PROFIT EARNED BY DATE PALM FARMERS AND CONTRACTORS IN DISTRICT KHAIRPUR, SINDH, PAKISTAN

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ABSTRACT: *Dates are an ideal food item due to their contents of essential nutrients and resulting health benefits for humans. This study is conducted to study the prevailing date palm garden contracting system in Sindh and estimate marketing margins earned by farmers and contractors involved in date garden contract in District Khairpur. For current study primary data was collected from Khairpur district. Through multistage sampling method a samples of 60 farmer respondents including 20 contract farmers, 20 non-contract farmers, and 20 contractors of date palm. Respondents of this study are mostly small farmers and average farm size of contract farmers and non-contract farmers was 2.5 and 3.5 acres respectively. Results show that per acre average revenue earned by non-contract farmers earning high (Rs. 163881) as compared to contract farmers (47475) although they are paying higher cost of production as mentioned above. Net revenue earned by the contractors is higher as compared to contract farmers because they do not invest in maintenance of orchards, while contract farmers incur all the expenses of maintenance of their orchards but cannot reap the proper benefit. More than 80 percent contract farmers told that they sell their orchards to contractors to avoid risk of price fluctuations and about 19 percent farmers respond that they sell their orchards to avoid weather risk.*

Keywords: Date palm, contractors, net revenues, farmers, marketing

1. INTRODUCTION

Dates are an ideal food item due to their contents of essential nutrients and resulting health benefits for humans [9]. Apart from a high percentage of carbohydrates (total soluble sugars, 44-88%), dates also contain fat (0.2-0.5%), protein (2.3-5.6%), dietary fiber (6.4-11.5%) and vitamins. The quantity of dietary fiber in dates depends on ripeness and variety. The flesh of dates contains 0.2-0.5% oil, whereas the seed contains 7.7-9.7% oil. Dates contain at least fifteen minerals whereby their concentrations vary from 0.1-916 mg/100 g dry matter [9]. Many date palm varieties have high concentrations of potassium in the flesh (0.9%) and seeds (0.5%). Other salts and minerals present in dates are boron, calcium, fluorine, magnesium, cobalt, copper, manganese, sodium, zinc, and phosphorous [9]. Dates contain flavonoids (ß-carotene, zea-xanthin, and lutein), which have the ability to protect cells in the body from harmful effects of free oxygen radicals and dates are an excellent source of iron (0.90 mg Fe/100 g) of fruit [19]. Date palm is socio-economically important for local inhabitants wherever it is cultivated [15]. Date palm provides food and feed to a large part of the populations living in the dry lands of the Middle East, southwestern Asia, North Africa, and the Arabian Peninsula [8]. Date palm has numerous usages and produces many useful products for human [6]. Leaves are used for making roofs, mats, staple dishes, hand fans, baskets, packaging material, and also for ropes and fences [18]. Trunks can be used as a construction material for houses and bridges, and as packing material for local transportation of vegetables and fruits [2]. Date cultivation and production offers many jobs in groves during fruit harvest and processing [15].

Date palm (*Phoenix dactylifera* L.) is one of the earliest cultivated plant species and approximately 100 million date palms belonging to different cultivars are planted worldwide [23]. In 2012, global date production was about 7 million t, equivalent to a market value of >1 billion US$ [11]. Most of date palms are grown in the world's arid regions between 15°N and 35°N, from India in the east to Morocco in the west [23]. Since 1962 date production has increased worldwide from 1,809,100 to 6,914,300 t in 2012 [11]. In 2012 the leading ten date producing countries were Egypt (23.5%), Iran (17.0%), Saudi Arabia (16.8%), Algeria (12.6%), Pakistan (9.6%), Iraq (8.1%), Oman (4.2%), UAE (3.0%), Tunisia (2.7%), and China (2.4%) [11]. Distribution of date palm by region shows that Asia stands first with the 60 million date palms mostly grown in Saudi Arabia, UAE, Bahrain, Iran, Iraq, Oman, Kuwait, Pakistan, Yemen, and Turkmenistan; Africa comes second with 32.5 million palms grown in Algeria, Egypt, Morocco, Mauritania, Libya, Mali, Niger, Sudan, Chad, Tunisia, and Somalia. USA and Mexico have 600,000 date palms followed by Europe (Spain) with 320,000 and Australia with 30,000 date palms [22]. Over the past 40 years the world's total export of dates has experienced an annual increase of 1.7% [9]. Rapid increase in export has been noticed in the UAE, Oman, Egypt, and Pakistan [5].

Pakistan is the 4th largest producer of dates with total annual production at around 650,000 tons [20]. In 2012, Pakistan had a date production of 600,000 t and had an increase in the area under date palm cultivation from 41,240 ha in 1992 to 95,000 ha in 2012 [11]. The main date palm growing areas of Pakistan are: Muzaffargarh, Jhang, Bahawalpur, and Dera Ghazi Khan (Punjab), Turbat and Panjgur (Baluchistan), Dera Ismail Khan (Khyber Pakhtunkhwa), and Khairpur and Sukkur Sindh [1]. More than 300 date palm varieties are grown of which the twelve commercially important are: Karbalaen, Aseel, Muzawati, Fasli, Begum Jhangi, Halawi, Dashtiari, Sabzo, Koharba, Jaan Swore, Rabai, and Dhakki [3]. However, some cultivars, grown in specific areas, such as Dhakki in Dera Ismail Khan, Aseel in Khairpur, and Begum Jhangi in Panjgur, have a particularly high market demand and some of them have the potential to compete with the world's best quality dates [18]. Dates are important as a subsistence crop in Pakistan and marketed all over the

country. Its utilization is at peak during the month of Ramadan in Muslim countries and during the celebrations of Diwali in India. Even in drought and salinity affected areas, date palm is a component of agricultural development and considered a symbol of life [24]. Date production fetches maximum returns to the community living in areas which are characterized by adverse climatic and soil conditions [10], [7].

In Southern Punjab, dates and their by-products are the third most important contributor to people's food and income [4]. Date Palm is also an important fruit crop of Sindh province, Sindh produces 350,000 tons of dates annually where 85% of total dates are produced in the Khairpur district [20]. There is a rapidly increasing demand of the offshoots of the locally grown cultivar Dhakki in Dera Ismail Khan [1]. The diverse uses of date palm in Pakistan demonstrate the importance of this fruit in the daily lives of rural communities [4]. Date growers in Pakistan often depend on advanced payments and other informal credits from commission agents, wholesalers and contractors with unfavorable conditions [3]. Furthermore, date palm growers face problems in marketing their products given their poor education [16]. The prevalence of traditional marketing structures therefore results in 30-40% deterioration of fresh produce before it reaches the consumer [18]. Other limitations in date palm cultivation areas include low quality date palm cultivars, poor farm management, processing facilities, uncertainty in prices at the time of selling and shortage of qualified trained labor [17].

Generally, date palm growers preferred to sell fresh dates because of scarce availability of labour, storage houses, and processing facilities. However, especially large scale growers tended to process their dates prior to selling them; they either made *chuhara* -a special type of dried date which is prepared by boiling premature dates and adding Rang kat (sodium formaldehyde) -or sold dried dates. Most of the date palm growers were selling their dates to contractors, commission agents or wholesalers in Punjab, Sindh and Baluchistan province. Many Households were bound to sale their dates to commission agents, because of the already taken loans from them with a 10-11% interest rate compared to agricultural banks charging 13-15%. It was observed that contractors had more knowledge of date palm sale, resources, and market access than growers. According to the contractors' response, prices of dates in wholesale market were under the control of wholesalers rather than fixed by the Pakistani government. In the date palm market chain, the wholesalers are working as intermediaries between growers / contractors and retailers / buyers. Exporters were either commission agents or owners of processing units and were mainly selling *chuhara* to India. Major players of wholesale market were commission agents, contractors, wholesalers, and retailers, whereby the two first bought highest quantities. Farmers gave various reasons for entering a contract agreeing to sell the entire production of their grove: particularly prominent was the distance to the next market. The results also illustrate that only small scale and medium scale date palm growers traded with commission agents while only medium scale sold fruits to hawkers, markets, and directly to consumers. Small scale date palm growers used a big portion of their dates for self-consumption. Hawkers were buying dates directly at the farm gate or from small wholesalers within the district and were moving street to street for selling them. Most retailers who owned small nut shops were buying dates from small wholesalers within the district while retailers who owned hypermarkets or superstores were buying dates from big wholesalers within provinces [13].

Sustainable value chain is regarded as fair distribution of revenues / profits earned by different actors / stakeholders in the value chain [21]. In order to achieve a significant contribution to decent work within the context of value chain development, several socio-economic criteria need to be taken into account such as industry growth prospects, employment and income creation, reducing incidences of child labor, promoting gender equity, improving occupational health and safety, social protection for families, enhancing skills, and poverty reduction [14]. Improper fruit harvesting is another problem in the groves as it affects date quality and is one of the major reasons for low demand of Pakistani dates in the international market. According to [12], Pakistan is exporting dates at a price of 565 $/t, which is very low as compared with other date producing countries (Tunisia, 2433 $/t; Iran, 1430 $/t; Saudi Arabia, 1109 $/t; Egypt, 1186 $/t; and Oman, 1257 $/t). Pakistani dates are harvested and marketed at three stages (*khalal*, *rurtab*, and *tamar*) of their development. The choice for the harvesting stage depends on cultivar characteristics, climatic conditions, and market demand [1].

In Sindh contracts of date palm orchards are generally verbal based on mutual trust between contractors and farmers. Literature highlights that more than 90 percent contracts of date palm orchards are verbal and based on mutual understanding (Khushk and Smith, 1996). In order to avoid risks during marketing of date palm, farmers prefer to sell their date palm orchard on contract to contractors before harvest. The duration for contract is decided contracting parties i.e. farmers and contractors. Mostly contracts are for single production season. Sometime farmers contract out their orchards at flowering stage. Under existing contract system contractors pay some of the contract amount in cash at the time of contract and remaining amount is paid to farmers in installments [16].

Contract system is the major marketing system in the supply of date palm because; producers usually avoid the marketing of fruit by themselves as they do not want to be involved in the complication of the marketing system. Due to that reason middlemen/ contractors become share partners in their profit/ marketing margins earned from the sale of date palm crop therefore date palm farmers have less income and investment for date palm orchards. Contractors do not take interest in proper management of date palm trees management therefore yield of date palm orchards is affected. This research attempts to compare marketing margins earned by contract farmers (farmers who are involved in contract system), non-contract farmers (farmers who are involved in contract system), and contractors in Dadu district of Sindh Province of Pakistan.

2. OBJECTIVES

Specific objectives of the study are as under:

1. To study the prevailing date palm garden contracting system in Sindh.
2. To estimate marketing margins earned by farmers and contractors involved in date garden contract in District Khairpur

3. METHODOLOGY

This study is conducted to study the prevailing date palm garden contracting system in Sindh and estimate marketing margins earned by farmers and contractors involved in date garden contract in District Khairpur. For current study primary data was collected from Khairpur district. Through multistage sampling method a samples of 60 farmer respondents including 20 farmers who are involved in contract system (contract farmers), 20 farmers who do not sell their date palm orchards on contracts and do all the operations of business by themselves (non-contract farmers), and 20 contractors who purchase date palm orchards from farmers on contracts and conduct marketing process. Initially, an informal survey of study area was carried out in order to pretest the questionnaires to interview 60 respondents. The collected data was tabulated, analyzed and interpreted to meet the objectives of this study. The data was collected through personal or face to face contact to the respondents in study area.

RESULTS

The result pertains in Table-1 regarding demographic characteristics of sample respondents. According to the data the average age of the contract farmers (who do not marketing themselves and contract out their date palm orchard to the contractors) were highest i.e. 41 years while the average age of non-contract farmers (who do marketing themselves) and contractors were same i.e. 40 years. Education plays a very important role for the uplift particularly in agriculture sector because education helps farmers to take various decisions regarding input choices and farming activities. It was found during the survey that the average years of education of contract farmers and non-contract farmers were same i.e. 9 years and average years of schooling of contractors were 8 years. According to the data the average number of family size of contract farmer were less (5.5) than contractors (6.6) and non-contract farmers' 7.3 members. The result shows that the average number of educated persons and number of earning member in family of non-contract farmers were highest (3, 2.5), contract farmers (2.7, 1.4) and contractors were (2.3, 1.6) respectively. Average farm size of contract farmers which they contract out the contractors were 2.5 acres, non-contract farmers owned 3.5 average acres of land and contractors bought 2.4 average acres. The contract farmers respond that they selling their orchard to the contractors since 4.5 average years, non-contract farmers farming since 7 average years and contractors involved in contract business since 3 average years

.Table 1 Demographic characteristic of respondents

	Contract farmer (Farmers who sell their orchards to contractors)			Non contract farmer (Farmers who do not sell their orchards to contractors)			Contractors (who purchase orchards from farmers on contract)		
Variables	Minimum	Maximum	Mean	Minimum	Maximum	Mean	Minimum	Maximum	Average
Age of respondents in years	30	52	41	28	55	40	29	60	40
Years of education	0	16	9	0	16	9	0	16	8
Family size	2	10	5.5	4	14	7.3	4	10	6.6
Number of educated family members	0	6	2.7	1	4	3	0	5	2.3
Number of earning members in family	1	3	1.4	1	5	2.5	1	3	1.6
Number of acres on contract	0.25	6	2.5	1	10	3.5	1	6	2.4
Years of farming/ contracting experience	2	8	4.5	3	15	7	1	8	3

4.1 Per acre average cost

Per acre average production and marketing cost of sample respondents are shown in Table-2. The result revealed that per acre average cost incurred by the contract farmer for different activities (farmyard manure, wages for hired labour, orchard maintenance and etc.) were Rs.1675, while the per acre average cost incurred by the non-contract farmers was Rs. 69266 for production and marketing and contractor paid Rs. 123133 average cost per acre for production and marketing cost including farmyard manure, wages for hired labour, maintenance of date palm orchard, packing material cost, loading & unloading, transport and commission in market.

4.2 Per acre average revenue

Table-3 shows the per acre average revenue earned by the sample respondents. The result revealed that non-contract farmers earning high (Rs. 163881) average revenue per acre than contract farmers (47475) and average revenue earned per acre by contractors was Rs. 210896 respectively

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Table 2 Per acre average cost incurred by respondents

	Contract farmer (Farmers who sell their orchards to contractors)	Non contract farmer (Farmers who do not sell their orchards to contractors)	Contractors (who purchase orchards from farmers on contract)
	Per acre average cost (Rs.)	Per acre average cost (Rs.)	Per acre average cost (Rs.)
Cost of production	1675	30355	91450
Packing	--	13380	26108
Loading & unloading	--	505	652
Transport	--	25026	4923
Grant total	**1675**	**69266**	**123133**

Table 3 Per acre average yield in (40kg), price/40kg and revenue earned by the respondents

	Per acre yield in mounds (40 kg)	**Price per 40 kg**	**Per acre revenue (Rs.)**
Farmers involve in contract	--	--	87475
Farmers not involve in contract	83.4	1965	163881
Contractors	98	2152	210896

4.3 Per acre gross margin and net margin

Per acre gross margin and net margin earned by the sample respondents is presented in table-4. It is investigated that per acre gross of non-contract farmers was high (133526) than contract farmers (Rs. 85800) and per acre gross margin earned by the contractors was Rs. 119441. Similarly per acre net margin of non-contract farmers was also high Rs. 94615 than contract farmers (Rs. 85800) while per acre net margin earned by the contractors was 87758 rupees.

Table 4 Per acre gross margin earned by farmers and contractors of study area

Respondents	**Per acre price paid (A)**	**Per acre price received (B)**	**Per acre gross margin earned (C) C=B-A**	**Per acre marketing costs (D)**	**Per acre net margin (E) E=C-D**
Farmers involved in contracting their farms to contractors	1675	87475	85800	--	85800
Farmers not involved in contracting their farms to contractors	30355	163881	133526	38911	94615
Contractors	91455	210896	119441	31683	87758

5 DISCUSSION

This study is conducted to evaluate the prevailing date palm garden contracting system in Sindh and estimate marketing margins earned by farmers and contractors involved in date garden contract in District Khairpur. For current study primary data was collected from Khairpur district. Through multistage sampling method a samples of 60 farmer respondents, including 20 farmers who are involved in contract system (contract farmers), 20 farmers who do not sell their date palm orchards on contracts and do all the operations of business by themselves (non-contract farmers), and 20 contractors who purchase date palm orchards from farmers on contracts and conduct marketing process. Respondents of this study are mostly small farmers and average farm size of contract farmers and non-contract farmers was 2.5 and 3.5 acres respectively. The result revealed that per acre average cost incurred by the contract farmer for different activities of farming business were Rs.1675, while the per acre average cost incurred by the non-contract farmers was Rs. 69266 for production and marketing, while contractor incur Rs. 123133 as average cost per acre for production and marketing. Results show that per acre average revenue earned by non-contract farmers earning high (Rs. 163881) as compared to contract farmers (47475) although they are paying higher costs of production as mentioned above. Average revenue earned per acre by contractors was Rs. 210896. Similarly, per acre net margin earned by non-contract farmers was also higher i.e. Rs. 94615 as contract farmers who earn Rs. 85800, while per acre net margin earned by the contractors was 87758 rupees. Net revenue earned by the contractors is higher as compared to contract farmers because they do not invest in maintenance of orchards, while contract farmers incur all the expenses of maintenance of their orchards but cannot reap the proper benefit. More than 80 percent contract farmers told that they sell their orchards to contractors to avoid risk of price fluctuations and about 19 percent farmers respond that they sell their orchards to avoid weather risk.

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