

## Study of Current Situation of the Apricot Tree Culture in the Area of Boukhmissa, Wilaya of M'sila, Algeria

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**Abstract:** Of share its situation inside the country, the area of Hodna, wilaya of M'sila, presents hot southernmost influences very interesting for an early product arboriculture. Surface occupied by this culture with passed of 3200 ha in 2001 to 6750 ha during the year 2006. Boukhmissa, is one of the most important arboriculture areas of Hodna, it contains an important collection of varieties of apricot tree, with various categories of age. Our study consists to evaluate and diagnose the situation of the culture of apricot tree in the area of Boukhmissa. A dry climate, following semi-arid bioclimatic stage with one cold winter and a very hot dry summer characterize the area of study. Being precipitations, the zone receives approximately 300 mm/an. The ground is of muddy type with alkaline pH (8.38) with an electric conductivity equalizes with 10.18  $\mu\text{s}/\text{cm}$ . Useful agricultural surface on 140 ha, being occupied by several cultures: Arboriculture 57 ha, cultivation of cereals 40 ha, market gardening 15 ha. These cultures all are led in irrigated system. Arboriculture accounts for 40.71% of the whole of the practised cultures. Among the various fruit-bearing species, which exist the apricot tree, is more dominating, with 90% of the orchards. Indeed, it has been about a speculation inherited a generation to another for several decades. Concerning the old one of the orchards, they are distributed as follows: 30% are lower than 10 years, 45% between 10 to 30 years and 25% are higher than 30 years. For the varieties, we find mainly Bullida 47%, Paviot 21%, red Louzi 17% and Tounsi 15%. As regards production, the statistics reveal strong increases passing in 4899q with 216000q, nevertheless the outputs remain weak and fluctuate one year to another according to the climatic conditions on the one hand and the ageing of the orchards and the plant health situation on the other hand.

**Key words:** Boukhmissa area • Arid stage • Valorisation • Apricot tree • M'sila

### INTRODUCTION

Algeria presents a broad range of climatic and agropedological stages inducing diversity in the agricultural speculations. Indeed the perennial cultures with knowing arboriculture is extremely interesting, on the one hand by its adaptation to multiple agroclimatic conditions and by its preserving role of the grounds and fixer of the rural populations.

The apricot tree, which is one of the most, practised cultures and best adapted to the various areas of Algeria. Unfortunately, the apricot tree for lack of care and talks knows many problems being able to lead to a deterioration of the state of the plantations as well at the regional level as national [1]. Its production remains very weak and still far from reaching that recorded in certain countries whose agroclimatic conditions are similar to those of Algeria,

which currently occupies the sixteenth world rank with 60 miles tons.

In Algeria the apricot tree is a species not fearing neither heat nor the dryness and gives good performances in various areas [2].

The orchards of apricot trees constitute one of the best richness of our country, in particular in the wilaya of M'sila, which occupies a very important place in the national production. Surface occupied by this culture in this wilaya with passed of 3200 ha in 2001 to 6750 ha during the year 2006, with a production passing of 4899q with 216000q.

But the output of the trees remains very weak and irregular because more the share of the orchards are very old, of family type, of which modern technologies of control of the orchards as the size, manures, the irrigation, the plant health treatments or are badly not applied.

Boukhmissa, is one of the most important arboriculture areas of Hodna, it contains an important collection of varieties of apricot tree, the majority of these varieties are into old of production very advanced, on the other hand, at the new plantations, which were carried out within the framework of the new agricultural program, present a range of very limited variety.

In this context, our contribution aims at studying the situation of the culture of apricot tree in the area of Boukhmissa, commune of M'sila, through investigations into ground which aim to develop the arboriculture potentialities of this area and to identify the constraints of development.

## MATERIALS AND METHODS

### Study of the Area Study

**Presentation of the Area Study:** Surveys of valorisation were carried out into the area of Boukhmissa which is in latitude 35°40' NR and in longitude 04°30' E, on an altitude d' approximately 500 m [3]. In the north of the chott El-Hodna and the south of the mountains of Maadid, throughout the trunk road N°45, it is the catchments area of El-Ksob river, with a very weak slope of 5%.

The area of Boukhmissa means on total surface area of 213 ha with population of 4435 inhabitants either of 20,8 inhabitant/ha with 469 habitats or 9,4 habitat/m<sup>2</sup> [4].

The area of Boukhmissa being itself on a useful agricultural surface on 140 ha, occupied by several cultures: Arboriculture 57 ha, cultivation of cereals 40 ha, market gardening 15 ha. Arboriculture thus accounts for 40.71%. These orchards are carried out in irrigated; the principal fruit-bearing species, which exists, is in first order, the apricot tree with 90% of the orchards.

### Study of the Climate

**Rain:** The zone of M'sila is located between the isohyets 500 mm at the level of the relief's septentrional (Mounts of the Hodna) and 150 mm on the level of Chott (plain of the Hodna), with a rain annual average of 213.20 mm [5].

The rainiest months are spread out September at May. The rainy season starts in September, the rains of autumn are sometimes torrential and more or less catastrophic (September 2007). As for the rains of winter, they are less violent.

According to Table 1, the rainiest month of the station of M'sila is May with (28.10 mm); the least rainy month is July with (4.30 mm).

The driest months are August and July. But it happens that the storms of autumn start as of the first days of August.

**Temperature:** The annual average temperature in the zone of study is evaluated with 19.43°C (Table 2). The monthly ventilation of the average temperatures shows that the coldest month is January with 8.7°C and the hottest month is 31.47°C July.

**Wind:** The winds of North are frequent during the winter, whereas those of the Northeast, distributed well over all the year reach easily in the basin of Hodna by the valley of the Barika's river. Those of the South reach Hodna only in summer, period during which they blow with extreme gusts, it blocks the development of the cultures

Whatever their directions, the winds which blow on M'sila, has relatively low speeds, which go from 3.6 m/s (12.96 km/h) in November to 5.2 m/s (18.7 km/h) in April (Table 3).

Table 1: Monthly and annual average precipitation in (mm) for the period (1988-2007)

Source	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
S.M.M	19.55	13.10	15.40	21.85	28.10	9.45	4.30	8.45	27.10	24.75	20.95	20.20	213.20

Source: Weather station of M'sila

Table 2: Monthly and annual averages of the temperatures (°C). of the station of M'sila for the period (1988 - 2007)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Moy
Im (°C)	3.51	4.30	7.67	10.56	16.03	20.96	24.41	24.11	19.20	14.59	8.40	4.69	13.20
M(°C)	13.89	16.14	20.21	22.91	27.88	34.66	38.53	37.97	32.18	25.75	18.88	18.88	25.27
(M+m)/2	8.70	10.22	13.94	16.74	21.95	27.81	31.47	31.04	25.69	20.17	13.64	11.78	19.43

Source: Weather station of M'sila

Table 3: Mean velocities of the wind in m/s of the period 1989-2007 station of M'sila

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Moy
Speed moy(m/s)	3.5	3.9	4.2	5.2	4.6	4.7	4.4	4.1	3.8	3.7	3.6	3.8	4.1

Source: Weather station of M'sila

**The Climatic Synthesis:** The climatic conditions of studied zone are severe, the high temperatures of the summer cause the evaporation of the grounds and the perspiration of the plants and weak precipitations are not enough to constitute a reserve useful for the plant.

We retained the most important parameters, the temperatures and precipitations to define our type of climate.

When we build the diagram starting from the averages over 19 years (Fig. 1), we note the existence; one period of very long dryness, over ten months going from the end of February to the end of November and a very short wet period, spreading out from the beginning of December to the end of January. The station positions in the arid bioclimatic stage at winters moderate, characterized by a dry, very hot summer and a very cold winter; with a dryness almost at all the year.

**System of Irrigation:** The area of study is an irrigated zone, the most common system of irrigation is starting from the dam El-Ksob. River of El-Ksob can be used to irrigate the orchards, which are on these edges, by the use of pump to go up water.

**Study of the Ground:** After study of the geological map it proved that the majority of the detected geological formations belong to quaternary in the form of old alluvia generally formed of sandy clay or silts on the banks of El-Ksob river which took place million years since. These deposits rich in organic matters carted and deposited leaving these very fertile grounds) [4].

**Method of Study:** During our investigations, we were interested in several aspects concerning the situation of the culture of the apricot tree in the area of following several aspects:

- Determination of the surfaces devoted to the culture of apricot tree:
- Typology of the orchards on the plan cuts, age and on the legal level of the land one:
- Identification of the cultivated varieties:

## RESULTS AND DISCUSSION

**Determination of the Surfaces Devoted to the Culture of Apricot Tree:** The area of Boukhmissa being itself on a useful agricultural surface of 140 ha, occupied by several cultures: Arboriculture 57 ha, cultivation of cereals 40 ha, market gardening 15 ha. Arboriculture occupies an

important place in the S.A.U of the area of study, it accounts for 40.71%. These orchards are carried out in irrigated, the various fruit-bearing species which exists are in first order the apricot tree with 90% of the rods, the other fruit-bearing species are: the olive-tree, the pomegranate and the apple tree.

The visits of prospect of the area of study revealed a predominance of arboriculture with a share of about 40.7 % followed by the cultivation of cereals and the truck farming to a total value of 28.6 and 10.7 % respectively (Figure 2). In addition to the sociological aspect of the area where arboriculture is a practice inherited a generation with another, this situation can be also explained by the adaptation and the productivity of arboriculture in this area. This is proven by the increase in the surface according to the years, which has practically tripled, it passed from 3200 ha in 2001 to 6750 ha during the year 2006, with a production passing of 4899q with 216000q.

### **Typology of the Orchards on the Old Level of the Trees:**

The trees of apricot tree of the area of study were classified in three categories of old: trees lower than 10 years, between 10 to 30 years and higher than 30 years.

The trees of the orchards of Boukhmissa is very old, more than 25% exceed 30 years, it is the period of senescence characterized by the reduction in the production. In the 20 last years there had been new plantations, which arrived at their full production (between 10-30 year), of new development programs agricultural made it possible to install new orchards thus renovating the plantations at a rate of 25% (lower than 10 years) (Fig. 3).

**Identification of the Cultivated Varieties:** The area of Boukhmissa is characterized by the presence of several varieties of apricot tree into old of production very advanced, on the other hand, the new plantations (young orchards) which in summer carried out within the framework of the new agricultural programs, have ranges of increasingly reduced varieties. The various cultivated species are mainly Bullida (47 % of the orchards), Paviot (21 %), Red Louzi (17 %), Tounsi (15 %). All the trees of these varieties are grafted on the frank Apricot tree.

The Bullida variety is largely at the head because it is a variety adapted to the arid, productive and early medium. The farmers of the area prefer it because is among the first varieties to be appeared on the market, therefore they can make benefit easily and recover the

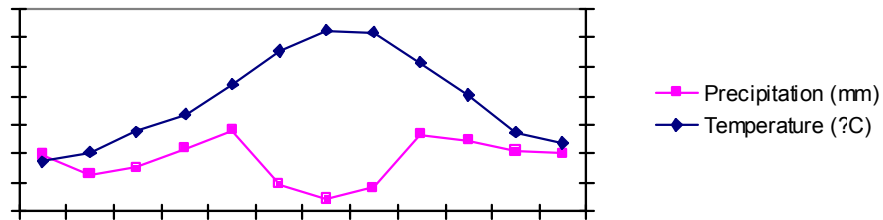


Fig. 1: Ombrothermique diagram of the zone study Period 1988-2007.

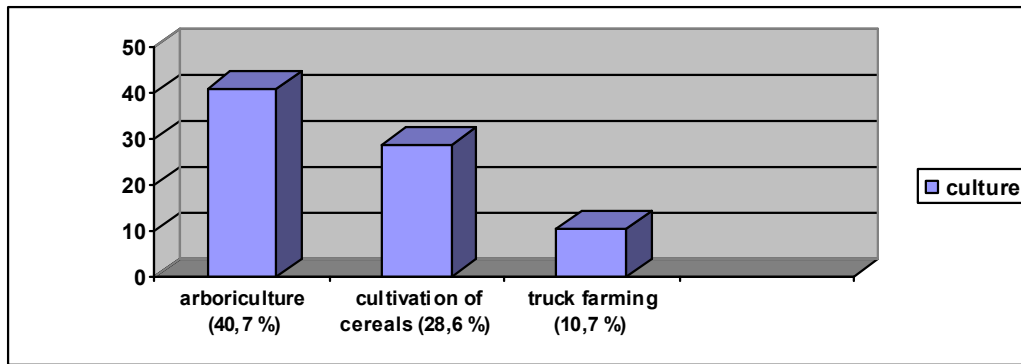


Fig. 2: Various cultures in the area of Boukhmissa

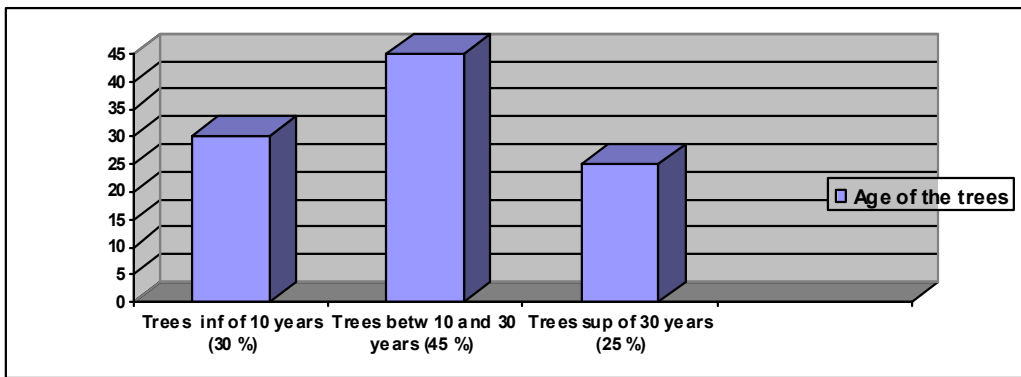


Fig. 3: Various categories of old from the trees of apricot tree.

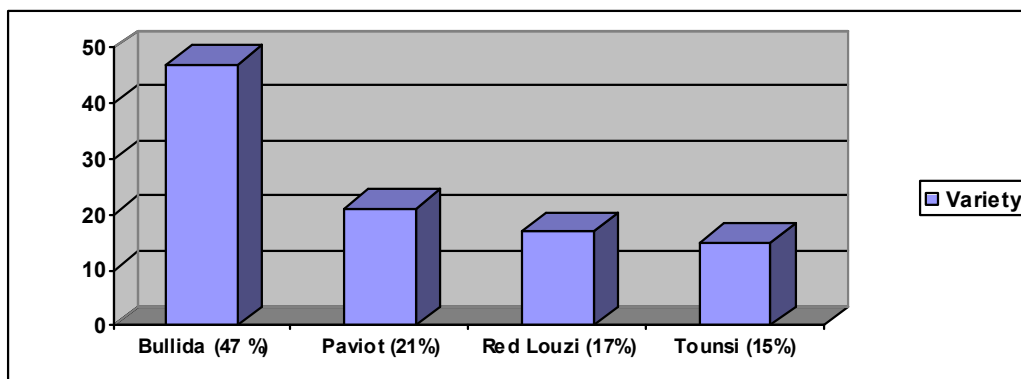


Fig. 4: Various varieties of apricot tree

expenses spent throughout the year. What gets an economic profitability and a commercial good quality to him (Fig. 4).

The Bullida variety is of Spanish origin, it is a tree of great strength, resisting well the wind, large fruit of orange yellow color clearly, very early flowering (risk of cold), maturity at the end of April [6]. These cultivated varieties give good results in particular in the mounts of Aurès and the mounts of Hodna [7].

### **CONCLUSION**

The area of Boukhmissa is with arboriculture vocation, the apricot tree is a species inherited on several generations, several orchards date on tens of years, on private grounds exits of the French colonists of the colonial era. The farmers prefer the Bullida variety, for its strong production and of its precocity. The continual division of the orchards between the heirs returned the orchards increasingly reduced.

These noted practical will allow to give an idea on the current location of the arboriculture area of Boukhmissa, for developing best and thus protecting the natural resources of which it holds.

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