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The stone fruit industry in the Mediterranean region: agronomic and commercial overview*

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SUMMARY - The first part of this work deals with agronomic and varietal aspects. Stone fruit trees now diffused throughout the Mediterranean countries represent a genetic resource which has differentiated in over twenty centuries of cultivation after their introduction from the Near and the Far East. The most widespread cultivars were derived directly from this germplasm or from programmes of genetic improvement set up in other countries (USA). The genetic variation thus obtained, combined with the modified socio-political conditions in some countries, and the availability of rational agronomic techniques (higher yields and lower production costs) have allowed for the cultivation of stone fruits in several Mediterranean areas characterised by very different ecological conditions from North-African and Sinai deserts to mild-continental climates of Italy, France and Turkey. A complementarity is thus attained at both the varietal (the use of the genotype in its environment of origin) and the market level that results in a longer seasonal supply of some products (north-south integration). Some factors needing further development include: political stability that can boosters investments in developing countries; a more rational nursery market utilising genetic and sanitary certification; and proposals for the rational trade of products to minimise unneeded competition among regions. The second part addresses the production and marketing aspects of stone fruits produced in the Mediterranean area. For the five species observed (peach, apricot, plum, cherry and almond), the trend of supply is discussed for the main producing countries and the trade with foreign countries for the period between 1979 and 1997. Furthermore, some aspects are highlighted concerning the dynamics of investments and the major stone fruit commodities.

The analysis forecasts some general considerations about the future market prospects. They are increasingly bound not only to the growing competition exerted by the new producing countries, but also to the evolution of the consumers' demand.

Key words: stone fruits, cultivars, genetic improvement, fruit markets, Mediterranean countries.

RESUME *- Dans la première partie de ce travail, on discute les aspects agronomiques et variétaux. Les essences à noyaux répandues à présent dans les pays méditerranéens constituent un patrimoine génétique qui s'est différencié pendant plus de vingt siècles de culture et de diffusion naturelle, à la suite de leur introduction des centres d'origine situés dans le Proche-Orient et dans l'Extrême-Orient. Les cultivars actuels dérivent directement de ces ressources génétiques ou bien ils sont le résultat des programmes d'amélioration génétique qui ont été réalisés dans d'autres régions du monde (notamment, aux USA). La variabilité génétique ainsi obtenue, le changement des conditions socio-politiques dans certains pays et la disponibilité de techniques agronomiques de plus en plus rationnelles (de meilleurs rendements sur le plan de la qualité et de la quantité, tout en respectant l'environnement et en réduisant les coûts de production), permettent de cultiver de nombreuses aires méditerranéennes, malgré des conditions écologiques très diversifiées, allant des déserts de l'Afrique du Nord et du Sinaï, aux climats tempérés et continentaux en Italie et en France. Une telle diversification assure une complémentarité au niveau des variétés (on utilise le génotype le plus approprié pour chaque milieu) et du marché, ce qui se traduit par une offre saisonnière prolongée dans le temps pour un bon nombre de produits (intégration nord-sud). Toutefois, on s'attend encore à des progrès importants : une plus grande stabilité politique qui encourage les investissements dans les pays en développement, la rationalisation du marché des productions de pépinière (certification génétique et sanitaire), la rationalisation des rapports commerciaux pour les produits qui peuvent engendrer des compétitions entre différentes régions. Dans la deuxième partie de ce travail), on examine les aspects productifs et commerciaux des essences à noyaux cultivées en Méditerranée par rapport à la situation mondiale. Pour les cinq espèces à l'étude (pêcher, abricotier, prunier, cerisier et amandier), on illustre le développement de l'offre dans les principaux pays producteurs et des échanges avec l'étranger pendant la période 1979-1997. En outre, l'accent est mis sur la dynamique des investissements et les principales typologies de produits. L'analyse se conclut par des considérations d'ordre général relativement aux perspectives du marché de ce secteur. Elles apparaissent liées non seulement à la concurrence croissante exercée par les nouveaux pays producteurs mais aussi à l'évolution persistante de la demande par les consommateurs.*

Mots – clés: *essences à noyaux, cultivars, amélioration génétique, marchés des fruits, Pays Méditerranéens.*

I - Agronomic-varietal overview

1. Climate

Stone fruit trees rank third (after olive and citrus) in terms of production and are a major fruit industry in the Mediterranean area. The Mediterranean countries are characterised by climatic conditions that are favourable for this species despite some striking differences between the north, the south and the eastern shores. Southern Europe (Spain, Portugal, France, Italy, Balkan countries) is mainly characterised by a continental climate of cold, rainy winters and warm, dry summers. In North Africa (Morocco, Tunisia, Libya, Algeria, Egypt),

they have very mild winters and very warm summers with low rainfall. Very often this region must deal with problems of soil salinity. The middle-east region deserves separate comments for its highly differentiated conditions, i.e. from the Neghev and Sinai deserts to the mountains of Lebanon and Turkey.

2. Species

These conditions have favoured the development and cultivation of several *Prunus* species (More and Ballington, 1990), mostly originated in the Far East, brought to the Mediterranean basin after commercial exchanges with Asia and the military events that led the armies of the Roman Empire to the heart of Asia. The cultivation of stone fruit trees may be traced back to over twenty centuries ago and allowed the origin of many ecotypes and wild forms such as apricot (*P. armeniaca*), cherry (*P. avium* and *P. cerasus*), almond (*P. dulcis*, *P. webbii*, the latter probably the source of the 'self-compatibility' character in almond), and plums (mainly *P. insititia*, *P. cerasifera*, *P. domestica*).

3. Germplasm

The self-compatibility trait and the high level of homozygosis (mainly for apricot and peach) or the easy obtention of improved forms, have resulted in the development of a very rich germplasm (cultivated biotypes of local interest, escapes) used either as fruit scions or as rootstocks.

3.1. Almond

For this species, the Mediterranean is the cradle of varietal differentiation even more important than for apricot. It shall be underlined that a large share of the world almond production depends on cultivars obtained from Spanish or Italian stocks. Italy is the centre of origin of 'self-compatible' cultivars that had a crucial role in the improvement of this species also thanks to Californian researchers.

3.2. Apricot

Every single Mediterranean country possesses its own germplasm resources whose value is more or less high if compared to the current market needs. Italy and Spain are the richest countries and the current varieties are mainly represented by biotypes selected within the local germplasm.

Several regions in North Africa (Tunisia and Morocco) possess quite good genetic resources used in the past for breeding programmes (resistance to *Monilinia* spp.) or as rootstocks ('Mech-Mech') that might be used as a source for the 'low chilling' trait.

Apricot germplasm in Turkey deserves special attention. In some regions of the country apricot is still wild and relatively unknown since exploration is just at the beginning (Ayanoglu and Kaska, 1995). Of particular value are some types featuring low acidity and high sugar content, mainly suited for drying (Güleryüz, 1995).

3.3. Cherry

The sweet cherry (*P. avium*) has many cultivars of local origin in Southern European countries because of its rather higher chilling requirements (Italy, France, Spain), and where it is found wild in many broad-leaf woods in the *Castanetum* area. To be noted also is the fact that Turkey is the most important country in the world for sweet cherry production

Sour cherry (*P. cerasus*) is cultivated mainly in central and eastern Europe and is rather scarce in the southern shores of the Mediterranean basin.

3.4. Peach

New peach varieties may be readily obtained through sowing open pollinated seeds, a practice that has given rise to hundreds of local selections. Mention must be made of the white-fleshed peaches of Italian origin, appreciated for their fruity aroma and harmonious balance of sugars and acids. Clingstone peaches (non melting flesh) are even more important especially in south Italy and Spain where they are still cultivated both for fresh consumption and canning.

3.5. Plums

Plums of Mediterranean origin belong to the species *P. insititia* and *cerasifera*; on the other hand, the forms belonging to *P. domestica* are more widespread in the Balkans or in the northernmost regions of Mediterranean countries. This distribution is due to the higher chilling requirements of *P. domestica*. Mediterranean plums have a limited importance for the fruit production (apart from few Myrobolan biotypes used as pollinators and for the genetic improvement of Japanese plums), whereas they play a key role as source of hardiness in calcareous and/or clay soils and polyvalent rootstocks for apricot, peach, Japanese and European plums.

4. **Present cultivars** (Anonimous, 1991; 1998; 1999)

4.1. Almond

The fierce competition of the Californian product (favoured by the excellent quality and by the strong organisation of the USA growers) has brought about a crisis in the Mediterranean

almond industry concentrated in Italy and Spain. This situation has partly been favoured by the higher profits obtainable from other stone fruit trees, mainly apricot and peach, because of their earlier bearing and higher income that make these crops economically rewarding also in small plots. In Italy local cultivars still prevail, both in Apulia ('Filippo Ceo', 'Tuono', 'Cristomorto', etc.) and in Sicily ('Pizzuta d'Avola' and 'Fascionello', particularly suited for the confectionery industry) with excellent kernels but hard shell, low shelling percentage and the frequent presence of 'double kernel'. Other than flower compatibility, late blooming is one of the major positive traits of the Apulian germplasm.

In Spain, the major European producer, large-size farms and lower production costs make this crop more economically yielding. Local cultivars of most importance are: 'Desmayo Largueta' and 'Marcona' (both account for more than 50% of the Spanish production), 'Garrigues', etc.

In France, where almond is less important, the crop relies on improved cultivars such as 'Ferragnès', 'Ferrastar' and 'Ferraduel'. To be noted that other Mediterranean countries are expanding their almond industry, e.g. in North Africa, Greece and Turkey.

4.2. Apricot

The cultivation of apricot is still broadly based on a high number of local varieties, sometimes resulting from the selection within cultivars-populations such as in the Vesuvio area in Italy: 'Baracca', 'Boccuccia', 'Cafona', 'Fracasso', 'Palummella', 'San Castrese' etc. This situation may be attributed to the genetic variability of the European apricots, characterised by very specific physiological traits that makes difficult their adaptability to areas other than the original ones.

Also in Spain, there is a high number of local cultivars ('Bulida', 'Canino' being the most important followed by 'Moniqui', 'Pepito del Rubio', 'Real Fino', 'Valencianos', etc.). In Greece, 80% of varieties are made up of 'Tirynthos', for fresh consumption and 'Bebecou', for processing. Also in France where the number of varieties is more limited, the most important local cultivars are: 'Bergeron', 'Polonais', 'Rouge de Roussillon', 'Tardif de Bordaneil', etc. In North Africa, apart from local forms, cultivars from other countries are planted, like the Spanish 'Canino', maybe one of the most cosmopolitan cultivar within the variegated group of Mediterranean apricots.

In more recent years, some cultivars are spreading in nearly all the apricot-growing areas. The examples of the Greek 'Tirynthos' and of the American 'Goldrich' are noteworthy. The first, more suitable to warm environments, is now less planted for its poor organoleptic characters despite an excellent aspect. The second one, because of its higher chilling requirements, is planted in colder areas; its excellent aspect and its quite good organoleptic characteristics favour its marketing. Attention should also be paid to other cultivars of north-

American origin (USA and Canada) for their fruit size and shape. Unfortunately they have problems of flower self-incompatibility (partial or total) like in 'Hargrand', 'Harcot', 'Laycot', 'Orange Red', 'Tomcot', etc. In Turkey, the most important cultivar is 'Hacihaliloglu', particularly suited for drying (low acid and high sugar content fruit).

4.3. Cherry

The panorama of cherry varieties is also evolving. Although the major cultivars are still represented by local Bigarreau-type such as 'Ferrovia', 'Bigarreau Burlat' and 'Duroni di Vignola' in Italy , several new cultivars have started to spread because of their earliness (the Californian 'Brooks') or self-compatibility (the Canadians 'New Star', 'Lapins', 'Sunburst'). The areas where varieties are being renewed or new plantations established are Apulia (Italy), Spain and France. Furthermore, the sweet cherry industry is flourishing in Greece and Turkey, where local cultivar are still popular.

4.4. Peach

Local peach cultivars have been replaced by American introductions (Hilaire and Mathieu, 1997). Traditional white-fleshed peaches that exceeded 80% of the whole production at the beginning of the 1950s in Italy, now barely represent 5%. The local clingstone types, once largely diffused in southern Italy and in Spain, have been largely replaced by cultivars from the USA ('Babygold', 'Catherina', 'Andross', 'Jungerman', etc.) or even with yellow melting flesh peaches and nectarines characterised by a nice appeal (round shape, red colour, firm and resistant to handling): 'Spring Crest', 'May Crest', 'Spring Lady', etc. Furthermore, the enhancement of previously neglected fruit traits has led to the creation of new varieties, with crispy and firm flesh such as the 'stony hard' type rich in insoluble pectins (e.g. the yellow peaches 'Rich Lady' and 'Summer Rich' and the yellow nectarine 'Big Top', etc.) or the low-acid, honey-type (e.g. the white peach 'White Lady' from USA and the yellow nectarine 'Maria Dolce' from Italy).

The availability of cultivars with a low chilling requirement (mainly developed at the University of Gainsville, Florida) has allowed for peach production in southern Spain, North Africa (mainly Morocco) and Israel. It is therefore possible to produce peaches in early April without resorting to greenhouses.

4.5. Plums

The plum cultivars are widely grown in the Mediterranean area with intensive plantings of the Japanese type (*P. salicina*), whose modern cultivars show some advantages with respect to the European plums (*P. domestica*), such as lower chilling requirements, earlier bearing, and large fruit size. Many of these cultivars are from USA programmes. First generation-

cultivars were characterised by high yield and poor fruit quality (e.g. 'Burbank') or unreliable yield and good quality (e.g. 'Santa Rosa'). Later on, fruit characters like large size, dark skin, small stone and fruit firmness have been implemented into a broad range of cultivars among which 'Friar', 'Simka' and 'Angeleno' were the first to be released, followed by a large number of new cultivars sharing the same traits but with earlier ripening time. However, it has to be underscored that in many of the above cultivars the flavour aspects are often neglected.

The overall production of European plums is rather low in the Mediterranean countries. Some of the most important cultivars planted in France, Italy and Spain were introduced from the U.S.A. (e.g. 'President' and 'Stanley'), while others of European origin are decreasing, e.g. the 'Green Gage' group and some selections from the population-cultivars 'Prune d'Ente' and 'Mirabelle' grown in France for drying and distillation, respectively.

Some types of *P. cerasifera* are used in Italy as seedling or clonal rootstocks ('Myrobolan 29 C', 'Myrobolan B', 'MrS 2/5') (Loreti *et al.*, 1991). *P. domestica* and *P. insititia* are more widespread in France (selections of 'Saint Julien' and 'Damson': Salesses *et al.*, 1992) and in Spain (selections of 'Pollizo de Murcia': Moreno, 1989; Moreno *et al.*, 1995).

5. Fruit production technologies

A great development of the fruit industry, including the stone fruit species, has been favoured in the second half of this century. Better production systems, in which all factors from agronomic techniques (thanks also to a better understanding of the tree physiology) to marketing practices, have been profoundly modified despite the differences related to the socio-economic conditions of the countries.

5.1. Choice of the plant material

A primary role for a successful fruit industry relies on the development of nursery activities for the quick and cheap (except when royalties are due for patented cultivars) production of plants for the establishment of new orchards (Anonimous, 1997).

5.1.1. Nursery aspects

In vitro culture allows to apply to many species (mainly rootstocks, e.g. peach x almond 'GF 677' and nearly all the plum selections) criteria similar to those of manufacturing industry, where demand-oriented production, propagation unrelated to natural tree growth cycles, sanitary guarantees, possibility of supplying new qualified products (e.g. mycorrhyzal plants) are required for large scale production.

5.1.2. *Varietal aspects*

The issues related to the choice of cultivars exhibits clashing aspects. The evolution of the fruit industry is undoubtedly favoured by the acceptance of new cultivars mediated by nurseries. Unfortunately, this action is often influenced by profit opportunities which have led to the hurried spread of poorer cultivars in terms of agronomic and varietal aspects or failure of adaptability to given areas. More recently, the application of patents has partly exacerbated the problem. It may happen that a given cultivar is introduced to exploit the exclusive patent rights regardless of the true value of the cultivar itself.

That is why the actual value of newly introduced cultivars should always preceed their introduction to the industry. In more advanced countries, the agronomic and commodity evaluation is carried out by boards of technicians who are not involved in the nursery industry (Italy, France). In this respect, the situation is more crucial in the countries where the fruit industry is more recent and where there are no independent assessment boards. Therefore the spread of cultivars is favoured by subjects only interested in plants supply.

Another aspect has to be underlined about the intrinsic value of new cultivars. In many cases, the most widespread cultivars have enhanced external aspects (colour, shape, size, firmness) while intrinsic values such as taste and resistance to diseases are rather neglected. This phenomenon often leads to the spread of new cultivars only on the basis of commercial needs merely relying on fruit appeal. The result is a large supply of new cultivars which create a great confusion in the industry with negative effects on the consumer (supply of low quality fruits).

5.2. *Planting density and training forms*

Although truly dwarfing rootstocks to modulate tree size according to the orchard architecture are not available for many of the stone fruit species, recently developed training and pruning techniques have reduced tree size of vigorous species (i. e. sweet cherry). By using moderately vigorous rootstocks and pruning techniques to reduce tree size (i. e. spindle and 'Y' training system), it is rather frequent to have orchards with more than two thousand trees per hectare (e.g. in peach and apricot) (Sansavini and Errani, 1998).

5.3. *Cultural techniques*

These results could not be attained without an integrated management of all resources among which pesticides, water and mineral nutrients rank first.

The better knowledge of the tree physiology favours a more targeted management of the soil resources and of the amounts of fertiliser needed. Fertiliser and water should be supplied

based on the effective needs of the tree (age, production, content and uptake kinetics of nutrients) and on the amounts available in the soil.

Similar considerations may be expressed for the control of weeds, diseases and pests. New molecules with a low residue effect make the selective control of weeds possible; the chemical on-row control is then integrated by mulching in association with inter-row mechanical weeding. The pest control is now favoured with the integrated pest management by the use of selective chemicals and by the application of biological control methods (e.g. *Bacillus thuringiensis*). The control of some Lepidoptera (i.e. *Cidia* in peach) is still a problem although the mating disruption method holds promise. The control of the Mediterranean fruit fly is rather difficult without chemicals spray in the warm areas where this polyphagous insect can accomplish several reproductive cycles on many fruit trees and even wild plants.

In conclusion, the complementarity of the above cultural techniques can yield two results: input saving (drop of production costs) and a lower impact on environment (Pirani, 1998).

6. Harvest and conditioning: fruit quality

Although stone fruits should be consumed soon after harvest, the application of cold storage is requested for several reasons: the need to reach markets far from the production sites (north Europe); to withstand temporary market crisis, and provide storage technologies for the processing industries. That is why it is necessary to develop for stone fruits, techniques similar to those used for pome fruits without necessarily resorting to the controlled atmosphere (that needs long periods of storage). Two techniques have allowed maintenance of good qualitative level of stone fruits. The first is prerefrigeration of fruits in the field. This technique, which is unfortunately scarcely used, allows to lower the respiration rates of the fruits soon after harvesting (Mencarelli and Anelli, 1992).

The second is the use of selective-permeability plastic films in fruit packaging. These films allow a partial modification of the package atmosphere due to the fruit respiration, which produces concurrently a moderate rise in the carbon dioxide and a lowering of oxygen concentration. This phenomenon, associated with moderate cooling (about 10°C), preserves fruit quality for a longer period especially for the species with a quick post-harvest evolution (i.e. apricots).

It would be useless to underline the importance of the right harvest time. Indeed, different, although concomitant reasons often lead to the marketing of low-quality fruits with a consequential loss of consumer interests. Other factors include cultivars of low value, lack of objective ripening indices, and premature harvest in order to exploit the high prices of the 'early' fruit market.

7. North-south integration

Intensive and industrialised fruit industry have developed in countries of the Mediterranean north shore, although currently the south and east shores (north Africa, Israel and Lebanon) show interesting promises.

First, the ecological conditions of mild winter and spring seasons and a dry climate allow for higher productions and fewer outbreaks of fungal diseases. Second, socio-economic reasons such as, lower cost of land and labour reduce production costs. However, these favourable conditions may be hampered by crucial environmental (i.e. drought) and social aspects (political instability).

The Mediterranean south shores, characterised by a sub-tropical climate, requires low to very low chilling cultivars, currently not available for all stone fruit crops. Apart from the almond, only the peach has a wide range of cultivars of this type. The availability of low-chill cultivars is lower for apricot, cherry and plum although some breeding programmes are addressing this goal. There are further difficulties stemming from the cultivation of dry soils with a high limestone or salinity content. The present know-how may help in solving these problems although its application requests skilled growers which are rather rare in these countries. Furthermore, infrastructures and sophisticated technologies, not always accessible, are needed for transportation, storage, cooling and packaging. Last but not least, political and social instability may discourage investment of foreign capitals. Notwithstanding, some European entrepreneurs are investing in North Africa, mainly in Morocco, attracted by favourable conditions.

From a more general standpoint, in the near future an integration of the fruit availability is expected to occur between the north and the south shores. Southern countries will meet the requirements of early cultivars from late spring to early summer. The north shore will produce fruits that are not acclimatised to the south and develop more advanced technologies to keep the costs at an acceptable level to meet the market needs in the second part of the summer.

The nursery industry of the north shores countries will also take advantage from the fruit industry development of wide areas in North Africa, although sanitary problems could be a constraint yet to be solved.

II - Productive and commercial panorama

1. Peaches and nectarines

1.1. Supply

In the main producing areas in the world, the production of peaches and nectarines tends to rise. Statistics indicate that from 1979 to 1981 the overall supply has grown more than 48%, from 7.4 million tons to a little less than 11 millions (average of 1995-1997, Tab. 1).

The world-wide context is featured by three main macro areas where 80% of the global supply is concentrated. The first is represented by the Mediterranean coastal regions (over 40%), the second by far east regions China and Japan (a little less than 30%), and the third by the USA (about 11%).

The Mediterranean area is the main productive centre in the world although its incidence has slightly dropped over the last twenty years (nearly 3%) because of the growth of China whose harvest has become six times higher.

Most supply of the Mediterranean area is concentrated in Europe and in particular in the European Union member countries that groups the four main countries. Italy is the first supplier with a yearly harvest of about 1.4 million tons from 1995 to 1997 and a potential production which may even exceed 1.7 million tons during favourable seasons, as it occurred in 1996. Over the last years, the following productions have been reported: 850-900 thousand tons of common peaches, about 450 thousand tons of nectarines and 150-200 thousand tons of clingstones. The supply is peculiar to some areas in the north, centre and south although the productive frame of the country has changed. In particular, common peaches are taking an increasing importance in the south whereas nectarines prevail in northern regions (Pirazzoli, 1996; Regazzi, 1998).

In Greece, investments rose in the decade 1986-1995 with an acreage increase from 36 thousand to 47 thousand hectares. This resulted in a sharp rise of the supply that exceeded 1 million tons in 1995. The progressive spread of *sharka* disease and adverse climatic conditions in the following years reduced the supply to lower levels (in 1996 down to 876 thousand tons and in 1997 to 530 thousand tons). The major producing areas are mainly concentrated in central and western Macedonia, where 90% of the national product is harvested.

Also the Spain acreage, which cover over 70 thousand hectares, increased during the 1980s. Orchards are mainly located in five regions: Aragon, Catalonia, Valencia, Murcia and Andalusia. Estremadura (Badajoz) is also interesting for the recent plantations of common peaches and nectarines. Compared to the period from 1979 to 1981, Spanish productions

have doubled attaining quantities of 900 thousand tons (Rodriguez Navarro and Cos Terrer, 1998).

In the same period of observation, the French supply has not reported significant changes (+6%) with a quantity lower than 500 thousand tons/year. A slight increase has to be reported in nectarine plantings whereas the common peach is dropping (Ctifl, 1995). Orchards are located in several departments in the south of the country with Drôme, eastern Pyrenèes, Gard, Bouches du Rhône as the most important with a supply of 25%, 17%, 16% and 15% respectively.

The Mediterranean countries along the African coast are recording continuous acreage increase despite their low productions (about 200 thousand tons/year) and countries like Egypt and Tunisia have now reached productive levels of 60 thousand tons/year.

In Asia, Turkey is the only producer with considerable productions exceeding 300 thousand tons/year. It is a country where the major growth occurred in the 1980s whereas during the present decade the increase has slowed down (only +2,3% from 1989 to 1991 and from 1995 to 1997).

As regards to cultivars grown in the Mediterranean area, a progressive increase of nectarines may be observed (they have doubled over the last fifteen years) whereas the amount of common peaches has dropped. In particular, in France about 38% of the stone fruit-growing surface is cultivated with nectarine. In Italy this amount drops to 30% and in Spain it does not exceed 23%. Nectarine acreage in Greece is limited, less than 10%. The common peach is mainly concentrated in Italy (about 60%), in the southern regions of the country. Similar levels were also reported in France (58%). In Greece and Spain the common peach is far less important (33% and 24%, respectively), while clingstones are more important (60% and 55%, respectively). In Italy and in France clingstone varieties equal 10% and 4%, respectively.

Most of the peach and nectarine harvested in the Mediterranean area are for fresh consumption. In some countries fruit processing has considerable economic importance (Greece, Spain and Italy). Processing industry use peach for the preparation of syrup fruits, fruit salads, juice, etc. The sector of processed products, mainly syrup peach, is very important in Greece where productions exceed 300 thousand tons. Spain supplies more than 120 thousand tons whereas Italy and France contribute with lower amounts: 40 and 20 thousand tons, respectively.

1.2. Trade

Over the last years the world trade of fresh product has steadily increased. Between the early 1980s and the mid 1990s, the amounts being exchange had risen by 400 thousand tons (about 80%), up to 1 million tons (Tab. 2). This trend, produced not only by a sharp increase of

demand in the countries with an important fruit tradition, was also backed up by the demand from new markets, therefore enlarging the number of importing countries (about 90).

The major commercial relation concerns the European area and the EU-member countries, where over two thirds of the overall volume is exchanged. Transactions with non-member countries allow the EU producers to get a positive commercial balance that totalled 50 million US dollars (equal to 42 million Euros) in 1994-1996.

Italy, with 500 thousand tons/year, takes the lead among exporting countries whereas Germany is the country with the highest imported amounts, over 300 thousand tons/year (about one third of the world total amount). Other EU exporters are Spain, with over 100 thousand tons/year, France and Greece with 60 thousand tons each. Other importing countries in Europe, apart from Germany, are United Kingdom (70-80 thousand tons), France (37-40 thousand tons), Belgium-Luxembourg (35-38 thousand tons), Switzerland (30-35 thousand tons), Austria (30 thousand tons) and Sweden (15-20 thousand tons).

In the 1990s, processed products were also increasingly exchanged. Currently about two thirds of 600 thousand tons/year of processed product come from Greece while Italy contributes with 10% and its incidence seems to progressively decrease. Other important exporters are Spain, South Africa and Chile. The main market for canned peach is still Germany, followed by England and Japan.

2. Apricots

2.1. Supply

The world apricot production is growing despite significant fluctuations due to the climatic pattern. In 1995 to 1997, it attained 2.3 million tons/year (Tab. 3). About half of the world supply is concentrated in the Mediterranean basin. Other important productive areas include the Asian Middle East (Iran ranks second after Turkey with some 200 thousand tons/year), the Far East (Afghanistan, China and Pakistan produce globally 330 thousand tons), and the USA (120 thousand tons). Notable are the productions from Ukraine (about 100 thousand tons per year) and in the Russian Federation (about 70 thousand tons per year). In the Southern hemisphere the most important countries are South Africa (70 thousand tons), Chile (35 thousand tons), Argentina (18 thousand tons) and Australia (25 thousand tons).

The EU Mediterranean countries possess one fifth of the overall world production: France, Greece, Italy, Portugal and Spain harvest 450-500 thousand tons/year. The global level of the supply was stable in 1979-1997, although the production supplied by each single country has been substantially modified. The most significant cases are France whose supply has nearly doubled and Greece whose productive level has dropped by 60%.

In France apricot growing is mainly concentrated in the southern departments of the country (eastern Pyrenèes, Bouche du Rhône, Drôme, Gard, Vaucluse). The maximum supply is available in the first two decades of July although some later varieties may be harvested till August (Audergon and Legave, 1997). The current supply averages 150 thousand tons/year, mainly for fresh consumption.

In Greece, apricot orchards are mainly located in the Peloponnesus: Argo, Corynth and Nauplia (over three fourths of the national acreage). However, apricots are also grown in Macedonia (10%). Over the last years, the amount harvested has been reduced considerably for the progressive spread of *Sharka* disease with production of 40 thousand tons/year. The maximum supply is reached in June, but by May, early varieties are ready to be marketed. One fourth of harvest is exported for fresh consumption; the remaining amount is shared between the domestic fresh consumption and the processing industry.

In Italy apricot production is rather constant in acreage with a slight growth over the last years. The cultivated acreage is a little less than 17 thousand hectares. Orchards are located in the southern regions mainly in Campania, Basilicata, and Sicily (a little less than a half of the national acreage). Also, orchards located in Emilia-Romagna (30%) and in Piedmont (7%) are noteworthy. Southern regions supply mainly small-sized fruits whose major trait is earlier ripening. This product is for both fresh market and processing. In the north, production has quality standards that are oriented for the fresh market (large size, brighter skin colour, flavour, etc.). Only near the end of harvest season is it processed. The Italian supply, after the peaks of 170-180 thousand tons recorded at the beginning of the 1990s, now averages 110-130 thousand tons/year (Alvisi, 1996).

Among the EU countries, Spain produces the highest amounts with an average of 150 thousand tons/year. This production is for the fresh market and partly for the processing industry (30-40%). Investments are stable and their possibility of expansion are linked to the availability of irrigation water. Apricot orchards are in the Murcia region, producing three-fourths of the whole Spanish supply. Other producing areas are located in Valencia, Saragoza, and Albacete.

As for the other Mediterranean countries, a significant evolution is observed both in North Africa (Egypt and Morocco) and in Asia. In this context, the Turkish supply is very interesting with the production at world level high with an average production equalling 250 thousand tons/year. Two-thirds of the Turkish supply is produced in the regions of Kars and Malatya. Cultivars are mainly local ecotypes and about two-thirds of the production is for the processing industry (Alvisi, 1997). The amounts produced for international trade are marginal (700 tons/year in 1994-96).

The apricot supply goes mainly to the fresh market, although a large share goes to the processing industry. In France and in Italy, a large part of the production is for the fresh

market, whereas in Turkey processing is the priority. In Greece and in Spain, the amounts for processing range between 30 and 40%. The main processed products include dried apricots (Turkey), canned (Greece) or semi-processed (Morocco) in desserts, cakes, ice-creams (Preda and Tondini, 1997).

2.2. Trade

The international market of fresh apricots is rather limited both for its short period of trade and for the difficulties related to the fruit storage. Furthermore, the volume of trade is influenced by the domestic supply of the main producing countries that is deeply impacted by the climate hazards (e.g. spring frost). The overall amounts of fresh apricots marketed at international level range between 130 and 170 thousand tons per year (6-7% of the world supply).

In Europe, the major trade is secured by the Spanish production with 62 thousand tons in 1994-96, by the French one with 34 thousand tons and by the Italian production with 16 thousand tons. The Greek supply, once the major source of fresh product in Europe, has presently a limited trade with foreign markets with no more than 10 thousand tons per year.

Among the importing countries, the major demand for fresh fruit comes from Germany (between 37 and 47 thousand tons/year) followed by Italy that, in spite of being one of the major producers at the world level, imports 24-25 thousand tons of fresh product. Other important commercial flows are towards Austria and Switzerland with a supply of 12-13 thousand tons per year in both countries.

As regards processing, the international trade is from four countries: Italy, Greece, Spain and South Africa. The supply equals 85 thousand tons of net weight, 90% of which is exported. The product is mainly supplied by Greece (45%), South Africa (30%) and Spain (20%). Italy supplies an increasing export of sugar-free preserves (about 20 thousand tons/year) towards Germany and sugar-added preserves (about 450 tons) towards France.

3. Plums

3.1. Supply

Over the last twenty years the world production of plums has recorded a considerable increase. If compared with the average of 1979-1981 when 5.5 million tons were harvested, the supply has increased by over 38% reaching 7.5 million tons in 1995-1997.

It has to be underlined that this rise did not occur in other regions of the world but deep changes have been reported with a new production scenario. The main variation has been the production in China, where the supply has increased five times, from 381 thousand to

around 2.5 million tons/year, ca. one third of the world harvest. Conversely, Europe's production (more than 50% of the world amount in 1979 of about 2.9 million tons), dropped to 2.5 million tons/year, equivalent to 30% of the world production. The eastern and the continental countries of the European Union have recorded losses of 300 thousand tons (-27%) and 150 thousand tons (-29%), respectively.

Currently, over a half of the supply in Eastern Europe is concentrated in Romania (about 470 thousand tons/year) and modest productions are also attained in Poland and in Hungary (over 100 thousand tons respectively). This supply is mainly used for the processing industry especially for distillates (slivovitz, etc.) and to a lesser extent for the preparation of jams or dried products. It is estimated that only 25-30% is for the local fresh market and 2-3% for international transactions.

In western continental Europe, Germany is an important producer; however, its supply (up to 300 thousand tons/year) is now diminishing. Crops are mainly located in Baden-Württemberg (more than 50%), in Rheinland-Pfalz (less than 20%), in Bayern, in Niedersachsen and in Nordrhein-Westfalen (5% each) and in Lander of former Federal Republic (about 10%). It has to be considered that most of the German production is in so-called 'family gardens' and for household consumption.

The countries of the Mediterranean basin are showing an increase which is relatively higher for the African ones but more important in absolute terms for the EU countries whose annual production is 600 thousand tons/year. A slight drop has been reported from former Yugoslavia after the civil conflict. Currently, the supply of plums coming from the Mediterranean area attains 1.6 million tons and is second to China. The major producers are former Yugoslavia (where Macedonia plays a major role with an average supply above 600 thousand tons over 1996-1997, mainly for processing), France, Italy and Spain.

With an annual amount of 280 thousand tons in 1995-97, France is the first producer of the European Union. Crops are mainly concentrated in three areas: south-west (over 50%) where the prevailing varieties are 'President', 'Green Gage', 'Prune d'Ente' and Japanese cultivars; south-east (about 20%) with similar varieties; east and particularly Alsatia and Lorraine (about one fourth of the domestic supply) where European small-sized varieties like 'Mirabelle' are grown. The French production is mainly oriented to processing with 'Prune d'Ente' and 'Mirabelle' whereas the production for the fresh market is now increasing due to the new Japanese varieties introduced from the USA (Palara, 1996).

In Italy considerable changes have occurred that have substantially led to the increase of specialised orchards and to the reduction of 'mixed' plantings. Acreage is more than 13 thousand hectares including the 'mixed' orchards. The current supply that is profoundly influenced by the seasonal trends, confirms the productive levels achieved at the end of the 1970s, i.e.130-180 thousand tons/year. The main producing regions are Emilia-Romagna and

Campania where half of the domestic supply is obtained. The main destination is fresh consumption (Alvisi and Lunati, 1982; Bertazzoli and Lunati, 1990).

The Spanish production is comparable with the Italian one and equals 140-150 thousand tons. Orchards are mainly concentrated in the regions of Valencia and Murcia as well as in Andalusia and in the Ebro valley. The most widely grown cultivars are 'Burbank', 'S. Rosa', 'Golden Japan' among the Japanese and 'Green Gage' among the European. The harvesting period begins in May for the early varieties throughout August for the late ones. This production is mainly for the fresh consumption and for exports. The world production is completed by the US and the South American supply. The USA production has increased by 150 thousand tons/year (+22%) from 642 to 785 thousand tons. A relevant part of the supply comes from California where more than one third of the produce is dried. The rise in Chile is also noteworthy (135%) with a production ranging from 17 thousand tons (in 1979-1981) to 143 thousand tons (in 1995-1997).

3.2. Trade

International transactions of the fresh product are increasing important and for the period observed the volumes exchanged have nearly doubled. Currently, the exchange concerns 300-350 thousand tons/year corresponding to 4% of the world supply. The growth of the global trade is mostly attributed to the increases exported from America. Both USA and Chile have reported considerable advances, from 24 thousand to more than 61 thousand tons and 3 thousand to 58 thousand tons, respectively.

In Europe, the Mediterranean EU countries supply the major amounts with about 100 thousand tons/year exported. Spain guarantees the highest quantities with volumes above 41 thousand tons/year in 1994-1996. The exported volumes from Italy (30-35 thousand tons) and from France (20 thousand tons) are also considerable. In the Mediterranean basin commercial flows from the Asian coast are also rising in virtue of the production from Lebanon (10 thousand tons), Syria and Turkey (4.5 thousand tons each).

As regards importing countries, Germany and the United Kingdom are the main importers with volumes that are sharply increasing. In 1994-1996 imported levels have reached 48 thousand and 41 thousand tons/year, respectively. Furthermore, commercial flows to Eastern Europe are increasingly important with considerable amounts in the Russian Federation (some 24 thousand tons/year in 1994-1996), in the Czech Republic (more than 6 thousand tons) and in former Yugoslavia, in Croatia (1,000 tons) and Slovenia (500 tons). The sharp increases must to be underlined for countries with a limited fruit-cropping tradition. The most significant examples concern Brazil, China, Hong Kong, and Saudi Arabia, whose annual volumes have increased by 20 thousand tons/year.

The few data available about the production of prunes indicate a world supply of about 290 thousand tons (1994-1996) that will grow until the year 2001. With the current levels of consumption, slightly above 200 thousand tons/year, one might presumably think of a further increase of the productive surplus of about 100-120 thousand tons. As known, the international market of prunes is held by the USA (about two thirds), followed by France (20%) and Chile (7%).

4. Cherries

4.1. Supply

Over the last twenty years the world production of cherries has increased by 30%. The increase in sour cherry production (+45%) is higher than that of sweet cherry (+22%) since the spread of the first species took place in the 1980s whereas that of the second only in the latest years. The current supply equals 2.6 million tons, of which 1.6 million trees being sweet cherries. Europe is the main region with 60% of the world production. In the EU, sweet cherry prevails (over three-fourths), whereas in Eastern Europe sour cherry is predominant.

Mediterranean countries play a more important role in the production of sweet cherries and contribute 40% to the world supply and 20% to the production of sour cherries (Tab. 7.1 and 7.2). On the whole, in the Mediterranean regions growth of both species is observed due to the high increases of the Asian coast, namely Turkey. This country represents, together with the USA, the main producer with annual amounts which exceed 300 thousand tons, two-thirds of which are sweet cherries. Nevertheless, the production harvested in the EU Mediterranean countries (mainly sweet cherries) is dropping. Except for Greece, whose annual production has risen from 20 thousand tons (1979-1981) to about 51 thousand tons (1995-1997), the other countries (France, Italy, Portugal and Spain) have all shown a decrease.

In particular, the French annual productions have reported a drop, from 116 thousand tons in 1979-1981 to 69 thousand in 1995-1997. The drop stemmed from the acreage reduction from 18 thousand hectares in 1980 to 13 thousand hectares in 1996. Recently new plantations have been established. This has stabilised the harvest and raised the mean level of the fruit quality. In France, crops are located in three main southern regions (about 80%): Rhône-Alpes, Provence-Côte d'Azur, and Languedoc-Roussillon. The cultivar assortment is slowly changing. The main cultivar is 'Burlat' (although it has decreased by 25%), followed by 'Napoleon' used for processing (Edin, 1993; Hutin, 1997).

In Italy, the acreage of over 29.7 thousand hectares is distributed in four regions: Veneto, Emilia-Romagna, Campania, and Apulia. Acreage nearly tripled in the last twenty years in Apulia, yielding about one-third of the Italian supply. In this region, the development of the cherry industry has been accompanied by a deep varietal innovation which has allowed to

introduce cultivars such as 'Ferrovia' and 'Moreau' both for the fresh market (Bargioni, 1995). The Italian production averages 120-125 thousand tons/year of sweet cherries. The production of sour cherries is 6 thousand tons/year.

The Spanish supply, after the growth recorded in the 1970s and the slight drop in the following decade, equals 65 thousand tons/year. Intensive orchards are in Extremadura, in the Ebro valley, in Catalonia and in the Levant. The harvesting season begins in April and ends in July. The supply is made up of 'sweet' varieties popular in the north European markets.

In western Europe the highest supplier is Germany with 200 thousand tons. Sweet cherry varieties are the most spread while sour cherries represent 40%. However, the bulk of the German production is grown in family gardens for household consumption and does not supply the open market (Alvisi, 1993). Harvest begins in June and ends in July.

Cherry industry plays a major productive role in the USA and in Iran with mean levels of supply of 300 thousand tons and 220 thousand tons/year, respectively. In particular, in the USA half of the acreage is made up of sweet varieties while it reaches two-thirds in Iran. This country has reported the highest productive increase in the world over the last twenty years (+150 thousand tons for both sweet and sour cherries).

One-third of the world production is for self consumption within the family farm. This use takes relevant proportions in northern Europe (with peaks of 50%) whereas it is limited in the Mediterranean countries (no more than 5-10%). The supply available for the market is for fresh consumption (over three-fourths) while the processing industry absorbs the remaining part (one-fourth). In Europe, the processing industry is supplied by Eastern countries whereas at world level by the USA with two-thirds of the total harvest.

4.2. Trade

Sweet cherries supply the international market with more than 100 thousand tons/year, 7% of the overall amount (Tab. 8.1). Trade shows increases in the supply volumes (+50%) and a higher number of importing countries.

Most of the commercial flows are concentrated in the EU where some of the major exporting (Italy, Spain and France) and importing countries (Germany, United Kingdom and Netherlands) are located. It has to be observed that in the Mediterranean area an increasing weight is being taken by production from the Asian coast which has increased by four times in the last twenty years. Turkey is supplying 13 thousand tons/year in the international market and ranks second after the USA. Countries of the Southern hemisphere (Chile, Argentina, South Africa and Australia) are gaining in the market area supplying cherry to

Europe in winter months. Off-season consumption is a phenomenon that is gaining ground in high-revenue countries.

Also, sour cherries supply a wide market, mainly for processing. In 1994-1996 international trade has concerned 40 thousand tons, an amount that is sharply increasing given the very low levels traded in the previous decades (Tab. 8.2). Currently, the main supplies come from Hungary and Poland which send their produce to Germany. Demands come from Germany (two-thirds of the overall amount), the United Kingdom, the Netherlands, and Belgium-Luxembourg.

5. Almonds

5.1. Supply

The world supply of almonds is stable, after the increase recorded in the 1980s, with average levels that attain 1.3 million tons of whole fruits equalling 400 thousand tons of shelled fruits (Tab. 9).

Major almond investments are concentrated in three geographical areas which have historically seen the progressive spread of the crop. These are the Mediterranean basin, Central Asia, and the USA (California). These regions are characterised by profound differences both from the agronomic viewpoint (growing technique, cultivars, yields) and for their commercial organisation.

In the Mediterranean area, Spain and Italy are the leaders in almond cultivation and productions, although the industry is presently growing also in some countries of the south shore.

Spain is the first producer in Europe with an average harvest above 250 thousand tons/year of in-shell fruits (about 75 thousand tons of shelled almonds). Over the last decades the almond industry has been modified both from the agronomic and commercial viewpoint allowing the country to become competitive at international level. The introduction of new cultivars, the improvement of cultural techniques, and the availability of irrigation have been the most significant innovations. The renewal of plantings, started in the 1970s, has given rise to higher more consistent yields. The almond is spread in several Spanish regions although it takes a more relevant role along the Mediterranean coast where about 80% of the product is harvested. The main areas are Catalonia (Lérida and Tarragona), Valencia, Murcia, Andalucia (Granada, Almeria and Malaga) and the Balearic islands. Hard shell varieties are more commonly grown, among them 'Marcona' and 'Desmayo Largueta' account for over a half of the total supply (Vargas Garcia and Romero, 1996).

The Italian production (once first in the world trade) has dropped considerably over the last decades. In the 1960s, it produced one-third of the world production, and it dropped to 17% in the 1980s, and to 8% in the 1990s. Currently, it is 90 thousand tons of in-shell nut, i.e. 7% on a world-wide basis. The shelled product is now estimated at 15 thousand tons or 3.5% of the world production. This decline is motivated by the difficulty to market a produce of low quality product compared to the high-quality standards of other producing countries (e. g. California). This has led to the replacement of old almond groves with other more rewarding crops (citrus, vegetables, etc.). This phenomenon is true mainly for Sicily where the areas of almond orchards has markedly dropped in the last decades (Bacarella and Barbera, 1989). For now the acreage has stabilised at 55 thousand hectares. The Sicilian almond industry is located in the counties of Siracusa, Agrigento, Caltanissetta, and Enna. Cultivars are mainly hard-shelled and some of them are particularly suitable for the production of 'confetti' (confectionery industry): 'Pizzuta d'Avola' and 'Fascionello'.

Other Mediterranean countries are showing interest in this species (Hutin, 1997) and have made a gradual renewal of old plantings (cultivars of local origin) with orchards trained more efficiently to exploit the potential of new profitable cultivars. This is particularly true for Greece, Morocco, Tunisia, and Turkey, whose productions have reached 40-50 thousand tons/year.

In Central and Eastern Asia, the almond supply has risen and the major advances were recorded in the last decade. The highest supply comes from Iran with an average production above 80 thousand tons/year (1995-1997). Productions of Pakistan and China are also growing with 55 thousand tons and 20 thousand tons/year, respectively.

The panorama is completed by the USA, the main supplier in the world. Plantings are primary in California where almond trees are grown in irrigated plains. Since the end of the second World War, the crop has shown continuous production increases. At the beginning of the 1960s it attained leadership in the world. The maximum supply was recorded in the 1980s when the threshold of 300 thousand tons of shelled product was reached. The latest almond reports an annual supply above 410 thousand tons of in-shell product equal to 250 thousand tons of kernels. Plantings are mainly located in the central and northern plains in the counties of Kern, Stanislaus, Merced, Fresno, San Joaquin, Madera, and Butte. About cultivars, the Californian supply is from 'Nonpareil' (half of the acreage), a high yielding cultivar with high shelling quality, between 60 and 65% (Monastra, 1997).

5.2. Trade

The international almond market has grown with the available supply. In the past twenty years, the volumes traded have doubled and the current transactions exceed 250 thousand tons of shelled product/year (1994-1996; Tab. 10). The world trade is strongly influenced by

California, which contributes four-fifths to the trade volume. Among the other countries, Spain exports 30 thousand tons/year and Italy only 1-2 thousand.

The grower organisation of the USA has played a key-role in the success of marketing the Californian product in international trade. The essential component of this organisation is the very tight link between the growers and the traders which, beyond the economic advantages for the whole channel, enables them to control the supply and to meet the changing market needs.

Considering the type of almond utilisation, mainly used for the confectionery , the major demands come from high-revenue countries with a consolidated tradition in food specialities. This explains the large exports to various European (Germany, France, Spain, Italy, United Kingdom, Netherlands, Switzerland, Belgium-Luxembourg) and to Middle and Far East countries (Arab Emirates, Japan, Republic of Korea).

III - Conclusions

As illustrated, the stone fruit-growing sector is rising and the production advances are quite considerable in the Mediterranean region. Several species are now migrating from northern to southern latitudes in order to better exploit the environment (both natural and social) and obtain earlier productions at more competitive costs. The possibility of broadening the marketing period is one of the more typical aspects brought to the attention of researchers and market operators.

From the commercial point of view it should be underlined that the production has attained very high levels making the sale of the products difficult at harvest time. Only with unfavourable phenomena which reduce harvests (hails, spring frosts, pest attacks), growers benefit partially from good market conditions. This is evident in the more developed countries where the production costs are very high, particularly for labour.

On the other hand, product demand, after the growth of acreage reported in the last decade, did not seem to increase, at least in the more important fruit-growing countries. Nor has the demand for processed products solved the problems linked to a structural surplus of production.

In this context it is important to find new commercial outlets without neglecting traditional partners. This is in tune with the need to identify a higher number of market outlets for the supply in compliance with its natural qualitative differentiation. For richer markets, it will be increasingly important to supply a product with high organoleptic contents and benefits for the consumer's health.

Despite current commercial difficulties, the perspectives for the Mediterranean growers are still interesting especially if successful factors of a modern fruit growing industry are taken

into account. From the agronomic viewpoint, technological innovations shall be applied in order to improve the relation between quantity and quality without increasing the production costs. From the commercial side, a tighter relationship needs be ensured between production and distribution in order to fit an increasingly multifaceted demand.

* *The first part of this paper is written by D. Bassi and second one by C. Pirazzoli.*

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Tab.1. World production of peaches and nectarines with special reference to Mediterranean countries (000 tons)

COUNTRIES	mean 1979-81 (A)	mean 1989-91 (B)	1995	1996	1997	mean 1995 -1997 (C)	%	variation % C / A	variation % C / B
France	459	475	529	464	469	487	4.4	+6.2	+2.6
Greece	381	760	1182	876	530	863	7.8	+126.4	+13.5
Italy	1419	1591	1329	1754	1218	1434	13.0	+1.0	-9.9
Portugal	31	90	90	76	89	85	0.8	+174.2	-5.6
Spain	414	708	661	870	925	819	7.4	+97.7	+15.6
EU Mediterranean countries	***2704***	***3624***	***3791***	***4040***	***3231***	***3687***	***33.5***	***+36.4***	***+1.7***
Albania	-	4	2	2	2	2	0.0		-50.0
Croatia	-	-	5	8	7	7	0.1		
Yugoslavia F.R.	82	88	42	58	58	53	0.5	-35.8	-40.2
Slovenia	-	-	9	13	13	12	0.1		
European Mediterranean countries	***82***	***92***	***58***	***81***	***80***	***73***	***0.7***	***-11.0***	***-20.7***
Algeria	13	27	39	45	39	41	0.4	+215.4	+51.9
Egypt	10	41	58	60	62	60	0.5	+500.0	+46.3
Libya	3	11	9	9	9	9	0.1	+200.0	-18.2
Morocco	20	30	30	35	34	33	0.3	+65.0	+10.0
Tunisia	22	35	48	55	60	54	0.5	+147.0	+55.2
African Mediterranean countries	***68***	***144***	***184***	***204***	***204***	***197***	***1.8***	***+190.2***	***+37.0***
Cyprus	2	1	2	2	2	2	0.0	+0.0	+100.0
Israel	30	40	51	47	48	49	0.4	+62.2	+21.7
Lebanon	20	39	44	49	48	47	0.4	+135.0	+20.5
Syria	21	62	21	43	23	29	0.3	+38.1	-53.2
Turkey	242	339	340	360	340	347	3.2	+43.3	+2.3
Asian Mediterranean countries	***315***	***481***	***458***	***501***	***461***	***473***	***4.3***	***+50.3***	***-1.6***
TOTAL MEDITERRANEAN COUNTRIES	**3169**	**4341**	**4491**	**4826**	**3976**	**4431**	**40.3**	**+39.8**	**+2.1**
European non-Mediterranean countries	***703****	***751****	***296 *****	***356 *****	***325 *****	***326***	***3.0***	***-53.6***	***-56.6***
South Africa	*180*	*158*	*158*	*172*	*236*	189	1.7	+4.8	+19.4
African non-Mediterranean countries	***184***	***166***	***167***	***175***	***244***	***195***	***1.8***	***+6.2***	***+17.7***
China	386	1232	2727	2772	2996	2832	25.8	+633.6	+129.8
Japan	253	185	163	169	176	169	1.5	-33.1	-8.5
Asian non-Mediterranean countries	***1017***	***1876***	***3594 ******	***3649 ******	***3898*****	***3714***	***33.8***	***+265.2***	***+98.0***
United States	*1496*	*1303*	*1204*	*1180*	*1442*	1275	11.6	-14.8	-2.1
North and Central America	***1711***	***1489***	***1390***	***1376***	***1638***	***1468***	***13.4***	***-14.2***	***-1.4***
Argentina	*247*	*237*	*199*	*199*	*199*	199	1.8	-19.4	-16.0
Chile	*104*	*191*	*275*	*275*	*270*	273	2.5	+162.8	+43.1
South America	***540***	***626***	***747***	***753***	***747***	***749***	***6.8***	***+38.7***	***+19.6***
Oceania	***98***	***87***	***94***	***108***	***109***	***104***	***0.9***	***+5.8***	***+19.2***
WORLD	**7422**	**9336**	**10779**	**11269**	**10937**	**10995**	**100.0**	**+48.1**	**+17.8**

* Including former USSR ** Including the European States of former USSR *** Including the Asian States of former USSR.

Suorces: F A O

Tab. 2. Imports/exports of fresh peaches-nectarines in the world (tons)

IMPORT			
COUNTRIES	Mean		
	1979-81	1989-91	1994-96
Austria	25478	26027	29842
Belgium-Luxembourg	31130	39186	37222
Denmark	5522	9315	9806
Finland	3239	4194	6222
France	30891	69256	38552
Germany	231746	286743	326793
Greece	-	17	953
Ireland	1372	2861	3306
Italy	514	6827	18176
Netherlands	18768	34957	40033
Portugal	-	2155	13679
United Kingdom	50597	89579	76356
Spain	-	9293	5362
Sweden	11472	14926	15882
Total EU Countries	***410729***	***595336***	***622184***
Iceland	-	65	91
Norway	2789	3901	5289
Switzerland	30462	33296	32146
Total other Western European countries	***33251***	***37262***	***37526***
Ex Yugoslavia	-	2985	-
Croatia	-	-	9415
Slovenia	-	-	4795
Poland	3619	7943	22378
Czechoslovakia	4600	4517	-
Czech Republic	-	-	16741
Slovakia	-	-	2446
Hungary	-	320	1366
Bulgaria	-	649	1936
Rumania	-	-	1073
Russian Federation	-	-	20953
Others	-	2985	1582
Total other Eastern European countries	***8219***	***19399***	***82685***
Saudi Arabia	9856	19455	14137
Brazil	43	2250	19982
China	-	1709	11280
Hong Kong	-	1950	4050
United States	3490	48784	44859
USSR	1401	1850	-
Other non-European countries	50177	72487	96578
Total non-European countries	***64968***	***148485***	***190886***
WORLD	**517167**	**800482**	**933281**

EXPORT			
COUNTRIES	Mean		
	1979-81	1989-91	1994-96
France	28333	46289	63035
Greece	77187	59435	58732
Italy	321996	443029	500264
Portugal	13	116	246
Spain	15737	62942	109576
Total EU Mediterranean countries	***443266***	***611811***	***731853***
Croatia	-	-	68
Yugoslavia F.R.	1472	1614	354
Slovenia	-	-	17
F.Y.R.O.M.	-	-	61
Other European Mediterranean	***1472***	***1614***	***500***
Egypt	-	435	1254
Morocco	85	335	1138
Tunisia	2	12	-
Total African Mediterranean countries	***87***	***782***	***2392***
Cyprus	17	3	6
Israel	551	7	43
Lebanon	9812	6611	6700
Syria	92	950	5073
Turkey	145	1623	701
Total Asian Mediterranean countries	***10618***	***9194***	***12523***
TOTAL MEDITERRANEAN COUNTRIES	**455443**	**623401**	**747268**
Netherlands	500	9181	14688
Belgium-Luxembourg	410	1567	4077
Other EU Countries	223	301	1798
Total EU non-Mediterranean countries	***1133***	***11049***	***20563***
Bulgaria	7349	5591	2837
Czech Republic	-	-	306
Slovakia	-	-	219
Hungary	7505	1561	194
Rumania	1500	86	193
Moldova	-	-	6133
Total Eastern European countries	***16354***	***7238***	***9882***
Others	***48741***	***150060***	***191654***
WORLD	**521671**	**791748**	**969367**

Sources: F A O

Tab. 3. World production of apricots with special reference to Mediterranean countries (000 tons)

COUNTRIES	mean 1979-81 (A)	mean 1989-91 (B)	1995	1996	1997	mean 1995 –1997 C	%	variation % C / A	C / B
France	75	113	101	176	157	145	6.3	+92.9	+28.0
Greece	101	94	44	48	30	41	1.8	-59.7	-56.7
Italy	103	174	105	137	106	116	5.0	+12.6	-33.3
Portugal	6	5	5	5	5	5	0.2	-16.7	+0.0
Spain	147	165	139	195	128	154	6.7	+4.8	-6.7
EU Mediterranean countries	***432***	***551***	***394***	***561***	***426***	***460***	***19.9***	**+6.6**	**-16.5**
Croatia	-	-	1	2	1	1	0.1		
Yugoslavia F.R.	24	40	12	29	29	23	1.0	-2.8	-41.7
Slovenia	-	-	1	1	1	1	0.0		
European Mediterranean countries	***24***	***40***	***14***	***32***	***31***	***26***	***1.1***	**+6.9**	**-35.8**
Algeria	32	47	41	80	40	54	2.3	+67.7	+14.2
Egypt	18	35	54	51	55	53	2.3	+196.3	+52.4
Libya	3	17	15	14	15	15	0.6	+388.9	-13.7
Morocco	63	82	88	90	104	94	4.1	+49.2	+14.6
Tunisia	23	19	26	25	26	26	1.1	+11.6	+35.1
African Mediterranean countries	***139***	***200***	***224***	***260***	***240***	***241***	***10.4***	**+73.6**	**+20.7**
Cyprus	1	1	3	2	2	2	0.1	+133.3	+133.3
Israel	11	13	12	8	8	9	0.4	-15.2	-28.2
Lebanon	20	44	56	65	67	63	2.7	+213.3	+42.4
Syria	48	56	30	83	35	49	2.1	+2.8	-11.9
Turkey	159	364	281	241	241	254	11.0	+60.0	-30.1
Asian Mediterranean countries	***239***	***478***	***382***	***399***	***353***	***378***	***16.4***	+58.2	-20.9
TOTAL MEDITERRANEAN COUNTRIES	**834**	**1271**	**1015**	**1253**	**1051**	**1105**	**47.9**	**+32.5**	**-13.0**
European non-Mediterranean countries	***402****	***390****	***227 *****	***350 *****	***277 *****	***285***	***12.3***	**-29.1**	**-26.9**
South Africa	42	51	60	54	72	62	2.7	+47.6	+21.6
African non-Mediterranean countries	***43***	***52***	***62***	***56***	***73***	***64***	***2.8***	**+48.1**	**+22.4**
Afghanistan	47	36	38	37	37	37	1.6	-20.6	+3.7
China	55	81	43	95	95	78	3.4	+41.2	-4.1
Iran	55	88	193	215	198	202	8.7	+267.3	+129.5
Pakistan	36	89	191	188	190	190	8.2	+426.9	+113.1
Asian non-Mediterranean countries	***234***	***339***	***637 ******	***697 ******	***694 ******	***676***	***29.3***	**+188.9**	**+99.4**
United States	110	102	55	72	125	84	3.6	-23.6	-17.6
North and Central America	***118***	***105***	***60***	***77***	***131***	***89***	***3.9***	**-24.3**	**-14.9**
Argentina	19	18	22	18	18	19	0.8	+1.8	+7.4
Chile	13	16	30	30	36	32	1.4	+146.2	+100.0
South America	***32***	***34***	***53***	***49***	***55***	***52***	***2.3***	+63.5	+53.9
Australia	28	29	30	22	27	26	1.1	-6.0	-9.2
Oceania	***35***	***37***	***40***	***34***	***38***	***37***	***1.6***	+6.7	+0.9
WORLD	**1698**	**2228**	**2094**	**2516**	**2319**	**2310**	**100.0**	**+36.0**	**+3.7**

* Including former USSR **Including the European States of former USSR *** Including the Asian States of former USSR.

Sources: FAO

Tab. 4. Imports/exports of fresh apricots in the world (000 tons)

IMPORT			
COUNTRIES	Mean		
	1979-81	1989-91	1994-96
Austria	8434	11609	12147
Belgium-Luxembourg	2850	3778	5571
Denmark	6	118	389
Finland	20	48	190
France	12797	8158	16196
Germany	20425	31286	42794
Greece	-	14	13
Ireland	7	25	37
Italy	11360	14813	25258
Netherlands	464	2590	4542
Portugal	-	211	1452
United Kingdom	2378	4937	6692
Spain	-	222	235
Sweden	33	181	407
Total EU Countries	***58772***	***77989***	***115926***
Iceland	-	3	4
Norway	10	75	85
Switzerland	9328	9964	12115
Total other Western European countries	***9338***	***10043***	***12204***
Ex Yugoslavia	1409	345	-
Croatia	-	-	1821
Slovenia	-	-	1715
Poland	-	-	493
Czechoslovakia	-	-	-
Czech republic	-	-	1950
Slovakia	-	-	118
Hungary	-	431	33
Bulgaria	-	-	98
Rumania	-	-	60
Russian Federation	-	-	1696
Others	-	-	191
Total other Eastern European countries	***1409***	***777***	***8175***
Saudi Arabia	3421	7029	8449
Australia	-	468	963
Canada	913	2738	3018
Kuwait	-	1190	2609
United States	42	1012	1420
USSR	-	643	-
Other non-European countries	3211	3946	4123
Total non-European countries	***7587***	***17026***	***20582***
WORLD	**77106**	**105835**	**156887**

EXPORT			
COUNTRIES	Mean		
	1979-81	1989-91	1994-96
France	1472	22843	34351
Greece	25664	14661	9737
Italy	5807	12152	16420
Portugal	-	-	3
Spain	22864	24522	62038
Total EU Mediterranean countries	***55807***	***74178***	***122549***
Croatia	-	-	6
Yugoslavia R. F.	58	1165	56
Slovenia	-	-	3
F.Y.R.O.M.	-	-	162
Other European Mediterranean countries	***58***	***1165***	***227***
Egypt	4	41	109
Morocco	111	228	215
Tunisia	2401	470	209
Total African Mediterranean countries	***2516***	***739***	***533***
Cyprus	7	5	2
Israel	102	-	-
Lebanon	9812	6611	6700
Syria	92	950	5073
Turkey	145	1623	701
Total Asian Mediterranean countries	***10158***	***9190***	***12476***
TOTAL MEDITERRANEAN COUNTRIES	**68540**	**85272**	**135786**
Netherlands	40	970	2155
Belgium-Luxembourg	78	122	1080
Other EU Countries	13	48	164
Total EU non-Mediterranean countries	***131***	***1141***	***3399***
Bulgaria	-	-	337
Czech Republic	-	-	832
Slovakia	-	-	2124
Hungary	3641	8943	2747
Rumania	-	179	365
Moldova	-	-	345
Total Eastern European countries	***3641***	***9122***	***6750***
Others	***3887***	***10398***	***14000***
WORLD	**76198**	**105933**	**159934**

Sources: FAO

Tab. 5. World production of plums with special reference to Mediterranean countries(000 tons)

COUNTRIES	mean 1979-81 (A)	mean 1989-91 (B)	1995	1996	1997	mean 1995 -1997 (C)	%	variation % C / A	variation % C / B
France	151	155	286	351	211	283	3.7	+ 87.2	+ 82.4
Greece	13	11	9	9	9	9	0.1	- 30.8	- 18.2
Italy	166	131	104	181	116	134	1.8	- 19.5	2.0
Portugal	6	10	18	18	18	18	0.2	200.0	80.0
Spain	95	140	124	146	155	142	1.9	49.1	1.2
E.U. Mediterranean countries	***431***	***447***	***541***	***705***	***509***	***585***	***7.7***	***35.7***	***30.9***
Albania	16	10	5	5	5	5	0.1	- 68.8	- 50.0
Ex Yugoslavia	666	623	327	755	724	602	7.9	-9.6	-3.4
- Bosnia Erzegovina	-	-	*35*	*25*	*23*	*28*	*0.4*	-	-
- Croatia	-	-	*38*	*72*	*47*	*52*	*0.7*	-	-
-Yugoslavia F.R.	-	-	*229*	*619*	*619*	*489*	*6.5*	-	-
-F.Y.R.O.M.	-	-	*17*	*31*	*31*	*26*	*0.3*	-	-
- Slovenia	-	-	*8*	*8*	*4*	*7*	*0.1*	-	-
European Mediterranean countries	***682***	***633***	***332***	***760***	***729***	***607***	***8.0***	***- 11.0***	***- 4.1***
Algeria	14	24	25	30	24	26	0.3	88.1	9.7
Egypt	6	41	51	47	53	50	0.7	738.9	22.8
Libya	1	2	1	1	1	1	0.0	0.0	- 50.0
Morocco	28	41	33	57	46	45	0.6	61.9	10.6
Tunisia	8	7	9	10	10	10	0.1	20.8	38.1
African Mediterranean countries	***57***	***115***	***119***	***145***	***134***	***133***	***1.8***	***132.7***	***15.4***
Cyprus	1	1	1	1	1	1	0.0	0.0	0.0
Israel	18	27	26	26	18	23	0.3	29.6	- 13.6
Lebanon	11	16	24	24	24	24	0.3	118.2	50.0
Syria	24	55	26	25	23	25	0.3	2.8	- 55.2
Turkey	152	183	187	195	195	192	2.5	26.5	5.1
Asian Mediterranean countries	***206***	***282***	***264***	***271***	***261***	***265***	***3.5***	***28.8***	***- 5.9***
TOTAL MEDITERRANEAN COUNTRIES	**1376**	**1477**	**1256**	**1881**	**1633**	**1590**	**21.0**	**15.6**	**7.7**
Germany	429	317	312	338	300	317	4.2	- 26.2	- 0.1
Other E.U.	129	80	*67*	84	80	*77*	1.0	- 40.3	- 3.8
E.U. non-Mediterranean countries	***558***	***397***	***379***	***422***	***380***	***394***	***5.2***	***- 29.5***	***- 0.8***
Bulgaria	*164*	123	*100*	*80*	*80*	*87*	1.1	- 47.2	- 29.5
Ex Czechoslovakia	48	45	30	45	48	41	0.5	- 14.6	- 8.9
- Czech Republic	-	-	*17*	*26*	*32*	*25*	*0.3*	-	-
- Slovakia	-	-	*13*	*19*	*16*	*16*	*0.2*	-	-
Poland	143	62	89	111	127	109	1.4	- 23.8	75.8
Rumania	601	454	252	663	492	469	6.2	- 22.0	3.3
Hungary	163	157	105	114	123	114	1.5	- 30.1	- 27.4
Eastern European countries	***1119***	***841***	***576***	***1013***	***870***	***820***	***10.8***	***- 26.8***	***- 2.5***
Other European countries	***67***	***24***	***23***	***22***	***26***	***24***	***0.3***	***- 64.7***	***- 1.4***
Ex USSR	***873***	***1081***	***578***	***620***	***621***	***606***	***8.0***	***- 30.5***	***- 43.9***
Russian Fed.	-	-	*116*	*166*	*170*	*151*	*2.0*	-	-
European Ex Soviet Union countries	-	-	*278*	*287*	*280*	*282*	*3.7*	-	-
Asian Ex Soviet Union countries	-	-	*184*	*167*	*171*	*174*	*2.3*	-	-
African non-Mediterranean countries	***21***	***19***	***31***	***27***	***38***	***32***	***0.4***	***52.4***	***68.4***
China	381	962	2179	2522	2717	2473	32.6	549.0	157.0
Asian non-Mediterranean countries	***612***	***1371***	***2666***	***2993***	***3270***	***2976***	***39.3***	***386.3***	***117.1***
U S A	642	780	675	864	816	785	10.4	22.3	0.6
North and Central America	***719***	***828***	***765***	***947***	***899***	***870***	***11.5***	***21.0***	***5.1***
Argentina	71	50	56	56	56	56	0.7	- 21.1	12.0
Chile	17	103	140	150	140	143	1.9	743.1	39.2
South America	***97***	***170***	***222***	***238***	***225***	***228***	***3.0***	***135.4***	***34.3***
Oceania	***26***	***28***	***34***	***35***	***34***	***34***	***0.5***	***32.1***	***22.6***
WORLD	**5468**	**6236**	**6530**	**8198**	**7996**	**7575**	**100.0**	**38.5**	**21.5**

Sources: F A O

Tab. 6. Imports/exports of fresh plums in the world (tons)

IMPORT				EXPORT			
COUNTRIES	Mean			COUNTRIES	Mean		
	1979-81	1989-91	1994-96		1979-81	1989-91	1994-96
Austria	2896	2291	3515	France	11594	14023	21515
Belgium-Luxembourg	10618	12742	16810	Greece	10	181	106
Denmark	1040	1235	2224	Italy	34547	16103	33935
Finland	4469	3928	3688	Portugal	1	20	1002
France	12573	11731	10226	Spain	22612	26627	41843
Germany	33784	37482	48157	***Total EU Mediterranean countries***	***68764***	***56954***	***98402***
Greece	-	20	239				
Ireland	916	1133	1970	Croatia	-	-	3
Italy	640	4547	7661	Yugoslavia F.R.	-	-	337
Netherlands	10243	17967	17869	Slovenia	-	-	3
Portugal	-	230	2127	F.Y.R.O.M.	-	-	91
United Kingdom	18762	27506	41244	***Other European Mediterranean countries***	-	-	***434***
Spain	17	2183	5955				
Sweden	1799	1637	2092	Egypt	-	158	237
Total EU countries	***97755***	***124631***	***163777***	Morocco	49	37	10
				Tunisia	2	5	-
Iceland	-	38	83	***Total African Mediterranean countries***	***51***	***200***	***248***
Norway	1117	1037	1608				
Switzerland	2635	3302	4988	Cyprus	23	3	3
Total Other Western European countries	***3752***	***4377***	***6679***	Israel	3	739	536
				Lebanon	7223	8407	10000
				Syria	120	1471	4883
Croatia	-	-	1080	Turkey	1794	6464	4421
Slovenia	-	-	510	***Total Asian Mediterranean countries***	***9163***	***17083***	***19843***
Poland	-	-	394	**TOTAL MEDITERRANEAN COUNTRIES**	***77978***	***74237***	***118926***
Czechoslovakia	-	-	-				
Czech Republic	-	-	6105	Netherlands	1275	8314	9054
Slovakia	-	-	434	Belgium-Luxemburg	1356	1280	6257
Hungary	-	48	36	Other EU Countries	4149	6330	5311
Bulgaria	-	-	75	***Total EU Non-Mediterranean countries***	***6780***	***15924***	***20621***
Rumania	-	15	275				
Russian Federation	-	-	23944	Bulgaria	2871	6015	3527
Others	-	-	448	Czech Republic	-	-	396
Total Other Eastern European countries	-	***63***	***33300***	Slovakia	-	-	876
				Hungary	6669	6626	13563
Saudi Arabia	917	5884	9823	Rumania	20233	17384	6140
Brazil	1783	6735	22235	Moldova	-	-	5289
China	-	24293	22829	***Total Eastern European countries***	***29773***	***30025***	***29792***
Hong Kong	-	10034	15545				
United States	18762	22640	21948	Chile	3066	39051	58440
USSR	523	606	-	United States	23389	71542	61841
Other non-European countries	16025	44756	50614	South Africa	5833	12196	14870
Total non-European countries	***38010***	***114950***	***142995***	***Total Others***	***49593***	***137561***	***157809***
WORLD	**139517**	**244020**	**346751**	**WORLD**	**164485**	**257748**	**327148**

Sources: F A O

Tab. 7.1. World production of sweet cherries with special reference to Mediterranean countries (000 tons)

COUNTRIES	mean 1979-81 (A)	mean 1989-91 (B)	1995	1996	1997	mean 1995-1997 (C)	%	variation % C / A	variation % C / B
France	116	80	63	77	66	69	4.2	-40.8	-14.2
Greece	21	38	49	53	50	51	3.1	+141.3	+33.3
Italy	137	109	120	137	112	123	7.6	-10.2	+12.8
Portugal	11	12	8	9	9	9	0.5	-21.2	-27.8
Spain	79	66	56	75	65	65	4.0	-17.3	-1.0
E.U. Mediterranean countries	***364***	***305***	***296***	***351***	***302***	***316***	***19.5***	***-13.1***	***+3.7***
Croatia	-	-	6	7	5	6	0.4		
Yugoslavia F.R.	48	62	25	32	32	30	1.8	-38.2	-52.2
Slovenia	-	-	7	5	2	5	0.3		
European Mediterranean countries	***48***	***62***	***38***	***44***	***39***	***40***	***2.5***	***-16.0***	***-34.9***
Algeria	2	3	5	3	3	4	0.2	+83.3	+22.2
Morocco	-	3	1	2	3	2	0.1		-33.3
African Mediterranean countries	***2***	***6***	***6***	***5***	***6***	***6***	***0.3***	***+183.3***	***-5.6***
Cyprus	1	1	1	1	1	1	0.1	+0.0	+0.0
Israel	-	1	1	2	1	1	0.1		+33.3
Lebanon	19	45	80	86	87	84	5.2	+343.9	+87.4
Syria	11	22	41	40	41	41	2.5	+269.7	+84.8
Turkey	94	142	186	200	200	195	12.1	+107.8	+37.6
Asian Mediterranean countries	***125***	***211***	***309***	***329***	***330***	***323***	***19.9***	***+158.1***	***+52.9***
TOTAL MEDITERRANEAN COUNTRIES	**539**	**584**	**649**	**729**	**677**	**685**	**42.3**	**+27.1**	**+17.3**
Bulgaria	61	69	75	50	50	58	3.6	-4.9	-15.5
Germany	130	115	140	160	80	127	7.8	-2.6	+10.5
Poland	26	14	36	37	36	36	2.2	+41.6	+159.5
Rumania	75	69	60	89	74	74	4.6	-0.9	+7.2
Hungary	30	28	20	22	22	21	1.3	-28.9	-23.8
USSR	109	132	62	85	80	76	4.7	-30.8	-42.8
European non-Mediterranean countries	***540***	***524***	***533***	***574***	***447***	***518***	***32.0***	***-4.1***	***-1.1***
Iran	53	87	157	173	156	162	10.0	+205.7	+86.2
Asian non-Mediterranean countries	***71***	***106***	***212 ****	***212****	***204 ****	***209***	***12.9***	***+194.8***	***+97.5***
United States	154	150	150	140	202	164	10.1	+6.5	+9.3
North and Central America	***163***	***156***	***157***	***147***	***209***	***171***	***10.5***	***+4.9***	***+9.6***
Chile	6	14	20	22	25	22	1.4	+272.2	+59.5
South America	***9***	***20***	27	***29***	32	***29***	***1.8***	***+225.9***	***+46.7***
Oceania	***6***	***7***	***8***	***7***	***7***	***7***	***0.5***	***+22.2***	***+4.8***
Others	***1***	***1***	***1***	***1***	***1***	***1***	***0.1***	***+0.0***	***+0.0***
WORLD	**1329**	**1398**	**1587**	**1699**	**1577**	**1621**	**100.0**	**+22.0**	**+16.0**

* Including the Asian States of former USSR

Sources: F A O

Tab. 7.2. World production of sour cherries with special reference to Mediterranean countries (000 tons)

COUNTRIES	mean 1979-81 (A)	mean 1989-91 (B)	1995	1996	1997	mean 1995-97 (C)	%	variation % C / A	variation % C / B
France	-	-	-	-	-	-	-	-	-
Greece	8	3	3	2	2	2	0.2	-70.4	-15.7
Italy	-	-	6	7	6	6	0.6	-	-
Portugal	1	1	1	1	1	1	0.1	+0.0	+0.0
Spain	-	-	1	1	1	1	0.1	-	-
E.U. Mediterranean countries	***9***	***4***	***11***	***11***	***10***	***11***	***1.1***	***+20.1***	***+183.2***
Croatia	-	-	7	7	6	7	0.7	-	-
Yugoslavia F.R.	70	129	61	86	86	78	7.9	+10.4	-39.6
Slovenia	-	-	2	1	1	1	0.1	-	-
European Mediterranean countries	***70***	***129***	***70***	***94***	***93***	***86***	***8.7***	***+21.8***	***-33.4***
Algeria	-	-	-	-	-	-	-	-	-
Egypt	-	-	-	-	-	-	-	-	-
Libya	-	-	-	-	-	-	-	-	-
Morocco	-	-	-	-	-	-	-	-	-
Tunisia	-	-	-	-	-	-	-	-	-
African Mediterranean countries	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
Cyprus	-	-	-	-	-	-	-	-	-
Israel	-	-	-	-	-	-	-	-	-
Lebanon	-	-	-	-	-	-	-	-	-
Syria	-	-	-	-	-	-	-	-	-
Turkey	57	87	92	110	115	106	10.7	+86.5	+21.9
Asian Mediterranean countries	***57***	***87***	***92***	***110***	***115***	***106***	***10.7***	***+86.5***	***+21.9***
TOTAL MEDITERRANEAN COUNTRIES	**136**	**219**	**173**	**215**	**218**	**202**	**20.5**	**+48.7**	**-7.8**
Bulgaria	25	33	12	16	16	15	1.5	-41.3	-56.0
Germany	121	117	110	115	64	96	9.8	-20.6	-17.9
Poland	38	82	144	149	136	143	14.5	+276.3	+75.1
Hungary	47	71	48	66	64	59	6.0	+26.2	-16.8
USSR	202	209	109	180	200	163	16.5	-19.2	-22.1
European non-Mediterranean countries	***448***	***538***	***515***	***615***	***564***	***565***	***57.2***	***+26.0***	***+5.0***
Iran	9	33	65	65	65	65	6.6	+622.2	+97.0
Asian non-Mediterranean countries	***9***	***33***	***65***	***65***	***65***	***65***	***6.6***	***+622.2***	***+97.0***
United States	79	100	179	123	131	144	14.6	+83.5	+43.9
North and Central America	***86***	***106***	***190***	***132***	***140***	***154***	***15.6***	***+79.8***	***+44.8***
Others	***1***	***4***	***2***	***2***	***-***	***1***	***0.1***	***-8.0***	***-62.6***
WORLD	**680**	**900**	**945**	**1029**	**987**	**987**	**100.0**	**+45.1**	**+9.7**

Sources: F A O

Tab. 8.1. Imports/exports of sweet cherries in the world (tons)

IMPORT			
COUNTRIES	Mean		
	1979-81	1989-91	1994-96
Austria	1425	1987	1848
Belgium-Luxembourg	6683	8698	4160
Denmark	486	1043	566
Finland	194	621	667
France	1531	2887	3626
Germany	28156	40327	26748
Greece	-	446	51
Ireland	95	124	75
Italy	2154	4503	2621
Netherlands	11176	16158	10731
Portugal	-	11	162
United Kingdom	4805	7967	10737
Spain	-	190	840
Sweden	866	1054	945
Total EU Countries	**57572**	**86017**	**63779**
Iceland	-	1	2
Norway	226	349	367
Switzerland	2745	1984	1441
Total other Western European countries	***2971***	***2334***	***1810***
Ex Yugoslavia	-	-	-
Croatia	-	-	1061
Slovenia	-	-	374
Poland	-	-	-
Ex Czechoslovakia	-	-	-
Czech Republic	-	-	883
Slovakia	-	-	79
Hungary	-	-	-
Bulgaria	-	-	-
Rumania	-	-	11
Russian Federation	-	-	552
Other countries	-	-	248
Total other Eastern European countries	-	-	***2960***
Saudi Arabia	1211	540*	524*
Australia	-	129	141
Canada	6888	7033	5157
Kuwait	-	794	2300
United States	617	1481	1722
USSR	-	-	-
Other non-European countries	4300	16665	32182
Total non-European countries	***13015***	***26102***	***41502***
WORLD	**73558**	**114453**	**110051**

EXPORT			
COUNTRIES	Mean		
	1979-81	1989-91	1994-96
France	11936	15056	8033
Greece	2810	7132	7311
Italy	19278	5682	10009
Portugal	2	142	61
Spain	954	2136	8452
Total EU Mediterranean countries	***34981***	***30149***	***33866***
Croatia	-	-	9
Yugoslavia F R.	-	-	-
Slovenia	-	-	3
F.Y.R.O.M.	-	-	570
Other European Mediterranean countries	-	-	***582***
Egypt	-	-	-
Morocco	4	21	12
Tunisia	-	-	-
Total African Mediterranean countries	***4***	***21***	***12***
Cyprus	65	5	1
Israel	-	-	-
Lebanon	4341	3363	5000
Syria	13	552	6510
Turkey	-	5221	13025
Total Asian Mediterranean countries	***4419***	***9140***	***24536***
TOTAL MEDITERRANEAN COUNTRIES	**39403**	**39311**	**58997**
Netherlands	217	3028	2224
Belgium-Luxembourg	2683	2607	3147
Other EU countries	8511	7936	2518
Total EU non-Mediterranean countries	***11411***	***13571***	***7889***
Bulgaria	5355	4928	-
Czech Republic	-	-	1970
Slovakia	-	-	119
Hungary	906	1333	-
Rumania	-	574	2732
Moldova	-	-	501
Total Eastern European Countries	***6261***	***6835***	***5321***
United States	9012	22393	27636
Other countries	***1173***	***4609***	***8067***
WORLD	**67260**	**86718**	**107910**

Sources: F A O

Tab. 8.2. Imports/exports of sour cherries in the world (tons)

IMPORT				EXPORT			
COUNTRIES	Mean			COUNTRIES	Mean		
	1979-81	1989-91	1994-96		1979-81	1989-91	1994-96
Austria	731	2458	1672	France	-	-	482
Belgium-Luxembourg	-	-	3314	Greece	94	-	214
Denmark	-	-	923	Italy	-	-	2169
Finland	-	-	21	Portugal	-	-	-
France	-	-	837	Spain	-	-	608
Germany	-	-	24136	*Total Mediterranean countries*	*94*	-	*3474*
Greece	-	-	1				
Ireland	-	-	55	Croatia	-	-	-
Italy	-	-	318	Ex Yugoslavia	4790	2379	1228
Netherlands	-	-	4483	Slovenia	-	-	-
Portugal	-	-	1	F.Y.R.O.M.	-	-	-
United Kingdom	-	-	1752	*Other European Mediterranean countries*	*4790*	*2379*	*1228*
Spain	-	-	31				
Sweden	-	-	173	Egypt	-	-	-
Total UE countries	*731*	*2458*	*37715*	Morocco	-	-	-
				Tunisia	-	-	-
Iceland	-	-	-	*Total African Mediterranean countries*	-	-	-
Norway	-	-	-				
Switzerland	-	-	-	Cyprus	-	-	
Total other Western European countries	-	-	-	Israel	-	-	-
				Lebanon	-	-	-
Ex-Yugoslavia	-	339	907	Syria	-	-	-
Croatia	-	-	-	Turkey	-	10	-
Slovenia	-	-	-	*Total Asian Mediterranean countries*	-	*10*	-
Poland	-	-	13	**TOTAL MEDITERRANEAN COUNTRIES**	**4884**	**2389**	**4702**
Czechoslovakia	-	-	-				
Czech Republic	-	-	91	Austria	74	34	187
Slovakia	-	-	-	Belgium-Luxembourg	-	-	1500
Hungary	-	84	345	Other EU countries	-	-	3645
Bulgaria	-	-	-	*Total EU non-Mediterranean countries*	*74*	*34*	*5332*
Rumania	-	-	-				
Russian Federation	-	-	-	Bulgaria	-	-	-
Others	-	-	-	Czech Republic	-	-	728
Total other Western European countries	-	*423*	*1356*	Slovakia	-	-	-
				Hungary	3913	13835	14391
Saudi Arabia	-	-	-	Rumania	-	-	-
Australia	-	-	-	Poland	-	2333	11230
Canada	-	-	-	*Total Eastern European countries*	*3913*	*16168*	*26349*
Kuwait	-	-	-				
United States	-	193	18	United States	630	483	4832
USSR	-	-	-				
Other non-European countries	-	-	723	*Others*	-	-	-
Total non-European countries	-	*193*	*741*				
WORLD	**731**	**3074**	**39813**	**WORLD**	**9501**	**19074**	**41214**

Sources: F A O

Tab. 9. World production of in-shell almonds with special reference to Mediterranean countries (000 tons)

COUNTRIES	mean 1979-81 (A)	mean 1989-91 (B)	1995	1996	1997	mean 1995 -1997 (C)	%	variation % C/A	variation % C/B
France	4	4	4	4	4	4	0.3	0.0	0.0
Greece	48	57	58	43	43	48	3.7	0.0	- 15.8
Italy	174	106	90	84	101	92	7.1	- 47.3	- 13.5
Portugal	6	20	7	8	12	9	0.7	+ 50.0	- 55.0
Spain	243	277	159	242	367	256	19.7	+ 5.3	- 7.6
EU Mediterranean countries	***475***	***464***	***318***	***381***	***527***	***409***	***31.5***	***-14.0***	***-11.9***
Ex Yugoslavia	4	5	3	3	3	3	0.2	- 25.0	- 40.0
- Croatia	-	-	2	2	2	2	0.2	-	-
European Mediterranean countries	***4***	***5***	***3***	***3***	***3***	***3***	***0.2***	***-25.0***	***-40.0***
Algeria	5	13	20	34	19	24	1.9	+ 386.7	+ 87.2
Egypt	-	-	-	-	-	0	0.0	-	-
Libya	6	33	30	29	30	30	2.3	+ 394.4	- 10.1
Morocco	38	61	46	34	87	56	4.3	+ 46.5	- 8.7
Tunisia	34	42	35	42	51	43	3.3	+ 25.5	+ 1.6
African Mediterranean countries	***83***	***149***	***131***	***139***	***187***	***152***	***11.7***	***+ 83.5***	***+ 2.2***
Cyprus	3	2	3	1	2	2	0.2	- 33.3	0.0
Israel	3	3	3	3	3	3	0.2	0.0	0.0
Lebanon	6	13	28	37	37	34	2.6	+ 466.7	+ 161.5
Syria	10	27	34	55	26	38	3.0	+ 283.3	+ 42.0
Turkey	30	46	37	43	33	38	2.9	+ 25.6	- 18.1
Asian Mediterranean countries	***52***	***91***	***105***	***139***	***101***	***115***	***8.9***	***+ 121.2***	***+ 26.4***
TOTAL MEDITERRANEAN COUNTRIES	**614**	**709**	**557**	**662**	**818**	**679**	**52.3**	**+ 10.6**	**- 4.2**
Bulgaria	2	2	1	1	1	1	0.1	- 50.0	- 40.0
EX USSR	7	18	-	-	-	-	-	-	-
- European Ex USSR countries			1	1	1	1	0.1	-	-
European non-Mediterranean countries	***9***	***20***	***2***	***2***	***2***	***2***	***0.2***	***- 76.9***	***- 89.8***
Afghanistan	9	9	9	9	9	9	0.7	0.0	0.0
China	11	17	19	22	22	21	1.6	+ 90.9	+ 23.5
Iran	47	67	79	91	76	82	6.3	+ 74.5	+ 22.4
Pakistan	23	31	49	49	49	49	3.8	+ 113.0	+ 58.1
Asian non-Mediterranean countries	***90***	***124***	***190 ****	***188 ****	***172 ****	***183***	***14.1***	***+ 103.5***	***+ 47.7***
United States	273	414	280	386	573	413	31.8	+ 51.3	- 0.2
North and Central America	***273***	***414***	***280***	***386***	***573***	***413***	***31.8***	***+ 51.3***	***- 0.2***
Other countries	***14***	***21***	***8***	***29***	***29***	***22***	***1.7***	***+ 57.1***	***+ 4.8***
WORLD	**1000**	**1288**	**1037**	**1267**	**1594**	**1299**	**100.0**	**+ 29.9**	**+ 0.9**

* Including the Asian States of former USSR

Sources: F A O

Tab. 10. Imports/exports of shelled almonds in the world (tons)

IMPORT			
COUNTRIES	Mean		
	1979-81	1989-91	1994-96
Austria	1385	2883	2382
Belgium-Luxembourg	2263	3643	4628
Denmark	2156	4013	5126
Finland	-	995	1208
France	15569	20147	19865
Germany	35553	54033	57806
Greece	10	1571	1911
Ireland	335	288	444
Italy	3204	10464	9993
Netherlands	4893	11516	10063
Portugal	-	500	1072
United Kingdom	8354	11515	9241
Spain	742	3672	16933
Sweden	3981	5128	4907
Total EU countries	***78446***	***130367***	***145579***
Iceland	6	12	20
Norway	2666	2416	2208
Switzerland	5447	7374	7431
Total other Western European countries	***8120***	***9801***	***9658***
Ex Yugoslavia	653	834	-
Croatia	-	-	-
Slovenia	-	-	-
Poland	78	100	375
Czechoslovakia	-	-	-
Czech Republic	-	-	91
Slovakia	-	-	-
Hungary	-	22	204
Bulgaria	-	-	49
Rumania	-	68	3
Russian Federation	-	-	-
Total other Eastern European countries	***731***	***1023***	***722***
Saudi Arabia	993	1528	1154
Australia	982	1933	1713
Canada	3799	7605	7628
China	-	3065	2289
Japan	8796	22160	19671
United Arab Emirates	632	4350	1905
USSR	6217	4163	-
Other non-European countries	5256	15210	21948
Total non-European countries	***26675***	***60014***	***56309***
WORLD	**113972**	**201205**	**212268**

EXPORT			
COUNTRIES	Mean		
	1979-81	1989-91	1994-96
France	869	1224	1881
Greece	458	3210	1006
Italy	5863	2988	1437
Portugal	859	888	561
Spain	18841	24665	28893
Total EU Mediterranean countries	***26890***	***32975***	***33779***
Croatia	-	-	-
Ex Yugoslavia	-	-	-
Slovenia	-	-	-
F.Y.R.O.M.	-	-	-
Other European Mediterranean countries	***-***	***-***	***-***
Egypt	-	6	6
Morocco	1588	1201	1098
Tunisia	1141	187	127
Total African Mediterranean countries	***2729***	***1394***	***1231***
Cyprus	44	-	1
Israel	-	56	-
Lebanon	-	-	-
Syria	1	12	310
Turkey	47	387	269
Total Asian Mediterranean countries	***93***	***455***	***580***
TOTAL MEDITERRANEAN COUNTRIES	**29711**	**34824**	**35589**
Germany	2605	3167	7067
Belgium-Luxembourg	55	229	1238
Other EU countries	941	2682	3265
Total EU non Mediterranean countries	***3601***	***6078***	***11570***
Bulgaria	-	-	51
Czech Republic	-	-	-
Slovakia	-	-	-
Hungary	-	1	34
Rumania	-	-	2
Poland	-	-	23
Total Eastern European countries	***-***	***1***	***110***
United States	68410	131361	200626
Other countries	***577***	***4468***	***5389***
WORLD	**102299**	**176732**	**253284**

Sources: F A O