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Economic Efficiency of Banana Production under Contract Farming in Sindh Pakistan

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Abstract

The result indicated that each selected banana farmers in study area on average per farm spent a sum of Rs.21334.00. This included Rs.4500.00 for loading, Rs.12334.00 for transportation and Rs.4500.00 of unloading respectively in the study area. The total cost of production of Rs.158581.00 this included Rs.88300.00, Rs.20100.00, Rs.28847.00 and Rs.21334.00 on fixed cost, labour costs, Capital Inputs and marketing costs respectively in the study area. The banana grower obtained per acre 143 mounds on an average and revenue Rs.1750.00 mounds on an average and per acre earned of Rs.250250.00 that obtained by the grower of banana. Thus the banana growers on an average per acre earned during study, Rs.91669.00 on net income, Rs.250250.00 on gross income and Rs.158581.00 on total expenditure in the study area. An average per acre gross income Rs.250250.00 and total expenditure is Rs.158581.00 in the study area therefore they availed input output ratio of 1:1.57 from banana growing in the study area. The selected banana growers on a net income per acre earned Rs.91669.00 and total expenditure Rs.158581.00 in the study area therefore they availed input output ratio of 1:0.57 from banana growing in the study area.

Keywords: Banana; Capital inputs; Gross income; Total expenditure; Capital inputs; Sindh

Introduction

Banana *(Musa paradidica L.)* belongs to the banana family Musaceae. A banana is an edible fruit produced by several kinds of large herbaceous flowering plants in the genus Musa. The fruit is variable in size, color and firmness, but is usually elongated and curved, with soft flesh rich in starch covered with a rind which may be green, yellow, red, purple, or brown when ripe. The fruits grow in clusters hanging from the top of the plant. In Southeast Asia, many more kinds of banana are grown and eaten, so the simple two-fold distinction is not useful and is not made in local languages. Bananas are an excellent source of vitamin B_6, soluble fiber, and contain moderate amounts of vitamin C, manganese and potassium. Along with other fruits and vegetables, consumption of bananas may be associated with a reduced risk of cancer and in women, breast cancer and renal cell carcinoma. Banana ingestion may affect dopamine production in people deficient in the amino acid tyrosine, a dopamine precursor present in bananas. Individuals with a latex allergy may experience a reaction to bananas [1].

Banana is most essential fruit of the World, mainly in the fruit Pakistan. Pakistan is main player in the banana industry. In Pakistan occupies and area of 349,000 ha with the total production and productivity of 29.7 MT/ha respectively. The 90% of this land lies in the Sindh province in the South East Asia of the country. The province of Sindh in Pakistan is major contributor in the field of banana production. However there is a need to launch newest growing technique and latest anti pest medicine to save banana crop from the attack of pests and worms. Because of their size and structure, banana plants are often mistaken for trees. The main or upright growth is called a pseudo stem, which for some species can obtain a height of up to 2–8 m, with leaves of up to 3.5 m in length. Banana fruit grow in hanging clusters, with up to 20 fruit to a tier (called a hand), and 20-30 tiers to a bunch. "Bananas are mature about three months from the time of flowering, with each bunch producing about 15 "hands" or rows. Each hand has about 20 bananas while each bunch will yield about 200 "fingers" or bananas. An average bunch of bananas can weigh between (30 to 40 kilograms) [2].

In Sindh Province of Pakistan, commercial cultivation of banana spreads over the districts of Hyderabad, Thatta, Khair pur, and Nawabshah. About 87% of banana acreage of Pakistan in Sindh and the share of this province averaged to 82.03% of total banana production of Pakistan during 2004-2005 [3-5]. It has gained quite remarkable popularity in the areas of central and lower Sindh where the climate is moderate. The physical climatic, soils and environmental conditions are particularly congenial in the districts of Hyderabad, Thatta, Khair pur, and Nawabshah for producing banana on commercial scale [6]. Consequently, it has occupied key place in the cropping pattern adopted by the progressive farmers of these districts. But they generally grumble over the complicated marketing system of this important fruit crop. In order to determine the efficiency of various farming types, studies on the economics of producing various crops necessary for giving a guide line to the producers to adopt the most suitable cropping pattern. Side by side the production, the marketing phase is also important. In the present age the expanding role of marketing can in no way be looked upon as wasteful, since the economic function of distribution is doubtless as important as production of goods. As a matter of fact, due to high% of distribution costs incurred by them do not employ high profits or inefficiency in the line of marketing [7-9].

The research aimed to performed socio-economic analysis of banana production and marketing in Sindh province of Pakistan.

Objectives

- To review present status of banana production in Sindh province.

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- To study the socio-economic status of banana producing farmers under contract farming.
- To examine the cost and returns structure in banana production.
- To identify the problems faced by the contract farmers under the banana contract farming and suggest appropriate policy measures.

Methodology

This study was carried out through a primary survey of banana producers and market intermediaries in order to assess the banana production positional and efficiency of the marketing system in Naushahro Feroze district Sindh [10]. The emphasis has been given on qualitative and quantities analysis of production practices adopted by the banana growers and identification of technical and socio-economic factors in banana production. Therefore, it is essential to define variables included in the research to make it more scientific and objective [11-13].

Method of study

Adopting survey method carried out the present research work. Preliminary survey of Sindh was carried out and a list of growers producing banana [14-16]. Main aspect of farming such as farming organization, cropping pattern, area sown under banana, location of farm etc were recorded. Samples of 60 banana growers were selected from this list through random sampling techniques. The sample constituted depends on the total population [17-19]. This sample was considered representative and manageable for survey. A comprehensive questionnaire containing quarries on land use pattern, area sown under banana, means of irrigations, cultivation standard, quantitative and qualitative aspects of inputs use, price of various inputs at which they were acquired, yield obtained, price at which banana was sold at different times, way rates prevailing in the area for different types of labour for different farm work marketing expenses incurred and the problems encountered by the growers during production process, was prepared and pre-tested before finalization to record the interviews of the entrepreneurs of the selected banana growers[20-22]. Certain data were collected form secondary sources, which included government publication and official record. Thus, the data collected through the questionnaire, and secondary sources constituted the material for the research. Each respondent was interviewed after the production period for the purpose. Data so collected were tabulated analyzed and interpreted in the thesis [23-25].

Data analysis

Collected data had both quantitative and qualitative information. For data analysis Microsoft Office Excel software package and SPSS package were used.

Averages: Averages were calculated by applying following formula

Average = $\sum Xi / n$

Where,

$\sum Xi$ = sum of independent variables

n = number of observation in data

Percentages: Percentage is the proportion of fraction articulated in hundredth. It was computed by

Percentage = F / N* 100

Where,

F = Respondents of desired class

N = Total number of respondents

Total cost of production: Total cost of production was estimated by using the following formula:

TC = TFC+TVC

Net returns: Net returns were estimated by using the following formula:

NR = TI- TC

Input-output ratio: The input-output ratio was estimated by using the following formula:

$$IO_R = \frac{TI}{TC}$$

Where IOR = Input-Output Ratio

Cost-benefit ratio: The cost-benefit ratio was estimated by using the following formula:

$$CBR = \frac{NR}{TC}$$

Where

CBR = Cost Benefit Ratio

Results

This study was initiated to conduct detail analysis of banana production and marketing in Naushahro Feroze district Sindh. It is based on primary data collection through a survey of banana growers and market.

Current status of banana sub-sector

A detailed description of the Current Status of Banana Sub-Sector is given in Table 1.

Age

Table 2 shows that 57.00% of the banana respondent belonged to the age group of 46 and above years, followed by 33.00% respondents belonged to the age group of 31-45 years and while 10.00% belonged to the age group of 21-30.

Year	Area (000, ha)			Production (000, tons)		
	Pakistan	Sindh	% Share of Sindh	Pakistan	Sindh	% Share of Sindh
2003-04	31.6	27.5	87.02	154.0	125.7	81.62
2004-05	33.1	29.0	87.61	158.0	129.6	82.02
2005-06	32.5	29.7	91.38	163.5	134.8	82.69
2006-07	34.9	32.2	92.26	150.5	126.3	84.2
2007-08	35.5	32.9	92.67	158.0	127.0	80.37
2008-09	36.0	33.4	92.77	157.3	128.9	81.94
2009-10	34.8	32.2	92.52	154.8	127.4	82.29
2010-11	29.6	26.8	90.54	141.2	113.4	80.31
2011-12	32.1	28.5	88.78	160.2	133.1	83.08
2012-13	33.2	29.8	89.75	159.4	134.0	84.06

Source: Agricultural Statistics of Pakistan, Government of Pakistan, Islamabad (2012-13).

Table 1: Area and production of banana in Pakistan and Sindh.

Age group	No. of farmers	Percentage
21-30	6	10.00
31-45	20	33.00
46 and above	34	57.00
Total	60	100

Table 2: Distributions of age groups of selected growers in the study area.

Education

Table 3 shows education level 13.33% banana farmers were illiterate, 50.00% banana farmers were Primary level of education, 26.66% of matriculation and while 10.00% farmers of the graduate education level in the study area.

Farming experience

Table 4 shows that 70.00% respondents belonged to the experience group of 1- 10 years and above followed by 23.00% respondents belonged to the experience group of 11-20 years, while 7% respondents belonged to the 21 and above years.

Farm size

Table 5 shows that 28.33% small farms, 48.34% and 23.33% were medium farms and large farms of banana farm in the study area.

Farmer status

Table 6 shows that there were 68.33% banana farmers who have owner ship, 36.66% were peasant proprietor and 11.66% were renter who have hired their banana farms on rent.

Verities of banana

Table 7 indicates that about 05 banana varieties were cultivated by sample farmers in the study area during the study. The majority of banana producers were 88.33% of Basrai (Cavendish dwarf) verity cultivate, while 6.66% respondent were cultivate William (Hybrid) verity, 1.66% Grand Nine (G-9), 1.66% B-10 (Hybrid) and 2.58% W-11 (Hybrid) verity were cultivated.

Variation in banana cultivation

Table 8 indicates that 50.00% of banana growers, while good yield and fewer requirements of tenants were also the reason to increase banana. The banana growers who responded to decrease banana acreage perceived the disease problem 50.00%, shortage of irrigation water 33.33% and shortage of capitals 16.66%.

Banana planting material

Table 9 indicates that a majority 36.66% of farmers obtained planting material from progressive & reliable grower. Where 30.00% of banana producers considered good looking and health of plants and 25.00% planted the suckers of their own plants.

Labour costs

Table 10 depicted that the Rs.28847.00 on an average per acre banana farmer spent labour cost of production. This included Rs.600.00 on Layout (time), Rs.1500.00 on Suckers (time), Rs.600.00 on FYM (time), Rs.2100.00 on Urea, DAP and Nitrophas (time), Rs.7500.00 on Irrigation (time) and Rs.7800.00 on Harvesting (time). Results showed that Rs.1800.00 on ploughing, Rs.2200.00 on cold crushing, Rs.2114.00 on harrowing, and 1233.00 on hoeing respectively in the study area.

Capital inputs

Table 11 shows that each selected banana grower of study area on an average per acre of banana spent a sum of Rs.56915.00 that included Rs.7715.00, Rs.6750.00, Rs.20300.00, Rs.15900.00 and Rs.6250.00 on Suckers, F.Y.M (Farm Yard Manure), Urea, DAP (Diammonium phosphate), SOP (Sulphate of potash) in the study area.

Fixed cost

Table 12 showed that majority 95% of contractor obtained advance

Education level	No. of farmers	Percentage
Illiterate	8	13.33
Primary	30	50.00
Matriculation	16	26.66
Graduate	6	10.00
Total	60	100.00

Table 3: Distributions of education level of selected growers in the study area.

Farming Experience	No. of farmers	Percentage
1- 10 years	42	70.00
11-20 years	14	23.00
21 and above	4	7.00
Total	60	100.00

Table 4: Distributions of banana farmers according to farming experience in the study area.

Farm size	No. of farmers	Percentage
Small Farm	17	28.33
Medium Farm	29	48.34
Large Farm	14	23.33
Total	60	100.00

Table 5: Distributions of banana farmers according to farm size in the study area.

Farmer status	No. of farmers	Percentage
Landowner	41	68.33
peasant proprietor	22	36.66
renter	07	11.66
Total	60	100.00

Table 6: Distributions of banana farmers according to farmer status in the study area.

Verities of Banana	No. of farmers	Percentage
Basrai (Cavendish dwarf)	53	88.33
William (Hybrid)	4	6.66
Grand Nine (G-9)	1	1.66
B-10 (Hybrid)	1	1.66
W-11 (Hybrid)	1	1.66
Total	60	100.00

Table 7: Distributions of banana farmers according to verities of Banana in the study area.

Reasons	No. of farmers	Percentage
Increase		
More and long term income	21	50.00
Good yield	18	42.85
Reduce tenants	3	7.14
Total	42	100.00
Decrease		
Disease problems	9	50.00
Shortage of irrigation water	6	33.33
Shortage of capitals	3	16.66
Total	18	100.00

Table 8: Distributions of the banana farmers according to their reasons in the study area.

Planting Material	No. of farmers	Percentage
Progressive and Reliable grower	22	36.66
Help of Malhi	05	8.33
Health and looking of suckers and plants	18	30.00
Own plants	15	25.00
Total	60	100.00

Table 9: Distributions of the banana farmers according to their Planting Material in the study area.

Particulars	Number	Rate/Unit	Amount
Layout (time)	2	300.00	600.00
Suckers (time)	5	300.00	1500.00
FYM(time)	2	300.00	600.00
Urea, DAP and Nitrophas (time)	7	300.00	2100.00
Irrigation (time)	25	300.00	7500.00
Harvesting (time)	26	300.00	7800.00
Ploughing	2	1800.00	3200.00
Clod crushing	1	2200.00	2200.00
Harrowing	1	2114.00	2114.00
Hoeing	1	1233.00	1233.00
Total	28847.00		

Table 10: Average per acre labour cost incurred by the banana producer/contractor in the study area.

Particulars	Number	Rate/Unit	Amount
Sucker	1543.00	4.00	7715.00
F.Y.M	3	2250.00	6750.00
Urea	7	2900.00	20300.00
DAP	3	5300.00	15900.00
SOP	5	1250.00	6250.00
Total			56915.00

Table 11: Per acre expenditure incurred on capital inputs in the study area.

payment to banana producer. On an average per acre banana growers spent for rent of land Rs.88300.00 in the study area.

Marketing costs

Table 13 results indicated that each selected banana farmers in study area on average per farm spent a sum of Rs.21334.00. This included Rs.300.00 for loading, Rs.8000.00 for transportation and Rs.3000.00 of unloading and Rs.7334.00 Agent Charges respectively in the study area.

Cost of production

Table 14 results showed that the selected banana grower in the study area on average per acre spent a total cost of production of Rs.158581.00 this included Rs.88300.00, Rs.20100.00, Rs.28847.00 and Rs.21334.00 on fixed cost, labour costs, Capital Inputs and marketing costs respectively in the study area.

Physical productivity

Table 15, it is clear form the result each banana grower in the study area obtained per acre 143 Mds on an average.

Revenue productivity

Table 16 depicted that each selected banana grower in the study area on revenue Rs.1750.00 mounds on an average and per acre earned of Rs.250250.00 that obtained by the grower of banana.

Net income

Table 17 results showed that the banana growers on an average per acre earned during study, Rs.91669.00 on net income, Rs.250250.00 on gross income and Rs.158581.00 on total expenditure in the study area.

Input - output ratio

Table 18 showed that the selected banana growers on an average per acre gross income Rs.250250.00 and total expenditure is Rs.158581.00 in the study area therefore they availed input output ratio of 1:1.57 from banana growing in the study area.

Cost benefit ratio

Table 19 showed that the selected banana growers on a net income per acre earned Rs.91669.00 and total expenditure Rs.158581.00 in the study area therefore they availed input output ratio of 1:0.57 from banana growing in the study area.

Suggestions

Particulars	Rate of contract (per year)
Rent/Contract of banana orchard	88300.00
Total	88300.00

Table 12: Average per acre rate of contract (per year) banana orchard in the study area.

Particulars	Number	Rate/Unit	Amount
Load charges	10	300.00	3000.00
Transport Exp	04	2000	8000.00
Unload charges	10	300.00	3000.00
Market Agent charges	--	--	7334.00
Total	21334.00		

Table 13: Average per acre marketing cost incurred by the banana producer.

Particulars	Mean
Fixed Cost	88300.00
Labour Cost	20100.00
Capital Inputs	28847.00
Marketing Cost	21334.00
Total	158581.00

Table 14: Per acre total cost of banana orchard production in the study area.

Particulars	Mean
Banana	143 Mds
Total	143 Mds

Table 15: Per acre physical productivity banana orchard in the study area.

Particulars	Mean
Banana	250250.00
Total	250250.00

Table 16: Per acre revenue productivity banana orchard in the study area.

Particulars	Mean
Gross Income (Rs) A	250250.00
Total Expenditure (Rs) B	158581.00
Net Income (Rs) A-B=C	91669.00

Table 17: Per acre net income of banana orchard in the study area.

Area sown	Gross Income(Rs.)	Total Expenditure(Rs.)	Input-output ratio
Acre	(A)	(B)	A/B=C
1	250250.00	15851.00	1:1.57

Table 18: Per acre input-output ratio of banana orchard in the study area.

Area sown	Net income (Rs.)	Total Expenditure(Rs.)	Input-output ratio
Acre	(A)	(B)	A/B=C
1	91669.00	158581.00	1:0.57

Table 19: Per acre cost benefit ratio of banana orchard in the study area.

Strengths of banana sector

- Availability of cheap labor in Naushahro Feroze district Sindh
- Availability of fertile land in Naushahro Feroze district Sindh
- Suitable environment for banana cultivation in Naushahro Feroze district Sindh
- Interest of banana the farmers and landowners in Naushahro Feroze district Sindh.

Weaknesses of banana sector

- Lack of awareness of pre and post-harvest management.
- Lack of information about new technologies.
- Water shortage (they can overcome this problem by using new techniques).
- Character of middlemen or contractors in this sector.
- Direct marketing problems.
- Bad infrastructure, Absence of cold storages.

Issues and problems of the banana sector of Sindh are

There are different problems in the banana sector of Naushahro Feroze district Sindh, such as

- Uneducated farmers and labor in this sector.
- Untrained farmers and labor in this sector.
- Unawareness about new technologies in this sector.
- Lack of proper information about pre and post-harvest management.
- Non availability of proper testing laboratories in Sindh.
- Its perishable nature and unreliable prices because of pre and post-harvest losses.
- This sector is dependent on middlemen and contractors because of lack of knowledge, commission agents' bias, and engagements of farmers or growers in other crops force banana producers to make contracts with middlemen or contractor.

Conclusion

Based on the findings of the study the following policy implications were made. The information such as total holding, area under banana, physical and revenue productivity obtained from banana contractors were enquired from the respondents. Data so collected was processed, tabulated, analyzed and interpreted in the previous chapter Rs. Investigate the quantitative and qualitative aspect of various inputs as incurred by the producer to cultivate per unit (acre) of banana in the area. The present study has been carried out the means to increase per acre yield and consequently the income of farm.

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