The nut sector in Tunisia: evolution and perspectives

Laajimi A., Thabet B.

in

Albisu L.M. (ed.).
Economics of nuts in the Mediterranean basin

Zaragoza : CIHEAM
Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 37

1999
pages 103-111

The nut sector in Tunisia: Evolution and perspectives

A. Laajimi* and B. Thabet**
*Ecole Supérieure d'Agriculture de Mograne
1121 Zaghouan, Tunisia
**Institut National Agronomique de Tunisie
43, Avenue Charles Nicolle, 1082 Tunis, Tunisia

SUMMARY – Nuts play an important role in Tunisian fruit tree production. The most important crops are almonds and pistachios. Almond production is mainly for domestic consumption, although a small part is exported. A great deal is also commercialised fresh. Pistachio production is still at an early stage despite its promising possibilities. Walnut and hazelnut are of limited significance although their potential for future development should be considered. Nut production still has certain constraints such as irregular yields, high production costs and variable quality.

Key words: Tree production, almond, pistachio, Tunisian agriculture.

RESUME *– "Le secteur des fruits secs en Tunisie : Evolution et perspectives". Les fruits secs jouent un rôle important dans la production fruitière tunisienne. Les amandes et les pistaches sont les produits les plus importants. La production des amandes est destinée essentiellement à la consommation locale; une part assez faible est dirigée à l'exportation. De même, une part significative est commercialisée sous la forme d'amandes vertes. En dépit de ses possibilités prometteuses, la production de pistaches est encore à un stade primaire. La production de noix et de noisettes est encore à un stade limité, bien que leur potentiel futur de développement devrait être considéré. Cependant, la production de fruits secs est encore sujette à des contrariantes telles que l'irrégularité des rendements, les coûts de production élevés et la variabilité de la qualité.*

Mots-clés *: Production fruitière, amandes, pistaches, agriculture tunisienne.*

Introduction

In Tunisia, as in many Mediterranean countries, the changing agro-climatic factors of the Mediterranean region have favoured the development of different fruit trees; and nuts play an important role. Presently, the most important nuts in Tunisia are almonds and pistachios. Walnuts and hazelnuts have not yet acquired a significant economic importance (Mlika, 1990). Other fruits, commonly consumed fresh, such as apricots and figs, are also consumed dry.

Tradition in the production of fruits is closely linked to food habits. Indeed, nut consumption in Tunisia, especially almonds, has always been part of a Mediterranean traditional lifestyle. With the standard of living improvements, local fruit industries have experienced a considerable expansion, which has generated an important derived demand for nuts. However, this consumption is still at a level which is far below those of other countries in the Mediterranean basin such as Spain, Turkey, Italy, etc.

Nut production in Tunisia, despite its relatively long history, has been studied partially, in comparison to olive oil production, for instance. However, this sector has gained importance in the past years as reflected by the incorporation of new plantations, which accounted for more than 8,000 ha only for almonds in 1996. This expansion is highly correlated with the development of other tree crops such as olives due to reasons of complementarity and sometimes substitution. But nut production has declined over the past twenty years, despite the existence of favourable agro-ecological conditions and production potential for the development of the main species: almonds, pistachios, walnuts and hazelnuts (Sgaïer, 1990).

This paper is an attempt to describe the main characteristics of the nut sector in Tunisia, to appraise the production potential and to bring out some perspectives regarding its future development, and it will be presented crop by crop. Emphasis will be placed on the production potential and the main characteristics related to marketing and consumption.

Almonds

Production, marketing and consumption

Almonds in Tunisia are known since the Carthaginian era and they date back to ancient times. The main almond-producing area is the region of Sfax which accounts for more than half of the plantations, but it also stretches out to almost all other areas in the country. Quite often almonds are cultivated together with olive trees. It is also regarded as an alternative for the reconversion of non-performing old olive tree plantations.

At present, around 300,000 ha are devoted to this crop, which corresponds to approximately 25% of the area devoted to olive plantations (Table 1). Despite this large surface, almond cultivation has not been modernised over the years as almond trees have received a limited amount of technical care. Furthermore, growers have small farms and follow traditional cultural practices.

Table 1. Evolution of almond-cultivated area and new plantations (ha) (Source: Ministère de l'Agriculture de la Tunisie, Annuaire des Statistiques Agricoles, various issues; Ministère de l'Agriculture de la Tunisie, Budget Economique, 1997)

	Cultivated area	New plantations
1980	259,000	n.a.
1982	274,500	5,270
1984	282,000	6,700
1986	290,500	9,700
1988	298,000	11,300
1989	278,000	10,850
1990	300,000	13,080
1991	310,000	12,205
1992	320,000	9,174
1993	328,000	8,837
1994	335,000	7,442
1995	285,400	3,447
1996	288,847	8,282
1997	296,000	5,950

n.a.: not available

Almond cultivation is still considered a secondary activity and a source of complementary income. It is also the result of quite a low and random income, when compared to other competing sectors. Either because they are protected by the public administration, such as the case of olive trees or cereals, or because they better utilize water resources, as in the case of peaches, apples or pears.

Despite its low significance in comparison to other fruit species, certain features need to be pointed out in order to highlight the social as well as the economic aspects. Growers devote part of their resources to this economic activity, which is a source of income for them, generally rather modest, but no indication of its abandonment has been observed. Quite the contrary, new plantations are implemented every year, as shown in Table 1.

There is an increasing trend as regards the number of hectares planted. This phenomenon could be explained by, at least, the following circumstances: (i) a positive evolution in the fruit tree sector as a result

of the intensification of fruit tree plantation programmes, mainly for almonds and pistachios (Thabet and Allaya, 1993); (ii) an expansion of the demand for dry nuts and pastry products, following the improvements in the standard of living, with an upward pressure on prices; and (iii) farmers' concerns to diversify their income sources, in view of the increasing disengagement of the State, and the distribution of market and climatic risks over a whole range of agricultural activities.

Almond production has also had a continued increase over the past years at a rather stable rate. In-shell almond harvesting reached 51,000 t in 1997, 27.5% from 1996 (Table 2). This production comes mainly from Sfax (10,000 t), Kairouan (8,000 t), Sidi Bouzid (6,300 t), Mahdia (3,800 t) and Kasserine (3,900 t). This evolution is explained by new plantations, primarily in the regions of Kairouan and Sfax. In-shell production is not the only output. A great deal of fresh almonds is taken by local and foreign markets. In 1996, 153 t were exported while in 1995 the exports of fresh almonds reached 81.6 t.

Table 2. Production and exports of in-shell almonds (t) (Source: Ministère de l'Agriculture de la Tunisie, Annuaire des Statistiques Agricoles, various issues; GIAF, 1996)

Year	Production	Exports
1983	37,000	300
1984	42,000	900
1985	51,000	600
1986	42,000	700
1987	46,000	600
1988	30,000	200
1989	38,000	100
1990	52,000	400
1991	40,000	736
1992	46,000	906
1993	47,000	1,933
1994	50,000	690
1995	35,000	356
1996	40,000	-
1997	51,000	n.a.

Despite the production increase during recent years, almond exports are still limited, due to the irregular production and the internal pressure to have higher consumption. The peak was reached in 1993 (1,900 t).

Almonds are exported either in-shell or unshelled. The main importing countries of Tunisian almonds are France (117.9 t in-shell), Italy (17 t unshelled), and Libya (50.7 t unshelled).

Tunisia offers an important commercial advantage because of its early production, due to the favourable climatic conditions, and partly to the characteristics of its varieties. It allows Tunisian traders to offer their production in September, when prices are usually high, since the American production reaches the international market later on.

Despite the increasing trend in production, the average productivity is low as it does not exceed 3 kg (in-shell almonds) per tree. Almonds are not often cultivated in favourable areas of high rainfall, like in the

North of the country, because of the competition with other profitable crops. They are cultivated mainly in semi-arid areas with low rainfall, thus achieving low yields.

The evolution of farmer prices is essentially characterised by an increasing trend (Fig. 1), with major increases over the past two years (1994 and 1995) when they increased dramatically following a period of unfavourable climatic conditions (especially diseases), indicating an important market response to prevailing supply and demand conditions.

As regards exports (Fig. 2), prices are different depending on the quantity of almonds commercialised. Unshelled almonds are sold at a higher price, given the processing costs, while fresh almonds are sold at a lower price.

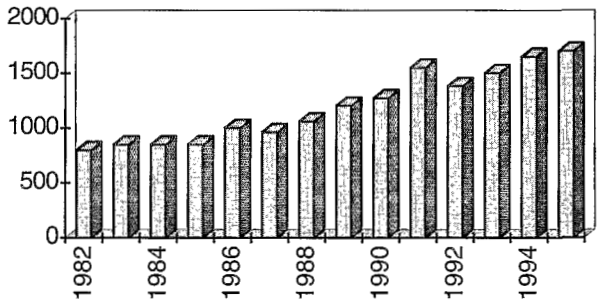

Fig. 1. Evolution of almond prices at farm level (Source: Ministère de l'Agriculture de la Tunisie, Budgets Economiques, various issues).

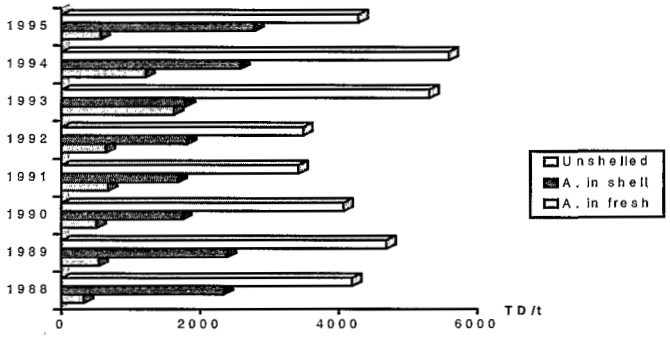

Fig. 2. Evolution of almond prices at export level (Source: Ministère de l'Agriculture de la Tunisie, Budgets Economiques, various issues).

It seems that the level of almond consumption is essentially affected by the degree of urban development (Chaffaî, 1994). Consumption in rural areas (400 g/person) is higher than in urban areas (300 g/person) since home consumption is most important in rural areas (33.3% for the nut sector as a whole). Altogether it has been rising during the past years (Table 3) except when there are drawbacks in production.

Table 3. Domestic consumption of almonds (in shell) (t) (Source: GIAF, 1996)

	1991	1992	1993	1994	1995
Domestic consumption and stocks	40,264	44,944	45,367	49,310	34,644

As mentioned above, a great deal of almonds is consumed fresh. Nevertheless, it is not easy to estimate this amount since an important part is commercialised directly in rural markets without the intervention of wholesalers.

Despite clear signs of improvement, major constraints still characterise the sector both in terms of production techniques and commercial organisation. With the increasing liberalisation of the economy, almonds, which have never benefited from public protection, may have a better development if better adapted to local conditions and they will play an important role within the Tunisian agricultural traditions.

Production costs

The estimated production costs of almonds vary a great deal according to the geographical area where the crop is grown. In Tunisia, there are three regions, the North, the Central part, and the South, according to different climatic conditions (Mlika, 1990). Table 4 shows almond production costs in the North region. According to estimates obtained by the Ministry of Agriculture, annual production costs per ha of dry almonds in the North, with a planting density of 200 trees/ha and a yield of 1 t/ha, is around 540 Tunisian Dinar (1 TDT= 0,97 USD). Gross margin at the eighth year amounts to 1120 TD (Table 4).

Table 4. Production cost (TD/ha) of almonds in the North region (Source: Ministère de l'Agriculture de la Tunisie, DGPA, 1990)

	Years					
	1	2	3	4	5	8
Total expenses (TD)	409	222	184	184	184	380
Production (kg)				200	300	1,000
Gross product				300	450	1,500
Cumulative expenses	409	631	815	-	-	-
Gross margin				116	382	1,120

The annual production cost per ha of dry almonds in the Central and South regions, with a planting density of 100 trees/ha and a yield of 500 kg/ha, is around 325 TD and the gross margin is considerably lower (Table 5).

Table 5. Production cost (TD/ha) of dry almonds in the Central and South regions (Source: Ministère de l'Agriculture de la Tunisie, DGPA, 1990)

	Years					
	1	2	3	4	5	8
Total expenses	404	219	192	200	200	230
Cumulative expenses	404	623	815	865	-	-
Production (kg)				100	150	500
Gross product				150	225	750
Gross margin					75	520

Although better results concerning gross profit per hectare are found in the North, the high income variability of this region, due to higher humidity conditions to which almonds are quite sensitive, should not be neglected.

Pistachio

Production, marketing and consumption

Pistachio cultivation has experienced an important expansion over the past years, going from 35 ha in 1965 to more than 50,000 ha in 1995 (Fig. 3). Plantations are generally found in semi-arid areas of the Centre and South. In the Northern region, pistachios cover around 700 ha. However, most plantations are young and only a small percentage (around 20%) are under production. Nevertheless, its expansion has been somewhat restrained by the limited knowledge of Tunisian farmers regarding this crop and also because of the risk involved in its variable economic yield.

The average annual production is around 800 t. Approximately 75% is produced in the regions of Kasserine, Sidi Bouzid and Gafsa. However, this quantity is regarded as low, considering that most plantations are young. Besides, weather constraints of semi-arid regions with low rainfall justify this low production level. Production is often commercialised according to weight or on site by traders. In general, pistachios are marketed in-shell and they are rarely marketed otherwise. Production has been increasing but not as much as the cultivated area because of the percentage of young trees (Fig. 4).

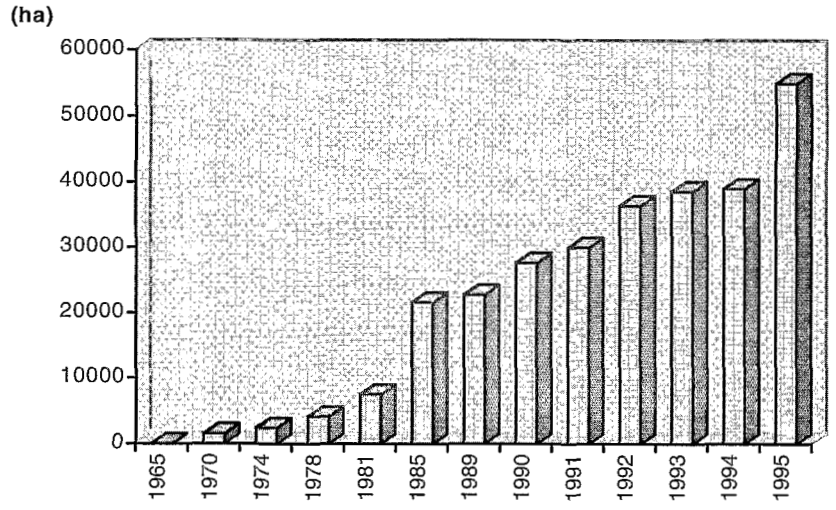

Fig. 3. Evolution of pistachio cultivated area (ha) (Source: Ministère de l'Agriculture, Annuaire des Statistiques Agricoles, various issues).

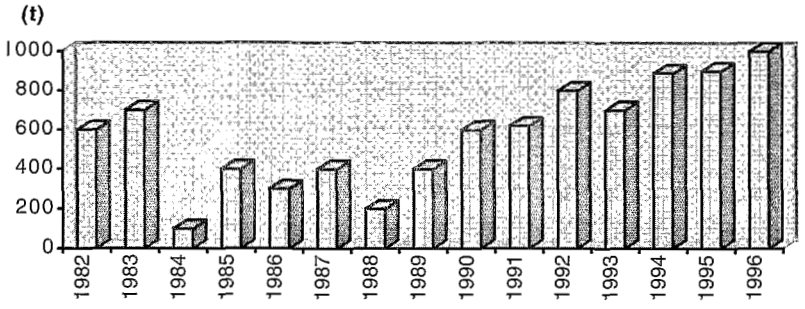

Fig. 4. Evolution of pistachio production (t) (Source: Ministère de l'Agriculture, Annuaire des Statistiques Agricoles, various issues).

As in the case of almonds, pistachios have experienced an expansion in recent years, as shown by new plantations (Fig. 5). It is essentially motivated by the adaptation of this crop to the specific conditions of arid areas, where pistachio could be an alternative and economically viable crop.

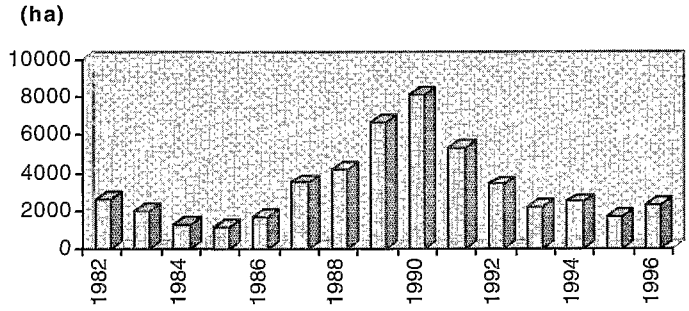

Fig. 5. Evolution of pistachio new plantations (t) (Source: Ministère de l'Agriculture, Annuaire des Statistiques Agricoles, various issues).

Production costs

The Ministry of Agriculture estimates that the annual production cost of pistachio per hectare in the Northern region, with a planting density of 100 trees/ha and a yield of 500 kg per hectare, is around 574 TD. Its gross margin at the fiftieth year reaches 1,515 TD (Table 6).

Table 6. Production cost (TD/ha) of pistachio in the Northern arid region[†] (Source: Ministère de l'Agriculture de la Tunisie, DGPA, 1990)

	Years							
	1	2	3	4	5	6	7	15
Total expenses	518	216	176	176	176	176	176	485
Cumulative expenses	518	734	910	1,086	1,262	1,338	-	-
Production (kg)						25	50	500
Gross product						100	200	2,000
Gross margin							24	1,515

[†]Rainfall: 400 to 500 mm

The annual production cost of one hectare of pistachio in the Southern region, with a planting density of 69 trees/ha and a yield of 350 kg/ha, is around 434 TD and the gross margin is lower than in the North region (Table 7).

Consumption is rather low and limited due to its market price although relatively high on the local market but a correct value cannot be quantified. It also has to be pointed out that consumption exceeds production, that is why imports are increased especially during holidays when more tourists are present.

Hazelnuts

Hazelnut production is rather small in Tunisia and there are few plantations for commercial purposes. However, some old plantations can still be found in the north-west region (Aïn Draham), and they are essentially based on European varieties. This type of crop is not yet well known in Tunisia and its immediate expansion seems rather difficult for climatic considerations primarily. Tunisia imports are insignificant and they account for around 130 t (15% in-shell and 85% unshelled).

Table 7. Production cost (TD/ha) of pistachio in the Central and Southern regions† (Source: Ministère de l'Agriculture de la Tunisie, DGPA, 1990)

	Years									
	1	2	3	4	5	6	7	8	9	20
Total expenses	465	210	163	169	169	169	169	169	169	320
Cumulative expenses	485	695	858	1,027	1,196	1,365	1,534	1,623	1,712	-
Production (kg)								20	35	350
Gross product								80	140	1,400
Gross margin									-	1,080

†Rainfall: 250 to 300 mm

Walnuts

Walnut plantations are mainly located in the north-west region, although there is some production coming from direct sowing in the region of Cape Bon. The total area covered is about 515 ha. Indeed, despite the possible adaptation of this crop to the conditions of the country, its expansion is limited. Production reached 200 t in 1996. Consumption is complemented with some imported quantities.

Pecans

The first pecan plantations were introduced during the period 1950 to 1977. The varieties 'Mahan' and 'Elisabeth' are the best known in the region of Mateur. Other plantations are also located in the region of Jendouba. In 1996, the production was estimated to be of 19.4 t. This crop is still at an experimental stage as research and experimentation on these varieties are still in progress . However, the ecological conditions seem suitable for a possible expansion of this crop. Its future will depend in all likelihood on the economic efficiency that could be achieved with this crop.

Conclusions

This document highlights the main characteristics of the nut sector in Tunisia. Despite the constraints of each of the crops mentioned, it appears that this sector could have a potential development in the years ahead because of the changes in economic policies, which are providing increasing room to market mechanisms to allocate resources.

At present, the main production is that of almonds and pistachios. Walnuts and hazelnuts have still a limited production although their potential development should be considered.

Indeed, almond, always linked to semi-arid landscapes, is the most promising crop and it is also a characteristic element of the Mediterranean diet. The amount of new trees planted during the past years shows that almond is one of the main fruit tree crops in the country. Production improvements in the past years and its profitability may lead to an improvement of the present situation.

Currently, pistachio occupies the second place considering planted acreage. Cultivated in the Centre and South, pistachio plantations are still at a very early stage. However, it is considered as a promising crop regarding profitability although it is still facing yield problems.

Nut consumption is rather weak if compared to other Mediterranean countries and it is mainly of almonds.

Nut production is still subject to certain constraints such as irregular yields, high production costs and variable quality. It has to be pointed out that the existing potential is not fully appreciated by

farmers. Thus, it seems fundamental to maintain a production objective of good commercial quality as the key factor for success in an increasingly competitive market. Indeed, the optimisation of the production system must be considered with the aim of improving production, taking into account commercial, ecological and technological factors.

Tunisia should capitalise on the existing almond and pistachio plantations in order to better respond to the needs of the domestic market and be able to export the surplus, in the case of almonds.

References

Chaffaî, A. (1994). Les perspectives de la demande alimentaire en Tunisie. In Actes du *séminaire national sur la planification des politiques alimentaires et nutritionnelles.* FAO, TCP/TUN/2256: 187-209.

Groupement Interprofessionnel des Fruits et des Agrûmes (GIAF) (1996). *Rapport Annuel*, Tunis.

Institut National de Statistique (INS) (various issues). *Annuaire statistique de la Tunisie,* Tunis.

Ministère de l'Agriculture de la Tunisie (various issues). *Budgets Economiques.*

Ministère de l'Agriculture de la Tunisie (various issues). *Annuaire des Statisques Agricoles.*

Ministère de l'Agriculture de la Tunisie, Direction Générale de la Production Agricole (DGPA) (1990). *Etude des critères de priorité des investissements dans l'agriculture.*

Mlika, M. (1990). Nuts production in Tunisia. In *Nut production and industry in Europe, Near East and North Africa.* REUR Technical Series 13, FAO, Rome.

Sgaïer, K. (1990). Introduction to major constraints to nut trees in Near East and North Africa Region. In *Nut production and industry in Europe, Near East and North Africa.* REUR Technical Series 13, FAO, Rome.

Thabet, B. and Allaya, M. (1993). *Tunisie : Le secteur agricole et ses perspectives à l'horizon 2000.* Commission des Communautés Européennes, Bruxelles.