

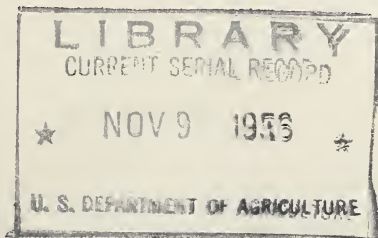
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THE WALNUT and FILBERT INDUSTRIES of the MEDITERRANEAN BASIN



by William C. Tesche

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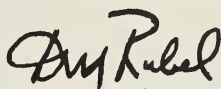
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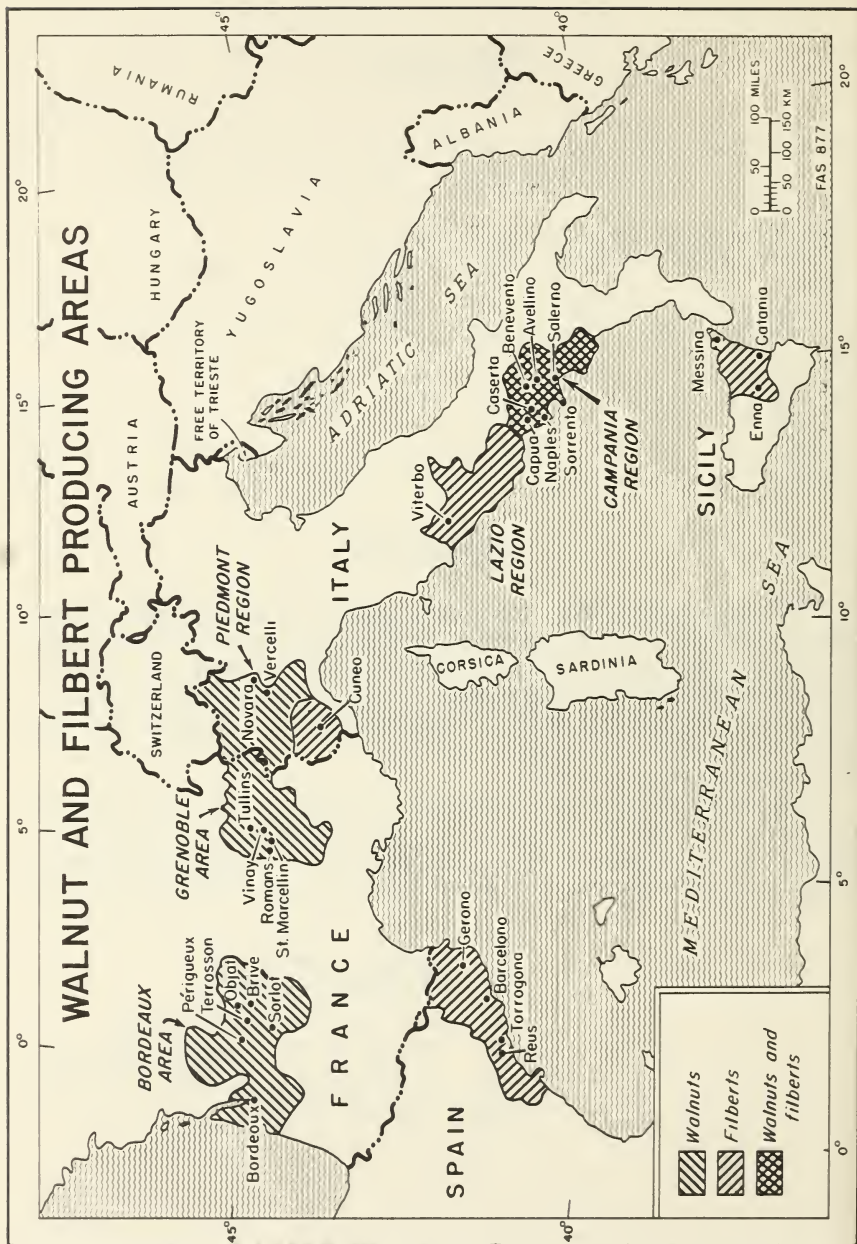
FOREWORD

The objective of Mr. Tesche's survey was to obtain more complete information relating to European walnut and filbert production and marketing. Emphasis was placed upon those factors influencing competition between the European and American walnut and filbert industries. Mr. Tesche investigated the major competing countries abroad and the main European market centers.

This work is part of a continuing study of foreign tree nut industries by the Foreign Agricultural Service for the purpose of determining present and potential competition facing American tree nuts in the domestic and overseas markets.



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THE WALNUT AND FILBERT INDUSTRIES OF THE MEDITERRANEAN BASIN

by William C. Tesche¹

INTRODUCTION

By far the most important walnut producers of Europe are France and Italy, with Turkey a poor third. The world's largest filbert producer is Turkey, followed by Italy and Spain. Therefore, the U. S. producer's concern with respect to European competition in these nuts centers around the Mediterranean Basin. Competition in walnuts from the Orient is another troublesome problem for European as well as for U. S. producers.

The great nut consumers of the world are Western and Northern Europe, the United States, and Canada. To the extent that the Mediterranean Basin countries exploit the European or "home" market, and the United States exploits its own market, a competitive calm prevails. However, when supply and demand or government efforts to bring international trade into balance cause either area to ship in volume into the other's natural markets, competitive frictions occur. And when the Orient enters the picture with heavy volumes of cheap shelled walnuts, both the Mediterranean and U. S. producers have cause for concern.

While the above portrays the broad outlines of the world marketing situation for tree nuts, the lines are never sharply drawn. For example, it is normal--one might say traditional--for the Mediterranean area to ship shelled walnuts and filberts regularly to U. S. markets, usually at prices lower than those obtainable for the U. S. production. When such imports are in modest or "average" quantities and do not collide with abnormally heavy domestic crops or hinder the sale of U. S. production at prices satisfactory to growers, no unusual concern is aroused. However, when imports are so heavy as to impede domestic marketing programs the imposition of import restrictions under section 22 of the Agricultural Adjustment Act becomes an issue.

Thus far, the United States Government has not deemed it necessary to apply such restrictions to walnut imports into

¹ Mr. Tesche has long been associated with the California fruit and nut industries. He was a member of the California Walnut Growers Association for over 20 years, and from 1951 to 1954 he was general manager of that organization.

the United States, although the threat of burdensome competition always exists. On the other hand, section 22 restrictions upon shelled filberts have been applied on several occasions. These are among the important reasons why the U. S. Department of Agriculture must maintain an adequate and current fund of information on foreign production and marketing, obtained in part from surveys such as this.

The impact of competition in the reverse direction--from U. S. exports into the European "home" markets of the Mediterranean and Turkish producers--is much smaller. In general, entrance into European markets by U. S. producers occurs only when an unusual supply-price situation at home appears to justify it. Consequently, relatively little attention in the course of this survey was paid to competition within Europe between European and U. S. production. The European market considers the quality of U. S. packs to be more uniform and dependable, and in the case of walnuts, U. S. packs have readily obtained moderate premiums over European packs. Even so, net returns to the U. S. producer were but 50 to 75 percent of those realized from the U. S. walnut market. This situation points up the real reason why European walnut and filbert producers need have little fear of sustained competition in what has been referred to as their home markets. Such competition as they have faced, or fear they may face again, has encouraged them to modernize and improve their own offerings, and has been salutary to this extent.

While seasonal weather, pest, and disease factors have their understandable effects, the quality of European walnuts and filberts ranges, with few exceptions, from fair to excellent. The only practical differences between the European and the American product, in a commercial sense, are that much of the European production is not so dependably graded or so attractively prepared for marketing. Recent European progress along these lines, however, has been substantial.

This study of the European walnut and filbert industries began in mid-August of 1955 and was concluded during the following February. Most of this time was spent in the producing areas of France, Italy, Turkey, and Spain, and the remainder in European market centers. Information on distribution was gathered from exporters and importers, agents, wholesalers, manufacturers, and trade associations. Sources of production information were growers, operators of processing and packing plants, officers of cooperative and agricultural organizations, and members of university and experiment station staffs. In addition, the writer had the benefit of published reports by such earlier investigators as Dr. L. D. Batchelor (walnuts), Dr. W. R. Schreiber (Turkish filberts) and Prof. Domenico Casella (Italian filberts); also of the files of the U. S. agricultural attachés in Europe, and of such foreign publications as could be obtained.

Although both coverage and the number of information sources were considerable, the writer makes no claim that this report is a complete picture of the two industries. Probably the chief difficulty in such a survey is the inadequacy and unreliability of statistical records. Further, the scattered nature of many of the plantings makes comprehensive crop statistics nearly impossible to obtain. Dependable export records are usually available as a result of tight government controls; but supply only part of the story. Cost figures are meager, and developing them is an arduous task, often with no dependable results. Therefore, the figures presented here--many of them obtained through painstaking work by the attachés' offices, consulates, and foreign service specialists--are simply the best available under the circumstances.

WALNUTS

GENERAL

During 1948-55, European walnut production averaged 54,000 short tons, in-shell basis, compared with average U. S. production of 75,000 tons. However, from available statistics it is difficult to differentiate between export volume, domestic commercial trade, and the remaining tonnage consumed on farms and in villages without conventional handling. The figures used herein refer to total production of a commercial character, comprising both the export and the domestic commercial trade. Accordingly, France accounted for 45 percent, Italy for 37 percent, Turkey for nearly 11 percent, and Yugoslavia for the rest, about 7 percent.

Europe no longer dominates the walnut industries of the Western Hemisphere as she did 30 years ago when the United States produced annual crops of only 20,000 to 25,000 tons. In those days France alone produced twice that much and Italy another 10,000 tons; and the average walnut crop for all of Europe must have been somewhat greater than it is today. Since then there have been declines in France and increases in Italy. Meanwhile, the United States has tripled its production.

This change has manifested itself in a sharp reduction in imports into the United States, which has become nearly self-sufficient. Recent annual imports of shelled walnuts averaged the equivalent of about 9,000 tons in-shell, but these were partially offset by exports averaging about 3,000

tons.² Not only has the quantity of Europe's walnut sales to the United States declined markedly in the last 30 years, but their character has changed as well. In the 1920's, imports of European in-shell walnuts were heavy, and the California industry's major fear was that they would depress the market for the home product. As a result, in 1930 the import duties were raised to 5 cents per pound on walnuts in the shell and 15 cents on shelled walnuts. These rates still prevail. Further aided by aggressive sales techniques and by the growth of grower-cooperative marketing agencies on the Pacific coast, domestic producers have for some years satisfied all the home demand for in-shell walnuts, and 70 to 75 percent of that for shelled walnuts.

Competition between the walnut industries of Europe and the United States therefore is limited almost entirely to shelled walnuts and to the U. S. market. U. S. walnuts have invaded European markets only spasmodically, and only at times when it was believed that surpluses could not be disposed of otherwise. Future exports will likely be on the same in-and-out basis. European costs of growing walnuts are appreciably lower, and the balance swings even more in Europe's favor for shelled walnuts. In any process involving a substantial amount of labor, the United States is at a distinct disadvantage, excepting where mechanization may reduce the differential. Thus, European competition with U. S. nuts of any kind is always sharpest in the shelled category.

During the 4 years 1951-54, France supplied 45 percent of the shelled-walnut imports into the United States, Italy 16 percent, Turkey 15 percent, Iran 13 percent, India 7 percent, and miscellaneous sources the balance. Trade restrictions have prevented importations from China and other Soviet bloc countries. In summary therefore, over three-quarters of recent shelled-walnut imports into the United States have come from Europe, including Turkey. Three-fifths of these have been from France, because French quality and grading is uniformly the best abroad.

During 1951-54, over 40 percent of the total recorded exports of France, Italy, and Turkey went to the United States--France alone sending over half of her shelled output. The other large buyers of shelled walnuts were the United Kingdom, Western Germany, the Netherlands, Belgium, and Canada. Walnuts in shelled form are more popular in the United States than in Europe. This is another manifestation of the U. S. housewife's preference for foods requiring a minimum of preparation. The European housewife still follows her old ways. More important, she usually cannot afford to pay the

² During the 5 years (1950-54), shelled walnut imports into the United States averaged 7,220,000 pounds per year. The abnormally high rate of imports during the first 7 months of the 1955 season suggested that the total for the 1955-56 statistical year would be twice the above average.

extra price for such "refined" foods, and she, herself, performs the labor of peeling, shelling, or preserving. U. S. food manufacturing also appears to make greater use of walnuts than its European counterpart.

The European processor's effort to produce a maximum of halves is often unnecessary as far as the U. S. trade is concerned. In the United States, the demand is for not more than 30 to 35 percent halves; pieces, which the Frenchman calls "invalides," are the important item. In the United States, shelled walnuts are primarily an ingredient in candy, ice cream, and bakery products, which utilize chopped nuts. Halves are the most expensive pack in the line, and the user sees no reason for paying a premium when he has to break them up anyway. In earlier years, larger quantities of halves were used for topping chocolate creams or other bonbon types of candy. Small halves (300-350 per pound), which enabled the user to top more candies per pound of kernels, stood high in the trade. Today, bar candies have taken over a large portion of the candy business, and when necessary, bonbon makers can use "quarters" for topping; consequently the small half is no longer in great demand.

The average European exporter has not realized this and cannot understand why the U. S. price of pieces is so close to that of halves. By his standards, the latter should still be most eagerly sought after. Aside from the fact that hand-cracking is relatively cheap in countries of plentiful female labor, perhaps one reason why the more enterprising European shellers have not gone to machine cracking is because they continue to seek a maximum of halves. For this objective, hand-cracking is superior to machinery. In some plants women were producing for the local trade something never seen in the U. S. market, but nevertheless well known to U. S. plant operators as "butterballs." These are perfect whole kernels, only the shell removed, with halves still joined and separation tissue intact. This fancy product was bringing about the same price as halves, the return from the extra weight of the separation tissue compensating for the more painstaking labor required.

Where U. S. in-shell walnuts excel is in standardized grading, shell brightness, and packaging. The brightness is due to more skillful use of the chlorine bleach. Though European packers use chlorine, they have not perfected the techniques; they seem reluctant to subject walnuts to full treatment, fearing kernel injury, particularly in weakly sealed varieties. European size grades for export are in terms of millimeters of diameter; the most popular size, said to account for 80 to 90 percent of export shipments, is 28 millimeters or over. Occasionally buyers will want larger and more uniform sizes such as 30-32 millimeters or 32-34 millimeters and will pay premiums for them. These sizes compare favorably with the larger sizes in use on the

Pacific coast. Smaller walnuts are generally confined to the home market or are shelled.

Kernel quality of in-shell packs is standardized in a general way, the export requirement being a minimum of "90 per cent sound." However, neither the interpretation of this phrase nor the specifications with respect to kernel color are as tight as in the United States. Buyers must rely largely upon the reputation of the district, the characteristics of the variety, and the integrity of the shipper.

A number of European in-shell packers have recently undertaken to brand walnuts individually, in the manner which contributed so much to the prestige of the Pacific coast product after the California Walnut Growers Association developed an economical method in the late 1920's. However, European packers are by no means in agreement as to its profitability. Several French packers are branding at least some of their output; but one outstanding Italian firm, which tried it with a machine resembling that of the California association, said it did not pay. A Sorrento packer uses a machine of good design that does a fine job of printing, but the output has been confined to a few premium local markets. It is doubtful that branding will make much progress in Europe.

More important in establishing brand identity these days is attractive packaging of convenient sizes for the retail trade. In this field, European walnut packers are making some progress. Almost every packer offers at least some of his pack in cellophane, and there are some very attractively printed bags in both France and Italy. The nuts are weighed to 1 pound or a near-equivalent in grams and are packed 25 to a case. At the time of observation, premiums of about 4 cents per pound over bulk packs--a little more than the average premium in the United States--were being charged. Packing methods are still crude, ranging from all handwork to semiautomatic filling and checkweighing. For bulk walnuts, shipping containers range from the 50-kilo burlap bag down to the neat and handy 10- and 15-kilo burlap or mesh bags.

Though walnut packaging lags behind that in the United States, nevertheless, and particularly in France, it seems to be keeping pace with the slow evolution in local retail merchandising. The real supermarket is a rarity in Europe; however, a good many small or "superette" units can now be observed in some areas. They feature self-service as well as ready-packaged merchandise. Even in the little old-fashioned stores where most food is still purchased, packaged and branded goods are conspicuous on the shelves. They are easier to handle, and advertising and other influences are steadily increasing the brand consciousness of European consumers. French and Italian walnut packers, on the whole, seem prepared to meet these changes in merchandising.

Most shelled walnuts are still shipped in 25-kilo (55 pound) wooden export cases, although some smaller fiberboard cartons are being tried for truck or rail shipments on the Continent. The small 3-ounce or 4-ounce cellophane bag was in evidence in France, and several excellent packs for the large-city trade were observed. Assuming that shelled walnuts will gradually increase in popularity among European consumers, as in the United States, these packages can be expected to become more popular; in fact, several aggressive operators, who normally export large quantities of bulk shelled walnuts, were interested in the possibility of putting up cellophane packs for retail merchandising in the United States.

The backbone of the European shelled walnut business is the export market, with the United States the best single customer. Most of these shelled walnuts are for manufacturing or for repackaging for retail sale by large distributors and specialty houses in the United States. Grading follows systems established in the export trade through many years of experience, and the integrity of these systems depends to a very large degree upon the packers. The Association of Food Distributors in New York has laid down for the export trade certain standards and rules which its members expect Europeans to observe. In quality and dependability, French exports head the list, followed by Italian, then Turkish and Iranian.

The grading of shelled walnuts follows the quality or physical characteristics peculiar to each country's production. Shelling stock is mostly of small size, a characteristic of the wild or seedling walnuts of the hills and of several of the fine shelling varieties. Of the standard varieties, nuts too small for in-shell sale are shelled. As a result, European kernel halves average smaller than those of the Pacific coast; many are small enough to be covered by a 5-cent piece. These were popular years ago, but today even in seasons of plentiful supplies in the United States, the larger domestic half-kernel enjoys a substantial premium over the small French half.

Analyzing the European walnut industry in terms of land utilization is an impossibility because so much is of a "casual" nature that any attempt to resolve it to acreage is futile. Orchard-form plantings are found only in the Grenoble area of France and the Naples-Salerno area of Italy. In the Bordeaux area, the most important in France and one which until recently produced as much as all of Italy, or more, the industry consists largely of trees scattered on grain or other field-crop land, along roads or property lines, in the hills, or in little groves or clusters which can hardly be called orchards. Only a few exceptions, near Périgueux, were noted.

TABLE 1.--Walnuts, unshelled: Estimated commercial production in specified countries, average 1948-52, annual 1952-55

Country	Average 1948-52	1952	1953	1954	1955
	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
France.....	21,200	34,200	26,700	26,500	28,500
Italy.....	22,500	27,800	7,700	12,700	31,500
Syria.....	5,000	6,600	(¹)	4,400	3,300
Turkey.....	7,900	1,900	3,300	3,800	22,000
Yugoslavia.....	4,100	3,600	4,000	3,800	(¹)
Foreign total.....	60,700	74,100	46,700	51,200	69,600
United States.....	76,900	83,800	59,200	75,400	75,400
Total.....	137,600	157,900	105,900	126,600	145,000

¹ 5-year average, 1948-52, used to obtain totals since production estimate was not available.

TABLE 2.--Walnuts, unshelled and shelled: Imports into the United States, by country of origin, average 1948-52, annual 1951-55¹

Country of origin	Average 1948-52	1951	1952	1953	1954	1955 ²
	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
UNSHELLED						
Italy.....	19	7	53	0	0	43
Other.....	³ 12	1	0	0	0	4 159
Total.....	31	8	53	0	0	202
SHELLED						
France.....	810	740	2,338	2,068	1,388	1,697
Italy.....	633	904	785	406	269	1,227
Turkey.....	574	809	135	661	574	304
Rumania.....	55	95	31	11	42	11
Iran (Persia).....	184	230	158	463	1,066	393
India.....	92	388	51	15	560	598
Other.....	⁵ 624	107	40	55	83	15
Total.....	2,972	3,273	3,538	3,679	3,982	4,245

¹ Year beginning Sept. 1.

² 7 months, September-March.

³ Mostly France.

⁴ Includes 116 tons from France and 43 from Chile.

⁵ Includes 562 tons from China.

As for the future, slow increases in European walnut production can be predicted. Italy will continue to expand her production. France, however--a major producer--has been standing still at a production level much lower than that of 30 or 40 years ago. The future there is problematical, with odds favoring a slow upward trend in response to the industry's efforts.

FRANCE

France produces nearly half the European commercial walnut crop, and trees are found everywhere, from the German border to the Pyrenees and even eastward into the valleys of the Alps. However, walnuts are of world commercial importance in only two broad areas of France--Bordeaux and Grenoble. During the past 8 years, French commercial production averaged 23,500 short tons.



A typical walnut tree grows on a hillside in Sarlat, France. France is the biggest walnut producer in Europe.



Young walnut trees border a highway between Capua and Cascano, Italy. Many walnuts in Europe grow along highways and property lines.



A ladder and baskets are used for harvesting walnuts in Europe. Intercrop in (background) is widely used.



A French walnut orchard with loft buildings where ripe walnuts are dried.



Workers hand-sort walnuts in a factory in Italy.

Location of Producing Areas

The Bordeaux area is the larger, with its major production in a zone roughly 75 miles in diameter, beginning 40 or 50 miles east of that seaport city and including parts of the Departments of Charente, Corrèze, Dordogne, and Lot. The most important cities in the area are Périgueux and Brive; the major production and processing operations center principally around the towns of Terrasson, Sarlat, Objat, and St. Robert. This area produces about two-thirds of the French commercial crop.

The Grenoble area lies about 275 miles to the east and comprises a group of districts at the base of the Alps and along the rivers flowing therefrom. Specifically, the area is defined by legal decree as comprising portions of the Departments of Isère, Drôme, and Savoie. Production is concentrated in the valley of the Isère River, which flows from the Alps to join the Rhône near Valence. The city of Grenoble itself has little direct association with the walnut industry. Processing, shipping, and most of the production are centered in or near the towns of Tullins, Vinay, St. Marcellin, and Romans-sur-Isère.

Cultural Practices

French walnut production appears to have changed little in the past 30 years. Here and there a tractor may have replaced animal power, but oxen and horses are still the important source of power for tillage. Harvesting and curing methods are exactly the same. Though Pacific coast equipment and methods are of interest in France, they are not well adapted to the French system. A larger portion of any new plantings will be on an orchard-row basis, and progress will be made in the search for disease control and resistance; but drastic changes are extremely unlikely.

French walnut production is primarily on a "casual" basis, incidental to other farming. However, there are minor exceptions in the Bordeaux area and major exceptions in the Grenoble area, where the predominating varieties are planted in solid blocks or in rows of some length along roads and property lines. The usual Grenoble walnut planting ranges in size from a half-acre to 10 or 15 acres, with trees planted only 35 to 40 feet apart--altogether too close by U. S. standards and experience. The beautiful, large trees growing somewhat isolated in the fields elsewhere testify to what might be expected in Grenoble if planting distances were adequate.

On soils of equivalent depth, fertility, and moisture, trees grow as large as in California but much more slowly. As a result, the wood is hard and annual twig growth is short with many angular spurs. The bark is dark and heavily ridged,

unlike the comparatively smooth, light gray bark of Pacific coast trees. French trees are foul with moss and lichens well into the upper branches. Many thousands of the trees must be 75 years old, and trees over 100 are common. Many may be close to 200 years old, but records are difficult to obtain. There would be many more veterans but for root disease and the cash value of old trees for lumber.

Practically all French walnut trees are grafted--even those in the hills or untended in odd locations in cultivated areas. French farmers have been skilled in the art for many generations. Common practice is to grow seedlings in nursery rows for 3 and occasionally 4 years, then transplant them to permanent locations. During the next 5 or 6 years, pruning off low side branches develops tall, straight trunks. Thus growth from seed to the establishment of the permanent high head takes 8 to 10 years. Grafting is done in the scaffold branches, to maintain a straight trunk of 8 to 12 feet, free from graft-union blemishes and of the highest value for lumber. This drawn-out process of propagation and development greatly delays fruiting. In the United States a nursery-grafted tree with 2-year-old roots and a 1-year top can be set out and brought into early production in 5 or 6 years--almost half the time required in France. But the high-headed French trees provide maximum opportunity for intercropping to vegetables, row crops, and grain. Eventually, however, the tops of tightly planted orchards become so dense as to prevent intercropping to any but winter crops.

Trees are cut for lumber when their death from root disease is imminent or when the farmer needs cash. Walnut logs are common sights in the sawmills or felled in the fields awaiting hauling. Their sale is no pin-money matter: a sound old log, say 8 feet in circumference and 10 feet long, will bring \$75 to \$100. The decline in French walnut production during the 1930's is partly attributed to the high price of logs in relation to the low price of walnuts.

The French Government takes considerable interest in the walnut as a timber resource. France is the most important shipper of walnut wood in Europe, with an average production of 40,000 cubic meters a year, although the rate of logging is declining at the moment. About half the production is used for regular cutting and half for veneers, and about 80 specialized sawmills and factories are involved in the business. The finest graining is found in trees that have grown most slowly in poor soil. The poorer trunks, limbs, and odds-and-ends are used for chair legs, cabinet work, and wooden shoes. The manufacture of walnut gun stocks is also an important French specialty.

The past 20 years have seen a sharp decline in walnut lumber production. In 1928, exports of walnut logs and timber amounted to 14,000 tons; but in 1951, to only 3,800. Government forestry officials are undertaking a program of

research and even subsidization of plantings, primarily on second-quality lands. These plantings are for the production of timber rather than nuts. The present subsidy is extended either in the form of free nursery trees or as reimbursement of part of the expenses incurred in planting new trees. It amounts to about \$1.00 for each 3-year-old tree. Thus far it has been paid for nongrafted trees only, but it is likely to be modified to include grafted trees provided grafting is done in the scaffold limbs. Few farmers are taking advantage of the subsidy, however, and it is doubtful that the present modest effort will greatly influence future walnut production.

The French walnut has its share of pests and diseases, although few are so severe as those on the Pacific coast. The codling moth attacks to a worrisome degree in some years and in some districts, and entomologists are concerned at the rapid spread of cochinnelle scale. Walnut anthracnose, also does some damage. Aphis, a problem in California, are not evident in France. Oil sprays are recommended for scale and copper sprays for anthracnose. Farmers are urged to spray also to kill moss and lichens. Despite these recommendations, there is little evidence of pest control. Presumably, nature takes its course: the insect population grows or declines with the seasons and the prevalence of predators, and blight is influenced by moisture and temperature in the growing season. In stored walnuts, the Indian meal moth is prevalent. Shelling plants and storage houses fumigate against this pest.

The disease of greatest concern is "l'encre," or ink disease, also called "champignon (mushroom) parasite." This soil-contaminating fungus appears to be caused by Phytophthora cinnamoni. (Secondary effects known as oak root fungus are caused by Armillaria mellea.) In France it is often called ink disease because in its late stages black sap oozes from the root crown or collar of the tree. Mushroom-like growths spring up from diseased tissue at certain times of the year. Starting in the smaller roots, the fungus works upward to the root crown, where it gradually strangles the tree by killing the cambium tissue. It has killed many thousands of fine French walnut trees, and is contaminating more land as time goes on. The only consolation is that if an old dying tree is removed before it is completely dead, it still has high timber value.

For years the French have believed that the "nigra" or black walnut root of northern California is comparatively resistant to "l'encre." Government pathologists are now extending their studies to numerous other American black walnuts and the various hybrids. Black seedlings are being made available to nurseries and to growers, who are reported to be showing increasing interest in these reputedly resistant stocks. However, the French now know, as do their Pacific

coast counterparts, that while resistance to fungus may be high, many white-on-black graft unions are short-lived or restrictive of proper tree development.

French scientists are directing a great deal of interest and research to soil treatment of fungus-infected areas and of the diseased trees themselves with organic mercury compounds. They report encouraging results. Preplanting treatment of soil offers possibilities, and results are claimed for treatment of trees already infected, provided the disease has not progressed too far. The methods are described by government pathologists C. Schad and J. Grente in a circular entitled "Le Traitement des Noyers par Disinfection du Sol," published by the Comité d'Etude Interprofessionnel de la Noix et du Noyer du Périgord," a committee of the Chamber of Agriculture at Périgueux (Dordogne).

Nut Varieties and Characteristics

French walnuts are as good intrinsically as those produced on the Pacific coast; in fact, the variety most widely planted on the coast today--the Franquette--was introduced from France some 85 years ago. Another French variety, the Mayette, was brought to California about the same time, but because of weaknesses is now of little consequence there.

Some French varieties have a rougher external appearance than most Pacific coast walnuts, but their normally good kernel color and filling are adequate compensations. French kernels in general have a lighter color than California kernels, probably because of lower temperatures and higher humidity in summer.

Leading in-shell varieties in the Bordeaux area are the Corne and the Marbot, both known throughout Europe. They have a low shell-out ratio; but their shells, although rather rough, are sturdy, well sealed, and well adapted to handling and shipping. The Marbot is roundish; the Corne, more elongated. In both varieties, kernel quality is good, but not so good as that of the three principal varieties in the Grenoble area; hence, prices are lower. The Marbot predominates in the eastern portion of the Bordeaux area. The Corne, which produces some of France's finest tree specimens, is concentrated in the central and western parts around Périgueux.

From two-thirds to three-fourths of the Bordeaux crop, however, is generally shelled. Shelling stock consists primarily of the Grandjean and Lalande varieties, and of a seedling strain grown in the Brantôme district. These preferred shelling varieties are said to yield 40 percent of kernels from orchard-run stock. Miscellaneous seedlings and some off-size or low-quality Cornes and Marbots are also shelled.

The best varieties for in-shell sale are grown in the Grenoble area. The three main varieties there are the

Franquette, Mayette, and Parisienne. Only walnuts belonging to these varieties and produced within the Grenoble area can be lawfully exported under the descriptive name "Grenoble." Grenoble production is roughly half that of the Bordeaux area, but a larger part is sold in-shell because of the high esteem in which the three main varieties are held, plus the fact that they are not particularly good shellers. The Franquette is elongated and pointed, with a heavy, tightly sealed shell. The Mayette is more squatty and rounded, with a broad, flat base. Its shell is thin and splits badly, and its kernels also are thin. The Parisienne is rounded and slightly elongated, resembling somewhat the Placentia of southern California. It is the best sheller of the three, but does not bleach as well for in-shell trade as do the other two. The Franquette ranks as the best all-round variety for the area because of its sturdiness, resistance to frost and blight, and good shipping and dessert qualities. The Mayette and Parisienne are slowly declining in popularity. In-shell packs may be of a single variety or Franquettes and Mayettes mixed; the poorer shell color of the Parisienne makes it less desirable for mixture. Only 10 to 20 percent of the three-variety crop is shelled.

The Grenoble area also produces the Chaberte, a shelling variety famous for its tiny kernels, light color, and fine flavor. It grows principally in the Drôme adjacent to the Isère, and the crop is practically all shelled.

Harvesting and Processing

The French walnut harvest begins a few weeks later than the California one. In the Grenoble area it proceeds at a fairly fast pace, if the market for fresh walnuts is good and the weather favorable. Picking was at top speed in the Isère Valley in early October 1955, the weather was moderately dry and sunny, and there was a rush to fill orders while nuts were still moist and green. In the Bordeaux area, harvesting is more leisurely, packers fearing that to rush the harvest may result in immature kernels, though conceding that delays can result in deterioration. In both areas, pickers climb the trees by ladders and beat the nuts down with light cane poles. In the Bordeaux districts, however, growers are inclined to let a larger percentage of the nuts fall naturally. Most hulling is done in the field, but some mechanical hulling is reported.

Yields in France are the equal of those on the Pacific coast, all things considered. A big tree with plenty of room will yield 150 to 200 pounds, and yields up to 350 pounds have been reported. One veteran grower and packer in the Isère Valley said that a good average yield in a row-planted orchard would be 75 pounds per tree. On the basis of the French planting distance of 35 to 40 feet, giving 27 to 35 trees per

acre, this is approximately 2,000 to 2,600 pounds per acre-- a good yield by Pacific coast standards.

After harvesting, farmers wash the nuts and may put them out in trays for surface drying. Most nuts, however, are dried by raking and turning in slat-floored, ventilated drying lofts comprising the upper stories of farm buildings. Artificial dehydration has yet to make much of an impression in France, although some of the more progressive growers expressed interest in U. S. methods. With the many small holdings, only the neighborhood commercial or cooperative type of installation could offer any promise. By U. S. standards, considerable time is lost in getting French walnuts to market. Occasionally they are a bit too moist when marketed, and price penalties are applied.

Production

Total production (both commercial and noncommercial) in the Bordeaux area in 1954 was only about 15,000 short tons, in-shell basis. In 1955, a year of good yields and quality, total production reached an estimated 27,000 tons. Production in the Grenoble area, which is largely commercial, has ranged from a low of about 3,500 short tons in-shell in 1949 to a high of 12,000 in 1955, inclusive of shelling varieties. The full production potential is believed locally to be 20 percent higher. Commercial production in 1955, for both areas combined, totaled an estimated 28,500 tons. French noncommercial production has averaged approximately 10,000 tons in recent years.

The French walnut industry has declined considerably over the past 30 years. One leader in Sarlat expressed the belief that the production potential is only 40 percent of that in 1925. He ascribed the decline to (1) disease, (2) frost and storm damage to trees, (3) the high proportion of tenant farming, which offers little incentive to long-range planning or planting, (4) insufficient interest in the better varieties, (5) migration of farmers to cities, (6) the "scatteration" of trees, which makes for neglect, (7) an increase in tractor farming in the level grain and row-crop areas, where casual walnut trees are in the way, and (8) the high cash value of logs.

A Terrasson packer and exporter who has been a leader in efforts to restore the industry to its former position, states that total French production, averaging about 33,000 short tons a year, is far short of what it was 20 years ago. Both he and another prominent Sarlat packer agreed that the present maximum potential, assuming highest yields in all areas, might be 50,000 tons. In the Grenoble district, one of the most experienced shippers said that the three Grenoble varieties are being produced in much smaller quantity than 30 years ago but that the curve has leveled out. Most others

in the area agree with this appraisal. He further believed that production of Chabertes for shelling had fallen by one-half in 40 years.

Shelling and Packing

Whereas walnut production on the farm appears to be little changed from 30 years ago, there is evidence of some modernization in the French packing industries. French in-shell packing houses follow basically the same system as that used in the United States but with less perfection of detail, more hand labor, and less conveyance by mechanical means. The best equipment was in the cooperative plant at Tullins, near Grenoble, which is the largest in-shell packing plant in France. An interesting innovation there was the system of drying surface moisture from shells, after bleaching, by carrying them on a metal belt through a heated drying compartment about 15 feet long. In the United States such wet nuts are dried in overhead slatted drying bins.

For shelling, plant operators farm out their stock to women of the towns and villages. Each plant has a group of families working for it. The walnuts are hand-cracked in the homes and given a quick sorting into halves, pieces, and offgrades. The women keep the shells for fuel and return the kernels. They are paid on a piece basis of 30 to 40 francs per kilo, equivalent to 4 or 5 cents per kernel pound. Handling and running over final grading screens and belts will add another cent or two. One old-time packer in the Isère Valley figured average production cost, exclusive of original shelling stock and shipping containers, at about 6 cents per pound, or half the U. S. cost. French packers are concerned over the increasing pressure of Italian competition, and claim that shelled walnuts are produced in Italy at half the French cost; but it was not possible to verify this.

Most French shelled walnuts are produced by the "farming out" method, but a minor volume still comes from farm homes--particularly in the more isolated hill areas--where the womenfolk shell their own crops. In December 1955, walnut kernels so produced were bringing about 400 francs per kilo or about 52 cents per pound. Export prices at the time ranged from 60 to 70 cents per pound, depending on grade. The difference between buying and selling prices covered costs of final grading and minor cull-out, packing, sales cost, and exporter's profit.

After home-shelled kernels are returned to the plants, handling is much the same as in the United States though somewhat cruder and less mechanized. The average French plant is much smaller than its counterpart in the United States, so heavy investments in machinery are not feasible. Kernels are passed over shakers or air blasts to remove foreign material, over screens to grade out the smaller

halves and pieces, and finally over belts for sorting and inspection before packing. Sometimes kernels are fumigated before shipment. During the summer shelled walnuts are kept in cold storage, but not ordinarily in large quantity. The in-shell stock seems to keep well enough in ordinary storage, particularly if fumigated occasionally against insects. Moreover, English buyers taking shelled walnuts from carryover stocks in September-October want the kernels to be freshly shelled just before shipment.

A product strange to Americans, but which accounts for sizable French tonnages, is the in-shell walnut in its fresh or green state. The crop is knocked off the trees as soon as the green hulls can be removed, and is rushed to market while the kernels are still moist and pliable. Western Europeans, particularly the English, relish these walnuts as a delicacy to be served with or in lieu of fruit at the end of a meal. They are cracked at the table and the moist pellicle, rather bitter at this stage, is peeled off before the pearly-white and delicately flavored kernel is eaten.

The fresh walnut is a more important trade item in the Grenoble area than elsewhere, and large quantities, as much as 20 to 25 percent of the area's in-shell sales, are shipped to England, Belgium and the Netherlands, and Germany. The walnuts are bleached with sulfur, washed in a light chlorine solution (largely to check mold), size-graded, and packed in attractive 6-kilo burlap and 10-kilo mesh bags. They are then rushed to market through the fresh fruit and vegetable trade--entirely different channels from those through which dried walnuts are handled. Early in October 1955, well-graded and packed fresh walnuts were quoted at 125 francs per kilo (about 16 cents per pound) f. o. b. packing plant, while dried walnuts of the same type were quoted at 190 francs (nearly 25 cents per pound).

Cooperative Marketing

The Coopérative Agricole des Producteurs de Noix de Grenoble, which operates the large in-shell packing plant at Tullins, handles 20 to 25 percent of the Grenoble varieties of the area. It has 1,000 grower-members who are under contract to deliver all their crops to the 28 member syndicates located throughout the area. Each syndicate has its managing officers who supervise the delivery of members' walnuts to concentration points. Here the nuts are picked up and hauled to the central plant at Tullins for processing, selling, and shipping.

The cooperative plant handles in-shell walnuts only, and sells to shellers any culls or other shelling stock that may be graded out. It puts up excellent packs ranging from attractive cellophane bags of several sizes to burlap and mesh bags, also of various sizes and well identified. The coopera-

tive aims at selling 90 percent of its pack by Christmas; in 1955 it disposed of 85 percent by that date. Sales to the French and Swiss trade continue after the holidays but at a slow rate. The short operating season militates against substantial investment in additional buildings and equipment. Currently, inadequate plant capacity is keeping the cooperative from accepting additional members.

The cooperative organization dates back to 1908 when the first local syndicates were formed. As they increased in number, they competed sharply and destructively with each other, thus sacrificing the major advantages of this type of organization. A federation was organized in 1929. Meanwhile, U. S. importing interests had erected a plant at Tullins, patterned after those in California, to insure adequate supplies at lowest costs. In those years, the importation of in-shell walnuts into California was a thriving business. Shortly afterward the pressure of competition from California and an increase in the U. S. tariff caused the owners to sell this plant to the federation--now the cooperative. This organization has had conspicuous success, even in a country of individualists--perhaps because it is a more or less closed group in which membership is a privilege.

Exports

The different varieties of French walnuts have somewhat different export markets. The bulk of French exports have been in the in-shell form, accounting for 62 percent of exports in 1951-55. In recent years, Germany has afforded by far the best market for the in-shell Cornes and Marbots, followed by the United Kingdom. From the 1955 crop of Cornes, however, the United States imported a small quantity. These shipments, the first in years, were the result of high in-shell price levels. For Chabertes, which are practically all sold shelled, the United States is the principal customer. For the three-variety crop of Grenoble walnuts, only 10 to 20 percent of which is shelled, the United Kingdom is the best market, followed by Switzerland, the Netherlands, and Belgium.

All in all, Western Germany is by far France's largest customer of in-shell walnuts, followed by the United Kingdom and then the other Western European countries. The United States is much the largest purchaser of shelled walnuts, followed by the United Kingdom, Canada, and Western European countries. United States imports of French shelled walnuts averaged 2, 145, 000 pounds in the 7 years 1948-54.

An idea of the export grading of French shelled walnuts can be gained from the following standards, promulgated by the Association of Food Distributors in New York. Colors are Light and Harlequin. Most production is of the Light. The Harlequin consists of various shades of brown and

mottling, and the kernels are frequently less plump than those of the better colors. Shelled walnuts of light color from the Bordeaux area are further graded into Extra Halves, Extra Petite (quite small) halves, Invalides (pieces), and Extra Halves and Pieces. Walnuts from the Dauphiné region (Grenoble, Isère, Drôme) are graded into Extra Chaberte Halves, Chaberte or Mayette Pieces, and Extras and Pieces mixed. Harlequins from both the Bordeaux and Dauphiné areas are graded into various darker shades of halves and pieces.

Outlook

The French walnut industry is making vigorous efforts to increase production and recover from the decline of the past 20 years. Heading these efforts are the exporters' association, the Fédération Nationale des Syndicats d'Exporteurs de Noix et Cerneaux, and the Comité d'Etude Interprofessionnel de la Noix et du Noyer du Périgord, sponsored by the Dordogne Chamber of Agriculture. In April 1955 the latter group held a conference at Sarlat, the proceedings of which were published in November by the Chamber, at Périgueux (Dordogne). Industry and government leaders participated, and the topics ranged from the history, economics, and expansion of the industry to pest and disease control.

TABLE 3.--Walnuts, unshelled and shelled: Exports from France, by country of destination, average 1935-39¹, annual 1946, 1951-55

Country of destination	Average 1935-39 ²	1946	1951	1952	1953	1954	1955 ²
	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons
UNSHELLED							
United States.....	413	(³)	(³)	(³)	(³)	(³)	-----
Canada.....	523	(³)	(³)	(³)	(³)	(³)	-----
United Kingdom.....	4,574	1,929	1,159	533	916	1,007	-----
Germany, Western ⁴	452	(³)	4,409	11,373	7,842	6,011	-----
Belgium and Luxembourg.....	1,139	(³)	564	773	726	404	-----
Netherlands.....	247	(³)	(³)	(³)	551	270	-----
Sweden.....	15	(³)	117	215	286	342	-----
Switzerland.....	717	487	453	845	849	698	-----
Brazil.....	(³)	(³)	(³)	739	458	55	-----
Algeria.....	564	(³)	652	1,536	1,320	845	-----
Tunisia.....	(³)	(³)	(³)	453	593	286	-----
Other.....	649	214	627	630	706	360	12,884
Total.....	9,293	2,630	7,981	17,097	14,247	10,278	12,884
SHELLED							
United States.....	-----	(³)	1,077	911	2,625	1,779	-----
Canada.....	-----	(³)	170	247	872	411	-----
United Kingdom.....	-----	(³)	544	201	462	750	-----
Belgium and Luxembourg.....	-----	189	65	67	(³)	84	-----
Germany, Western ⁴	-----	(³)	113	189	160	136	-----
Netherlands.....	-----	(³)	(³)	(³)	(³)	31	-----
Norway.....	-----	(³)	(³)	(³)	(³)	12	-----
Sweden.....	-----	(³)	(³)	66	(³)	91	-----
Switzerland.....	-----	13	(³)	72	105	106	-----
Other.....	-----	15	167	85	300	112	3,333
Total.....	-----	217	2,136	1,838	4,524	3,512	3,333

¹ Not separately classified as to shelled and unshelled.

² No breakdown by country of destination available at date of publication.

³ If any, included in "Other."

⁴ Classified as East and West Germany, January 1952.

Better than any other source, the speeches and papers published in this record tell the story of the French walnut industry and the hopes for its restoration, or at least its stabilization. If world prosperity holds firm and export markets remain good, the efforts of the industry's leadership will meet with some success despite political and economic vicissitudes in France. In that event, walnut production will remain steady during the next decade and show slow increases after that. To accomplish this, plantings will have to be made at a rate at least equal to the mortality among old trees. The planting situation in the Bordeaux area is difficult to appraise because of "scatteration;" in the Grenoble area, however, many young replacement trees are coming into production, and there is evidence in the nurseries of more to come. Ability to cope with the "ink" disease in older lands or to avoid it by planting on new lands will also have an important influence on the trend during the next several decades.

ITALY

During the past 8 years, Italy's commercial walnut production averaged an estimated 20,500 short tons, or 38 percent of the European total. On the basis of preliminary estimates, Italy's share of the 1955 crop is closer to 48 percent.

Location of Producing Areas

Walnuts are grown in all parts of Italy. In 1955, approximately 33 percent of Italian walnut production came from what is known in the trade as the Naples area, which ranges along the coast from Capua on the north to Sorrento on the southwest. Another 25 percent came from around Benevento, Salerno, Caserta, and Avellino, which ring the Naples district on the inland. Putting them all together into an expanded Naples area accounts for nearly 60 percent of Italian production. An estimated 12 percent comes from the Piedmont region, mostly from the Provinces of Vercelli and Novara. The remainder is scattered.

Cultural Practices

A unique planting system characterizes much of the walnut industry in the important Naples-Sorrento-Salerno area and to a less degree elsewhere. Possibly this system represents the most intensive land utilization in the world. Individual holdings are small, but not an inch is wasted. High-headed walnut trees are scattered over a typical plot more or less in rows. If the trees are still young, say under 15 or 20 years, high wires are strung between them to support grapevines 10 to 15 feet from the ground. Between the rows

of walnuts and grapes are citrus or mixed fruit trees 12 to 20 feet apart. Finally, under all these trees and vines two or more surface crops are grown per year. Eventually, crowding becomes excessive, and either the walnuts or the other trees are thinned out or removed entirely. The fertile volcanic soil at the base of Mt. Vesuvius and the deep alluvial deposits at the foot of the other hills, together with heavy animal and green manuring, make this intensive system possible.

In the Naples area, trees grow much more rapidly than in France, and consequently resemble in bark color and stature those on the Pacific coast. Most Italian walnut areas are un-irrigated. This, plus higher summer temperatures, accounts for an average kernel color darker than that of French walnuts, as well as for occasional heavy shrivel. Some authorities believe that providing proper drainage and deep-rooting zones presents more serious problems than does the moisture supply in itself; a few districts apparently have high water tables. Heavy irrigation of interplanted citrus and surface crops, as in the intensively cropped districts south of Naples, can be equally injurious to walnuts.

Most Italian walnuts are grown on the white root, though some interest is developing in the U. S. black and the Chinese stocks because they are believed resistant to the ink disease and oak root fungus. These infections do not appear to be as serious in Italy as in France. Codling moth is also present in some Italian districts, but little seems to be done about it because of lack of equipment, the small acreages, and the danger of spraying with toxic materials in heavily intercropped orchards.

Types of Nuts

Two well-known Italian walnut types are the refined Sorrento variety and the rough seedling Partenope, or Vesuvio, which is on the decline. In the Campania or expanded Naples area, the Sorrento comprises 50 to 60 percent of the production, and this share will increase as the old Partenopes are removed or are topworked to Sorrentos and as the younger plantings come into heavier production. The Sorrento is pleasingly oval, with a smooth, strong, well-sealed shell of excellent texture. In quality, its kernel is good--nearly the equivalent of the Californian. In color, however, the Sorrento kernel is inferior to the Oregonian, and varies widely from crop to crop. The Sorrento is the favorite Italian walnut for in-shell export. Nominal quantities of the Partenope are exported in-shell, but at differentials as much as 20 to 25 percent below the Sorrento.

In the Piedmont region, the walnuts are close to the French in quality, probably because of a gentler climate. Piedmont walnuts, by far the best in the Italian shelled trade, are not a variety but a type composed of seedling strains.

Harvesting and Processing

Nuts are harvested by tree-climbing and beating. Near Naples, early harvesting is occasionally carried to extremes. Many husks are not yet split when the nuts are knocked off, and subsequent attempts to hull them mechanically are apt to cause damage. Moreover, when piles of green walnuts lie around, subjected to abnormally slow open-air drying, the prevalence of moldy kernels increases. Growers blame exporters for pressing for too early deliveries. Dr. L. D. Batchelor, however, in reporting the same harvesting procedure 30 years ago, surmised that growers rushed to harvest the trees in open or nonfenced properties in an effort to circumvent thievery, which might occur if the walnuts were allowed to drop naturally and were picked only at intervals.

Production

All statistical data and competent testimony show that Italy's walnut production has expanded rapidly during the past 30 years. In 1925, Dr. Batchelor credited Italy with 10,000 tons. For 1935-39, Foreign Agricultural Service records show an average of 16,500 tons. More recently, the averages have risen above the 20,000-ton level, and the 1955 crop is estimated at 31,500 tons--probably the largest in Italy's history. Further evidence of Italy's progress can be detected in France, where exporters are beginning to worry about the competitive pressures.

Conventional walnut orchard expansion is rare in Italy, yet the production trend continues upward, for several reasons. First, a great many Italian walnut trees have yet to reach maximum production. Second, the government's reclamation and settlement project encourages the roadside planting of walnuts in suitable areas. Eventually, walnuts will also be planted around the farmsteads and along property lines in these new areas. Partial offsets to these influences are the slow but certain decline of the old Partenope type, and the removal of walnuts from some of the intensively planted districts to relieve competition with more profitable crops such as citrus.

Marketing by Growers

Crops are sold to exporters or their agents, or to local "accumulators." Practically all the export trade is channeled through Naples, even including the Piedmont walnuts from the north. Sales are made early or late, depending on the grower's judgment of the market or his need for cash. Frequently in the Naples district crops are sold on the trees. They may also be sold off the trees and still moist and green, or in the dried form. Some small lots may be sold by count,

with dry Sorrentos averaging about 100 per kilo, or 45 to 46 per pound--much the same ratio as in California. Pre-harvest sales contracts are rare, not only because growers are wary of making errors in judgment, but also because packers know such contracts would be worth nothing if price levels were to rise later.

In the plants, most of which are in or near Naples, the walnuts are bleached lightly with sulfur, followed by chlorine treatment. As a rule, they are sized in three categories. The minimum size is 26 millimeters in diameter, but most are sold on the basis of 28 millimeters or better, and occasional premium lots are sold on a 30-millimeter basis. The price differential between 26 and 28 millimeters is approximately 1 cent per pound for Sorrentos and 1-1/2 cents for Partenopes. Sizes smaller than 26 millimeters are sold locally or shelled.

A substantial share of Italy's walnut production is consumed in the home market. Statistical information on domestic trade and noncommercial home consumption is difficult to evaluate. For example, walnut production for 1953 and 1954, as published in Italian Government reports, averaged 48,000 short tons. Yet the figure based on the commercial tonnages reported by the American consulates and secured from trade sources is less than 12,000 tons. The high figure unquestionably represents a generous guess, covering all kinds of utilization, from consumption by farm families or trading with neighbors or nearby stores to that part which enters commercial channels in both domestic and export markets. The lower figure necessarily excludes on-farm consumption and local peddling, and undoubtedly fails to give proper credit to commercial handling and distribution in the domestic market.

Shelling

Shelling is done in or near Naples, except for what is done on individual farms. "Farmed out" or home shelling, universal in France, is not practiced in Italy because of unsatisfactory experience. Consequently, all commercial shelling is done in plants; even the Piedmont stock from the north is brought into Naples, where a teeming population is eager to work for relatively low wages. Walnuts are hand-cracked with hammers and then sorted as usual before being packed and shipped. Women's wages in 1955 were approximately \$1.00 per day. When insurance costs, borne by the employer, are added, the actual cost is said to be increased by another 40 or 50 percent. Basic wages for men were \$2.00 to \$2.50 per day. There were hints that, with thousands of people seeking work in winter, labor could be had at less cost; but violation of minimum wage rates or insurance requirements might entail penalties.

Exports

In Italy, the export of in-shell walnuts predominates even more than in France, accounting for 70 percent of the total volume shipped. Germany and the United Kingdom, in that order, have been by far the largest buyers in recent years. Next is the Belgium-Luxembourg Economic Union, followed by Brazil. In the years 1951 through 1955, shelled walnuts (converted to an in-shell basis) have accounted for only 28 percent of the export trade and a much smaller share of the domestic trade. The United States was the biggest taker in this category, followed closely by Canada, and much less closely by the United Kingdom and Germany.

One reason for the pressure of Italian competition on the French industry is price. Italian walnuts are not of such high or dependable quality as the French, and grading is less reliable, particularly in years of poor average quality. But Italian prices are lower--a situation that always attracts

TABLE 4.--Walnuts, unshelled and shelled: Exports from Italy by country of destination, average 1935-39, annual 1946, 1951-55

Country of destination	Average 1935-39 ¹	1946 ¹	1951	1952	1953	1954	1955 ²
	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons
UNSHELLED							
United States.....	71	535	97	89	(³)	(³)	(³)
Canada.....	42	276	103	311	(³)	(³)	(³)
United Kingdom.....	498	1,494	5,207	1,533	2,361	1,777	2,630
France.....	15	(⁴)	249	13	(³)	(³)	(³)
Sweden.....	4	65	161	154	(³)	(³)	(³)
Belgium and Luxembourg.....	135	106	937	834	584	575	678
Czechoslovakia.....	189	(⁴)	(³)	97	515	(³)	(³)
Denmark.....	255	(⁴)	6	97	(³)	(³)	(³)
Germany, Western ⁵	3,752	13	2,200	3,709	3,620	2,398	4,557
Malta.....	111	11	163	259	(³)	(³)	(³)
Switzerland.....	536	719	547	463	(³)	(³)	(³)
Netherlands.....	17	114	130	378	(³)	(³)	(³)
Argentina.....	173	27	16	0	(³)	627	(³)
Brazil.....	126	602	1,092	853	55	451	(³)
Cuba.....	44	109	20	8	(³)	(³)	(³)
Uruguay.....	22	42	279	136	(³)	(³)	(³)
Egypt.....	63	13	468	672	492	(³)	(³)
Libya.....	191	(⁴)	34	66	(³)	(³)	(³)
Tunisia.....	208	(⁴)	45	54	(³)	(³)	(³)
Australia.....	49	(⁴)	240	31	333	336	(³)
New Zealand.....	(³)	(⁴)	126	3	(³)	(³)	(³)
Other.....	484	32	538	316	1,978	1,471	⁶ 3,347
Total.....	6,985	4,158	12,658	9,979	9,938	7,635	11,212
SHELLED							
United States.....	-----	-----	537	707	495	312	699
Canada.....	-----	-----	230	606	486	231	67
United Kingdom.....	-----	-----	238	123	85	80	106
Belgium and Luxembourg.....	-----	-----	30	16	(³)	(³)	(³)
Denmark.....	-----	-----	52	36	(³)	(³)	(³)
Germany, Western ⁵	-----	-----	27	190	184	58	108
Sweden.....	-----	-----	33	20	86	42	62
Switzerland.....	-----	-----	58	5	(³)	43	(³)
New Zealand.....	-----	-----	8	9	72	55	(³)
Australia.....	-----	-----	23	0	74	64	(³)
Other.....	-----	-----	664	317	295	104	259
Total.....	-----	-----	1,900	2,029	1,777	989	1,301

¹ Not separately classified as to shelled and unshelled.

² Preliminary.

³ If any, included in "Other."

⁴ If any, less than 1/2-ton.

⁵ Classified as East and West Germany, January 1952.

⁶ Includes 493 tons to Norway.

an important segment of the trade. In 1955, for instance, the prices of bleached Sorrento in-shell walnuts averaged about 10 percent or roughly \$5.00 per 100 kilos (2-1/3 cents per pound) lower than those of the Grenoble varieties. The Partenope brought about 15 percent less than the second-quality in-shell French packs. Likewise, Italian shelled walnuts, at 45 to 66 cents per pound, were priced roughly 10 to 20 percent below the French, the wider differential being in the lower grades.

TURKEY

Walnut production in Turkey is primarily for home consumption. Time and facilities did not permit an inspection in the field as part of this survey, Turkey's filbert industry being of vastly greater commercial importance. However, the essential facts were obtainable from files of the American Consulate in Istanbul, and something of the industry in the field was observed along the Sea of Marmara on the route between Istanbul and Ankara.

Production

Turkish Government statistics indicate that there are a very large number of walnut trees scattered throughout all parts of the country. A tabulation from official records for 1946-50 reveals nearly 2-1/2 million trees, which if planted in orchard form would be equivalent to perhaps 100,000 acres. The records even give the annual production from these trees, broken down by the 62 provinces for which the statistics were compiled and averaging a total of 53,413 short tons per year. But the possibility of compiling accurate production data in such detail is open to question.

For a time the American Consulate attempted to report the best available production figures. For example, in September 1946 it estimated the crop in normal years to average about 37,000 short tons, in-shell. It also reported that many trees had been felled during World War II and exported to Germany for lumber. That the official Turkish statistics must be used with caution was evidenced in 1947, for example, when the crop was first estimated officially at 22,000 short tons but later reported as 40,800.

It soon became apparent to the Consulate that the only data of value to the international walnut trade were the quantities available for export; consequently, these figures have been the basis for all subsequent reports. The average tonnage so recorded during the past 5 years (1951-55) was about 4,000, in-shell basis. This would appear to be anywhere from 10 to 20 percent of total production.

TABLE 5.--Walnuts, unshelled and shelled: Exports from Turkey, by country of destination, average 1935-39, annual 1946, 1951-55

Country of destination	Average 1935-39	1946	1951	1952	1953	1954	1955 ¹
UNSHELLED							
United States.....	Short tons 7	Short tons (2) 10	Short tons 0	Short tons 0	Short tons 0	Short tons 0	Short tons 0
Canada.....	(2) 7	10	0	0	0	0	0
United Kingdom.....	5	74	30	0	0	0	0
Germany, Western ³	3,858	(2)	60	0	82	23	0
Germany, Eastern ³				0	0	165	0
Austria.....	81	(2)	0	0	17	40	0
Czechoslovakia.....	6	(2)	0	0	230	24	0
Italy.....	91	(2)	0	28	0	0	7
Uruguay.....	(2)	(2)	91	58	126	165	186
Egypt.....	124	93	17	17	0	0	0
Cyprus.....	6	83	16	0	0	0	0
Lebanon.....	(2)	(2)	15	28	0	0	0
Syria.....	79	(2)	15	0	0	0	0
Other.....	4 173	5 887	22	4	14	24	6 388
Total.....	4,430	1,147	266	135	469	441	581
SHELLED							
United States.....	158	515	629	35	13	238	17
Canada.....	2	14	896	264	0	34	0
United Kingdom.....	6	(2)	204	0	10	10	30
Bulgaria.....	(2)	0	0	0	59	315	0
Austria.....	1	0	0	0	32	19	7
Czechoslovakia.....	56	0	0	0	47	0	0
Denmark.....	3	62	0	0	1	2	0
France.....	11	0	35	103	0	0	0
Germany, Western ³	575	0	0	157	12	85	13
Hungary.....	2	0	0	0	0	10	0
Italy.....	10	0	33	56	0	0	0
Finland.....	1	0	0	0	0	122	18
Netherlands.....	2	0	47	0	0	0	0
Sweden.....	(2)	74	1	4	33	0	0
Switzerland.....	10	40	39	0	0	0	6
Yugoslavia.....	(2)	0	0	0	36	165	766
Israel-Palestine.....	23	183	0	7	2	47	80
Egypt.....	48	73	11	0	0	0	0
Lebanon.....	(2)	0	64	86	0	0	0
Syria.....	26	8	(7)	0	0	0	0
Other.....	6	23	6	18	6	5	28
Total.....	940	992	1,965	730	251	1,052	965

¹ Preliminary.

² If any, included in "Other."

³ Classified as East and West Germany, January 1952.

⁴ Includes, in tons: Hungary 56 and Brazil 26.

⁵ Includes, in tons: Switzerland 346, Malta 391, and Palestine 90.

⁶ Includes 16 tons to Finland and 372 to Brazil.

⁷ Less than 1/2-ton.

Marketing

Walnuts are valued in Turkey as a basic household food for winter consumption, and farmers harvest them primarily for their own use. Walnuts are also consumed in fairly large quantities in pastry-making and in the manufacture of confections. Each year itinerant buyers go through the country as agents of the commercial and export trade and buy the farmers' surpluses. The price, or the farmer's need for cash, will of course influence the amount he offers for sale. A recent report stated that home consumption is increasing with the gradual improvement in standards of living, and many farmers are not interested in selling at any price.

Exports

About 85 percent of Turkey's export volume has been in shelled form. The United States has been the top customer, followed by Western Germany and Canada. The small tonnage sold in-shell has gone to Germany and Uruguay. Because of third-country transactions and the exchange manipulations characteristic of Turkish foreign commerce, export declarations covering shelled walnuts do not afford reliable indices of destination. For example, in 1954 the record showed Yugoslavia, itself a producer of walnuts, as a substantial importer from Turkey; and Bulgaria, also a substantial walnut producer, as the largest shelled-walnut customer of the year.

One reason for the erratic nature of Turkey's shelled-walnut exports, aside from exchange manipulations, may lie in the comparatively poor and undependable quality of its shipments. An importing country may make substantial purchases one year and be so dissatisfied with deliveries that it makes no further purchases for some time. In 1954-55 the situation was so exasperating to U. S. importers that the Association of Food Distributors of New York filed formal complaint. In reply, Turkish exporters proposed that U. S. importers set up their own agency in Istanbul to inspect and certify the quality of shipments before loading. This system would entail more expense than could be justified by the volume and character of the Turkish shelled-walnut supply.

Before export, shelled walnuts undergo what the Turks call manipulation. They are culled for defects and separated into several colors and by halves and pieces. Then these fractions are blended to make up the synthesized commercial grades. Exporters maintain that this process, plus proper packaging for export, is overly expensive. In any case, Turkish walnuts have not enjoyed a good reputation in the U. S. trade. At best, quality is still undependable, for production is all from mixed seedling types and the trees are largely at the mercy of pests, disease, and the variable and occasionally harsh climate of the region. Handling from tree to port may also be complicated. Thus it is not surprising that Turkish kernels often run to high percentages of dark color, shrivel, and mold.

FILBERTS

GENERAL

World commercial production of filberts is confined almost entirely to four countries--Turkey, Italy, Spain, and the United States, in the order of their in-shell tonnage. Total production from these four has averaged about 124,000 short tons during the years 1948 to 1955.

During this 8-year period Turkey accounted for about 56 percent. Italy with 26 percent was second, Spain with 11 percent was third, and the United States with about 7 percent was fourth. The impact of U. S. production upon the world supply-price situation is confined to its position in the U. S. market and its influence upon the volume of imports into the United States. This in turn reacts upon the situation in Europe.

Actually the filbert is much more popular in Europe than in the United States. Perhaps two-thirds of the Turkish-Italian-Spanish production, or some 75,000 to 80,000 tons, in-shell weight, is consumed in western and northern Europe compared with approximately 15,000 tons in the United States.

In the United States 35 to 40 percent of the filberts used are sold in the shell; in Europe only 15 to 20 percent (in-shell basis). Probably the reason why the shelled filbert enjoys greater favor in Europe is its popularity in the manufacture of candy and bakery products.

The United States makes use of filberts in ways not so well known to Europe. Large quantities in-shell are used in the commercial mixed nut packs so popular in the United States during the winter holidays (walnuts, filberts, almonds, pecans, and Brazil nuts); also in the roasted-salted "bridge mixes" of shelled nuts, which are still a novelty in Europe but which might well merit exploitation there.

The United States has been importing about half the filberts it uses (computed on an in-shell basis), with this amount consisting almost entirely of shelled filberts, and Turkey accounting for 75 percent of it. Clearly, the quantity and price of imports from Europe exert an important influence upon returns to the U. S. producer. Reflecting this fact is the U. S. duty of 5 cents per pound on in-shell filberts and 8 cents on shelled filberts.

The 1955-crop marketing season was one of short supplies in relation to demand. Influenced by a marked world shortage of almonds, which are also used heavily in candies and salted mixes, prices of shelled filberts rose to the highest in history, and heavy speculative activity occurred. Starting at \$112.50 per 100 kilos (51 cents per pound) in August, Turkish prices rose to \$180.00 (82 cents per pound) three

months later. Italian and Spanish shelled filberts likewise moved upward, to as high as \$155.00 (70 cents). Generally speaking, the ruling prices for European shelled filberts during the last quarter of the calendar year ranged from 64 to 70 cents per pound, and were from 40 to 75 percent above those of immediately preceding seasons. Prices of in-shell filberts--influenced by the good-sized crop in Italy, which is the heaviest supplier of filberts in this form--did not rise so spectacularly.

The European filbert is a good product. Quality varies somewhat according to the country of production, climatic influences, the prevalence of insects and diseases, varieties grown, and the like. Sizes, however, are small. What is considered a good-sized filbert in Europe is little, if any, larger than the Medium of the Pacific Northwest. On the other hand, the smaller size of the European kernel is advantageous to candy-makers, who frequently must use a fixed number of kernels per bar to retain consumer favor. Some bars are moulded in squares, each of which must contain a whole filbert.

TABLE 6.--Filberts, unshelled: Estimated commercial production in specified countries, average 1948-52, annual 1952-55

Country	Average 1948-52	1952	1953	1954	1955
	Short tons	Short tons	Short tons	Short tons	Short tons
Italy.....	30,000	15,000	38,000	23,000	50,000
Spain.....	14,200	9,800	22,000	7,300	12,000
Turkey.....	67,000	67,000	51,000	125,000	50,000
Foreign total.....	111,200	91,800	111,000	155,300	112,000
United States.....	8,600	12,250	4,960	8,670	7,700
Grand total.....	119,800	104,050	115,960	163,970	119,700

TABLE 7.--Filberts, shelled and unshelled: Imports into United States by country of origin, average 1948-52, annual 1951-55¹

Country of origin	Average 1948-52	1951	1952	1953	1954	1955 ²
	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons
SHELLED						
Italy.....	269	332	240	535	133	215
Spain.....	91	105	132	836	35	43
Turkey.....	2,679	3,439	1,959	1,157	3,750	1,234
Netherlands.....	(³) 23	2	2	2	44	70
Lebanon.....	(³) 0	0	0	0	96	16
Others.....	41	13	0	28	11	30
Total.....	3,080	3,912	2,333	2,558	4,069	1,608
UNSHELLED						
Italy.....	48	100	74	222	0	0

¹ Year Beginning Sept. 1.

² September through March.

³ If any, included in "Others."

Compiled from official records of Bureau of Census.

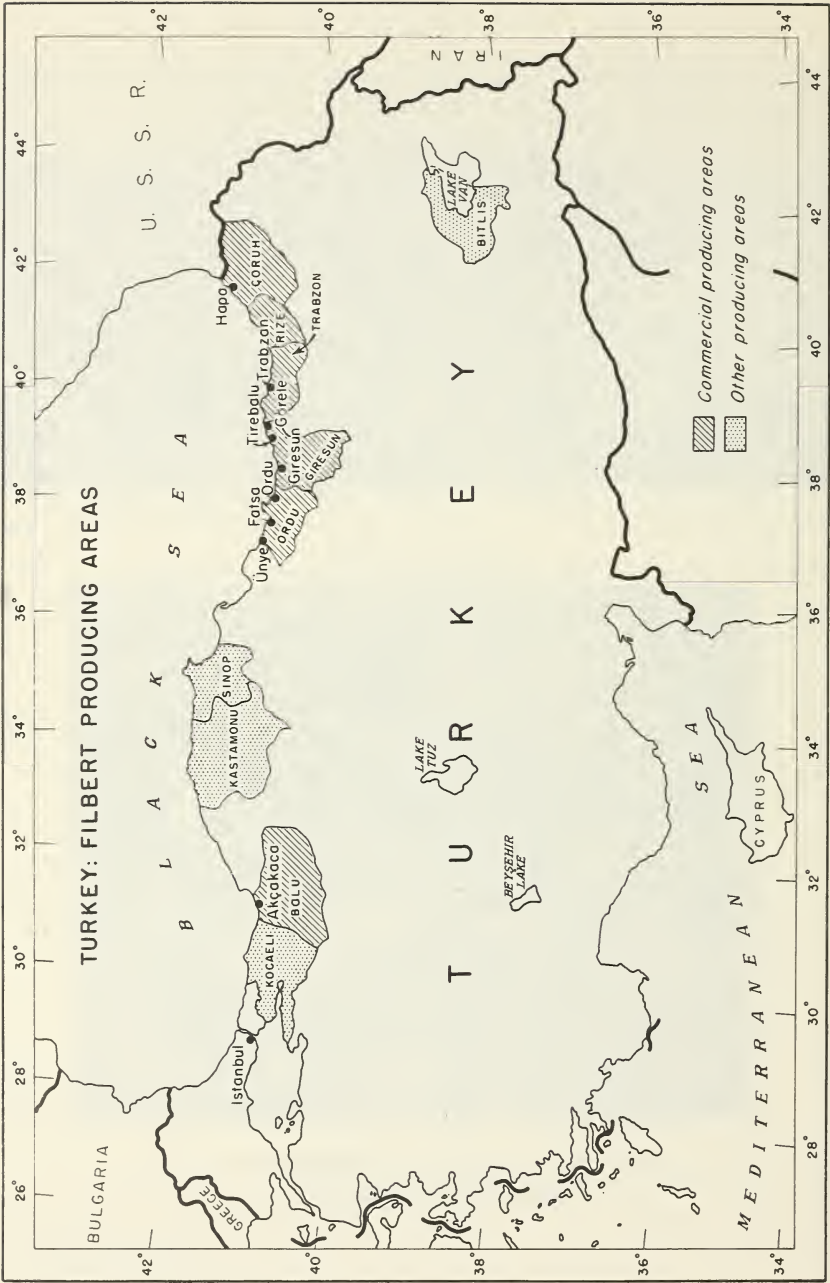
Unlike European walnuts, most European filberts are grown on a specialized basis and not necessarily incidental



Filbert orchard near Tarragona, Spain. Bushes are planted in rows 15 to 25 feet apart
--about 90 to an acre.



In Spain inter-cropping is practiced extensively and orchards are well cared for.



to other farming. But their culture is conspicuously different from that in the United States. The plants are bushes rather than trees, consisting of from three to five rootings or rootstocks in a 4 to 5 foot circle, Each bush has a number of shoots or stalks. As individual stalks become too old for good production, in perhaps 15 to 30 years or longer, they are removed and nearby young shoots are retained as replacements. Most plantings are on hillsides--some quite rocky and steep--and the bushes are set at irregular distances to accommodate themselves to the terrain. Plantings usually average considerably more plants to the acre than in the U. S. In contrast, Oregon-Washington filberts are planted in regular rows, trained in single-trunk tree form, and headed high enough to permit cultivation. Some outstanding exceptions to the European rule were noted in Italy and Spain, where excellent regular-row orchards were found on small areas of level or nearly level land.

European filberts exhibit an alternate bearing habit. The cycle can be disturbed, of course, by climatic influences, and most authorities believe that its sharpness can be lessened by improved cultural practices such as pruning, fertilization, and better pollination. However, it must be accepted as a definite tendency. It is generally attributed to tree exhaustion during production of a heavy crop, followed by recuperation with a light crop the next year.

The most serious insect pest in European filberts is the weevil, Balaninus nucum L., the adult of which emerges in spring from its overwintering in the ground, pierces the green filbert, and lays its eggs inside. The grub hatches inside the nut and feeds on the growing kernel. As a result, the filbert either drops during midsummer winds or is so crippled in its development that the kernel is defective. In Turkey, most of the damaged nuts drop before harvest. In Italy they generally reach maturity, and are impossible to cull out from surface appearances. Even after shelling, injured kernels are hard to detect, for internal black areas are revealed only when the kernel is broken. Thus the insect causes serious crop reduction, or, worse still, objectionable kernel quality when injured kernels mature.

Nearly all of Europe's filbert industry grows under natural rainfall, except for a substantial irrigated acreage in the Tarragona-Reus district of Spain. Within limits, of course, the higher the rainfall the better the growth and yields. Sustained drought over several seasons is very hard on filberts. However, untimely rain and dampness during pollination in early spring or at harvest time will also have an adverse effect on the crop.

TURKEY

In the course of this survey, Turkey was visited in late November and early December at the peak of shelling operations but too late for worthwhile horticultural observations in the field. For this reason, and in view of the exhaustive and authoritative report by W. R. Schreiber, "Filberts in Turkey" (Foreign Agricultural Report No. 73, U. S. Department of Agriculture, published in June 1953), no effort is being made to go into great detail concerning this segment of the European filbert industry, though it not only dominates the world picture, but is one of Turkey's most important agricultural and export industries. Dr. Schreiber's report is commended to all who desire a carefully detailed account of the Turkish industry. Consequently, only a few highlights, personal observations, and conclusions will be recorded here.

Location of Producing Areas

Turkey produces well over half the world's commercial filbert crop. All production of any consequence is in areas lying along the south coast of the Black Sea, between Istanbul and the Bosphorus on the West and the Russian frontier on the East. The region is mountainous and filberts are planted on the slopes of the hills running down to the sea, so for the most part they are confined to a coastal strip some 15 to 20 miles wide. A half dozen "vilayets" or states contain most of the industry, and the leading Black Sea port cities serving it are Giresun, Trabzon, and Ordu--the first-named being the filbert capitol of the region. The Black Sea coast enjoys a moderate climate; in the major producing areas temperatures range from a minimum of about 20° F. to a maximum of about 90°. Annual rainfall in the filbert areas ranges from 25 to 100 inches, and averages 40 to 60.

Cultural Practices

Filbert plantings are mostly in hilly and often rocky country, and regularity of spacing is impossible. A rough contour system may be followed for new plantings; but in general the peasants have simply allowed nature to take its course, and bushes are the result of chance seedling or volunteer growth. Hand tools are used for any tillage practiced. Goats or other livestock are often pastured on the natural ground cover. Solidly planted areas may contain three times as many bushes per acre as there are trees per acre in Oregon or Washington. From the best Turkish information available in 1953, 160,000 acres were totally or partly planted to filberts, of which about 80 percent were in bearing--a total area about 7-1/2 times larger than that in the

United States. The average yield per bush in 1953 was 11 pounds, which is in close agreement with information ascertained during this survey.

Nut Varieties and Characteristics

Turkey's shelled filberts are among the finest in the world. The reason is probably their high oil content (66 to 68 percent for the best-known varieties), which heightens flavor and facilitates the removal of the pellicle or skin after a short period of roasting. Turkey has many varieties and types of filberts, but for practical trade purposes there are two major groupings based on geography: the Giresun, grown in the area around that city and believed by many to be the best Turkey produces; and the Levante, comprising the rest. These are further divided into the round or "tom-bul" type and the long or pointed "sivri" type. The round is much preferred for shelling because it suffers less damage in cracking, and because--in Giresun, at least--it has a higher shell-out ratio, is rich in oil, and blanches easily. Perhaps 75 percent of Turkish production is of the round type, and most new plantings are confined to it.

Harvesting

In Turkey, unlike the rest of Europe, filberts are picked from the trees by hand instead of being shaken to the ground. This minimizes washing or floating away in the event of rain, loss in crevices, and damage by rodents. It also prevents the twig damage that beating causes. The nuts are picked in the husk, transported to central drying grounds or sheds, allowed to dry several days, beaten or threshed free of their husks, and dried again on open dry-grounds or in warmed sheds. They are then ready for market. The proper timing of the harvest is important; picking too green results in poor quality and loss, while waiting too long brings danger of rain damage. Each local governmental authority controls the legal date on which picking may begin.

Production

Average production in recent years has been about 70,000 short tons, in-shell, and while the 1955 crop fell to 50,000 tons as a result of drought and the fact that it was an "off" year in the production cycle, Turkey produced 125,000 tons in 1954 and promises to do substantially better in good seasons in the future.

The Turkish government is extremely ambitious to improve and modernize the filbert industry. Experiment stations are working on improved culture techniques (there is a station near Giresun), and through the official import and

credit agencies such supplies as fertilizer are being made available to growers. Superior types and varieties, pest control, fertilization, better pruning, etc. offer promise of improvement, and though progress in the field may be slow, it seems assured that crops from existing acreage will tend to increase as a result.

Marketing

The grower may sell his harvested crop to an "accumulator" who consolidates relatively small purchases and resells for a profit to a plant operator; or he may sell directly to a sheller through the latter's field agent; or he delivers or sells to the cooperative, which is empowered to name minimum field prices to growers. If government price-support operations become necessary, the cooperative can buy from nonmembers at the stipulated price-support level. Under the circumstances, the grower need not be too hasty in selling. If commercial handlers do not buy at the field prices dictated by the controlled export market, the cooperative, financed by government-sponsored agricultural credit banks, will provide a market. For the period of the 1955-crop season ending on February 1, 1956, the support minimum was 145 kuras per kilo in-shell, compared with 125 in 1954-55, and 100 in 1953-54. (145 kuras per kilo were worth 24 cents per pound at the official exchange rate, but about 8 cents per pound at the then existing free market rate).

Shelling

Nearly all Turkish filberts are shelled in plants. Home shelling is of minor consequence. There are about 45 or 50 shellers in Turkey. The plants vary considerably in degree of mechanization and age of equipment; most of it is out of date by U. S. standards. The largest plant is operated in Giresun by Findik Tarim Satis Kooperatifleri, the cooperative. It reflects the greatest degree of mechanization and its equipment is newest and most modern. Filberts are bulked for storage, then screened, size-graded, and cracked by machine. Turkish shellers crack between revolving millstones, set horizontally with clearance adjusted to the size of the nut. Nuts are then blown to remove the shell. The kernels are screened, size-graded, run over belts where women give them a final sorting, and bagged in heavy burlap for export. A filled bag weighs 176 pounds. Before export, the nuts are subjected to careful inspection.

In-shell filberts keep better than shelled ones, and kernels with pellicle intact keep better than those which are skinned and bruised in processing. Therefore, the practice is to shell only as sales are made and shipping dates approach. Unsold stocks are stored in-shell and hold up fairly well

under ordinary storage through the summer months. Government and marketing agencies are planning better warehousing facilities for stocks carried over from years of heavy production into succeeding seasons.

Labor, particularly female, is plentiful and cheap because the women will accept even meager wages to help support their families. Operators in Giresun stated that in 1955 wages were substantially increased, and that women workers in shelling plants were being paid from 2 lira (about 70 cents) per 8 hour day to as high as 4 lira in special cases. Heavy male labor was paid not less than 10 lira (about \$3.60) per day. These ratios are theoretical, however; at the free or black market rate of exchange the value of the Turkish lira at that time was only one-third the official rate. On a rock-bottom basis, most women were earning closer to 25 cents per day, and most men around \$1.25.

Cooperatives

The sales cooperative in Giresun is a federation of 15 or 16 organizations scattered throughout the Black Sea filbert belt. The first one was started 20 years ago under legislation enacted for the purpose. The relationship between the cooperative and government is quite close, the former acting as agent for the latter in support operations and other matters. The volume of filberts processed and sold by the cooperative was not ascertainable. It undoubtedly fluctuates with annual production, and also in relation to the nonmember tonnage handled. Giresun sources indicated that deliveries by actual members comprised about 15 to 20 percent of the Black Sea production. The membership obligation appears to be rather loose, for a certain amount of selling to private handlers is an accepted fact.

The cooperative plays an increasingly effective role in stabilizing the industry. A large new, first-class building is being erected in Giresun to house the offices of the cooperative, now in an old building somewhat removed from the plant, and also the offices of the export union; and to provide storage space for stocks and supplies.

Exports

An outstanding feature of the Turkish industry is its inspection system, operated by the government to protect export operations. Without doubt it has contributed very substantially to the growth of the Turkish industry and its prestige abroad. No lot of filberts may be exported without first being inspected, the bags sealed, and a certificate issued to accompany the other export documents.

The filbert standards established by law are unusually complete and detailed. They cover an intricate system of bag markings to show such information as weight, buyer's code and destination, crop year, grade, and type. Nearly 20 markings are used to indicate shape and size of kernels, and whether they are whole, broken, or mixed. Tolerances for deviation are provided, and there are tight provisions with respect to moisture content (5 percent maximum), and conditions like mold, shrivel, and rancidity. Whenever a sheller has sacked a lot for shipment he calls for inspection. The inspector draws samples from bags selected at random, carefully examines them, inspects the bags themselves for freedom from rips and for markings, and issues a certificate in accordance with his findings. Each bag is lead sealed.

Certain trade organizations are also empowered to perform important functions. For example, every dealer in filberts must be registered with a trade organization or chamber of commerce, in order to establish individual responsibility and protect sellers and purchasers from unscrupulous practices. The most important organization is the Filbert Exporters Union, which has a membership of several hundred and is sanctioned by law to fix minimum export prices and issue licenses. Its activities furnish the basis for much of the statistical data covering Turkey's export trade. Its pricing authority serves to provide the basis for the minimum field prices fixed to protect growers from unjustifiably low prices and exploitation.

The threads of speculation, manipulation of foreign exchange, and circumvention of price controls are often woven through transactions. This is understandable in the light of the wide discrepancy between official and free market exchange rates. The official rate was 2.8 lira per dollar; the free market rate was 9 or more lira per dollar during the 1955-56 marketing season. Nevertheless, the rigid inspection and certification system seems to be functioning well, and the establishment of minimum export prices does have a stabilizing effect upon the grower's position.

The bulk of Turkish exports are in shelled form. Currently, Turkey's principal customer by a wide margin is West Germany, followed by the United Kingdom. Other Western European countries as Austria, Belgium, France, Italy, the Netherlands, Norway, and Switzerland are also important customers. Altogether, filbert exports bring Turkey upwards of \$20 million annually, possibly \$50 million in 1955. During 1950-54, average annual U. S. imports of Turkish shelled filberts were 2,300 short tons (5,100 tons in-shell equivalent). Although this fell far short of purchases by Germany, United Kingdom, and the others, Turkey is nevertheless the leading source of U. S. filbert imports, accounting for nearly 80 percent during the past 5 years.

TABLE 8.--Filberts, unshelled and shelled: Exports from Turkey, by country of destination, average 1935-39, annual 1946, 1951-55

Country of destination	Average 1935-39	1946	1951	1952	1953	1954	1955 ¹
UNSHELLED							
	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
United States.....	85	105	0	0	0	0	0
United Kingdom.....	301	86	1	0	0	0	0
Belgium and Luxembourg.....	40	367	0	0	0	11	0
Czechoslovakia.....	98	(²)	0	0	254	242	197
France.....	133	(²)	22	0	1	72	0
Germany, Western ³	1,294	(²)	987	0	0	117	44
Germany, Eastern ³		-----	-----	0	220	0	0
Netherlands.....	31	(²)	(⁴)	2	0	10	0
Norway.....	4	(²)	0	0	0	1,405	0
Poland.....	105	(²)	0	0	0	176	70
Sweden.....	70	337	66	6	0	28	0
Switzerland.....	5	56	0	0	0	494	0
Brazil.....	106	3	0	0	0	0	251
Uruguay.....	(²)	(²)	0	39	61	60	28
Israel-Palestine.....	74	841	0	0	3	0	14
Egypt.....	553	661	316	796	266	226	308
Cyprus.....	(²)	107	0	8	0	0	0
Iraq.....	9	830	0	0	0	0	0
Syria.....	70	352	39	55	0	55	33
Lebanon.....	(²)	(²)	55	91	0	49	16
Other.....	90	106	5	15	0	8	0
Total.....	3,068	3,851	1,491	1,012	805	2,953	961
SHELLED							
United States.....	565	5,151	509	1,096	770	849	203
Canada.....	114	324	723	55	47	204	3
United Kingdom.....	1,738	907	5,357	2,121	5,600	3,172	4,408
Austria.....	476	(²)	394	589	573	1,086	4,130
Belgium and Luxembourg.....	267	2,495	327	401	626	489	1,229
Bulgaria.....	5	(²)	0	143	2,727	0	0
Czechoslovakia.....	1,864	387	66	187	166	661	1,836
Denmark.....	201	700	0	118	88	83	172
Finland.....	9	(²)	0	545	290	679	733
France.....	1,660	169	1,658	979	1,179	1,599	2,140
Germany, Western ³	12,445	(²)	8,696	12,423	12,055	14,511	20,907
Germany, Eastern ³		-----	-----	163	355	601	1,285
Hungary.....	501	(²)	25	0	0	0	1,319
Ireland (Eire).....	1	(²)	104	89	1,309	9	0
Italy.....	572	58	11	1,161	82	1,422	2,541
Netherlands.....	158	998	853	920	1,942	581	1,744
Norway.....	25	299	138	5	0	0	132
Sweden.....	288	2,508	596	1,459	825	655	235
Switzerland.....	999	10,006	1,126	2,064	1,534	3,772	2,078
Poland.....	236	(²)	13	0	0	110	257
Rumania.....	152	(²)	0	0	0	0	385
Yugoslavia.....	111	(²)	0	1,542	187	324	480
Argentina.....	9	89	21	0	0	0	0
Brazil.....	12	18	206	0	0	0	65
Uruguay.....	(²)	(²)	93	22	28	36	0
Egypt.....	65	402	382	182	11	113	73
Israel-Palestine.....	16	702	0	687	568	159	1,600
Lebanon.....	(²)	(²)	83	239	18	10	28
Syria.....	41	205	28	0	0	22	0
Union of South Africa.....	25	87	283	104	118	36	1
Australia.....	72	(²)	291	339	180	22	53
New Zealand.....	27	(²)	202	33	50	0	0
Other.....	66	129	39	170	13	3	16
Total.....	22,720	25,634	22,224	27,836	31,341	31,208	48,053

¹ Preliminary.

² If any, included in "Other."

³ Classified as East and West Germany, January 1952.

⁴ Less than 1/2-ton.

Unfortunately, the maximum benefit of this trade with the United States has not accrued to Turkey. Most of the imports by the United States were made through Western European countries whose traders found it profitable to purchase filberts in Turkey for re-sale to the United States, their purchase costs being lower than the prices quoted directly to the United States. Thus, Turkey supplied the

filberts but failed to get payment in U. S. dollars, a condition attributable to its system of controls and the erratic position of its currency.

Outlook

Turkish filbert production is expected to increase. The Turks take great pride in their filbert industry, the exports of which have been an important source of foreign exchange, and have amounted to about 40 percent of the combined export value of all their tree and vine crops. The Turkish government is determined to expand the industry because of its importance as an export asset, and growers can be expected to do their part as long as yields and prices are satisfactory. Important new plantings have been extended into the state of Akcakoca, along the Black Sea, and improved management should slowly but surely have its influence upon the older areas.

ITALY

During 1948-55, Italy's commercial filbert production averaged nearly 33,000 short tons in-shell, comprising about 26 percent of the 4-country total.

Location of Producing Areas

Italy's filberts, like Turkey's, grow largely in hilly country, in areas where rainfall is adequate. The industry is centered for the most part in Campania (Naples-Avellino-Salerno) and Sicily. Official Italian records show that an average of 88 percent of the crop has been grown in these two areas, Campania ordinarily producing two or three times as much as Sicily. The Piedmont area of the north accounts for another 5 or 6 percent of the total, and the Lazio area (around Viterbo, near Rome) for 4 or 5 percent; the rest is scattered.

Of the most important districts, Avellino lies about 25 miles inland, Naples and Salerno are on the coast, and Viterbo is some 30 miles inland. In Sicily most production is within a similar distance from the sea. The plantings extend to 3,000 feet above sea level, but best production is reported from the zone of 800 feet to 2,000 feet and on those exposures receiving heaviest rainfall.

Cultural Practices

Though most of the filbert land ranges from gentle slopes to steep hillsides, there appears to be some regularity in planting distances, either on a rectangular plan or by contour. Mature bushes and yields are larger than in Turkey,

because of better soil, warmer climate, and possibly better culture. Considerable covercropping to lupines and vetches is practiced in the better districts, and more animal manures are applied.

The Avellino district is probably the most intensive filbert area in Italy. Plantings are small, the largest farms comprising about 25 to 30 acres. On good land, about 70 to 75 bushes are planted per acre, each one occupying a circle 4 or 5 feet in diameter at the base, so that the space between bushes averages 18 to 20 feet. Elsewhere, and on poorer lands, bushes may be much closer and smaller. Every few years the plantings should be systematically pruned by removing old stalks in favor of selected young stalks. The young original plant is a partially rooted shoot from an old clump, and a bush consists of three or four such original stalks planted in a circle 3 or 4 feet across. Consequently, an old bush consists of a group of clumps of good size at ground level, but susceptible to decay and root rot from the exposed cuts that result from successive prunings of old stalks.

Orchards are expensive. Good ones are valued at the equivalent of \$1,000 an acre. There is a large degree of absentee ownership because filbert plantings are a favorite investment among town business and professional men. During the past few years, prices have been relatively good and the rate of return satisfactory. As a result, most filbert orchards are farmed by tenants, and a common division is one-third of the crop to the tenant and two-thirds to the owner. Many farmers who own their own land rent additional acreage. Common male field labor receives \$1.50 per day; specialized labor for work like pruning, receives \$2.00. Women and children receive a dollar or slightly more.

In Sicily the industry is largely of a "casual" or wild nature, on the hillsides, principally on the moist northern slopes of Mount Aetna. Most holdings are small, though a few have 100 to 200 acres and are cultivated. Care is negligible except for occasional pruning, which is done as much for firewood as for any other reason.

The extent of weevil damage in Italy is said to be in inverse proportion to the size of the crop. The number of egg-laying adults and the number of eggs laid are believed to be relatively constant in a given orchard; consequently, when the crops are short and the number of available green filberts is small in relation to adult weevils, the percentage of infestation is heavy and presents a serious obstacle to the maintenance of quality exports. In Sicily, where the problem is most serious, infestations may run as high as 30 to 40 percent in bad years and as low as 5 to 10 percent in years of heavy production such as 1955.

Acreage

For Italy, as for other European countries, the actual net acreage in filberts is not ascertainable. The official Italian statistical report for 1955 estimates that about 79,000 acres are "specializzata" with respect to filberts. In addition filberts are "promiscua" on about 253,000 acres, meaning that on each acre there are a few filbert bushes. It would appear that both Italy's specialized acreage and commercial tonnage are slightly less than half of Turkey's.

Nut Varieties and Characteristics

Europe's finest in-shell filberts are produced in the Naples area of Italy. In size and appearance, however, these filberts are outpointed by the Oregon-Washington product. This fact explains in part why they have been unable to capture the U. S. in-shell market. The occasional shipments of in-shell filberts that have come into the United States in recent years were of medium-sized nuts for use in low-priced mixes.

Filbert varieties in Italy vary with the area, having been time-tested under each environment for a good many years, although authorities concede much room for improvement by selection and breeding. Production in the Avellino district is largely of the San Giovanni or Long Naples variety. The preferred shelling variety there is the Round Naples. In the Salerno district south of Naples the "Giffoni" dominates and is a favorite of U. S. shelled filbert buyers. The Viterbo district above Rome produces a fine shelling variety called "Romana" or "Gentile." In Sicily, most are either the "Racinante" or the ordinary unclassified "filbert of commerce."

A Naples exporter of long experience rates filbert types or varieties in the following order, using shelling quality as the criterion: First are the filberts of the Piedmont or extreme northwestern region of Italy and comprising only a small percentage of the production; next the Romana or Gentile; third, the Giffoni; fourth, the Naples Round, also sold in-shell as Round Polished; fifth, San Giovanni or Long Naples, usually sold in-shell and commanding top prices in that form; and last, the Sicilians, also sold mostly in-shell.

Harvesting

At harvest the bushes are beaten with canes and nuts are picked from the ground. Some crops are sold on the trees, but this practice is declining. A few filberts are sold in the fresh or green state for local consumption. It is the custom to sell to "accumulators" or to agents representing Naples firms.

Production

Production is estimated to have reached a record level of 50,000 tons in 1955 and predictions are for a near-future increase. If so, it will be partly due to increased plantings and to slow but steady improvement in the care of existing plantings, particularly in the Naples area.

Good production in the Avellino district is said to be 30 to 50 pounds per bush. If average production is half of that, it would be considerably better than the average reported by Dr. Schreiber for Turkey. It also means that around Avellino, the most important single filbert district, average production in a good year might be 1,500 pounds per acre. In 1953, an above-average year, yields in the Avellino district averaged 1,600 pounds per acre according to official statistics and in 1954, a poor year, only 535 pounds.

Sicilian production accounts for about one-third of the Italian total and in recent years ranged from a low of 4,400 tons in 1954 to a high of over 15,000 tons in 1955.

Marketing and Shelling

Marketing in Italy is relatively free of controls: Buying and selling are on a free basis and, if 1955 is any criterion, there is less price fluctuation than in Turkey. Italian exporters follow the market at levels somewhat lower than those prevailing in Turkey and appear to exert a stabilizing influence upon international trade, keeping prices on a more realistic basis than in Turkey--or so it was in 1955. Marketing is through the usual channels--sales by grower to sheller or packer via a field agent or "accumulator" and sale to distributors and manufacturers abroad via commission agents. Terms are the usual ones--sight draft against letters of credit upon presentation of documents. Most of the shelling is done at Naples, where female labor is plentiful and cheap. Farmers are price-conscious and cautious in selling, and delayed marketing paid well in 1955 when, although the Italian crop was large, the market strengthened steadily as a result of the short Turkish crop and a shortage of almonds.

There are two underlying forces pushing the industry ahead. First, as in all relatively free economies, greater interest will prevail because the crop has been profitable to farmers since the war. Second, the government will continue to foster improvement and expansion as a part of its broad effort to boost exports and strengthen the country's economy. However, a substantial proportion of Italy's filbert production is now being used at home and the prospect is for this percentage to increase. This is partly due to the ingenuity of a large candy maker, who developed a substitute for chocolate in a filbert bar. Several years ago when

cocoa was very expensive, he compounded a synthetic mixture of wholesome materials and departed from custom by marketing it through food and other stores instead of through the specialty candy shops which dominate the candy trade. The reasonably-priced bar became popular and resulted in a noticeably larger usage of filberts within Italy.

Sicilian filberts have a relatively low shell-out ratio because of heavy shells and higher percentage of defective kernels. Consequently they are sold mostly in-shell at lower prices than those brought by Round and Long Naples. Inasmuch as the shelled filbert market was especially strong in 1955, there were indications that a larger-than-usual percentage of the crop would be shelled, despite the handicaps.

Exports

From one-half to two-thirds of Italy's exports are in in-shell form. However, the situation was reversed in 1953 and 1955, years of heavy production, when 60 percent and 55

TABLE 9.--Filberts, unshelled and shelled: Exports from Italy, by country of destination, average 1935-39, annual 1946, 1951-55

Country of destination	Average 1935-39	1946	1951	1952	1953	1954	1955 ¹
UNSHELLED							
	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons
United States.....	905	2,138	60	82	87	(²)	(²)
Canada.....	404	1,002	114	156	647	(²)	(²)
United Kingdom.....	1,068	1,300	2,683	964	3,196	1,494	2,831
Belgium and Luxembourg.....	127	9	105	127	(²)	(²)	(²)
Denmark.....	228	0	0	138	(²)	(²)	(²)
France.....	782	151	778	159	1,082	1,005	1,056
Germany ³	5,708	14	3,080	5,585	6,210	4,323	4,758
Ireland (Eire).....	16	33	23	46	(²)	(²)	(²)
Norway.....	410	217	1	1	(²)	635	857
Netherlands.....	83	0	124	193	(²)	(²)	(²)
Sweden.....	719	885	1,136	770	1,099	1,056	1,135
Switzerland.....	96	91	91	89	(²)	(²)	(²)
Argentina.....	234	383	100	0	(²)	(²)	(²)
Brazil.....	51	339	560	357	(²)	(²)	(²)
Cuba.....	25	34	16	41	(²)	(²)	(²)
Egypt.....	132	65	395	194	602	(²)	(²)
Libya.....	101	0	22	34	(²)	(²)	(²)
Tunisia.....	68	0	61	78	(²)	(²)	(²)
Other.....	686	114	473	274	1,430	1,827	2,894
Total.....	11,843	6,775	9,822	9,288	14,353	10,340	13,531
SHELLED							
United States.....	265	398	(²)	121	291	(²)	(²)
Canada.....	21	23	(²)	6	(²)	(²)	(²)
United Kingdom.....	37	109	(²)	54	(²)	(²)	(²)
Belgium and Luxembourg.....	287	0	318	213	598	383	589
Czechoslovakia.....	417	111	(²)	68	(²)	(²)	(²)
France.....	389	0	604	108	758	647	1,515
Germany ³	964	0	392	130	4,950	1,297	2,431
Norway.....	43	0	141	85	(²)	(²)	(²)
Sweden.....	68	38	103	6	101	(²)	(²)
Switzerland.....	697	518	609	628	2,139	964	2,341
Austria.....	173	0	(²)	10	185	(²)	(²)
Other.....	539	83	4 913	213	855	1,110	⁵ 1,060
Total.....	3,900	1,280	3,080	1,642	9,877	4,401	7,936

¹ Preliminary.

² If any, included in "Others."

³ Classification as to East and West Germany not shown.

⁴ Includes (in tons) 114 to Costa Rica; 114 to Mexico; 78 to Ecuador.

⁵ Includes 310 tons to Hungary.

percent, respectively, of the crop was shelled. Much depends upon comparative returns from the two forms of marketing in a given season, and these in turn are dependent upon prices and upon plumpness of kernels in relation to weight of shell--the shell-out ratio.

Currently, Italy's largest in-shell customers are Germany by a wide margin, United Kingdom, Scandinavia, and France, and the most important takers of shelled filberts are Germany, Switzerland, and France. In the case of shelled filberts, Germany is likewise the principal market, followed by Switzerland, France, and Belgium.

SPAIN

Spain accounted for 11 percent of the 4-country commercial filbert crop with an average in-shell production of 14,000 short tons during the 8 years, 1948-55.

Location of Producing Areas

Production is scattered throughout eastern and northern Spain, but the east dominates, and the province of Tarragona on the northern east coast produces about 75 percent of the total. Neighboring Barcelona and Oveido also on the east coast, together produce another 15 to 20 percent. The other producing areas are scattered. Barcelona is the key port of shipment, but the production and packing center of greatest importance is the little city of Reus, about 15 miles inland from the city of Tarragona. In a general way, production can be divided into two zones, a low coastal area around Tarragona-Reus and the moist hillside areas near Barcelona, extending north to Gerona. This situation causes variations in yields within given seasons; for example, 1955 crops in the coastal areas were hit by damp weather during spring pollination, while the higher areas were unaffected. On the other hand, several recent years of drought have cut Spanish production as a whole, with most serious damage to the higher plantings where soil is shallow and retains less moisture.

Cultural Practices

The plantings seen on level bottom soil in the Tarragona-Reus area were in regular rows, 15 to 25 feet apart, averaging about 90 bushes per acre. The largest irrigated area is to be found here--some 27,200 acres according to an estimate by the National Syndicate of Fruit and Garden Products. Inter-cropping is practiced rather extensively in this area and the orchards are well cared for. The bush type prevails, although many orchards are evidently set out

on the basis of only one shoot per location instead of three or four planted in a triangle or square as in Turkey and Italy.

Acreage

Official Spanish statistics listed 58,000 acres of filberts in solidly planted orchards in 1952. The National Syndicate of Fruit and Garden Products estimates that if all scattered bushes were added in the existing orchards, there would be a total of 90,000 acres in filberts.

Nut Varieties and Characteristics

Seventy percent of the acreage is said to be of the "Negreta" variety, a medium-long type, and the rest is "Comuna" or unclassified common.

Production

A good commercial filbert crop in Spain is reckoned at 25,000 short tons in-shell. This figure was approached in 1953 (22,000 tons) and exceeded by the 26,800-ton average during the prewar years of 1935-39. The unfavorable weather of recent years accounts for the disturbance of the normal 2-year cycle of large and small crops. The 1954 crop was the smallest ever recorded and the 1955 crop of 12,000 short tons in-shell, though considerably larger than the year before, is still well below average. Low government export prices discouraged growers, who became indifferent to the care of orchards and harvesting. A turn for the better was indicated in 1955. Yields were improved and export prices to growers were fixed at 19.25 pesetas per kilo (22.4 cents per pound), one peseta higher than in the previous year.

Marketing

One of the problems faced by Spanish handlers is delay in receipt of nuts from the field. Ordinarily the harvest begins in August--in 1955 it was September--but growers tend to hold their crops, hoping to profit pricewise. Like a good many other European nut growers, who know that each season packers accept certain orders for early delivery and face serious loss and embarrassment if they haven't the nuts to ship, the grower with prime stock ready for market tries to make the packer pay heavy prices--and frequently he succeeds. Delayed deliveries are said to have cost the Spaniards the loss of some important markets. The government's minimum export price to farmers is frequently increased for deliveries before December 31 in order to encourage early marketing.

Home consumption of filberts is relatively small, fluctuating somewhat with price. The nougat or candy industry of Spain is the largest user.

Shelling

Little shelling is done in the plants of the export handlers. Local operators in the villages buy the filberts from growers, shell them, and sell the kernels to the exporters. The exporters run the deliveries over shaker-graders to remove dirt and loose pellicle. The kernels are then sized and run over belts where women cull out the broken, mouldy and rancid kernels, and pieces of shell. (Women workers in Reus plants were receiving 30 pesetas or 75 cents per day in 1955.)

Exports

About 70 percent of the filbert crop is exported; approximately 90 percent of the filberts exported are shelled. Based on official exports, Switzerland is the biggest customer, followed by France, Germany, and the Netherlands. Spain is far down the list as a supplier of shelled filberts to the United States. For example, Turkish shelled filberts were imported at an average rate of 2,300 tons per year during 1950-54, Italian at less than 400 tons, and Spanish at only 240 tons.

The Spanish Government's export controls--in some respects even stricter than Turkey's--have resulted in extensive smuggling out of Spain over the French and Portuguese borders. Illegal export occurs in such volume that official Spanish figures give little idea of the real volume and destination of exports. To approach the facts one must guess, with the help of the trade, the amount leaving Spain surreptitiously. This help is difficult to obtain because of the official ban placed in 1948 against giving trade information to representatives of foreign governments. In 1954-55, however, the smuggled export of filberts probably exceeded the recorded volume nearly 2 to 1. In 1955-56 the illegal volume was said to be over half the total.

The major encouragement to smuggling nuts out of the country is the system by which the government gets a large percentage from each transaction in addition to appropriating the foreign exchange involved. An exporter must apply to the Ministry of Commerce for an export license, either through the Association of Almond and Filbert Exporters, or directly. If the sale is to the United States the dollars paid by the U. S. customer are retained by the government and the exporter is reimbursed in pesetas. However, instead of being given pesetas at the official rate of 38.95 per dollar, in 1955-56, for example, he was paid 30.4 pesetas, the government retaining the difference. Similarly, large

exchange premiums are extracted in dealings with France and Portugal, so there is a strong incentive to circumvent the government by smuggling across the borders for direct payment. In addition, the illegal exporter owns the foreign currency paid for the nuts and can use it advantageously on any importations into Spain that he or another party may undertake.

TABLE 10.--Filberts, unshelled and shelled: Exports from Spain, by country of destination, average 1933-35, annual 1946, 1951-55

Country of destination	Average 1933-35 ¹	1946	1951	1952	1953	1954	1955 ²
UNSHELLED							
	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons
United States.....	232	6	66	(³)	0	0	0
Canada.....	145	19	137	177	5	0	0
United Kingdom.....	1,555	(⁴)	592	46	10	0	3
Belgium and Luxembourg.....	228	(⁴)	25	269	0	0	0
France.....	354	0	177	449	225	0	11
Norway.....	186	0	0	(³)	0	0	16
Sweden.....	184	0	26	28	0	0	0
Switzerland.....	14	60	396	113	99	2	0
Brazil.....	29	1	29	50	91	12	13
Other.....	⁵ 1,599	⁶ 238	126	42	12	4	15
Total.....	4,526	324	1,574	1,174	442	18	58
SHELLED							
United States.....	217	65	62	0	102	11	62
Canada.....	117	13	17	2	11	0	0
United Kingdom.....	1,782	28	722	150	117	50	75
Austria.....	27	0	150	125	369	15	6
Belgium and Luxembourg.....	545	0	205	171	226	4	39
France.....	2,039	1	577	1,480	792	148	416
Germany ⁷	1,009	0	145	551	709	31	201
Netherlands.....	379	0	130	175	648	79	25
Norway.....	62	0	0	119	18	9	74
Sweden.....	166	0	39	80	304	191	33
Switzerland.....	675	553	2,433	1,499	3,157	1,235	1,039
Denmark.....	134	31	147	92	20	0	1
Other.....	⁸ 802	58	102	109	212	9	137
Total.....	7,954	749	4,729	4,553	6,685	1,782	2,108

¹ 3-year average 1933-35; average 1935-39 not available because of Spanish Civil War. ² Preliminary. ³ If any, less than 1/2-ton. ⁴ Less than 1/2-ton. ⁵ Includes (in tons)--Germany 423; Denmark 145; Netherlands 134; Argentina 311; Cuba 130; Mexico 74; French Morocco 125; Algeria 49; Italy and Australia each 31; Republic of Philippines 23. ⁶ Includes (in tons) 70 to Puerto Rico; 46, Argentina; and 33, Mexico. ⁷ Classification as to East and West Germany not shown. ⁸ Includes (in tons) Czechoslovakia 97; Italy 291.

The government has classified export commodities into groups, with an exchange rate for each group. Filberts, in 1955-56 were in group 3 with rates of 30.425 pesetas per dollar (official rate 38.95), 8.55 pesetas per 100 French francs (official rate 10.85), and 105.5 pesetas per 100 Portuguese escudos (official rate 134.96). At the urgings of scrupulous members of the nut trade, the government is strengthening its defenses against illegal border crossings.

Prices for the sale of filberts in the domestic market are not fixed, but minimum export prices are established each season by the government upon recommendation by the exporters. The competitive flow of filberts into the two channels, one controlled and the other not, is left to self-regulation; domestic users, such as the nougat industry, must outbid the export minimum until adequate supplies have been secured, after which the exporters have their chance. Or the situation may be reversed.