

The current status of the date palm (*Phoenix dactylifera*) and its uses in the Gaza Strip, Palestine

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Abstract. *Abd Rabou AN, Radwan ES. 2017. The current status of the date palm (Phoenix dactylifera) and its uses in the Gaza Strip, Palestine. Biodiversitas 18: 1047-1061.* The date palm (*Phoenix dactylifera* L.) is considered one of the most important fruit crops in Palestine. It has a major socio-economic importance due to its commercial, nutritional, environmental, social, health and religious values. Because of its importance as a resistant and strategic crop facing serious local threats like pest infestation, underdeveloped marketing and mismanagement, the current study comes to investigate the status of the date palm tree and its uses in the Gaza Strip. Field surveys and institutional visits were applied to fulfill the purpose of the study. The current study revealed a total number of 250,000 trees of date palm existing in the Gaza Strip, with 40% of the dates is concentrated in the Middle Governorate. At least, 19 cultivars have been recorded locally with the 'Hayani', 'Barhee' and 'Bentaisha' being the most common. The average date production in the last few years was 12,000 - 15,000 ton per year. More than 40 industries and uses associated with the date palm tree have been observed in the Gaza Strip, with the handicraft production and food industries are the main creative uses by the Palestinian community. Finally, the study recommends the improvement of the processes of date palm cultivation, production, protection, and marketing. The cooperation of different parties is very essential to ensure good sustainable development and uses of the date palm in the Gaza Strip, Palestine.

Keywords: Date palm, cultivars, Hayani, public uses, Gaza Strip, Palestine

INTRODUCTION

Date palm has long been one of the most important fruit crops in the arid regions of the Middle East and North Africa (Chao and Krueger 2007). It is one of the oldest trees from which man has derived benefits, and it has been cultivated since ancient times (El-Juhany 2010). Today, the date palm is found in both the old world and the new world where dates are grown commercially in large quantities (Zabar and Borowy 2012). The total world number of date palms is about 120 million trees, distributed in 30 countries and producing nearly 7.5 million tons of fruit per year (FAO 2013). Arab countries account for 70% of the world's date palms number and are responsible for 67% of the global production of date palm (El-Juhany 2010). Date palm has a major socio-economic importance not only for its fruit but also as an ornamental plant (Morton 1987). Dates are the main income source and staple food for local populations in many countries in which they are cultivated, and have played significant roles in the economy, social, and environment of those countries (Saafi et al. 2008; Chao and Krueger 2007). The date palm tree has a minimum water demand and tolerates harsh weather and high levels of salinity; in fact, it is more salt tolerant than any other fruit crop (FAO 1982; Alhammadi and Kurup 2012).

Date palm cultivation in the Palestinian Territories exists in the regions of Jericho and the Jordan Valley in the West Bank. In the Gaza Strip, date palm cultivation is mainly concentrated in the Middle and Southern Governorates (Figure 1). Deir Al-Balah is well known for

growing date palms; with the 'Hayani' as the most common cultivar. The Red Palm Weevil, RPW (*Rhynchophorus ferrugineus* Olivier) has recently become one of the major date palm pests and causes severe losses to farmers (Vidyasagar and Aldosari 2011).

Multi-purpose surveys regarding the date palm were carried out in different countries worldwide. Special focus was paid to the importance of date palm uses, cultivation, pests, diseases, genotyping in addition to its cultivars identification. Chao and Krueger (2007) highlighted the biology, uses and cultivation of date palm in the U.S.A. Studies on date palms in developing countries seemed to be extensive and intensive. Many researchers evaluated the date palm byproducts, while others focused on the effect of certain physical conditions on the growth and yield of the date palm (Alrasbi et al. 2010; Alhammadi and Kurup 2012; El-Hadrami and Al-Khayri 2012; Mahmoud and El-Bana 2013). In addition, many studies concentrated on the genetic variation and molecular characterization of some date palm cultivars using various markers (Hamza et al. 2012; El Kichoui et al. 2013; Khierallah et al. 2014).

In Palestine, many surveys have been carried out to highlight the status and perspective of the date palm. Abu-Qaoud (1993, 2015) pointed out that the cultivation of the date palm in Palestine is still below expectations, and the high investment costs and the underdeveloped marketing structures are the main constraints impeding date production in Palestine. Ali-Shtayeh et al. (2000), Said et al. (2002), Abu-Rabia (2005) and Ali-Shtayeh and Jamous (2002 and 2006) conducted ethnobotanical and floristic

surveys in the Palestinian Territories and they focused on the medicinal importance of many plant species including the date palm. The Applied Research Institute - Jerusalem (ARIJ) (2002) described different trees and shrubs occurring in Palestine including the date palm, with focus on their nutritional, economic, medicinal and fodder values. To conserve the Palestinian floristic and agricultural plants, Azaizeh et al. (2003) suggested a multilevel program involving the training of local practitioners, an establishment of a medicinal plant botanical garden and a field gene bank.

In the Gaza Strip, work on floristic species including the date palm is restricted to a few studies. Bolous (1959) described as many as 251 floristic species including the date palm and highlighted some aspects of their uses. Abd Rabou (2005) and Abd Rabou et al. (2008) described 70 floristic species occurring in Wadi Gaza. They revealed that the date palm has been used as a food source for humans and many wildlife species. The date palm was mentioned to be used in herbal medicine and in timber and fuel production. Abou Auda (2010, 2011 and 2012) studied plant ecology in the Gaza Strip and denoted the local potential uses of date palm. Madi (2001 and 2005) and Madi et al. (2002) described the various wild plants species prevailing in the coastal sand dunes of the Gaza Strip with the date palm included. Furthermore, Albanna and Eid (2007), MOA (2010) and Qofa (2014) focused on the industries, public uses and the ecological importance of the date palm in the Gaza Strip. More recently, Al-Agha (2016) and Radwan (2017) carried out comprehensive works regarding the date palm sector in the Gaza Strip. They revealed many threats facing the local cultivation of date palms, which is more concentrated in the Middle Governorate of the Gaza Strip. El Kichaoui et al. (2013) described the genetic variation and molecular characterization of six date palm cultivars in the Gaza Strip. More recently, El-Hindi (2017) and El Kichaoui et al. (2017) investigated the evaluation, isolation and molecular identification of the entomopathogenic fungi *Metarhizium anisopliae* and *Beauveria bassiana* against the RPW in the Gaza Strip. They revealed that the use of these fungi can be useful as a preventive and curative tool for the protection of date palm tree. Due to its importance as a national and strategic crop in Palestine, the current study investigates the current status of the date palm tree and its uses in the Gaza Strip.

MATERIALS AND METHODS

Study Area

The Gaza Strip is very populated (about 2.0 million) with an area of about 365 km². It constitutes 1.35% of the total area of Palestine (27,009 km²). It is located on the eastern coast of the Mediterranean Sea bordering Egypt on the southwest for 11 km and the occupied Palestinian Territories on the east and north for a 51 km (PCBS 2016). The Gaza Strip area has a typical semi-arid Mediterranean climate; hot in summer and cold in winter. The average daily mean temperature ranges from 25°C in summer to

13°C in winter, with the average daily maximum temperature range from 29°C to 17°C and the minimum temperature range from 21°C to 9°C, in summer and winter respectively. The daily relative humidity fluctuates between 65% in daytime and 85% at night in summer and between 60% and 80% respectively in winter (UNEP 2003).

Site and Institutional Visits

During the course of the current study, frequent visits were carried out to different date palm fields in order to investigate the current status of the date palm in the Gaza Strip. Meetings and discussions with farmers and owners of date palm orchards were of an utmost priority to fill the gaps needed in data collection regarding the current status, cultivars and uses of the date palm in the Gaza Strip. Moreover, vital visits were carried out to the Ministry of Agriculture (MOA), Earth and Human Center for Research and Studies (EHCRS), Al-Ahlyah Association for the Development of Date Palm (ASDPD) and Palestinian Al-Nakheel Association for Progress and Development (PNAPD). A set of close and open-ended questions were developed and used during the structured and semi-structured interviews conducted.



Figure 2. The geographic distribution of date palm cultivation in the Gaza Strip, Palestine

Photography and data analysis

A professional digital camera was used to take photos regarding the aspects related and needed to the date palm sector in the Gaza Strip. The data collected throughout the course of the study was statistically analyzed using SPSS computer program version 18.0 for Windows (Statistical Package for Social Sciences Inc, Chicago, Illinois). Graphs were plotted using Microsoft Excel program 2010.

RESULTS AND DISCUSSION

Distribution of the date palm in the Gaza Strip

Date palm cultivation is historic in Palestine including the Gaza Strip. According to current estimates of MOA, a total number of 250,000 date palm trees are found in the Gaza Strip (Table 1), of which about two-thirds (67%) are fruit trees. In spite of its cultivation in the whole Gaza Strip, date palm cultivation is more concentrated in the Middle Governorate (100,000 = 40.0%) as well as in Khan Younis (85,000 = 34.0%). With regard to the age of the date palm trees, the survey pointed out that 20,000 trees are less than ten years old, and the rest 230,000 had ages exceeding 10 years old. Of this figure, thousands of the trees were stated to exceed 100 years old.

Date palm cultivars grown in the Gaza Strip

At least nineteen date palm cultivars were recorded in the Gaza Strip. These cultivars can be identified by their fruit appearance and texture. They fall into three types: soft, semi-dry, and dry. The recorded cultivars are 'Hayani', 'Barhee', 'Bentaisha', 'Ameri', 'Dairy', 'Degani', 'Hilali', 'Halawy', 'Hatmi', 'Jabri', 'Khanaizi', 'Khalas', 'Khasab', 'Lulu', 'Muktomi', 'Medjool', 'Sukkari', 'Zahidi' and 'Zaghool' (Figures 2 and 3). The numbers and percentages of these cultivars are illustrated in Table 2.

Production of the date palm in the Gaza Strip

The total harvested area of the date palm in the Gaza Strip is about 8500 acres (Acre = 10,000 m²). The average date or Balah production in the last few years was estimated to be 12,000 -15,000 tons per year (Table 3). The average production per tree is 100 -150 kg, but according to personal communications with the MOA, ASDPD, PNAPD and EHCRS, the average production per tree may reach 400 kg depending on certain physical conditions such as irrigation, lighting amounts, temperature, humidity, wind, etc.

Industries associated with date palm

The current study documented 44 industries based on date palm products in the Gaza Strip; of which 16 were food industries, and the remainder represented other industries. Handicrafts were the most industries applied locally using the different parts of the date palm tree. These industries are categorized as follows:

Table 1. The number of the date palm trees in Governorates of the Gaza Strip (MOA 2016)

| Governorate | No. of the date palm trees | Percentage (%) |
|-------------|----------------------------|----------------|
| Rafah | 28,000 | 11.2 |
| Khan Younis | 85,000 | 34.0 |
| Middle | 100,000 | 40.0 |
| Gaza | 17,000 | 6.8 |
| North Gaza | 20,000 | 8.0 |
| Total | 250,000 | 100 |

Table 2. The number of tree for each cultivar (MOA 2016)

| Cultivars | Number of trees | Percentage (%) |
|-----------------|-----------------|----------------|
| Hayani | 210,000 | 84 |
| Bentaisha | 25,000 | 10 |
| Barhee | 10,000 | 4 |
| Other Cultivars | 5,000 | 2 |
| Total | 250,000 | 100 |

Table 3. Quantity of date palm or Balah production in the Gaza Strip in 2016 (MOA 2016)

| Governorate | Quantity of Production (ton) | Percentage (%) |
|--------------------|------------------------------|----------------|
| Rafah | 1,680 | 11.2 |
| Khan Younis | 5,100 | 34.0 |
| Middle Governorate | 6,000 | 40.0 |
| Gaza | 1,020 | 6.80 |
| North Gaza | 1,200 | 8.00 |
| Total | 15,000 | 100 |

Food industries

Biscuits, pies and pastries production: Some Palestinian women are fond in preparing some types of biscuits and pastries filled with dates or Ajwa (a soft paste made of dates) instead of using chocolate. These home or sometimes factory products are very delicious and they are commonly eaten with hot or cold drinks such as tea, coffee, cola and juice. The Palestinians often offer these foods for special occasions such as holidays, birthday parties, feasts, engagements and weddings (Figure 4A).

Dates pone: In spite of its rarity, this type of pone is commonly eaten by people who want to reduce their weight. The pone helps in slimming health because of its high nutritional value. Some people consider it a substitute for ordinary bread. It can be offered to guests with tea or coffee (Figure 4B).

Date chocolate and Tamreya industry: Many women prefer eating date chocolates or Tamreya (a special snack made of dates) with hot drinks such as coffee. Recently, it becomes one of the most hospitality sweet that are offered to visitors and guests (Figure 4C).

Date salad: It is sometimes prepared during the fasting month of Ramadan. It very delicious especially when some vegetables and fruits such as lettuce, watercress, mushroom, and apples are added (Figure 4D).

Balah jam: The production of the balah jam depends on using fresh dates rather than rutab. It is a tasty food commonly consumed by the Palestinians year round; especially in the fasting month of Ramadan (Figure 4E).

Date powder: This powder is used for both medicinal and nutritional purposes. Some women mix date powder with oil in order to paint their hair (Figure 4F).

Molasses production: It is a thick sugar liquid produced from certain varieties of dates. It consists of sugary material which constitutes 85% of the dry weight. Molasses is produced by using old, primitive and manual modes (Figure 4G).

Qatayif production: The Qatayif, which is a special dessert commonly served during the fasting month of Ramadan, is a very common traditional industry in the

Palestinian society. Sometimes, instead of nuts and other filling material, Qatayif is filled with dates or Ajwa (Figure 4H).

Ajwa industry: Ajwa, which is a soft paste made of dates, is a very common industry in the Gaza Strip; particularly Deir Al-Balah. It is made from the rutab phase of fruits. Sometimes, the Ajwa may contain seeds or is blended with sesame, anise, hazelnuts and walnuts. One ton of Ajwa requires at least 3 tons of rutab dates (Figure 5A).

Fresh date or balah consumption: Dates are considered one of the most important fruits in the Palestinian society; especially in the fasting month of Ramadan. They are very delicious and it is commonly eaten with hot or cold drinks such as tea, coffee, cola and juice (Figure 5B).

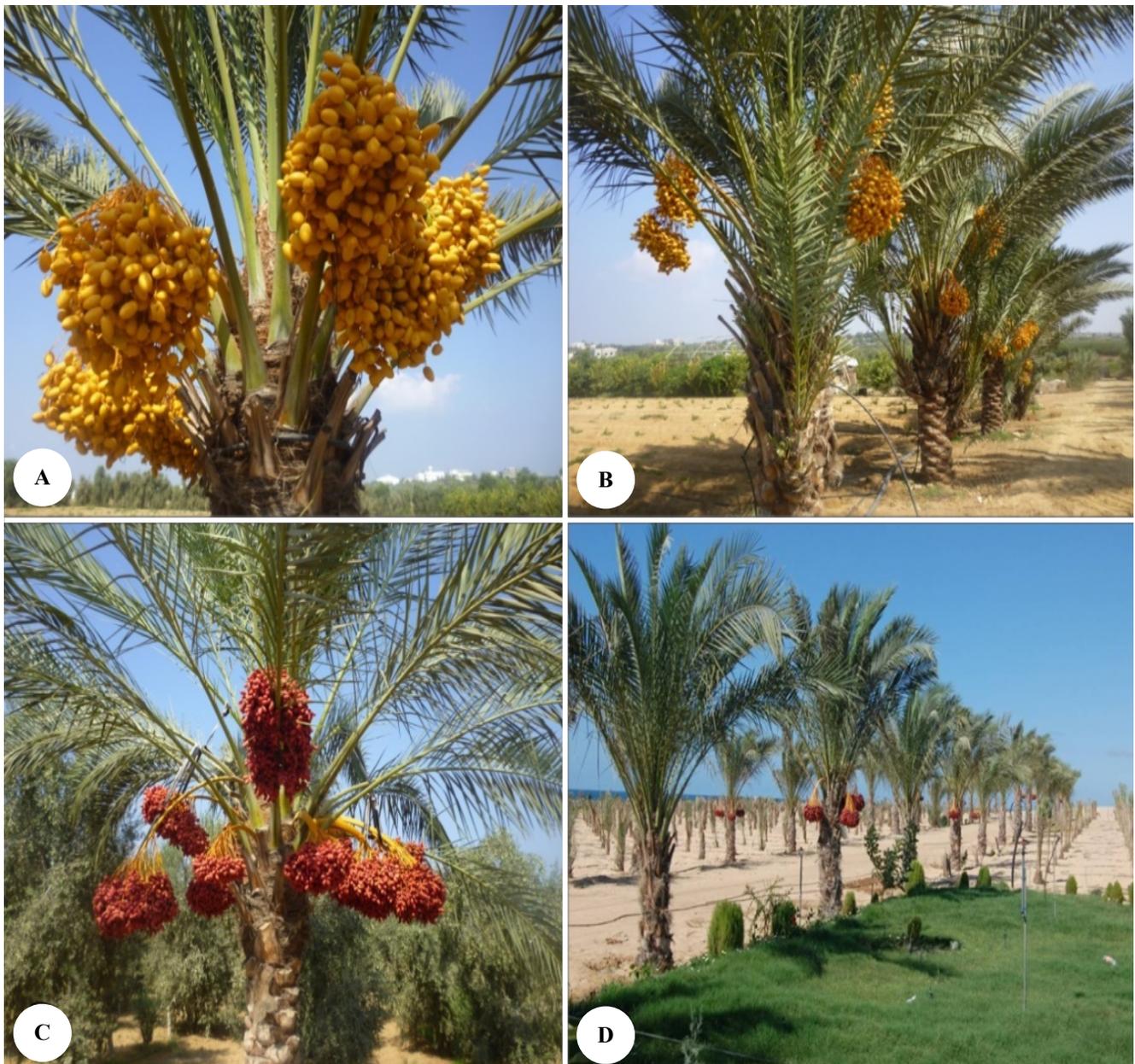


Figure 2: Main cultivars of the date palm in the Gaza Strip: (A) and (B) 'Barhee', (C) and (D) 'Hayani'

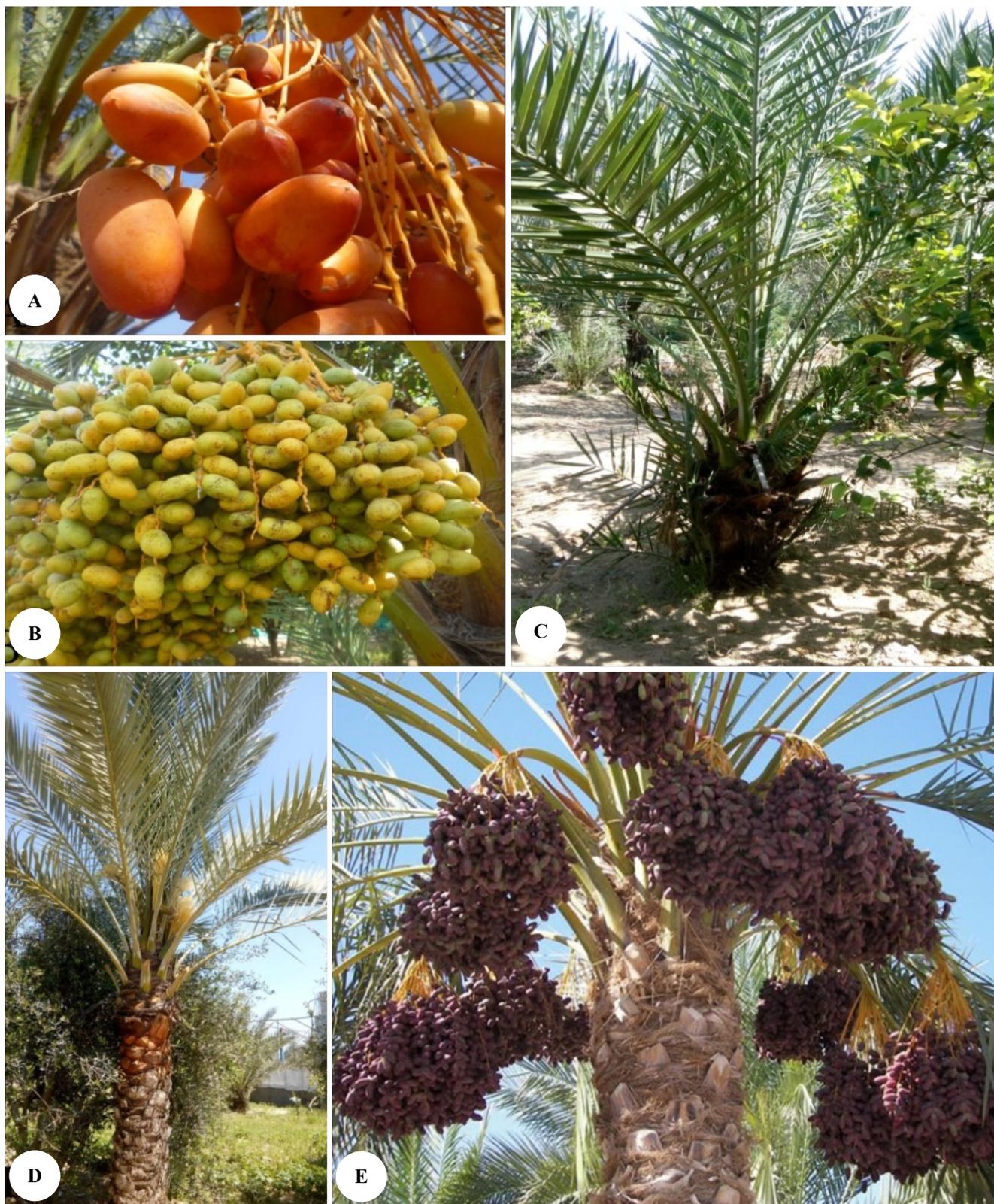


Figure 3. Minor cultivars of the date palm grown in the Gaza Strip: (A) and (C) ‘Ameri’, (B) and (D) ‘Halawy’, (E) ‘Medjool’

Coffee industry: This type of coffee is commonly prepared by grinding the date seeds after being washed and dried. It contains no caffeine, does not cause acidity and helps to get rid of excess weight (Figure 5C).

Beverages industry: These drinks are easy to prepare. Doctors often advise women to prepare it for children due to its importance in strengthening the body, treating anemia and preventing nerve disorders (Figure 5D).



Figure 4. Food industries associated with date palm: (A) Pies and pastries production, (B) Dates pone, (C) Date chocolate and tamreya industry, (D) Date salad, (E) Balah jam, (F) Date powder, (G) Molasses production, (H) Qatayif production



Figure 5: Food industries associated with date palm: (A) Ajwa industry, (B) Fresh date or balah consumption, (C) Coffee industry, (D) Beverages industry, (E) Date packing and processing, (F) Date cake, (G) Balah pickle, (H) Eid cake

Date packing and processing: Here, dates are usually washed off, dried and then packaged in bags made of nylon, cartoon bottles or transparent plastic containers. Finally, these bags are compressed and stored in suitable places (Figure 5E).

Date cake: This is very delicious and rich in calories. The cake consists of flour, sugar, dates, walnuts, almonds and chocolate pieces commonly offered to guests with several sauces such as toffee sauce on many occasions (Figure 5F).

Balah pickle: This product is similar to olive, egg-white and cucumber pickles. It has a pungent acid taste. The aim of the balah or date pickle production is to search an alternative use of dates (Figure 5G).

Eid cake: During the two Eids (feasts) of Muslims, the Palestinians used to make the Eid cake, which mostly depends on the use of Ajwa as a filling material (Figure 5H).

Handicrafts

Picture frames: These frames are commonly made of various parts of the date palm tree especially the fronds. In some cases, these fronds are pigmented with different colors to give an aesthetically pleasing look (Figure 6A).

Use of fronds as a signal of grave or consolation place: It is an inherited practice in the Palestinian community to place the fronds of the date palm tree on the top of graves, or in streets as a sign indicating that a consolation is present in a near place (Figure 6B).

Vases industry: Vases are decorative pieces designed to make everyday life more happy and creative. These vases are usually filled with roses and flowers and then placed on the dining tables or at the shelves to give a beautiful look (Figure 6C).

Mat industry: Mats have a great history in Palestine. They are manufactured in large quantities due to their high demand especially in winter. Gazans use mats to cover the floor in order to give a beautiful look to furnished rooms (Figure 6D).

Baskets and bowls industry: It is one of the most famous traditional industries. It is easy to prepare, where women braid fronds to make baskets, dishes and large vessels in order to keep clothes, bread, vegetables, fruits ...etc (Figure 6E).

Furniture industry: The manufacture of beds, cabinets, chairs, tables and shelves is common in the Gaza Strip. These tools are characterized by their cheapness, resistance to weather conditions, beauty, relation to the Palestinian heritage and attractiveness to Arab and foreign tourists (Figure 6F).

Mattress and pillow industry: This industry depends on filling of cloth bags with fibers of a date palm tree. They are sometimes found in heritage parks and restaurants (Figure 6G).

Chandelier industry: The fronds can be used in chandelier preparation. Sometimes, Gazans package the chandelier with a piece of braided frond to give it a beautiful look (Figure 6H).

Salver industry: Such a salver (sewing tray) is used to offer foods and drinks. It is characterized by resistance to damage, durability, cheapness and attractiveness. It reflects some sort of the Palestinian heritage (Figure 7A).

Bibelots industry: It is a trinket or an art piece that has historic, aesthetic and artistic values. It is one of the rare and precious things for the community which is used to decorate rooms (Figure 7B).

Bags industry: The bags are made with different shapes, sizes, colors and decorations. Many women are attracted to buy these bags because of their lower prices and durability (Figure 7C).

Tissues can industry: These cans have different shapes, sizes, and colors. They are characterized by their durability and long life (Figure 7D).

Luffa industry: The fibers of palm trunks are rarely used to produce luffa. Doctors sometimes recommend patients and people to use these fibers because they are good cleaner of the human body as they protect it from skin diseases (Figure 7E).

Cans industry: These cans are commonly used by the Palestinians to keep special papers, needles, threads, accessories, cosmetics or decorations. They are sometimes used to harbor sweets and chocolates in special occasions such as holidays and feasts (Figure 7F).

Hats industry: It is a common industry in the Palestinian society. They are available year round with low prices and different sizes, shapes and colors. Some women wear them in events such as weddings (Figure 7G).

Broom industry: Brooms are made of fronds or fibers of palm and are used by women to clean walls, houses, rooms and gardens especially in rural areas. Small brushes, produced from fibers, are used in cleaning small things like stairs and shoes (Figure 7H).

Bird and fruit cages industry: This industry is often located near commercial fruit, vegetable and bird markets in order to be used in packaging and export. It is an eco-friendly industry trying to preserve the environment from the accumulation of palm wastes. This industry contributes to the improvement of the standard of living of individuals (Figure 7I).

Border of parks and fields: Some agricultural fields and orchards of the Gaza Strip are fenced with palm fronds. The fronds are commonly arranged in orderly lines around the fields. They are favored because of their low price and attractiveness (Figure 7J).

Decorations made of palm trunks in resorts and restaurants: Some people use the trunks of the palm tree to decorate their homes, resorts and restaurants. They are usually placed as ornamental columns rather than structural columns (Figure 8A).

Pergola industry: Seashore pergolas are common in the Gaza Strip. They are often made of leaves and trunks of palm trees. The internal environment inside these pergolas is cooler than the outside (Figure 8B).

Tables made from palm trunks: Pieces of trunks of palm have been used by locals as tables in some shore parks and chalets (Figure 8C).

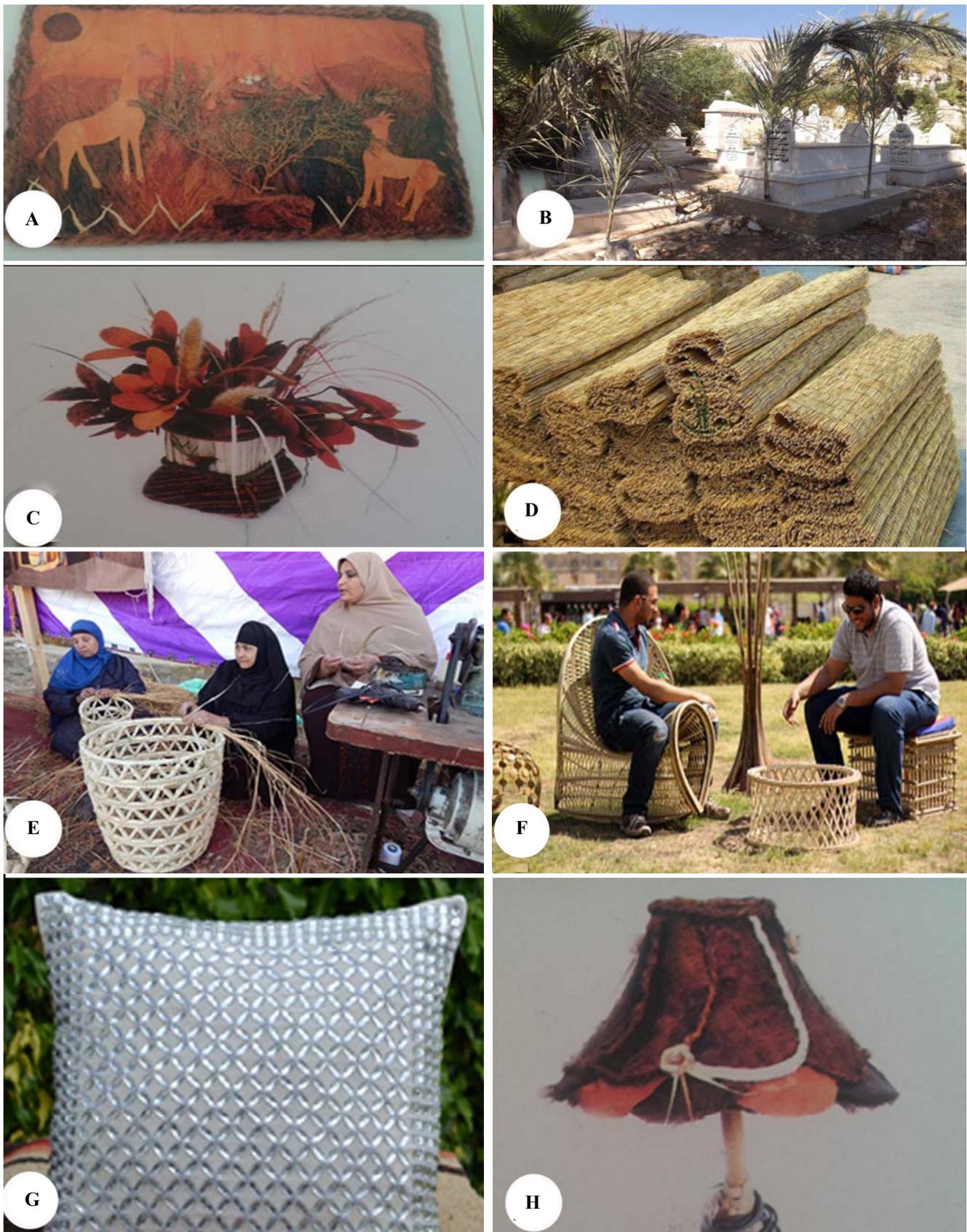


Figure 6. Handicrafts associated with date palm: (A) Picture frames, (B) Use of fronds as a signal of grave or consolation place, (C) Vases industry, (D) Mat industry, (E) Baskets and bowls industry, (F) Furniture industry, (G) Mattress and pillow industry, (H) Chandelier industry

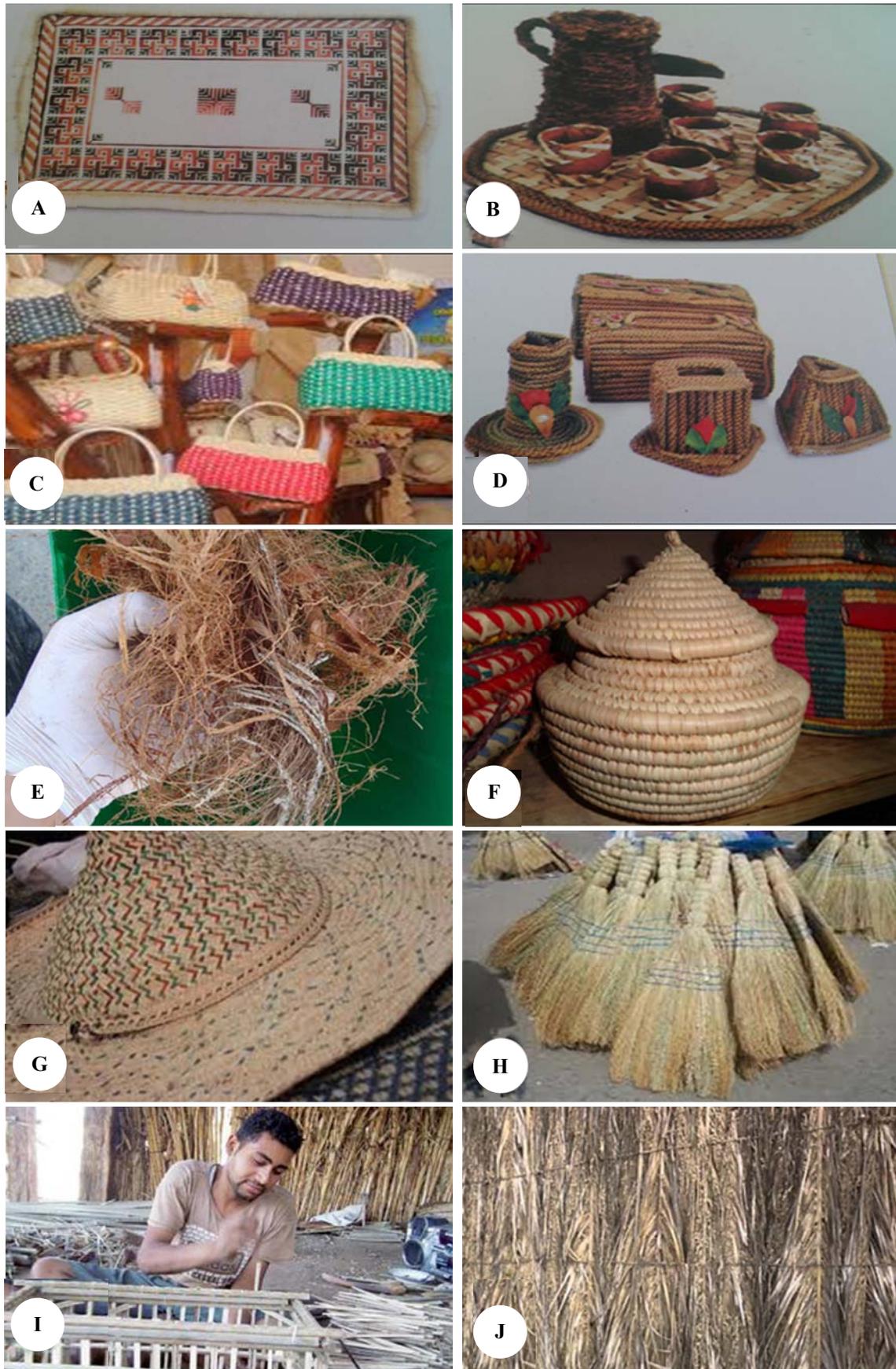


Figure 7. Handicrafts associated with date palm: (A) Salver industry, (B) Bibelots industry, (C) Bags industry, (D) Tissues can industry, (E) Luffa industry, (F) Cans industry, (G) Hats industry, (H) Broom industry, (I) Bird and fruit cages industry, (J) Border of parks and fields



Figure 8: Public uses associated with date palm: (A) Decors made of palm trunks in resorts and restaurants, (B) Pergola industry, (C) Tables made from palm trunks, (D) Ceilings industry.



Figure 9: Cultivation of date palm tree in public parks and green spaces



Figure 10: Other industries associated with date palm: (A) Coal industry, (B) Ropes and strings industry, (C) Animal fodder production, (D) Use pollen in folk medicine, (E) Organic fertilizer production, (F) Eyeliner production

Ceilings industry: Since ancient times, palm trunks have been used as beams to bear ceilings made of palm fronds (Figure 8D).

Cultivation of date palm tree in public parks and green spaces: Date Palm trees have a geometric and beautiful landscape appearance. They are commonly

planted in public parks and green spaces. From an ecological point of view, palms are known to act as windbreaks, moderate temperature, raise relative humidity, stabilize soils and dunes and combat desertification (Figure 9).

Other industries based on the residues of date palm

Eyeliner and coal industry from seeds: The seeds of dates are collected and exposed to the sun, washed well, crushed and finally used as eyeliner. The seeds are sometimes used in the production of coal (Figure 10A and F).

Ropes and strings industry: The fibers of date palm tree may be used in the production of strings and ropes (Figure 10B).

Animal fodder production: Many palm residues, e.g. fibers, seeds and fronds are sometimes involved in the production of the animal fodder or feed. A machine has been designed especially to chop, grind and turn palm residues into animal fodder (Figure 10C).

The use of pollen in folk medicine: The pollen of the palm tree is used by some Palestinians for therapeutic purposes. It is medicinally used in order to strengthen the bones, protect against fragility and aid digestion. Moreover, it helps in treating inflammatory bowel and stomach ulcers and in stopping bleeding (Figure 10D).

Organic fertilizer production: Some palm residues have been used locally in the fertilizer industry as humus to supply agricultural plants with beneficial nutrients. It is considered a safe and a good alternative to chemical fertilizers that have pose harmful impacts on plants and the environment (Figure 10E).

Discussion

The strategic position of Palestine at the terrestrial meeting point between Asia, Europe, and Africa facilitates the interaction and spread of various plant species including the date palm. The Gaza Strip, which is located in the southern portion of the Palestine coast along the Mediterranean Sea is an arid to semi-arid land, harboring vast areas cultivated with different cultivars of date palm trees that attract a variety of wildlife species, especially birds (Abd Rabou 2005 and Abd Rabou et al. 2008). The present survey revealed that a total number of 250,000 date palm trees existing in the Gaza Strip, particularly in the Middle Governorate. This finding coincides with that of Abu-Qaoud (2015) who confirmed an intensive and extensive cultivation of date palms in the cities of Deir Al-Balah and Khan Younis. Date palm cultivation has been practiced in the Gaza Strip since ancient times. The least occurrence of the date palm trees in the Gaza Governorate could be attributed to its political, residential, commercial and economic status. It is actually the capital of the Gaza Strip that is separated geographically from the West Bank.

Water shortage and high salinity levels of water in most Gaza Governorates encouraged farmers to grow date palm trees as halophytic plants that tolerate high levels of salinity (Al Hammadi 2006; Yaish and Kumar 2015). According to FAO (1982), the date palm is more salt tolerant than any other fruit crop.

The 19 cultivars of date palm grown in the Gaza Strip are very difficult to be distinguished by morphology as was indicated by El Kichaoui et al. (2013). They are mostly distinguished by the characters of the fruits, produced only

after 4-5 years as indicated by Sedra et al. (1998). It is obvious that the different climatic factors are considered as limiting factors for the growth and development of certain cultivars in the Gaza Strip. For example, Abu-Qaoud (2015) reported that the climate in the Ghor Region of Palestine, where temperatures range from 12°C in March up to 50°C between July and October, is considered ideal for Medjool date production, which requires hot and dry weather. The climatic conditions of the Gaza Strip are not ideal for growth and development of this cultivar. The local climatic conditions are more suitable for producing of soft cultivars of the date palm such as Barhee and Hayani. Similar results were reported by both El-Kichaoui et al. (2013) and Qofa (2014), who mentioned that the Hayani, Bentaisha, Barhee and Ameri cultivars are the most famous in the Gaza Strip.

The production of date palm in the Gaza Strip is relatively not stable since decades. El-Juhany (2010), Qofa (2014) and Abu-Qaoud (2015) mentioned more or less similar fluctuations because of reduction in local demands, weakness of post-harvest infrastructure, marketing difficulties and the shift adopted by farmers to plant other cash crops.

The use of the different parts of the date palm tree in producing a variety of foods and handicrafts are common industries in the Gaza Strip and the other Palestinian territories. Palestinian women are skillful in such industries which reflect a heritage inherited over centuries. Such uses were confirmed by other local researchers who pointed out that an increase in demand for date palm products will lead to an increase in employment and income of poorer families (Albanna and Eid 2007; MOA 2010; Qofa 2014; Abu-Qaoud 2015). In spite of that, local date palm products do not receive the interest, attention, and support of the responsible authorities and NGOs. Such ignorance may lead to the reluctance of many people to continue in such production. Other non-Palestinian studies pointed out that the date palm over centuries has provided a large number of products and traditional uses which have been extensively used by the people in all aspects of daily life such as the production of baskets, bowls, broom, ceilings, etc. (Barreveld: 1993; Hasan et al. 2006; Al-Khalifah and Shanavaskhan 2012; Johnson 2012 and Boufennara et al. 2016). Food industries depending on date palms are of great importance to the Palestinians in the Gaza Strip who are living under blockades imposed by the Israeli Army since 2006. Of course, such food industries need support and respect from the governmental and non-governmental organizations and agencies in order to continue locally where a great percentage of the Gazans suffers from poverty and unemployment. In their studies, Al-Shahib and Marshall (2003), Hasan et al. (2006), and Al-Orf et al. (2012) pointed out that the date fruits are of high nutritional value because they are considered as a good source of sugars, minerals, and vitamins. The syrup, jams, ice cream, baby foods and soft drinks produced from date palms are of great demand in the Arab markets. They improve the level of standard living, increase the percentage of employment and require modest equipment and tools.

Finally, the study recommends the improvement of the processes of date palm cultivation, production, protection, and marketing. Moreover, the cooperation of different parties locally, regionally and internationally is essential to ensure a sustainable development of this vital sector in the economy of the Gaza Strip.

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