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Economic Analysis of Jasmine Flower: A Case Study of Punjab, Pakistan

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Abstract

Floriculture has been considered as a potential business due to divergence of farmers towards high value floral crops and consumption of flowers in social events as well as for industrial production in Pakistan. The present study was designed to estimate the production cost, net income and BCR of jasmine flower. Purposive sampling technique was used for the data collection. Data were collected from district Kasur, Lahore and Sheikhupura. A total of 50 respondents of jasmine flower were interviewed. To determine the impact of different socioeconomic and agronomic factors on the production of Jasmine a Cobb-Douglas production function was employed. The results of the findings revealed that the per acre cost of production of the jasmine small farmers (Rs. 275,531) was less as compared to medium and large farmers. The total cost of production of the jasmine medium farmers (Rs. 278,111) was higher as compared to small (Rs. 275,531) and less than that of large farmers (Rs. 293,016). The total average cost of production of all farms was Rs. 279,719. The total revenue of the small, medium, large and all sampled farmers in the area was Rs. 666,385, Rs. 615,441, Rs. 640,017 and Rs. 630,346, respectively. The net income was the highest of the small farmers, i.e. Rs. 390,854 followed by large farmers (Rs. 347,001) and medium farmers (Rs. 350,627). The BCR of the sampled small, medium, large and all farmers was 2.42, 2.21, 2.18 and 2.25, respectively. The results of the econometrics model implied that the variable of education of the farmers, land preparation cost, FYM cost, fertilization cost and irrigations applied had positive and significant while the variable of chemical cost had negative and significant impact on the dependent variable (yield of jasmine). The educated people need to be encouraged to adopt flower business. The farmers should be encouraged to prepare good quality land to get better and high-quality yield of jasmine flowers.

INTRODUCTION

People usually use flowers in all their ceremonies like wedding, birthday and marriage day greetings, and religious offerings and sometimes in social, political and historical occasions (Usman *et al.*, 2015). About 145 countries are involved in floriculture

cultivation and consumption worth is in billions of dollars, but Pakistan's share is less than 3 percent in international market while India ranks 25th in global trade with export having a growth rate of 12-15 percent in floriculture, where more than 50% of the floriculture products are contributed by the Netherlands. As far as Pakistan is concerned, this industry is still in an infant position (Sidhu, 2005).

Flower crops are seasonal crops; farmers need too much wait for output return from traditional crops (sugarcane, cotton and rice etc.). Compare to these conventional crops, the flower crops are profitable and requires less input resources. Flower crops provide premium rates and this type of farming is a good choice for small as well as large scale farming. Flower cultivation as business, farming is highly profitable, which provides a maximum net return in context with to its cultivation cost (Jahan, 2009). So, flower cultivation is getting maximum value in the world. Business of cut-flower yearly extended at 25 percent growth scale. About 11 billion US dollars are an international business in which from floriculture, cut-flower shares 60 percent and expectation is that it would be double till 2025 (Singh *et al.*, 2010).

Conventionally flowers were grown for the aesthetic benefits, social function and export of essential oils and fragrance production (Byczynski, 1997). Now floriculture has emerged as a lucrative profession with the much higher potential for returns compared to other Agri-horticultural crops (Sudhagar, 2013). Evidences from all civilizations reveal that mankind has a historical interest in gardening and culturing flowers to satisfy an aesthetic need. But, in the present world, the flower becomes important not only for its aesthetic, social values, but also for its economic contribution (Aditya, 1992; Dadlani, 2003). Floriculture has been identified as a potential business due to divergence of farmers towards high value floral crops and utilization of flowers in social events as well as for industrial production in Pakistan (Younis *et al.*, 2002). Owing to enhanced profit levels, commercial floriculture is emerging as a potential field of horticultural production. Commercial floriculture has a remarkable positive impact on increasing total household income (Yeasmin, 2009).

The diverse agro-climatic conditions in Pakistan suit all kinds of floriculture crops, including cut-flowers, and potted plants throughout the seasons. In Pakistan growing cut-flowers are a very profitable business if done properly on a commercial basis. The cut-flower marketing business is getting popular because of its high demand. As farm holdings are small, therefore a farmer hardly makes his both ends meet from this enterprise. It is high time that innovative approaches should be employed by the farmers to increase their income (Usman *et al*, 2014). Pakistan has favorable climate and cheap labor for growing these crops, whereas they need less land and water for production. These crops also give the premium prices almost round the year and there is no need to wait for a long time as in the case of other traditional crops. Net profit is much higher for these crops compared with other conventional crops. These products are in high demand all over the world (Usman *et al.*, 2015).

The present study estimated production cost, gross margin, net income and benefit cost ratio of jasmine flower. The production function is also estimated and some recommendations are suggested based on the findings. The remainder of the paper is organized as: research methodology is presented is section 2 and results and discussion are discussed in part 3. Section 4 provides study conclusion and suggestions.

MATERIALS AND METHODS

Study Area, Sampling and Data Collection

The present study was conducted at the province of Punjab, Pakistan during the year, 2013-14. Data were collected from district Kasur, Lahore and Sheikhupura. Purposive sampling technique was employed for the data collection. A total of 50 respondents of jasmine were interviewed. Twenty respondents were selected from tehsil Pattoki of district Kasur, 15 each from Lahore and Sheikhupura districts. There were 25 small, 15 medium and 10 large respondents, respectively. Small respondents were taken more than of medium and large as in the study area, majority of the land holdings are small. The data were collected through farmers' interviews using a well-structured and field pre-tested questionnaire.

The respondents were classified into small, medium and large farms, according to the size of their area under flower acreage. The farmers having flower acreage of less than 2.5 acres were termed as small farmers; those with flower acreage between 2.5 acres to 5 acres were placed under medium farmers, whereas farmers having more than 5 acres of flower were classified as large farmers (Usman *et al.*, 2013; Usman and Ashfa, 2013a, 2013b; Usman *et al.*, 2014; Ashfaq *et al.*, 2015).

Cost Estimation Procedure

This part deals with the methodology adopted for estimation of cost of production of jasmine cut -flowers incurred by the farmers. Estimation of cost of production of a farm enterprise is a very complex exercise. The cost of any one-farm enterprise cannot be determined precisely unless the costs of all other farm enterprises are determined simultaneously (Ahmad *et al.*, 2004). To overcome this problem, actual hiring or market rates, including transportation cost of variable inputs such as labor, ploughing, planking, seed, fertilizer, irrigation, hoeing, pesticide, weedicide and picking etc. was considered. Costs, margins and income were calculated following the earlier studies (Usman *et al.*, 2013; Usman and Ashfa, 2013a, 2013b; Usman *et al.*, 2014; Ashfaq *et al.*, 2015).

Land Preparation

Cost per time/hour of ploughing, planking, leveling, seed beds and ridges were estimated based on prevailing hiring rate in the village.

Seed

Seed cost per seedling, bud, cutting and or kilogram were estimated based on prevailing hiring rate in the market.

Fertilizer

The value of the fertilizer applied, including transportation cost, was charged to the selected flower.

Irrigation Cost

Canal irrigation cost was determined by using water charges cost (Abyana). The rate at which tube well water can be purchased was used irrespective of the fact whether the farmer owned or did not own his tube well.

Pesticide/Weedicide

The value of the chemicals applied along with the hiring rate of the sprayers was used to calculate the total cost.

Labor Uses

Growing flowers is a labor intensive business. Large number of laborers are used in hoeing, seed transplanting and pricing etc., during flower production. Three types of labor are used on the farm i.e. family labor, permanent hired labor and casual hired labor. Casual hired labor was mostly employed during the peak load periods for specific operations. Market or hiring rate was used for all types of labor used in jasmine production.

Land Rent

It is generally assumed that land has no cost of production, i.e. is a free gift of nature. It is true, but in its natural state it cannot be used for agriculture. Land is not a factor of production unless it is not modified. The payment made to land, for its use in production, is called the land rent (Ahmad *et. al*., 2004). Land rent was estimated by following the three steps used by Ahmad *et al.* (2004).

Land Revenue and Other Taxes

The actual amount paid to the government for flower was considered for working out the cost.

Analytical Framework

Data were edited and entered into the computer for analysis purposes and following statistical techniques were used to analyze and interpret data.

Descriptive Statistics

To analyze the results of the present study, the descriptive statistics were used to find out the percentages and frequencies of different stakeholder. The average was calculated by using the formula AM = $\sum X$ / N where AM is arithmetic mean, N is total number of observations and $\sum X$ is total sum of variables. The percentage was calculated by using the formula P = F/ N* 100 where P is percentage, F is frequency and N is total number of observations.

Gross Margin

Gross margin was calculated using the formula GM = TR-TVC where GM is gross margin, TR is total revenue and TVC is total variable cost.

Net Income

Net income was calculated using the formula NI = TR-TC where NI is net income, TR is total revenue and TC is total cost.

Benefit Cost Ratio

It is defined as the amount received in the shape of profit on the cost of one rupee. The BCR was computed by formula BCR = TR/TC where BCR is benefit cost ratio, TR is total revenue and TC is total cost.

Econometric Analysis of Data

The Cobb-Douglas production function is the most commonly used functional forms for analyzing agricultural production data. The major reasons for using this functional form are mathematical properties, simplicity of computation, and interpretation (Heady and Dillon, 1961). In addition, the Cobb-Douglas production function is relatively simpler to estimate because of logarithmic transformation into linear form (Beattie and Taylor, 1985). The Cobb-Douglas production function was linearized in a double logarithmic function with a view to getting a form amenable to practical purposes and was used as expressed below.

$$\text{Ln } Y = \beta_0+\beta_1 \text{Ln}X_1+\beta_2 \text{Ln}X_2+\beta_3 \text{Ln}X_3+\beta_4 \text{Ln}X4+\beta_5 \text{Ln}X_5+\beta_6 \text{Ln}X_6+\beta_7 \text{Ln}X_7+B_8 \text{Ln}X_8+\beta_9 \text{Ln}X_9+\beta_{10} \text{Ln}X_{10}+\beta_{11} \text{Ln}X_{11}+\mu_i$$

Where;

Y	Production per acre (Kg)
B_0	Constant
X_1	Age (years)
X_2	Education (years)
X_3	Flower growing experience (years)
X_4	Distance from flower market (Km)
X_5	Land preparation cost (Rs.)
X_6	Seed quantity (seedling, cutting, buds)
X_7	Farmyard manure (FYM) cost (Rs.)
X_8	Fertilization cost (Rs.)
X_9	Total labor man-days (No.)
X_{10}	Chemical cost (Rs.)
X_{11}	Irrigation (No.)
$B_1, B_2 \ldots B_{11}$	Regression coefficients estimated through multiple regression analysis
μ_i	Error term which included unknown factors affecting revenue of farmers

Ashfaq *et al.* (2015) also used similar function to estimate the production function of cut-flowers.

RESULTS AND DISCUSSION

Cost of Production of Jasmine Flower/Acre

The highest expenditures incurred by the jasmine small farmers was of picking i.e. Rs. 115,742 followed by hoeing (Rs. 22,144), tube well irrigation (Rs. 21,299), seedling (Rs. 21,244), fertilizer (Rs. 9,500), and land preparation (Rs. 8,260). The variable (Rs. 225,091) and total cost (Rs. 275,531) of the jasmine small farmers was less as compared to medium and large farmers. The small farmers used the available resources better than the medium and large farmers (Table 1). It was reported that the sampled medium farmers of jasmine used more FYM (Rs. 13,435) than small (Rs. 7,607) and large farmers (Rs. 6,245). The land preparation, seed and fertilization cost per acre was Rs. 6,511, Rs. 21,758 and Rs. 8736. The hoeing cost of medium farmers (Rs. 23918) was low as compared to large (Rs. 29,093) and higher than that of small farmers (Rs. 22,144) per acre. The highest expenditures of medium farmers were on picking (Rs. 113,076). The picking cost of jasmine flower was higher. This may be the reason that, picking of flowers are carried out daily during the season of the respective flowers. The total cost of production of the jasmine medium farmers (Rs. 27,811) was higher as compared to small (Rs. 275,531) and less than that of large farmers (Rs. 293,016). Table 1 revealed that the land preparation, seedling, fertilizer, hoeing and tube well irrigation cost per acre of large farmers was Rs. 8,101, Rs. 19,242, Rs. 9,706, Rs. 29,092 and Rs. 17,605. The variable and total cost of production was Rs. 242,576 and Rs. 293,016. The results of the study revealed that the major expenditures born by jasmine all farms were of picking (Rs. 117620), seedling (Rs.

21041, hoeing (Rs. 24,202) and tube well irrigation (Rs. 19,742). The total cost of per acre of jasmine all farms was Rs. 279,719.

Table 1: Production cost of jasmine flower per acre.

Production Practices	Farm Size Categories			
	Small	**Medium**	**Large**	**All**
Rotavator (No.)	1,550	1,500	1,640.63	1,553.98
Cultivator (No.)	2,023.43	2,228.80	2,119.50	2,124.70
Planking (No.)	556.15	568.40	607.50	571.25
Leveling (Rs.)	2,875	2,214.29	3,733.33	2,728.57
Ridges (No.)	1,255	1,270	1,300	1,270
Seed quantity (buds/seedling)	21,243.75	21,758.43	19,242.30	21,041.08
Man-days for seeds/bud transplantation	7,566.75	7,765.25	7,285	7,597.08
Man-days for earthling up	5,407.88	5,872.25	6,786	5,868.16
FYM Trolley	7,607.41	13,434.67	6,244.90	9,483.38
Urea (bag)	3,479.64	3,420	4,105.50	3,583.67
DAP (bag)	4,413.22	4,069.23	4,100	4,205.71
SSP (bag)	1,607.14	1,247.22	1,500	1,427.21
Hoeing	22,143.86	23,918.21	29,092.80	24,201.78
Weedicide	920	891.67	875	896.67
Spray	5,401.06	5211	5,487	5,364.45
Tube well irrigation	21,299.47	19,225.15	17,604.94	19,742.15
Picking	11,5741.72	113,076.38	130,851.65	117,619.52
Water charges (abyana 4 months)	180	180	180	180
Land Rent (4 months)	50,260	50,260	50,260	50,260
Variable cost	225,091.48	227,670.94	242,576.04	229,279.35
Total cost	275,531.48	278,110.94	293,016.04	279,719.35

Economic Analysis

The yield of jasmine per acre of the small, medium, large and all the farmers was 3,216.24 kg, 2,992 kg, 3107 kg and 3061 kg, respectively. The average price received per kg of jasmine was the highest of the small farmers, i.e. Rs. 207.19 while that of medium and large farmers were Rs. 205.73 and Rs. 205.99, respectively. The average sale price of all the sampled farmers was Rs. 205.92. The total revenue of the small, medium, large and all sampled farmers in the area was Rs. 666,385, Rs. 615,441, Rs. 640,017 and Rs. 630,346, respectively (See Table 2).

The gross margin of the small farmers was Rs. 441294 while that of medium and large farmers was Rs. 387770 and Rs. 397441, respectively. The gross margin of all the sampled farmers per acre from jasmine flower production was Rs. 401,067. The net income was the highest of the small farmers, i.e. Rs. 390854 followed by large farmers (Rs. 347,001) and medium farmers (Rs. 350,627). The benefit cost ratio (BCR) of the sampled small, medium, large and all farmers was 2.42, 2.21, 2.18 and 2.25, respectively. Growing jasmine flower is a profitable business as the returns are double than the cost incurred. These results are in accordance with the study of Ashfaq *et al.* (2015).

Table 2: Economic analysis of jasmine flower per acre.

Item/unit	Farm size categories			
	Small	**Medium**	**Large**	**All**
Variable cost (Rs.)	78797.88	82848.03	88609.53	82504.27
Total cost (Rs.)	95347.24	99397.39	105158.89	99053.63
Production (Kg)	4112.09	3637.19	4372.35	3970.93
Sale price/ kg (Rs.)	47.25	43.25	45	45.2
Total revenue (Rs.)	194296	157308	196756	179486
Gross margin (Rs.)	115498.26	74460.33	108146.22	96981.59
Net income (Rs.)	98948.89	57910.97	91596.86	80432.22
BCR	2.04	1.58	1.87	1.81

Production Function of Jasmine Flower

The results of the production function of jasmine flower indicates that the coefficient of age was negative (-0.06) and had an insignificant impact on the dependent variable (production of jasmine). Majority of the farmers was involved in the growing of jasmine were old. Growing flower is newly emerging business in Pakistan. Its production and marketing practices differ from the traditional crops (wheat, rice, cotton and sugarcane etc.). The education of the farmers is very important because cut-flower is a very sensitive business. The coefficient of education was positive (0.23) and significant at the one percent level. It indicates that with a one percent increase in the level of education, the production increased by 0.23 percent. The educated people need to be encouraged to adopt flower business. This variable is in accordance with the earlier studies (Usman and Ashfaq, 2013a; Usman *et al.*, 2013; Ashfaq *et al.,* 2015).

The results of the findings reveal that the coefficient of flower growing experience was positive (0.09) and had an insignificant impact on the dependent variable. The coefficient of distance from flower markets was negative (-0.23) and had insignificant impact on the dependent variable. The coefficient of land preparation cost was positive (0.36) and significant at the one percent level. It indicates that with a one percent increase in the expenditures for the cost of land preparation, the production of jasmine increased by 0.36 percent. Similar results are reported by Usman *et al. (*2013), Usman and Ashfaq (2013a), Usman *et al. (*2014) and Ashfaq *et al. (*2015). The farmers should be encouraged to prepare good quality land to get better and high-quality yield of jasmine flowers. The coefficient of seed quantity was positive (0.08) and had an insignificant impact on the dependent variable.

The coefficient of FYM cost was 0.20. It was positive and significant at the four percent level. It indicates that with a one percent increase in the expenditures on FYM, the production increased by 0.20 percent. This variable is in accordance with the study of Usman *et al. (*2013, 2014) and Ashfaq *et al. (*2015). Farm manure application reduced the deleterious effects of brackish water and enhanced the fertility level of the soil (Munir *et al.,* 2012). Straw mulch encourages flower production, both qualitatively and quantitatively (Younis *et al.,* 2012). The coefficient of fertilization cost was 0.31 and significant at the one percent level. It indicates that with a one percent increase in the expenditures on the cost of fertilizer used, the production increased by 0.31 percent (Table 3). This variable is in accordance with the study of Usman *et al. (*2013), Usman and Ashfaq (2013b) and Ashfaq *et al. (*2015). Fertilizer is a very important input in the

production of cut-flower. There is always needed to add fertilizers in soil to fulfill nutrients deficiency to get maximum production. A balanced used of fertilizer with the desire level of nutrients is very necessary if one wants to get maximum production. Fertilizer is very essential for flower production as their pickings are done daily during season (Usman *et al.*, 2014).

The coefficient of labor man-days was negative (-0.01) and had insignificant impact on the dependent variable. Untrained and unskilled labor force was being used in the study area by the sampled farmers. The coefficient of chemical cost was negative (-0.19) and significant at the 3 percent level. It indicates that with a one percent increase in the expenditures for the cost of chemical, the production of jasmine increased by 0.19 percent. Ashfaq *et al. (*2015) also reported similar results. Irrigation is a vital factor for good quality of jasmine flowers as their pickings are done daily. The coefficient of irrigations applied was positive (0.31) and significant at the 1 percent level. It indicates that with a 1 percent increase in the number of irrigations, the production of jasmine increased by 0.31 percent. The findings of Usman *et al. (*2013), Usman and Ashfaq (2013a) and Ashfaq *et al. (*2015) also reported similar results.

Table 3: Regression results of estimated cobb-douglass production function of jasmine flower.

Variable/unit	**B**	**t-value**	**Significance level**
Constant	-2.68	-0.48	0.63
ln-age (years)	-0.06	-0.76	0.45
ln-education (years)	0.23	2.56	0.01
ln-flower growing experience (years)	0.09	0.23	0.82
ln-distance from flower market (Km)	-0.23	-0.59	0.56
ln-land preparation cost (Rs.)	0.36	3.74	0.0
ln-seed-quantity (seedling)	0.08	0.91	0.37
ln-FYM cost (Rs.)	0.20	2.18	0.04
ln-fertilization cost (Rs.)	0.31	3.11	0.0
ln-total labor man-days (No)	-0.01	-0.12	0.90
ln-chemical cost (Rs.)	-0.19	-2.21	0.03
ln-irrigation (No)	0.31	3.08	0.0
R^2	0.76		
Adjusted R^2	0.69		
F-value	10.77		

Source: Author's Own Calculations

CONCLUSION AND RECOMMENDATIONS

The economics of any crop give a factual depiction not only on the revenue, expenses and net income that accumulate to the farmers from their followed enterprise, but also enable them to use their resources in such a way to get maximum returns. Economics of production truly play an important role in the production. It helps the farmers to use their accessible resources in a mainly well-organized and gainful way. It enables them to seem into the variety of factors and to adjust into maximum return and to minimize costs (Memon *et al.*, 2015). The present study has been carried out the means to increase per hectare yield and consequently the income of the farm. The results of the

study depicted that the growing of jasmine in the study area give double the return than the cost incurred. Following recommendations are suggested based on the study findings:

Farmers should be trained about the modern production practices and technology related to this new enterprise. There is a need to establish a research wing in production areas to develop better methods of cultivation and optimum use of recommended inputs in floriculture. This would be helpful in enhancing the production of various flowers at relatively less cost. This would, in turn, increase the income of growers as well as give surplus produce for export purpose. The more flower markets should be established near the growing areas. Electronic and press media are playing very important role to create awareness among people about the scenic value and aesthetic sense of the flowers. Extension services should be provided to different stakeholders involved in flower business by electronic and press media.

REFERENCES

Aditya, D.K. 1992. Floriculture in national economy. Proceedings of the 6th National Horticultural Conference and Symposium. BSHS.

Ahmad, B., K. Bakhsh and S. Hassan. 2004. Economics of growing radish. PhD diss., Fclty.Agric. Econ.Rural Socio., Univ. Agriculture Fsd, Pakistan.

Ashfaq, M., M. Usman, Q.M. Din and S.A. Adil. 2015. Production, management and marketing of cut flowers. Inst. Agric. Res. Econ., Univ. Agriculture, Fsd, Pakistan.

Beattie, B.R. and C.R. Taylor. 1985. The economics of production. John Wiley and Sons. New York.p.258.

Byczynski, L. 1997. The flower farmer: an organic grower's guide to raising and selling cut flowers. White River Junction, VT: Chelsea Green Publishing Company.

Dadlani, N.K. 2003. Global positioning of Bangladesh floriculture. Int. Floriculture Conf., November 6, 2003, Dhaka, Bangladesh.

Heady, E.O. and J. Dillon. 1961. Agricultural production functions. Ames: Iowa State University Press. Jahan, H. 2009. Production, Post-harvest handling and marketing of cut flowers in Bangladesh: An agribusiness study. SAARC. J. Agri. 7:1-14.

Memon, I.N., S. Noonari, I.A. Shahani, A. Pathan, Z. Memon, M. Pathan and A. Manzoor 2015. Performance of rose production in Sindh, Pakistan. Inds. Eng. LetRs. 5 (7): 43-48.

Munir, A., A. Hassan, S. Nawaz and M.A. Bajw. 2012. Farm manure improved soil fertility in mungbean-wheat cropping system and rectified the deleterious effects of brackish water. Pak. J. Agri. Sci. 49 (4):511-519:

Sidhu, S. 2005. Proceedings of the seminar on ''Diversification in floriculture trends and avenues''. University of Arid Agriculture, Rawalpindi, Pakistan.

Singh, B.K., E.S. Rakesh, V.P.S. Yadav and D.K. Singh. 2010. Adoption of commercial cut flower production technology in Meerut. Indian Res. J. Ext. Edu. 10:50-53.

Sudhagar, S. 2013. Production and marketing of cut flower (Rose and Gerbera) in Hosur Taluk. Int. J. Busi. Mngmnt. Inve. 2 (5):15-25

Usman, M., A. Ali, S. Hassan and M. Abid. 2015. An Economic efficiency analysis of tuberose cut flower: a case study of district Kasur. J. Anim. Plant Sci. 25 (6):1699-1706.

Usman, M., M. Ashfaq, S.A.A. Naqvi, A. Ali, M.I. Javed, N. Nadeem, M.H. Raza and M. Waseem. 2015. An efficiency analysis of gladiolus cut-flower in Punjab, Pakistan. Agric. Sci. 6:663-669.

Usman, M., M. Ashfaq, S. Taj and M. Abid. 2014. An economic analysis of cut-rose flower in Punjab, Pakistan. J. Anim. Plant Sci. 24 (2): 651-655.

Usman, M., M. Ashfaq and I. Ali. 2013. An Economics analysis of statice cut-flower production in Punjab, Pakistan. Pak. J. Agric. Sci. 50 (2):311- 315.

Usman, M. and M. Ashfaq. 2013. An Economics analysis of tuberose production in Punjab, Pakistan. Srhd. J. Agri. 29 (2):279-284.

Usman, M. and M. Ashfaq. 2013. An Economics analysis of gladiolus production in Punjab, Pakistan. J. Agric. Res. 51 (3):317-326.

Yeasmin, S. 2009. Socioeconomic impact of commercial floriculture on improving livelihood of farm households in selected areas of Jessore district. M.S. (Thesis). Dprt. Agric. Econ, Bangladesh Agricultural Univ. Mymensingh, Bangladesh.

Younis, A., A. Riaz, M. Qasim and S. Akhtar. 2002. Development and management of green spaces on Sumundri road, Faisalabad: A case study. Pak. J. Agri. Sci. 39:292-296.

Younis, A., M.Z.M. Bhatti, A. Riaz, U. Tariq, M. Arfan, M. Nadeem and M. Ahsan. 2012. Effect of different types of mulching on growth and flowering of *Freesia alba*cv. aurora. Pak. J. Agri. Sci. 49:429-433.