# CHALLENGES FACED BY RURAL WOMEN IN DATES PROCESSING INDUSTRY IN KHAIRPUR MIRS

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## ABSTRACT

*This study evaluated the economic empowerment potentials of Dried Dates processing by women in rural areas of Khairpur Sindh using a sample of 100 women processors randomly selected from the study area. Data analysis was done using Descriptive statistics, Net Farm Income Model and Data Envelopment Analysis (D.E.A). An average net return of N10, 586.6 was obtainable within a processing cycle. The average pure technical and scale efficiency scores were 80 and 83 percent respectively. The major constraints confronting the processing of Dried Dates include inadequate capital for expansion and lack of processing machines. A significant opportunity exists for empowering rural women through Dried Dates processing.*

**Keywords**: *Dates Processing, Women, Khairpur Mirs*

## 1. INTRODUCTION

India and Pakistan are both low-income countries and are amongst the poorest and least developed nations of the world. Pakistan appeared on the map of date exporting country is the second largest exporter of dates in the world. Major buyer of dried date is India. Date is on of the important fruit of Pakistan, and Khairpur district is account for 60% of the total dry date's exports to India. (Primary Sources). The export increased by 20% in this year 2006 because of the good relationship with India. Dates are rich in carbohydrates, minerals and vitamins.

Pakistan's Varieties: Rich soil, abundant sunshine and four distinct seasons make Pakistan an ideal place for cultivating a variety of agriculture crops. the above factors help in creating a very special taste incur farm produce, particularly in fruits. mangoes, apples, and dates. Makran, Khairpur (MIRS) and D.I. Khan are major date growing regions in the country. Our commercially important date verities include Aseel, Kabala, Fasli and Kupro of Sindh, Muzawati, Negum Jangi, Jaan Swore, Kehraba and Rabsai of Balochistan; Dakki and Gulistan of NWFP and seedless variety of Punjab.

Table 1-Production of date Fruits in Pakistan and Sindh Province during 1991-2002 (000 Tones)

| Year | Pakistan | Sindh | Share of Sindh |
|---|---|---|---|
| 199001 | 287.3 | 97.6 | 34% |
| 1991-92 | 292.9 | 107.1 | 36.56 |
| 1992-93 | 275.2 | 84.0 | 30.52 |
| 1993-94 | 578.6 | 84.1 | 14.53 |
| 1994-95 | 531.5 | 30.7 | 5.78 |
| 1995-96 | 532.5 | 31.5 | 5.91 |
| 1996-97 | 534.5 | 32.1 | 4.32 |
| 1997-98 | 537.5 | 34.0 | 6.36 |
| 1998-99 | 540.1 | 33.9 | 6.28 |
| 1999-2000 | 579.9 | 244.6 | 42.18 |
| 2000-2001 | 612.5 | 266.0 | 43.43 |
| 2001-2002 | 630.3 | 288.9 | 45.83 |

Source: Government of Pakistan (2004), Agricultural Statistics of Pakistan 2003-04 Islamabad, P.100.

Processing Centre: Therhi, in district Khairpur (Mirs) occupies a central place in date processing in Pakistan. Close to one doze date factories are established in and around this township. Quality control starts with the choice of only highest quality fruits. Date factories purchase date for exports from progressive date grower, who take extreme care of dates right from the flowering stage. Well-developed, fleshed, fully ripened and sun-dried dates are brought in plastic trays or wooden crates at the premises of the factory. On arrival, the fruit is weighed and immediately fumigated. For fumigation, usually methyl bromide, aluminum/magnesium phosphate, or a toxin tablets are used. All vents and openings are completely sealed for adequate fumigant, date of fumigation, validity period of fumigation and date of re-fumigation, if necessary, are clearly indicated. The fruit is store in a clean and dry are. Dated are taken from tees lots as and when require. Mostly, dates are processed manually. Only skilled male and female workers perform the processing job. Dates are gibe a light warm-water wash in order to remove dust, and or any other foreign matter. The Fruit is then spread on large tables for manual sorting and grading. (Pakistan Gulf Economist-December 2002).

Grading: Dates in Pakistani re usually classified according to the following grades

| | |
|---|---|
| (a) | Extra Class |
| (b) | Select-A |
| (c) | Select-B |
| (d) | Good Average Quality (GAQ) |
| (e) | Fair Average Quality (FAQ) |
| (f) | Industrial Grade |

The job of date grading is quire technical in nature. Uniformity in color and size, weight of dates per kg, percentage of discolored, deformed, mashed, mechanically injured dates and dates with broken skin, scars and other defects, which materially affect external appearance, audibility or keeping quality of the food are some of the factors taken in account for determining the grade. A batch of workers works under the supervision of a highly experience quality controller, who vies instructions to his team for preparing the desired grades.

Packing: Graded dates are packed in clean, new fiber board cases lined with perforated polyethylene bags. Cross dividers are optional. All packaging material meets the standards of for grade packaging. Each carton is passed through metal detectors before and after being finally sealed.

Higher Standards: Date factories in Therhi are maintaining international standards of cleanliness, hygiene and quality control. One of these factories has even achieved ISO9000 certificate of quality control. The factory is totally neat and clean. The entire processing area is fly-free zone. The company has installed Glue Board fly-killers in the factory. The device attracts catches and kills insects, including flies, wasps, mosquitoes and moths silently without the use of any poison or chemicals. Workers wear white cotton scarves on their heads to prevent falling of any hair during the work. Pakistan has the capacity to supply fully processed high quality dates in aviations styles, shapes and forms, which include pitted whole dates, un-pitted whole dates, pressed date bricks, date chops, date paste in bulk as well as ready-to-distribute small boxes/jars weighing from 100 gms to 1000 gms.

Packing dried Dates: As compared to fresh dates, the processing of dried dates for exports is not very much complex. The fruit is simply cleaned, graded and just packed in 70 kg jute bags. Agha Qadirdad Khan date market, situated on the left bank of river Indus, near Baberloi, one of the earliest homes of dates in Sindh and Khairpur dated market, on the national highway, are the main processing centers for dried dates. Most of the women they are engaged in packing and grading the dates at Agha Qadirdad market which is amen domestic market.

Exports from Pakistan: Pakistan appeared on the map of date exporting countries in the beginning of 80s in the last century. Today, we are the second largest exporters of this fruit in the work .Major buyers of our dates include Canada, the USA, Germany, the UK, Denmark, Australia, India, Bangladesh, Nepal, Sri Lanka, South Africa, Dubai, Japan, China, South Korea and North Korea etc.

**3. MATERIALS AND METHODS**

The study was conducted in five areas of Khairpur District. The locations are largely agrarian with the majority of the people as subsistence farmers who cultivate crops such as Rice, Wheat, Banana and maize, millet, and sorghum. Thirty women Dried Dates processors were randomly selected from each location to give a total of 100 respondents for the study. Data was collected with the aid of an interview schedule. Data was collected on the socio-economic characteristics of Dried Dates processors as well as input such as; capital, machines, labor,

and the outputs. The data collected were analyzed using simple descriptive statistics, Net farm Income model and Data Envelopment Analysis. The Net farm income model is expressed as:

NFI = TR (Qc x Pc + Qo x Pou) – TC (TVC + TFC)

Where: - NFI = Net farm income

TR = Total revenue (from cake and oil)

Qc = Quantity

Pc = Price

Qo = Quantity

Pou = Price of Dried Dates per unit

TC = Total cost

TVC = Total Variable cost

TFC = Total fixed cost

The variable cost items considered include capital (cost of transportation, firewood, and packaging), labor, cost of grinding, water, salt and Dried Dates. The fixed cost items include; drums, basin, processing machine.

***3.1 Envelopment Analysis (DEA)***

Data Envelopment Analysis is a non-parametric, linear programming based frontier analysis method that was originally developed to analyze the performance of organizations whose goals are not limited to profit maximization (Charnes *et al*., 1978). Data Envelopment Analysis (DEA) uses a non-parametric non stochastic piecewise linear production frontier in estimating technical efficiency. The DEA frontier estimates efficiency relative to the pareto-efficiency frontier which estimates best performance. An output-oriented variable returns to scale DEA model was used to calculate technical, and scale efficiency in Dried Dates processing. The output oriented model estimates the proportional increase in outputs as inputs remains the unchanged. Assuming that there is data available on K inputs and M outputs in each of the N decision making units (i.e. processing) and input and output vectors are represented by the vectors x and y, respectively for the ith processor. The data for all processors may be denoted by the K N input matrix (X) and M N output matrix (Y). The envelope form of input-oriented VRS DEA model which is the most widely used is then specified according to

Coelli, *et al* (1998) and Sharma *et al* (1999) as follows: Min $\theta\lambda$ $\theta$

St $-y1 + Y\lambda \geq 0$

$\theta x1 - X\lambda \geq 0$

$NI'\lambda = 1$

$\lambda \geq 0$

Where $\lambda$ is scalar and is a N x 1 vector of constraints, the value of $\theta$ obtained signifies the efficiency score for the ith DMU. It will satisfy $\theta \leq 1$with a value of 1 indicating a point on the frontier hence a technically efficient DMU according to Farrell (1957) definition. Thus, the linear programming problem needs to be solved N times and a value of $\theta$ is provided for each the processor (DMU) in the sample. Both CRS and the VRS DEA are conducted on the same data set and the ratio between the CRS and the VRS technical efficiency scores (CRS T.E/VRS T.E) is called scale efficiency (Latruffe *et al*, 2005). Efficiency scores in the study were estimated using the computer program, DEAP version 2.1 described in Coelli (1996). The inputs considered include: Raw Dried Dates(kg), Water (litres), Labour (man/days), Salt (g), Capital (firewood, packaging and transportation). The outputs considered include: Oil (litres) and Cake (kg).

## 4. RESULTS AND DISCUSSION

### *4.1 Inputs and outputs in Dried Dates processing*

The result shows inputs used and outputs obtained in Dried Dates processing. The inputs used include Dried Dates, water, salt and firewood. Others include fuel (kerosene) and labour. In a processing cycle of about 4 days, the total quantity of Dried Dates processed was 3862.80kg with an average of 154.5120kg. The total quantity of water used was 1160.00 litres with an average of 46.400 litres per processor while the total quantity of fuel (kerosene) used was 44.00 litres. Furthermore, Table 1 shows the total of Dried Dates obtained was 2236.80kg with an average of 89.4720kg per processor while the total quantity of Dried Date.

### 4.2 Costs and returns analysis in Dried Dates processing

The result for the cost and returns analysis is presented in Table 2. The average total cost of processing was N20, 250.9, which was dominated by the variable cost of processing which accounted for 90.7% of the average total cost. The fixed cost component on the other hand accounts for 9.3% of the average total cost of processing. The cost of Dried Dates dominated the variable cost by accounting for 79.59 of the total variable cost.

In terms of returns, an average gross returns of N30,817.6 per processing cycle was obtained from Dried Dates processing. The average gross returns was dominated by the return from Dried Date soil which accounted for 56.3% of the average gross returns while the Dried Dates cake (*kuli-kuli*) accounts for 43.7% of the average gross returns. The revenue from Dried Date soil also accounts for 85.5% of the total average cost of processing. This implies that for the processors to make sufficient profit, they have to sell both Dried Dates cake and Dried Date. A similar finding was made by Hamidu, *et al* (2007). The result further shows that the average net return of N10,586.6 per processing cycle of about four days was obtained in Dried Dates processing by rural women in the study area. This means that in a month, net revenue of about N74106.20 was obtainable.

### *4.3 Pure Technical Efficiency in Dried Dates Processing*

An improvement in technical efficiency is essential for enhancing the profitability of any enterprise. An assessment of the level of technical efficiency in Dried Dates processing was done to provide further insights into the nature and causes of inefficiency in Dried Dates processing. The technical efficiency in Dried Dates processing in the study area varies from 0.07% for the 'least' practice processors and 100% for the 'best' practice processors with a mean value of 0.802. Thus, in the short run, there is scope for increasing the outputs of Dried Dates/cake by about 20 percent through improvement in technical efficiency.

### *4.4 Scale Efficiency in Dried Dates Processing*

The scale Efficiency in Dried Dates processing in the study area varies from 12.4% to 100% with a mean of 83%. This implies that, the Dried Dates processors in the study area need to increase their scale of operation by 17% to attain full scale efficiency. If the average scale efficiency score is less than the average pure technical efficiency score, then scale inefficiency is the cause of overall inefficiency (Krasachat, 2003). Otherwise, it is attributed to inefficient management

practices (Latruffe *et al*., 2005). Hence, the low average pure technical efficiency (80 percent) in comparison to the average scale efficiency (83 percent) as shown in Table 3 and 4 respectively. Implies that pure Technical Efficiency in the cause of overall inefficiency. This implies that inefficiency in Dried Dates processing is due to managerial factors and not the scale of operation.

### *4.5 The constraints faced by rural women in Dried Dates processing*

The constraints militating against Dried Dates processing in the study area varies from one respondent to another. However, ten constraints were identified as shown in Table 5. The processors pointed out that inadequate capital for expansion, unstable price of inputs and inadequate processing machines are the three major constraints hindering the processing of groundnut. A similar finding was also made by Haruna *et al.*, 2006). The respondents also pointed out that their profit will increase if the constraints can be overcome.

## 5. CONCLUSION

Inefficiency in Dried Dates processing is due to managerial factors and not the scale of operation. Furthermore, a significant opportunity exists for empowering rural women and alleviating poverty in Khairpur District Sindh Pakistan through Dried Dates pro raw groundnut cessing. This opportunity can be exploited through improvement in managerial ability and provision of advisory services.

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Table: Inputs and outputs in Dried Dates (2 acre farm)

| N | MINIMUM | MAXIMUM | TOTAL | MEAN |
|---|---|---|---|---|
| Labour | 30 | 60 | 90 | 45 |
| Color | 1.kg | 1.5k.g | 2.5 | 1.25 |
| Sugar | 20.k.g | 40.k.g | 60 | 30 |
| Fire wood | 20.mounds | 40.m | 60.m | 30.m |

Table 2. Cost and returns analysis from Dried Dates processing

| Cost Return components | UNIT | QUANTITY | COST PER UNIT | Total Production (2acres) and cost | TOTAL COST |
|---|---|---|---|---|---|
| Fresh Dates | KG | 1.kg | Rs.10 | Rs.10,000m | Rs.1000,00 |
| Dried Dates | KG | 1.kg | Rs.8 | Rs. 15,000.m | Rs.120,000 |
| Transport Cost | - | 1.Kg | Rs.2<br><br>Rs.1.Dried | Rs.20,000 Fresh<br>Rs.15000Dried | Rs.20,000<br><br>Rs.150000 |
| Marketing Cost | | Mounds | Rs.20 | Rs.200000 | Rs.200000 F |
| | | Mounds | Rs.15 | Rs.225,000 | Rs.225,000 |

Table-3.Technical efficiency in Dates Processing

| Class Interval | Frequency | Percentage |
|---|---|---|
| 0.071 – 0.2568 | 6 | 6 |
| 0.2569 – 0.4426 | 8 | 8 |
| 0.4427 – 0.6284 | 8 | 8 |
| 0.6285 – 0.8142 | 16 | 16 |
| 0.8143 – 1.0 | 62 | 62 |
| | 100 | 100 |

Table-4. Constraints faced by women in Dried Dates Processing

| Constraints | Frequency | Percentage | Ranking |
|---|---|---|---|
| In adequate labour supply | 9 | 2 | 9 |
| Unstable price of inputs | 74 | 20 | 1 |
| Unstable price of outputs | 27 | 6 | 8 |
| Lack of readily available market | 16 | 10 | 5 |
| Incomplete return of credit sales | 13 | 9 | 6 |
| Low volume of production | 49 | 15 | 3 |
| Inadequate Processing machines | 60 | 18 | 2 |
| Unstable Electricity | 11 | 8 | 7 |
| Lack of processing shed | 38 | 12 | 4 |
| TOTAL | 297* | 100 | |