

**TREE NUTS ECONOMIC OUTLOOK
IN THE MEDITERRANEAN AREA.
THE SELECTION OF MAIN RESEARCH ISSUES**

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1.- INTRODUCTION

Tree nuts have been cultivated in the Mediterranean countries for centuries and they are of great economic significance in the Mediterranean Area. They have been traditionally consumed in all Mediterranean countries, as a component of the typical Mediterranean diet, but also exported mainly to Europe. Their cultivation is important for producers, grounds for development of agrofood firms and important source of foreign income for some countries.

The FAO decided to launch, within the general research network of tree nuts in the Mediterranean Area, a sub network to study economic issues and they assigned me to act as the coordinator.

This report tries to review the most important economic factors that affect their production, transformation, trade and consumption. It gathers my personal views but also some of the concerns that were discussed, in a meeting held in Zaragoza (Spain) at the beginning of June, with participants from different Mediterranean countries.

Along the report there are references to Mediterranean countries but also to United States because of the technical and commercial improvements occurred in this country and their implications for the Mediterranean Area. The final aim is to indicate research issues that could be of interest for future projects.

Four nuts cultivated in the Mediterranean have been selected: A) almonds, B) hazelnuts, C) pistachios and D) walnuts.

2.- PRODUCTION

2.1 Trends

A) Almonds

In the last two decades (1970-1990) world production has more than doubled. United States has taken the biggest share of that increase and it has been consolidating a clear world leadership reaching more than 60% of the total production. The rest is

mainly produced in the Mediterranean Area. Spain is the second largest producer and his production has been in between 15% to 20%. Greece, Italy, Morocco, Portugal, Tunisia and Turkey amount around 20%. Thus, the Mediterranean Area accounts for around 35% of world production. Spain and, especially, Italy have been loosing world production shares

B) Hazelnuts

World production has almost doubled in the last two decades. Along that period of time Turkey has been the dominant producer and last figures indicate that still this country supplies around 70% of total production. Far behind comes Italy with around 20%. Both countries have increased their production at annual rates of 4% and 2,3%, respectively.

USA and Spain account for around 7% of the total production divided in similar shares. The first country has been growing at an annual rate of 3,7% and the second at 1,45%. Greece, France and Portugal are small producers. The Mediterranean Area accounts for around 95% of total world production.

In the last two decades Turkey has increased 30% his hazelnut cultivated area which has duplicated his production indicating that productivity has improved at a great rate.

C) Pistachios

During the last 20 years the increase of world pistachio production has been in between 4 to 5 times, but it has been during the last decade when this change has been more outstanding.

At the beginning of that period of time Iran accounted for more than 80% of total production. Recently, Iran is still the leader but his share has come down to between 30% to 50%, depending on the year. United States has emerged from around figures of 10% to 30%. Turkey has already reached a production share in between

20% to 30% of total world production. Syria, Greece and Italy are the next most important producers. The Mediterranean countries together account for 25% to 45% depending on the year to year variations that occur in Turkey.

D) Walnuts

United States and China cover 75% of total world production. In United States production during the last 5 years has remained quite stable. Turkey production amounts to more than 10%, and between France and Italy less than 10%. The Mediterranean Area, on average, supplies around 20% of total production.

2.2 Main potentials and restrictions

There are some general considerations that apply to all different tree nuts and some potential developments could be mentioned.

Some Mediterranean countries have potential areas, where land and climatological conditions could be appropriate to plant tree nuts. Also, there are other areas that could be irrigated and use of modern techniques implemented.

Old varieties could be improved or new varieties introduced in many countries. If a Mediterranean market identity should be preserved then the improvement of local varieties will be a better approach in the long run.

Nuts, especially if they are grown on dry lands, do not require the use of intensive input applications. Nevertheless, so far, there has not been much consideration about the possibilities of using more ecological techniques and how consumers may react and pay a premium for these products.

There are different grade systems which are applied by farmers. They attend national classifications but also commercial end-users. A clarification, in that respect, will benefit the entire sector.

Farmers are highly disorganized in most countries. Great improvements could be achieved in that respect that will affect farmers income and it will result in a more

orderly supply.

Some restrictions could also be referred to. Mediterranean nuts supply is not well known because of a lack of accurate information about cultivated area and yields. As a result of it, speculative positions are taken by farmers that have misleading consequences. More accurate information should help the future of many farmers and base their decisions based on sound economic grounds.

There are marginal areas, mainly in hilly areas, with low precipitation which are planted with tree nuts. Their yields have been normally very low and without much scope for improvement. Not only productivity has been poor in those areas but also product homogeneity has been rarely achieved and their quality standards have been normally below industrial requisites.

Inefficient farms structures and small farm sizes along the Mediterranean countries have a negative impact on supply prices. Some orchards have been able to survive because of low salaries as mechanization has been a difficult task to achieve. Lack of other productive alternatives and part time farming could be other reasons why still many growers have not left their farms. In many cases the value of land close to urban areas maintains growers waiting for the occasion to sell their farms.

Water shortages and the need of heavy investments on irrigated projects along the Mediterranean countries, prevent from having a bigger irrigated area dedicated to tree nuts.

It is difficult to foresee an economic future for those areas unless environmental aspects are incorporated in the analysis. It is hard to understand that at the same time there are in the European Union incentives to uproot nut trees and large sums of money are invested in afforestation. Nevertheless, the European policy of subsidizing farming systems to increase their quality has had a beneficial impact. It is recognized that cultivation has improved and farmers take more care than a few years ago.

A) Almonds

Potentialities may come more from higher yields than from area expansion. As

a reference, the great increase of yields occurred in United States has been the result of many factors but irrigation and mechanization probably have been the two most important.

In the Mediterranean countries more productive variety combinations with higher tree density per hectare and, in general, learning how to get more from their orchards through better pollination strategy, irrigation and fertilization planning are key elements

United States has followed a policy, so far, of concentrating production in a reduced number of varieties. This approach has had clear benefits, with a more homogeneous supply in the market and a clear preference by transformers of soft shell almonds. Recent plantations have switched towards hard shell varieties which have been commonly produced in Spain.

There are great stock variations, from year to year, as a consequence of climatological changing conditions in countries, like Spain, where almonds are cultivated on dry areas. The United States controls his stocks through its marketing orders and, consequently, prices are more stable. Spain should take joint decisions with California to control almond supply.

B) Hazelnuts

World production of hazelnuts rely strongly on Turkey and his climatic conditions resulting in alternate ups and downs production.

New areas are planned in Turkey to cultivate this crop and so far they have taken advantage of low salaries. The question remains if those salary levels will be able to be maintained in the next decade, especially if the country enters the European Union or it has closer linkages with this economic block

Yields have increased constantly in Turkey but there are more opportunities to improve them which could be materialized in the future.

The new and more liberal policy that the Turkish government follows with respect to producers protection may act negatively for growers, as minimum prices will

not exist or will not be guaranteed to the extent that it has been so far.

Stocks are not stored in an efficient manner. There is a tendency when prices go up to stock the production on producers hands but in a very disseminated manner and without any global control. It is difficult to predict the amount of those stocks, at a certain point in time, and their unfortunate repercussions.

There are certain areas, especially in Spain, where water shortages are introducing cost distortions and limitations for future supply. The price of water is raising and competition with other productive areas is difficult to achieve. It has been estimated that competitive production should not be more expensive than 0,8 Ecu/kg.

C) Pistachios

Lack of quality standards has induced California producers, through a voluntary Market Agreement, to provide uniform quality standards for California pistachios. Fifteen processors representing 70% of total production have agreed to forbid the blending of A/O product with clean splits, to forbid the blanching of any product and to establish that all products must be appropriately labeled as artificially opened or natural splits. This situation about lack of standards can be extended to Iran and Turkey.

D) Walnuts

In United States calculated gross returns per bearing hectare of walnuts are similar to almonds, greater than hazelnuts and lower than pistachios. China has a great potential to improve yields through better inputs use and technological applications.

2.3 Future supply

Cultivated area and yields are the two main elements that will influence future supply.

A) Almonds

In United States it has been reported a slight decrease in total almond cultivated area between 1988 and 1992. However, yields have followed an increasing trend that offsets the area decline. Around 15% of the total area corresponds to non-bearing trees.

In United States with recent changes in federal laws and the increased emphasis on protection of endangered species, it is obvious that there will be less water available to farmers under the Central Valley Water Project, and probably in the future under the State Water Project.

In Spain there has been a big controversy about area and yields statistics. Better statistics are now available because of the European Union programs that help producers to improve their orchards which have generated more accurate figures. There are indications of plantings decrease as a consequence of the European Union policy to uproot trees. Yields should be following an upward trend enough to compensate area losses. Lack of precipitations and frosts are the main negative elements.

In the Mediterranean Area it is worth mentioning Tunisia which has been increasing almond areas, in the last few years, and he should increase production in the near future

B) Hazelnuts

There are expectations that around 50 000 thousand hectares could be uprooted in Italy and Spain during the next few years. This may have an impact of around 30 000 tons drawn away from the market. They could be compensated partially by a raise in productivity and partially with the entrance of production of trees which were planted not long time ago

There are plans in Turkey to continue his expansion of hazelnut cultivation which might reach, by year 2.000, up to 500.000 hectares and a production, in good years, of around 450 000 tons. There is still margin to increase yields by the use of more fertile soils, irrigated land and more efficient inputs use.

United States has also plans to expand production but not with such rapid growth. Of his total planted area around 20% corresponds to non-bearing trees.

C) Pistachios

It is expected than in the next 10 years world production will increase with a great expansion in United States. This country foresees to be the first supplier in the world or at least to come close to Iranian production. In this country there is more than 50.000 hectares with non-bearing tress ready to star production. It represents about one fourth of his total area.

Turkey also has important expansion plans. According to Turkish officials production will be intensified in the South East Anatolian region. There are other countries which are intensifying their production and total world production could reach in between 300.000 tons to 350 000 tons, in five years time

D) Walnuts

In United States total area dedicated to walnuts has remained quite constant over the last decade. In California there are limitations to use more land and the actual area will be partitioned among different nuts

3. TRADE

3.1 Trends

A) Almonds

Since 1970 total exports have multiplied by four. Shelled almond exports amount to almost 15 times, in value, what is exported in shell. United States has reached around 80% of total world exports. Spain is the second exporter with less than 15% and the rest is dispersed among other Mediterranean countries, which altogether

account for around 20%.

The European Union is the main importer with more than 50% of total imports value. The Pacific Rim nations come on second place with around 20% and a rapid increase during the last decade. Germany accounts for more than 30% of total imports; the followers are Japan, with an increasing trend, and France, in the opposite direction, which account for 15% and 10%, respectively. In the last twenty years the Asian nations have been increasing their share and the European countries, except Germany, have been losing weight.

B) Hazelnuts

Since 1970 total world exports have more than doubled. Turkey along the years has increased his share from around 70% to over 75% of total exports. Italy has been quite stable exporting in between 15% to 20%, Spain has decreased from 7% to less than 4%, and United States has reached in between 3% to 4% following an increasing trend. The Mediterranean Area covers more than 95% of total worldwide exports.

Germany has been the main importer reaching over 40% of total world imports and duplicating his imports in that period of time. Around 75% of total exports go to European countries.

C) Pistachios

Iran has been and still is the main world exporter spite restrictions to export to United States. Exports started in the eighties and Iran was the unique country. Most recent figures indicate that United States exports around 20% of total world exports.

Germany is also the main importer of pistachios in the world. Spain and France are the next but they import one third of the quantity imported by Germany. There is an upward importing trend in most European countries.

D) Walnuts

United States is a clear leader accounting for more than 50% of total world exports. The Mediterranean Area only exports less than 10% of the total and France is the biggest exporter in that Area.

In the last decade imports of in-shell walnuts into Europe have multiplied by three reaching almost 18.000 tons. United Kingdom, France and Germany are the main importers accounting for around 60% of the total.

In that period of time shelled imports have duplicated and around 70% come from China and India, which have similar shares.

3.2 Factors affecting its development

The European Community has granted preferential agreements along the years to Turkey and the United States. Quotas were established with no tariff payments for Turkey (25 000 tons) and a 2% tariff for United States (45 000 tons). Imported quantities over those quotas had to pay 4% from Turkey and 7% from United States.

A) Almonds

Promotion programs for Californian almonds has had a positive impact on fresh consumption. Homogeneous products, of an standardized quality, and exports sold by big commercial groups has made possible to transformers to be more inclined to buy almonds from California.

B) Hazelnuts

Traditionally Turkey has been controlling his exports but importers complain that their standards are not safe and problems arise every year, such as high humidity, abundant quantities of shrivelled and very small kernels. These deficiencies affect

long term contracts.

C) Pistachios

There is a lack of any established quality or grading standards. Artificially split pistachios are introducing quality problems among traders.

D) Walnuts

California through big cooperatives and in a more organized marketing approach has been able to dominate European markets.

3.3 Future prospects

There are great expectations about expanding trade in the near future as a result of more liberalized world markets. Two significant changes have occurred quite recently: the GATT and NAFTA agreements. The first applies to all countries and the second to United States, Canada and Mexico. GATT has been replaced by the newly formed World Trade Organization (WTO). It is too early to say anything about the impacts of diminishing tariffs under the GATT agreement because these provisions are entering into effect the 1st of July 1995.

But it is already noticeable that USA exports have increased quite drastically to Mexico, in a short period of time, because of NAFTA agreements and before the peso crisis. Several Central and South American nations have expressed an interest to become part of NAFTA, which would most likely extend favorable tariff treatment to USA nuts.

A) Almonds

Almonds are better known than any other nut in the market except of peanuts.

Any general increase that could affect to all nuts will have a primary impact on almond trade.

B) Hazelnuts

In this case Turkey also plays a major role and there are expectations that trade will increase. A more prepared product will be supplied increasing the amount of shelled nuts. The liberalization policy undertaken by the Turkish government could have implications for the industry with a greater concentration able to meet trade demands.

In the future, as it is now the case, Turkey will be the price setter for the world market. It is important for the entire sector that this country should take the appropriate decisions in years of over supply. Strict trade restriction of products with poor quality has to be enforced.

C) Pistachios

There are good prospects based on the general positive trade framework reinforced by the United States pistachio growers association expectations about more market outlets all over the world. For example, as a result of NAFTA agreements trade is increasing with Mexico and 1994 trade figures went up around 30% from previous year.

D) Walnuts

Adoption of uniform product standards worldwide should become an important task in the future and important element to increase trade.

4. CONSUMPTION

4.1 Trends

Nuts have been facing growing consumer markets and still this situation prevails in most countries.

A) Almonds

Almond consumption has increased drastically in the last two decades. Consumption has expanded by around 3 times in United States and Japan, and around 2 times in Germany, Spain, Italy, France and United Kingdom. Europe accounts for 60% of total almond world consumption. However, it seems that world consumption has been stable in the last 5 years.

B) Hazelnuts

Hazelnuts world consumption has also been growing and in the last thirty years figures have doubled. The most important consumers located in central Europe, such as, Germany, Switzerland, Holland and Belgium are still increasing their per capita consumption

Only 10% is considered that goes for consumption in-shell. The rest is shelled, but around 80% is for industrial purposes and another 10% for direct human consumption.

Per capita consumption shows great differences among European countries. Germany is over 1 kg followed by Greece, Belgium-Luxembourg and Italy over 0,8 kg

C) Pistachios

This nut is still increasing the number of new consumers and it is considered

as a novelty product in comparison to other nuts.

Pistachio consumption in Europe has gone up by more than 60% in the last five years and by more than 300% in the last ten years.

D) Walnuts

Greece has the biggest per capita consumption of walnuts, around 2 kg. Most of the European countries are under 0,5 kg.

4.2 Consumer behavior

Snacks consumption is growing in some developed markets. Nuts are offered in such a way that they can be distinguished by consumers. Although, most recently, consumers search for variety and they are beginning to prefer an assortment of nuts, mixing traditional and not so well known nuts. This trend has not been so evident in some producing countries, because their consumers do not have such high incomes and local produce is available at significant lower prices.

There is a firm tendency to buy more already prepared products that include several ingredients. Nuts are a component of 500 to 1.000 different products, depending on the market and the kind of nut.

Brands benefit from more advanced commercial channels, in the case of modern retail outlets, to expand their market share but also they have to compete with distribution brands that gather supplies of diverse origin.

According to several studies it seems that impulse appeal is important for consumers when they buy in stores. Then, promotion is of paramount significance to switch their buying decisions. Still selling nuts in bulk is more common than branded products in many countries.

Nuts are sold from producers to processors, and to wholesalers and retailers, based on size. But consumers consider many other elements such as, flavor, consistency, appearance, value, safety, texture, nutritious, freshness, fun in opening,

integrity and truth in advertisement, natural and consumer perception.

Consumers have a relative poor knowledge about objective nutritional matters but nevertheless they have their clear preferences. Nowadays, among educated consumers, the main worry is about fattening products. Nuts come clearly on the top because their caloric content. Not much distinction is made between saturated and unsaturated fat content and their influences on cholesterol levels.

Different dietary pyramids, where the base contains the healthy products and the top the most unhealthy ones, are taken in United States as an influential reference for food consumption. Unfortunately nuts have been located near the top, in some cases, and this situation can have a negative impact on their consumption.

4.3 Future trends

There exist expectations about consumption increase in the next decade but future demand expansions rely on new product developments, quality improvements and promotional efforts.

Consumers will be more concerned about healthy matters and they will follow recommendations provided by nutritionists. The mass media will play an important role to communicate new fashions and findings.

The Market Promotion Program (MAP) from United States has been an important tool to expand consumption nationally and internationally. The primary aim has been to promote their products but some aside positive effects could have happened for nuts of different origins. Because of the public deficit this program is cutting its funds and it might have a perverse result over the entire sector.

Nuts, as part of the Mediterranean diet, should profit from a beneficial image. However, the nuts sector from producers to distributors should increase the amount of money dedicated to communicate to consumers.

Nutritional labeling will be more extensively used. Although consumers do not pay much attention to the information provided on labels and their understanding is very limited, they rely on safety and consumer leadership interpretation.

A) Almonds

There are already studies about the kind of healthy fat content existing in almonds that should be correctly communicated to consumers

B) Hazelnuts

It has been estimated an annual growth rate of 1% to 2% percent for hazelnuts in the near future. It is the result of a larger use in industrial products with hazelnuts considered as another ingredient but not the main one.

Expectations exist that consumption in United States and Japan will raise in the future. In the first country as a result promotional efforts made by national producers.

C) Pistachios

This nut offers a distinctive color and a differentiated taste which results in an extra consumers attraction. This has had implications especially in the ice cream industry.

D) Walnuts

Walnuts have a positive image that will encourage consumers to increase their consumption. Consumption used to be around Christmas but it is expanding the marketing period.

There is a feeling that not enough promotional efforts have been made and they should be reinforced in the future

The good effects of eating walnuts on cholesterol levels should be communicated to reinforce good prospects for future consumption.

5. AGROFOOD CHAIN

5.1 Industrial changes

Industrial uses are the most common destination for nuts. It is calculated that in between 70% to 80% of total production is dedicated for industrial purposes. It is worth mentioning bakeries, manufacturers of confectionery including chocolate, perfumery and pharmaceutical industries.

The increase of the number of ingredients in the composition of final products makes easier for the industry to substitute one product for other, or in our case among different nuts. But also the proportion of nuts can be changed without much notice to consumers because they can still read on labels that nuts are included without fully realizing the proportion of the mixed ingredients. The picture on the label must be inaccurate in relation to final ingredients composition.

The industry needs stable prices because they can not change the final product price. This is another reason for understanding price determination, at transformer level, in order to avoid great variations.

Like in other sectors there is a tendency for industrial integration and the strengthening of multinationals. Regular and large supplies, homogeneous products, high quality standards and contracting are common practices among big firms.

The implementation of the ISO quality norms and the Hazard Analysis and Critical Control Points (HACCP) are becoming more important. It will carry out significant implications for producers.

5.2 Distribution patterns

There have been traditionally many middle men along the commercialization chain but with the increase of a supply concentration and the newly created farmers organizations, it is common the case of direct contracts between producers and big distributors.

Nuts are not an exception from many other food products that have to face the

retailing revolution with powerful chains indicating procedures to reach markets successfully.

There are retail chains of international, national and regional coverage. It is important to decide, in each case, the marketing strategy of producers firms. Their limited size, lack of expertise or not too aggressive marketing approaches might lead them to operate in limited geographical areas or to search niche markets.

6. GENERAL OUTLOOK

Nuts have been encountering a continuous demand expansion in many markets during the last two decades. This situation has rarely occurred for other food commodities and products. The Mediterranean nut sector has profited from this positive market environment but United States has been a hard competitor and he has been a clear winner.

In the Mediterranean Area there are, in some countries, plans to expand nuts production and, in other countries, policies to protect their cultivations by making them more competitive in a more liberalized trade framework. There are many economic shortcomings which have to be solved in the future.

7. MAIN RESEARCH ISSUES

There are many research economic issues that would be worth while to look at. In this section some of the questions are expressed without any ranking classification. They are the outcome of the review of problems and opportunities undertaken above but also as a consequence of the contacts established with businessmen and other professionals.

In the future, in order to apply for research funds, it will also be necessary to take into consideration research priorities established by funding institutions. For

example, the European Union in its recent "Call for proposals for the specific programme for research and technological development and demonstration in the field of cooperation with third countries and international organizations" establishes specific research priorities for the Mediterranean. If possible, the research team that would deal with economics problems of tree nuts in the Mediterranean Area should find a compromise between their research purposes and research priorities provided by funding institutions.

The description of possible research issues has followed the scheme of the previous review. In each case ten general and specific questions have been chosen and some hints about their importance are presented.

7.1 Production

1) To gather and analyze the most consistent data about area and yields in the Mediterranean countries. In most Mediterranean countries there are diverse and no very accurate statistics. Area and yields are the two main components to calculate supply where efforts should be made to gather reliable statistics.

2) To quantify main input factors, such as labor, on cost of production attending to different productive situations. A typical comment from analysts, when international comparisons are made, is the consequences of the cost of labor without any other considerations and not precise analyses on the cost per kilogram.

3) To calculate establishment costs for new varieties in order to replace traditional orchards and have a more diverse offer. Consumers require greater diversity and traditional nuts might be trapped in mature markets with slow growth. New varieties and different nuts could provide better opportunities.

4) To evaluate the impact of the expansion of new planted areas and new projects for irrigation on future supply. There are, in some countries, ambitious plans to expand the area under cultivation on dry lands but also to invest on irrigated projects. These plans will have a clear impact on future supply that has to be evaluated.

5) To explain which are the main variables that affect supply in order to make medium term projections. So far, there has been a tendency on nuts international markets to speculate, on year to year operations, because of a lack of accurate information about quantities to be supplied. This speculation will be minimized if more precise information about supply is given and it will help a more sensible medium term planning.

6) To determine farmers price formation mechanisms taking into consideration supply and demand. Prices vary considerably from year to year and it is the result of many factors that have to be determined.

7) To design the most efficient supply organizations able to manage supply for international markets. It is common the case that farmers are not sufficiently organized in order to keep to industrial requirements from developed markets. Supply organizations should match their demands.

8) To understand the economic consequences of changing from intensive to extensive productive systems. New policies contribute to favor more extensive systems, but it is not well known their economic feasibility in comparison to typical intensive systems. Not only productivity should be analyzed but also the ability to comply with quality demands and industrial needs.

9) To calculate the optimum reserve or stock quantities to regulate supply in the Mediterranean Area. In the United States there are careful decisions made each year to determine the amount of stocks and the Mediterranean countries should act accordingly.

10) To analyze feasible economic production patterns that are environmentally friendly. New regulations have been and will be introduced in the near future but also markets request more attention to satisfy consumers demands.

7.2 Trade

1) To analyze the main trade flows between Mediterranean producing countries and western and eastern European markets. Western Europe has been the area where

Mediterranean producers have normally directed their exports but new opportunities are arising in Eastern Europe that should be taken into consideration.

2) To quantify preferential agreements between the European Union and the rest of the Mediterranean Area. The European Union has a preferential treatment with his neighbors in the South part of the Mediterranean sea. Too often all the blame of a poor trade performance is focused on the discussion of tariffs but not enough empirical work has been done to know which are the real consequences of lowering tariffs on nuts trade.

3) To explore possibilities and determine how to commercialize in expanding Asian countries. Lately the Pacific Rim countries are increasing their imports at a very rapid rate. Mediterranean countries have not taken advantage of this new situation and not enough efforts have been undertaken.

4) To evaluate the consequences of the GATT agreements on nuts trade for the main Mediterranean countries. Liberalization of trade will have positive effects and the distribution of those effects should be analyzed

5) To clarify which are the main tariff and non-tariff factors but also to quantify their effects. There is a tendency to rely on tariff levels, as a main determinant for competition, and to know the impact of new policies often forgetting the importance of non-tariff factors. Safety and environmental measures are increasingly influencing trade.

6) To know which are the main quality standards applied to trade and to make comparative studies on quality requirements and supply conditions. There are international quality standards established as a guide to put in order trade but the distribution system, through the big chains, and governments in other cases, as it is for Turkey with hazelnuts, have their own standards.

7) To determine the most effective organizations able to deal with big industrial and multinational enterprises. Trade is concentrating in fewer hands and operations which were not suspected to happen not long time ago like alliances between competitors are providing different scenarios.

8) To determine the specific tasks that national organizations, the FAO and the

International Nut Council could achieve for an appropriate improvement of trade in the Mediterranean Area. There are national and international organizations which have the same aim of improving trade for the nut sector. Efforts should be performed in a complementary way.

9) To set up the main activities that an intergovernmental group could carry out as the most effective way to increase demand and to promote Mediterranean nuts. Intergovernmental groups have been very active and successful for certain commodities. There are already efforts to set up one intergovernmental group for nuts and it is probably now the appropriate time to analyze how it should be arranged.

10) To explore possibilities of a Mediterranean product differentiation for trade implementation. There is an increasing recognition of the Mediterranean diet that the Mediterranean countries should exploit. It could lead to the use of a Mediterranean recognition.

7.3 Consumption

1) To know what consumers think about nuts and how they react. Market research should be of a constant concern and easy extrapolations from country to country should be avoided.

2) To determine demand in the most important markets with special reference to Europe and new emerging trends in other wealthy countries. Demand factors are of various nature and marketing programs should be started after knowing the demand characteristics of each market, segment and niche.

3) To know which evaluation consumers make about health and nutritional aspects of nuts. Health and nutrition seem to be the two key elements for consumers. There have been confusing messages about nuts that have to be evaluated by consumers.

4) To search how consumers evaluate Californian versus Mediterranean nuts. Californian nuts have been very successful in European markets and elsewhere. They have been taken market share from Mediterranean nuts.

5) To find out consumers behavior in supermarkets with respect to nuts. There are big battles in supermarkets about space and location. Distribution space is expensive and sometimes distribution chains charge manufacturers for their space.

6) To know and evaluate new products development for fresh consumption and processed products. New products are of paramount relevance for market development and many of them perish in a short period of time.

7) To find out the image that consumers have about each particular nut. Image is an important factor for consumers to make final decisions.

8) To search for the implementation of generic advertisement and promotion programs for nuts based on the Mediterranean diet concept. Generic advertisement is an excellent means to communicate and a good way to increase total demand. Promotion can be performed in many different ways. The Mediterranean diet concept should be linked to those efforts.

9) To quantify consumers awareness of national versus foreign brands. In most Mediterranean producing countries there are leading national brands that compete with foreign brands.

10) To understand the appropriate percentage of nuts that consumers are willing to accept in processed foods. Processed foods are the result of a combination of many ingredients. Nuts can be a noticeable ingredient not only percentage wise but also in the display of the picture that could be located in the package.

7.4 Agrofood chain

1) To find out the appropriate national and international organizations that should help orderly linkages along the Mediterranean tree nuts sector. It applies to vertical coordination and communication along the agrofood chain.

2) To understand how partnerships could be accomplished. Alliances and partnerships are becoming very relevant to deal with huge markets and they are accomplished through complicated mechanisms that is important to know how they act.

3) To know the linkages that multinationals have in different markets. Capital

moves rapidly from country to country and global planning requires a correct knowledge of how to deal with it.

4) To establish analytical mechanisms in order to determine price formation, at national and international levels. Prices take different values at each marketing stage and the mark up has to be evaluated.

5) To find out optimum processing plant sizes and locations. Industries doubt about setting their processing plants close to big markets or near supplying sites depending on different incentives.

6) To know which are the precise requirements that industrial transformers and distributors expect from suppliers. It implies services and rules that could be specific for each industry.

7) To find out the right combination of products. How specialized a company should be.

8) To compare distribution strategies. Distribution is changing rapidly and different strategies can be designed.

9) To understand quality requirements and quality management needs. Their implications for producers have to be evaluated. Each company has its own goals and probably different ways of handling the system.

10) To explore how to succeed implementing international quality norms and the use in their marketing strategy. ISO norms are starting to be implemented on big industries in order to accomplish consumer satisfaction but also at a lower cost.

8. CONCLUDING REMARKS

Forty questions or research issues of different coverage have been presented in this paper that should encourage and help future research on nuts economics in the Mediterranean Area.

Many of those issues could be gathered under these five different headings:

1. Information and data needs in different countries
2. Supply determination and production problems.
3. Market structure and price formation mechanisms

4. Demand and consumer behaviour.
5. National and international policies impact.



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