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Cost and Revenue of Date Production in District Kech of Balohistan

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Abstract:

The study aims at estimating the average cost and revenues of date production district Kech of Balochistan which is the highest date producing province of Pakistan. A sample of size 40 date growers was selected through simple random sampling from three purposively selected villages of the study area. Simple budgeting technique was used for calculation of cost and revenues. The total cost of production of date per acre included caring/cutting/pruning cost, labour cost, irrigation fertilizer cost, chemical cost and marketing costs etc. The average total cost incurred per acre in the study area was found to be PKR. 60720. The major contribution factor was caring/cutting/pruning cost that parted 27.67% share in average total cost. The gross and net revenues were estimated to be PKR. 451,200 and PKR. 390,480 respectively. The study recommended special

attention of government and concerned organizations as well as improvements in policies for development of the sector.

Key words: Cost, Revenue, Date, Kech, Balochistan, Simple Budgeting.

1. INTRODUCTION

The botanical name of the date palm, *Phoenix dactylifera* L., is presumably derived from a Phoenician name "phoenix", which means date palm, and "dactylifera" derived from a Greek word "daktulos" meaning a finger, illustrating the fruit's form (Linné, 1734). Another source refers this botanical name to the legendary Egyptian bird, "Phoenix", which lived to be 500 years old, and cast itself into a fire from which it rose with renewed growth (Pliny, 1489; Van Zyl, 1983). This resemblance to the date palm, which can also re-grow after fire damage, makes the bird and the date palm share this name, while "dactylifera" originates from the Hebrew word "dachel" which describes the fruit's shape (Popenoe, 1938). Belonging to the Angiosperms-Monocotyledones, Palmaceae is a family of about 200 genera and 1, 500 species (Dowson, 1982). Phoenix (Coryphoideae Phoeniceae) is one of the genera which contains a dozen species, all native to the tropical or subtropical regions of Africa or Southern Asia, including *Phoenix dactylifera* L. (Munier, 1973). According to Dransfield and Uhl, (1986) date palm is classified as follows:

Table 1.1 Taxonomy of Date

Kingdom	**Plantea**
Order	Arecales
Family	Arecaceae
Genus	*Phoenix*
Species	*P. dactylifera*

Source: Dransfield and Uhl, 1986.

The exact origin of the date palm (*Phoenix dactylifera* L.) is considered to be lost in Antiquity. However, it is certain that the date palm was cultivated as early as 4000 B.C. since it was used for the construction of the temple of the moon god near Ur in Southern Iraq - Mesopotamia (Popenoe, 1913; 1973). More proof of the great antiquity of the date palm is in Egypt's Nile Valley where it was used as the symbol for a year in Egyptian hieroglyphics and its frond as a symbol for a month (Dowson, 1982). However, the culture of date palm did not become important in Egypt until somewhat later than that of Iraq (Danthine, 1937) about 3000-2000 B.C.

Date palm is one of the oldest trees in history and has a unique place in Islam. The date fruit and tree were dear to Prophet Muhammad (peace be upon him) and the word "date" is mentioned in the Holy Qur'an more than 20 times. The date palm, mentioned more than any other fruit-bearing plant in the Qur'an, is a symbol often associated with Islam and Muslims. Throughout the month of Ramadan, dates are a common ingredient in the Muslim diet. The Prophet said: "Break your fast by eating dates as it is purifying," (Ahmad). On the basis of this Hadith, Muslims insist on breaking their fasts with dates. However, in another Hadith, the Prophet said, "If you have a date, break your fast with it, if you don't have it, break the fast with water as it is purifying." (Abu Dawood) According to another Hadith, "The Messenger said: Ajwah dates are from Paradise." (Al-Tirmidhi) Ajwah is one of the excellent varieties of dates grown in the Madinah region.

The significance of the date palm as a source of nutrition and sustenance is evident in the statement narrated by Ibn Umar (may Allah be pleased with him): "The Prophet said there is a tree among the trees which is similar to a Muslim (in goodness), and that is the date palm tree." (Bukhari). In another Hadith, the Prophet stressed the importance of dates

as a major food item, saying, "People in a house without dates are in a state of hunger." (Muslim)

Date is produced mostly in Arab countries and the world production is dominated by those countries. The most date producing country is Egypt in terms of quantity with 1470 thousand metric tonnes in the year 2012 followed by Iran and Saudi Arabia having production of 1066 and 1050 metric tonnes respectively. Pakistan stands 6th among the top ten date producing countries of the world. The top ten date producing countries with their respective production for the year 2012 according to world productions statistics of Food and Agriculture organization are given in the table below.

Table 1.2 Top ten date producing countries of the world (000 metric tonnes)

Rank	Country	Production
1	Egypt	1470
2	Iran	1066
3	Saudi Arabia	1050
4	Algeria	789
5	Iraq	650
6	Pakistan	600
7	Oman	270
8	United Arab Emirates	250
9	Tunisia	190
10	Libya	170

Source: FAO, 2012

Pakistan is rated among the largest producers of date palm in the world with different cultivars. The major countries importing both fresh and dried dates from Pakistan are India, USA, UK, Canada, Germany, Denmark, Malaysia and Indonesia. The major cultivars are Begum Jangi of Balochistan, Aseel of Sindh and Dhakki of Dera Ismail Khan.

Dates are growing in all four provinces of Pakistan. The main dates producing areas of Pakistan are Turbat and Panjgoor of Balochistan, Khairpur and Sukkur of Sindh,

Muzaffar Garh, Jhang, Multan and D.G Khan of Punjab, and D.I. Khan of Khyber Pakhtunkhwa. (Abul-Soad, 2011).

Balochistan produces 225, 000 tonnes of dates from an area of 42.3 thousand hectares and contributes 53 per cent to the total national output. Production of dates is second to apples in the area. Mekran division produces 227,000 tonnes of quality dates from about 20 varieties. Unfortunately, only a few thousand tonnes are marketed. Mekran is the second largest date producer in the country after Sukkur. Kech district's share is 59 percent (Daily DAWN, 2011).

1.1 Importance of the study

District Kech of Balochistan stands first in terms of date production. The study is helpful to find the cost and revenues and the important factors that have major share in the cost of production of date which is the major source of income of most of the farmers of the study area. The findings of this study will be helpful for the researchers in future.

1.2 Objectives of the study

The study was carried out with following main objectives:

- To estimate costs and revenues of date production in the study area.
- To assess percentage share of inputs in total cost of production of date in the study area.
- To suggest recommendations on the basis of the findings of the study.

2. MATERIAL AND METHODS

2.1 Universe of the study

The study was carried out in district Kech of Balochistan. Three major date producing areas on the district were selected

purposively for the study namely Kolwai bazaar, Bonde kalath, and Salalah bazaar.

2.2 Sample size

There are many ways for determination of sample size. However, keeping the budgetary, time and transportation constraints in mind a sample size of 40 date growers was selected. Total 40 growers of date were selected to be interviewed for the estimation of cost and revenue of date production in study area.

2.3 Sampling technique

Simple random sampling technique was used for the slection of sample for the study.

2.4 Data collection

Data was collected through a pre-designed interview schedule by face-to-face interaction. The date growers were motivated during the interview so that they provide the correct information that would lead to the generation of accurate results.

2.5 Data analysis

The total cost and net returns of the sampled respondent were estimated using the following formula (Debertin, 1985 : Varion, 1992).

$$TC_i = \Sigma Px_i \times X_i \quad (3.1)$$

Where:

$$TR_i = Py_i \times Y_i \quad (3.2)$$

$$NR_i = TR_i - TC_i \quad (3.3)$$

NR_i= Net revenue of ith date grower of study area (PKR acr^{-1}).
TC_i= Total cost of production of date of ith grower (PKR acr^{-1}).

TR_i= Total revenue of date of *i*th date grower (PKR acr $^{-1}$).
Py_i= Price of output of the *i*th date grower (PKR acr $^{-1}$).
Y_i= Quantity of output produced by the *i*th date grower (Kg acr $^{-1}$).
Px_i= Prices of inputs of *i*th date grower (PKR Unit^{-1}).
X_i= Quantities of inputs applied by the *i*th date grower (Unit).

3. RESULTS AND DISCUSSION

3.1 Distribution of the respondents in the study area

A total sample of 40 date growers was selected randomly for the study from the three purposively selected village of the study area. It was found that 15 (37.5%) of date growers belonged to Kolwai Bazar while 17(42.5%) and 8 (20.0%) belonged to Bonde Kalath and Salalah Bazar villages of the study area. Table 3.1 depicts the distribution of date growers in different villages of the study area.

Table 3.1 Distribution of the respondents of the study area.

Villages	Sample size	Percentage
Kolwai bazar	15	37.5
Bonde kalath	17	42.5
Salalah bazar	8	20.0
Total	40	100

Source: Survey Data, 2014.

3.2 Age wise distribution of the respondents in the study area

All the respondents were divided into 4 groups of different ages (Table 3.2). 1st group contained the respondent of age 21-30 years; the second group was of age 31-40 years. The third and fourth groups contained the respondents of age 41-50 and 51-60 years respectively. It was discovered from the collected data that there were 3 (7.5%) respondents in the first age group (21-30 years), out of which 1 and 2 were from Kolwai Bazar and Bonde Kalath village respectively while no respondent was found of age group 21-30 years in Salalah Bazar village of the

study area. The second age group (31-40 years) had 10 (25.0%) respondents, out of which 3, 5, and 2 were from Kolwai Bazar, Bonde Kalath and Salalah Bazar village respectively. There were 19 (47.5%) respondents in the third age group (41-50 years) out of which 4, 9 and 6 belonged to Kolwai Bazar, Bonde Kalath, and Salalah Bazar villages respectively. The last age group (51-60 years or above) contained 8 (20%), respondents out of which 7, and 1 belonged to Kolwai Bazar and Bonde Kalath villages respectively while no respondent of the same age group was found in Salalah Bazar village of the study area. Most of the farmers were older than 40 years which might be due to the low literacy level of that age group (Huang *et al.* 2001).

Table 3.2 Age wise distribution of the respondents in the study area

Village	Age (year)				Total
	21-30	31-40	41-50	51-60 or above	
Kolwai Bazar	1	3	4	7	15
Bunde Kalat	2	5	9	1	17
Salalah Bazar	0	2	6	0	8
Total	03	10	19	8	40

Source: Survey Data, 2014.

3.3 Tenancy status of the respondents in the study area

The farmers of the study area were categorized into 3 groups based on their tenancy status i.e. owner, tenant and owner-cum-tenant. Tenancy status of the farmers of both crops is indicated in the table 3.3. It is evident from the table that 33 (82.5%) farmers of the study area were owners out of which 15, 12 and 6 belonged to Kolwai Bazar, Bonde Kalath and Salalah Bazar villages respectively. The number of tenants in the study area was found to be only 1 (2.5%) who belonged to Bonde Kalath village of the study area. Similarly the number of owner-cum-tenants in the study area was 6 (15.0%) out of which 4, and 2 belonged to Bonde Kalath and Salalah Bazar

villages respectively while no owner-cum-tennant respondent was found in Kolwai Bazar of the study area.

Table 3.3 Tenancy status of the respondents in the study area

Village	Tenancy status			Total
	Owner	Tenant	Owner-cum-tenant	
Kolwai bazar	15	0	0	15
Bonde kalath	12	1	4	17
Salalah bazar	6	0	2	8
Total	33	1	6	40

Source: Survey Data, 2014.

3.4 Educational level of the respondents in the study area

Education is an important demographic factor. It influences the decisions of a farmer regarding the cultivation of the crops, techniques and input decisions etc (Sharada, 1997). The educational level was divided into 4 groups, 1st group was the illiterate group. 2nd group was having educational level 1-5 years, the 3rd group was having educational level 6-8 years, and the last 4th group was having educational level 9-10 or above years. Table 3.4 shows the educational level of the respondents of all three villages. It is depicted by the table that there were 17 (42.5%) farmers who were illiterate, out of which 5, 8 and 4 belonged to Kolwai Bazar, Bonde Kalath and Salalah Bazar villages respectively. The number of the farmers who had educational level of 1-5 years was 5 (12.5%) out of which 1 and 4 belonged to Kolwai Bazar and Bonde Kalath villages respectively while no respondent of same educational level was found in Bonde Kalath village of the study area. The farmers having educational level of 6-8 years were 2 (5.0%) who belonged to Salalah Bazar village and no respondents of the same educational level were found in Kolwai Bazar and Bonday Kalath villages of the study area. The last group having educational level of 9-10 or above years consisted of 16 farmers,

out of which, 8, 5, and 3 belonged to Kolwai Bazar, Bonde Kalath and Salalah Bazar villages respectively. Lower level of education in the study area might be due to lack of awareness about education (Ishaq, *et al.* 2007) or poverty might also be a factor for low literacy rate (Khan *et al.* 2006).

Table 3.4 Educational level of respondents in the study area

Village	Educational level				Total
	Illiterate	1-5 year	6-8 year	9-10 or above	
Kolwai Bazar	5	1	0	8	14
Bonde Kalath	8	4	0	5	17
Salalah Bazar	4	0	2	3	9
Total	17	5	2	16	40

Source: Survey Data, 2014.

3.5 Cost of production of Date Palme per acre in the study area

Cost of production of any crop is the total cost incurred for raising that crop. It included the pre and post harvest activities and their costs or charges. In the present study factors of cost of production of date palm included pruning/cutting/caring cost, fertilizers cost, irrigation cost, labour cost, marketing cost and land rent etc.

3.5.1 Pruning/caring cost

The pruning/cutting/caring cost is the cost that is incurred mostly in the off season to keep the trees alive and healthy. It enables the growers to get higher yields in the fruiting season and enhance their profit margins. The pruning/cutting/caring cost was found to be PKR. 16800.0 (Table 3.5) per acre for date production in the study area.

3.5.2 Irrigation cost

Irrigation cost may be the Abiana, or the cost of fuel/energy used for extracting water from the ground. In the study area, all farmers were using electricity to extract water from the ground for irrigation. The average cost of irrigation in the study area was found to be PKR. 14640.0 (Table 3.5).

3.5.3 Fertilizer cost

Fertilizers are very important for raising a good crop. Fertilizers enhance soil fertility and result in good and high yield of a crop. But In the study area, most of the farmers were not using DAP and urea as fertilizers. Average cost of fertilizers in the study area was estimated to be PKR. 5280.0 (Table 3.5).

3.5.4 Labour cost

Labour cost includes the actions and activities of the labour in crop production such as handling of crop, application of chemicals, irrigation, pre and post harvest activities etc. Table 3.5 shows that the average labour cost for date palm was found to be PKR.13200.0 per acre in the study area.

3.5.5 Marketing cost

The marketing cost includes the costs that are incurred for loading, unloading, weighing, packing and transporting etc the produce. Table 3.5 shows that the average marketing cost was PKR. 6000.0 per acre in the study area.

3.5.6 Land rent

Land rent is of two types, 1st is that which is determined by the owner's willingness while 2nd is the opportunity cost that is earned by the best alternative way. In this study 1st type of land rent was included that is determined by the farmers. Table 3.5 shows that the average land rent was found to be PKR. 4800.0 per acre in the study area.

3.5.7 Total cost of Date palm production

The total cost of production of a crop includes cost of inputs and cost incurred for marketing that produce. Table 3.5 shows the total cost of date palm production in the study area. The total cost of production on average basis was found to be PKR. 60720.0 per acre in the study area.

Table 3.5 Total cost of date palm production per acre in the study area (PKR)

Input	Date palm	
	Mean	Percentage
Pruning/cutting/Caring	16800	27.67
Irrigation	14640	24.11
Fertilizer	5280	8.70
Labour	13200	21.74
Marketing	6000	9.88
Land Rent	4800	7.91
Total	60720	100.00

Source: Survey Data, 2014.

3.6 Output per acre of date palm production in the study area

3.6.1 Main product

The higher yields of agricultural products depend on the high quality or soil, high quality inputs, better soil preparation techniques and adequate water supply etc. In this study the main product of date palm was found to be 376 Mds per acre which is less than the potential yield in other date producing areas of the world.

The lower yields might be attributed due to inefficiency in the use of inputs, irrigation problems, shortage of inputs in season and lack of proper information etc (Afzal *et al.*2008). The results of the study are in line with that of Karim *et al.* 1999, who also suggested that the yields could be improved by optimum use of inputs and better management techniques etc.

3.6.2 By product

By product of a crop is the product that is gained automatically by growing the crop for main product. It is that part of the crop which is other than main product and can be used and sold in the market. The by-product of date palm is leaves of date, which was found to be 4700 leaves per acre in the study area (Table 3.6).

3.6.3 Gross revenue per acre of Date palm

Gross revenue is that revenue which is gained by selling each and every unit of output (main product and by product) at market price. The table 4.6 provides information about the gross revenues of date palm in study area. The gross revenue on average basis was found to be PKR. 451200.0 per acre.

3.6.4 Net revenue per acre of Date palm

Net revenue of a crop is gained by subtracting the total cost of production from gross revenue generated. It depicts that on average, the net revenue of date palm was found to be PKR. 390,480.0 per acre in the study area.

Table 3.6 Per acre average output of date production in the study area

Output	Unit or Mds acre^{-1}	Price per Unit	Total
Main product	376	1,100	41,3600
By product	4,700	08	37,600
Gross revenue	451,200		
Net revenue	390,480		

Source: Survey Data, 2014.

4. SUMMARY

The study was carried out to estimate the cost and revenues of date palm production in district Kech of Balochistan. Primary data was collected from 40 growers of date palm selected randomly from three different villages i.e. Kolwai Bazar, Bonde

Kalath and Salalah Bazar. The findings of the study showed that majority (47.5%) of the respondent were of age group 41-50. The literacy rate of the study area was low and majority of the respondents (42.5%) were illiterate. The average cost of production of date was found to be PKR. 60720.0 per acre. The major factor of cost of production of date was pruning/cutting/caring cost of Rs. 16800.0 having (27.67%) share in the total cost of production while the other factors of cost of production for date were irrigation cost, fertilizer cost, labour cost, marketing cost, land rent with (24.11%), (8.70%), (21.74%), (9.88%), and (7.91%) share in the total cost per acre respectively.

5. CONCLUSION

Date palm is produced in wide area of Balochistan and district Kech stands first in its production. Most of the growers of date were illiterate. In all villages, majority 19 (47.5%) of the respondents were of age 41-50 years. Major factors of cost of production of date (in order of share) were pruning/cutting/caring, irrigation cost, labor cost, marketing cost, fertilizer cost and land rent. The output of date was found to be 376 Mds per acre. The gross revenue and net revenue was found to be PKR. 451,200.0 and PKR. 390,480.0 per acre of date production in the study area.

6. RECOMMENDATIONS

Based on the findings of the study it is recommended that keeping in view the suitable climatic conditions for date the growers should focus on best economical and high profit generating varieties such as Begum Jangi and Alieni etc. Programs should be launched by government as well as by the other concerned organizations to train the date growers about

the improved practices of date production to enhance their efficiency and competency with ever increasing demand and quality of date in national and international markets. Necessary policies should be made for the promotion of this sector.

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