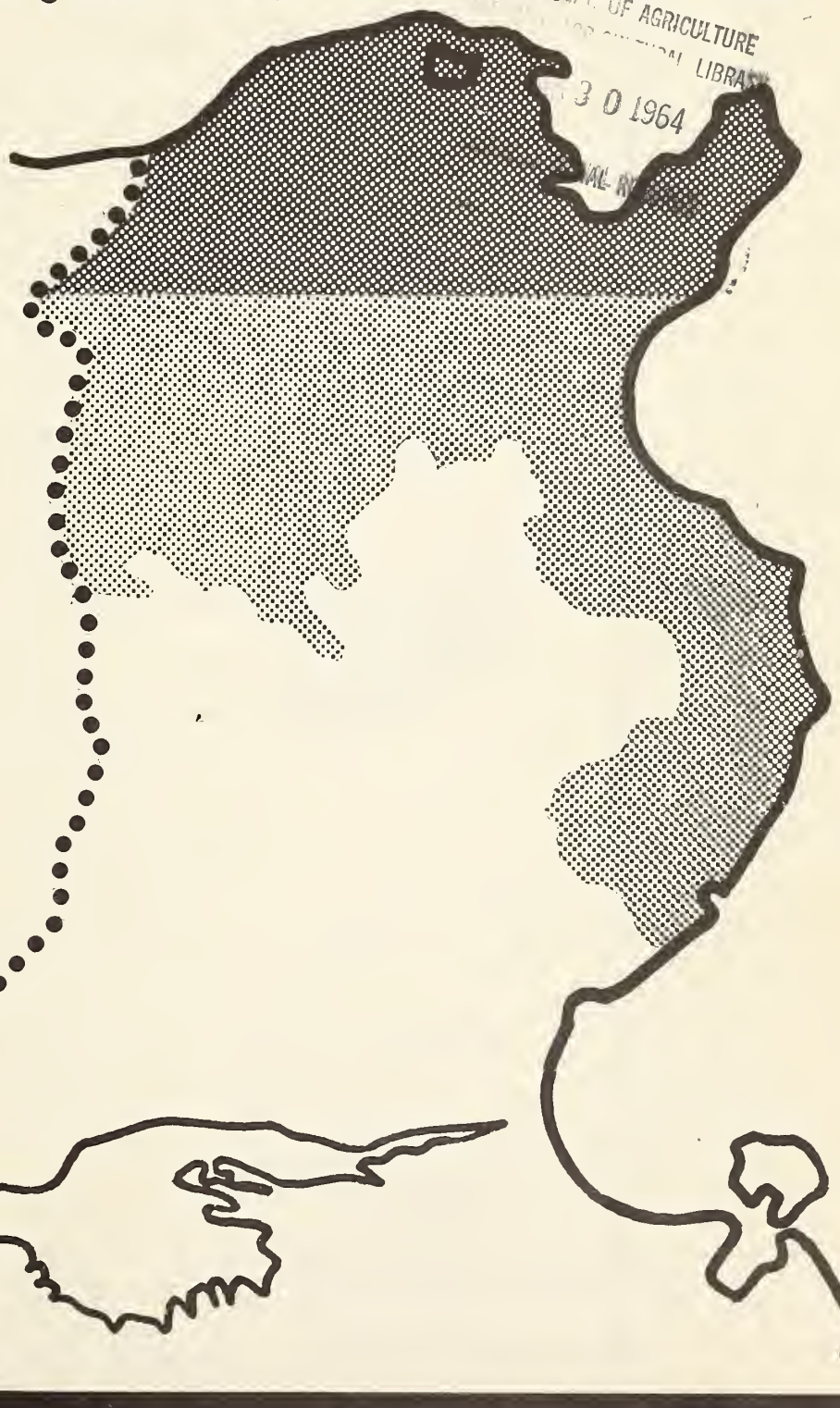
# Agriculture in Tunisia:

## Organization, Production, and Trade





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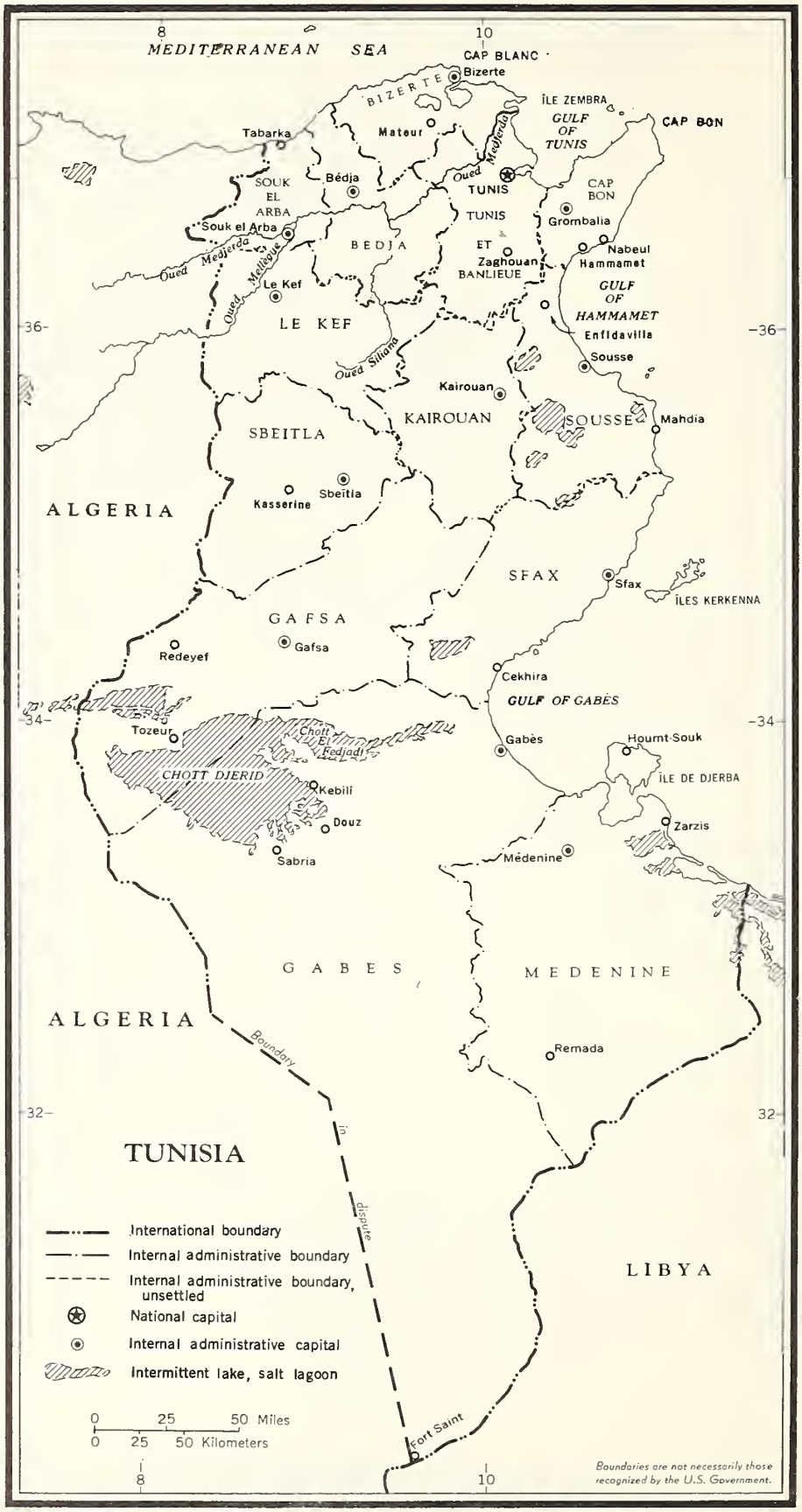


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## SUMMARY

Tunisia is making a serious attack on its agricultural problems. The foundations for an improved agricultural economy have been laid and remedial programs are being implemented.

Redistribution of farmland takes high priority in the current 10-year program for agriculture. Agricultural extension activities, essential in land reform, are being emphasized. Particular attention is directed to introducing high-yield irrigation crops into areas previously unirrigated. An effort is being made to get maximum production from the central and southern sections of the country, which are relatively underdeveloped agriculturally but which make up more than 70 percent of the nation's area. Comprehensive livestock improvement programs are also planned.

Gains from crop diversification and increased yield per acre in the irrigated zones are being made, although only a small percentage of farmers are affected. As more land is irrigated and as farmers gain experience, substantial production increases on irrigated land should materialize fairly soon. With full exploitation of the available water, however, Tunisia will still be mainly a dry-farming country. Ultimately, there may be greater expansion of output in dryland farming and livestock raising than in irrigation, but short-run production increases will be less rapid.

Grains usually account for about one-third of the total income from agriculture. Although Tunisia is a net importer of ordinary wheat varieties, sizable surpluses of durum wheat and barley occur frequently. In 1960-61, Tunisia ranked third in the Mediterranean basin in production of olive oil, which ordinarily accounts for a fifth of Tunisian farm income. Livestock contributes nearly as much as olive oil to the value of agricultural production. Citrus fruits, grapes (mainly for wine), dates, fresh vegetables, and esparto(alfa) grass are also important.

Tunisia's income from exports of olive oil, hard wheat, citrus, and other fruits and vegetables is expected to increase substantially if there is no major economic recession and if long-term technical assistance and working funds from abroad permit materially increased production. The need to import some sugar, wheat other than hard wheat, seed potatoes, dairy products, wool, tobacco, and farm machinery can be expected to continue indefinitely.

Imports of U.S. agricultural products, largely under aid programs, and imports from countries other than France, under bilateral and technical aid agreements made since independence, have increased substantially in recent years. The United States has recently supplied grains and wheat flour, dairy products, and tobacco. In 1961/62, Tunisia was the third leading African importer of U.S. agricultural commodities. However, France is still by far Tunisia's principal trading partner for both agricultural and nonagricultural products.

Neither the long-range demand for Tunisian farm products nor increased competition from other Mediterranean countries can be forecast with accuracy. Further, Tunisia's future marketing limitations will be dictated in good part by its political relationship with France. Shifts to alternative markets could necessitate shifts in agricultural production.

A more rapid rate of agricultural development is anticipated when land and water reforms have been implemented and institutional reforms have begun producing a steady supply of well-trained Tunisian technical personnel and broadened facilities for research, extension, and credit. However, it is doubtful that Tunisia's full agricultural potential will be reached within the next decade. Prospects in the coming few years appear to depend largely on the timing, extent, and caliber of the foreign interest that can be enlisted.

# AGRICULTURE IN TUNISIA: ORGANIZATION, PRODUCTION, AND TRADE

by

Henrietta M. Holm and Carolee Santmyer, Agricultural Economists,
Regional Analysis Division, Economic Research Service

## INTRODUCTION

A French protectorate since 1882, Tunisia gained independence in 1956 and was proclaimed the Republic of Tunisia the following year.

During most of the protectorate period, efforts to increase agricultural productivity were mainly oriented toward the European farmer and brought little direct benefit to the majority of rural Tunisians. In recent years, the first of two 4-year, so-called Monnet plans for agricultural reform gave priority to large-scale projects, such as development of the Medjerda Valley--an area in which European farmers were heavily concentrated. The second Four-Year Plan, which ran through 1957, continued the large projects but made relatively modest provision for modernizing Tunisian farming methods, especially in farm credit operations.

Since independence, much governmental emphasis has been on "Tunisification". For agriculture, this involves teaching Tunisian farmers to alter traditional ways of farming and involves undertaking a great variety of physical and institutional reforms to promote realization of Tunisia's economic potential as an independent, largely agricultural nation.

## I. AGRICULTURAL ECONOMY

The Republic of Tunisia is east of Algeria on the southern shores of the Mediterranean Sea. It is slightly larger than the State of Mississippi. Well over half of Tunisia's total area is of limited value or is useless for agriculture (table 1, figures 1 and 2). Much land used for crops receives less than optimum rainfall. Nevertheless, about 35 percent of the annual gross national product is derived from farming and livestock.

Table 1.--Tunisia: Land use, 1957

| Category | Area | Percentage of total |
|---|---|---|
| | 1,000 acres | Percent |
| Cultivated land | 12,133 | 39.2 |
| Potentially productive land | 7,417 | 24.0 |
| Forest | 2,421 | 7.8 |
| Pastures and meadows | 259 | .9 |
| Wasteland and other | 8,689 | 28.1 |
| Total land area | 30,919 | 100.0 |

Source: FAO Agricultural Yearbook, 1961.

Figure 1--Sheep on poor grazing land, Central Tunisia, 1960

Figure 2--Eroded land near Kasserine, 1960

Over 95 percent of the population, now more than 4 million, is of Arabic or Berber descent. Most of the remainder are Europeans, largely of French or Italian origin. About 70 percent of the non-European population is part of the farm economy--owners of farms, laborers, or seminomadic or nomadic livestockraisers. Most of these people consume their own produce and sell a modest surplus in local markets in good crop years, but rarely compete in other markets with any consistency.

About one-fifth of the Europeans in Tunisia are engaged in agriculture or forestry. Europeans own most of the larger and more productive farms. Emigration decreased the European population from 255,000 in 1956 to 110,000 in early 1961. Today it probably is less than 100,000. The crisis in French-Tunisian relations in the summer of 1961, sparked by the dispute over evacuation of Bizerte, accelerated European emigration and increased the rate at which farms in the modern sector came under Tunisian management. However, the impact of European farmers on the Tunisian agricultural economy is still strong.

Two-thirds of the population is in the northern third of the country, north of the two Atlas Mountain chains. The most valuable agricultural region is the Tell, the area north of Dorsale Tunisienne, the southern massif of the Atlas ranges. Here a Mediterranean climate prevails. This section has access to water of the Oued (river) Medjerda flowing northeast from Algeria to the Gulf of Tunis. Cork oak forests are in the northwest areas, while north central Tunisia has excellent land for cereal crops and grazing. There is a variety of agricultural production in the northeast, where good crops of cereals, olives, grapes, citrus fruits, and garden vegetables are grown. Livestock also thrive in this area.

On the central plateau, south of Dorsale Tunisienne to Djebel Cherb, Mediterranean and desert climatic influences are combined. The land is suitable for dry cultivation of grains and for grazing. Tunisia's most extensive olive groves lie in the eastern coastal regions between the Gulfs of Hammamet and Gabes. South of Djebel Cherb, Saharan agriculture is limited to alfa (esparto) grass ranges and oasis agriculture. Stock tending becomes progressively more nomadic from north to south.

The principal agricultural regions receive from 16 to 24 inches of rainfall annually. The range is from about 60 inches in the extreme northwest Kroumirie highlands to less than 4 inches in the desert. Even in good agricultural areas, dry summers and spasmodic rainfall the rest of the year tend to make production uneven from season to season. Because of traditional land management practices, much of the rainfall is lost by runoff.

Figure 3.--Rugged terrain in south central Tunisia, west of Medenine.

European farmers still own more than 1 million acres of choice land. This is close to one-tenth of the total arable area. European farmers produce about 95 percent of Tunisia's wine, 40 percent of all cereals, and 10 percent of the olive oil. They are primary exporters of agricultural produce; thus, they account for a large proportion of total agricultural income.

European farm holdings are divided into three types: large joint stock companies, estates owned by a few families, and small farms--often of less than 60 acres. Most European holdings are in the northern part of the country; most are efficiently operated mechanized units.

Some of the more progressive Tunisian farmers who use modern techniques and machinery operate market-oriented, large and medium-sized holdings. The majority of Tunisian farms, however, range from 12 to 25 acres. Cultivation methods are usually primitive, greatly restricting production.

## Landownership and Tenure

Tunisia's system of landownership is complicated by Muslim laws of inheritance and divergent concepts of property, such as those related to geographic locations and historical factors. No recent comprehensive census of land holdings by category of ownership is available. Some progress is being made in land registration, but titles are not clear to as much as three-fifths of the arable land. Consequently, poor use has been made of some of these tracts; others have been abandoned because of confusion of ownership.

In addition to areas owned by the State and privately owned (melk) property, land is commonly held under two other types of ownership--land "belonging" 1/ to the tribes and endowed or habous land.

In general, habous land is nontransferable land, the revenues from which are used either as a private endowment for specified persons (private habous), or as a gift (public habous) to charities such as mosques, schools, and hospitals. Public habous is similar to the Spanish system of "mortmain," under which gifts of land have been made over the centuries to the church. There is also the mixed habous in which a proportion of the land revenue is allotted for a stated beneficiary or purpose and the rest is given to the founder's descendants or other individuals.

Although habous land is inalienable in principle, transfer of public habous land was authorized in 1898, after which considerable acreages changed hands at the legal rate of about 12,000 acres a year. The small remainder of the public habous land was nationalized in 1956.2/

Because of the nonexistence or obscurity of title deeds, the total area in private and mixed habous land is more difficult to determine. According to a 1959 estimate, there were about 1 million acres in private habous and more than 2 million acres in mixed habous.

With the abolition of the public habous, the assumption of authority over some tribal land, and the addition of confiscated properties and those purchased from European farmers 3/, the State now nominally controls about half of the productive area of the country. Use of State-controlled land largely continues along traditional patterns. However, some tracts of State and former habous land have been utilized to provide farms for landless Tunisians as part of the plan for more economic rural management.

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1/ An extensive and collective concept of land "ownership," in reality limited to possession of recognized grazing rights in certain localities. The tribe has no legal right to the land itself, but is customarily granted the use of it.

2/ The area in public habous was estimated to have declined from hundreds of thousands of acres to less than 25,000 acres in the 60 years after 1898.

3/ Government plans to reacquire European farmland had a stultifying effect on much of the most productive sector. Facing ultimate loss of their farms, rural Europeans were reluctant to make additional investments for machinery, fertilizers, and other normal farm expenditures from which immediate returns could not be anticipated. Until the drought of 1960/61, crops were fairly good in most years since independence. But overall agricultural production did not exceed the 1956 level. Realizing there are not enough modern Tunisian agriculturalists to replace the Europeans, the Government recently issued policy statements which recognize the danger in a too rapid exodus and attempt to reassure non-Tunisian farm owners wishing to remain in the country.

Data are not available on the number of farmers who rent land or who are tenants, or who are share farmers. Property, usually private habous, may be farmed under the enzel or the kirdar contract. In the first agreement payment of a fixed perpetual rent is required; in the second the rent varies annually according to prices. There is also the mogharsa agreement under which a landowner may let out a portion of his uncultivated (often private habous) holdings for the planting of olive trees. In this contract the lessee furnishes the tools and young olive trees; the owner relinquishes half the land and the trees to the cultivator at the end of a specified number of years or when the trees come into bearing. Revenue from the other half goes to the habous. Another contract is the mougakate, by which olive groves and other tree plantations are rented, with a portion of the crop going to the renter in exchange for his labor.

Also in use are the khammes form of tenancy, under which the tenant receives one-fifth of the harvest for his labor, and the rebaa system, which involves a return of one-fourth of the harvest. In the oases, seminomadic Tunisians may turn over their gardens to cheriks, who cultivate these plots for part of the produce.

## Crop and Livestock Production

For centuries, grains and olives for oil have been Tunisia's most important agricultural products and main foods. Other principal crops, shown in table 2, are grapes for wine, dates, citrus, and other fruits, pulses, and market garden crops. Alfa grass, customarily classified as a forest product, is an important source of revenue in south central Tunisia 4/. There is minor production of industrial crops, and the livestock industry is largely underdeveloped.

Figure 4.--
Baling alfa grass near Medenine, 1960.

4/ Reference to alfa grass is made because of its quasi-agricultural nature. Production averages between 70,000 and 95,000 tons a year depending on rainfall. This is second only to Algeria, the world's largest producer. Most of the Tunisian crop is exported to Great Britain and France for use in the paper and pulp industry. In recent years, alfa grass has ranked among the 10 leading commodities, in terms of value, among all Tunisia's exports.

Table 2.--Tunisia: Production of principal agricultural products, average 1952/53-1954/55 (base period) and annual 1957/58 through 1962/63

| | Average 1952/53 : 1954/55 | 1957/58 | 1958/59 | 1959/60 | 1960/61 | 1961/62 | 1962/63 |
|---|---|---|---|---|---|---|---|
| | 1,000 metric tons | | | | | | |
| Wheat 1/ | 630 | 498 | 520 | 525 | 452 | 245 | 394 |
| Barley 1/ | 234 | 261 | 283 | 235 | 146 | 87 | 109 |
| Oats 1/ | 11 | 9 | 11 | 10 | 12 | 9 | 13 |
| Corn & sorghum | 3 | 3 | 3 | 5 | 4 | 3 | 4 |
| Potatoes | 19 | 32 | 30 | 34 | 31 | 25 | 30 |
| Olive oil 2/ 3/ | 54 | 50 | 132 | 45 | 125 | 34 | 45 |
| Tobacco 1/ | 2 | 2 | 2 | 2 | 2 | 1 | 1 |
| Dates 1/ | 33 | 41 | 46 | 30 | 50 | 27 | 50 |
| Citrus fruit 4/ | 43 | 52 | 77 | 88 | 84 | 77 | 80 |
| Grapes 1/ | 113 | 227 | 230 | 245 | 209 | 225 | 230 |
| Figs, dried 1/ | 3 | 4 | 5 | 5 | 5 | 5 | 5 |
| Apricots 1/ | 5 | 12 | 15 | 15 | 10 | 15 | 15 |
| Tomatoes 1/ | 22 | 35 | 55 | 59 | 50 | 75 | 68 |
| Milk 5/ 6/ | 98 | 150 | 150 | 150 | 155 | 110 | 112 |
| Meat 5/ 7/ | 30 | 36 | 39 | 38 | 42 | 35 | 40 |
| Eggs 5/ | 13 | 11 | 13 | 15 | 15 | 14 | 15 |
| Wool 5/ | 4 | 4 | 3 | 4 | 4 | 4 | 4 |

1/ The bulk or all the harvesting is done in the first year of the split-year combination. 2/ Excluding sulphur oil. 3/ Oil pressed in marketing season, beginning November 1 of first year shown. 4/ The bulk of the harvest occurs in the second year of the split-year combination. 5/ Calendar year of the first year mentioned. 6/ About half goat milk; the remainder mostly cow and sheep milk. 7/ About two-thirds mutton and lamb; the remainder principally beef and veal.

Source: Foreign Agricultural Service, Economic Research Service, U.S. Dept. Agr.

Grains: The major grains are wheat and barley. In the north, production is mostly by mechanical means. Production in the center and south is mainly by traditional methods. Average yields are low. As in other north African countries, the yield on modern Tunisian farms may be more than twice as high on farms handled by traditional methods.

Historical data indicate a good grain crop usually occurs once during a 5-year cycle, which also includes two fair and two poor crop years. Cereals are particularly susceptible to damage by hail, the hot sirocco wind from the desert, locusts, and fungoid blights. In addition, serious crop failures may result from unusually dry fall and winter weather, which delays or prevents sowing. Such damage occurred in 1961-62 when only about a quarter of the annual average output was harvested. In general, grain farmers only on the northern plains and inland plains of the upper Tell can expect a reasonably regular production pattern from year to year.

Table 3.--Tunisia: Area and production of major grains by regions, 1959

| Region | Durum wheat | | | Other wheat | | | Barley | | |
|---|---|---|---|---|---|---|---|---|---|
| | Area | Yield per acre | Production | Area | Yield per acre | Production | Area | Yield per acre | Production |
| | 1,000 acres | Bushels | 1,000 M.T. | 1,000 acres | Bushels | 1,000 M.T. | 1,000 acres | Bushels | 1,000 M.T. |
| Bedja | 366 | 7.1 | 72 | 82 | 12.3 | 27 | 111 | 6.5 | 16 |
| Bizerte | 143 | 4.9 | 19 | 15 | 10.4 | 4 | 47 | 5.4 | 5 |
| Cap Bon | 49 | 4.8 | 7 | 5 | 6.7 | 1 | 44 | 6.7 | 7 |
| Gabes | 57 | 2.2 | 3 | 5 | 2.5 | 1/ | 104 | 3.2 | 7 |
| Gafsa | 230 | 4.2 | 26 | 54 | 5.5 | 8 | 141 | 7.1 | 22 |
| Kairouan | 339 | 3.3 | 30 | 77 | 6.4 | 13 | 260 | 7.4 | 42 |
| Kasserine | 267 | 3.7 | 27 | 12 | 9.1 | 3 | 193 | 5.6 | 24 |
| Le Kef | 635 | 8.2 | 143 | 35 | 12.3 | 12 | 306 | 9.3 | 62 |
| Medenine | 79 | .7 | 2 | 0 | 0 | 0 | 183 | 1.3 | 5 |
| Sfax | 119 | 2.5 | 8 | 22 | 4.2 | 3 | 183 | 3.9 | 15 |
| Souk-El-Arba | 133 | 6.4 | 23 | 17 | 8.2 | 4 | 52 | 5.4 | 6 |
| Sousse | 180 | 1.3 | 7 | 20 | 5.4 | 3 | 227 | 2.0 | 10 |
| Tunis and environs | 252 | 7.6 | 52 | 89 | 11.3 | 28 | 99 | 6.7 | 15 |
| Total | 2,849 | 5.4 | 419 | 433 | 8.9 | 106 | 1,950 | 5.6 | 236 |

1/ Less than 500 metric tons.
Source: Annuaire Statistique de la Tunisie, 1959.

Most wheat is cultivated north of the Dorsale Tunisienne. Table 3 indicates that barley is grown mainly in central and southern Tunisia. Barley acreage in the north remains fairly static. The area that can be sown to this crop in the central and southern parts of the country fluctuates sharply each season with the timing of the fall rains. Ordinarily, about 2.7 million acres are planted to cereals in the north. The area in wheat and barley in central and southern Tunisia varies from approximately 1.2 million acres to 2.6 million. Tunisian farmers produce more than half the wheat and barley; Europeans in Tunisia grow a small amount.

More barley than wheat is consumed on the farm by growers. In central and southern Tunisia barley is the principal food grain. Hard wheat is grown mainly for the export market, principally for milling abroad into semolina for use in the manufacture of macaroni and similar pastes. Production of other wheat varieties is seldom sufficient for domestic consumption.

Output of oats, corn, and sorghum averages between 12,000 and 17,000 metric tons a year. Occasionally there are small exports of corn, in contrast to considerable imports required before World War II.

Limited quantities of other grains, such as millet and durra, are also grown. Recent experimental irrigated plantings of rice in the Medjerda Valley have yielded over 2 tons per acre.

Olive oil: Second to cereals, olive oil is of greatest value to agriculture. Tunisia is by far the largest olive oil producing country in northern Africa and the Middle East. Domestic production usually provides the fat requirements in the Tunisian diet. Exports of olive oil are an important and sometimes the principal source of foreign exchange. The value of exports varies with world prices and according to seasonal fluctuations in production. Close to 80 percent of the olive oil produced in Tunisia goes to the export trade.

Table 4 shows that most important olive-growing areas are along the east central coast and on the Cap Bon Peninsula. But wherever cultivation is possible, the Tunisian farm family will usually have whole or part ownership of a tree or two. In the Sousse-Mahdia and Sfax regions of the Sahel, where concentration of trees is heaviest, more than 95 percent of the people derive their livelihood from cultivating or processing olives. New plantations are being developed in other sections, mainly on rehabilitated soils in west central Tunisia. The olive tree can adapt to the climate of the steppes better than many crops, but requires sufficient rainfall or irrigation for good yields.

Most olives used for pickling or dry processing are harvested in October or November of each year. The main crop for oil is harvested from November or early December through February. Two primary types of olive oil are produced--crude edible oils of the first and second pressings, and inedible industrial olive oil derived from the olive cake after initial pressings by solvents. The oilcake itself is mixed with bran for livestock feed or with straw and manure for use in nurseries. It is also used for fuel.

Output of oil increased from an average of about 20,000 tons annually in 1891-1900 to 68,000 in 1950-59. Yearly deviation, on a regular cycle of "off" and "on" years, is shown in table 2. The record 1958/59 crop of 132,000 tons of edible oil and 19,000 tons of industrial oil exceeded any yearly output in recent Tunisian history.

Table 4.--Number of olive trees by regions, 1957

| Region | Wild and nontaxable trees | Trees less than 15 years old | Bearing trees 1/ | | | Total, all olive trees |
|---|---|---|---|---|---|---|
| | | | 15-20 years old | 20 years and over 2/ | Total | |
| | 1,000 trees | | | | | |
| Bedja | 102 | 374 | 84 | 295 | 379 | 855 |
| Bizerte | 63 | 193 | 31 | 534 | 565 | 821 |
| Gabes | 9 | 140 | 39 | 294 | 333 | 482 |
| Gafsa | 6 | 144 | 87 | 312 | 399 | 549 |
| Kairouan | 135 | 39 | 49 | 947 | 996 | 1,170 |
| Le Kef | 140 | 243 | 54 | 162 | 216 | 599 |
| Medenine | 10 | 521 | 134 | 739 | 873 | 1,404 |
| Nabeul (Cap Bon ) | 89 | 1,283 | 139 | 1,668 | 1,807 | 3,179 |
| Sbeitla (Kasserine) | 4 | 75 | 22 | 71 | 93 | 172 |
| Sfax | 4 | 1,731 | 306 | 4,016 | 4,322 | 6,057 |
| Souk-El-Arba | 412 | 241 | 67 | 249 | 316 | 969 |
| Sousse | 151 | 1,270 | 434 | 7,097 | 7,531 | 8,952 |
| Tozeur | 4 | 43 | 11 | 50 | 61 | 108 |
| Tunis | 51 | 914 | 187 | 1,072 | 1,259 | 2,224 |
| Total | 1,180 | 3/ 7,211 | 1,644 | 17,506 | 19,150 | 27,541 |

1/ The olive tree may bear fruit 3 years after the transplanting of 2-year-old shoots. A commercial crop is not produced until 10 years later. Certain varieties continue to bear economically from 60 to 100 years. Some trees in the Cap Bon and Tunis regions and on the island of Djerba date back to Roman times; their regenerated shoots still bear small quantities of olives. 2/ Excluding the island of Djerba.
3/ Composed of 2,630,000 trees less than 5 years old; 2,761,000 trees 5 to 9 years old; and 1,830,000 trees from 10 to 14 years old.
Source: Annuaire Statistique de la Tunisie, 1959.

Figure 5--New plantations of olives with grapes, near Kairouan

Grapes: Natural resources in many areas of Tunisia are suitable for grape-growing. Conditions are particularly favorable in the coastal northeast near Tunis and on the Cap Bon Peninsula. Until the arrival of European settlers in the 19th century, only about 2,500 acres were planted to vineyards. Because the use of alcoholic beverages was forbidden to Tunisia's predominantly Muslim people, these early vineyards were almost exclusively devoted to production of table grape varieties.

According to table 5, vineyards now cover over 100,000 acres. Most are European-owned enterprises producing grapes for wine. From 1956 to 1960 an average of 1.6 million hectoliters of wine and 20,000 tons of table grapes were produced annually. Income from wine exports has recently represented about one-seventh of Tunisia's revenue from all exports.

Table 5.--Area in vineyards by regions, annual 1955 to 1959

| Region | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|
| | | | 1,000 acres | | |
| Bizerte | 9.0 | 9.3 | 9.4 | 9.7 | 9.8 |
| Cap Bon | 45.6 | 45.6 | 45.5 | 47.1 | 47.8 |
| Djerba | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |
| Sousse | .6 | .7 | .7 | .8 | .8 |
| Tunis and environs | 42.0 | 41.1 | 41.0 | 41.2 | 41.6 |
| Other regions 1/ | 3.5 | 3.4 | 3.2 | 3.2 | 3.2 |
| Total area | 102.8 | 102.2 | 101.9 | 104.1 | 105.3 |
| Tunisian-owned | 12.6 | 13.4 | 14.2 | 15.6 | 16.7 |
| European-owned | 90.2 | 88.8 | 87.7 | 88.5 | 88.6 |

1/ Mainly Souk El Arba, Sfax, Le Kef, Kairouan and Gabes.
Source: Annuaire Statistique de la Tunisie, 1959

The area in wine grapes may decline as European farmers continue leaving the country and as the vines planted after the phylloxera infestation of the 1930's go out of production. But the Tunisian Government has shown an active interest in increasing production and quality of table grapes for fresh consumption and raisins. Annual imports of raisins have in the past amounted to about $1 million per year.

Dates: The date palm is common to many parts of Tunisia, but it is most numerous and bears fruit only in the south. Dates of the nonexport varieties are a staple human food. Inferior fruit and pits are fed to livestock. Fermented dates are the basis for Boukha, an alcoholic drink. The palm tree itself is used ingeniously--the roots for fuel and the stems in construction. Palm fronds are woven for windbreaks, shoes, mats, and receptacles. Palm fiber is used for rope-making, reins for animals, and for saddles.

The bulk of the date crop is produced in the vicinities of Gabes, Medenine-Tatehouine, and Gafsa; on the oases adjacent to Chott Djerid (Douz, Kebili, Degache, Nefta, Tozeur); and on the island of Djerba. Most production is consumed by the growers or within the country.

Superior varieties, such as Degla, Kintah, and Firmlah, enter mainly the export trade. About 750,000 trees, or close to 20 percent of all Tunisia's date palms, are of the Degla variety. Kintah and Firmlah trees each make up less than 10 percent. In recent years the share of export dates has been less than one-fourth of total production.

Citrus fruits: Tunisia's citrus industry is relatively new. Modern groves were planted when Spanish production declined during the Spanish Civil War of 1936-39. Production has averaged about 80,000 tons annually the last 5 years. Despite its modest development, citrus cultivation is becoming important in the country's agricultural pattern. Gradually, over the next 10 years, the Tunisian Government hopes to more than double production by converting some of the land now in grains, truck crops, and unproductive vineyards and olive trees to citrus.

Most of the present groves are on the coastal plains (table 6). Main growing areas are between Tunis and Cap Bon and near Nabeul and Hammamet. Plantations are small; about 90 percent are less than 25 acres in size. Oranges make up nearly 65 percent of total output. There are also lemons, mandarins, clementines (an early maturing, seedless fruit that is probably a cross between the mandarin and the orange), and various other citrus.

Table 6.--Number of citrus trees by regions, 1959

| Region | Young citrus trees | Bearing citrus trees 1/ | Total |
|---|---|---|---|
| | - - - - - - 1,000 trees - - - - - - | | |
| Bedja | 2 | 39 | 41 |
| Bizerte | 2 | 108 | 110 |
| Cap Bon | 9 | 1,498 | 1,507 |
| Gabes | 0 | 0 | 0 |
| Gafsa | 3 | 56 | 59 |
| Kairouan | 0 | 2 | 2 |
| Kasserine | 0 | 0 | 0 |
| Le Kef | 0 | 1 | 1 |
| Medenine | 0 | 3 | 3 |
| Sfax | 0 | 18 | 18 |
| Souk El Arba | 0 | 21 | 21 |
| Sousse | 0 | 61 | 61 |
| Tunis and environs | 10 | 217 | 227 |
| Total | 26 | 2,024 | 2,050 |

1/ Taxable trees

Source: Annuaire Statistique de la Tunisie, 1959.

Tunisian farmers own most citrus groves, but European farmers are responsible for almost all exports. Compared with other citrus-producing countries in north Africa, Tunisia's trade in citrus is small. About half the annual output is exported, mainly to France. However, the list of other European customers is expanding. A small but developing domestic processing industry now absorbs some 10 percent of production, principally for jellies and jams, canned fruit, and fruit pulp. The remainder of the crop is consumed fresh.

Other fruits and nuts: Pomegranates are grown in many regions of Tunisia. Figs, apricots, plums, cherries, prunes, and a variety of berries are also produced. Deciduous orchards are mainly in the north. However, new experimental plantations are

being laid out in the central highlands. Trial plantings of tropical fruits, such as bananas, guavas, and papayas, have been made in southeastern Tunisia.

From 5,000 to 7,000 tons (dry weight) of almonds are grown each year; a third of the crop is exported. Since Tunisia has recently imported about $300,000 worth of pistachio nuts annually, an effort is being made to supplant these imports with domestic production.

Complete data for numbers of fruit and nut trees by variety are not available. The total number of trees in 1959 is shown in table 7.

Table 7.--Number of fruit trees, other than citrus, by regions, 1959

| Region | Young trees | Bearing trees 1/ | Total |
|---|---|---|---|
| | | 1,000 trees | |
| Bedja | 9 | 480 | 489 |
| Bizerte | 12 | 754 | 766 |
| Cap Bon | 3 | 1,256 | 1,259 |
| Gabes | 0 | 499 | 499 |
| Gafsa | 11 | 1,364 | 1,375 |
| Kairouan | 4 | 561 | 565 |
| Kasserine | 1 | 314 | 315 |
| Le Kef | 21 | 261 | 282 |
| Medenine | 134 | 469 | 603 |
| Sfax | 11 | 2,286 | 2,297 |
| Souk El Arba | 1 | 240 | 241 |
| Sousse | 4 | 1,346 | 1,350 |
| Tunis and environs | 83 | 1,148 | 1,231 |
| Total | 294 | 10,978 | 11,272 |

1/ Taxable trees.

Source: Annuaire Statistique de la Tunisie, 1959

Market garden crops: Market gardening under captive rainwater irrigation has long been established in Tunisia, particularly around the towns and cities of the northern and central coastal plains. Most melons and small quantities of other truck crops are dry-farmed. As is indicated in table 8, more than 60,000 acres were planted to market garden crops in 1959.

A network of experimental farms has been laid out along the coast between Tabarka and Teboulba. These are designed to demonstrate new cultivation techniques to Tunisian farmers. The most important crops grown for demonstration are potatoes, tomatoes, melons, cucumbers, peppers, and squash.

While most truck crops are used fresh, commercial preparation of vegetables is a growing industry. Production of processed tomatoes, hot peppers, and other vegetables increased from a little more than 2,000 tons in 1956 to nearly 5,500 in 1959.

Output of market garden crops is expected to increase significantly as farming skills improve and as new areas are brought under irrigation. This will provide appreciable additional amounts of fresh and processed produce for home use and export.

Table 8.--Area in market garden crops by regions, 1959

| Region | Artichokes | Potatoes | Melons | Peppers | Tomatoes | Other market garden crops | Total |
|---|---|---|---|---|---|---|---|
| | 1,000 acres | | | | | | |
| Irrigated crops: | | | | | | | |
| Bedja | 1/ | .1 | .2 | .3 | .5 | .6 | 1.7 |
| Bizerte | .3 | 1.6 | .3 | .3 | 1.2 | .5 | 4.2 |
| Cap Bon | .1 | 1.2 | .4 | 5.8 | 3.8 | 2.9 | 14.1 |
| Gabes | 0 | 1/ | .3 | .6 | .5 | 1.1 | 2.5 |
| Gafsa | 1/ | 1/ | .1 | .3 | .2 | .5 | 1.1 |
| Kairouan | 1/ | 1/ | .1 | .8 | .2 | .3 | 1.4 |
| Kasserine | 1/ | 1/ | 1/ | .1 | .1 | .1 | .3 |
| Le Kef | 0 | 1/ | 1/ | .1 | .1 | .1 | .3 |
| Medenine | 1/ | -- | 1/ | 1/ | 1/ | 1/ | .1 |
| Sfax | 1/ | 1/ | .2 | .2 | .2 | .1 | .7 |
| Souk El Arba | 1/ | 1/ | .3 | .2 | .3 | .2 | 1.0 |
| Sousse | 1/ | .1 | .3 | .8 | .3 | .4 | 1.9 |
| Tunis and environs | 2.2 | .2 | .8 | .4 | 2.4 | 1.4 | 7.4 |
| Total | 2.6 | 3.2 | 3.0 | 9.9 | 9.8 | 8.2 | 36.7 |
| Dry-farmed crops: | | | | | | | |
| Bedja | 1/ | .2 | 3.1 | 1/ | 1/ | 2.0 | 5.3 |
| Bizerte | .1 | .8 | 1.4 | 1/ | .1 | .5 | 2.9 |
| Cap Bon | 1/ | .1 | 2.1 | 1/ | .4 | .6 | 3.2 |
| Gabes | 0 | 1/ | .1 | 0 | 1/ | 1/ | .1 |
| Gafsa | 0 | 0 | .1 | 1/ | 1/ | 0 | .1 |
| Kairouan | 1/ | 1/ | 1.9 | 1/ | 1/ | 1/ | 1.9 |
| Kasserine | 0 | 0 | 0 | 0 | 0 | 1/ | 1/ |
| Le Kef | 0 | 1/ | .1 | 0 | 1/ | 1/ | .1 |
| Medenine | 0 | 0 | .1 | 0 | .1 | .1 | .3 |
| Sfax | 0 | 1/ | 4.4 | 1/ | 1/ | 1/ | 4.5 |
| Souk El Arba | 1/ | .1 | 1.5 | 1/ | 1/ | .1 | 1.7 |
| Sousse | 1/ | 1/ | 3.6 | 1/ | .8 | .2 | 4.6 |
| Tunis and environs | 1/ | 1/ | .7 | 1/ | .2 | .2 | 1.1 |
| Total | .1 | 1.2 | 19.1 | .1 | 1.6 | 3.7 | 25.8 |
| Total area | 2.7 | 4.4 | 22.1 | 10.0 | 11.4 | 11.9 | 62.5 |

1/ Less than 50 acres.

Source: Annuaire Statistique de la Tunisie, 1959

Pulses: The primary pulse crops, broadbeans and chickpeas, are cultivated mainly by Tunisian farmers in the north, largely in rotation with wheat. Tunisia is a net exporter of pulses, although production has decreased in the last few years.

Table 9.--Production of pulses, 1955-60

| Type | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 |
|---|---|---|---|---|---|---|
| | - - - - - - - - - - 1,000 metric tons - - - - - - - - - - | | | | | |
| Beans | 23 | 21 | 15 | 18 | 12 | 14 |
| Chickpeas and peas | 4 | 3 | 3 | 3 | 5 | 5 |
| Lentils | 2 | 1 | 1 | 1 | 1 | 1 |
| Total | 29 | 25 | 19 | 22 | 18 | 20 |

Source: Annuaire Statistique de la Tunisie, 1959 and Foreign Service Reports.

Industrial crops: The present area in industrial crops is not large, but production is expanding. New plantations are being established to reduce imports and provide additional export surpluses.

Small crops of two types of tobacco, Arbi and Souffi (Nicotina rustica), are grown under rigid Government control. Local production, shown in table 10, supplies about one-fifth of the country's needs.

Table 10.--Area and production of tobacco, number of tobacco planters, 1956-1961

| Crop by type | Area cultivated | Production | Number of planters |
|---|---|---|---|
| | 1,000 acres | 1,000 metric tons | Thousands |
| 1956: | | | |
| Arbi | 2.5 | .5 | 5.4 |
| Souffi | .7 | .6 | 1.1 |
| 1957: | | | |
| Arbi | 2.7 | .8 | 6.2 |
| Souffi | 1.0 | .8 | 1.9 |
| 1958: | | | |
| Arbi | 3.2 | .8 | 7.7 |
| Souffi | 1.0 | .8 | 1.7 |
| 1959: | | | |
| Arbi | 5.2 | 1.7 | 9.2 |
| Souffi | .7 | .6 | 1.2 |
| 1960: | | | |
| Arbi | 4.5 | 1.4 | 8.6 |
| Souffi | .6 | .6 | 1.2 |
| 1961: 1/ | | | |
| Arbi | 4.9 | .5 | -- |
| Souffi | .8 | .6 | -- |

1/ Preliminary.

Source: 1956-59 Annuaire Statistique de la Tunisie, 1959.
1960-61 Foreign Service Reports.

Cultivation of flaxseed gained considerable popularity between 1948 and 1950 because of the high support prices then in effect. After the subsidy was withdrawn, output dropped sharply from about 23,000 tons in 1949 to less than 1,500 in 1959. However, conversion of some marginal grain land to flaxseed may provide a fresh domestic source of this crop for drying oil (used in paints), livestock feed, and export.

Cotton, sugarbeets, and kenaf--an east Indian fiber plant (Hibiscus cannabinus) --are new cultures to the country. Less than 2,000 acres were planted to cotton in 1960. Cotton grown experimentally under irrigation in the central and southern sections of Tunisia recently yielded an average of about 1½ tons per hectare (1 hectare equals 2.471 acres). Trial plantings of sugarbeets in the Tunis area suggest satisfactory future yields. The results of kenaf suitability trials in the Medjerda Valley indicate this crop will thrive there. Kenaf is used as a substitute for jute.

Livestock and livestock products: European farmers keep a moderate number of mainly high-grade livestock. They produce all the swine. However, Tunisian farmers dominate most of the animal industry. As in other areas of northern Africa, traditional livestock raising is largely separate from crop production.

Livestock owned by nomads and seminomads are considered capital reserve and are rarely sold. The animals depend almost entirely on natural vegetation for feed; there is little disposition to limit the number kept to the amount of feed available. Thus, herds and flocks are enlarged in good seasons and lost in large numbers in bad seasons. During a recent disastrous fall and winter drought, losses of Tunisia livestock were heavy; mortality of sheep was estimated as high as 50 percent in some areas.

Sheep and goats are by far the most numerous livestock, averaging over 3 million and 1.6 million respectively, from 1950 to 1959 (table 11). This table indicates a decrease in swine numbers as European farmers left the country. A gradual increase is shown for cattle. Most of this is in the north, mainly in the Bedja region (table 12).

Consumption of livestock products is low, but higher than in other north African countries. Annual meat production exclusive of poultry meat is estimated at 30,000 to 40,000 tons. Of the million sheep born each year, some 600,000 are consumed; commercial slaughterings and exports of live animals account for only about 60 percent of consumption. Uncontrolled slaughter of an appreciable number of other species would further increase the total meat supply for domestic use.

About 150,000 tons of milk are produced in years of normal pasturage. (See table 2.)

Wool and hides and skins are a basis for Tunisia's extensive handicraft industries. About 2,400 metric tons of hides and skins and about 1,700 tons of clean wool are produced annually. These are also export commodities.

Many Tunisian farmers keep poultry. Tunisia produces about 300 million eggs a year. Annual output of poultry meat is estimated at some 7,000 tons. Commercial poultry production began only recently.

Table 11.--Livestock population by species, 1950 - 1960

| Year | Sheep | Goats | Cattle | Donkeys and mules | Horses | Swine | Camels |
|---|---|---|---|---|---|---|---|
| | 1,000 head | | | | | | |
| 1950 | 2,361 | 1,724 | 397 | 174 | 69 | 30 | 162 |
| 1951 | 3,060 | 2,228 | 475 | 211 | 80 | 20 | 203 |
| 1952 | 3,420 | 2,242 | 401 | 221 | 80 | 16 | 234 |
| 1953 | 2,872 | 1,716 | 483 | 213 | 78 | 16 | 215 |
| 1954 | 3,352 | 1,853 | 483 | 210 | 78 | 14 | 202 |
| 1955 | 3,045 | 1,427 | 502 | 212 | 81 | 15 | 226 |
| 1956 | 2,891 | 1,241 | 491 | 220 | 82 | 16 | 266 |
| 1957 | 3,026 | 1,320 | 544 | 250 | 82 | 10 | 219 |
| 1958 | 3,410 | 1,447 | 563 | 232 | 81 | 7 | 212 |
| 1959 | 3,793 | 1,276 | 601 | 255 | 80 | 8 | 217 |
| 1950-59 average | 3,123 | 1,647 | 494 | 220 | 79 | 15 | 216 |
| 1960 | 4,006 | 845 | 634 | 313 | -- | 5 | 172 |

Source: Annuaire Statistique de la Tunisie, 1959 -(1950-59).
1960 Foreign Service Reports.

Table 12.--Distribution of livestock by regions, 1959

| Region | Sheep | Goats | Cattle | Horses, donkeys, and mules | Swine | Camels |
|---|---|---|---|---|---|---|
| | 1,000 head | | | | | |
| Bedja | 323 | 95 | 137 | 44 | 4 | 1 |
| Bizerte | 72 | 11 | 35 | 9 | 1 | 1/ |
| Cap Bon | 84 | 25 | 66 | 20 | 1 | 6 |
| Gabes | 157 | 146 | 1 | 11 | 0 | 15 |
| Gafsa | 615 | 258 | 10 | 24 | 0 | 50 |
| Kairouan | 498 | 61 | 62 | 31 | 0 | 30 |
| Kasserine | 521 | 151 | 25 | 34 | 0 | 16 |
| Le Kef | 389 | 91 | 81 | 46 | 0 | 2 |
| Medenine | 224 | 253 | 1/ | 19 | 1/ | 39 |
| Sfax | 267 | 63 | 4 | 20 | | 28 |
| Souk El Arba | 108 | 51 | 79 | 19 | 1/ | 1/ |
| Sousse | 344 | 13 | 35 | 34 | 1/ | 27 |
| Tunis and environs | 191 | 58 | 66 | 24 | 2 | 3 |
| Total | 3,793 | 1,276 | 601 | 335 | 8 | 217 |

1/ Less than 1,000 head.

Source: Annuaire Statistique de la Tunisie, 1959.

## II. AGRICULTURAL DEVELOPMENT

All of Tunisia's plans for agricultural development are deeply concerned with the rapid transfer of most rural people from the backward traditional farming sector into the modern economy. The primary goal is to expand production so that it will be equal and eventually exceed the rate of population growth, which is currently close to 2½ percent a year.

The Tunisian Government hopes that a revitalized agriculture will absorb much of the country's untapped reserves of unemployed and underemployed workers. Then, a secure base can be built for a gradual upturn in living standards for both farmers and urban dwellers.

Tunisia's program for rural reform is written into its Ten-Year Economic Development Plan, announced in 1961. Gross investment for 1962-71 is projected at over $2 billion, with about one-third for agriculture. Special emphasis is on expanding facilities for agricultural education and extension, properly using land and water, and efficiently managing crops and livestock. Most of the development programs are newly drafted; some are projects begun during the protectorate years.

Many remedial measures to fulfill these plans are being undertaken with foreign financial and technical assistance, largely from the United States. A large proportion of the projects connected with Tunisia's national program to alleviate unemployment--Lutte Contre le Sous Development--are in soil and water conservation, flood control, tree-planting, land-clearing, and other facets of rural improvement. These too have been underwritten by supplies of American agricultural commodities, tools, and equipment. (See Foreign Aid.)

A 3-year, so-called "preplan" period, the first stage of the Ten-Year Plan, was begun in January 1963 to test the practicality of the Plan. The Three-Year Plan calls for investment of about $785 million, to be financed partly from Tunisian resources and partly from foreign supply credits, loans, and grants.

The Three-Year Plan emphasizes (1) withdrawal of economic privileges granted to Europeans under the protectorate, (2) purchase of European land, (3) redirection of trade from France, (4) expansion of agricultural industries, and (5) diversification of agriculture from the duoculture of grains and wine.

Projected reforms fall into two main categories: institutional reforms, improvements in agricultural extension and research services and farm credit; and physical reforms, or the development of land and water resources.

### Institutional Reforms

The paucity of educational and extension services that have been available to the average rural Tunisian has slowed the speed of agricultural development since 1956. Before Tunisia's independence, Government services were staffed largely by Europeans. Few Tunisians could take advantage of existing educational facilities; consequently, the country is very short of trained technicians in extension and research. Also, until recently, the Tunisian farmer had very limited access to farm credit to improve his holding.

Agricultural education is available in Tunisia at four scholastic levels. The Superior College of Agriculture (Ecole Superieure d'Agriculture Tunisienne) at Tunis offers a 3-year college curriculum. This institution was founded to provide facilities for agricultural education, mainly for sons of European colons in Tunisia and neighboring African countries. Before independence, there were only 17 Tunisian graduates, although other Tunisians were graduates of colleges of agriculture in France.

In recent years the Superior College of Agriculture has lost many students and teachers through emigration. In 1961 only 47 students were enrolled, compared with from 120 to 130 in most years before 1956. The 1962/63 enrollment was 89. Technicians from various organizations act as part-time substitutes for about half of the original faculty. In most departments, the physical plant of the college is outmoded.

A junior college at Morhrane 5/ (College Secondaire de Morhrane) provides 3 years of secondary education with emphasis on agricultural practices. This installation includes a demonstration farm. Although the layout of the school is good, it is insufficient for present requirements. The faculty is temporary, drawn from other schools and organizations to lecture and conduct laboratory and field experiments a few hours weekly.

There were 154 students at Morhrane in the 1962/63 school year. Graduates are eligible, on successfully passing an examination, for admission to the Superior College of Agriculture at Tunis. Those who do not go to the higher school are usually employed by the Tunisian Government as intermediate-grade agricultural workers.

Below the secondary school are 12 practical schools (Ecoles Moyenne d'Agriculture) of a seventh to ninth-grade level. These offer 2-year courses in agriculture and related sciences. Enrollment is about 1,100 students. Graduates are eligible for lower-grade Government jobs in agriculture.

To provide training for the agricultural technicians needed over the next 10 years, Tunisia is preparing to strengthen agricultural education at each of these schools. In addition, many young Tunisians are being sent abroad, mainly to France, for supplementary college training.

Although establishment of a central extension service was authorized by decree in 1958, the small amount of extension work before independence was conducted by several unrelated technical services. Partly due to the shortage of trained personnel, an effective extension system, judged by U.S. standards, is not yet organized. However, efforts to train workers at the village level have been relatively successful. Four training centers now offer 1 or 2 years of vocational agricultural education, combining lectures and supervised laboratory and field work in good farming practices. About 10 more such training centers are planned. Over 400 young rural Tunisians were enrolled at these centers in 1962. Graduates are not employed by the Government, but are expected to become "animateurs," or demonstration agents, bringing advance agricultural methods to other farmers of their home communities.

A cooperative training school with an enrollment of 100 students has been established in Tunis. Graduates are to serve in management capacities in existing agricultural cooperatives, as well as in new cooperatives envisaged in the Three-Year Plan.

A program for applied research is underway. At present, there is only one agricultural research station and one substation. There are small demonstration nurseries for fruit trees and plots for varietal testing of crops (figure 6). These are scattered mainly along the coast. Native and imported crops are observed, improved fertilizer practices are studied, and Tunisians are trained to upgrade quality and quantity of production.

Until recently, the Tunisian farmer had only very limited access to farm credit at reasonable interest rates. With lack of collateral for bank loans, much credit was in the form of small crop loans from the landlord or some prosperous villager, often at annual interest rates up to 30 percent.

5/ In English-language publications of the Government of Tunisia, Morhrane is spelled Moghrane.

Figure 6.--Varietal trials of watermelon at Teboulba Experiment Station, 1960.

Many Tunisian farmers still have difficulty obtaining loans because of obscurity of land title and lack of other collateral. But important steps to improve farm credit were taken with the establishment of the National Agricultural Bank in 1959 and the Cooperative Bank 2 years later.

The National Agricultural Bank offers short-term loans--usually from 3 to 18 months--for farm operating expenses, seed, fertilizer, fuel for machinery, and labor. Intermediate loans--from 2 to 7 years--may be made for buying machinery, livestock, and other more costly farm needs. Loans of up to 25 years are made for buying and improving land, building houses and barns, and putting in new orchards or olive groves.

In its first 9 months of existence the National Agricultural Bank made loans totaling $8 million, but these went mostly to the minority of Tunisian farmers who held clear titles to land and could put up sufficient collateral. A large number of loan applications were rejected because of insufficient collateral. Only partial assistance on some of the rejected applications was available through the Societes Tunisiennes de Prevoyance, cooperatives founded in 1907 to provide credit and other services for Tunisian farmers.

The need for reaching more farmers still ineligible for loans became increasingly evident. Consequently, in July 1961 a Cooperative Bank was formed to provide a source of credit to all cooperatives, craftsmen, seamen, and their unions. Tunisia now has nearly 150 agricultural cooperatives, and under the Three-Year Plan expects to organize 500 new cooperatives--200 in the north and 300 in the central and southern part of the country. The Cooperative Bank is designed to serve many farmers to whom credit could not be extended otherwise.

## Land and Water Development

Climate and soils in northern Tunisia are favorable for increased production, with proper land management. If protection from floods and excessive water can be provided, the area's flat plains have potential for high production. The problem of flood control, drainage, and of providing water for domestic use and livestock is being approached two ways. The building of protective structures to impound and regulate water and diversionary channels to protect lands, roads, railroads, and rural and urban centers is one approach. The second is that of establishing low-cost programs for building broadbase terraces and small upstream dams for subsoiling, strip-cropping, and controlled grazing. Reforestation is in progress to reduce water losses from runoff and increase output of forest products.

Except for about 75,000 acres of land in the lower Medjerda Valley--for which the Medjerda dam system now being developed by the Government of Tunisia (see below) can provide water--little possibility exists for extensive expansion of irrigation land. However, many small projects using spring waters, artesian wells, pump wells, and water-spreading are going forward, especially in the central and southern parts of the country where small-scale subsistence farming and livestock raising are most difficult.

Among the more spectacular of the broad programs in the north is the development--begun before Tunisian independence--of the fertile valley of the Oued Medjerda and its tributaries. The Medjerda is the only watercourse in Tunisia that flows throughout the year. This is due to generous rainfall in its source area, northeastern Algeria.

Grain crops have traditionally predominated in the Medjerda Valley. As cropland increased, forests were sacrificed, erosion spread, and devastating floods became a recurrent menace. Agricultural problems became those of bringing water to arid land, draining soggy sectors, and halting erosion.

Other primary aims of development were to bring more water to the expanding city of Tunis and its suburbs and to furnish power from domestic resources, the lack of which had resulted in dependence on imported coal and petroleum.

A dam was constructed on the Oued Ellil, which flows from the Kroumirie highlands and joins the Medjerda River near Souk El Khemis, to give additional water to the Tunis region. A dam on the Mellegue River, one of the Medjerda's principal tributaries, was built south of the town of Souk El Arba to regulate waterflow from the west. A canal at Taullerville and the Taullerville-El Aroussa Dam were completed. At the same time, drainage of surplus water from low-lying zones was being accomplished. In addition, a large-scale reclamation program to retain needed moisture led to terracing hillsides and planting them with olive trees.

About a fourth of the irrigable area of the valley, an estimated 125,000 acres, is ready for irrigation. With completion of the Medjerda projects, erosion control is expected on close to 300,000 acres, drainage on more than 125,000 acres (including 30,000 acres of salt marshes), and flood protection or control on about 125,000 acres. It is anticipated that approximately 30 million kilowatt hours of electricity will ultimately be available.

A Government agency, Office de la Mise en Valeur de la Vallee de la Medjerda (OMVVM), administers the development operations. The activities of OMVVM are guided by Tunisian and foreign, principally American, technicians working cooperatively. Under OMVVM, production of high-value, labor-intensive fruit, vegetable, feed, and industrial crops is proceeding in the newly irrigated and drained zones. Some of these crops are becoming available for export; some are beginning to replace imports for home use. A portion of the grain production of the valley has been transferred to less adequately watered regions.

Special problems arose in changing from extensive to intensive farming. Cultivation under irrigation was new to many Tunisian farmers. Water costs were high. Some landowners were reluctant to change old farming habits. There were objections to the trouble involved in learning to grow strange crops when, with increasing mechanization, the labor for producing familiar grains was reduced to a minimum.

The Tunisian Government took decisive steps. An agrarian law for the Medjerda, promulgated in 1958, stated that (1) farmers in the Medjerda development region must raise irrigated crops; (2) landowners must contribute to the amortization of the funds used by the Government in their interest at the estimated rate that the productivity of their holdings was increased by irrigation; (3) large tracts of land would be divided, with some exceptions, into smaller units suitable for irrigated farming; (4) land freed by these reforms would be redistributed to landless Tunisians.

Tunisia's many small farms of less than 5 acres were exempted from payment in either cash or land. This was one way to help safeguard against subdividing miniscule farms below the estimated 5-acre "vital minimum." Fragmentation of property often occurs, particularly in large families under Muslim laws of inheritance. At the same time, opportunity for single ownership of large areas, which had resulted in the past when heirs were forced to sell their uneconomic holdings, was curtailed.

Payment by those required to contribute cash was fixed at less than a quarter of the expense incurred by the Government. The rate of land surrender was determined according to the suitability of the soil of each individual farm for different crops.

It was decreed that 70 percent of the area of farms over 5 acres having soils good for crops such as citrus be relinquished. For farms with soils good for all market garden and tree crops, the rate was 60 percent. Forty percent of the land suitable for cultivation of only some market garden and feed crops was subject to redistribution.

On land requiring heavy initial expenses to be borne by the owner, the rate was reduced to 25 percent.

A commission was set up to supervise equitable land division and redistribution. Within certain limits, owners of medium-sized properties were given their choice of forfeiting the determined portion of their land, or, by payment of its sales value to the Government, of keeping their farms intact. However, cash payment was asked of owners of property between 5 and 10 acres in size, of land entirely planted to fruit trees, or of other land that could not be split up economically. In contrast, owners of farms of more than 125 acres were expected to pay their contributions in kind. With Government permission, owners of such farms were allowed to sell excess property privately. Otherwise, the excess was liable to expropriation for division and sale.

Provision was made for large industrial enterprises to operate holdings larger than 125 acres, with Government approval of the agricultural program being carried on. In addition, this type of farm was expected to provide work for as many paid laborers as might have been employed had the tract been divided into plots of 125 acres or less.

The law of the Medjerda further specified that after land boundaries were established and irrigation water made available to the farmer, each acre not converted to intensive cropping within 2 years became liable to an annual tax of about $5. It was hoped that Government recommendations for planting particular crops on private farms would be followed. However, except in special projects under the direct control of OMVVM, the landowner was free to choose his crops.

The Tunisian Government estimates that, once the Medjerda Valley is fully irrigated and drained, about two-fifths of the land could be redistributed to new owners. This would accomodate several thousand landless farm families. In addition, many permanent or seasonal farm laborers would be required to cultivate the irrigated crops.

The OMVVM plans to set up a number of cooperative agricultural centers within the framework of the agrarian law of the Medjerda. The first such project was opened in 1959 at El Habibia, about 10 miles northwest of Tunis on the road to Mateur. This center occupies nearly 800 acres, a large part of which was owned by a French agricultural corporation.

El Habibia encloses 44 parcels of land. These are from 10 to 30 acres in size, depending on the soil type and the crop to be planted. Smaller plots on the best land are earmarked for production of citrus and deciduous fruits. Market garden crops are being grown until fruit trees come into full production. Larger plots of lower-grade land are planted half to deciduous fruits and olives and half to market garden, fodder, and industrial crops.

Additional space is reserved in the center for a community fruit tree nursery. Other acreage is set aside for experimental plantings of new crops, such as rice, cotton, and kenaf.

The families chosen for relocation at El Habibia had some experience in irrigation farming. Land had been parceled, subsoiled, leveled for irrigation, and drained before the center was opened. A secondary network to distribute water to an irrigation canal on each plot was already in operation. Attractive stone and white adobe houses, each with kitchen, 2 or 3 utility rooms, and a courtyard, had been erected on most of the holdings. There were separate shelters for the family's farm animals.

Figure 7.--New housing at El Habibia Model Village--Irrigation pipe in foreground, 1960.

Construction of access roads and public buildings had been largely completed before the center opened. Windbreaks and some fruit trees were planted by the new landowners.

Credit was made available for planting and cultivating cash crops. The first year's income from these belonged to the farmer. Net income from the first crop of artichokes amounted to about $14,000. Individual farmers received from about $70 to $950 each. Titles to plots and homes carried the obligation to repay the Government from farm income in progressive installments over a 20-year period, but initial payment was deferred until the second year of occupancy.

In the El Habibia project emphasis is on community labor under the direction of "monitors." Instruction is given in the field and in compulsory evening sessions at the center's large recreation hall which, with administrative and police offices, a mosque, a school, and a clinic, is attached to the settlement. Home economists instruct the women of the village.

Under the control of OMVVM, El Habibia is planned to eventually serve as a rural administrative center for much of the surrounding locality. Another such center is being planned elsewhere in the valley.

Some other land, both in and out of the Medjerda Valley, is also being redistributed by OMVVM to farmers without resources of their own. The new allotments range from about 7 to 20 acres. Conditions of ownership are similar to those in the agrarian law of the Medjerda. Recipients operate their holdings under close supervision. They are expected to reimburse the Government for the acreage given them by long-term, graduated, annual payments from farm income over an agreed period of years. Failure to comply with these regulations may result in transfer of the farm to another landless farmer.

The list of other projects to promote better land and water management is long. Among them is the development of the Enfidaville Domain 6/. About 90,000 acres of public land in the vicinity of Enfidaville is being developed with help from the United States Agency for International Development. This land had suffered from years of poor management by several nomadic tribes of the region. It is being improved to provide cultivable tracts, collective pastures and forests, villages, and housing facilities for about 3,500 families. A large area has been cleared of the deep-boring jujubier root, which prevents crop cultivation (figure 8). Olive and fruit trees have been planted on more than 17,000 acres. About 15,000 acres of grazing land has been fenced and seeded. Nearly 500 buildings have been built in the project.

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6/ Originally the endowment of a high Tunisian official, the 250,000-acre Enfida estate was sold to a French company in 1880. The resulting dispute over the sale of Tunisian land to non-Muslims was a contributing factor in creating the French protectorate over Tunisia the following year.

Figure 8.--Hand clearing: Digging out the cancerous jujubier root, which prevents crop production (1959). The root is burned for charcoal.

A contract between the Tunisian Government and the Utah Construction and Mining Company, signed in May 1962, provides for construction of the Oued Nebhana Dam at Sidi Messaoud. This construction is to be completed within the next 2 years and associated irrigation work is to be finished by 1966. Total cost is estimated at about $63 million, half of which is being financed by a development loan fund.

The Three-Year Plan provides for creating 200 production units, each over 1,200 acres. These are designed to provide an area large enough to economically use machinery and modern farming techniques. This will permit changeover from traditional farming methods to the more advanced ones, especially the use of legumes and grasses in rotation with wheat to increase production.

Other typical projects completed or underway are: (1) levelling about 2,500 acres in the Kasserine area; (2) water distribution on close to 1,000 acres to benefit 800 families near Nefzaoua; (3) irrigation of the La Soukra-Ariana region to provide over 2,000 acres of irrigated land for fruits and vegetables; (4) development of 12 nurseries, covering more than 3,000 acres for some 2,500 families near Gabes; and (5) construction of a dam and irrigation system in the Menzel Bou Zelfa area for cultivation of 7,000 acres in fruits and vegetables. Continuing projects are tree-planting, terracing, land-clearing (figures 9 and 10), construction of access roads, rural housing, exploration of underground water resources, and construction of small wells all over the country.

The overall plan for crops is to increase and vary production by replacing some less profitable, traditional ones with high-value fruits, vegetables, and industrial crops. At the same time, the livestock industry is to be developed.

Figure 9.--Terracing, Kairowan Plain, 1959.

Figure 10.--Land-clearing, Central Tunisia, 1959.

As shown in table 13, the prospects of increasing grain and pulse crops over the next 10 years seem promising. Wheat and oats could gain about 50 percent over the 1954-57 average, with output of grain sorghums increasing four-fold and barley increasing moderately. Production of rice, Tunisia's newest grain crop, at the estimated rate would replace the greater part of estimated import needs for home consumption by 1970. Peas, chickpeas, and lentils promise substantial increases, while beans show a moderate gain.

Table 13.--Area and production of grain and pulse crops, 1954-57 average, estimated 1970

| Crop | 1954-57 average | | Estimated 1970 | |
|---|---|---|---|---|
| | Area 1/ | Production | Area | Production |
| | 1,000 acres | 1,000 metric tons | 1,000 acres | 1,000 metric tons |
| Durum wheat | 2,470 | 350 | 2,720 | 550 |
| Other wheat | 495 | 140 | 615 | 220 |
| Barley | 1,730 | 140 | 1,235 | 150 |
| Oats | 50 | 5 | 40 | 9 |
| Grain sorghum | 40 | 2 | 50 | 8 |
| Rice | 0 | 0 | 8 | 12 |
| Total grains | 4,785 | 637 | 4,668 | 949 |
| Beans | 160 | 24 | 160 | 30 |
| Peas | 5 | 3 | 25 | 6 |
| Chickpeas | 30 | 1 | 60 | 8 |
| Lentils and other pulses | 10 | 2 | 100 | 18 |
| Total pulses | 205 | 30 | 345 | 62 |

1/ Approximate

Source: Projet FAO de Developpement Mediterranean, Tunisie, Rapport National -- Organisation des Nations Unies pour l'Alimentation et l'Agriculture, Rome, Italie, 1959.

Table 14 indicates that the greatest planned increase in high-value fruits would accrue from extended acreages in citrus groves, date plantations, deciduous orchards, and olive groves. However, the area in vineyards is expected to increase about 10 percent, with heavier emphasis on production of table grapes principally for export. The impressive gains estimated in production of potatoes, market garden, and industrial and feed crops would result mainly from improved cultivation techniques and increased irrigation.

Among the direct methods suggested in Tunisia's Ten-Year Development Plan for crop refinement and expansion and range improvement are:

1. Substitution of rotations of wheat and edible pulses for wheat and stubble-fallows on close to 500,000 acres in sections of northern Tunisia with 16 or more inches of rainfall and rotation of wheat with legume hay and silage crops on nearly 750,000 acres. Conversion of all the stubble-fallow acreage to one or the other legume crop in rotation with wheat, while expanding production of feed and edible pulses, would not reduce the present area in grains but should increase wheat yields.

2. Expansion of the area in forage crops, particularly alfalfa, on irrigation land from negligible to about 90,000 acres. This is proposed for the Medjerda Valley, the Sahel, the vicinity of Sfax, and scattered locations in central Tunisia. This would further reinforce development of the livestock industry.

Table 14.--Area in specified crops, 1954-57 average, estimated 1970

| Crop | Area 1/ | | Estimated increase, 1970 over 1954-57 average |
|---|---|---|---|
| | 1954-57 av. | 1970 | |
| | 1,000 acres | 1,000 acres | Percent |
| Olive groves 2/ | 28 | 32 | /19 |
| Vineyards | 102 | 110 | /10 |
| Citrus groves | 18 | 32 | /80 |
| Date palms 2/ | 3 | 4 | /33 |
| Other fruit trees 2/ | 11 | 16 | /33 |
| Potatoes | 5 | 13 | /166 |
| Other fresh vegetables: | | | |
| Irrigated | 25 | 75 | /200 |
| Dry-farmed | 13 | 37 | /185 |
| Cotton | 0 | 25 | -- |
| Flaxseed | 8 | 25 | /210 |
| Castor seeds | 0 | 13 | -- |
| Tobacco | 4 | 13 | /225 |
| Sugarbeets | 0 | 37 | -- |
| Cultivated forage | 74 | 320 | |
| Lucerne | 13 | 37 - 75 | /188 - /480 |

1/ Approximate. 2/ Million trees.

Source: Projet FAO de Developpement Mediterranean, Tunisie, Rapport National--Organisation des Nations Unies pour l'Alimentation et l'Agriculture, Rome, Italie, 1959.

3. Expansion of land in small fresh fruits and vegetables by more than 100 percent (or from 35,000 to 75,000 acres) mainly under irrigation in the Medjerda Valley, the Sahel, Cap Bon, and the deep-well irrigated land in central and southern Tunisia. About 25,000 acres of the enlarged area would be for producing "Primeur" early fruits and vegetables for export; the remainder would be put into quick-growing crops, particularly tomatoes for home consumption and processing.

4. Cultivation of nearly 2,000 acres of rice in the Medjerda Valley, sugarbeets on about 12,000 acres in the Bedja region, and cotton on 10,000 acres on the Kairouan Plain, near Sfax, and in the Medjerda Valley.

5. Replacement of about three-fifths of the 60,000 acres of the old, unproductive olive trees scheduled for destruction in the north, planting some 1.4 million acres to tree crops (700,000 acres in olives, the remainder mainly in figs, apricots, and almonds) in the central and upper southern regions.

Roughly 300,000 acres of the new olive plantings would be in southern Tunisia, the remainder in the central sections. This would ultimately increase acreage in olive trees by about 30 percent. Added to the yield from present plantations under 15 years of age (table 4) production of olive oil could be nearly doubled in the next 25 years. Expansion of other tree crops is directed mainly to the export market.

Most of the projected increases in livestock and livestock products are expected to result from improved feed practices. Livestock numbers would be increased by only about 10 percent. An increase of over 30 percent in sheep and 20 percent in cattle would be accompanied by reduction of the goat population by one-third and camel numbers by half. As European farmers leave, the number of swine would decline to only a fraction of the current small number. Production of twice as much milk and meat is anticipated. An increase of one-third in hides is also expected.

Office National de Motoculture et de Mise en Valeur Agricole "Motoculture", a self-governing organization affiliated with the Secretariat for Agriculture through its president, the Secretary of Agriculture, has been set up to assist in minimizing the setback in agricultural production anticipated as European farmers leave Tunisia by bringing undercultivated farms into fuller use and helping Tunisian farmers maintain or increase output on land already cultivated.

This organization maintains tractor stations to rent heavy equipment for land-clearing and terracing, and provides maintenance for machinery owned by farm cooperatives. In addition, Motoculture sells insecticides, fertilizers, and seeds at cost, and participates with the Government in providing land, former European properties, to selected Tunisian farmers. A small tractor assembly plant is the newest venture. In the past, Tunisia, producing neither tractors nor farm implements, has depended on foreign sources for these items. Volume of trade in farm machinery is shown in table 15.

Table 15.--Tunisian imports of farm machinery, 1944-61

| Product | 1944-59 | 1960 | | 1961 | | 1944-61 |
|---|---|---|---|---|---|---|
| | Total | Tractor-drawn | Tractor-carried | Tractor-drawn | Tractor-carried | Total |
| | Number | | | | | |
| Plows | 815 | 11 | 115 | 9 | 5 | 955 |
| Disc plows | 2,882 | 31 | 34 | 18 | 55 | 3,020 |
| Disc harrows | 3,300 | 179 | 46 | 186 | 64 | 3,775 |
| Pulverizers | 2,258 | 60 | 27 | 20 | 37 | 2,402 |
| Cultivators | 3,417 | 52 | 89 | 49 | 88 | 3,695 |
| Seeders | 1,952 | 12 | 5 | 34 | 6 | 2,009 |
| Fertilizer distributors | 921 | 2 | 2 | -- | 9 | 934 |
| Manure spreaders | 27 | -- | -- | -- | -- | 27 |
| Mowers: | | | | | | |
| Animal-drawn | 834 | -- | -- | -- | -- | 834 |
| Tractor-drawn | 486 | -- | 3 | -- | 15 | 504 |
| Binders | 503 | -- | -- | -- | -- | 503 |
| Combines | 2,535 | 57 | -- | 55 | -- | 2,647 |
| Balers | 214 | -- | -- | 1 | 1 | 216 |
| Rakes | 1,047 | 9 | -- | 11 | 8 | 1,075 |
| Track-laying tractors | 2,947 | 38 | | 18 | | 3,003 |
| Wheeled tractors | 5,438 | 871 | | 633 | | 6,942 |

Source: Foreign Service Reports.

## III. SITUATION IN THE WORLD MARKET

### Pattern of Trade

France took nearly 54 percent of all Tunisian exports and furnished over 53 percent of the value of total imports during 1961-62 (table 16). But partly because of new bilateral agreements, other nations are beginning to influence the trade pattern.

Table 16.--Percentage value of total trade: Exports by principal country of destination and imports by principal country of origin, annual 1961 and 1962

| Country | Exports | | Imports | |
|---|---|---|---|---|
| | 1961 | 1962 1/ | 1961 | 1962 1/ |
| | Percent | | Percent | |
| France | 54.9 | 52.8 | 53.7 | 52.4 |
| United States | .6 | 1.4 | 15.0 | 16.0 |
| Italy | 9.0 | 16.7 | 5.1 | 6.5 |
| United Kingdom | 6.2 | 4.6 | 2.7 | 3.1 |
| West Germany | 1.7 | 1.3 | 4.6 | 3.9 |
| Netherlands | 1.7 | 2.6 | 1.3 | 1.5 |
| USSR | 2.3 | 2.0 | 1.3 | 1.0 |
| Yugoslavia | 2.8 | 1.6 | 1.1 | .6 |
| Algeria | 2.8 | 2.4 | 1.2 | .5 |
| Ceylon | .1 | -- | 1.4 | 1.8 |
| All other countries | 17.9 | 14.6 | 12.6 | 12.7 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 |
| Value of total trade in million U.S. dollars | 110.3 | 115.9 | 2 0.5 | 216.3 |

1/ Preliminary

Source: Foreign Service Reports.

The United States has risen steadily as a source of Tunisian imports from about 3 percent in 1958 to 16 percent in 1962. The increase was due mainly to shipments of food under aid programs for development and relief projects.

U.S. imports from Tunisia, mainly olive oil, have remained relatively low, amounting to an average of only $1.8 million annually from 1959 to 1962.

A modest level of self-sufficiency in most basic foods is maintained or exceeded in years of average-to-good harvests. In other seasons, grains must be imported. Domestic requirements of sugar, tea, coffee, and considerable quantities of potatoes, dairy products, processed foods, oilseeds, and vegetable oils other than olive oil are regularly bought abroad.

An average of nearly 60 percent of the value of Tunisia's total export trade in 1961-62 was derived from agricultural products, according to table 17. Olive oil contributed close to 24 percent, wines over 16 percent, and citrus fruits nearly 4 percent. The sharp reduction in the value of cereals, less than 5 percent of total export value in 1961-62 compared with almost 18 percent in 1958, was due to greatly reduced output of Tunisian grains in the 1961/62 production year.

Table 17.--Exports of principal agricultural commodities, annual 1958, 1961, and 1962

| Commodity | 1958 | | 1961 | | 1962 (Prelim.) | |
|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| | 1,000 M.T. | Million dollars | 1,000 M.T. | Million dollars | 1,000 M.T. | Million dollars |
| Wheat | 100 | 13.0 | 34 | 3.9 | 30 | 3.4 |
| Barley | 84 | 4.9 | -- | -- | -- | -- |
| Other grains and grain products | 70 | 8.0 | 54 | 1.6 | 58 | 3.2 |
| Pulses | 4 | .5 | 2/ | .7 | 1 | .9 |
| Fresh vegetables | 11 | 1.4 | 6 | .6 | 9 | 1.0 |
| Olive oil 1/ | 42 | 26.3 | 45 | 23.1 | 54 | 30.6 |
| Fish | 4/ 3 | 2.2 | 3 | 1.4 | 3 | 1.2 |
| Wines | 133 | 36.6 | 133 | 19.0 | 125 | 18.2 |
| Citrus fruit | 39 | 5.2 | 42 | 4.4 | 38 | 4.3 |
| Dates | 3 | 1.1 | 4 | 1.1 | 4 | 1.1 |
| Other fresh fruits | 3/ | -- | 2/ | 5/ | 2 | .3 |
| Preserved fruits and jams | 3/ | -- | 10 | 2.0 | 15 | 2.9 |
| Hides and skins, raw | 2 | 1.8 | 2 | 1.3 | 2 | 1.2 |
| Wool and hair | 1 | .6 | 2/ | .1 | 2/ | 5/ |
| Total above | -- | 101.6 | -- | 59.2 | -- | 68.3 |
| Percent of total exports | -- | 66.3 | -- | 53.7 | -- | 58.9 |
| Total exports | -- | 153.3 | -- | 110.3 | -- | 115.9 |

1/ Includes olive oil foots. 2/ Less than 500 metric tons. 3/ Not separately reported. 4/ Includes preserved meat. 5/ Less than $500,000.

Source: Foreign Service Reports.

About 23 percent of total import expenditures in 1961-62 was for food products and tobacco. More than half of the value of agricultural imports was represented by purchases of grains, mainly wheat.

In 1962 France took 98 percent of the total value of Tunisia's exports of wine and 85 percent of the citrus fruit. Main customers for Tunisian olive oil were Italy (37 percent by value), France (35 percent), Cuba (9 percent), the USSR and the United States (5 percent each).

Over 95 percent of the value of imports of bread wheat and barley originated in the United States. France supplied the bulk of potato imports and nearly 40 percent of dairy products. Other principal exporters of dairy products to Tunisia were the Netherlands (32 percent) and the United States (16 percent). Most tea came from Ceylon and Japan; coffee came mainly from Brazil. Over 70 percent of the sugar imported in 1962 came from Cuba; nearly 25 percent was imported from the United Kingdom.

Table 18.--Imports of principal agricultural commodities, annual 1958, 1961, and 1962

| Commodity | 1958 | | 1961 | | 1962 (Prelim.) | |
|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| | 1,000 M.T. | Million dollars | 1,000 M.T. | Million dollars | 1,000 M.T. | Million dollars |
| Sugar | 73 | 8.6 | 79 | 6.5 | 93 | 6.5 |
| Wheat | 27 | 2.2 | 367 | 26.8 | 271 | 19.3 |
| Barley | 0 | -- | 69 | 3.3 | 93 | 5.7 |
| Other grains | 2 | .3 | 21 | 1.8 | 17 | 1.3 |
| Coffee | 2 | 1.6 | 5 | 1.2 | 5 | 1.3 |
| Tea | 4 | 3.4 | 4 | 4.4 | 4 | 4.3 |
| Potatoes | 15 | 1.3 | 22 | 1.2 | 13 | .9 |
| Fruits | 6 | 1.6 | 5 | 1.3 | 5 | 1.1 |
| Dairy products | 5 | 2.8 | 7 | 3.2 | 8 | 3.5 |
| Oilseeds, edible | 3 | .8 | 3 | .6 | 3 | .7 |
| Tobacco | 4 | 2.9 | 2 | 1.3 | 3 | 2.3 |
| Total above | -- | 25.5 | -- | 51.6 | -- | 46.9 |
| Percent of total imports | -- | 16.5 | -- | 24.5 | -- | 21.7 |
| Total imports | -- | 154.5 | -- | 210.5 | -- | 216.3 |

Source: Foreign Service Reports.

Tunisian goals for economic development emphasize increased exports of a wider variety of farm products accompanied by diminishing per capita expenditure on agricultural imports. During the next 10 years grains, olive oil, and wine will probably continue to dominate the export list. However, improved farming and marketing practices should permit an appreciable rise in exports of the newer cash crops such as citrus, other fresh fruits, and vegetables.

Tables 19 and 20 estimate possible changes in commodity patterns and the scope of agricultural trade during the next few years. However, some reservations must be observed. The actual rate of increase in farm export availabilities and decrease in import needs will be conditioned primarily by the realized rate of Tunisia's development.

Weather, of course, will be a qualifying factor. In addition, consideration must be given to future outlets for Tunisian farm goods. Competition from other countries may increase as more developing nations begin attaining their agricultural potentials and as American and European countries attempt to expand markets.

## Trade with the United States

Farm products normally predominate in exchanges between Tunisia and the United States (tables 21 and 22). Olive oil usually makes up most of the value of U. S. purchases. The decline of nearly 90 percent in value of total U.S. imports from Tunisia between 1959 and 1960 resulted almost wholly from reduced oil imports. This was due to the 1959/60 "off" production season for Tunisian olives.

Table 19.--Value of agricultural exports, 1954-57 average, estimated 1970

| Commodity | 1954-57 average | | Estimated 1970 | |
|---|---|---|---|---|
| | Value | Percent of total agri. exports | Value | Percent of total agri. exports |
| | Million dollars | Percent | Million dollars | Percent |
| Olive oil | 14.2 | 29.2 | 18.3 | 22.3 |
| Grains and grain products | 14.1 | 29.0 | 28.6 | 34.8 |
| Wine | 9.2 | 18.9 | 9.2 | 11.2 |
| Citrus fruit | 2.7 | 5.6 | 6.2 | 7.8 |
| Other fresh fruits | 1.1 | 2.3 | 2.4 | 2.9 |
| Canned or preserved fruits and vegetables | 1.1 | 2.3 | 7.1 | 8.6 |
| Livestock products | 1.1 | 2.3 | 2.4 | 2.9 |
| Fresh vegetables | 1.0 | 2.1 | 3.6 | 4.4 |
| Oilseeds | .9 | 1.8 | 1.2 | 1.4 |
| Pulse crops | .8 | 1.6 | .7 | .8 |
| Dates | .8 | 1.6 | 0 | 0 |
| Vegetable oils, exc. olive oil | .2 | .4 | 0 | 0 |
| All other agricultural exports | 1.4 | 2.9 | 2.4 | 2.9 |
| Total | 48.6 | 100.0 | 82.1 | 100.0 |

Table 20.--Expenditures for agricultural imports, 1954-57 average, estimated 1970

| Commodity | 1954-57 average | | Estimated 1970 | |
|---|---|---|---|---|
| | Cost | Percent of total expenditures for agri. imports | Cost | Percent of total expenditures for agri. imports |
| | Million dollars | Percent | Million dollars | Percent |
| Sugar | 10.2 | 28.3 | 11.9 | 26.3 |
| Grains and grain products | 5.9 | 16.4 | 2.4 | 5.3 |
| Coffee, tea, and cocoa | 5.1 | 14.2 | 7.1 | 15.7 |
| Livestock products | 3.7 | 10.3 | 9.5 | 21.0 |
| Vegetable oils, exc. olive oil | 2.2 | 6.1 | 2.9 | 6.4 |
| Nonalcoholic beverages | 1.9 | 5.3 | 2.4 | 5.3 |
| Fresh fruits | 1.6 | 4.4 | 2.4 | 5.3 |
| Preserved fruits & vegetables | 1.3 | 3.6 | 2.4 | 5.3 |
| Fresh vegetables | 1.2 | 3.3 | 1.2 | 2.7 |
| Oilseeds | 1.0 | 2.8 | 1.2 | 2.7 |
| Olive oil | .6 | 1.7 | 0 | 0 |
| Pulse crops | .5 | 1.4 | .7 | 1.5 |
| Spices | .3 | .8 | .5 | 1.1 |
| All other agricultural imports | .5 | 1.4 | .6 | 1.4 |
| Total | 36.0 | 100.0 | 45.2 | 100.0 |

Source: Projet FAO de Developpement Mediterranean, Tunisie, Rapport National -- Organisation des Nations Unies pour l'Alimentation et l'Agriculture, Rome, Italie, 1959

Table 21.--United States agricultural exports to Tunisia, 1959, 1960, and 1961

| Commodity | Unit | Quantity | | | Value | | |
|---|---|---|---|---|---|---|---|
| | | 1959 | 1960 | 1961 | 1959 | 1960 | 1961 |
| | | --- Thousands --- | | | -- 1,000 dollars -- | | |
| Nonfat dry milk | Lb. | 933 | 1,728 | 1,663 | 265 | 272 | 226 |
| Other dairy products | Lb. | 331 | 0 | 0 | 125 | 0 | 0 |
| Wheat | Bu. | 1,974 | 4,679 | 13,118 | 4,269 | 10,137 | 25,631 |
| Wheat flour | Cwt. | 1 | 2 | 44 | 3 | 11 | 213 |
| Tobacco, unmfd. | Lb. | 95 | 443 | 44 | 56 | 265 | 34 |
| Corn, except seed | Bu. | 0 | 0 | 1,177 | 0 | 0 | 1,507 |
| Grain sorghums | Bu. | 0 | 0 | 492 | 0 | 0 | 586 |
| Barley | Bu. | 0 | 184 | 2,090 | 0 | 223 | 2,333 |
| Rice | Lb. | 0 | 8,380 | 12,125 | 0 | 578 | 834 |
| Food for relief or charity | - | -- | -- | -- | 95 | 173 | 573 |
| Other agricultural | - | -- | -- | -- | 17 | 22 | 82 |
| Total agricultural | - | -- | -- | -- | 4,830 | 11,681 | 32,019 |
| Nonagricultural | - | -- | -- | -- | 4,452 | 9,569 | 7,493 |
| Total exports | - | -- | -- | -- | 9,282 | 21,250 | 39,512 |

Table 22.--United States agricultural imports from Tunisia, 1959, 1960, and 1961

| Commodity | Unit | Quantity | | | Value | | |
|---|---|---|---|---|---|---|---|
| | | 1959 | 1960 | 1961 | 1959 | 1960 | 1961 |
| | | --- Thousands --- | | | -- 1,000 dollars -- | | |
| Hides and skins, raw | Lb. | 34 | 0 | 0 | 12 | 0 | 0 |
| Olive oil | Lb. | 10,965 | 1,160 | 2,458 | 2,392 | 244 | 568 |
| Other agricultural | - | -- | -- | -- | 2 | 1 | 5 |
| Total agricultural | - | -- | -- | -- | 2,406 | 245 | 573 |
| Nonagricultural | - | -- | -- | -- | 198 | 423 | 84 |
| Total imports | - | -- | -- | -- | 2,604 | 668 | 657 |

Source: Economic Research Service, USDA.

In addition to cereals and cereal products, the most significant U.S. agricultural exports to Tunisia are dairy products and tobacco. Grains and flour, mainly wheat, (valued at approximately $92 million) were delivered to Tunisia between 1954 and 1962 under Title II, P.L. 480. Modest shipments of other food items have been made from time to time under various U.S. export programs. Motor vehicles and agricultural equipment also have been furnished as components of U.S. aid.

## Trade Policies

Tunisia is striving to reduce dependence on trade with France. Many bilateral trade agreements have been negotiated. By early 1961, 27 such agreements were in effect, mainly with West European and Soviet Bloc countries. In 1962, Tunisia signed an agricultural commodities agreement with the United States under Title I of the amended Agricultural Trade Development and Assistance Act. The commodities covered by this agreement are bread wheat and edible vegetable oil.

Favorable treatment for Tunisian grains and wine is accorded by France under an amended trade and tariff convention made by the two governments. The convention also grants preference to imports of certain French products into Tunisia. Imports from other countries usually require individual licenses. Since the Tunisian dinar is no longer aligned with the devalued French franc, individual import authorizations from the Central Bank of Tunisia are required for imports from countries in the franc zone.

Import licenses were granted formerly on individual basis for commodities considered essential for economic development or domestic consumption. But in late 1959 all quantitative restrictions were removed on a large number of trade items, mostly capital goods, imported from specified sources, including the United States. Practically all such imports are now covered by automatic import permits. Imports of a number of farm products have been liberalized. A liberalized product is one that may be imported with quantitative limitations; other farm imports are still subject to quantitative restrictions. A recent device to restrict imports of consumer goods has been the requirement of deposits of up to 25 percent of the value of licenses at the time of application.

Some products not covered by the liberalization measures can be imported under a system of global quotas. Formerly restricted to members of the European Payments Union, these are now open to all suppliers. Other imported commodities are licensed in accordance with Tunisia's bilateral agreements. Licenses are not usually granted for dollar imports classed as nonessential. Trade with the United States has not increased markedly as a result of the liberalization measures.

Except for Government purchases and a few commodities, all imports are subject to customs duties. However, Tunisia recently suspended import duties and taxes on eggs, sheep, cattle, olives, and certain nonagricultural products.

Capital goods, raw materials, and essential imports generally have low duties--from 5 to 25 percent ad valorem. Luxuries, nonessentials, or commodities competing with local industries are subject to duties of from 30 to 100 percent ad valorem. Many French agricultural and manufactured products are granted from 5 to 10 percent preferential tariff treatment.

To promote disposal of surplus commodities, Tunisia's export policy is fairly liberal. Quotas or bans are imposed occasionally to protect home industries. Exports of a number of agricultural commodities, among them grains, olive oil in small containers, and Maltese oranges, benefit by direct or indirect Government subsidies.

Export licenses are required for only a few farm products, including olive oil. Other restrictions on exports are limited to those dictated by the terms of individual bilateral trade agreements or by the capacity of foreign markets to absorb what Tunisia offers.

The granting of import and export licenses is a function of the Sous-Direction des Finances Exterieures et du Commerce, Service du Commerce Exterieur (Foreign Trade Service or FINEX-COM). To prevent speculation, this agency administers the strict governmental controls on foreign exchange payments and proceeds, including those involving transactions with France.

Except for grains, tobacco, and alfa grass, State trading operations in Tunisia are limited. Both domestic and foreign trade in grains is controlled by the National Cereals Office, which reports to the Secretariat of State for Agriculture. All trade in tobacco has been a State monopoly for over 70 years. Trade in alfa grass is delegated by the Government to Tunisian National Railways, which is subsidized from State funds when trade in alfa is in deficit. Profits derived by Tunisian National Railways from sales of this grass revert to the national treasury.

Some trend toward increased State intervention in trade may be indicated by the establishment in 1959 of a national olive oil marketing organization intended to standardize oil for export, and in a January 1962 State project for constructing a date packing plant at Tunis at a cost of over $8 million.

Tunisia was provisionally accepted for membership in the General Agreement on Tariffs and Trade (GATT) in the fall of 1959, and in the sessions of the GATT held in late 1961 asked for a 2-year extension of the provisional acceptance granted earlier.

## IV. FOREIGN AID

Since becoming an independent state, Tunisia has benefited from foreign financial and technical assistance from a number of sources. French subsidization of Tunisian agricultural exports, mainly of hard wheat and wine, has continued. Other recent aid from France has been in the form of providing the services of administrators and technicians and operating several small demonstration programs in various ministeries of the Tunisian Government. West Germany has lent financial aid and technical assistance in agricultural projects. Italy has offered financial aid. Soviet Bloc countries have extended credits for equipment, construction, and dam building. An outstanding contribution of the United Nations is in adult education for the illiterate and provision of advisors and technicians in health, nutrition, and handicrafts.

The United States has provided the largest proportion of the monetary and technical assistance to Tunisia. This assistance was given mainly under the Mutual Security Act, the Agency for International Development, the Development Loan Bank, and special aid programs.

Considerable sums in European currencies have accrued to Tunisia through triangular transactions under Section 402 of the Mutual Security Act. The USAID has given intensive assistance on most of the newer development projects for better soil and water management, increased agricultural production, improvements in rural credit, fisheries, forestry, and in the general standard of living. Development loans have been made for railway equipment, to finance dams, to build small manufacturing plants, and for processing agricultural products.

Food for Peace accounts for a large percentage of U.S. economic assistance to Tunisia. Under the program, U.S. farm goods valued at $170 million were delivered to Tunisia from 1954 to 1962. Shipments of U.S. agricultural commodities continue to play an important role in feeding hungry people of Tunisia and promoting economic growth.

Under the Food for Peace program, about $70 million worth of U.S. agricultural commodities were delivered to Tunisia for refugee feeding, child care programs, and to alleviate distress resulting from floods and other disasters. The joint Tunisia-U.S. child feeding program, conducted during the past 5 years with substantial Tunisian contributions and supplements to U.S. agricultural commodities, is the principal means of overcoming nutritional deficiencies among Tunisia's needy children. This program is of particular importance to Tunisia in developing its human resources, as 40 percent of its population is under 15 years of age and 50 percent under 20.

Nearly $70 million worth of U.S. agricultural products under Food for Peace have been used in Tunisia as partial payment on public works projects as a basis for promoting economic development. The Tunisian work relief program provides full-time employment for about 200,000 laborers, otherwise unemployed, on more than 4,000 projects, including land-clearing and development, reforestation, road construction, water retention, drainage, and construction of schools and clinics. In addition, a large portion of the currency generated from the sale of U.S. agricultural commodities to Tunisia under the Food for Peace program (about $34 million), is being used to finance economic development projects.

The foreign share in investment funds for Tunisia's Three-Year Plan begun in January 1963 will be a little less than half of total estimated expenditures, or about $370 million. Of this amount the United States is committed to supply $180 million. France may contribute $30 million to $40 million; Italy, West Germany, Sweden, and Czechoslovakia have also promised assistance.