PRODUCTION CONSTRAINTS OF GUAVA IN DISTRICT KOHAT

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ABSTRACT

This article is based on primary data collected during Nov-Dec 2005 and the universe of the study was district Kohat, being a famous area for Guava cultivation. 50 respondents were randomly selected from five villages and interviewed. . It was found that water shortage seriously hampered the yield of guava in project area. The serious bottlenecks were insignificant use of chemical fertilizer as reported by less than 17% of the total respondents, this was followed by defective marketing system and fear of risk taking 15.23%, lack of marketing information 9.52%, lack of processing and preservation industry 34.32%, lack of credit facilities 50.00%, time constraint 29.82%, costly labor 36.84% and carrying out traditional practices regarding post harvest techniques. Situation was further aggravated by the non-availability, ineffective and expensive nature of insecticides and pesticides. The study also revealed that the sample respondents' access to the extension services was considerably low 92%. The study suggested post harvest recommended practices, training of field staff, institutional credit facilities and encouragement of preservation and processing industry.

Key words: Guava, Extension services, Water shortage

INTRODUCTION

Guava (*Psidium guajava* L.) belongs to the Myrtaceae family; it has more than 80 genera and 3000 species dispersed throughout the tropics and subtropics, mostly in the America, Asia and Australia (Nakasone and Paull, 1998).Guava tolerates a wide range of climates, provided they are frost-free (Menzel, 1995). However, optimum production occurs in tropical regions below 1300m above sea level. It is usually propagated from seed and the chief pollinator is the honeybee. Except from some clones, Guava is difficult to root and cutting are therefore not to be relying on (Yeshitela and Woldetsadik, 2003). In general the amount of cross-pollination ranges from 25.7 to 41.3%. In order to obtain high quality fruit with good yielding, selection of superior seedlings is necessary and their properties must be maintained by vegetative propagation. Guava is an excellent source of ascorbic acid, dietary fiber, vitamin A, and calcium. Its flesh is high in pectin making it useful for jams and jelly (Morton, 1987).

Among the major fruits of Pakistan, guava occupies the third position after Citrus and Mango in terms of area. 1,94,700 hectares are under Citrus, 90,900 hectares under Mango and 56,800 hectares under guava. Area-wise it is more than the combined area under Apples, and Peaches (49,000 ha). The reason for covering huge area throughout the country lays in the fact that guava is the hardiest, drought tolerant and with stands the pH ranging from 4.5 to 8.5 (Singh, 1990). Production-wise, it ranks fourth after Citrus, Mango and Bananas in Pakistan. However, the yield of guava is quite low, 8.1 tones/ha; considerably less than the potential yield of 25 tones/ha (Anka, 2003).

Guava is grown in all the districts of Punjab where climate and soil are suitable for this crop. In Sindh, excellent pear shaped guava with smaller seed core is grown in Larkana. Dadu, Shikarpur and Hyderabad district. In NWFP Kohat, Bannu, Haripur, D.I. Khan and Malakand are famous for good quality guava production. In NWFP during 2004–2005 an area of 1557 hectares was under guava cultivation, which produced 18570 tones of guava fruit .Of which Kohat alone produced 33% (Agricultural Statistics of Pakistan 2004 -2005).

Guava fruits can be taken twice a year, that is why guava fruit is usually available in the market through out the year (Wilson, 1980). White Allahabadi, Red Allahabadi, and loca/Desi Amroad were grown in Kohat valley. White Allahabadi is commercially accepted guava fruit due to its good quality, colour, shape (rounded in shape and white in colour) and reasonable shelf life.

While Red Allahabadi is also good quality, rounded shape and red colour but its shelf life is not upto the mark. Local/Desi variety, which has got two different shapes i.e., rounded rough surface and oval. It is also commercially not accepted due to its low shell life.

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Haq (1985) noted that 10-15% of the total production of fruit was wasted from picking to the end user. Some of the researcher also showed that about 4 percent of the production was reduced due to the faulty collection, mechanical damage, picking up un-ripen fruit and improper packing, while about 3 percent was lost owing to defective methods of transport, and carelessness. The system of transportation in refrigerated vans was practically absent. It was concluded that due to lack of cold storage facilities about 6 percent of the produce was rotten.

Extension services were expected to provide better techniques to carry out their farm operations on scientific lines. The scientific farming technologies are cast effective. Likeness proper marketing facilities for guava grower are essential. Fair prices were found to be the function of proper infrastructure, modern marketing facilities and day-to-day information about market prices. It was also found that there was wide gape between the existing production of guava and potential yield possibility. It was observed that guava farming system was traditional and coming down from generation to generation. It was also observed that still labour intensive production methods were used and mechanical farming system was namesake. Strangely enough inputs were not only insignificantly used but also was untimely applied. Consequently upon which about 20% of the total production of guava was wasted and thrown away. This gave lost instead of gain (Malik, 1993).

Objectives

i. To identify different production constraints faced by Guava growers in Kohat.
ii. To study its utilization patterns and present policies implication.
iii. To set an area for future research.

MATERIALS AND METHODS

The research was conducted during Nov-Dec 2005 in five villages (constitute 10% of the total villages) of District Kohat. The sample villages include Kurd, Chickerkot, Jarwanda, Nasret Kehl, and Aral. The research method used for data collection was mainly interview based. A well-designed and structured questionnaire was used to collect Primary data, moreover due to high illiteracy rate among the respondents questions were asked in local language. The total sample size across five villages was 50, who were mainly involved in Guava farming. The Chi-square test was used for the analysis of data.

RESULTS AND DISCUSSIONS

Propagation of guava plant

All the sample respondents in the project area used sexual method of propagation i.e. seedling. Since guava was generally propagated from seeds, each plant symbolizes variation in genetic make up and each individual plant thus, has variation in fruit quality, maturity and other aspects. Hence this sexual method of propagation had been found to be significant hindrance in developing guava fruit as a crop for fresh consumption as well as for feeding agro-based industry.

The production of quality considerably depends on variety. In other words good variety, not only give more yields, but also high quality. The data analyzed in Table I show that majority of sample respondents used white Allahabadi mainly in village Kurd, Chicker Kot and Nasret Khel, followed by Jarwanda and Aral. While only five respondents constituting 10% of the total universe used white and red Allahabadi. It could be assumed that farmer had got more popularity and acceptability among the farming community of district Kohat.

Main constraints of guava farming

Table II provides information regarding the production and yield per acre of the sample respondents. It was customary that farmers usually sell their orchids to contractors, before the crop is ready. This practice is not recommendable because farmers cannot get right price. During the field survey it was found that the contractors of Jarwanda and Aral got maximum yield per acre i.e. 30800 and 25000 kg per acre respectively. This could be attributed due to better managerial inputs and proper applications of farming techniques. The respondents of Chicker Kot obtained lesser yield i.e. 9600 kg per acre. This low yield may be, that most of the orchards were recently reaching to the fruit bearing age. Moreover, proper application of chemical fertilizers and insecticide were not maintained.

Irrigation

Water and Agriculture move hand in hand. Water is as important for agriculture as blood for life. The Kohat region is basically a rainfed area and rain is the main source of irrigation. In the past at many occasions Kohat district experienced server drought, consequently upon which majority of the growers reported that their orchards were irrigated by other sources of irrigation. The data depicted in Table III shows that over whelming of respondents constituting 60% of the total universe used spring irrigation, followed by the remaining 40% using

canal irrigation. During the process of field data collection it was reported and observed that there was a positive correlation between the availability of water and guava production.

Chemical fertilizer

Chemical fertilizer is one of the crucial inputs for enhancing guava production. The organic material has been considerably decreased over the last decade due to farm mechanization. Thus the farmers throughout the country switched over to chemical fertilizers. The data depicted in Table IV shows that more than 80% of the growers used Farm Yard Manure (FYM), this could be attributed apart from other two main factors, the sample respondents were financially very poor and this could be well supported by the data given in Table III where all the sample respondents had small farm holding. Secondly due to illiteracy farmers were still not aware about the profitability and lucrativeness of chemical fertilizers. Strongly enough only ten respondents in village Aral did use urea. From the above data it could be concluded that there was a wide scope of enhancing Guava production by optimum use of combining FYM, chemical fertilizer and irrigation water.

Reasons for contract

The collected data was put to statistical tools and techniques for establishing facts regarding reasons for contract. In this regard chi-square test was applied, data depicted in Table V shows that sample respondents had non-significant relationship with causes of selling through pre-harvest contractors.

The above findings contradict the conclusion of a number of researchers who found significant relationship between the sample respondents and causes of selling through pre-harvest contractors.

MARKETING CONSTRAINTS

It was found that defective marketing was based on number of factors. However some of the main factors were identified as under:

Picking

Proper picking of fruit and vegetables was important step and had a profound effect on the quality of produce. The produce picked in an improper way or handled roughly could result sooner into perishability. By applying chi-square test, Table VIa reveals that the sample respondents had non-significant relationship with the picking problems.

Packing

In order to attract customers to purchase the product in the market proper packing of fruit is essential, so that better appearance, safe arrival in the market and maximum profit are ensured. By applying chi-square test, Table VIb indicates that the sample respondents had non-significant relationship with the packing problems.

Packing material

By applying chi-square test, Table VIc highlights that there was non-significant relationship between sample respondents and packing material.

Extension services

Agricultural extension service was another important institutional support provided by the government to the farmers. It endeavored to educate farmers in modern practices. The data given in Table VII revealed that the extension worker contacted only eight percent of the sample respondents, while 92% were not contacted. The data indicated that the sample respondent's access to extension services was significantly low. It may be pointed out that more contact between the extension worker and the farmer was not an end in itself. Such contacts can be useful only if the knowledge of the extension worker regarding recommended production practices is up-to-date.

CONCLUSION

i. Asexual propagation ensures conservation of an improved crop variety. It was also concluded that there existed non-significant relationship between quality, inputs and out puts.
ii. ne of the main reasons for low yield was unbalanced production in a year i.e. more in one season resulted low in other and vise versa. The problem was complicated by number of factors such as poor marketing facilities, poor financial conditions of the responds, enrolment of unskilled labour in picking, packing and loading extension services were found to be insignificant and need was felt not to increase the frequency but the quality as well.

RECOMMENDATIONS

i. Awareness should be created among the farming through media and extension services regarding scientific farming of Guava.
ii. Agricultural loans should be provided on soft and simple terms and conditions to small farmers.
iii. The required inputs should be made available for farmers in required amount and at the right time.
iv. The cold storage facility will also positively contribute to enhance guava productivity.

v. Processing and manufacturing plants should be installed for easy access of the farmers. Where the farmers could either sell their product at profitable rates or make jams, squashes etc. This could result into more Guava production and better socio-economic conditions of the farmers.

Table I. ***Percentage distribution of selected farmers using different varieties***

Village	Total	Varieties	
		White Allahabadi	White & Red Allahabadi
Kurd	10	10 (100)	-
Chicker Kot	10	10 (100)	-
Jarwanda	10	8 (80)	2(20)
Nasret Khel	10	9 (90)	1(10)
Aral	10	8 (80)	2(20)
Total	50(100)	45(90)	5(10)

Table II. ***Village wise area, production (kg) and yield per acre***

Village	Total Respondents	Area (acre)	Average production (kg)	Yield per acre (Kg)
Kurd	10	3.05	58560	19200
Chicker Kot	10	1.35	12960	9600
Jarwanda	10	2.05	63140	30800
Nasret Khel	10	2.70	65880	24400
Aral	10	2.9	72500	25000
Total	50	12.05	273040	109000

Table III. ***Distribution of respondent by the source of irrigation***

Location	Source of Irrigation		Total
	Spring	Canal	
Kurd	10 (100)	-	10
Chicker Kot	10 (100)	-	10
Jarwanda	-	10(100)	10
Nasret Khel	10 (100)	-	10
Aral	-	10 (100)	10
Total	**30(60)**	**20(40)**	**50(100)**

Table IV. ***FYM and fertilizer application***

Location	FYM	Urea	Total
Kurd	10(100)	0 (0)	10
Chicker Kot	10(100)	0 (0)	10
Jarwanda	10(100)	0 (0)	10
Nasret Khel	10(100)	0 (0)	10
Aral	10(50)	10 (50)	20
Total	**50(83.30)**	**10(16.70)**	**60**

Source: Field Survey.
Note: Figures in parenthesis show percentages.

Table V. ***Causes of selling through pre-harvest contractors***

Location	A	B	C	D	E	F	G	H	I	J	Total
Kurd	-	-	-	1(33.3)	-	1(33.3)	1(33.3)	-	-	-	3(2.9)
Chicker Kot	-	-	-	1(20)	1(20)	1(20)	1(20)	-	1(20)	-	5(4.8)
Jarwanda	3(8.5)	5(14.2)	2(5.7)	-	2(5.7)	4(11.4)	5(14.3)	6(17.1)	4(11.42)	4(11.4)	35(33.3)
Nasret Khel	5(14.7)	3(8.8)	2(5.8)	1(2.9)	1(2.9)	3(8.8)	5(14.7)	5(14.7)	3(8.8)	6(19.6)	34(32.4
Aral	4(14.2)	2(7.1)	2(7.1)	1(3.5)	1(3.5)	2(7.1)	4(14.3)	4(14.3)	2(7.1)	6(21.4)	28(26.6)
Total	**12(11.4)**	**10(9.52)**	**6(5.7)**	**4(3.8)**	**5(4.7)**	**11(10.7)**	**16(15.23)**	**15(14.3)**	**10(9.52)**	**16(15.2)**	**105(100)**

Chi-square is 29.32, with p equal to 0.77, and degree of freedom 36. NA
The sample respondents increase figures due to multiple answers.
A - Lack of transportation facilities,
B – Lack of market information,
C – Picking problems,
D – Absentee Land lord,
E – Enmities,
F – Government job,
G – Risk and uncertainties,
H – Lack of marketing expertise,
I – Lack of Labour,
J – Urgent need for money,

Table VI a. ***Picking problems of sample respondents***

Factors constraining Picking	Kurd	Chicker Kot	Jarwanda	Nasret Khel	Areal	Total
1.Non-availability of labour	8(44.44)	1(5.55)	4(22.22)	3(16.66)	2(11.11)	18(26.86)
2. Irrigation	2(12.5)	1(6.25)	5(31.25)	4(25)	4(25)	16(23.88)
3. Hurting of fruit.	5(15.16)	8(24.24)	7(21.21)	7(21.21)	6(18.18)	33(49.25)
Total	**15(24.03)**	**10(12.0)**	**16(24.89)**	**14(20.95)**	**12(18.09)**	**67(100)**

Chi-square is 10.84, with p equal to 0.21, and degree of freedom 8. NA

Table VI b. ***Packing problems of sample respondents***

Factors Constraining Packing	Kurd	Chicker Kot	Jarwanda	Nasret Khel	Areal	Total
1.Non-availability of skilled labour	8(34.78)	0(0)	4(17.39)	5(21.73)	6(26.08)	23(20.17)
2. No. of labours	6(40)	2(13.33)	2(13.33)	3(20)	2(13.33)	15(31.15)
3. Time constraint.	2(5.88)	8(23.52)	9(26.47)	7(20.58)	8(23.52)	34(29.82)
4. Costly labour	9(21.42	8(19.04)	8(19.04)	8(19.04)	9(21.42)	42(36.84)
Total	**2(25.52)**	**18(13.97)**	**23(19.05)**	**23(20.33)**	**25(21.08)**	**114(100)**

Chi-square is15.14, p equal to 0.23,and degree of freedom 12. NA
Source: Field Survey
Note: Fig. In parenthesis shows percentages.
Fig. are increased due to multiple answers by sample respondents

Table VI c. ***Packing material problems of sample respondents***

Packing Material	Kurd	Chicker Kot	Jarwanda	Nasret Khel	Aral	Total
Expensive	10(22.22)	9(20)	9(20)	8(17.77)	9(20)	45(51.7)
Inappropriateness of crates	4(16.16)	5(20.83)	4(16.16)	5(20.83)	6(25)	24(27.5)
Non availability of crates	6(33.33)	2(11.11)	3(16.66)	3(16.66)	4(22.22)	18(20.6)
Total	**20(24.07)**	**16(17.31)**	**16(17.77)**	**16(18.42)**	**19(22.4)**	**87(100)**

Chi-square is 2.35, with p equal to 0.96, and degree of freedom 8. NA

Table VII. ***Extension workers' visits reported by sample respondents***

Village	Yes	No	Total
Kurd	2 (20)	8(80)	10
Chicker Kot	1 (10)	9 (90)	10
Jarwanda	1(10)	9(90)	10
Nasret Khel	-	10(100)	10
Aral	-	10(100)	10
Total	**4(8)**	**46(92)**	**50(100)**

Source: Field Survey

Note: Fig. in parenthesis shows percentages.

Fig. are increased due to multiple answers by sample respondents

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