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2016

Online at <https://mpra.ub.uni-muenchen.de/79707/>
MPRA Paper No. 79707, posted 13 Jul 2017 11:42 UTC

ECONOMICS AND MARKETING OF ROSES IN ISLAMABAD AND RAWALPINDI DISTRICTS, PAKISTAN

Muhammad Taseer Rasheed*, Khalid Mahmood Aujla*, Abid Hussain*, Abdul Hayee Qureshi* and Tariq Hassan*

ABSTRACT:-

Roses have reasonable demand in Pakistan. The study was conducted in rose growing pockets of Islamabad and Rawalpindi districts. The objective of the study was to determine costs and returns of rose producers and marketing intermediaries. Random sampling technique was used to collect the data from thirty farmers and ten retailers. In the study area, per acre yield of roses was 1010 kg per annum. Average establishment cost of rose gardens was Rs. 0.17 million per acre. Total cost of production was calculated to be Rs. 0.26 million per acre per annum. Gross and net returns of rose farmers were calculated to be Rs. 0.32 million and Rs. 0.06 million per acre, respectively. Benefit cost ratio of roses production was 1.24, thus returns from roses' production are high enough, and it is an attractive farming activity in the study area. Marketing channel for roses was identified as producers, retailers, and consumers. Marketing costs of producers and retailers were Rs. 54.1 and Rs. 17.3 per kg, respectively. Shares of producers and retailers in consumer rupee were 77.4% and 22.6%, respectively. Farmers in the study area obtain low yield of roses than their counterparts in irrigated areas of the country, mainly to due to traditional non-recommended production practices. Thus, farmers should be trained to use recommended production technology for production of roses.

Key Words: Benefit cost ratio, Consumer's rupee, Establishment cost, Islamabad, Maintenance cost, Net margins, Rawalpindi, Roses,

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INTRODUCTION

Floriculture is an important subsector of horticulture and is concerned with production and marketing of flowers, ornamental plants as well as flower arrangements. Pakistan is blessed with varied climatic and topographic conditions suitable for growing variety of flowers such as rose, tuberose, gladiolus and carnation etc. Furthermore, the country has the capacity not only to meet local demand but to export flowers. Statistics of area, production and exports of flowers are not officially published. However, Taj et al. (2013) reported that flowers are cultivated on 16506 acres in the country. Bashir (2010) reported that value of all flower exports from Pakistan was Rs. 35 million in the year 2009-10. Pakistan exports flowers mostly to Dubai, Egypt and Germany (Zeb et al., 2007).

Rose flower is a perennial crop and has unique fragrance and beauty. In market it is usually available in red, yellow and white colors. It is widely used to express love and affection for relatives, friends and departed souls in the form of cut flower, garland and wreath. Ahmad (2007) reported that in the year 2006-07 area planted under roses in the country was 8000 acre. The Government of Pakistan is promoting the floriculture industry through Pakistan Horticulture Development and Export Board (PHDEB). The board is working on different lines; like undertaking different situational analysis, preparation of feasibility reports, establishing common facility centers, flora auction houses, provision of cool vans, technical support to flora projects and taking many other initiatives for the development of floral industry (Farooq and Bajwa, 2007).

Flower production and trade is relatively new in Pakistan. Main problems faced by floriculturist in Pakistan are absence of proper infrastructure for post-harvest

management, lack of quality seed, bulbs, and germplasm etc. (Ahmad, 2007). Fresh roses, petals, rose stem has reasonable demand in twin cities of Rawalpindi and Islamabad. In past few studies have been conducted about marketing of cut rose in Kasur and Faisalabad districts by Taj et al., 2013, marketing of floriculture in Peshawar by Zeb et al., 2007, marketing of cut-flower in Hyderabad by Sharif et al., 2005 and economics of floriculture in Lahore by Manzoor et al., 2001. Taj et al. stressed on vertical integration in cut rose market for the benefit of both producers and consumers. Zeb et al. found that main marketing channels of flowers were whole sale market, retailers and direct consumers. Sharif et al. described that main constraints in marketing of cut-flower are high post harvest losses due to improper flower harvesting, limited grading & standardization, and lack of information system. Manzoor et al. reported that returns per rupee spent in production of different flower were ranged from Rs. 1.47 to 2.36, and mean return per rupee spent by retailers was Rs. 1.18. They further stated that shares of producers and retailers in consumer rupee were 56.6% and 43.4%, respectively. Findings of these studies revealed that there exist a prosperous future for floriculture sector in terms of income and employment generation in the country, given that constraints of market intermediaries are timely addressed. Moreover, there is a need to study production and marketing of flowers in other big cities of the country i.e. Karachi, Rawalpindi, Islamabad and Quetta. This study is designed to find out the cost of production and analyze marketing of roses, so that the cost and benefits of rose enterprise can be fully understood by the prospective farmer, market intermediaries and policy planners. The study provides information to research and development institutes in understanding problems faced by flower growers. As already stated, though few research studies have

been carried out in irrigated area of Lahore, Faisalabad, Kasur, Hyderabad and Peshawar districts, yet no study has been conducted in rain-fed Pothohar plateau of Punjab. The agro-climatic conditions of the study area are entirely different from irrigated areas. The study area lies in the humid region with higher annual rainfall of 861 mm as compared to Lahore (750 mm), Peshawar (505 mm) and Hyderabad (422 mm) and other irrigated districts. Moreover rainfall pattern in the study area is significantly different from irrigated areas of the country (GOP, 2013) and canal irrigation system also does not exist. This study has been designed to examine the production and marketing of roses in the study area with specific objectives; to determine the cost and returns of roses production in Islamabad and Rawalpindi districts, to identify marketing channels and quantify marketing margins of rose producers and marketing intermediaries and, to ascertain production and marketing constraints of roses and make recommendation for increasing productivity and improving marketing of roses.

MATERIALS AND METHOD

In the first phase list of rose producers was made with the help of retailers of main markets in Islamabad viz. G-9 markaz and Aabapara, and in Rawalpindi viz. Sadiqabad and Banni. Rose flower are produced on commercial scale in small pockets viz. Sohan, Ojhri, and Hardogehar villages of Islamabad, and Tarnol, Adila, and Chakari villages of Rawalpindi. During informal survey with retailers contact details of rose growing farmers were obtained. Out of these, thirty farmers were randomly interviewed. A sample of fifteen farmers was selected from Islamabad and Rawalpindi tehsil each. Five farmers were selected from each of the above referred villages. Ten retailers were also interviewed, five each from main markets of Islamabad and Rawalpindi cities.

The data regarding costs and margins were collected for the calendar year 2013. Moreover farmers were also inquired about establishment expenses on rose fields. Accordingly, the cost of production is divided into two main heads establishment/ initial investment cost and maintenance/annual cost of rose production. Establishment cost is the cost borne by the producers during first year of planting rose fields. As the rose plants starts flowering in marketable quantity in the second year of planting, thus establishment cost was calculated for first complete calendar year. Establishment cost has been divided into two components fixed cost and variable cost. Fixed cost consists of rental value of the land and interest on working capital. Variable cost is comprised of planting material cost, tractor charges land preparation, labour cost (for makings water channels, digging pits, transplantation, manure application, weeding, irrigations and pesticide application) and costs of manure, pesticides, fertilizers and irrigation. The maintenance cost as the name indicates is the cost of maintaining the rose field after its establishment. The maintenance cost is also bifurcated into fixed cost and variable cost. Fixed cost consists of land rent and interest on working capital and apportioned establishment cost. Subrahmanyam (1989) reported that economic life of rose fields is 10 years. Thus this apportioned establishment cost is calculated by dividing the establishment cost by economic life of rose fields i.e. 10 years. The variable cost consists of labour cost for pruning, manure application, weeding, hoeing, pesticide application, irrigation and flower cutting; costs of the manure, pesticide, fertilizers, irrigation and marketing the produce. The marketing cost of producer was calculated by adding transportation and packing material costs. After checking the data for internal consistency and accuracy, it was entered in Microsoft excel worksheets and analyzed. The cost of production was calculated by adding up fixed and variable costs. In order to find the gross returns, total production of roses per acre and market value of produce are taken into account. Then,

net income was obtained by subtracting cost of production from gross returns. Moreover, benefit cost ratio (BCR) was calculated by dividing annual gross income with total cost. Price spread for the farmers and retailers were obtained by given by equation (1). Market Margin for retailer was calculated by dividing price spread of retailer with his sale price (equation 2).

$$PS = SP - RP \quad (1)$$

Where, PS = Price spread,

SP = Selling price of farmer/retailer and

RP = Buying price of retailer/consumer.

$$MM = (PS/SP) * 100 \quad (2)$$

Where, MM = Marketing margin,

PS = Price spread and

SP = Sale price of the retailer

Farmer's share in consumer's rupee i.e. the share of farmer in price paid by consumer is obtained by equation (3). If share of producer is low then retailers is getting high share in the consumer price and vice versa.

$$SS = (PP/CP) * 100 \quad (3)$$

Where, SS = Farmer's share,

PP = Farmer's price and

CP = Consumer's price.

RESULTS AND DISCUSSION

Table 1 contains data about farm size of sample farmers, area allocated to the rose field and value of farm implements owned by the farmers. It is obvious from the data

presented in Table 2, that average farm size in the study area was 1.5 acres with area allocation to rose fields of 1.2 acre i.e. 80% of total farm size. Mean age of rose fields of sample farmers was 3 year. District wise mean farm sizes were about 1 and 2 acre in Islamabad and Rawalpindi, respectively. Mean value of farm implements per farm was Rs. 4,440.

Table 1 Farm size, area allocation to rose fields and value of farm implements

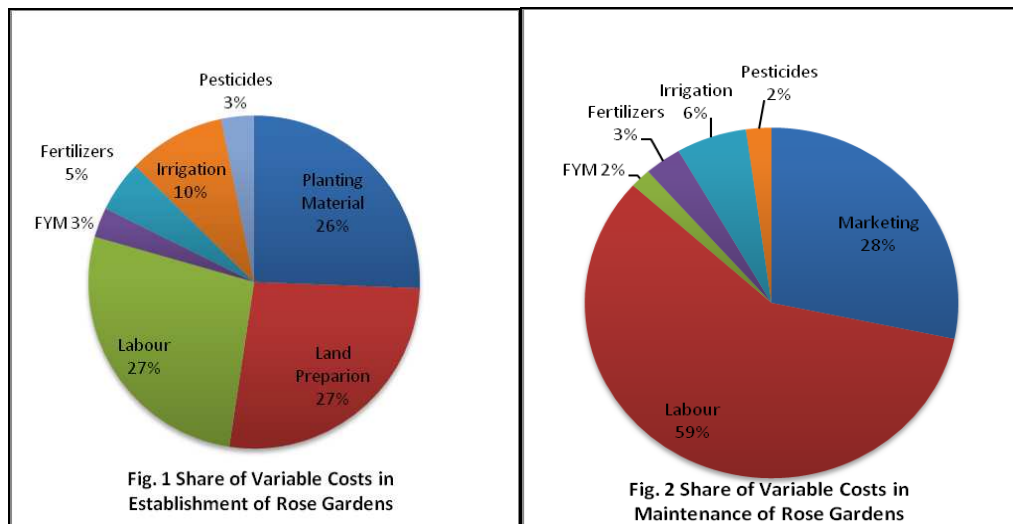
S. No.	Items	Mean	Minimum	Maximum
1	Farm size (acre)	1.5	1.0	3.0
2	Area allocated to rose field (acre)	1.2	0.6	2.8
3	Value of Implements (Rs./farm)	4,440	3,000	7,360

Source: Field survey conducted in Islamabad and Rawalpindi districts in the year 2013

Sample farmers reported to deep plough land once to completely eradicate weeds; then, land is properly prepared for planting rose plants on ridges. About one trolley of farm yard manure (FYM) is applied per acre before planting rose fields. Mean number of rose plants per acre was 720, with a minimum of 640 and a maximum of 800 plants. Most of the farmers (87%) reported to buy rose plants from nearby nurseries, while the remaining farmers (13%) reported to prepare rose nursery on their farms. More or less one bag (each of 50 kg) of Di-ammonium Phosphate (DAP) and Urea is applied per acre per annum. On the average, sample farmers reported to irrigate rose fields 24 times per annum. Though, number of irrigations does vary with season. Generally, after three or four months of planting roses, fields are hoed once in a month. Pruning is done in December and January due to low temperature and resulting dormancy in plant growth. Quratulain et al. (2015) reported that roses are attacked by a number of insects pests like rose aphid, large rose sawfly and thrips, etc. While, sample farmers reported that hairy caterpillar is the main insect pest of the flower in the study area. Farmers' production

practices differ very much from recommended ones. Khan et al. (2014) recommended to apply 133 kg of Single Super Phosphate (SSP), Potash and Nitrogen each, with two ton of farm yard manure per acre of rose fields. They further recommended that the fields should be irrigated twice a week depending on weather and rainfall conditions. Moreover, rose fields should be hoed twice a month for better weed control and soil aeration.

Percentage share of different variable cost items in establishment and maintenance cost of rose fields are presented in figure 1 and 2, respectively. Planting material, land preparation and labour are major cost items and share about one-fourth each in total variable establishment cost. While, labour is main cost item in maintenance cost and shares 59% in the total variable maintenance cost of rose fields. High aesthetic demand of consumers for roses requires considerable use of pesticides. In the study area, pesticide cost shares 3% and 2% in establishment and maintenance of rose fields. Marketing cost also share a major chunk in maintenance cost (28%).



Details about different cost items in establishment and maintenance costs of rose fields are given in Table 2 and 3, respectively. In rose gardening, land preparation cost includes all operations on land before planting viz. ploughing, planking and ridge making.

Average price of rose plants was Rs. 44. Labour use for planting, application of manure, fertilizers, pesticides and irrigations, and weeding/ hoeing the fields was 111.3 man days, with wage rate of Rs. 300 per man day. More or less one bag (each of 50 kg) of Diammonium Phosphate and Urea is used per acre per annum with mean prices of Rs. 3800 and Rs. 2418 per bag, respectively. Fixed cost for rose gardening is comprised of land rent and interest on working capital. Variable and fixed cost share 72.5 and 27.5 percent in total establishment cost. Per year twenty four irrigations are applied with average cost of Rs. 494 per irrigation. In the study area, land rent ranges from Rs. 32000- 40000 per acre with average of Rs. 33066. The share of land rent and interest on working capital in fixed cost are 70% and 30%, respectively.

Table 2 Establishment cost (Rupees/acre/annum)

S. No.	Cost items	Mean	Minimum	Maximum
A. Variable cost				
1.	Planting cost	31893(25.6)	25600	64000
2.	Land preparation cost (tractor ploughing, planking ridge making)	33387(26.8)	29800	34400
3.	Plantation cost	1080 (1.0)	900	1200
4.	Labour cost for (manure, fertilizer application, weeding, pesticide and irrigation)	32299(26.0)	32700	31800
5.	Farmyard manure cost	3530 (2.9)	3500	3600
6.	Fertilizer cost (Urea, DAP)	6218 (5.0)	5360	6432
7.	Irrigation cost	11840 (9.5)	10800	12000
8.	Pesticide cost	3976 (3.2)	3840	4400
	Total variable cost (VC)	124223(100)		-
B. Fixed cost				
1.	Land rent	33066 (70.0)	32000	40000
2.	Interest on working capital @ 9% for one year	14156 (30.0)		-
	Total fixed cost (FC)	47222 (100)		-
	Total cost(VC+FC)	171445		-

Source: Source: Field survey conducted in Islamabad and Rawalpindi districts in the year 2013

Note: Figures in parentheses are percentages.

Flower production is a labour intensive farming activity. Labour uses for cutting roses and performing other field operations were 210.0 and 97.5 man days per annum,

respectively. Wage rates were higher for cutting roses (Rs. 400 per man day) as compared to other gardening activities (Rs. 300 per man day). Share of labour cost which was 27% of establishment cost, further increased to 58.4% in case of maintenance cost. Use of farm yard manure, fertilizers and application of irrigations was the same as in case of establishment cost. The marketing cost consists of two components: cost of packing material and transportation cost. Cost of packing material is negligible because same cloth is used day after day by the farmers to pack the flowers. Total establishment and maintenance cost of rose fields per acre were Rs. 0.17 million and Rs. 0.26 million, respectively. Figure 3 shows that roses are produced from the month of February to November. Roses are not produced in the month of December and January due to severe frost. Figure 3 shows month wise average productions of roses per acre. It is clear from the figure that highest mean monthly per acre production was 143 kg in March and the lowest was in July, 81 kg.

Table 3 Maintenance cost

(Rupees/acre/annum)

S. No.	Cost items	Mean	Minimum	Maximum
A	Variable cost			
1.	Labour (weeding, hoeing, manure, fertilizers, irrigation and pesticide application, cutting and pruning)	113245 (58.4)	112538	113738
2.	Farmyard manure	3530 (1.8)	3500	3600
3.	Fertilizers (Urea, DAP)	6218 (3.2)	5360	6432
4.	Irrigation	11840 (6.1)	10800	12000
5.	Pesticides	3976 (2.2)	3840	4400
6.	Marketing (packing & transportation)	54902 (28.3)	54100	60100
	Total variable cost (VC)	193711 (100)		-
B	Fixed cost			
1.	Land rent	33066 (46.8)	40000	32000
2.	Interest on working capital at the rate of 9% for 12 months	20410 (29.0)		-
3.	Apportioned establishment cost	17145 (24.2)		-
	Total fixed cost (FC)	70621 (100)		-
	Total cost(VC+FC)	264332		-

Source: Source: Field survey conducted in Islamabad and Rawalpindi districts in the year 2013

Note: Figures in parenthesis are percentages.

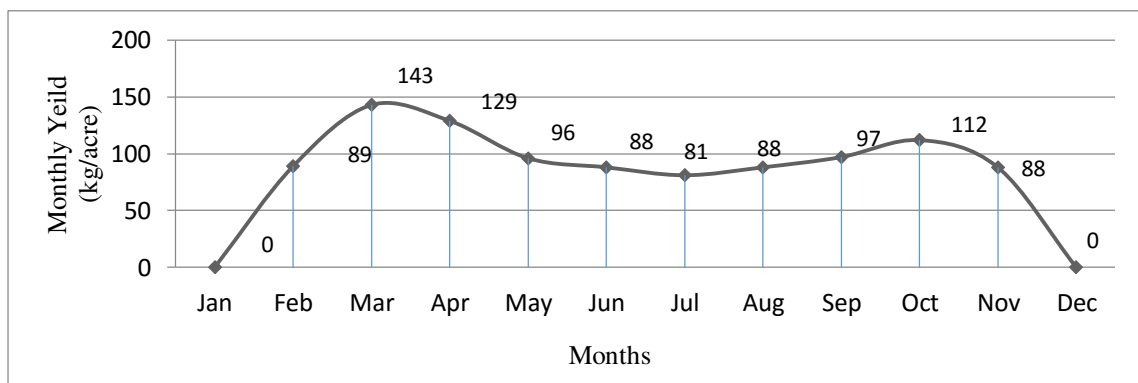


Fig. 3 Month wise fluctuations in production of roses

Prices of roses were the highest in summer season (Rs. 400 per kg in July), followed by in winter season (Rs. 360 per kg in November), autumn seasons (Rs. 325 per kg in October) and spring season (Rs. 290 per kg in March). Roses production touches the maximum level in March, thus prices remain low in spring season. While production reaches the lowest level in July, thus prices remain high in summer season. The average price of roses in the study year was Rs. 340 per kg. Though, demand and prices of roses also fluctuates with social events i.e. marriage seasons and religious celebrations (*eids* and festivals).

Mean per acre yield of roses was 1010 kg per annum (Table 4). Yield in the study area is low as compared to Lahore district Punjab (1606 kg per acre) as reported by Manzoor et al. (2001). Thus, sample rose farmers obtain 37% less rose yield than their counterparts in irrigated areas of province. The yield difference is mainly due to difference in agro-climatic conditions, irrigation systems, depth of water table and input use etc. Cost of production was estimated to be Rs. 261 per kg. Net return was estimated to be Rs. 64 per kg. Benefit cost ratio was calculated to be 1.24, which means by investing Rs. 1 in rose farming the producers earns Rs. 1.24 in return. Thus, returns from roses are high enough and it is an attractive farming activity in the study area. Manzoor et al. (2001) reported a high cost benefit ratio of 1.97 in Lahore district. Differences in soil fertility, irrigation systems & production practices, and market access etc. are reasons of difference in cost benefit ratios in the study area and irrigated areas of the province.

Furthermore, Manzoor et al. (2001) used data of a field survey conducted in year 1994 for their study.

Table 4. Cost and returns of rose producers (Rupees/acre/annum)

S. No.	Particulars	Mean	Min	Max
A. Cost and returns				
1	Total cost (Rs.)	264332		-
2	Yield (Kg)	1010	1000	1024
3	Gross returns (Rs.)	328409		-
4	Net returns (Rs.)	64077		-
B. Cost and returns per Kg				
1	Price (Rs./Kg)	325	300	350
2	Cost (Rs./Kg)	261		-
3	Net return (Rs./Kg)	64		-
C.	Benefit cost ratio	1.24		-

Source: Source: Field survey conducted in Islamabad and Rawalpindi districts in the year 2013

Marketing of roses involves assembling, packing, transportation and selling of the flowers. Roses are picked early in the morning and packed in cloth sheets. Farmers transport their produce to the retailers in different markets of twin cities viz. Banni market, Sadiqabad, Aabpara, G-9 Markaz (Karachi Company). The producers reported not to face post-harvest losses as the flowers are immediately transported to market after cutting in morning hours. Roses are produced in the study area only to cater local needs. Hence, the flowers are not transported to other cities. In the study areas, marketing system of roses is at its primitive stage. The channel used for marketing of roses is shown in Figure 4. Farmers directly sell their produce to the retailers. Similarly, retailers also made agreements/ contractual arrangements with rose farmers to supply rose produce exclusively to them. Same marketing channel for roses was reported by Zeb et al. (2007) in rain-fed areas of Khyber Pakhtunkhwa and Manzoor et al. (2001) in irrigated areas of Lahore district of Punjab. Taj et al. (2013) also reported same marketing channel for rose cut flowers in irrigated areas of Kasur and Faisalabad districts of Punjab.



Fig. 4 Marketing channel used for Roses

Table 5 shows the costs incurred by the farmers and retailers in marketing of roses and price spread for retailers. The major cost incurred by the farmer was transportation cost. The share of packing and transportation cost in consumer's rupee was 12.9%. The highest cost incurred by retailer in the marketing was wages of labour followed by rent of the shop and payment of utility bills. Share of wages, shop rent and storage cost in consumer's rupee were 1.9%, 1.2% and 0.4%, respectively.

Table 5. Marketing cost and price spreads for farmers and retailers (Rupees per kg)

Items	Mean	Share in consumer's rupee (%)
Net price received by producer	270.9	64.5
A. Producer's marketing cost		
Marketing cost of producer (cost of packing and transportation)	54.1	12.9
Producer's selling price	325.0	77.4
B. Retailer's marketing cost (Rs/kg)		
Share in shop rent	5.0	1.2
Share in wages	8.1	1.9
Share in transportation	2.5	0.6
Share in storage	1.7	0.4
Marketing cost of retailer (shop rent, wages, transportation, storage and packing)	17.3	4.2
Retailer's profit	77.7	18.5
Consumer's purchase price	420.0	100.0
Price spread	95.0	22.6

Source: Source: Field survey location Islamabad and Rawalpindi districts in the year 2013

Expenditure on storage and packing were Rs.1.7 per kg, including storage cost of Rs. 1.3 and packing cost of Rs. 0.4 per kg. Price spread for retailer is calculated to be Rs. 95 per kg. The shares of producers and retailers in consumer rupee were calculated to be 77.4 % and 22.6 %, respectively. Retailers' profit was estimated to be Rs. 77.7 per kg or 18.5% of the price paid by consumers for the flower. These results are quite similar to that reported by Sharif *et al.* (2005) for cut flowers production in Hyderabad district of Sindh province. They reported that retailers' profit was 15.7% of the prices paid by the consumers.. Monthly average sale of roses was 177 kg. Monthly gross income of retailers was estimated to be Rs. 74340 with net income of Rs. 16815. None of the retailers reported storage losses. Benefit cost ratio for the retailers were 1.29. Most of them reported to sell roses on daily basis and the left over stock is stored in freezers and sold

next day. Thus, a little quantity of roses get perished, which is sold at low prices, mostly to *hakims* and small entrepreneurs, who use roses in preparation of certain medicines and products viz. rose water, scent and cosmetics etc.

Farmers reported to face problems in production of roses. The traditional practices adopted by the farmers in production of roses are the main cause of low yield in the study area. Problem regarding insect pest (hairy caterpillar) attack on rose plants was reported by few producers. Taj *et al.* (2013) also reported problem of insect pest attack on rose cut flower in Kasur and Faisalabad districts of Punjab. Non-availability of technical guidance was also another problem. Manzoor *et al.* (2001) also reported lack of technical guidance for roses farmers in Lahore district of Punjab. Problem of moisture stress were also reported by the farmers in the study area. Similarly, Zeb *et al.* (2007) reported problem of water stress for roses production in rain-fed areas of Khyber Pakhtunkhwa. The sample farmers and retailers were satisfied with the marketing system of roses. However, high transportation cost and short shelf life were reported mains problems in production and marketing of roses.

CONCLUSION AND RECOMMENDATIONS

Agro climatic conditions of the study area are favorable to grow roses and variety of other flowers. However, flower farming is practiced in the study area on limited scale due to high cost of production and relatively small market size as compared to other big cities of the country viz. Lahore, Hyderabad and Peshawar. The farmers of the study area are generally skeptical about the return on investment in traditional crops as their production solely depends on rainfall. While, moisture requirements of roses are mainly fulfilled by irrigating rose fields with submersible pumps, which is also supplemented with rain water. Hence, through adoption of rose gardening area farmers can increase their incomes. Thus, both public departments (Agricultural Extension Department, Punjab Horticulture Board-PHDB, Horticulture Directorate of CDA etc.) and private sector should come forward to encourage farmers to adopt rose gardening. Further research is required in area of value chain analysis to identify strengths, weaknesses, opportunities and threats in the flower business.

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