

# An overview of *Phoenix dactylifera* L. Date Varieties in the Province of Bechar-(Southwest of Algeria): Productivity and Challenges of the Date Palm Sector

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**Abstract.** Date palms (*Phoenix dactylifera* L.) are of ecological, socio-economic, and nutritional importance for the Saharan population. This study aims to scan the production of dates, particularly in Bechar (Southwest of Algeria) by determining the main varieties of dates, and the areas of agricultural exploitation intended for their production in Bechar. Several palm oases were visited to survey the different varieties of dates produced in Bechar, while the statistical data relating to the dates production and the date-producing agricultural areas were obtained through bibliographic, documentary research, as well as data from the agricultural services department of Bechar (DSA). The obtained results showed that Algeria is among the leading producers of dates, ranking fourth worldwide through 16 date-producing provinces, where the province of Bechar occupies the 6th position with production going from 2,446 t (2015) to 59,781.3 t (2021). A rate of 85% of this production is attributed to the soft date variety 'Ghers' and its analogs, while 15% is for the dry dates 'Degla Beida' and similar ones. The survey carried out in Bechar showed richness and diversity in terms of the variety of dates. Among the 10 component municipalities of Bechar province, Taghit is the most dates-producing municipality, constituting a rate of 12,72% of the total production. The agricultural area intended for the production of dates has also undergone an evolution where it reached a total of 13,918.5 ha (Agricultural area occupied by date palms) of which 10,027 ha is the date-producing agricultural area. The challenges facing this crop mainly lie in phytopathogenic diseases affecting the date palms and in climatic factors, namely drought and water stress. The local and national authorities should intervene to maintain and even promote the place of date-producing provinces in Algeria, which constitutes one of the drivers of economic development outside the oil sector.

**Keywords.** Date varieties, Date palm (*Phoenix dactylifera* L.), Production of dates, Bechar (Algeria).

## 1. Introduction

The date palm is the most mentioned fruit-bearing tree in the Quran. This palm fruit is also the earliest tree on earth. As can be seen in this hadith: The Prophet Muhammad reported by Anas: (The first tree planted on earth is our tent the palm tree, it was created from the same clay as Adam's) [1].

Therefore, dates are foods that have a central place in the diet of Muslim countries. In addition, it is not a coincidence that the very first food recommended by the Prophet Muhammad to put in contact with the baby's mouth is the date fruit, and it is not by chance that Allah ordered Maryam to shake the palm tree, below which she gave birth to Isa (Jesus). This is to have some dates to eat and have the necessary nutrients at this trying time in a woman's life. God the Almighty says in Quran 19:25 (The Clear Quran 19:25 surah Maryam) [2] after In the Name of God, the Most Gracious, the Most Merciful: (... and shake the trunk of this palm tree towards you, it will drop fresh, ripe dates upon you). The great truth of God. Likewise, many hadiths have been reported to us, proving that the date is a fruit that has many benefits, in particular, the following hadith: The Prophet Muhammad صلى الله عليه وسلم said: (Whoever breakfasts in the morning with seven dates of 'Al'Ajwa', nothing can harm him on that day, neither poison nor sorcery) [3].

The Algerian palm grove is rich in the diversity of date varieties which constitute the main source of income for some twenty of these regions, and are characterized by a very interesting aptitude for processing and conservation skills. According to Ayurveda, dates (Khajoor) are known for their high nutritional and therapeutic value [4, 5]. Although they are rich in certain mineral salts, vitamins, and organic acids, it is their sugar content that makes them a first-choice food [6].

For this purpose, the study aims to give an overview of the varieties of dates produced and the challenges facing date palm culture in Bechar province (Southwest of Algeria).

### 1.1. Study Site: Bechar Province (Southwest of Algeria)

Bechar province geographically belongs to the North-Western Sahara. It is an area that covers and spreads over approximately 14,400 km<sup>2</sup>; 500 km long from north to south and 400 km wide from east to west. Physically, this province extends from the southern piedmont of the Saharan Atlas to the Saharan platform which it integrates into its southern part.

Before the new territorial division which took place in December 2019 [7], Bechar province was considered the largest province in Southwestern Algeria which represents 17,98% of the national territory. Its total population was estimated to be more than 279,800 inhabitants. It partially corresponds to the former department of Saoura of which it was the capital, 1,150 km away to the southwest of the capital Algiers, 852 km from Tindouf province, and about 80 km west of the Moroccan border [8, 9].

## 2. Material and Methods

All surveys were carried out in the palm oases and Agricultural services department of Bechar province for five months from May to September 2022.

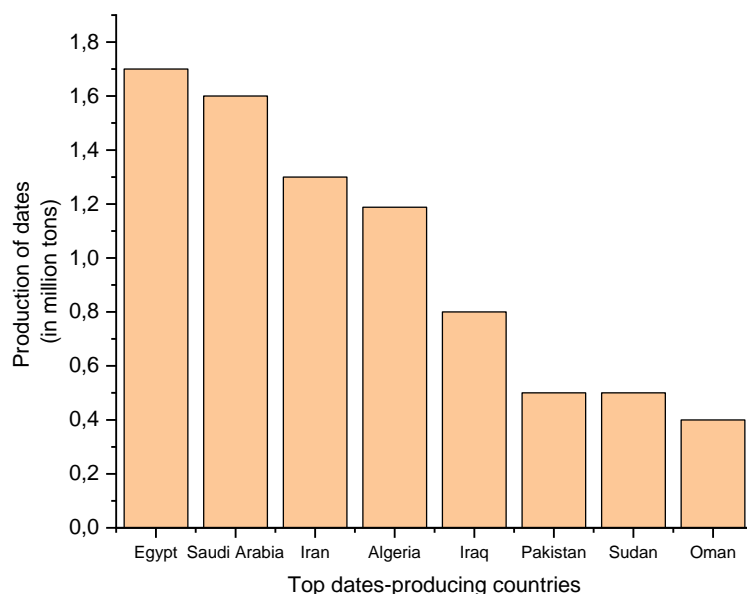
There is no date sampling method for dates, however, the most widely used method is that cited by Girard [10] which recommends the choice of homogeneous palms for each cultivar [11].

This study was based on a survey of date palms in Bechar province as well as the main produced varieties. The data relating to the varieties of dates as well as the date palms were obtained by interviewing the farmers on-site through the various municipalities of Bechar, while the statistics were obtained from the agricultural services department of Bechar province, Ministry of Agriculture and rural development, and Ministry of trade and export promotion (Algeria).

## 3. Results and Discussion

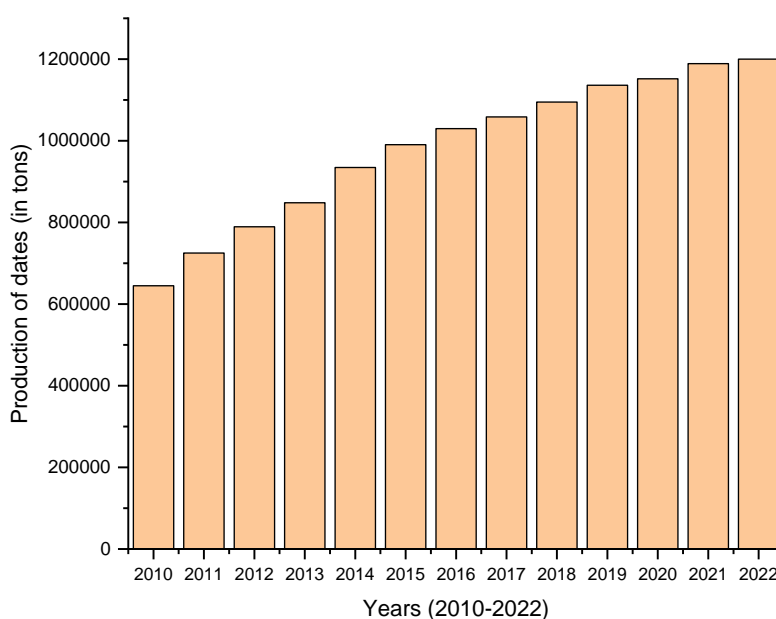
### 3.1. Production of Dates

In (2021), 9,8 million tons of dates were produced worldwide [12]. Algeria remained among the top eight date producers worldwide (in 4th position) after Egypt, Saudi Arabia, and Iran), and also remained among the main leading date-exporting countries [13] (Figure 1).



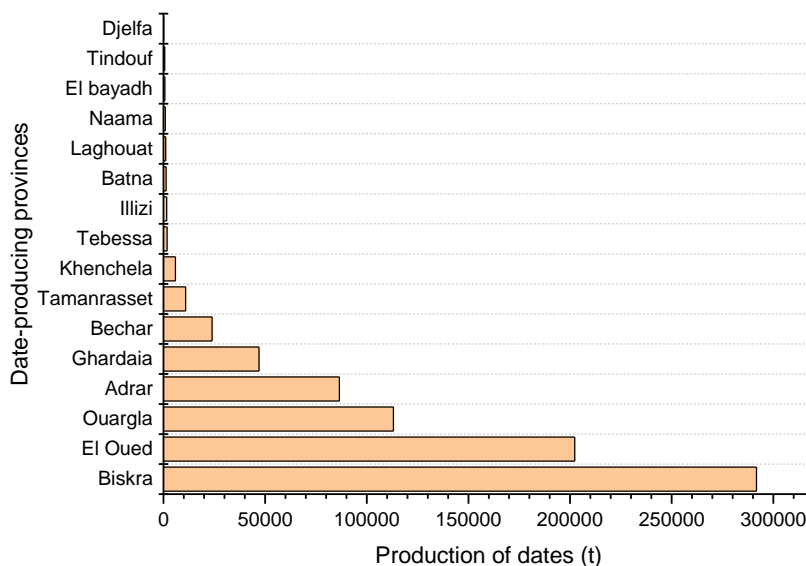
**Figure 1.** The world's biggest producers of dates [14] (Own elaboration).

Production of dates in Algeria has increased from 644,741 in 2010 to 1,188 million tons in 2021 (Figure 2), where dates occupy seventh place in the ladder of agricultural crop production at the national level. Production of 1,2 million tons (t) of dates was recorded in 2022 [12, 15], of which 3% is intended for export [16]. The Minister reported that exports of this product in the first 11 months of 2021 reached more than USD 70 million [17].



**Figure 2.** Production of dates in Algeria from 2010 to 2022 [18].

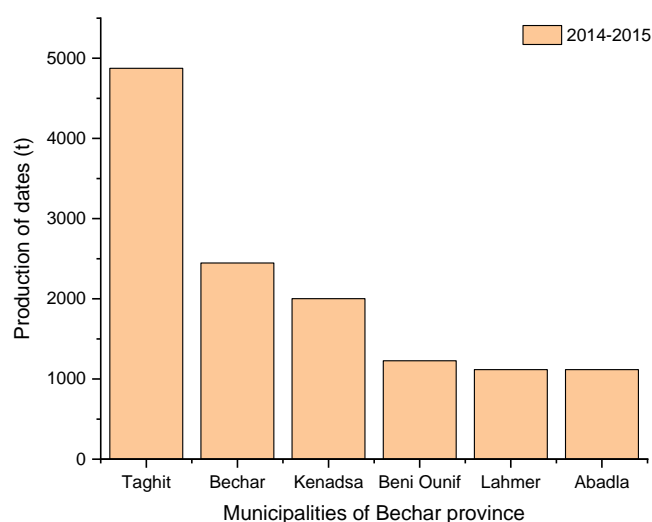
Bechar province is one of the main regions of Algeria known for its high production and significant diversity of dates, it ranks 6th among the 16 date-producing provinces, after the following provinces: Biskra, El Oued, Ouargla, Adrar, and Ghardaia [19] (Figure 3).



**Figure 3.** Ranking of date-producing provinces of Algeria [19] (Own elaboration).

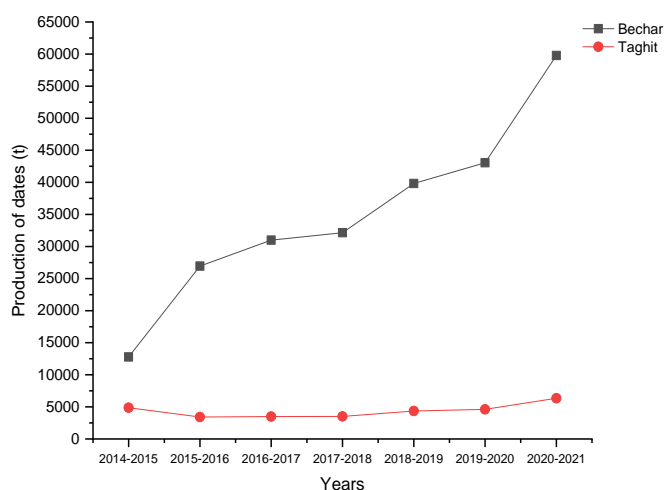
From the latest statistical data announced by the Algerian News Agency [20], Biskra province comes in the first position with a production of more than 4,38 million quintals of dates, followed by El Oued province, producing more than 2,6 million quintals, then Ouargla providing more than 1,4 million quintals.

Figure 4 below shows that Taghit was the most productive municipality of dates in Bechar province with a production of 4,875 t (2015).

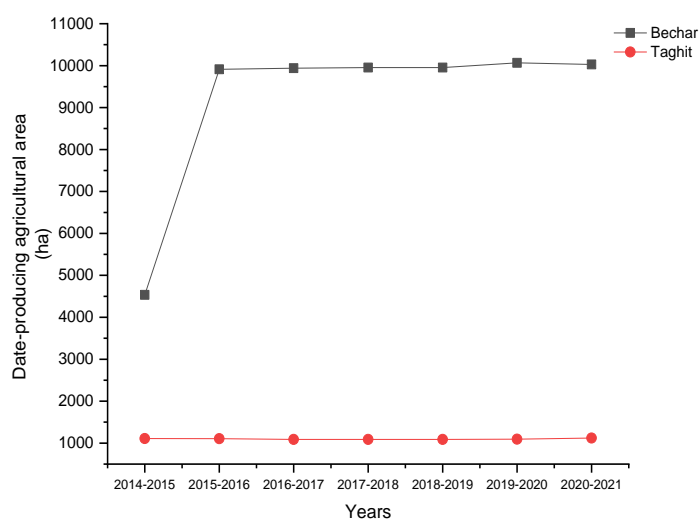


**Figure 4.** Date-producing municipalities of Bechar province [21] (Own elaboration).

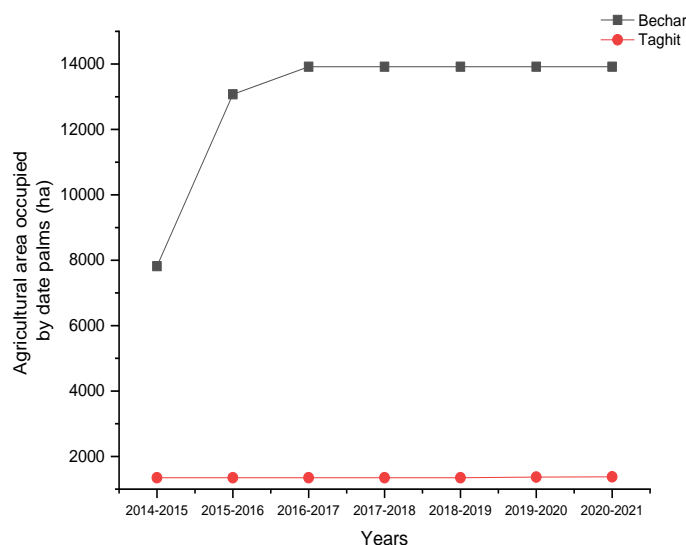
Several support measures have been established following the campaign of palm groves launched by the Algerian state (2008) [22], and earlier in 1983 through the APFA program on Agricultural Land Ownership and modernization of agriculture [23], namely subsidies for plantations and irrigation facilities, the distribution of land to farmers in the context of development [24], support of producers through the National Program for Agricultural Development ‘PNDA’, involvement of engineers and technicians of agricultural services department to help farmers in the date palms’ culture practices, irrigation, and phytosanitary protection techniques from phytopathogenic diseases, as well as the financing of farmers by granting bank loans from financial institutions such as BADR (Bank for Agriculture and Rural Development) [25, 26]. These measures have made it possible to increase the occupied and related agricultural area, and consequently the production of dates in Bechar, where the date-producing agricultural area has increased from 4,534 to 10,027 ha (2015-2021) out of a total agricultural area occupied for date palms of 13,918.5 ha (2021), while the production of dates further increased from 2,446 to 59,781.3 t (2015-2021) as shown in Figures 5, 6 and 7.



**Figure 5.** Evolution of date production in Bechar province (2015-2021) [21] (Own elaboration).



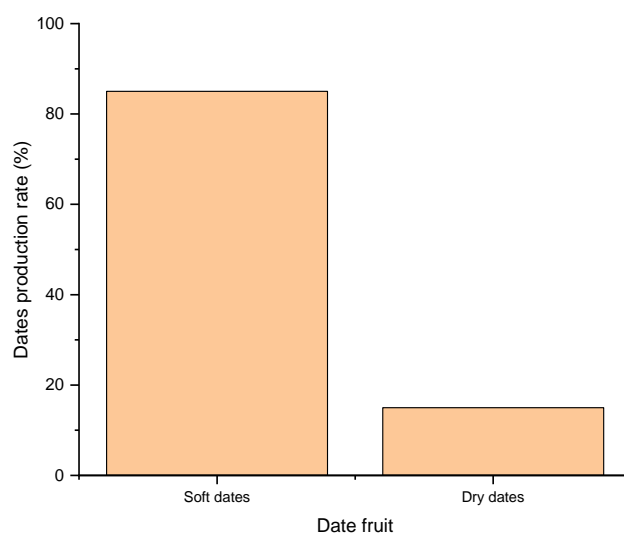
**Figure 6.** Evolution of the productive agricultural area of dates in Bechar province (2015-2021) [21] (Own elaboration).



**Figure 7.** Evolution of the agricultural area occupied by date palms in Bechar province (2015-2021) [21] (Own elaboration).

### 3.2. Varieties of Date

The survey carried out in Bechar on the main date palms and their fruits showed an important richness and diversity, from the qualitative and quantitative points of view. In addition, statistics from the agricultural services department of Bechar [21] show that soft dates' varieties (*Ghers* variety and its analogs) constitute a rate of 85% of the produced varieties, while 15% is attributed to dry ones (*Degla Beida* variety and its analogs) (Figure 8).

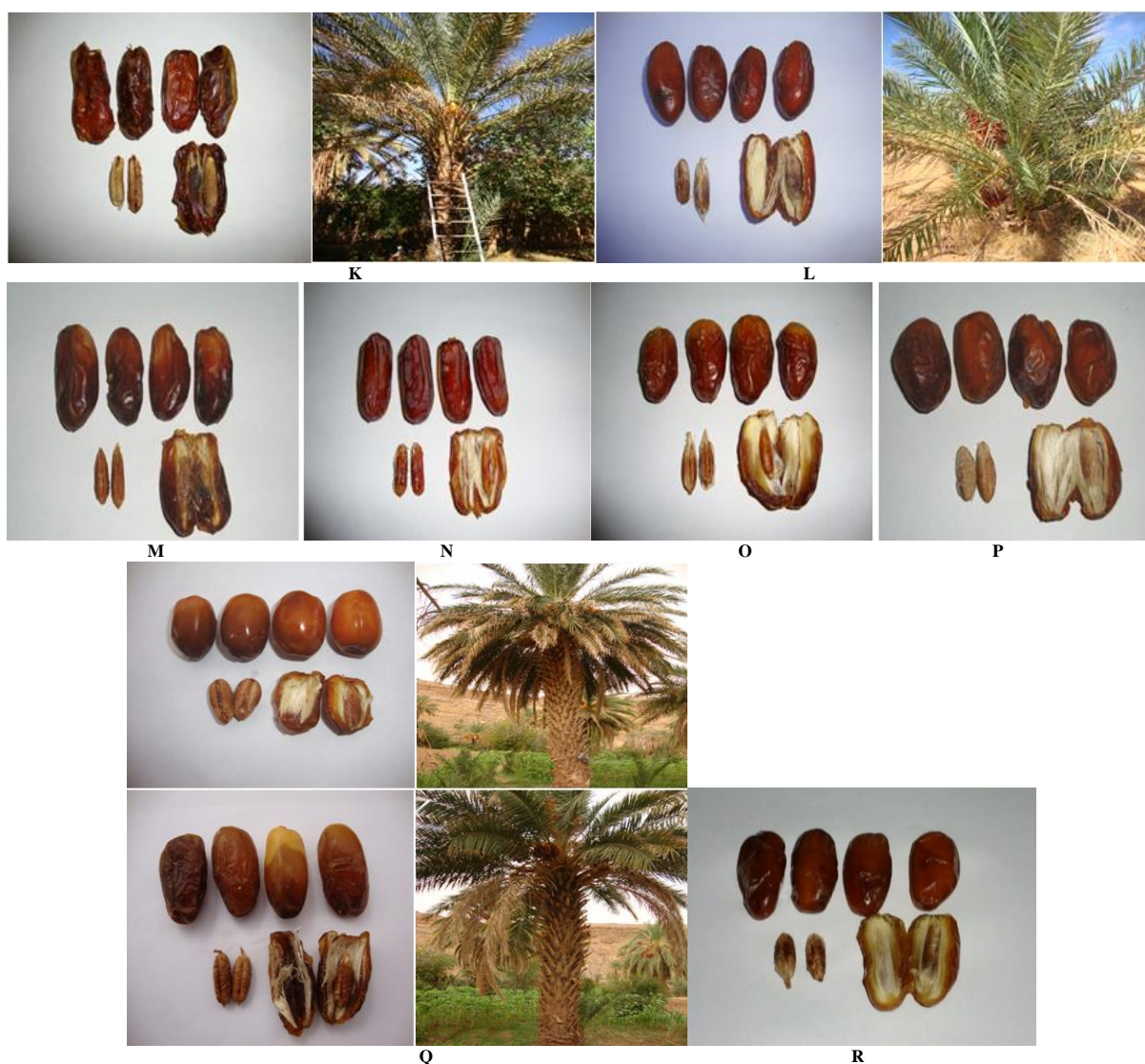


**Figure 8.** Production rate of soft and dry dates in Bechar province [21] (Own elaboration).

For a very long time, the Saharan population counted a lot in their diets on dates. It constituted the raw material for the elaboration of a good number of food by-products and a wide variety of recipes that were specific to each region, namely: date pastries, date flour, date-based sugar, vinegar, date juice, and date extract (*Robb*) ..... [11, 27, 28].

According to the investigations conducted in the palm oases, Figure 9 below presents the main date varieties produced in Bechar province where the three soft date varieties 'Hmira', 'Ghers', and 'Feghous' are mostly produced in this region.





**Figure 9.** Varieties of dates grown in Bechar (Southwest of Algeria) (Ph. E. Benyagoub)

**A:** ‘*Affroul*’ variety; **B:** ‘*Amallah*’ variety; **C:** ‘*Bent-Cherk* or *Charka*’ variety; **D:** ‘*Boughalou*’ variety; **E:** ‘*Ghers*’ variety; **F:** ‘*Khali*’ variety; **G:** ‘*Faghous*’ variety; **H:** ‘*Addam*’ variety; **I:** ‘*Tamliha*’ variety; **J:** ‘*Rottbi*’ variety; **K:** ‘*Hartan karzaz*’ variety; **L:** ‘*Hmira*’ variety; **M:** ‘*Addam robb*’ variety; **N:** ‘*Addam boulla*’ variety; **O:** ‘*Degla Adrar*’ variety; **P:** ‘*Takarbouch*’ variety; **Q:** ‘*Trabbah*’ variety; **R:** ‘*Degla*’ variety. **Source:** Own study.

For a long time, the date palm was considered one of the major trees in the Sahara communities and for the ecosystem [29]. The richness in the diversity of dates is threatened not only at the level of the productivity of dates (quantity), but also by the characteristics of dates (quality) where efforts should be made to face the challenges that threaten this richness and productivity, namely the climatic conditions that have known southern Algeria in recent years, mainly due to global warming, causing drought, water stress and hot winds, have favored the proliferation of several parasites, in particular, the date palm mite ‘*Boufaroua*’ and date worm ‘*Ectomyelois ceratoniae*’, which have infested the palm groves [26, 30].

The main sector’s constraints are linked to the technical, professional, socioeconomic conditions, and commercial environment of date production [31]. Thus, control of palm diseases will reduce desertification and increase the food supply and the income of the local inhabitants [29]. Moreover, according to Rekis [32], it is necessary to characterize the different varieties to preserve them and make an improvement strategy.



## Conclusion

Dates are a staple food for people and animals in the Sahara. Despite the rich variety of dates it provides in the hostile desert areas, the date palm sector faces, on the one hand, major phytosanitary challenges following the spread of phytopathogenic diseases, mainly the *Fusarium* wilt disease called 'bayoud' as well as other parasites, and on the environmental level faces the phenomenon of drought (desertification), where for a long time, the oasis as being endorheic spaces relies on old-fashioned irrigation practices that do not allow rational exploitation of groundwater, which constitutes one of the main water resources of arid regions. On the other hand, the date sector is still not developed in the field of processing and valuing of dates in the study area, which should draw the attention of economic investors to potential investment opportunities that contribute to promoting the national economy and ensuring one of the food security pathways targeted by local and national authorities.

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## Conflict of Interest

The author declares that he has no conflict of interest.

## Ethical Approval

This article does not contain any studies with human participants or animals performed by any of the authors.

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