 |
| Leased-in land | 21.26 | 78.39 |
| Total operational holding | 27.12 | 100.00 |

risk as the most serious biotic problem with a mean score of 2.82, while the rest of sample farmers (about 18%) considered this problem of medium level. Cultivation of high-value crops for seed production is relatively expensive because it requires more manual labour than other conventional crops (Manjunatha and Prasad, 2012). Similarly, the present investigation found that production of flowers was labour intensive and hence, involved high cost of production. Nearly half of the cost of cultivating flower seeds was spent on manual labour and the cost per acre on this account was greater than the total variable cost incurred in alternate crop of wheat. Respondents described the high production cost as the main financial constraint in cultivation of flower seed crops; with mean score of 2.58, it has been ranked the second most crucial problem in production of flower seeds. About 58 and 42 per cent of sample farmers perceived this problem of severe and medium level, respectively.

The adverse climatic condition was 3rd major production related problem faced by the sample farmers. About 43 per cent and 32 per cent of the sample farmers perceived this as severe and medium nature of problem, respectively. It was found that sample farms suffered losses due to heat wave during harvest resulting into significant decrease in yield of flower seed crops in comparison to previous normal seasons. Being very sensitive, decline in yield of nasturtium, delphinium and daisy flower seed crops was very high in the study area. A study on adoption status and constraints in flower production technology also indicated that high fluctuations in weather conditions is one of the major constraints in flower production in the Punjab state (Kaur and Singh, 2019).

The flower seed production is a high cost enterprise and farmers require financial assistance to cover the cost of cultivation. Farmers reported that sample contract firms did not provide financial support and loan provided by formal credit institutions were insufficient to cover the expense of cultivation of floricultural crops. Non-availability of adequate amount of loan was ranked fourth among production related problem with about 43 per cent and 27 per cent of sample famers reporting it as severe and medium nature of problem. A number of previous studies identified the lack of adequate loan as the major financial issue in flower seed production (Trivedi, 2000; Kumar and Kumar, 2008; Manjunatha and Prasad, 2012). However, according to Singh *et al* (2011), in case of some other crops (barley) the contract firm provided farmers with credit without charging any interest.

Weed infestation on sample farms was difficult to control due to the delicate nature of flowers and lack of chemical weed control.Huge manual labour was employed for weeding on this account in most flower crops grown by the respondents which increased the cost of cultivation. Weed infestation was perceived as of medium and sever nature of problem by about 23 and 22 per cent respondents, respectively and was ranked fifth in flower seed production with a mean score of 1.47.

Sample farmers reported that lack of training facilities and relevant literature were also among the major problems faced by flower growers and according to severity scores these were ranked sixth and seventh, respectively. Respondents described that training in cultural practices and management of flower seed production as well as availability of appropriate floriculture literature could help them to improve flower production. The lack of availability of skilled labour has been ranked eighth because seed production is a labour-intensive enterprise and the scarcity of skilled labour particularly during harvesting is a significant constraint. A study on vegetable seed production under contract in Karnataka also reported lack of availability of skilled labour as a major issue for farmers (Manjunatha and Prasad, 2012). Kaur and Singh (2019) also identified lack of training and limited availability of skilled labour as major constraints in flower production in Punjab state. Besides, lack of extension services followed by attack of insects/pests/diseases, poor quality of output, high wage rate, unavailability of farm machinery, problem in germination of seeds, and poor quality of irrigation water and soil were the other production related constraints faced by the sample farms in the study area.

## Marketing Related Problems

Marketing aspects are crucial in development of the high value agriculture including floriculture. In general, sample farmers were unconcerned about marketing of flower seeds because the produce was collected by the contract firm for processing and sale. Contract companies usually export flower seeds to other countries at pre-determined terms. However success of this enterprise depends upon the available marketing structure and its performance. The results of in-depth analysis of various marketing issues experienced by the cultivators of the flower seed crops are reported in Table 5.

Most of the flower seed produced is being exported to the developed countries. However, exports are the sole domain area of contract agencies and farmers were unfamiliar with export procedures. Majority of respondents reported that they were unable to export their produce themselves due to lack of knowledge regarding exports and farmers had to satisfy at lower rates provided by the firm. Lack of knowledge in

**Table 4. Production related problems in flower seed production on sample farms, 2021-22**

| Problems | % of respondents facing different levels of problems | | | | Mean score | Rank |
|---|---|---|---|---|---|---|
| | No problem | Low problem | Medium problem | High problem | | |
| Soil quality | 78.33 | 8.33 | 13.33 | 0.00 | 0.35 | 16 |
| Irrigation water quality | 75.00 | 15.00 | 10.00 | 0.00 | 0.35 | 17 |
| Adverse weather/temp | 0.00 | 25.00 | 31.67 | 43.33 | 2.18 | 3 |
| Skilled labour availability | 31.67 | 36.67 | 30.00 | 1.67 | 1.02 | 8 |
| High wage rate | 53.33 | 38.33 | 8.33 | 0.00 | 0.55 | 13 |
| Unavailability of machinery | 65.00 | 18.33 | 16.67 | 0.00 | 0.52 | 14 |
| Lack of extension services | 38.33 | 31.67 | 20.00 | 10.00 | 1.02 | 9 |
| Lack of training facilities | 10.00 | 50.00 | 28.33 | 11.67 | 1.42 | 6 |
| Lack of relevant literature | 23.33 | 58.33 | 6.67 | 11.67 | 1.07 | 7 |
| Production risk | 0.00 | 0.00 | 18.33 | 81.67 | 2.82 | 1 |
| Output quality | 48.33 | 36.67 | 5.00 | 10.00 | 0.77 | 11 |
| Problem in germination | 73.33 | 16.67 | 0.00 | 10.00 | 0.47 | 15 |
| Insect/pest infestation | 41.67 | 38.33 | 20.00 | 0.00 | 0.78 | 10 |
| Diseases | 45.00 | 40.00 | 15.00 | 0.00 | 0.70 | 12 |
| Weed infestation | 20.00 | 35.00 | 23.33 | 21.67 | 1.47 | 5 |
| High cost of production | 0.00 | 0.00 | 41.67 | 58.33 | 2.58 | 2 |
| Non-availability of required credit | 0.00 | 30.00 | 26.67 | 43.33 | 2.13 | 4 |

this regard was rated as high and medium problem by 81.67 per cent and 18.33 per cent farmers respectively. The present study identified it as the most important marketing problem faced by the flower seed producers with mean score of 2.82 on severity scale.

The yearly contract prices of flower seed output are highly fluctuating, so the farmers perceive that there should be some grunted annual increase in the contract prices. With a mean score of 2.63 on severity scale, the lack of a minimum yearly increase in contract prices was ranked as the second most serious issue because it made it difficult for farmers to choose flower crops over other crops, particularly wheat for which the Minimum Support Price (MSP) is assured. About 73 and 20 per cent respondents perceived it of high and medium nature of problem respectively.

On account of lack of local demand for flower seeds, farmers had to depend upon the contracting firms for disposing of their flower seed output. Farmers ranked lack of local demand for flower seeds as the third most serious problem, with a mean score of 1.48 on the severity scale. While 35 per cent of farmers classified this as a medium-level problem, another 7 per cent classified it as a high-level problem.

Few companies operate in the flower seed business. This reduces the competition among the buyer companies and these companies often collaborate with each other to fix the contract prices of flower seeds which is disadvantageous to producers. The sample farmers stated that due to lack of competition among the contacting firms; they received lower rates for their produce. Thus, with mean score of 1.22, lack of competition among contract firms ranks fourth in terms of marketing constraints.

The efficiency of agricultural markets is being adversely affected due to the lack of proper market information. Floriculture farmers are unawareof fluctuations in local and international prices and changing demand-supply scenario. The only source of this information is the contracting companies which may exploit the situation to their advantage. Poor market information was ranked fifth with mean score of 0.82. Furthermore, a significant number of respondents identified output cleaning and grading as a marketing problem.Due to lack of specific machinery, most of the cleaning and grading of flower seeds at farm level was done through costly manual labour leading to high labour costs. Garg (1999) also reported similar marketing related problems being faced by the flower growers. According to Trivedi (2000) and Kumar and Kumar (2008), the major constraints in the development of floriculture enterprises were frequent fluctuations in international prices and a lack of government support in marketing.

**Table 5. Marketing related problems in flower seed production on sample farms, 2021-22**

| Problems | % of respondents facing different levels of problems | | | | Mean score | Rank |
|---|---|---|---|---|---|---|
| | No problem | Low problem | Medium problem | High problem | | |
| Lack of market information | 41.67 | 36.67 | 20.00 | 1.67 | 0.82 | 5 |
| Lack of assured/assured increase in price | 3.33 | 3.33 | 20.00 | 73.33 | 2.63 | 2 |
| Cleaning/grading problem of output | 71.67 | 15.00 | 13.33 | 0.00 | 0.42 | 7 |
| Output quality problem | 58.33 | 21.67 | 8.33 | 11.67 | 0.73 | 6 |
| Lack of local demand/market | 0.00 | 58.33 | 35.00 | 6.67 | 1.48 | 3 |
| Lack of competition among contract firms | 28.33 | 25.00 | 43.33 | 3.33 | 1.22 | 4 |
| Lack of knowledge regarding exports | 0.00 | 0.00 | 18.33 | 81.67 | 2.82 | 1 |

Both sample farmers and contract firms informed about several problems resulted because of complications in contract system of flower seed production. Problems faced by farmers and contract agencies under contract system are discussed as followings:

## Contract Related Problems Faced by Farmers

The perceptions of farmers on contract related problems faced by them have been depicted in Table 6. The most severe contract-related problem with mean score of 1.30 on the severity scale, is the high rejection rate of seed output by contract agencies due to various quality concerns resulting in quality price cuts. About 37 per cent farmers cited it as medium or high-level problem while other about 43 per cent farmers reported it as a problem though of low-level severity. Farmers were paid on the basis of quality which was checked after the flower seeds were brought to the processing unit. This process required time and sample farmers reported that because of it payment was irregular and often delayed up to two to three months by the company and hence it was ranked second most important problem of contract production of flower seeds. While about 18 per cent farmers rated it as medium problem, 40 per cent farmers cited it as some sort of problem but of low nature. Singh *et al* (2011), in their study on satisfaction level among the farmers regarding contract farming also raised similar issues of rejection of produce, money blockage and changes in policies of companies at the time of sale.

The problem of low contract prices was ranked third because farmers perceived that backed by high international demand and price, companies are making huge profits by exports of flower seeds but contract price offered to farmers were relatively low. Flower production being a costly and risky enterprise, lack of financial help from the contract firms was ranked fourth and 47 per cent of sample farmers reported it as a problem because generally the contract firm did not offer any financial assistance. Contract firms may resort to manipulation of norms at the time of sale. With 20 per cent farmers citing this issue of medium to high severity, it was ranked fifth in the category of contract related problems. Besides, according to some sample farmers, poor technical guidance and breach of contract by contacting firms were also the problems though these are not of serious nature.

## Problems Faced by Contract Firms

The flower seed contracting firms also face problems

**Table 6. Contract related problems faced by sample farmers, 2021-22**

| Problems | % of respondents facing different levels of problems | | | | Mean score | Rank |
|---|---|---|---|---|---|---|
| | No problem | Less problem | Medium problem | High problem | | |
| Poor technical guidance | 55.00 | 45.00 | - | - | 0.45 | 6 |
| Irregular payment | 41.67 | 40.00 | 18.33 | - | 0.77 | 2 |
| Manipulation of norms | 71.67 | 8.33 | 15.00 | 5.00 | 0.53 | 5 |
| High rejection rate | 20.00 | 43.33 | 23.33 | 13.33 | 1.30 | 1 |
| Low contract prices | 48.33 | 31.67 | 20.00 | - | 0.72 | 3 |
| Lack of financial aid | 53.33 | 33.33 | 13.33 | - | 0.60 | 4 |
| Breach of contract | 70.00 | 30.00 | - | - | 0.30 | 7 |

**Table 7. Problems faced by sample firms in contract farming of flower seeds production**

| Problems | % of sample contract firms facing different levels of problems | | | | Mean score | Rank |
|---|---|---|---|---|---|---|
| | No problem | Less problem | Medium problem | High problem | | |
| Breach of contract by farmers | 60 | 40 | - | - | 0.4 | 8 |
| Delayed delivery of output | 40 | 60 | - | - | 0.6 | 6 |
| Farmer's unwillingness to follow prescribed practices | - | 80 | 20 | - | 1.2 | 3 |
| Problematic behaviour | - | 40 | 60 | - | 1.6 | 2 |
| Mixing of poor quality output | - | 40 | 20 | 40 | 2 | 1 |
| Lack of institutional/government support | 60 | - | 40 | - | 0.8 | 5 |
| Quality/price disputes | 20 | 60 | 20 | - | 1 | 4 |
| Lack of infrastructure | 60 | 20 | 20 | - | 0.6 | 7 |

in operating their business and their perception on these problems is presented in Table 7. Mixing of poor quality seed was the top ranked problem faced by the contract firms as 60 per cent of respondent firms reported it as medium or high level of problem. Due to this problem, screening high-quality seeds require extra effort because low-quality output may jeopardise brand reputation in the international market. Farmers' problematic behaviour had been second highest ranked problem as perceived by the contracting firms with 60 per cent sample firms classifying it as medium type of constraint.

According to contact firms, while guidance was provided regarding cultivation practices to farmers, they generally disregarded it, which could reduce the quantity and quality of produce; thus, it was rated as a medium problem by 20 per cent sample firms and, thus, making it a third ranked constraint. The remaining 80 per cent of firms regarded this as a low-level issue, owing to the fact that if farmers refused to follow prescribed practices, resulting in quality loss, these firms have rejection or price cut options and it was ultimately the farmer's loss. Farmers failing to follow prescribed cultivation practices have also been identified as a problem for contract firms by Kaur and Singh (2019).

The rejection or reducing prices for low-quality output by contract firms often resulted in disputes with farmers and this was identified as a problem faced by 80 per cent of firms and ranked fourth among contract farming related problems of flower seed production. Other problems faced by contract firms included lack of government/institutional support, delays in delivery of output by farmers and poor infrastructure.In contrast to the study by Kumar and Kumar (2008), which revealed that violation of contract terms and conditions was a major constraint in contract farming in Karnataka, breach of contract by flower seed producers was primarily a minor issue for sample study firms.

## Conclusions and Policy Suggestions

The present investigation of constraints in cultivation of flowers for seed production revealed that sample farmers were most troubled due to high production risk, high cost of production and adverse weather conditions which were the major biotic, financial and abiotic constraints in the production related problems on sample farms. The respondents were unaware of the export regulation procedures and they were required to sell flower seeds to contract companies and lack of assured increase in output prices is also a marketing issue for farmers. The three major constraints among contract-related problems faced by the sample farmers were high rejection rate of the output, irregular payment and low contract prices fixed by the contract firms. The major concerns for contract firms involved in flower seed production were a mix of poor quality output, problematic farmer behaviour and farmers' unwillingness to follow prescribed practices. The finding of the study, suggest that in order to encourage the adoption of flower crops for seed production in Punjab, package of practices for flower crops must be standardised/developed through strengthening of research and development programmes. This will help in mitigating the production risk in floricultural crops and thus increasing the profitability. Government and agricultural institutes must prioritise providing extension services, incentives or subsidies on machinery to farmers who practice floriculture. This will help in reducing the high cost of cultivation in flower crops by substituting costly manual labour. Contract firms should provide training and literature on flower seed production to guide farmers in appropriate cultural practices to obtain high quality produce which will reduce the rejection rate of flower seeds by firms due to low quality. Contracting companies should provide financial support to farmers and there must be

provision for crop insurance under the contract to compensate farmers for losses caused by adverse weather conditions. In order to protect contract farmers against irregular payment and manipulation of terms by contract firms, written form of contract with provision for legal measures should be made compulsory.

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