

Oman Traditional Date Palms: Production and Improvement of Date Palms in Oman

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Summary

Date production in the world is confined to a small number of countries, most of them being Arab. However, date industry in the Arab world is not yet fully developed and concerted efforts are still needed to fully utilize the tremendous date tree potential as a commodity that can be consumed in the local market or processed for export.

Date palm cultivation is one of the most important agricultural activities in Oman. It occupies more than 82% of total fruit crop area and about 42% of total agricultural land. Not only is domestic demand met, but a surplus for export is also generated. Tremendous development has occurred in the production and distribution of dates during the last two decades. However, the contribution of dates to total agriculture exports was found to be low.

This paper presents date palm crop in terms of its traditional practice and economic development in Oman. Results show that the quality of dates produced has not yet met approved standards and, therefore, the return to producers is not maximized.

Résumé

Le palmier dattier traditionnel d'Oman: production et amélioration de la culture du palmier dattier à Oman

La production de dattes dans le monde ne concerne qu'un nombre limité de pays, avec les pays arabes constituant la majorité. Cependant, l'industrie des dattes dans le monde arabe est encore à l'état embryonnaire et des efforts énormes restent à fournir afin de bien utiliser le grand potentiel du palmier dattier pour la consommation locale du fruit et aussi pour l'augmentation de l'exportation.

La culture du palmier dattier est une des activités agricoles les plus importantes à Oman. Elle occupe plus de 82% de la superficie totale fruitière et à peu près 42% de la superficie totale agricole. La production actuelle couvre non seulement la demande locale mais engendre aussi un surplus pour l'exportation. La production et la distribution des dattes ont connu un développement important pendant les deux dernières décennies.

Ce papier examine les techniques de cultures traditionnelles ainsi que le développement économique du secteur dattier à Oman. Le problème de la qualité des dattes est traité en particulier. L'étude a montré que la contribution des dattes à l'exportation est restée faible et a tendance à la baisse.

Introduction

Date palm is reckoned to be the oldest fruit tree in Oman. Dates, being the main food source in the past, are widely considered to be a strategic source of food security. In line with the dietary requirements of the modern consumer, dates are high in fiber (about 6.5%), contain 'brown' sugar (70%), mainly glucose and fructose, and have a negligible fat content. Thus, they contain most of the dietary constituents essential to the human body in the form of easily digested sugars, fat, proteins, minerals and vitamins (10, 13).

In Oman, although socio-economic changes had a negative effect on traditional date palm cultivation, they have not lead to the disappearance of the date palm crop. On the contrary, the country's economic progress created the impetus and a vehicle to find new ways to introduce modern techniques in agricultural

practices and processing methods. Presently, date palm development and improvement in terms of disease control and introduction of new technology is a government concern, while date processing factories remain a concern of the private sector.

The overall picture is now one of a continuous new endeavor aimed at improving the growing areas through the introduction of labor-saving methods in cultivation, modern irrigation systems, improved packaging, industrialization of dates and diversification of date palm by-products by better utilization of lignocelluloses residues of the palm tree.

In many areas of the sultanate, date palm trees are very well developed in terms of cultivar selection, planting, harvesting, marketing and storage. Most of the traditional palm tree practices are still carried out by farm-

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ers with only slight variation or with no change at all, since most modern techniques are not applicable by a majority of farmers. The last agricultural census (11) showed that date palm trees occupy around 35,469 ha, about 82.6% of the total fruit producing area, and include more than 8 million trees. The census also indicated the distribution of the date palm tree in each region. For example, the Batinah region occupies first place in terms of palm tree area with 42%; Al Sharqiyah, 21%; Dhaklia, 15%; Dhahira, 14%; Muscat, 6%; and Musandam, 2%. Total production of dates has averaged more than 170,000 tons/year and the average production per tree has been around 29 kg. More than 200 date varieties are produced in Oman.

The objective of this paper is to present a review of the traditional date palm cropping practices over the last decade and suggest ways in which the products can be improved. The major goal is to describe the traditional market system used to market date production and recommend some improvements.

Country profile

Oman is situated at the southeastern part of the Arabian Peninsula. The Republic of Yemen borders the country to the south and Gulf of Oman and Arabian Gulf to the north. To the west of the country are located Saudi Arabia and the United Arab Emirates while the Indian Ocean and Arabian Sea boarder the country to the east (Figure 1). Different weather systems dominate in various parts of the country. Two distinct seasons are winter (November to April) and summer (May to October). Summer is very hot and dry with maximum temperatures as high as 50 °C. The winter is very mild. Rainfall varies from less than

50 mm in central Oman, rising to more than 300 mm in the Northern Oman Mountains, and shows wide year to year variations.

Oman enjoys a long coast line that extends for more than 1,700 km. The surrounding seas contain rich aquatic life. Fisheries constitute an important economic resource.



Plate 1: Traditional date palm garden in Oman.

According to Food and Agriculture Organization (FAO) statistics, total world production of dates in 1996 hit a new record of 4,492,000 tons with an almost 21.4% growth since 1991 (Figure 2). Sultanate of Oman ranked eighth in the list of date producers. Iran emerges as the World's largest producer, followed by Egypt (Figure 3).



Figure 1: Map of the Sultanate of Oman. This map is not an authority on International Boundaries. Source: <http://www.worldbank.org/>

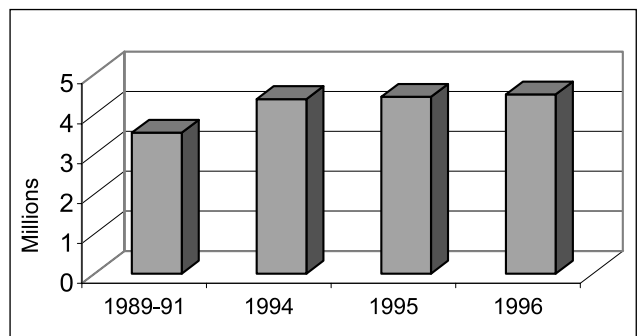


Figure 2: World date production (in tons) during the period 1989-1996, FAO Statistics

It is difficult to determine the exact origin of date palm cultivation in Oman. It is possible, as El Mardi stated (6), that the tree is a mutation or hybrid of a wild palm. On the other hand, Al-Baker (1) reported that the tree originated in Western India, Southern Iran and on the western coast of the Arabian Gulf. These areas are easily within reach of the Omani people with their strong maritime tradition. The moment of the first cultivation of the tree in Oman is not known, but Omanis have known dates ever since they started to sail around the seas of this region and this for more than during seventeen centuries (6).

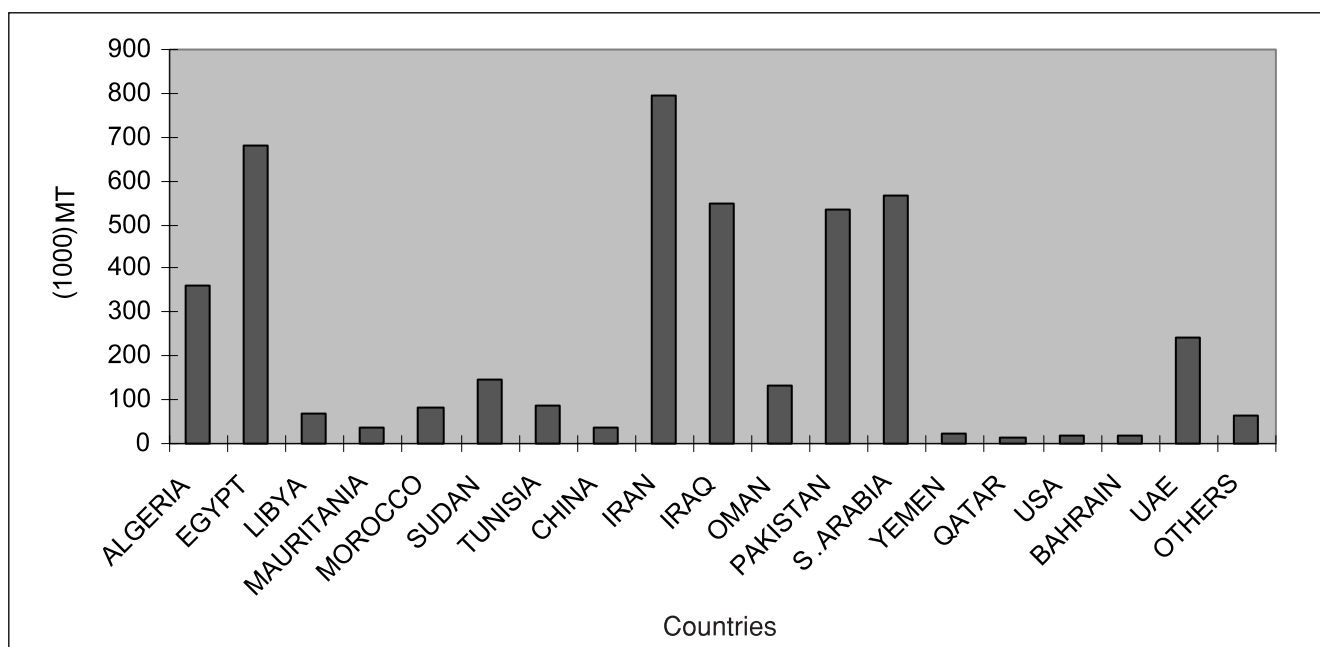


Figure 3: Total world production of dates during 1996, FAO Statistics.

The date palm has retained its value for the desert population because of its good adaptation to the environment and the wide range of benefits it provides. These benefits can be summarized as follows:

1. To many desert inhabitants, date palm trees represent an important source of nutrition. Its products can be used the year round. Fresh mature dates are used during the June and October period. In addition, dates can be processed and stored for the remaining months of the year simply by using traditional ways of packing in jars or bags.
2. It is very often used as a source of income. It provides building materials, and its leaves and fibers are used for making crates, boxes, ropes and baskets.
3. Traditionally, the palm tree is considered as a good shade tree. People tend to build their houses in the middle of palm tree gardens. Similarly, shades can be constructed from leaves in order to protect animals from high temperatures during summer periods.
4. Recently, farmers have started to mix palm tree leaves with other by-products in order to produce animal manure.

A number of studies have shown large variations in palm tree population densities, production and yield per tree. The reason for the difference, mainly lies in the evolution in cultivars and methods of cultivation of the date palm tree over the last 90 years. For example, Popenoe (19) mentioned that Oman was credited with 4 million date palms, the larger part of which was on the Batinah coast. He reported two things: first, Samail (a village situated in the interior) produced the highest average yield per tree in the industry. Second, total annual exports of Oman were estimated at 30,000 tons. Wilkinson (26) stated that the average yield of

Batinah region palms was 34 kg, whereas the Samail's estimate was as high as 45 kg. Vittoz (25) observed that there are 3.5 million palm trees in Oman of which 15% are located in the interior and 30% in the Batinah region. FAO (8) indicated that the estimated annual production of Omani dates is 50,000 tons and the number of date palms averaged 1 million for the 1961 to 1978 period. Currently, as estimated by the census carried out by the Ministry of Agriculture and Fisheries (10), the total number of palm trees is 8 million, occupying 35,469 ha which represents 82.6% of the total fruit area.

Available information collected mainly from the Ministry of Agriculture and Fisheries from 1982 to 1999 shows an increasing trend of both production and area planted with palm tree (Figure 4). However, it is important to note that during the last 6 years the area under cultivation did not increase whereas production doubled. This can be attributed primary to two reasons. First, to the introduction of new techniques in planting, and second, to more fertilizer application.

Traditional market

Schultz (22) viewed traditional agriculture as "that sector of a poor underdeveloped country which has attained a particular long-run equilibrium with respect to the allocation of factors of production at the disposal of farmers and with respect to investment to increase the stocks of such factors». Todaro (23) stated the "most of the traditional farmers, if not all of them, have existed outside formal organisations, institutions and government policies. Since they have had to feed themselves first, survival instead of development has been their dominant goal". Achieving subsistence is still the major objective of third world peasant agriculture.

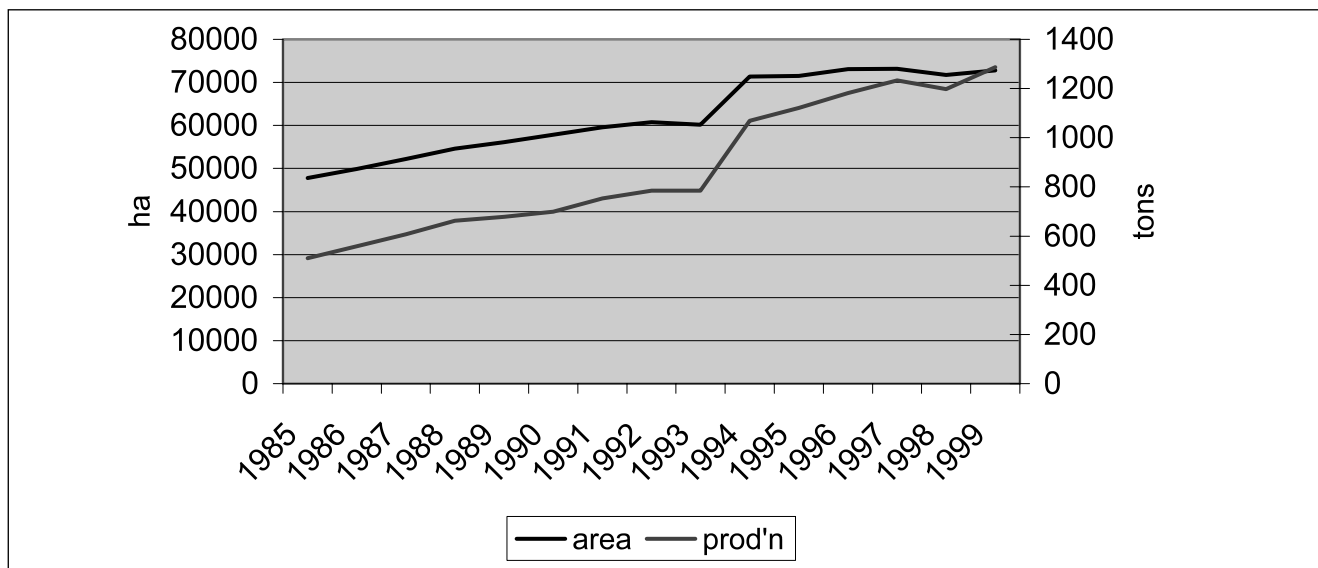


Figure 4: Date production and area increases in Oman for the period 1982-1995.
Source: Ministry of Agriculture and Fisheries.

A more general view states that traditional farmers are generally referred to as those producers that are poor, small in scale, rural in attitude and illiterate. It is widely hypothesised that these producers are traditional in their way of thinking, in their production system, in their decision-making and in their way of life, which is driven by their overall objective of subsistence and survival. Dates production and marketing in Oman is still performed traditionally. For many decades, traditional farmers have been considered as subsistence producers with a main objective to only supply enough food for the family needs.

Dates are sold in a variety of ways. Some are auctioned when they are still on the tree. Some are sold in the local market either fresh or more commonly dried (in Arabic called *tamar*).

Traditional date markets seem to be important to farmers and consumers. Information provided by previous studies (19) and by the author's own observations, reveals that the operation of these markets calls for analysis of their structure and operation in order to suggest some improvements. Commercial dates come to the market from three different sources: farmers, merchants and processors. Historically, commercial dates come in two forms, fresh and dry.

Fresh date market auction

This type of auction is conducted when harvests are still on the tree. Farmers who will have a surplus will be involved in this operation. Just after the fruit is ripe, all people in the village will be informed about the day time and place of the auction. An auctioneer or caller (in Arabic called *dalla*) conducts the auction. There will be a recorder (in Arabic called *qabith*) present during the auction in order to record information on selling and buying.

The caller will open the auction by calling one of a number of standard phrases that serve to announce the auction is about to start. Once the caller considers

that enough potential buyers have collected, he will start the bidding. The steps of each bid are decided by the caller and the rise in price depends on the varieties and quality of the dates offered. Thus, the caller goes round and calls for quotes. Payment is usually made in cash.

At any stage during the auction, the prospective seller can withdraw either because he feels that insufficient people are present or because he considers the final price called is not high enough. Generally, however, attempts to persuade him to accept the arrived-at price will be made not only by the buyer but by the caller as well. When the seller accepts the auction price, it is recorded along with the names of the seller and the buyer. After the sale is made it is the responsibility of the recorder to make sure that the seller receives his money and that the buyer pays. From the total selling value obtained through the auction, a deduction of 6% is made. Forty percent of the 6% go to the caller while the remaining amount goes to the recorders as fee.

To sum up, fresh dates are sold while they are still on the tree. The sale takes place in each farmer's field. Normally, the buyers come from the same area surrounding the farms in which the auction takes place. The buyer will buy dates while the seller or the owner has to continue to irrigate and give access to pick up the date fruits.

Dried date auction

In the past, dried dates were taken to the traditional market by donkey or camel. Today, vehicles are used for transportation. Dried date auction deals with harvested dates that are packed in either plastic sacks or jars. Normally, dates for human consumption are packed and washed in a plastic jar, whereas dates that are deformed or insect-infested are packed in plastic sacks/bags. Both will be sold in the same local market. The same auctioning principle will be applied as for

fresh dates auction with a caller and recorder. The only difference, however, is that in this auction the traders, who trade dates to neighboring Gulf States (GCC), will compete with local consumers. Several Omani date traders operating from local traditional markets take the fruit all the way to Dubai (UAE) and beyond to other GCC states to get higher profits.

Traditional market improvement

Local markets are expanding and are increasingly becoming focal points for success or failure of local products. It has been observed that increases in food demand, due to natural growth of the rural population, were met by increased amounts of imported food. The pressures on traditional markets to offer high quality food are increasing and the government has intervened in a variety of potentially supportive ways. Examples are establishment of infrastructure, directly by constructing new places for traditional markets, and indirectly by building roads (from rural areas to local markets). An effective marketing system ensures the production of marketable produce and can add value to produce by transferring it from areas of surplus to areas of shortage. Adequate infrastructure and services to facilitate such transfer may include the provision of storage and transportation facilities, grading and packing services and the dissemination of market information (which is the basis of production decision making).

In Oman there is a tradition of entrepreneurship and a certain amount of prestige is associated with trading activities. In this context, it is unwise to disregard the potential role of the private individual. The local entrepreneur generally has low operating costs, and is knowledgeable about the market. Thus, two factories were established by the government in 1975 to process dates and hence stimulate production and marketing. Now these factories have been privatised and are operated by the private sector.

However, only an authority such as the government can devise and implement pricing policies, quality control and selective import restrictions to assist local producers. These may be the ways in which the government can intervene in the development and improvement of the local markets. The local economy, however, is still basically a subsistence economy, where the family is still the basic economic production unit using limited modern technology. This lack of a commercial orientation has much to do with storage and transportation limitations.

Traditional irrigation

The majority of date palm gardens in Oman is irrigated by *Falaj* system. The *falaj* system is a flooding system of irrigation which depends on gravity. Growers irrigate their palms for a couple of hours. All they need to do is to manage water into each area (24). The farm is irrigated once a week in the summer and every two to three weeks during winter season. *Falaj* water is either inherited or bought from the village *falaj* committee that is responsible for water distribution (19). However,

in Batinah region most palm farms are irrigated from wells. Water is drawn from these wells by diesel or electric pumps that have now replaced animal power used to draw water in the past.



Plate 2: Traditional Aflaj system.

Recommendation and future perspectives

Since the 70's the Ministry of Agriculture and Fisheries has attempted to improve the production of date palm trees through targeted extension programmes and financial support for various cultural practices (11). In spite of the achievements, date quality remains a major concern for Oman. Appearance, composition and packaging have not always been up to standard and have negative effects on local consumer purchases and Omani dates competitiveness in foreign markets.

It has been estimated that average annual Omani per capita consumption of dates is 60 kg. With a population of 2.28 million for the year 2000, annual local consumption of dates can be calculated at 115,400 tons. Based on the total Omani production of dates in 2000 (13), a surplus of 164,630 tons, which represents 69% of the annual production, goes to waste or to animal feed. This excess production is expected to be utilized for industrialization into value-added products and can be considered a good potential for export.

It has been indicated by the Foreign Trade Statistic, published yearly by the Royal Police Custom Department, that average yearly date export for 1995-1999 was only 7,000 tons, representing an average of only 2.5% of total production. The low level of exports can be attributed to a number of reasons. First, most dates are packed by traditional farmers or wholesalers, who have limited resources with which to produce high quality products. Second, consumers' differentiation based on date variety and price usually plays a secondary role.

However, the Omani government has realized the problem of date quality. Therefore, a number of measures have been implemented. These can be summarized as follows:

1. An Omani standard for Omani date products has been issued and approved locally in 1985.
2. The Ministry of Agriculture and Fisheries (MAF) has conducted a comprehensive study on date treatment, pressing and packaging according to international market norms and standards.

3. The MAF also conducted many research programmes through local institutes intended to increase productivity and improve quality.
4. The College of Agriculture, Sultan Qaboos University, has carried out comprehensive studies in 1997 in an attempt to improve date quality.

However, the government has to ensure that date palm producers maintain high standards of quality. This means that producers have to be informed about good management techniques in order to manage palm trees properly throughout all production stages. Extension centers can play an important role in conveying quality standard requirements to farmers. Date experts recognize that quality should start at the farm with proper cultural techniques. Good quality dates depend on adequate irrigation, fertilization, protection from pests, pollination, and harvesting. Post-harvest techniques for good quality dates include appropriate handling, transportation, processing, packaging, storage and distribution. However, post-harvest techniques can only preserve quality provided by the farmer. Assistance to farmers should promote cultural practices and provide guidance on how they could get improved high yields and better quality dates to the market.

In support of date palm producers, MAF has also established, since 1976, two date processing plants at Nizwa and Rustaq in addition to two date collection centers at Mudhaibi and Samail. The function of the processing plants can be summarized as follows:

1. to buy dates from farmers at reasonable prices;
2. to sort, process and pack dates at a level of high quality and
3. to store and distribute date products to retail, consumer and foreign markets.

In 1996, all processing date plant facilities were privatized. The Dates of Oman Company now operate these plants.

It is well recognized that processing factories are the only link between traditional palm date producers and foreign markets. Therefore, government needs to establish a committee that consists of members from traditional producers and Oman date companies. This committee will have to study the problems and recommend solutions for the problems that the date palm

sector is facing. Thus, for the future development of traditional date farmers and palm factories, and to explore new products and derivatives, Ministry of Agriculture and fisheries in Oman should establish new horizons for applied research in the following areas:

1. identify the technical and marketing problems arising from production and marketing of existing farms and factories and find solutions through applied research. The areas of research would involve improving competitiveness and marketability of dates, and storage and shelf life of the products.
2. Innovations for new product development using date products based on traditional dishes. For example, production of syrup and pastes from dates, production of dates' powder as baby food and pre-mixed cake powder.

Conclusion

Dates dominate agricultural production in Oman. They are the traditional national staple and were Oman's main source of income before oil. However, Oman has undergone some drastic changes that have impacted consumption patterns. These socio-economic changes included improvement in living standards, continuous urban drift and introduction of technology. The overall picture drawn from general examination of traditional date palm production in Oman reveals the importance of the sector for the country's economy. Thus, some development or changes may be required to find solutions to some high priority problems. However, attempts to undertake these actions require careful consideration of prevailing social rules and habits. It is well recognized that any suggested changes of an existing system may bring problems of greater complexity.

The most prevalent view in Oman is that quality standards of dates (fresh and dried) are still deficient. Cases of blemished, damaged, moldy and souring dates have been encountered at farm and market levels. Furthermore, high food demands, due to population increase, along with external international competition call for improvement in the existing date palm industry.

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It is a good opportunity also to call for new referees to still improve the quality of our journal through an enlarged referees team.

The Secretariat will be very pleased to receive any proposition in that sense.