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Preliminary Draft

RESTRICTED

Capt. R. K. Cavanaugh

CIVIL AFFAIRS HANDBOOK

on

I T A L Y

Section Seven

on

A G R I C U L T U R E

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CIVIL AFFAIRS HANDBOOKS

TOPICAL OUTLINE

1. Geographical and Social Background
2. Government and Administration
3. Legal Affairs
4. Government Finance
5. Money and Banking
6. Natural Resources
7. Agriculture *
8. Industry and Commerce
9. Labor
10. Public Works and Utilities
11. Transportation systems
12. Communications
13. Public Health and Sanitation
14. Public Safety
15. Education
16. Public Welfare

* This study on Italian Agriculture was prepared for the Military Government Division of the Office of the Provost Marshal General by the Division of Foreign Agricultural Relations of the Department of Agriculture.

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INTRODUCTION

Purpose of the Civil Affairs Handbook.

International Law places upon an occupying power the obligation and responsibility for establishing government and maintaining civil order in the areas occupied.

The basic purposes of civil affairs officers are thus (1) to assist the Commanding General of the combat units by quickly establishing those orderly conditions which will contribute most effectively to the conduct of military operations, (2) to reduce to a minimum the human suffering and the material damage resulting from disorder and (3) to create the conditions which will make it possible for civilian agencies to function effectively.

The preparation of Civil Affairs Handbooks is a part of the effort of the War Department to carry out this obligation as efficiently and humanely as is possible. The Handbooks do not deal with planning or policy. They are rather ready reference source books of the basic factual information needed for planning and policy making.

Revision for Final Publication.

Significant area information is immediately needed (a) for civil affairs officers charged with policy making and planning, (b) for the use of civil affairs officers-in-training and (c) to make certain that organized data is in hand, whenever events require it.

Arrangements were therefore made with the cooperating agencies to organize all immediately available material in accordance with a prepared outline. This section on Agriculture is therefore a preliminary draft only. It is being revised preparatory to the final publication of the handbook as a whole. The revision will focus primarily on obtaining (a) more recent data on agricultural conditions and (b) greater detail in respect to administrative control over the production and distribution of farm products.

COMMENTS AND CRITICISMS BY OFFICERS USING THIS MATERIAL ARE REQUESTED. THEY SHOULD BE SENT TO LT. COLONEL JAMES H. SHOEMAKER, MILITARY GOVERNMENT DIVISION, P.M.G.O., 2805 MUNITIONS BUILDING, WASHINGTON, D.C. (OR PHONE WAR DEPARTMENT EXTENSION 76370). 4276

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THE AGRICULTURE OF ITALY

Part I. General Survey

1. Introduction

Agriculture is Italy's most important industry, with nearly one-half of the gainfully employed population engaged in agricultural pursuits. The relative importance of other economic activities varies from region to region, but throughout Italy agriculture is one of the main sources of employment and income. Thus, the more industrialized regions of the North are also the main agricultural areas.

Much of Italy is not naturally suited to agricultural production. But with an area less than that of the State of California, which it resembles in climate and crops grown, and with some 19 million out of a population of almost 43 million (1936) directly dependent on agriculture for their livelihood, virtually all land which returns a mere subsistence income has been brought under cultivation. One-half of this largely mountainous, semi-arid country is worked with the plough and the spade. Another fifth is classified as permanent meadow and pasture, one-fifth as woods and forests, and one-fifteenth as uncultivated productive land, leaving less than one-tenth as unproductive.

A variety of soils, climate and topography makes possible the production of an unusually wide range of crops. Rye and buckwheat are grown in the north. Rice is a staple crop of the Po Valley. Mulberry leaves and silk worms are a source of income to the farmers of the northeast. Chestnuts are grown on an extensive scale in the Western Alps and the Tuscan Appennines. Citrus fruits, almonds, pistachio nuts, sumach, and, on a small scale, cotton are staple crops in Sicily. Wheat, olives and the vine are common throughout the peninsula.

In the last years before the outbreak of the present war, Italy had achieved a high degree of self-sufficiency in food by increasing production and decreasing consumption to rather low levels compared to most European countries. According to an official estimate, a decrease in net imports from 19 to 6 percent of the nation's calorie intake between 1926-29 and 1934-37 was accompanied by a decrease in the calories available per person per day from an average of nearly 2,900 to less than 2,600 (excluding wine). Italy had a net export of rice, potatoes, cheese, wine, fruits, vegetables, and nuts, and also of such raw materials for industry as silk and hemp. It was on a deficit basis for wheat, meat, fats and oils, cotton, wool, and rubber. Agricultural exports contributed over two-fifths of the total value of exported goods. Though the share of agricultural imports in total imports was somewhat smaller, the absolute value of agricultural imports exceeded that of exports (except in 1936).

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2. Salient Features of Agriculture in Italy

Though agricultural production is carried on in Italy under a variety of conditions, it is yet possible to discuss certain salient features of farm organization and management which obtain for the country as a whole. Italian agriculture differs in so many respects from farming in the United States that this general background discussion is thought to be essential for a full understanding of the section on the agricultural economy of the several regions.

Farm Enterprises. - The main characteristic of Italian agriculture is the importance of wheat in the farm economy. The predominance of this crop, for which the climates and soils of the Peninsula are often ill-suited, accrues from both institutional and economic causes. Bread and other grain products are the staple foods of the rural population, so that wheat is raised on family-size holdings, to make the peasant family independent of outside sources for this important item of its diet. On large holdings, some wheat is produced to enable the operator to pay labor wages in kind. In addition, wheat has long been made the object of special attention on the part of the Government, having received tariff protection from the unification of Italy (except during the period 1915-1925). Some years after the advent of Fascism, Government action resulted in the guarantee of minimum prices to wheat producers, thus making wheat production a most safe undertaking.

Nowadays, on most farms, from one-fourth to one-half of the land in cultivation is planted in wheat. On small holdings, wheat production fully covers household consumption; on large holdings wheat is an important cash crop. Only in the higher regions in the mountains does wheat disappear and rye take its place as the staple food crop.

The staple cereal is never the sole crop grown but is part of a general rotation which, on small farms, is carefully maintained from year to year and, on large farms, is modified from time to time according to criteria of economic advantage. The rotation begins with a deep-rooted crop - often referred to as rinnovo. This crop entails careful preparation of the ground - deep plowing, leveling, etc., - application of manure and commercial fertilizer, frequent cultivations, extirpation of bad weeds, etc. - which improves the soil and increases its fertility. A wide range of crops are planted as rinnovo: 1) Additional sources of food such as corn—which in Italy is almost as widespread as wheat — rice, beans, and potatoes. Usually the output of these crops exceeds family consumption, thus leaving a marketable surplus. 2) "Industrial" crops, which are distributed throughout the country centering round processing plants. These include tobacco, sugar beets, hemp, flax, cotton, tomatoes, sorghum, and oil seeds.

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The rinnovo precedes a wheat crop, which in turn is followed by a legume crop used for fodder and green manure. The legume crop includes both perennial plants such as alfalfa, ladino clover, sainfoin, sulla and annual plants such as red and crimson clover. These legumes yield from one to five cuttings per annum and are grazed by cattle between cuttings. After the legume meadows have been exploited, wheat is again planted.

The importance of trees and vines in Italian agriculture often equals and sometimes exceeds that of field crops. Grapes throughout the whole country, mulberry leaves for silkworms, olives in Central Italy and in the South, a variety of deciduous and citrus fruits as well as nuts, constitute important factors in the agricultural economy of Italy, especially in the hilly regions and, at times, in the mountain valleys. As the slope of the fields increases trees become more important, reducing the acreage of open fields. These products supply additional sources of foodstuffs (oil, wine) for the family, together with a marketable surplus which brings in considerable cash income. Some fodder is also obtained from leaves and young twigs of live supports (maples, willows, poplars, and elms) of vines. Trees are also important because they supply wood for fuel and some timber.

The layout of the fields, the smallness of holdings, and the importance of arboreal crops make the use of tractors difficult on many Italian farms. Even on large commercialized farms a number of operations (cultivating, harrowing, etc.) are carried on with machinery drawn by animals. Thus livestock, consisting, in the overwhelming majority of cases, cattle constitute the main source of power. Consequently, in cattle breeding, emphasis is laid on power, with secondary attention to other purposes. Most of the cattle raised are dual-purpose cattle, with some breeds characterized by rapid gains in live weight, often referred to as cattle for meat, and a few breeds that yield considerable amounts of milk. Obviously, seasonal fluctuations in milk production are greatly affected by the amount of work in the field performed by milch cows. Dairy cows of the Swiss and Holstein breeds are found only on specialized dairy farms in the North and around the large centers of Central Italy (Florence and Rome). Beef cattle of the American type are practically unknown.

Horses are used for heavy work only on light soils, but they supply some power for lighter operations (cultivating and harvesting). On the other hand, they are used for personal conveyance and transportation of crops from the fields to the farmstead and from the farmstead to the market. Asses and mules are used as pack animals and for personal conveyance, and only occasionally for draft. On many farms livestock is kept as a source of power and manure, rather than of cash income.

The smaller animal enterprises assume varying degrees of importance in different regions. Sheep and goats are raised all over the country. Large sheep flocks are predominant in Central and Southern Italy. Commercial flocks of goats (of over a hundred head) comprise almost one-seventh of the total number of animals.

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A few head of swine are raised on practically all farms, with large herds, few in number, confined to Northern Italy. Small flocks of poultry produce the overwhelming proportion of poultry meat and eggs.

The livestock of all classes are fed from farm-grown grains and fodder. Ensilage of small grains is rare, while hay and legume silages are used to tide over from one season into another. Commercial feeds are bought only by large farms and occasionally by small holdings for the fattening of cattle. Litter, in normal years, is obtained from cereal straw, stovers and legume straw. However, all of these products may also be fed, so that a feed shortage is most likely to be reflected in a shortage of litter and, in time, in an impairment of the quality of manure.

Supplies. - While a high degree of self-sufficiency is achieved for food and fodder, the farm family is largely dependent upon the market for other consumption and production goods.

The farm enterprise depends upon outside sources for fertilizer and for plant sprays which, under conditions prevailing in Italy, assume unusual importance, especially for vineyards and olive trees. All of the farm machinery with the exception of wooden plows is obtained from the market; often such services as deep-plowing and threshing are performed by itinerant machine-owners. Borrowing and hiring of planting machinery and of harrows are very frequent.

Storage of Agricultural Products. - Wheat and small grains in general are stored in the upper floor of the operator's house, with the laborer's lodging furnishing additional storage capacity.

Hay is stored in stacks and in haylofts over the barn or stable. As a general rule farms are not equipped with storage facilities for such raw materials as flax, hemp, tomatoes, and sugar beets. It is imperative that these products be moved into the processing centers as rapidly as possible to avoid spoilage and waste.

Agricultural Marketing. - Marketing of agricultural commodities has remained in a somewhat primitive stage in Italy, partly because of the low degree of commercialization of many farm units, partly because of the conservatism of the farm operators. Grading and standardization of agricultural commodities before the present war were comparatively rare and, moreover, less thorough than in the United States.

Wheat was graded on the basis of specific weight and impurities. Corn, rice, oats, and barley were classified by variety and then on vague, commercial grades such as good, marketable, medium, etc. No reliable grades were used for feeds while control of any sort was lacking for commercial feedstuffs, oilmeal and cakes. Grades for meat varied from region to region and applied to different cuts rather than to the condition of the animal. Grades for eggs and milk were practically unheard of, and only occasionally were attempts made to grade butter and other dairy products. It is therefore impossible,

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in the case of most agricultural commodities, to use grades and establish prices accordingly. Presumably, during the war, the Government in its endeavors to achieve possession of foodstuffs has done away with most of the existing classifications and distinctions.

On the other hand, satisfactory grading systems have been achieved for industrial raw materials such as sugar beets, flax and hemp. Tobacco had long been produced under special agreements, covering both grading and prices.

Small producers sold their produce to small mills and wholesalers, while large producers relied heavily upon "middlemen" who acted as selling agents for farm products and, very often, as purchasing agents for farm supplies. It is a safe assumption that these individuals, more or less deprived of their livelihood by the establishment of compulsory pools and by Government intervention in the whole system of marketing, are now engaged in black market operations. Auction sales of any kind were practically unheard of.

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Forms of Land Tenure

Land tenure arrangements vary greatly from region to region, so that an overall discussion is of little significance. Accordingly, this section gives merely a description of the main types of land tenure arrangements to be found in Italy.

The following types of land tenure arrangements in Italy present unique features:

a) Capitalistic rental agreements (affitto capitalistico)

Large units are let to individuals who supply operating capital and management, while hiring labor or entering share-cropping agreements with the workers. The lease is for a number of years, with rental often paid in kind. or in the money equivalent of fixed amounts of produce. Locally grown commercial crops (sugar beets, rice, wheat, corn and potatoes) are used as basis for rental determination.

b) Share-lease agreements (mezzadria or colonia parziaria)

Family-size units are rented to peasants under specific agreements by which landlord and operator share expenditures and returns on a uniform basis. Selection of enterprises, acreage in various crops and methods of operation are specifically agreed upon by both parties. The contract, which essentially is more in the nature of a partnership than of a lease, lasts one year but is very often automatically renewed. In Central Italy, the family-size units are part of larger estates called fattorie. These are discussed in the section on Tuscany.

c) Cash tenancy for small holdings (affitto colonico)

This is a form of year-to-year cash lease, supplemented by payment of a few perquisites in kind (poultry, fruits, vegetables).

d) Share-cropping agreements (partitanza)

Small tracts of land are assigned either to farm hired hands or to small owners in the neighboring areas for the growing of specified crops (cereals and industrial crops). These agreements are very similar to those existing in the southeast of the United States except that normally, the peasant has other sources of income as cash tenant or hired hand or as independent operator of his own holding.

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e) Collective or cooperative share-cropping agreements (compartecipazione collettiva)

Large estates are managed by the owner or capitalistic tenant under a collective share agreement with a body of workers. Total labor returns are shared among workers according to the amount of labor contributed by each family.

f) Enfiteusi

An estate in land granted to an individual and his heirs and assigns for a length of time, usually 29 years, for a consideration in cash or kind and with the obligation of performing certain improvements. The operator has the right to redeem the land for an established price.

g) Demanio comunale

Land held by communes and townships as property in common for all inhabitants.

h) Usi civici

Lesser property rights, often in the nature of servitudes, upon privately owned land, vested in the inhabitants of a commune or of a locality. Such rights consist mostly of shares in the returns from the land: right of grazing, gleaning, gathering fruits, etc.

Agricultural Cooperation

In recent years the once flourishing cooperative organizations of Italy have been unfavorably affected by the policies of the Fascist Regime. Some of the organizations have been subjected to Government control; others have disappeared. Only vestiges are left of what was once a most interesting development in the field of agricultural cooperation.

The cooperative movement in Italy is, to a certain extent, connected with specific types of land tenure arrangements. Both in the Alps and in the Appennini Mountains, much of the pasture and forest land is either communal property or held as property in common, with the title vested in de jure persons, such as "the people of the village", and use rights granted to individual families. From such tenure arrangements stem special agreements on a formal or informal basis for the cooperative processing of livestock and forest products. Hence cooperative

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saw-mills and cooperative dairies, which are commonly to be found in the Alps, and community-owned plants, which are frequent in the Appennini Mountains.

From the mountains the cooperative movement gradually spread to the hills and plains, where organizations for the processing and sale of dairy products - Latterie Sociali - acquire great importance. Cooperation also affected the grape industry. In Piedmont wine-producers banded into cooperative organizations which soon engaged in the purchase of farm supplies as well as in the assembling of grapes, while in Veneto the cooperatives purchased the grapes and sold the product to wholesalers. Processing cooperatives were also organized for the extraction of olive oil, the milling of wheat and corn, the distillation of alcohol, the curing of tobacco. However, with the exception of dairy products and grapes, processing cooperatives have negligible importance.

All of the organizations thus far discussed have been little affected by Government action but, unfortunately, their influence is restricted to small areas.

At the beginning of the twentieth century, credit cooperatives, organized after German and Danish patterns, were established in various parts of Italy. The smaller cooperatives were short-lived, partly because of inefficient management and partly because they were bitterly fought by the Fascist Government. Larger cooperatives, on the other hand, soon became nation-wide organizations, with little or no connection with the cooperative movement.

Mutual insurance organizations are especially concerned with hail insurance. Again, organizations of this type soon developed into large corporations and farmers lost all control of their management and policies.

Mutual insurance for livestock remained essentially on a community or district basis. It assumes especial importance in the provinces of Milan and Varese, but as a whole, mutual companies insure only one-tenth of one percent of the cattle population of Italy.

The developments discussed above affected essentially the economic conditions of small farmers. Cooperation among landlords and capitalistic renters was almost exclusively confined to the field of agricultural marketing.

Purchasing cooperatives (Consorzi Agrari), banded together in a National Federation, long dominated the field. The Federation purchased agricultural supplies from producers and importers, and made them available to farm operators, often on a credit basis. The commodities handled included fertilizer, plant sprays, seed, feed, and agricultural machinery. Some of the cooperatives also engaged in the manufacture of agricultural

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machinery - especially grain drills - and owned plants for the production of phosphates.

The National Federation gradually became a quasi-public agency, assisting the Government in the establishment and operation of compulsory pools (wheat, silk cocoons, wool).

An overall appraisal of recent developments in the field of agricultural cooperation in Italy is extremely difficult; by and large the cooperatives could be said to have as a principal function the elimination of middlemen and the reduction of costs to agricultural producers. On the other hand, educational programs were lacking and cooperative action in many fields was hampered by Government regulation and Government-sponsored monopolies. Furthermore, some important cooperative organizations were opposed and some even abolished because of their political affiliations with opposition parties. In wartime the assembling functions of the cooperatives ave been largely taken over by Government agencies or are performed by the cooperatives qua agents of the state.

3. Government and Agriculture

Fascist legislation granted the Government far-reaching powers to regulate and control the whole economic life of Italy so that it would have been possible to achieve almost complete regimentation of agricultural activities. In fact, however, the upper strata of the agricultural population and particularly the great landowners of Northern and Southern Italy wielded much influence in the councils of the regime and successfully used their position to limit the extent of Government interference. Accordingly, while an imposing array of organizations dealing with all phases of the agricultural economy of the nation was established, only a limited control of agriculture was achieved, many of the regulations remaining a dead letter. Furthermore, it was found expedient to vary the degree of Government interference from region to region, while even regulations that were nation-wide in scope were enforced only in accordance with the requests of local interest groups. Consequently, it cannot be assumed that Italian farmers have accepted far-reaching regimentation of any kind, or have become accustomed to be ruled by fiat through many years of thralldom.

A study of the relationship between Government and agriculture must needs be analytical rather than descriptive in nature; it necessarily involves a number of value judgments upon which there is ample room for disagreement and dissent.

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General Powers of the Government Affecting Agriculture

As a result of the constitutional reform imposed by the Fascist regime, the Italian Government had the power fully to regulate all phases of the agricultural economy, from land uses to farming practices, from land tenure to agricultural marketing. Regulation could be achieved either by laws (Acts of Parliament) or by executive decrees, issued either by the national government or by provincial authorities (prefetti). However, public action seldom exceeded in scope what would be possible in this country under the police power of the several states or the commerce power of the Federal Government, both considered according to the broader interpretation that has obtained recently in our courts.

In a few fields only could the Fascist Government be said to have exercised limitless powers. First Italian law granted public agencies greater freedom of action with regard to eminent domain than is usually the case in the United States. Expropriation of estates, for reasons of public interest, was broadened in scope to facilitate resettlement projects and recomposition of fragmented holdings. Occasionally, provincial authorities found it expedient to deprive land-owners of the management of their estates when operation of the latter was deemed inefficient or in conflict with the general aims of national agricultural policies. The few estates affected by such action were then operated by Government agencies such as the National Association of ex-servicemen. (Opera Nazionale Combattenti, commonly referred to as O.N.C.).

Secondly, under the special regulations concerning forest land, land use and farming practices in certain watersheds and bordering forests were strictly regulated. However, since these were areas of extensive farming, the regulations actually affected little more than pasture land and the raising of goats and sheep.

Finally, to relieve or prevent technological unemployment, regulations providing for compulsory employment of agricultural labor were often issued by provincial authorities. This action prevented the use of harvesting machinery on the large, well-mechanized farms of Northern Italy.

Independently of the powers exercised by the central Government and the provincial authorities, a number of public agencies were given the task of dealing with all phases of the agricultural economy of the Nation. In this connection specific, complex problems exist which deserve careful consideration.

By and large the whole body of Government employees were under the influence and control of the Fascist Party, so that some reorganization of personnel in agencies affecting agriculture might be desirable.

With regard to agencies and organizations per se, the following points should be made: It is first possible to distinguish a number of agencies which perform purely administrative functions. Such are the tax-collecting agency, Catasto, and the extension offices.

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Secondly, there are many organizations, which, although part of the Fascist state, may be traced back to more democratic institutions of the recent past and may be said to provide convenient machinery for the handling of specific problems. Such are land reclamation Consortia and provincial Consortia for cooperative marketing. These institutions, however, are found wanting in democratic features.

Organizations of agriculturists and agricultural labor are essentially political in nature. As such they are viewed with distrust and odium by the opponents of the Regime and by the underprivileged classes. By their very nature such bodies need sweeping reform. Yet consideration should be given to some essential functions performed by these organizations which provided channels for the action of interest groups.

Administration and Extension

First and foremost among the functions of administrative agencies is the recording of property titles, of transfers of property, and of deeds concerning farm real estate. This function is entrusted to the Catasto, a government agency which levies and collects taxes on behalf of the State.

As a basis for assessment, the whole area under a taxing unit (commune) is divided in small tracts which are in turn classified by land use. Within each land use, classes of productivity are established. For each productivity class, the yields are determined from sample parcels, with all lands in the same class being assessed at a rate which is usually uniform within any one province.

With all land surveyed, parcelled and classified, the Catasto furnishes valuable information on the productivity of any one farm which should be of help in the prevention of hoarding.

The Provincial Inspectorates of Agriculture are merely the outgrowth of organizations similar in character to the Extension Service of the United States. For each province, the personnel of the office functions in an advisory capecity. Occasionally the task of investigating specific problems, formulating recommendations, and arbitrating conflicts between individual parties is also entrusted to the Inspector and his Staff. While the Inspectorates are essentially technical bodies, in recent years the political element has acquired importance with regard to the extension work.

Of great significance among the functions of the Inspectorate is the passing upon the fitness of sires to be used by associations or whose services are to be purchased by farmers. The practice has been highly beneficial with regard to stallions and jacks, and has undoubtedly improved the sanitary conditions of cattle. However, in many provinces the Inspectorates forbade the use of sires of breeds that were deemed undesirable in the area. Thus, in many sections of Lombardy, Holstein bulls were not

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approved because attempts were being made to promote the Brown-Swiss breed.

Experiment stations dealing with problems of agricultural production, plant and animal breeding, disease control, etc., are established in various regions of the Peninsula. Their activities are essentially non-political.

Land Reclamation Agencies

The irregular, torrential character of many Italian watercourses, the nature of soils which, in many watersheds, are subject to erosion and leaching, and possibly changes in the level of shore lines have all resulted in poor drainage conditions for large areas in the Italian plains.

With settlements first established on hills and mountainsides, the importance of reclaiming and reconditioning the marshes soon appeared evident so that, in a sense, land reclamation activities have been carried on in Italy since ancient times. All of the people and groups that settled and ruled in Italy at any one time left their marks in this field.

Prior to the advent of the Fascist Regime, land reclamation was essentially a private activity, duly encouraged by the Government through tax exemptions and reductions, and only occasionally supplemented with public works programs.

The experience in the field of irrigation had clearly shown the advantages of cooperation so that, since its very beginning, land reclamation work was carried on by special organizations, partaking of the nature of corporations and of cooperatives, referred to as Consorzi di Bonifica (Consortia of Land Reclamation.) The Consortia coordinated reclamation activities within their watershed, provided the services of engineers and technicians, supervised planning, and often owned the main reclamation works (main ditches, canals, pump installations, etc.)

With the advent of Fascism, and especially under laws of 1928 and 1933, much of the land reclamation work became the task of the Government. More specifically, the Government undertook those projects deemed to be public works, such as regulating watercourses, construction of buildings, rural electrification, etc. Land improvement activities were in turn to be carried on by landowners, according to specific plans, and with Government subsidies.

Both land reclamation and improvement activities were carried on through the Consortia which thus became quasi-public agencies with regard to public works programs, as well as planning and action agencies for land improvement.

Conflicts between the interest of landowners, who still retained a degree of control in the administration of the Consortia, and the Government plans resulted in considerable dissatisfaction and mismanagement. As a result, the Consortia were often headed by commissioners appointed by the Government.

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As a general rule, the Consortia provide an adequate machinery for the handling of the complex problems of the land reclamation districts. It should be pointed out, however, that representation is provided only for landowners rather than for occupiers or for other strata of the agricultural population.

The Corporate Organization of Agriculture

The complex structure of the Corporate State is outlined in other sections of the Handbook. This section must, therefore, deal only with those aspects of the Corporate State which are of significance in the field of agriculture.

Of the 22 Corporations established, 8 represent economic activities connected with agricultural, industrial, and commercial operations regarding (1) grains, (2) vegetable, flower, and fruit growing, (3) viticulture and wine production, (4) edible oils, (5) sugar beets and sugar, (6) animal husbandry and fishing, (7) forestry and wood products, and (8) textile products. Each must have members representing employers and workers, as well as representatives of the Fascist Party and of industry, commerce, and the consuming public. Subject to Fascist authority, they are in fact little more than advisory groups whose recommendations must be approved by the central authority.

Since 1934, 9 confederations have controlled the syndical system, two of which deal with agriculture —— the Fascist Confederation of Agriculturists and the Fascist Confederation of Workers in Agriculture. The first, representing employers, is composed of four National federations made up of (1) landowners who employ tenant or hired labor, (2) landowners who lease out land, (3) persons who cultivate their own or leased land with the help of their families, and (4) managers of agricultural enterprises. The second, comprising workers in agriculture, are also divided into four federations: (1) Technical and administrative employees, (2) tenant farmers and sharecroppers, (3) farm laborers, and (4) specialists in agricultural, animal husbandry, and forestry trades.

In addition to the two confederations and 8 national federations, each Province has two syndical associations, one representing workers and the other employers, which are affiliated with the national federation of its respective category. In some cases, local associations are also organized to work with the provincial groups. These organizations of employers and employees are principally charged with looking after the economic interests of their members and presenting their problems to the corporations. The Confederations coordinate the work of the associations and maintain discipline over them.

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Democratic features were conspicuously lacking in the whole organization of syndicates. Graft-ridden, with poor leadership, the workers'

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syndicates were held in very low opinion by their members. Both employers' and workers' organizations would voice the claims and complaints of their membership, but on all vital issues the interests of the various groups had to yield to the requests from central authorities.

Yet the syndicates provided the sole channel through which the social strata engaged in agriculture could give expression to their grievances and needs. With the elimination of labor unions, the syndicates maintained at least the appearance of collective bargaining. The possibility of salvaging some of the syndical structure, with the necessary changes in personnel and the adoption of a more democratic system, may be considered at least a temporary solution to many problems of agricultural labor relations.

Policies and Programs Affecting Agricultural Labor

The activities of the Fascist Government with regard to agricultural labor clearly evince a lack of definite aims and goals. It may be said that the only concern of Government in this respect was one of shaping its policies according to the pressure brought and the requests advanced by various interest groups.

By and large a few basic tendencies might be recognized:

1/ Syndical organizations encouraged arrangements by which the reward of labor was made to consist, wholly or in part, of farm products. This was achieved (a) by encouraging share-cropping arrangements, and (b) by specifically providing, in wage agreements, for payments in kind. Share-cropping arrangements were made to include not only products which would be consumed by the family but also industrial raw materials (hemp, sugar beets). Labor's share was determined with consideration of the returns for the farm family as a whole. Arrangements of this type were often used to offset previously granted wage increases.

2/ Advances to farm laborers for subsistence were considered the minimum income to which the laborers were entitled, independently of the results of the enterprise.

3/ Hourly or daily wage rates were lowered for those enterprises that could provide year-round employment and housing facilities.

4/ Where the practice of hiring labor existed, provinces were divided into zones and wage rates fixed by zone for each task. Originally fixed with consideration of economic conditions, zone boundaries were later revised to satisfy the requests of landlords.

5/ Although the regime had repeatedly announced programs of fixing the tillers to the soil, little was done in connection with land reform on the spot. Occasionally migrations from distressed agricultural areas were organized in connection with resettlement programs.

Land-Tenure Reform

While regulation of landlord relationships was often declared to

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be a concern of the corporate state, tenancy reform is conspicuously lacking in the Fascist policies. The many programs designed for the improvement of the economic status of tenants never materialized.

In recent years regulation of landlord-tenant relationships was entrusted to syndical organizations. These were supposed to embody proposed reforms in standard agreements, after which individual contracts were to be patterned. The achievements of tenant groups in this field were practically negligible. Fundamentally, they consist in the elimination from contracts of vexatious clauses, such as the requirement of exorbitant bonds, and the prohibition of small farm enterprises (family flocks, etc.). Payment of perquisites, contributions in form of personal services, maintenance and repairs of farm buildings were also regulated. By and large, the main accomplishment of such regulations was to give the tenant a legal claim on what had hitherto been granted by the paternalism of landlords.

With specific regard to share-tenancy, attempts to regulate uniformly this contract merely resulted in a considerable degree of confusion and dissatisfaction. In one field only of land tenure was the Government definitely active. In many sections of Italy rural communities held lesser estates in land, of the profits-a-prendre type. These arrangements, relics of ages past, specifically granted certain rights such as grazing, gleaning, gathering of faggots, usage of land for the raising of certain products, etc. Since existence of these rights interfered, to a certain extent, with intensive cultivation of land and with changes in land use and land use practices, radical reforms were planned. Accordingly, the original owner was given full property rights, free of any encumbrance, on most of the land. Enough land to correspond to the capitalized value of the rights and claims of the community was assigned to communes and organizations to be leased to inhabitants. A small area was assigned to individual residents of the community, under the obligation of settling on the land and performing improvements.

Resettlement Programs

Much of the land reclamation work had been undertaken to relieve local unemployment, but the labor force employed in the projects far exceeded the amount that, upon completion of the work, could become permanently attached to the soil. Thus, especially in the provinces of Mantua, Ferrara, Venice, and Rovigo unemployment among the agricultural population constituted a problem of exceptional gravity, which could be relieved only in part by compulsory hiring of unskilled labor (see page 10). The situation was also worsened by the more efficient practices that could be introduced after the land had been reclaimed and reconditioned and by the displacement of that part of the rural population which, prior to the reclamation and drainage, obtained its livelihood from fishing, hunting, and part-time farming.

Rather than undertake land reform or engage in badly needed housing programs (both actions being objectionable to powerful interest groups) the Government chose to attempt resettlement of the displaced and unemployed farm families on those areas that had been reclaimed by Government agencies.

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principally by the National Association of Ex-servicemen (O.N.C.).

Resettlement projects thus began when the land was only partially reconditioned and were further hindered by many technical blunders committed by Government officials. Although the general aim of resettlement projects was the establishment of peasant ownership through a long-time payment plan, nowhere did purchase plans prove themselves practicable. Therefore, in most cases, the settlers operated their holdings as share-tenants of Government agencies, the latter being forced to subsidize heavily most of the farm enterprises.

The results achieved in the most important resettlement projects vary greatly from region to region; therefore, they will be discussed in the regional section.

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Action Programs Affecting Production and Marketing of Agricultural Commodities

When the Fascist Party first seized control of the government its attitude toward agriculture had not been definitely stated; but, from the very primordia of Fascist rule, the regime found it both expedient and necessary to cater to the great landowners, especially because of the latter's influence in the otherwise hostile Senate. At the same time, the population policy of the Fascist government gave the rural groups a position of great political importance. Consequently economic policies soon became influenced and at times were dictated by a powerful "farm bloc", while "agrarian" tendencies became part and parcel of the Fascist ideology.

Government intervention in agricultural production and marketing in Italy came to assume all of the multifarious forms adopted in most of the world during the inter-war period, including promotion and furtherance of technological improvement; subsidization of production of staple foodstuffs; acreage control; marketing quotas; price fixing and stabilization; compulsory pools; currency and exchange control; "dumping" and export control; tariff protection and quantitative restriction of imports; and expansion of consumption of domestically produced commodities. Although government programs gradually came to include most agricultural products, overall agricultural planning, in the sense of providing for the most efficient utilization of human and natural resources, was never achieved. In popular parlance, it could be said that prior to the war the Government always had "something to say" about the farmer's business but never told the farmer "what to grow and what not to grow."

First and foremost among all programs was the so-called "Battle of Wheat", theoretically designed to make the country self-sufficient with regard to wheat. To this end, beside considerable propaganda, great efforts were made to improve the varieties under cultivation, to encourage adoption of earlier varieties, and to develop new varieties suited to the different environmental conditions of the Peninsula. The first years brought only acreage expansion, accompanied by a decrease in production of equally essential crops. In later years the emphasis was placed upon high yields with prizes awarded for production peaks. The main positive contribution of the Battle of Wheat consists of some technological improvements (with regard to rotations, varieties, cultivation), the adoption of which was made profitable by high wheat tariffs and by price floors.

The Battle of Wheat was launched in 1925. With the onset of the depression and the strengthening of the urge toward self-sufficiency, attention was drawn to other agricultural commodities. In a few cases it was deemed advisable to institute production control. With regard to hemp, flax, and sugar beets, such control was achieved through agreements between processors and producers. The processing industries made allotments (both in terms of acreage and production) to individual producers of the commodities

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listed above, while agreeing to undertake the processing. Prices for sugar beets and hemp were fixed by syndical organizations, while prices for flax were agreed upon before planting by both processors and producers.

Acreage of tomatoes for paste was fixed by the Ministry of Agriculture, which allotted shares of the national production among provinces. Within each province syndical organizations provided for the allotment to farmers.

With regard to rice, conditions on the world market forced the Government to adopt a form of "dumping." A special agency (Ente Nazionale Risi) was given full control of the domestic market and of experts. Representatives of the agency entered agreements with individual producers concerning the acreage to be planted in rice and the varieties to be grown. The agency sold seed to farmers and purchased all of their crop.

In connection with production control mention should also be made of tobacco which has been a Government monopoly since the unification of Italy. Regulations concerning its production vary widely from region to region. Fire-cured tobacco of the Burley type, which is known in Italy as Kentucky tobacco, is grown by licensed producers who had a permanent authorization to plant a fixed acreage. The license further specified type of soil and number of plant per hectare. The crop is cured on the farm or in cooperative plants and delivered to the State Monopoly in barrels. Light tobacco for cigarettes is grown under annual agreements, the Monopoly announcing the acreage to be planted and the farmers making application for their share. The crop is delivered at harvest time, the curing taking place in Government-owned plants.

While production control before the war was limited to a small number of commodities, intervention in the marketing of agricultural products was widespread. One of its chief forms was a "pool" for those agricultural commodities for which the Government was attempting to achieve price stabilization. The pools were first organized on a voluntary basis, partly to take the place of marketing cooperatives which the Fascist regime had, intentionally or unintentionally, destroyed. In the late thirties pools became compulsory for wheat, hemp, silk, rice, corn, olive oil, and wool. In this respect the war economy is little different from the peacetime system. However, peacetime pools actually functioned to eliminate middlemen and to guarantee the producer a minimum price, while wartime pools are instruments of requisition and price control. Under the pool system, title to the crop, which had been temporarily stored on the farm, was transferred to a Provincial Consortium, which in turn provided for the resale to millers and other processors. Thus the Consortia do not necessarily have facilities for handling all of the grain crops in their territory.

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Pool prices were fixed on simple criteria such as specific weight and impurities, with certified seeds exempted from the pool. The produce which, for any reason, could be sold at a premium tended to escape the pool, thus giving the framework for the active black market of present days.

Government and the Marketing of Agricultural Supplies

Government regulation of the marketing of agricultural supplies was conspicuously lacking. Few attempts were made to regulate the feed market, the sale of fertilizer, of agricultural machinery, etc.

The only vestige left of the once flourishing purchasing cooperatives are the Agricultural Consortia (banded into a National Federation) for the purchase of fertilizer, seed, machinery, etc. (see pp. 8-9)

Specifically supplied by Government agencies are:

a) Nicotine and tobacco compounds, used as insecticides
b) Quinine for malarial regions
c) Fuel oil for agricultural purposes
d) Salt for animal feeding

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4. The Degree of Self-Sufficiency

Italy had long been dependent upon foreign sources for part of her food supplies and for much of the raw materials used by her textile industries. The protectionistic trend, which started with the unification of the Kingdom and the abandonment of the free-trade policies of the Kingdom of Sardinia, gained momentum under the Fascist regime and, with the Ethiopian war, developed into autarchy that was extended to all sectors of the economy. Fascism placed autarchy among its main economic goals, partly because of obvious military considerations and partly on the basis of ill-founded economic theories.

It has already been pointed out that by increasing production and decreasing consumption of foodstuffs, Italy was able to cut net imports of food to 6 percent of the nation's caloric intake in 1934-37. Account was not taken of fodder imports, but their inclusion would make no great change in the degree of self-sufficiency, since such imports were small and livestock products contributed only 14 percent of all calories. Less than half of the calories came from wheat, net imports of which amounted to 6 percent of total supplies. The deficit was little larger for meat, but rose to 15 percent for the edible fats and oils. At the same time Italy had a net export of rice, potatoes, cheese, fruits, nuts, wine, vegetables, and occasionally sugar.

With regard to industrial raw materials, imports of cotton, wool, jute, and rubber were considerable and had been affected only to a limited extent by the increased use of nationally grown fibers or synthetic products. Italy's traditional exports of silk and hemp were unfavorably affected by international economic developments.

Production expansion, however, was attended by increased use of agricultural supplies. Italy was approaching self-sufficiency with regard to nitrogenous fertilizer but had to import potash from Germany and rock phosphate from North Africa. Plant sprays, an item of exceptional importance for the perennial crops which are part and parcel of Italian agriculture, had also to be imported in considerable quantities. Feed imports included, besides grains, about 100,000 tons of oilcake and meal, in the form of oilseeds. Finally, although domestic production of farm machinery had considerably increased, tractors and harvesting machinery were partly obtained from foreign sources. Furthermore, the large number of foreign-made machinery used on Italian farms made it necessary to import large quantities of spare parts.

5. Agriculture and the Present War

Since the war, food production has been well maintained. Output of grains exceeded the 1933-37 average in 1940, fell under it only slightly in 1941 when the corn crop was subnormal, and recovered in 1942. More sugar-beets and potatoes have been grown than before the war. Livestock

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ITALY.- Production, Trade and Utilization of Foodstuffs
Average 1933-37

Commodity	Production	Seed	Net Trade 1/	Deductions for feed and industrial uses	Available for food
	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Qls.
Wheat					
Soft	54,858	4,999	+ 4,394	-	54,635
Durum	17,416	2,091	+ 382	-	14,651
Corn	29,454	531	+ 1,566	16,834	13,655
Rice, rough	7,328	214	- 1,920	40	5,154
Rye	1,497	151	+ 69	134	1,302
Barley	2,107	256	+ 603	1,980	473
Potatoes	27,899	4,231	- 418	7,129	16,111
Horse beans	5,903	477	- 145	2,806	2,476
Kidney beans	1,770	180	+ 370	-	1,959
Other dry legumes	1,402	135	+ 48	-	1,314
Tomatoes	9,177	-	- 2,144	-	7,033
Sugar	2,965	-	+ 44	-	3,009
Vegetables	16,822	-	- 1,218	-	15,604
Fresh fruits	13,143	-	- 1,395	-	11,748
Citrus fruits	7,651	-	- 3,659	646	3,346
Nuts	6,159	-	- 1,278	532	4,349
Dried fruits	828	-	+ 170	-	998

(Continued)

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(Continued)

ITALY.- Production, Trade and Utilization of Foodstuffs
Average 1933-37

Commodity	Production	Net Trade 1/	Available for food
	1,000 Qls.	1,000 Qls.	1,000 Qls.
Wine 2/	36,610	- 1,213	35,597
Beef and veal	3,290	+ 632	3,922
Pork	2,243	- 57	2,186
Mutton, Lamb, Goat meat	486	- 1	485
Horse meat	134	-	134
Meat offals	724	+ 32	756
Fowls and game	732	+ 21	753
Rabbits	459	- 3	456
Fish	1,780	+ 783	2,563
Eggs	3,102	+ 69	3,171
Cow's Milk 2/	14,469	- 8	14,461
Cheese	2,322	- 196	2,126
Butter	478	+ 10	488
Hog fat, tallow	1,502	+ 31	1,533
Olive oil 2/	2,166	- 41	2,125
Seed oil	3/ 734	+ 1	735
Coffee	-	+ 377	377

Office of Foreign Agricultural Relations. Based on official statistics.
1/ Net imports +, net exports - .
2/ Thousands of hectoliters.
3/ Mostly from imported oilseeds.

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have
numbers/declined from the peak 1939 levels, but probably remain somewhat larger than in 1936-37. Moreover, in 1940-41 Italy was on an import basis for bread grains, dry legumes, meat, and oils, though net imports were much reduced compared to pre-war times; exports of these commodities were directed almost entirely to Italian possessions and Albania. While growing transportation difficulties and widespread hoarding of food by peasants in Europe may have reduced the possibilities of drawing supplies from abroad, and the areas occupied by Italy constitutes a drain on, rather than a supplement to, Italian food resources, reports indicate that Italian supplies at least of bread grain and meat continued to be supplemented by imports in 1941-42. On the other hand, Italy sharply increased net exports of potatoes, vegetables, and fruits, most of which were directed to Germany. Exports of potatoes and vegetables during the last six months of 1941 were running at a higher rate than during the corresponding period of the preceding year. Exports of fruits and especially nuts, however, showed a decline. The same was true for rice and cheese exports, which even in 1940-41 had not reached the pre-war average. Precise information on trade in 1942-43 is lacking but Italy has reportedly received substantial amounts of grain and potatoes from Germany, and presumably has continued to export fruits and vegetables.

Changes in production and in imports and exports do not of themselves, therefore, account for the drastic limitations placed on consumption. These appear to have been necessitated in large part by the inability of the government to collect and distribute equitably available supplies.

The government has steadily expanded its authority over distribution. In the middle of 1941 compulsory delivery was in effect not only for wheat, corn, rice, and olive oil, but also for rye, barley, oats, and beans. Blocking of supplies, to be held at the disposition of the Ministry of Agriculture, was successively decreed for a substantial proportion of livestock, for butter and cream, hay and straw, eggs in storage and imported eggs, cheese, potatoes, dry legumes other than beans, wine, etc. Rationing either by card or allotment, which had applied to sugar, alimentary pastes, flour, rice, meat, fats and oils in 1940-41, was extended to bread, potatoes, dry legumes, cheese, eggs, milk, and wine in the following year.

Tightening of restrictions, however, generally operates as an incentive to, rather than a cure for, illegal consumption. Utilization of home-grown products by farm families, which constitute well over two-fifths of the Italian population, is always difficult to control. High black market prices diverted production from official channels of distribution. During 1918 the black market is said to have supplemented rations for individual products by as much as 30 percent even in Germany. It seems probable that illegal sales are at least as important in present-day Italy, where the supervision and control of the central authorities are much weaker and where the population has a well-known dislike for regulations and a well-known ability to evade them. Some indication of the seriousness of the problem is given by the heavy penalties imposed on farmers for failure to deliver their produce and on hoarding in

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general, by the amount of publicity given to arrests of food-regulation violators and the sentences imposed, and by the violent measures advocated by strongly Fascist papers against those buying and selling in the black market. The result has been to throw the burden of reduced consumption on the less well-to-do who have no connection with peasants or who cannot afford to pay the high black market prices, mainly those in cities and larger towns.

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Part II. Survey of Regions

Introduction

The first section of this chapter has dealt briefly with those salient features that are common to the agricultural economy of all sections of Italy. It was stated above that, within its small area, Italy presents a diversity of natural and economic conditions which makes it imperative to consider in some detail the physiographic, social, and economic features of the various sections of the Kingdom. In the same way one could first deal with the overall aspects of American agriculture and then discuss the New England States, the Cotton Belt, the Corn Belt, etc.

From an administrative standpoint Italy is divided into 92 provinces. These are self-contained administrative units, with their own officials, budget, and services, but closely supervised by the national government. Provinces vary greatly with regard to size (from 894 to 9,243 square kilometers) and population (from 106,775 to 2,084,960 inhabitants).

In official statistics, provinces are often grouped into larger territorial units, referred to as regions (Italian: regioni) or compartments (Italian: compartimenti). These are not governmental units in any sense.

In this report, the agricultural economy has been dealt with by regions, following a general outline:

(a) The discussion opens with an introductory statement on the importance of agriculture in the regional economy.

(b) The region is then divided into type-of-farming areas, viz., areas where land tenure, size of holding, and nature of the agricultural enterprise have a significant degree of uniformity. For each area the pattern of land tenure and settlement, the main crops, and farm practices are considered.

(c) The types of livestock are discussed, giving numbers, breeds, and size of herds and flocks, mostly by provinces.

(d) The problems of food supplies are briefly considered on the basis of pre-war conditions. Data on interregional trade in foodstuffs are scarce, and much change has been brought about by war-time dislocations. Accordingly, the discussion on food problems is qualitative rather than quantitative in nature. It is essentially designed as an indication of those problems

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to which the attention of administrators must turn, first, to obtain quantitative data through surveys on the spot, and second, to provide solutions by adequate measures.

Statistical data on crop and livestock production, as well as on requirements for fertilizer and plant sprays, are attached to each region.

Thus the second section yields a brief but more or less complete description of the agricultural economy of the various regions. Obviously such a description should be considered in connection with the background information given in Part I.

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NORTHERN ITALY

1. Piedmont

Types of Farming

The importance of agriculture in the economy of Piedmont varies greatly from province to province; while for the region as a whole less than one-fourth of the total population is engaged in agriculture, Aosta, Asti, and Cuneo have one-third of their population employed in agricultural pursuits. In sharp contrast with the provinces listed above, the agricultural population comprises but one-tenth of the total in the province of Torino. It can thus be said that the economy of Piedmont is based both on agriculture and on industry. On the other hand, the dependency of industries upon local agricultural supplies, commonly found in other Italian regions, is of little significance in Piedmont, where industries obtain raw materials from non-agricultural or outside sources and the processing of locally grown commodities is not very important.

About 50 percent of Piedmont is mountainous, a circumstance which explains the comparatively high percentage of non-productive land. Essentially on the basis of topography, it is possible to distinguish three main agricultural regions: the mountains, the hills and non-irrigated plains, and the irrigated areas.

The mountainous agricultural region comprises the valleys of the Alps from North to South, including the whole province of Aosta and large parts of the provinces of Cuneo, Torino, Vercelli, and Novara. The size of agricultural holdings in this section tends to be small, with peasants operating their own farms and mountain pastures being held as communal property. Potatoes are the main rinnovo (deep-root crop), followed by wheat or rye. Leguminous crops for fodder are comparatively unimportant, but in production of kidney beans Piedmont is second only to Abruzzi. The livestock enterprises are heavily dependent upon mountain pastures, and as a whole are less developed than in other regions of northern Italy.

Economic conditions in the mountains of Piedmont yield a complete picture of the status of Italian mountaineers. These conditions range from the utter destitution found in the province of Novara to the comparative prosperity of the province of Cuneo where huge chestnut groves constitute an important source of income.

The second of the three agricultural regions, made up of the hills and non-irrigated plains, includes the province of Asti and parts of the provinces of Cuneo, Torino, and Alessandria. Here again the size of holdings is small (10-15 hectares), but various forms of tenancy predominate. In many respects this section has unique features. First, farms often include a summer residence where the owner spends part of the year. Second, and because of the non-agricultural uses of farm real estate, the operating unit coincides

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with the holding, in sharp contrast with other parts of Italy where the holding comprises several units. Third, the peasant families derive some income from working for the landlord, mostly as household servants.

The agriculture of the area is based essentially on grain crops and on grape and fruit production. Cash crops are comparatively unimportant with the exception of hemp around Carmagnola (Cuneo). Wheat, corn, and oats occupy 7/10 of the total area on farms, while legumes, with the exception of kidney beans (mostly interplanted with corn), are altogether unimportant. Production of apples, pears, and quinces is extremely important, although fruit trees of this type are seldom grown in specialized groves. Large-scale production of peaches in specialized orchards is found at Santena and in the region around Alba. Grape production, especially for wine-making, is one of Piedmont's main activities. Most of the grapes are sold to large wine-making plants for the production of high-priced wines. Sparkling wines are also made in the region around Asti. In many sections of the hills the silk industry is still of great importance although it has been greatly affected by unfavorable economic conditions.

The irrigated plains, mainly in the provinces of Vercelli, Novara, and Alessandria, comprise 1/15 of the total productive area of Piedmont. The first two have abundant water for irrigation obtained from the rivers, fed by the Alpine glaciers throughout the summer. The naturally favorable conditions for irrigation are further enhanced by large canals, outstanding among them the Cavour Canal, between the Ticino and Dora Baltea rivers. The size of holdings tends to be large (80 - 100 hectares), and cash tenancy is the predominant form of land tenure. Labor is supplied by permanent laborers who live on the farm and are rewarded with monthly wages in cash and shares of the corn and rice crops. In type of crops, the irrigated areas in this section differ from the better-known farms of Lombardy. Water is available mostly during the summer, and spring droughts are not uncommon. Thus rice and corn are the main crops, while meadows are only irrigated for part of the year. In economic importance rice surpasses all other enterprises and conditions the economic life of the area. The need for elimination of noxious weeds necessitates sharp increases in the labor requirements of these farms, which are met by using large numbers of migratory workers. In recent years there has been a general shift toward late varieties of rice, which has made it necessary that the crop be dried artificially. Nowadays most farms have special equipment for the drying of the crop. Rice straw is often used as fuel for this purpose, but coal consumption in this connection is also considerable.

By and large, rice cultivation in Piedmont is carried on with greater efficiency and more extensive use of mechanized equipment than anywhere else in Italy. Consequently, the economic and social status of the farm laborers is far above that of rice growers in the Venetia and Emilia. On the other hand, the dairy enterprises, from which Lombard farms obtain much of their income, are altogether of little importance in this section.

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The irrigated area around Alessandria obtains its water from the Tanaro River and from subterranean wells, so that the water supply reaches a peak in the spring and in the fall rather than in the summer. This gives unique features to the whole agricultural economy of the area. The crop merely receives temporary relief from irrigation, for the quantity of water available is rather limited. Rice disappears almost entirely and, in its place, corn, wheat, and sugar beets are the main crops. On small holdings vegetable production, especially on sandy soil, becomes of such importance as to provide marketable surpluses both for Turin and Milan. Grape and fruit crops, on the contrary, are mostly for family consumption. Livestock enterprises acquire great importance, with pit silos being used to store fodder through the summer and winter.

Livestock

The extensive areas under irrigation, the availability of rich mountain pastures, and the nearness of large urban markets create in Piedmont a potentially favorable environment for the raising of livestock. On the other hand, the small size of the production unit and, in the plains, the competition between grains and feed crops have prevented a fuller development of livestock industries than is possible with the types of farming prevailing in the region.

By and large, it seems unquestionable that a significant expansion of the livestock industry in Piedmont is both possible and desirable.

Horses, mules, and asses.- Piedmont has about 65,000 horses used for light work on farms and for transportation of produce to markets and processing plants. The province of Alessandria alone accounts for about one-third of all the horses in the region.

Mules exceed asses in number, with Cuneo and Turin accounting for two-thirds of all mules in the region.

Consumption of horse meat is fairly high in Turin and Alessandria.

Cattle.- Piedmont's cattle population comprises over 1,000,000 head, about one-fourth of which are used as draft animals. With regard to the cattle industry, a distinction can be made between provinces raising triple-purpose animals, areas engaged in veal production, and dairy provinces.

Triple-purpose animals belong essentially to the Valdostana breed, which is raised mostly in the province of Aosta and in the western part of the province of Turin. This breed is characterized by a fairly high production of milk and by high yields of meat from young animals (55-60 percent).

The areas engaged in veal production include the provinces of Cuneo, Asti, and Turin, as well as the hilly sections of Alessandria. The cattle industry in this area is geared to production of fat calves and baby beef. To this end, animals of the Piemontese breed are raised. This breed, while being

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fairly well suited for milk production and for work, is characterized by rapid gains up to the first year. One-year old animals weigh around 400 kilograms with a net yield of veal of 240 kilograms. The quality of the meat is far superior to that of all other breeds raised in Italy. Strangely enough, two of the provinces which specialize in veal production also export fodder. In particular, Cuneo and Alessandria ship hay to Asti, to Liguria, and to the province of Pavia. Cuneo in turn has considerable production of milk.

The provinces of Novara and Vercelli raise dairy cattle both in connection with the irrigated meadows and with the Alpine pastures. As has been said before, nowhere in the area does the dairy industry reach the importance it has in Lombardy. The main breed is the Brown Swiss (over 100,000 cows in the two provinces) with a few head of Holstein. The Holstein cattle of Piedmont are mostly descendents of Dutch cattle, as compared with the Carnation cattle of Lombardy and Latium. In cheese production, Piedmont ranks fifth among all Italian regions, with over 100,000 plants processing milk. Most of the cheese is produced in the provinces of Cuneo and Novara.

Swine.- The comparatively small number of swine raised in Piedmont (174,000 head) accrues from the special features of the agricultural economy of the region. The dairy areas of Novara and Vercelli are comparatively unimportant; instead the province of Cuneo, with large cheese factories and extensive areas in timber, outranks all other provinces in swine production. Piedmont engages essentially in the fattening of hogs, importing sucklings and small pigs from other regions, especially Tuscany and Romagna. The Large White is the most common breed, and the animals are kept mostly in pens.

Sheep and goats. - Sheep and goats play a lesser role in the mountain economy of Piedmont than would be expected. A characteristic of the sheep industry is that the flock is one of the farm enterprises. In the winter sheep are fed from hay and grain raised on the farm, while in the summer they graze on communal pastures. Wool production is the most important enterprise.

Goat numbers have declined sharply in recent years because of taxes and restrictions.

Poultry.- Piedmont has the largest number of industrial enterprises for poultry production of all regions of Italy. Meat production is based largely on the Rhode Island and Plymouth Rock breeds. There is a large packing plant at Novi.

Farm enterprises are important in the area around Carmagnola. Egg production is based on the Leghorn and Wyandotte breeds.

As a whole, the region produces a surplus of eggs and poultry which are exported to Lombardy and Sicily.

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Food Problems

The food balance of Piedmont is an extremely favorable one. The region exports large surpluses of grains, especially rice and soft wheat, fruits, wine, and poultry products. It imports alimentary pastes, citrus fruits, and olive oil.

The balance with regard to meat needs some explanation. In the whole of Piedmont and especially in Turin, meat consumption is confined mostly to veal. The ratio of calves to beef cattle slaughtered is almost 16 to 1. This fact, together with the high beef and veal consumption (about 20 kgs. per capita in Turin), results in the importation of young cattle from Emilia and Veneto and in the exportation of steers and beef cattle to Liguria and Lombardy.

Turin, with a population of 700,000 inhabitants, presents supply problems of a specific nature. First, about 40 percent of the cattle slaughtered in the city are imported from other regions. Second, over one-eighth of the total meat consumption consists of fresh meat shipped from out-of-town slaughter-houses. Third, consumption of frozen meat is higher in Turin than in other cities.

The milk supply of Turin is also dependent in part upon other areas of the region, but in contrast with Italy's major centers, the province of Turin could easily become self-sufficient for all dairy products.

For the region as a whole, one should remember that the agricultural economy of Piedmont is closely connected with that of Liguria. The latter region has conspicuous food deficits and largely depends upon Piedmont for grains, meat, and poultry products. This situation is to be ascribed partly to locational and institutional factors and partly to the excellent transportation facilities between the surplus areas of Piedmont (provinces of Cuneo, Alessandria, Asti, Novara, and Vercelli) and the deficit areas of Liguria (Genoa).

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PIEDMONT

Agricultural Statistics

I Main Crops

Commodity	Area Harvested: 1933-37	Area Harvested: 1940	Production: 1933-37	Production: 1940	Yield per Ha.: 1933-37	Yield per Ha.: 1940	Planting Time: From	Planting Time: To	Harvesting Time: From	Harvesting Time: To
	1000 Ha	1000 Ha	1000 qls	1000 qls	qls.	qls.				
Wheat 1/	313	311.8	5,922	6,866	18.8	22	Sept 10	Oct. 15	June 10	Aug. 10
Rye	45.0	43.2	643	688	14.2	15.9	Sept 1	Oct. 20	June 10	Aug. 10
Barley	1.2	1.4	17	22	13.3	15.5	Sept 20	Oct. 31	June 10	Aug. 31
Oats	17.0	14.3	279	262	16.3	18.3	Mar. 1	Apr. 30	June 30	Aug. 20
Rice (rough)	68.6	79.3	3,371	4,159	49.0	52.5	Apr. 15	Apr. 30	Sept 15	Oct. 10
Corn 2/	141.1	148.7	3,676	3,831	27.0	26.6	Apr. 15	May 25	Sept 5	Oct. 15
Horse beans	3.0	4.1	37	53	11.9	12.8	Feb. 1	Apr. 1	Aug. 1	Aug. 25
Kidney beans	38.4	38	308	286	8.8	7.5	Apr. 1	May 31	Aug. 1	Oct. 15
Other dry legumes	4.2	3/	52	26	-	-	-	-	-	-
Potatoes 4/	33.4	34.5	2,633	4,141	84.9	119.3	Mar. 15	Apr. 30	Aug. 20	Oct. 5
Tomatoes	.4	.2	128	152	-	-	Mar. 10	May 20	Aug. 10	Sept. 15
Other fr. vegetables	6	8.4	522	670	-	-	-	-	-	-
Sugar Beets	1.3	2.4	351	763	267	313.9	Mar. 20	Apr. 10	Sept 10	Sept. 20
Hemp	.9	3/	10	3/	9.9	3/	Mar. 15	Apr. 30	Aug. 1	Sept. 10
Cultivated meadows 5/	243.4	279.1	11,498	13,939	-	-	-	-	-	-
Natural meadows 5/	312.6	292.7	16,339	16,436	-	-	-	-	-	-
Pastures 5/	415.1	407.8	1,870	2,475	-	-	-	-	-	-
Vineyards	6/ 193.8	6/ 171.3	7/ 259	7/ 272	-	-	-	-	July-15	Sept.-20
	8/ 49.7	8/ 48.5	9/ 4.014	9/ 3.468	-	-	-	-	Sept-20	Oct. 20
Deciduous fruit	-	-	973	1,266	-	-	-	-	-	-
Nuts	-	-	746	10/ 89	-	-	-	-	-	-

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " spring corn only.
3/ Not available.
4/ Yields, planting and harvesting time for common potatoes only.
5/ All production in "normal hay".
6/ In groves and orchards.
7/ Grapes for direct consumption.
8/ In open fields.
9/ Wine (1,000 Hls.) 10/ Does not include chestnuts.

Office of Foreign Agricultural Relations. Data from Annuario Statistico Italiano.

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PIEDMONT

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	63,716	21,226	10,596	1,014,107	1/ 549210	169,800	156,353	87,756
1940	60,000	13,000	10,000	1,041,000	2/	175,000	175,000	91,000

B. Live Weight by Classes of Livestock (March 1938)

Horses, mules, asses	All cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
432,988	4,429,690	158,013	76,017	37,231

C. Livestock Products (1937)

Cow's Milk 3/	Butter	Cow's and sheep cheese	Cottage cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
4,491	65.3	174.7	2.7	392.1

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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PIEDMONT

III. Fertilizer Consumption. Average 1936-38 and 1940

Fertilizer	1936-38	1940
	Quintels	Quintals
Superphosphates	1,543,301	1,749,536
Ground phosphates	30,926	37,258
Basic slag	9,083	1,800
Ammonium sulphate	426,780	579,342
Calcium cyanamide	388,839	315,369
Ammonium nitrate	34,277	46,625
Calcium nitrate	117,534	180,016
Sodium nitrate	90,812	95,051
Potassium salts	113,158	270,703
Potassium by-products 1/	190	-
Leucite	327	-
Ammonium phosphate	19,469	14,515

Office of Foreign Agricultural Relations. Based on official statistics.
1/ From sugar factories.

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PIEDMONT

IV. Consumption of Plant Sprays,
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of sodium	466	Pyrethrum	600
Containing arsenites	1,000	Rotenone	600
Arsenates	40,755	Fluorine silicate	2,030
Sulphides and polysulphides	86,433	Oxychloride of copper	1,190,867
Carbon sulphide	12,434	Other copper products	167
Tar oil	372	Sulphur	4,114,600
Tar oil products	40,322	Copper-sulphur	1,131,233
Zinc phosphide	12,933	Iron sulphate	118,620
Zinc chloride and sulphate	900	Copper sulphate	5,129,067
Nicotine extract, common	20,614		
Nicotine extract, superior	1,720		
Nicotine powder	2,977		
Nicotine sulphate	107		
Nicotine soap	546		
Monital, nicotine	2,560		
Other nicotine products	4,717		
Quassio wood	6,133		
Quassio extract	3,139		

Office of Foreign Agricultural Relations. Based on official statistics.

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2. Liguria

Types of Farming

Agriculture in Liguria assumes less importance than in any other region of Italy, with only one-fourth of the gainfully employed engaged in agricultural pursuits. What importance Liguria has in the agricultural economy of Italy accrues not from her share in the supply of staple foodstuffs, but from her production of valuable export commodities.

Four main agricultural regions can be distinguished in Liguria: The first comprises the alluvial areas in the major valleys, the few plains along the seacoast and the lower slopes of the hills up to 300 meters above sea level. This is a region of highly specialized and intensively cultivated farms. Vegetable production is especially important in the western Riviera, with cauliflower, artichokes, asparagus, lettuce and early potatoes produced in the open fields, and zucchini, eggplant, tomatoes, herbs, peppers, and cucumbers cultivated in hothouses. The hothouses are heated either with radiators (thus needing coal) or by fermentation of cotton by-products. Similar undertakings exist also in the eastern Riviera at Chiavari, Lavagna and Recco. Flower production is especially important in the province of Imperia (around S. Remo) as well as in that of Savona. The plains of Albenga and the areas around Genoa produce considerable amounts of peaches. Citrus fruit production is declining, but still has importance around Savona - where a small citrus for canning is the local specialty. Oranges are the main produce of the citrus groves around Chiavari and Levanga.

The region lying between 300 and 600 meters above sea level is essentially a fruit and olive-growning area. Among deciduous fruits, figs, apples, pears are important. Trees are grown either separately or associated with special crops such as parsley. Vineyards produce mostly wine grapes and are more important in the east (province of Spezia).

The so-called mountain region begins above 600 meters, where olives and vineyards disappear and cereals, potatoes and pasture become important. Chestnuts are the main trees of economic importance, followed by hazelnuts. In this area, mountain pastures provide fodder for the not negligible herds of cattle.

The fourth area comprises the sections in the northern slopes of the mountains where the crops of Piedmont and Emilia prevail. A well-established rotation opened by corn or potatoes can be recognized. Wheat occupies two-fifths of the arable land, both preceding and following alfalfa or clover.

By and large, the small holding is Liguria's prevalent form of land tenure. Operators are either owners or cash tenants, with part-time farming associated with fishing assuming great importance in the coastal regions.

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Livestock

The characteristic of agricultural production in Liguria so strongly directed toward expert trade is even more evident with regard to livestock.

Livestock numbers in Liguria consistently declined in the last pre-war years. The equine animals numbered 21,240 head in 1938, almost half of which were mules, over one-fourth asses, and the rest horses. Of the 89,000 head of cattle, 57,000 were cows, with a large percentage of dairy cows. Less than one-tenth of all cattle are employed as draft animals. Swine number less than ten thousand, while sheep and goats assume some importance in the mountains.

In the whole province of Genoa the Brown-Swiss is the predominant breed, with over 30,000 head. This breed, which altogether accounts for about one-half of all the cattle, is also to be found in the coastal sections of the provinces of Savona, Imperia and La Spezia. In the latter province some cattle for meat are also raised.

Cattle raising in Liguria is essentially a small-scale enterprise. Herds of less than 5 head comprise the bulk of the cattle population, while no herd has more than 30 head.

The main deficiency of the cattle industry of Liguria is the shortage of beef and dual-purpose cattle. Meat production is absolutely inadequate to cover local needs. Genoa (with about half of the total population of the region) consumed in 1936 the meat equivalent of 71,000 head of cattle. Thus, if Liguria were to supply the needs of the great urban center, the cattle population would have to be over three times as large as was actually the case.

Poultry.- Poultry production acquires in Liguria some importance through the utilization of by-products for feed. Yet considerable shipments of eggs from Piedmont to Genoa and Savona were necessary to meet the requirements of the local population.

Food Problems

Two problems related to the food supply of Liguria will be considered here: First, the over-all problem created by the specific features of agricultural production; and, second, the problems of densely populated urban and quasi-urban areas.

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The production of staple foods in Liguria is especially low, and this situation is worsened by the territorial distribution of wheat-growing areas. By and large, the upper regions (the mountain slopes facing the Ligurian Sea and those facing the Po Valley) may be assumed to have achieved a high degree of self-sufficiency. Conversely, the coastal and hilly regions produce commodities for export, with especial emphasis on out-of-season crops. Not only is such produce inadequate for the organization of an emergency ration, but also the interruption of trade will play havoc with the economy of the region. In such areas as S. Remo, Albenga, Rapallo, the local rural population is wholly dependent upon trade for essential and non-essential foodstuffs.

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The urban centers of Genoa and La Spezia depend, to a considerable extent, upon Lombardy and Emilia for their food supplies. Food imports from Tuscany have little importance except for shipments of olive oil. Some shipments of meat to Genoa from Sardinia also are worthy of mention.

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LIGURIA

Agricultural Statistics

I Main Crops

Commodity	Area Harvested		Production		Yield per Ha.		Planting Time		Harvesting Time	
	1933-37	1940	1933-37	1940	1933-37	1940	From	To	From	To
	1000 Ha	1000 Ha	1000 Qls	1000 Qls	Quintals	Quintals				
Wheat 1/	22.2	23.7	247	253	10.6	10.7	Sept 20	Nov.15	June 20	Aug. 5
Corn 2/	7.0	6.7	130	126	20.9	19.1	Mar. 20	Apr.30	Aug. 20	Oct. 15
Kidney beans	2.5	1.7	21	14	9.1	8.7	Mar. 25	Jul.15	Jul.15	Oct. 10
Potatoes 3/	13.6	15.1	950	1126	70.9	76	Mar. 25	Apr. 30	Jun. 20	Aug. 30
Tomatoes	.4	.5	337	528	-	-	Mar. 30	June 15	June 5	Aug. 29
Other fr. vegetables	8.5	9.1	791	639	-	-	-	-	-	-
Cultivated Meadows 4/	6.6	7.3	282	330	-	-	-	-	-	-
Natural Meadows 4/	35.2	39.7	622	820	-	-	-	-	-	-
Pastures 4/	53.0	40.9	289	420	-	-	-	-	-	-
Vineyards	5/ 9.3	5/ 8.3	6/ 96	6/ 60	-	-	-	-	-	-
Olive trees	7/ 36.1 5/ 39.8 7/ 12.9	7/ 3.7 5/ 40.8 7/ 9.0	8/ 683 10/ 781	8/ 404 10/ 133	-	-	-	-	Aug. 16 Sept. 15	Sept. 20 Oct. 30
Deciduous Fruits	-	-	646	688	-	-	-	-	Jan. 1	Feb. 28
Nuts	-	-	562	9/ 17	-	-	-	-	-	-
Citrus Fruits	4.5	5.1	11.3	11	-	-	-	-	-	-

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " spring corn only.
3/ " " " " " " common potatoes only.
4/ All production in "normal hay".
5/ In groves and orchards.
6/ Grapes for direct consumption.
7/ In open fields.
8/ Wine (1,000 Hls.)
9/ Does not include chestnuts. 10/ Olive oil.

Office of Foreign Agricultural Relations. Data from Annuario Statistico Italiano.

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LIGURIA

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	5,500	9,743	6,500	88,877	57,670 1/	10,270	62,390	20,050
1960	5,000	9,000	6,000	89,000	2/	10,000	69,000	22,000

B. Live weight by classes of Livestock (March 1938)

Horses, mules, asses	All Cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
76,577	340,189	9,204	24,714	8,927

C. Livestock Products (1937)

Cow's Milk 3/	Butter	Cow's and sheep's cheese	Cottage Cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
825	1	5.5	.3	30.5

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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LIGURIA

III. Fertilizer Consumption,
Average 1936-38, and 1940

Fertilizer	1936-38	1940
	qls.	qls.
Superphosphates	50,862	53,621
Ground phosphates	468	1,351
Basic slag	233	-
Ammonium sulphate	26,876	29,753
Calcium cyanamide	5,381	5,212
Ammonium nitrate	1,270	1,203
Calcium nitrates	2,189	3,172
Sodium nitrate	9,696	9,092
Potassium salts	8,782	7,044
Potassium by-products 1/	-	-
Leucite	-	-
Ammonium phosphate	2,171	1,941

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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LIGURIA

IV. Consumption of Plant Sprays,
Average 1936-38

For use against animal parasites	kilograms	For use against vegetable parasites	kilograms
Arsenite of sodium	2,967	Pyrethrum	4,842
Containing arsenites	4,832	Rotenone	1.067
Arsenites	21,744	Fluorine silicate	759
Sulphides and polysulphides	5,343	Oxychloride of copper	138,050
Carbon sulphide	11,855	Other copper products	267
Tar oil	3,871	Sulphur	1,704.017
Tar oil products	10,674	Copper-sulphur	310,508
Zinc phosphide	287	Iron sulphate	200,350
Zinc chloride and sulphate	-	Copper sulphate	2,087,633
Nicotine extract, common	102,129		
Nicotine extract, superior	9,420		
Nicotine powder	5,520		
Nicotine sulphate	196		
Nicotine soap	259		
Monital, nicotine	1,943		
Other nicotine products	3,956		
Quassio wood	15,808		
Quassio extract	2,412		

Office of Foreign Agricultural Relations. Based on official statistics.

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3. Lombardy

Types of Farming

The agriculture of Lombardy assumes different characteristics from section to section according to the topography, but presents a few general features which need emphasizing from the very beginning.

First, the range of crops is less wide than in any other region of Italy; second, grains are by far the most important crop, while industrial raw materials (sugar beets and flax) have little significance. The trees and vineyards, which are of great importance for Italy as a whole, are negligible in Lombardy. In their place as a source of year-round employment the livestock enterprises dominate. Essentially the latter are typical of more progressive farming; cattle rather than goats or sheep, horses rather than mules or asses. Fruit and vegetable production are of little importance in Lombardy; olives are extremely rare; the mulberry acquires some importance in the East.

About 40 percent of the total area of Lombardy is mountain (provinces of Sondrio, Como, Varese), a circumstance which accounts for the considerable extent of unproductive land, 14.9 percent of the total. Pastures and forests cover 40 and 36 percent of the total area of the mountains. The tillable area in the valleys is held in private ownership by small operators. Frequently one undertaking includes small separate tracts. In addition, farm operators own some permanent pasture on the surrounding hillsides. The tillable land of the valleys is cultivated on a four-year rotation with potatoes or corn as rinnovo, followed by wheat, rye or buckwheat, clover and second-year cereals. All these enterprises yield little more than is needed for consumption by the operator's household.

The cattle, usually native or Brown Swiss, are fed on neighboring pastures or on farm-grown hay and, during the dry months, are moved to the Alps. These are huge mountain pastures owned by the commune or held as property in common. They are provided with permanent shelter for the animals and the shepherds and with a small plant for making of butter and cheese.

Spreading fan-wise between the mountain and the plains is a region of hills and plateaus, mostly moraines abandoned by glaciers. The soils are physically and chemically poor, while the climate is unfavorable to agricultural production.

Tillable land is here more important than in the mountains (50 percent of the total area) and grains (wheat and rye) are the main crops. Pastures supply fodder to the cattle. Between Ricino and Adda the predominant

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form of land tenure is the small owner-operated farm. In the provinces of Bergamo and Brescia large holdings assume greater importance. These are operated with contracts of mezzadria: in the province of Brescia the landlord contributes one-half of the operating capital (including livestock) and receives half of the returns. In the province of Bergamo the operator contributes all of the cattle and one-half of the other operating expenses. Also noteworthy in the province of Brescia are the Ronchi, which are small holdings intensively cultivated in vegetables, fruit trees and vineyards, where the operator contributes all the cattle and the machinery.

The plains of Lombardy comprise three main agricultural regions: (a) the irrigated plains on the left side of the Po River stretching westward from the Piedmont's border to include the province of Cremona; (b) the triangular area beyond the Po, almost an enclave between Piedmont and Emilia; and (c) the provinces of Mantua from the Chiese River to the Venetian borders.

The irrigated plains (pianura irrigua) comprise about 700,000 hectares of cultivated land, the most productive region of Italy and one of the garden spots of the world. The area derives its wealth from a highly perfected irrigation system which covers practically all of the territory. Water is obtained from difference sources. First and foremost are the great irrigation canals connecting the main rivers (Ticino, Adda, Serio, Oglio). Important among the canals are the Canale Villoresi (86 kilometers in length, 55,000 hectares irrigated), the Naviglio Grande (50 kilometers in length, 50,000 hectares irrigated), the Canale della Muzza (38.3 kilometers in length, 55,000 hectares irrigated), etc. Water is also obtained from the fontanili, i.e., surface or quasi-surface springs through which water is recovered in the plains. The whole water supply is distributed through lesser canals and ditches (Rogge) all provided with simple and often ancient weirs. Some of the canals are also ancient, dating as far back as the 12th (Naviglio Grande) and 13th Centuries (Muzza).

The essential function of irrigation in Lombardy is a two-fold one. In summertime the water is used to supply moisture to the crops more to create an entirely artificial environment than merely to overcome temporary droughts. In wintertime irrigation has the function of softening the effect of the climate by maintaining a comparatively high temperature on the soil. The quantity of water thus consumed reaches on the average 1 liter per second per hectare.

The main irrigation works are owned by Consortia. The individual farms have water rights and purchase their water from the Consortia either directly or by payment of annual dues. Within the farm the water is diverted through small ditches from which it flows in thin layers over the ground.

Differences in the nature of soils and in the amount of water available for irrigation have resulted in different type-of-farming areas within the irrigated plains. These are in turn reflected in differences in land tenure pattern.

In the west and in the center (provinces of Pavia and Milan) the typical production unit is the Cascina, a holding varying in size from 80

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to 100 hectares, which is part of a larger estate. Landowners (often charitable institutions) lease the holdings to capitalistic renters, for cash or kind, for terms of 9 to 12 years. The renter contributes all of the management and operating capital and operates the farm with hired labor. Usually the workers receive wages for the labor supplied to the feed crops and livestock enterprises and share in the returns from cash grains.

The types of enterprise differ somewhat from the west to the east as the soil content of clay increases. In the Lomellina - the territory between the Ticino and Po Rivers - rice is the main crop, with long rotations including wheat, corn and crimson clover. In the rest of the province of Pavia, corn and wheat are the main crops; but considerable acreage is invested in alfalfa, and animal enterprises are well developed. The lower part of the Province of Milan comprises mostly dairy farms. Here corn is the main rinnovo, followed by wheat. But as much as one-half of the farm is invested in cultivated pastures of ladino clover, a giant variety of white clover, enormously productive, which supplies green fodder the year round.

The western part of the irrigated plains, especially the provinces of Cremona and Brescia, are Italy's leading agricultural sections. Not only are grain yields exceptionally high (40 quintals of wheat per hectare, with peaks of 75 to 80 quintals) but the livestock industries (dairy, draft horses and swine) are remarkably well developed. The size of farms in this section tends to be smaller (40 hectares) and owner-operated units are more common.

Location and type of farm buildings are a somewhat unique feature of the irrigated plains. They are usually clustered at the center of the unit to form a corte (farmstead) with the shelters for humans and animals. Also in the corte are the all-important storage facilities for the grains, the hay and the silage.

The silage-making practices of Lombardy differ sharply from those of the United States, so that some detailed description is needed. The Lombard silo is of the type known ~~xx~~ in America as Crema silos, namely, a cylindrical tower of concrete blocks with a metallic cover. The basic principle of this method is the conservation of fodder by means of the carbon dioxide developed during the fermentation of the ensilage. Thus the silo is an air-tight one in which the fodder is heavily compressed. The green fodder harvested from the meadows and pastures is first left to wilt until 60 percent of the original moisture has been eliminated, and then is loaded into the silo and carefully compressed. To this end three or four workers distribute evenly the silage and compress it against the walls by treading. Whenever the loading is interrupted, weights are placed upon the ensiled mass. Upon termination of the loading, a conic-shaped lid is lowered to close the silo and heavy concrete blocks are placed on it further to insure compression. Fermentation of the silage usually lasts from 1 to 1½ months and the fodder keeps for 8 to 10 months. If the wilting has not been successful, straw is mixed to the silage to reduce the total moisture. Otherwise, mixture of material in the silo is the exception rather than the rule.

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Silos of the Crema type have, under the influence of Lombard farmers, spread all over Italy and are today the most common type of all.

The second agricultural region, usually referred to as Oltre-Po Pavese(region of Pavia beyond the Po River), comprises 100,000 hectares of sandy and clay soils of the plains, hills and mountains. Holdings in this area are small (15 hectares) and are operated by the owner. Corn and potatoes are the main rinnovo, with wheat and alfalfa completing the rotation. Economic conditions in this section, especially in the hills and mountains, are in sharp contrast with those of the irrigated plains. There is a greater tendency toward diversification of the enterprise, with vineyards occupying some importance.

The province of Mantua differs from the rest of the plains in the lesser importance of irrigation, which is available for only 25,000 of the 300,000 hectares. The labor force lives in villages and commutes daily to the farms, where it is employed on a per diem basis or on contracts of collective share-cropping. Rice and sugar beets are the main crops in the plains, where dairying also assumed some importance. The hills are a region of small holdings, where contracts of share-tenancy are the most common form of land tenure. Vineyards and mulberries are important among the tree crops. Corn, potatoes and wheat are the main field crops.

Livestock

The livestock of Lombardy accounts for 18 percent of the cattle, 20 percent of the horses, 15 percent of the swine of Italy. In quality and value, the livestock of this region surpasses that of all other sections. Furthermore, feed production is one of the main activities of Lombardy's agriculture, with meadows and pastures occupying 17.3 percent of the total area of the region.

Horses, mules and asses.-Most of the horses are of the heavy type, Belgians and Percherons, similar to those commonly found on American farms. They are concentrated mostly in the irrigated plains (provinces of Cremona and Milan) and in both sections of the province of Pavia. The mountain provinces, especially Sondrio, have very few horses, as well as a surprisingly low number of mules. Asses have some importance in the plateaux and on the hills.

Cattle.-Approximately half of the cattle of Lombardy are dairy cows predominantly of the Brown-Swiss breed (633,830 head), of which Lombardy has over 60 percent of the total. Other breeds of dairy cows are comparatively unimportant with the exception of 22,000 head of Holstein cattle, most of which descend from American sires of the Carnation lines. Only a small percentage of the cows are used as draft animals, and cattle are altogether a secondary source of power.

Swine.- The swine of Lombardy are mainly of the Yorkshire breed mostly concentrated in the provinces of Mantua and Milan. Feed is obtained

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from dairy by-products, corn, and from pasture. Hog-raising in Lombardy is efficient and progressive, with large herds (over 75 head) as the most common type of enterprise.

Sheep and goats.- Although Lombardy is the original center of one of Italy's best breeds of sheep (the Bergamasca) this animal plays a negligible role in the economy of the region. Most of the sheep are of the dual-purpose type for mutton and wool. Lamb production is especially important because twinning is a typical feature of the Lombard breeds. The mountain area has about two-thirds of all sheep, with about 30,000 head in the plains and 10,000 in the hills. Brescia and Sondrio are the most important provinces with regard to sheep production. Goats are altogether unimportant in Lombardy.

Poultry.- Poultry production assumes especial importance in Lombardy, where large industrialized flocks are common. Egg production is carried on in the Brianza region - between Como and Monza - and in the province of Pavia. Fattening of poultry is practiced on an industrial level around Codogno, where the only packing center of Italy is located.

Food Problems

The dense population of the region as a whole and the heavy concentration in the plains create peculiar problems of food supply for the urban centers of Lombardy. Also the large groups of industrial workers and the non-farming population at large are characterized by a greater variety of dietaries than is to be found elsewhere in Italy.

The plains produce essentially grains and livestock products. Potatoes, a very important item of the Lombard diet, are partially supplied by the hill and mountain regions. For meat, which in Lombardy is almost exclusively beef and veal, the region is partly dependent upon outside sources. Fruits and vegetables ~~all~~ come from Liguria, Tuscany, and Southern Italy.

Three factors contribute to make the situation of Milan especially difficult. The first is the composition of the population, which includes large groups from other sections of Italy. Thus, consumption of olive oil, pasta, and fish is higher than would be inferred from the location of the city. Second, although Milan is an important railroad center, railroad connections with the potato-producing valleys are poor and motor transportation was - in pre-war years - of vital significance. Third, the suburban orchards and truck farms, which insure a minimum supply of vegetables to many urban centers of Italy, are scarce around Milan, where large dairy farms reach the outskirts of the city. As a consequence Milan lacks that year-round flow of products which brings significant additions to the total supply. The few orchards that do exist in the plains produce less than is consumed by the small industrial centers. Altogether Milan may constitute one of the most difficult aspects of the Italian food supply, surpassed perhaps only by that of Rome.

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LOMBARDY

Agricultural Statistics

I Main Crops

Commodity	Area Harvested		Production		Yield per Ha.		Planting Time		Harvesting Time	
	1933-37	1940	1933-37	1940	1933-37	1940	From	To	From	To
	1000 Ha	1000 Ha	1000 Qls	1000 Qls	Quintals	Quintals				
Wheat 1/	288.2	283.9	7,495	6,505	25.9	22.9	Sept. 20	Nov. 10	June 15	July 20
Rye	16.2	16.6	262	272	17.5	16.3	Sept. 25	Oct. 20	June 1	July 15
Oats	14.6	16.5	291	349	19.8	21.1	Feb. 15	Apr. 20	June 10	July 30
Rice (rough)	54.2	61.3	2,680	3,321	49.2	54.2	Apr. 15	May 15	Sept. 20	Oct. 25
Corn 2/	245.4	264.7	7,649	9,874	33.7	40.1	Mar. 20	May 5	Sept. 15	Oct. 15
Horse beans	1.2	1.1	7	10	5.6	9.7	Apr. 10	Apr. 30	July 30	Aug. 30
Kidney beans	38.7	22.4	70.2	63	2.2	2.8	Apr. 1	June 15	July 1	Oct. 20
Potatoes 3/	18.3	20.9	2,216	3,359	112.4	151	Mar. 10	Apr. 15	Aug. 20	Oct. 10
Tomatoes	.4	.3	191	168	-	-	Mar. 10	May 31	July 20	Aug. 20
Other Fr. Vegetables	7.9	8.2	1,666	1,136	-	-	-	-	-	-
Sugar beets	4.9	9.1	1,239	2,974	261.4	327.7	Mar. 15	Apr. 30	Aug. 10	Sept. 20
Flax	.7	1.2	4	8	6.1	6.2	Mar. 10	Apr. 20	June 10	June 30
Colza and rape	.9	4/	12.2	4/	11.6	4/	-	-	-	-
Tobacco	7.1	4/	12.8	4/	-	-	Apr. 15	June 5	July 15	Sept. 30
Cultivated meadows 5/	456.0	477.5	31,958	32,712	-	-	-	-	-	-
Natural meadows 5/	182	179.4	10,920	12,790	-	-	-	-	-	-
Pastures 5/	218	199.9	1,260	1,715	-	-	-	-	-	-
Vineyards	6/ 37	6/ 36.5	7/ 195	7/ 180	-	-	-	-	Aug. 1	Oct. 10
	8/153	8/145.9	9/ 2,170	9/ 2,066	-	-	-	-	Sept. 20	Oct. 25
Deciduous Fruits	-	-	265	384	-	-	-	-	-	-
Nuts	-	-	250	10/ 22	-	-	-	-	-	-

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " Spring corn only.
3/ " " " " " " Common potatoes only.
4/ Not available.
5/ All production in "normal hay".
6/ In groves and orchards.
7/ Grapes for direct consumption
8/ In open fields.
9/ Wine (1,000 Hls.). 10/ Does not include chestnuts.

Office of Foreign Agricultural Relations. Data from Annuario Statistico Italiano.

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LOMBARDY

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	161,857	12,763	36,390	1,357,963	1/ 753800	387,913	86,223	55,990
1940	159,000	10,000	36,000	1,422,000	2/	449,000	123,000	57,000

B. Live Weight by Classes of Livestock (March 1938)

Horses, mules, asses	All cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
994,226	6,028,157	444,345	40,640	23,070

C. Livestock Products (1937)

Cow's milk 3/	Butter	Cow's and sheep cheese	Cottage cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
8,080	182.3	825.8	1.9	165.3

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

42.9

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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LOMBARDY

III. Fertilizer Consumption, Average 1936-38 and 1940

Fertilizer	1936-38	1940
	gls.	gls.
Superphosphates	2,127,314	2,258,969
Ground phosphates	40,032	22,631
Basic slag	11,010	3,500
Ammonium sulphate	548,011	675,197
Calcium cyanamide	433,927	255,190
Ammonium nitrate	56,747	63,168
Calcium nitrates	263,152	316,020
Sodium nitrate	166,961	144,763
Potassium salts	91,745	217,541
Potassium by-products 1/	1,169	1,695
Leucite	601	16
Ammonium phosphate	14,443	7,302

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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LOMBARDY

IV. Consumption of Plant Sprays
Average 1936-38

Used against animal parasites	Kilograms	Used against Vegetable parasites	Kilograms
Arsenite of soda	1,350	Pyrethrum	1,757
Containing arsenite	---	Rotenone	700
Arsenates	30,605	Fluorine silicate	14,366
Sulphides and polysulphides	7,200	Oxychloride of copper	372,867
Carbon bisulphide	70,354	Other copper products	833
Tar oil	79,700	Sulphur	1,225,867
Tar oil products	55,143	Copper sulphur	559,677
Zinc phosphide	8,333	Iron sulphate	150,966
Zinc chloride and sulphate	8,158	Copper sulphate	7,890,833
Nicotine extract, common	31,923		
Nicotine extract, superior	2,835		
Nicotine powder	5,177		
Nicotine sulphate	2,476		
Nicotine soap	1,244		
Monital, nicotine	4,818		
Other nicotine products	6,083		
Quassio wood	2,917		
Quassio extract	686		

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Office of Foreign Agricultural Relations. Based on official statistics.

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4. Venezia Tridentina

Types of Farming

Venezia Tridentina, long divided from the rest of the Kingdom by political boundaries, still has few economic ties with the rest of Italy. This accrues in part from the rugged topography of the region, whose valleys have only narrow outlets, and in part from altogether inadequate transportation facilities. Thus the agricultural economy of the region is essentially that of a self-sufficient mountain area inadequately supplemented by the plains of the Po Valley.

The region is predominantly agricultural, with the farming population comprising over one-half of the gainfully employed and about one-fourth of all the inhabitants.

About one-half of the productive land is in timber, while pastures cover one-fourth of the total area. Tillable land represents but 7 percent of the total area in farms. Thus the economy of the region is a silvo-pastoral one, with forest industries prevailing in the province of Trento, and livestock industries in that of Bolzano.

The two provinces widely differ with regard to land settlement and land tenure, while types of crops and livestock enterprises are fairly uniform throughout the region.

The province of Trento or Trentino presents the combination of mountain pastures and farm enterprises which is common in Northern Italy. However, while in Piedmont and Lombardy the pasture supplements the irrigated farms or the fairly large holdings of the plains, in Trentino the integration takes place between mountain pastures and small subsistence farms.

The arable land of the lower mountain slopes and of the narrow valleys is held in ownership and operated by peasants who live in small villages. The main crops are foodstuffs for family consumption - wheat, rye, barley, potatoes, kidney beans and buckwheat. A small area is, in the lower sections, planted in vineyards and fruit trees.

The pastures belong to the community or to absentee owners and are rented for the season to groups of peasants. The cattlemen live in small wooden shelters and process the milk into cheese and butter.

The province of Bolzano has a unique pattern of land tenure based on peasant ownership. Part of the population lives in villages, usually in the lower parts of the valleys, and operates small tracts of farm land. In areas of greater soil fertility hereditary peasant holdings of 50-100 hectares in size predominate. These farms are inherited by only one of the male heirs, who in turn provides employment for his relatives. The operator's family and the hired labor live on the farm where all buildings are clustered in a farmstead.

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Wheat, rye, potatoes, and kidney beans are the main crops, but their production seldom exceeds local consumption. Pasture land is owned by the communes and by absentee landowners, and is leased for the duration of the grazing season by cooperatives of small farmers and by the owners of hereditary holdings.

In the more level areas around Bolzano and Merano, commercial production of fruits and table grapes is the main farm enterprise. Fruit trees and vineyards are planted in specialized groves, with the ground between rows being cultivated in legumes (clover and alfalfa). Apples for direct consumption are the main product, while peaches, apricots and plums are canned and converted into jams and jellies at Bolzano, Lana, and Merano.

Livestock

In spite of the large areas in pasture, livestock industries are poorly developed in this region. This is due partly to feed shortages in the winter, which are worsened by the lack of facilities for conserving fodder (there were only 34 silos in the region), and partly to the difficulties of carrying out improvement programs in an area where livestock enterprises tend to be very small.

Horses, mules and asses. - The horse population numbers about 10,000 head, most of which are heavy draft animals, raised in the province of Bolzano. Asses number over 2,000, all in the province of Trento. The latter also has most of the mules of the region.

Cattle. - The cattle population amounts to 200,000 head, one-fifth of which are used as draft animals. Most of the cattle are raised in small groups of less than 5 head in the province of Trento, while herds of over 10 head prevail in the province of Bolzano.

About one-half of the cattle in the province of Bolzano belong to or derive from the Brown Swiss breed. The rest belong mostly to a native breed, the Grey of the Adige. These are multiple-purpose cattle with good production of milk.

The province of Trento is characterized by the net prevalence of a hybrid breed, the Gray Alpine, with good production of meat and low milk yield. Dairy cattle are derived from Brown Swiss sires and native dams, and milk production is low.

Sheep and goats. - Sheep raising acquires some importance only in the province of Bolzano, where the wool mills are one of the main industries (Brunico and Vipiteno). It is essentially a family enterprise, most flocks comprising less than 50 head.

Flocks are even smaller in the province of Trento, where three-fourths of the sheep are in enterprises of less than 10 head.

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Sheep are seldom taken to the mountain pastures; more often they graze the farm meadows during the good season and feed on hay and straw during the winter.

Milk and cheese production is low, while mutton and lamb are locally consumed in considerable quantities. Goats number over 40,000; the rural population consumes some cheese. Goat and kid meat is sold on urban markets.

Swine. - The swine population comprises only 40,000 head, mostly raised in small herds of less than 10 animals. Hogs are usually slaughtered on the farm, and the pork and pork products are consumed by the members of the household.

Food Problems

Consumption levels for the province of Bolzano are among the highest in Italy, animal products supplying large portions of the proteids and most of the fats. Rationing of meat and animal fats thus creates a problem of increasing the supply of bread grains and vegetable products for which the area had, in peacetime, achieved a degree of self-sufficiency.

The province of Trento had low consumption levels so that, during the depression, pathologic conditions, possibly related to dietary deficiencies, were noticed. Summer droughts often impair the production of kidney beans and potatoes, making it necessary to import these staples from Veneto.

For the processing of grains, Venezia Tridentina is well equipped with watermills, while hydroelectric plants supply power to the small rural industries.

VENEZIA TRIDENTINA

Agricultural Statistics

1. Main Crops

Commodity	Area Harvested		Production		Yield per Ha.		Planting Time		Harvesting Time	
	1933-37	1940	1933-37	1940	1933-37	1940	From	To	From	To
	1000 Ha	1000 Ha	1000 qls	1000 qls	Qls.	Qls.				
Wheat 1/	15.1	14.5	261	248	17.3	17.6	Sept 25	Oct. 20	June 20	July 25
Rye	12.3	12.1	183	208	14.8	16.4	Sept 20	Oct. 20	July 20	Aug. 20
Barley	4.0	4.1	59.8	61	14.9	14.2	Mar. 25	Apr. 10	July 25	Aug. 31
Oats	1.9	1.9	27.1	29	14.3	15.2	Apr. 20	May 10	July 25	Sept. 10
Corn 2/	10.5	11.4	254.1	311	24.5	25.1	Apr. 25	May 20	Oct. 1	Oct. 15
Kidney beans	12.6	11.8	30.7	28	2.9	2.2	Apr. 25	May 31	Sept. 10	Oct. 10
Potatoes 3/	16.0	16.5	1,475	1,792	92.9	91.3	Apr. 10	May 15	Sept. 25	Oct. 10
Other fr. vegetables	10.3	3.6	191	240	-	-	-	-	-	-
Tobacco	.4	4/	6.1	4/	-	-	May 1	June 20	Aug. 20	Oct. 10
Cultivated meadows 5/	10.6	13.9	719	1,006	-	-	-	-	-	-
Natural meadows 5/	96.6	89.9	4,202	4,836	-	-	-	-	-	-
Pastures 5/	347.1	5/363.3	1,524	1,885	-	-	-	-	-	-
Vineyards (6/	12.8	6/ 12.8	7/ 41.2	7/ 38	-	-	-	-	July 25	Oct. 10
Vineyards (8/	19.7	8/ 20.1	9/ 536	9/ 613	-	-	-	-	Sept. 20	Oct. 20
Deciduous fruits	-	-	559.2	384	-	-	-	-	-	-
Nuts	-	-	26.4	10/ 5	-	-	-	-	-	-

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " spring corn only.
3/ " " " " " " common potatoes only.
4/ Not available.
5/ All production in "normal" hay.
6/ In groves and orchards
7/ Grapes for direct consumption.
8/ In open fields.
9/ Wine (1,000 Hls.)
10/ Does not include chestnuts.

Office of Foreign Agricultural Relations. Data from Annuario Statistico Italiano.

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VENEZIA TRIDENTINA

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	11,093	3,113	2,393	206,120	113,260 1/	42,427	69,663	45,133
1940	10,000	2,000	2,000	205,000	2/	44,000	78,000	44,000

B. Live weight by classes of Livestock (March 1938)

Horses, mules, asses	All cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
65,059	857,295	34,815	29,878	17,602

C. Livestock Products (1937)

Cow's Milk 3/	Butter	Cow's and sheep's cheese	Cottage cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs
1,403	23.8	32	1.2	83.7

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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VENEZIA TRIDENTINA

III. Fertilizer Consumption, average 1936-38 and 1940

Fertilizer	1936-38	1940
	Qls.	Qls.
Superphosphates	99,570	117,680
Ground phosphates	4,679	1,500
Basic slag	2,242	600
Ammonium sulphate	23,282	36,470
Calcium cyanamide	2,879	3,145
Ammonium nitrate	3,446	2,903
Calcium nitrates	7,010	9,685
Sodium nitrate	6,142	---
Potassium salts	11,599	23,961
Potassium by-products 1/	---	---
Leucite	---	---
Ammonium phosphate	1,126	1,629

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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VENEZIA TRIDENTINA

IV. Consumption of Plant Sprays
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of soda	1,067	Pyrethrum	167
Containing aresnite	-	Rotenone	3,700
Arsenates	109,163	Fluorine silicate	187
Sulphides and polysulphides	1,028,223	Oxychloride of copper	198,767
Carbon sulphide	1,163	Other copper products	7,267
Tar oil	506,633	Sulphur	810,733
Tar oil products	319,123	Copper sulphur	34,967
Zinc phosphide	168	Iron sulphate	2,567
Zinc chloride and sulphate	-	Copper sulphate	2,338,733
Nicotine extract, common	115,458		
Nicotine extract, superior	6,565		
Nicotine, powder	107		
Nicotine sulphate	4,211		
Nicotine soap	319		
Monitol, nicotine	10,871		
Other nicotine products	16,462		
Quassio wood	717		
Quassio extract	100		

Office of Foreign Agricultural Relations. Based on official statistics.

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5. Veneto

Types of Farming

Agriculture is Veneto's main economic activity, and the whole region has essentially rural features. Over one-half of the gainfully employed are engaged in agricultural pursuits, and the farm population comprises 42 percent of the total. Furthermore, even the urban population has strong economic ties both with rural groups and with agricultural production. Finally, processing industries for agricultural commodities and fertilizer plants in this region have considerable importance.

To describe briefly the agriculture of Veneto is an almost impossible task, because in variety of crops this area surpasses all other regions of the Kingdom. This is the result of a variety of environmental conditions which must be briefly considered.

Veneto includes the region of the Alpi Carniche, the Pre-Alpine ranges, the hill regions, and finally the plains that spread fanwise on the Adriatic Sea, between the Mincio and Isonzo rivers.

The mountain region, lying mostly in the provinces of Belluno and Udine, is characterized by heavy rainfalls, the heaviest of the whole of Italy (2,500-3,000 mm.). Here the population has two main sources of livelihood: First is the farm itself on the lower slopes of the mountain. This is a small or very small holding, where a simple rotation of corn and wheat or potatoes and rye is practiced. Kidney beans also represent an important crop, either alone or more often interplanted with corn. Around the farmstead there is also some area in pasture, whence hay and grass are obtained. The second source of livelihood, which by and large far exceeds in importance the strictly agricultural enterprise, is livestock, especially cattle. Most of the year cattle are not kept on the farm but on the pastures that the community owns on the surrounding mountains. The community ranges are provided with barns for the animals and shelter for the cattlemen. There are also facilities for the making of cheese and butter. Men on the ranges take care of the cattle and, at the lower altitudes, also engage in the logging of lumber from the forests. These forests also are communal property.

From the institutional factor of communal ownership stems directly the interest in the cooperative movement that is one of the main cultural traits of this area. Cooperative organization and excellent transportation facilities have led to a greater degree of commercialization than is commonly to be found on mountain farms. The rural population, while producing huge surpluses of dairy products, is dependent upon outside sources for part of its supply of staple foods.

The Pre-Alps are a series of isolated ranges and plateaus between the true Alps and the plains. The Lessini Mountains, between Lake Garda and the Leogra Valley, are an area rich in pastures and meadows with a

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well developed cattle industry. The plateau of Asiago is an area of small farms, mainly producing potatoes and dairy products. The eastern Pre-Alps are a poor, sparsely populated area producing rye and potatoes.

The hills include some of the richest sections of Veneto. Farms vary in size from 10 to 20 hectares and are operated mostly by cash renters. The share-lease contract is important only in the Montello area around Treviso. Typical of the hills is the association of tree crops and field crops with some specialized groves. Vineyards are the most important undertaking, together with corn, wheat and legumes. In isolated areas trees of milder climates are also to be found, such as citrus around Lake Garda and olive trees in the provinces of Verona and Padua.

The plains comprise at least four different subregions: the upper and lower plains, the lagoons and the Polesine. The great torrential rivers that flow from the Alps, and the Po itself, which in its lower course is swollen by the tributaries from the Appennines, have contributed much varied alluvial material to the formation of the plains. In turn, the problem of avoiding siltation around the harbor and lagoon of Venice has in the past ten centuries received much consideration, so that the very course of the rivers has often been modified by man's action.

The upper plains, where the soil is formed from heavier alluvia, are characterized by the small size of holdings and the great diversification of farms. Industrial crops - tobacco, flax, some sugar beets - are included in the enterprise, together with a wide range of lesser crops such as castor beans around Legnago, broom corn in the province of Padua, colza in the province of Udine, sorghum for sugar, etc. Corn and potatoes are the main food crops, while wheat occupies but one-fourth of the area in cultivation. Perennial crops acquire more importance in the upper plains than in any other part of the Po Valley; they include vineyards, mulberry trees, and peach trees.

The lower plains have impermeable soils and poor drainage conditions which from early times required land reclamation and drainage works. Here the rivers, especially the Po and the Adige, flow at a higher level than the farm land, contained by towering levees. The holdings are usually fairly large (50 to 100 hectares) and are subdivided into small units operated by share-croppers and cash tenants. The crops are essentially those of the upper plains, though large-scale production of vegetables (cabbage, onion, garlic, and spinach) and cultivation of fruit trees assumes, in various places, considerable importance.

A distinctive feature of land reclamation projects in this area is the fact that they were undertaken by private individuals rather than by corporations or public agencies. This has resulted in a somewhat paternalistic attitude toward agricultural labor, with a definite clouding of social and economic issues. Thus, while at times the living conditions of the peasants are no better than those existing in the province of Ferrara or in the latifumdia, the social conflicts are not so patent and bitter

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in the plains of Veneto as in other regions of Italy. Nevertheless, it should be pointed out that in the lower plains nutritional diseases, especially pellagra, are endemic. The peasant consumes little or nothing of the vegetables, fruits and milk he produces. Corn is the staple food, and only rice varies the monotonous diet.

The fringe of dunes and lowlands that surround the lagoons on the Adriatic shore has been variously transformed in the recent past. While the western area has remained depopulated and barren, so that only very recently has settlement been attempted, the sandy soils of the area around Venice have been converted into exceptionally productive truck farms. In other parts of Italy, greenhouses are part and parcel of the vegetable garden. Here, however, all crops are grown in the open, under an intensive cultivation which never leaves the soil untilled or unproductive. Part of the produce goes to Venice and part to foreign markets, either directly through the Valsugana railroad or through the assembling center of Verona.

The area known as Polesine comprises most of the province of Rovigo. It is essentially a region of reclaimed land where mechanical drainage is of vital importance. Farms tend to be large (100-500 hectares) or very large and are operated either by the owner or by capitalistic renters with share-croppers' labor. The productivity of the land, which often receives the benefit of summer irrigation, is higher than in any other part of Veneto. Comparatively little corn is grown, while industrial raw materials (hemp, sugar beets) and tobacco are the main rinnovi. Tobacco is grown under special license and is fire-cured on the farm. Hemp and sugar beets are shipped by river and canal to the factories. In the sections nearer to the sea rice becomes the main crop, at times following itself for several years. In other cases rice follows a regular rotation which begins with sugar beets or hemp and includes alfalfa, wheat and clover. The rice harvest begins in Polesine somewhat earlier than in Piedmont, so that even the late varieties (which are dried mechanically) reach the market around November.

The tree crops which play an important role in other sections of Veneto disappear entirely in the Polesine. Lombardy and Carolina poplars occasionally take the place of vineyards along some of the fields, while some grapes and fruits are produced on the sandy dunes. By and large, however, the Polesine is a region of wide open spaces that gives an impression of abandonment and emptiness. Even experienced agriculturists fail to realize that this is one of Italy's most important agricultural areas.

The transportation problems of this area deserve specific mention. The rest of Veneto is well provided with highways and railroads, but Polesine has few good roads and depends upon the rivers (the many branches of the Po River, and the Adige River) for the transportation of many agricultural commodities. Furthermore, transportation within the farm often becomes difficult during the rainy months, so that farmers are often forced to make detours to the highway in order to move crops from the fields to the farmstead.

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Livestock

In absolute number of livestock Veneto occupies a place of great importance among the Italian regions. With regard to animal products and qualities of the breeds raised, Veneto follows closely Lombardy and Emilia.

Horses, mules and asses. - In the recent past Veneto was second only to Lombardy in the number of horses. Lately horses have greatly declined and are now important only in the provinces of Verona, Padua and Udine, which have two-fifths of all the animals in the region. Verona especially deserves consideration for its production of heavy draft animals, which were often sold in Lombardy and Emilia. Asses outnumber mules in all provinces but they are seldom used in farm operations Instead, they provide transportation to the inhabited centers at which the peasants gather on weekly market days. The mountain provinces have but small proportions of mules and asses. Belluno has but 2 percent of all the equines of the region.

Cattle. - The importance of cattle in the economy of Veneto accrues from many causes: first, the large acreages invested in corn, a crop which requires deep plowing and abundant applications of manure, while in turn supplying bulky, unmarketable fodder from tops, stovers and leaves; second, the nature of the soils, often too heavy for horses; finally, the importance of alfalfa in the rotation.

Thus cattle are raised on all farms of Veneto, including the small orchards along the lagoons. Large farms have proportionally less cattle than the small peasant holdings, and herds of over 50 head are rare.

Cattle are used as draft animals in Veneto to a greater extent (40 percent) than in any other region of Northern Italy. The percentage of cattle used for draft varies, however, from the plains (with 50 percent of all cattle used as draft animals) to the mountains, where dairying assumes greater importance.

In many provinces of Veneto improved breeds have taken the place of the native ones, even on peasant holdings. The Brown Swiss cattle are especially important in the provinces of Udine, Verona and Vicenza. This breed comprises one-fourth of all cows. In the mountains farmers raise (in addition to the Brown Swiss) large numbers of the gray triple-purpose cattle, known as Grigia. This is an improved native breed with some aptitude for milk production. It is the typical cattle of peasant holdings. The lower plains are characterized by triple-purpose cattle of the Simmenthal breed, which are good producers of meat and milk. The cattle in Polesine are mostly of the Pugliese type and are used almost exclusively as draft animals. Livestock production on most farms in this area is designed only as a source of animal power and manure, and seldom yields any net return. This is unfortunate because hay and grass production is considerable all over the area.

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Swine. - Swine number in Veneto around 275,000 head. Swine production is carried on as a secondary enterprise on the majority of farms, but only in the provinces of Udine and Vicenza does it assume great importance.

Sheep and goats. - The economic importance of sheep and goats is negligible. They are confined to the mountain areas and to small peasant-owned flocks.

Poultry. - Poultry raising is important in the provinces of Rovigo, Treviso and Padova, which produce considerable surpluses for the market.

Food Problems

The absence of large cities, together with the existence of dairy and vegetable belts around the main urban centers, favorably affect problems of food distribution. However, two problem areas can be allowed for: (a) the mountain regions, which need supplies of staple grains and (b) the city of Venice, whose milkshed extends far in the mainland, thus creating transportation problems. Moreover, in general, storage facilities for vegetables and perishable products in Venice are most deficient because the city depends upon daily flows of such supplies from the lagoon areas.

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VENETO

Agricultural Statistics

I Main Crops

Commodity	Area Harvested: 1933-37	Area Harvested: 1940	Production: 1933-37	Production: 1940	Yield Per Ha.: 1933-37	Yield Per Ha.: 1940	Planting Time: From	Planting Time: To	Harvesting Time: From	Harvesting Time: To
	1000 Ha	1000 Ha	1000 Qls	1000 Qls	Quintals	Quintals				
Wheat 1/	320.6	296.4	6,537	4,380	21.2	14.8	Sept. 20	Nov. 5	June 10	Aug. 10
Rye	3.8	4.0	55	60	14.5	15.0	Sept. 20	Oct. 20	June 15	Aug. 10
Barley	1.5	1.7	23	26	14.9	15.4	Sept. 30	Nov. 15	June 20	Aug. 10
Oats	7.2	9.4	127	142	16.6	15.2	Feb. 20	Mar. 20	June 15	Aug. 10
Rice (rough)	6.4	7.5	277	320	42.9	43.0	Apr. 1	May 10	Sept. 15	Nov. 15
Corn 2/	315.8	353.4	7,621	9,124	26	29.1	Apr. 1	May 10	Aug. 25	Oct. 15
Kidney beans	112.8	128.5	188	302	-	-	Mar. 20	May 15	July 10	Sept. 15
Potatoes 3/	17.9	18.4	1,944	2.836	98	147.5	Mar. 1	Apr. 30	July 15	Sept. 20
Tomatoes	.1	.3	131	116	-	-	Apr. 1	May 31	Aug. 1	Sept. 20
Other fr. vegetables	15.0	16.1	1,233	1,004	-	-	-	-	-	-
Sugar beets	46.3	69.4	12,247	15,679	268	293.3	Mar. 1	Apr. 15	Aug. 1	Sept. 30
Hemp	5.7	4/	61	4/	-	-	Feb. 25	Apr. 15	Aug. 5	Sept. 15
Flax	.1	1.9	2	6	-	-	Mar. 10	Apr. 15	July 1	Sept. 5
Tobacco	5.0	4/	92	4/	-	-	May 15	June 10	Aug. 1	Sept. 30
Cultivated meadows 5/	352.5	380.9	19,092	24,009	-	-	-	-	-	-
Natural meadows 5/	288.4	252.9	9,704	9,893	-	-	-	-	-	-
Pastures 5/	164.8	187.6	945	2,085	-	-	-	-	-	-
Vineyards (6/	30.1	6/ 30	7/ 85	7/ 112	-	-	-	-	Aug. 1	Sept. 30
(8/	551.5	8/ 565.7	9/ 3,013	9/ 2,570	-	-	-	-	Sept. 10	Oct. 20
Deciduous Fruits	-	-	768	1,176	-	-	-	-	-	-
Nuts	-	-	75.2	10/ 15	-	-	-	-	-	-

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " spring corn only.
3/ " " " " " " common potatoes only.
4/ Not available.
5/ All production in "normal hay".
6/ In orchards and groves.
7/ Grapes for direct consumption.
8/ In open fields.
9/ Wine. (1,000 Hls.)
10/ Does not include chestnuts.

Office of Foreign Agricultural Relations. Data from Annuario Statistico Italiano.

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VENETO

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	73,093	11,897	39,810	1,104,000	1/522760	306,763	106,220	59,963
1940	67,000	8,000	38,000	1,175,000	2/	332,000	135,000	61,000

B. Live Weight by Classes of Livestock (March 1938)

Horses, mules, asses	All cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
448,923	5,025,879	275,769	49,287	22,987

C. Livestock Products (1937)

Cow's milk 3/	Butter	Cow's and sheep cheese	Cottage cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
5,277	53.8	238.5	4.2	59.2

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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VENETO

III. Fertilizer Consumption, average 1936-38 and 1940.

Fertilizer	1936-38	1940
	Quintals	Quintals
Superphosphates	1,479,674	2,110,634
Ground phosphates	12,744	1,946
Basic slag	2,952	1,550
Ammonium sulphate	137,926	214,468
Calcium cyanamide	197,620	207,581
Ammonium nitrate	26,686	30,547
Calcium nitrates	159,549	229,616
Sodium nitrate	135,550	164,909
Potassium salts	72,618	118,382
Leucite	-	-
Potassium by-products 1/	3,933	6,563
Ammonium phosphate	26,117	18,807

Office of Foreign Agricultural Relations. Based on official statistics.
1/ From sugar factories.

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VENETO

IV. Consumption of Plant Sprays
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of soda	1,883	Pyrethrum	2,707
Containing arsentic	-	Rotenone	1,000
Arsenates	55,049	Fluorine silicate	6,076
Sulphides and polysulphide	8,167	Oxycloride of copper	358,267
Carbon bisulphide	23,879	Other copper products	633
Tar oil	3,100	Sulphur	2,968,233
Tar oil products	67,940	Copper sulphur	497,008
Zinc phosphide	5,100	Iron sulphate	80,467
Zinc chloride and sulphate	-	Copper sulphate	9,894,466
Nicotine extract, common	15,008		
Nicotine extract, superior	1,005		
Nicotine, powder	3,520		
Nicotine sulphate	284		
Nicotine soap	644		
Monital, nicotine	4,414		
Other nicotine products	4,365		
Quassio wood	76,558		
Quassio extract	5,273		

Office of Foreign Agricultural Relations. Based on official statistics.

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6. Venezia Giulia and Zara

Types of Farming

Venezia Giulia takes up the easternmost part of the Italian peninsula, the Dalmatian islands under Italian rule, and the city of Zara. The great extension of shores, the number of large harbors, natural outlets for the trade of the Danube's valley and, in recent years, the development of important industries, all contribute to give agriculture a secondary role in the economy of the region.

Agricultural pursuits engage but 36 percent of the gainfully employed, or 16 percent of the total population. Thus with regard to economic structure the region more closely resembles Liguria than Veneto, although it has many physiographic features in common with the latter. Of the five provinces, Gorizia and Istria are predominantly agricultural, with over one-half of the gainfully employed engaged in farming, while Carnaro, Zara and, above all, Trieste, are essentially industrial and commercial areas.

It is also worth pointing out that many sections of Venezia Giulia, especially the coast of Istria and the islands, enjoy an extremely mild climate, so that some of their agricultural products are those of Central and Southern Italy.

Tillable land occupies 15 percent of the productive area, pastures and woodland covering 20 and 32 percent, respectively.

Peasant ownership is the predominant form of land tenure, with over 80 percent of the rural families operating their own holdings.

The province of Gorizia lies within the northwestern fringe of the plains of Friuli and the upper valley of the Isonzo river. Wheat, corn and potatoes are the main crops. There is some production of vegetables. The lower plains have been recently reclaimed and are now divided in large capitalistic holdings, operated with daily laborers and share-croppers. Here grains are the main crop, together with some production of sugar beets. At Torre Viscosa 6,000 hectares have been planted in reed for cellulose, which is processed in the same locality.

The peninsula of Istria, with the provinces of Trieste and Pola, has a very dry climate and, with regard to nature of soils and regime of watercourses, closely resembles Puglia. Like the latter region, its development depends upon a stable supply of water both for human consumption and for irrigation. Reservoirs for this purpose have been constructed since 1937.

Corn, wheat, potatoes, rye, and legumes (kidney beans, lentils, peas) are the main crops. Tree crops comprise deciduous fruits (apples, prunes, and peaches), olive trees (in constant decline), and vineyards. The wines

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of Istria are in great demand, especially in Veneto.

The islands of Dalmatia and the territory of Zara yield a variety of fruit crops, especially plums and Maraschino cherries.

Zara has important processing industries which include cigarette factories and alcohol distilleries, but the tobacco has to be imported from other regions or from the Near East.

Livestock

The lack of good natural pastures and the low productivity of cultivated meadows are the main obstacles to livestock expansion in the region. The hills and mountains in particular need means to stabilize their feed supply, because in the past droughts have caused the destruction of entire herds.

Horses, mules and asses. - The horse population numbers 8,000 head, mostly in the plains and lower valley of the Isonzo. Istria raises most of the 14,000 asses of the region. They are used as draft animals for transportation and light work on farms.

Cattle. - Cattle number over 130,000 head, 40 percent of which are in the province of Gorizia. About one-third of all cattle are used as draft animals, so that multiple-purpose animals predominate. In the provinces of Gorizia and Trieste the most common breeds are the Mollthal and Simmenthal breeds, characterized by rapid gains and good production of milk. Brown Swiss are raised in the suburban areas.

Farmers in Istria and Carnaro raise cattle of the Pugliese breed. The few head of cattle in the province of Zara are Brown Swiss and grade cows from this breed.

Sheep and goats. - Most of the 140,000 sheep of Venezia Giulia are in the province of Istria. Sheep are raised as a secondary farm enterprise, most of the flocks having less than 50 head.

The enterprise has little importance for wool production, which averages only 2,000 kilograms of textile fiber; most of the product is used as ticking material. There is some production of mutton and lamb, while the cheese output is altogether negligible.

Swine. - The swine population numbers only 60,000 head, mostly in the provinces of Gorizia and Istria. Swine production is essentially a household enterprise limited to 2-5 animals per household.

Food Problems

The region is on a deficit basis with regard to food products in general. Grains and potatoes were the main peacetime imports, together with animal products, citrus fruits, etc. Trieste, Fiume and Zara will probably suffer food shortages and will have to be supplied by sea because the surrounding areas do not yield sufficient amounts of staple foods.

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VENEZIA GIULIA and ZARA

Agricultural Statistics

I Main Crops

	Area Harvested		Production		Yield per Ha.		Planting Time		Harvesting Time	
	1933-37	1940	1933-37	1940	1933-37	1940	From	To	From	To
	1000 Ha.	1000 Ha.	1000 Qls	1000 Qls	Quintals	Quintals				
Wheat 1/	28.6	25.7	345	287	12.0	11.2	Oct. 1	Dec. 1	June 20	Aug. 10
Rye	2.9	2.4	33	25	11.5	10.6	Sept. 20	Oct. 31	June 1	Aug. 1
Barley	5.5	4.7	60	45	10.8	9.6	Sept. 10	Nov. 1	June 15	July 10
Oats	3.3	2.8	34	28	10.4	9.8	Feb. 20	Mar. 20	Aug. 1	Aug. 20
Corn 2/	30.2	32.2	419	529	13.9	17.1	Apr. 20	May 15	Aug. 20	Oct. 20
Horse beans	.2	.1	1	1	-	-	Nov. 20	Dec. 31	June 1	June 30
Kidney beans	12.4	12.0	52	40	-	-	Mar. 15	May 20	Aug. 20	Sept. 30
Other legumes			3	2	-	-	-	-	-	-
Potatoes 3/	23.8	23.7	1,839	1,715	72.6	74.2	Mar. 1	Apr. 30	July 1	Aug. 30
Tomatoes	.6	.6	45	57	-	-	Mar. 1	May 10	July 15	Oct. 10
Fresh vegetables	5.3	5.5	188	235	-	-				
Tobacco	2.0	4/	2	4/	-	-	Apr. 15	June 30	July 15	Sept. 30
Cultivated meadows 5/	16.2	20.3	837	1,121	-	-	-	-	-	-
Natural meadows 5/	99.2	67	2,582	1,899	-	-	-	-	-	-
Pastures 5/	174.0	187.6	1,881	2,227	-	-	-	-	-	-
Vineyards (6/	22.3	6/ 22.6	7/ 59	7/ 66	-	-	-	-	July 15	Oct. 5
(8/	31.6	8/ 31.1	9/ 464	9/ 507	-	-	-	-	Sept. 10	Oct. 20
Olive trees 6/	8.2	6/ 7.8							Nov. 10	Dec. 25
8/	8.9	8/ 9.1	10/	9	-	-	-	-		
Deciduous Fruits	-	-	135	128	-	-	-	-		
Nuts	-	-	10/	7	-	-				

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " spring corn only.
3/ " " " " " " common potatoes only.
4/ Not available.
5/ All production in "normal hay".
6/ In orchards and groves.
7/ Grapes for direct consumption.
8/ In open fields.
9/ Wine, 1.000 Hls. 10/ Does not include chestnuts. 11/Olive Oil

Office of Foreign Agricultural Relations. Data from Annuario Statistico Italiano.

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VENEZIA GIULIA and ZARA

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	8,813	1,633	15,117	125,930	59,910 1/	62,410	143,156	19,163
1940	8,000	1,000	14,000	138,000	2/	69,000	147,000	23,000

B. Live Weight by Classes of Livestock (March 1938)

Horses, mules, asses	All Cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
74,861	588,257	62,606	64,650	9,160

C. Livestock Products (1937)

Cow's milk 3/	Butter	Cow's and sheep cheese	Cottage cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
924.7	7.6	6.0	.4	65

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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VENEZIA GIULIA and ZARA

III. Fertilizer Consumption, average 1936-38 and 1940

Fertilizer	1936-38	1940
	Qls.	Qls.
Superphosphates	107,592	158,311
Ground phosphates	1,545	1,350
Basic slag	267	1,100
Ammonium sulphate	10,900	16,025
Calcium cyanamide	8,013	9,100
Ammonium nitrate	316	305
Calcium nitrates	9,118	12,055
Sodium nitrate	6,503	8,390
Potassium salts	6,644	14,885
Potassium by-products 1/	200	---
Leucite	---	---
Ammonium phosphate	2,236	2,012

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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VENEZIA GIULIA and ZARA

IV. Consumption of Plant Sprays
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of soda	-	Pyrethrum	320
Containing arsenite	-	Rotenone	333
Arsenates	9,550	Fluorine silicate	93
Sulphides and polysulphides	567	Oxychloride of copper	109,100
Carbon bisulphide	1,891	Other copper products	-
Tar oil	1,100	Sulphur	675,408
Tar oil products	13,097	Copper sulphur	492,250
Zinc phosphide	1,300	Iron sulphate	10,867
Zinc chloride and sulphate	-	Copper sulphate	826,600
Nicotine extract, common	3,621		
Nicotine extract, superior	166		
Nicotine, powder	53		
Nicotine sulphate	46		
Nicotine soap	138		
Monital, nicotine	466		
Other nicotine products	1,244		
Quassio wood	375		
Quassio extract	257		

Office of Foreign Agricultural Relations. Based on official statistics. 4237

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7. Emilia

Types of Farming

Emilia stretches from the northern slopes of the Upper Appennini to the right bank of the Po River; thus, with regard to location the region partakes both of the features of the Po Valley and of those of the mountains of Central Italy. Nevertheless, because of the nature of the relief and the character of the watercourses, the agricultural economy of Emilia widely differs from that of other regions of the Po Valley and has distinct features of its own.

Agriculture is of greater relative importance in Emilia than in any other region of Northern Italy. Over one-fourth of the population is engaged in agricultural pursuits, with 58.5 percent of the gainfully employed obtaining their livelihood from farming. The processing of agricultural commodities is the region's main industrial activity. The few and comparatively unimportant heavy industries produce essentially farm machinery while, with the exception of gunpowder, fertilizers are almost the sole product of the chemical industries. Thus the whole economic life of the region is dependent upon agriculture to an extent that is quite exceptional for Northern Italy.

Watercourses and other topographical features afford good natural boundaries for the agricultural regions. In the upper part of Emilia the rivers are tributaries of the Po River. West of Bologna the rivers flow directly to the Adriatic Sea. All rivers have a very irregular character, being fed from the mountain snows rather than from glaciers. They are all torrential watercourses in flood or freshet in the rainy months and almost without water in the middle course during the summer. All rivers carry enormous quantities of silt, which is often used in sedimentation projects. The tributaries of the Po often lie below the level of the latter, a circumstance which makes both discharge and drainage difficult and, at times, impossible. Thus the plains of Emilia lack irrigation, which is the mainstay of agriculture in neighboring Lombardy; and problems of drainage and land reclamation are exceptionally important.

Several agricultural regions can be distinguished: first, the provinces of the Po Valley - Piacenza, Parma, Modena, Reggio, Bologna; second, the province of Ferrara, which lies entirely in the alluvial plains of the lower courses of the Po and Reno; and finally, the provinces of Ravenna and Forli in the southeastern part of Emilia.

The western provinces are similar to Lombardy with regard to climate but, because there is little or no irrigation available and because soils are predominantly of the clay type, agricultural production in this area has distinctive features.

From the mountains to the plains the size of holdings is essentially small, but the relationship between labor and entrepreneur varies greatly from farm to farm. Two types of contracts deserve specific mention: first, the share-lease contract of the type so common in other regions of Italy, with operator and landlord sharing equally in all costs and returns; second,

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the so-called boaria, an arrangement common on somewhat larger holdings, by which the operator shares with the landlord in the returns from industrial crops and furnishes the labor needed for feed crops. In both cases each holding is an independent unit and the peasants live in isolated farmsteads.

The crops vary from the plains to the mountains. Farms in the plains (roughly north of the Emilia Road) are poorly drained and rely on pumping stations most of the year. Consequently, the fields have been leveled and shaped so that moisture is stored in the ground during the dry months. This gives the fields a most typical appearance, very much like the top of an old-fashioned trunk.

Industrial raw materials such as hemp and sugar beets open the rotation. In the province of Parma tomatoes for paste are the most important field crop, while tomatoes for direct consumption are produced in the provinces of Modena and Bologna. Corn outranks the other crops in acreage, and supplies food to the peasants as well as feed for the cattle and swine. Wheat is extremely important, often occupying one-half of the area in cultivation. The feed crops are the legumes that thrive even in the absence of irrigation, especially alfalfa and white clover.

The perennial crops are seldom grown by themselves. More often, long rows of vineyards stretch on the two longer sides of the field. The support for vines comes mostly from elm trees. The silkworm industry has some importance in the province of Reggio.

The hills have large areas in pastures. Here corn takes the place of all of the industrial crops with the exception of tomatoes, which in this section are produced for direct consumption more than for processing. Vineyards are grown mostly in groves.

The mountains present a strange association of crops with rye, potatoes, and corn found together with fruit trees. The pastures, though not comparable with those of the Alps, are fairly productive but are grazed mostly by sheep. Chestnuts are said to be the cornerstone of the mountain economy.

The northernmost part of the province of Bologna and the whole province of Ferrara are recently reclaimed areas: the former has been reconditioned through sedimentation, the latter through drainage. The reclamation was undertaken by large corporations which, in most cases, have retained the ownership of the land. In Bologna and in the western part of the province of Ferrara, farms have gradually been provided with buildings, water, etc., so that the area is now densely populated with scattered farmsteads. The eastern part of the province of Ferrara comprises enormous holdings operated with sharecroppers and hired labor. The main crops are rice, hemp, sugar beets and wheat. Most farms produce hay in excess of their needs, so that there is an active trade with the livestock-growing regions of the Po Valley.

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A typical feature of the province of Ferrara is the lack of tree crops. Not only do farms lack vineyards and fruit trees, but also the common trees of northern Italy, poplars, willows, and elms, are rare, so that there is a chronic shortage of wood for fuel.

Altogether the living conditions of the peasants in the province of Ferrara are extremely poor. Elsewhere in Italy, rural poverty stems from primitive farming systems or from unfavorable conditions of soil and climate. Here rural poverty is in a sense related to the pattern of land tenure and more particularly to contractual relations between labor and entrepreneur. From a technological standpoint little criticism can be made of the large farms of this area. Mechanization has been pushed to the limit and all advantages of large-scale production have been thoroughly exploited. From a social standpoint the contrast between the all-evident wealth of the area and the poverty of the peasant is worthy of attention, especially because the experience of the past has shown that the local population is fully aware of existing inequalities and, in times of change, is inclined to seek remedy by means of violent action.

The provinces of Ravenna and Forli are characterized by greater uniformity in land tenure arrangements, which are mostly of the one-half share lease type. Consequently, perennial crops assume greater importance. Fruit trees are widespread in the province of Ravenna, especially around Massalombarda, a huge fruit-growing center, where farms are somewhat similar to the fruit farms of California. Peaches, pears and plums are the main fruits produced.

Conversely the province of Forli has developed the cultivation of grapes and olives. The former are mostly used in winemaking, which in this province is essentially a cooperative undertaking. Forli is one of the very few provinces of Italy where the processing of grapes does not, in most cases, take place on the farm, but in assembling centers. This explains the many industries concerned with the exploitation of by-products, dregs, seeds, etc.

Livestock

Much of the wealth of Emilia comes from the livestock industry, not only because of the number and size of animal enterprises but also because of the value of products, especially cheese and pork products. This indeed appears remarkable if consideration is given to the fact that those very conditions which led to the development of the livestock industry in Lombardy obtain in Emilia to a much lesser degree and, at times, are lacking.

Horses, mules and asses. - Horses on Emilian farms are used for lighter work only, especially for the cutting of fodder, the cultivation of industrial crops, and the hauling of products to factories and markets. In the province of Piacenza, where soils are somewhat lighter, horses are used for all purposes.

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Asses and mules are, naturally, the draft and pack animals of the mountains. Altogether they are negligible in numbers except in the upper valleys of the Appennini.

Cattle. - In number and value of cattle Emilia is second to Lombardy. When, however, the importance of the cattle industry is gauged on the basis of the value of animal products, the 1,300,000 head of Emilia exceed any other regions of Italy.

Cattle are mostly dairy animals of the Brown Swiss breed in the provinces of Piacenza and Parma, the latter famous for its cheese. Modena and Reggio have triple-purpose native cattle. The local breeds, however, yield considerable quantities of meat and milk. Of the two, the better is the one raised in the province of Modena (124,000 head) with yields of meat that average 56 percent of the live weight.

The provinces of Bologna, Ravenna, and Forli are characterized by a dual-purpose breed for draft and meat, which is referred to as Romagnolo. This breed not only supplies powerful draft animals, but also from calves, herd cullings and oxen contributes a significant share of the meat production of Italy.

The province of Ferrara raises mostly draft animals. Milk production is so scarce that the feeding of the calves at times becomes a difficult problem. Both around Bologna and Ferrara are to be found industrial dairies for the production of fluid milk, mostly from Brown Swiss cows.

Strictly connected with the cattle industry is the problem of feed supply, which is of vital importance in this region. It has been stated before that the pastures in most parts of Emilia are not irrigated. Thus alfalfa rather than ladino clover is the main feed crop, and haymaking rather than ensilage the current practice for the preservation of fodder.

The upper provinces tend to have a surplus of cattle, a circumstance which in case of droughts in the Spring creates difficult problems. In the lower provinces, especially Ferrara, there is usually a surplus of fodder which is sold both in Lombardy and in the section around Piacenza.

In the province of Forli fodder is kept in special silos of the pit type; instead of the partial wilting used in the Crema silos, straw is added and mixed with the legumes.

Swine. - In numbers of swine Emilia leads all other regions of Italy. As a phase of utilization of industrial by-products and of the crops grown, swine production in Emilia has developed somewhat unique features.

The young pigs, partly raised locally and partly purchased in central Italy, are first fed with whey and grain until they reach the age of six

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months. They are then fattened on a grain diet and sold to large packing plants. From this combination of enterprises develop the typical Emilian undertakings, with grains, tomatoes, hogs and cheese as the main products.

Sheep. - Emilia has over one-fourth of the sheep of northern Italy (229,000). Besides the province of Forli, where sheep find large but meager pastures on the hills and mountain slopes, the sheep industry in the other provinces is based on migration. The flocks spend the warm months on the slopes of the Appennini. In the Fall they migrate to the plains, often in the newly reclaimed areas, where the sheep graze the grass-covered ridges of levees and canals.

Food Problems

Emilia has sizable surpluses of food products and is exceptionally well equipped with processing facilities. The main problems of a wartime economy are those of insuring an adequate supply of corn for hogs and feed concentrates for dairy cattle. Impairment of the swine and cheese industry would cause serious economic dislocations.

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EMILIA

Agricultural Statistics

I Main Crops

Commodity	Area Harvested		Production		Yield per Ha.		Planting Time		Harvesting Time	
	1933-37	1940	1933-37	1940	1933-37	1940	From	To	From	To
	1000 Ha.	1000 Ha.	1000 Qls	1000 Qls	Quintals	Quintals				
Wheat 1/	508	485.5	10,761	10,024	21.1	20.6	Sept. 20	Nov. 5	June 10	Aug. 5
Rye	1.8	1.8	31	32	17.0	17.9	Sept. 25	Oct. 20	June 10	July 20
Barley	10.1	9.2	136	139	13.5	15.1	Sept. 20	Oct. 31	June 15	July 20
Oats	9.2	6.6	159	118	17.2	17.8	Feb. 15	Apr. 15	July 25	Aug. 31
Rice (rough)	6.8	12.5	403	821	59.8	65.6	April 15	May 10	Sept. 15	Oct. 31
Corn 2/	94.6	77.9	2,372	2,281	25.3	29.7	Mar. 25	Apr. 30	Aug. 15	Sept. 30
Horse beans	8.3	5.4	107	55	12.9	10.2	Oct. 10	Nov. 15	June 1	Aug. 15
Kidney beans	36.2	27.3	85	90	-	-	Mar. 20	May 31	July 25	Aug. 31
Other legumes	-	-	19	12	-	-	-	-	-	-
Potatoes 3/	15.4	14.1	1,612	2,004	108.2	140.9	Mar. 15	Apr. 25	June 15	Aug. 20
Tomatoes	9.6	11.3	2,374	3,016	-	-	Apr. 1	Apr. 30	July 25	Aug. 20
Other vegetables	10.4	6.8	1,275	849	-	-	-	-	-	-
Sugar beets	37.8	68.9	9,787	23,165	261.4	336.2	Mar. 10	Apr. 30	Aug. 15	Sept. 30
Hemp	39.4	4/	443	4/	-	-	Feb. 20	Apr. 20	July 20	Aug. 31
Flax	.7	1.6	6	18	-	-	Mar. 10	Mar. 31	June 15	Aug. 15
Tobacco	1.5	4/	25	4/	-	-	May 5	June 20	Aug. 15	Sept. 15
Cultivated meadows 5/	495.4	416.9	30,374	35,385	-	-	-	-	-	-
Natural meadows 5/	60.4	50.1	3,278	3,221	-	-	-	-	-	-
Pastures 5/	111.6	106.7	725	759	-	-	-	-	-	-
Vineyards (6/)	18.2	19.2	285 7/	235	-	-	-	-	Aug.-1	Oct. 20
Vineyards (8/)	597.7	695.1	3,835 9/	4,033	-	-	-	-	Sept.-10	Oct. 20
Olives (6/)	.6	.7	7	4	-	-	-	-	Nov. 1	Dec. 31
Olives (8/)	14.5	15.6			-	-	-	-	-	-
Deciduous Fruits	-	-	1,070	1,543	-	-	-	-	-	-
Nuts	-	-	411 10/	14	-	-	-	-	-	-

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " spring corn only.
3/ " " " " " common potatoes only.
4/ Not available.
5/ All production in "normal hay."
6/ In orchards and groves.
7/ Grapes for direct consumption.
8/ In open fields.
9/ Wine, 1,000 of Hls.
10/ Does not include chestnuts.
11/ Olive oil.

Office of Foreign Agricultural Relations. Data from Annuario Statistico Italiano.

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EMILIA

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	65,796	6,037	27,867	1,258,846	1/ 588,320	497,957	226,820	10,623
1940	62,000	5,000	28,000	1,306,000	2/	490,000	230,000	12,000

B. Live Weight by Classes of Livestock (March 1938)

Horses, mules, asses	All Cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
378,014	5,761,446	485,809	92,908	5,582

C. Livestock Products (1937)

Cow's milk 3/	Butter	Cow's and sheep cheese	Cottage cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
3,318	102.6	381.6	5.4	173.8

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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III. Fertilizer Consumption, average 1936-38 and 1940

Fertilizer	1936-38	1940
	qls.	qls.
Superphosphates	2,116,702	2,518,397
Ground phosphates	35,824	29,915
Basic slag	96,802	42,140
Ammonium sulphate	108,434	302,348
Calcium cyanamide	419,206	358,035
Ammonium nitrate	21,898	37,380
Calcium nitrates	214,392	311,822
Sodium nitrate	132,180	210,458
Potassium salts	21,798	64,372
Potassium by-products 1/	400	-
Leucite	-	-
Ammonium phosphate	27,727	11,569

Office of Foreign Agricultural Relations. Based on official statistics.
1/ From sugar factories.

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EMILIA

IV. Consumption of Plant Sprays
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of soda	16,918	Pyrethrum	2,463
Containing arsenite	-	Rotenone	467
Arsenates	86,949	Fluorine silicate	1,104
Sulphides and polysulphides	8,800	Oxychloride of copper	654,567
Carbon bisulphide	100,511	Other copper products	-
Tar oil	2,000	Sulphur	2,992,166
Tar oil products	116,090	Copper sulphur	954,167
Zinc phosphide	300	Iron sulphate	219,557
Zinc chloride and sulphate	-	Copper sulphate	25,960,215
Nicotine extract, common	44,835		
Nicotine extract, superior	4,811		
Nicotine powder	7,123		
Nicotine sulphate	4,022		
Nicotine soap	1,115		
Monital, nicotine	8,370		
Other nicotine products	9,615		
Quassio wood	181,987		
Quassio extract	7,672		

Office of Foreign Agricultural Relations. Based on official statistics.

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CENTRAL ITALY

1. Tuscany

Types of Farming

Agriculture and mining are Tuscany's main industries. The farming population represents about one-fourth of the total and 48 percent of the gainfully employed. In addition, much of the wealth of the region comes from food processing industries, Tuscany leading other Italian regions in the quality of some agricultural products.

A division of Tuscany into type-of-farming regions must be an incomplete and rudimentary one. Because of diversity in the nature of soils, climate, and drainage conditions, the agricultural economy of the region varies greatly from place to place. With regard only to broad general features, it is possible to distinguish four main regions:

a) The valleys of the Arno and Serchio rivers and the coastal plains of the Versilia;

b) The coastal plains of the Maremma from Cecina to the boundaries with Latium;

c) The Appennini region and the province of Siena;

d) The rugged region of the Alpi Apuane and Garfagnana.

Land tenure arrangements are essentially the same all over Tuscany, while the size of holdings exhibits great variations. The most important form of tenure arrangement is the contract of mezzadria, frequent also in other parts of Central and Northern Italy. Because of its importance in Tuscany, it will be discussed at length in this section.

The contract centers around a holding referred to as podere, sufficient in size for the needs of the average peasant family. The holding is a well-identified unit, with fields thickly interplanted with olive trees and vineyards and provided with farm buildings (peasant dwellings, barn, silo, hay loft, etc.). The podere may be isolated or part of a large estate referred to as fattoria. In either case it is managed as an independent unit. The fattorie are especially important in the provinces of Siena, Pisa, and Florence, where from 66 to 53 percent of the total agricultural land is held by these estates.

Under the contract of mezzadria, the landlord and the tenant form a partnership to which they contribute, respectively, the land and the labor needed in the enterprise. All expenditures are shared on a fifty-fifty basis. Where necessary, operating capital is provided by the landlord, no interest being charged the tenant. The contract is nominally from year to year, with a six months' notice required for its termination. Actually, however, these clauses are often modified by agreements between the parties.

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While stock-share leases are to be found in many other Italian regions, nowhere do they assume the special significance they have in Tuscany. In this region they have become part and parcel of the agricultural economy, greatly affecting types of farming, farming practices, and the whole social structure of the agricultural population.

Any discussion of the fairness and social desirability of this type of agreement would be outside of the province of this handbook. Suffice it to say that, over several centuries of application, landlord-tenant relationships in Tuscany have crystallized around this contract, making it extremely difficult to introduce changes of any nature in the organization and operation of the production unit. As a result, Tuscany's agriculture is somewhat of a paradox. An intelligent, progressive, skillful agricultural population is found side by side with obsolete machinery and, by and large, a degree of inefficiency in farm practices, feeding methods, and even combination of enterprises. These conditions are particularly evident where the increase in farm population has been accompanied by a decrease in soil fertility. Economic and social maladjustments have in the past led to violent movements among the rural population. Conversely, where farm organization has been in a state of flux for many years - such as in the Maremma - farming methods compare favorably with those of the Po Valley.

The valleys of the Serchio and Arno rivers comprise Tuscany's main agricultural and industrial areas. The size of production units tends to be small (5 to 15 hectares), and the Fattorie themselves seldom exceed 100 hectares in size. In the plains, field crops are the most important group of enterprises, while on the hills the tree crops and the vineyards dominate the farm economy. Wheat is by far the most important of field crops, being an important source both of food for the farm family and of cash income. It often covers one-half of the land in cultivation, absorbing much of the capital and labor available. Climate and soil are altogether ill-suited to this crop. If rains occur in the fall, planting has to be postponed until spring, with harmful effects upon yields. Conversely, good weather conditions in November may lead to excessive growth of the young plants and make it necessary to prevent further development by harrowing the fields or having sheep tread upon the seeded land. Corn, tobacco, and horse beans are the main rinnovi.

Practices followed in the production of feed crops constitute the main weakness of Tuscan agriculture. Besides a few legumes which have been grown for centuries, only timid attempts have been made to introduce alfalfa and the better varieties of clover. Instead, farmers in this area have resorted to the use of cover crops. After the cereal crops have been harvested, rape, colza, and small grains are planted to provide fodder for the winter. Thus, there is a continuous drain on the fertility of the soil, and the timeliness of plowing for the rinnovo is greatly impaired.

To conserve the cover crops many farms have simple types of trench or pit silos. Others have adopted the so-called universal silo, which is of the pit type, with concrete-covered brick walls. The top of the silo, about

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1.5 meters above the ground, is equipped with a lid to insure air-tight sealing; but in most cases the conservation of the ensilage is achieved by spraying it with a solution of sulphuric and hydrochloric acid, just as is done in some of our dairy states with the A.I.V. system.

Among tree crops, olive trees predominate, yielding a product of exceptionally high quality. Before the establishment of compulsory pools, many estates not only processed but also bottled and sold their oil. Vineyards are the object of jealous care, but the quality of their products varies greatly from farm to farm. This area includes the Chianti belts, where musts from three kinds of grapes are mixed to make the world-famous wine of the same name.

The coastal fringe of the Versilia is a region of orchards and umbrella-pine forests. The mild climate and the sandy soil are suitable for the production of early vegetables and truck crops (peas, asparagus, strawberries, etc.)

The plains of the Maremma were once a malaria-infested region, almost depopulated, where cattle roamed in the wilderness. Private entrepreneurs and government agencies have accomplished great land reclamation works so that part of the area is now under cultivation. The typical farm here presents some resemblance with the latifundia of Sicily. Durum wheat is the main crop, accompanied in the rotation by sugar beets, castor beans, and tobacco. The estates are divided into units of over 40 hectares in size and are operated partly with share-tenants and partly with hired labor. These farms are highly mechanized, with extensive use of American tractors, binders, combines, etc. Tree crops are so unimportant that there is often a shortage of wood for fuel.

The settlers are either native farmers (on private enterprises) or ex-service men (on the Government project of Alberese). Economic and social conditions in the Maremma are altogether unsatisfactory. Both reclamation and settlement have been carried on at too rapid a pace. Many farms do not produce enough to support the operator's family and frequent droughts make yields all over the area largely a matter of chance.

The Appennini and the province of Siena constitute an area where the problem of soil erosion acquires vital importance. Under normal farming practices, erosion and leaching soon destroy the fertility and the farm soil itself. While such practices as terracing and contour plowing are commonly adopted in other parts of Tuscany, soil erosion assumes in this area alarming proportions. Furthermore, certain practices that have been adopted from ages past to control noxious weeds and to modify the acidity of the soil are definitely harmful to soil fertility. Finally, recent changes in the tenure status of mountain pastures by which communal holdings were destroyed have also impaired the economic conditions of the area. In short, the Appenini and, to a lesser degree, the province of Siena, present all of the problems of the Italian mountains in their worse aspects.

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The size of holding is here larger than in other parts of Tuscany, often reaching 100 hectares per podere. Only a fraction of the area is in cultivation, with a simple rotation of corn or potatoes, wheat or rye, sulla or sainfoin. Wheat is mostly spring wheat because fall planting is extremely difficult. Productivity could be greatly enhanced by mechanization and by use of high-grade fertilizer, but shortages of capital have prevented any modification of currently adopted practices. Forests and scanty pastures comprise the rest of the farming unit.

Most of the problems of Garfagnana and Alpi Apuane accrue directly from the importance of quarries and mines in the economy of the area. The great fluctuations in output and employment that characterize extractive industries periodically made the mining population dependent upon farming for its livelihood. Thus the whole area exhibited acute economic and social maladjustment.

The rugged land of the area is divided in small holdings, with peasant ownership assuming greater importance than elsewhere in Tuscany. Much of the land is terraced and thickly planted in olive trees and vineyards. Potatoes, wheat, and horse beans are the main crops.

Livestock

Except in the province of Apuania, livestock numbers vary little from province to province. In the less intensively cultivated areas, pastures and wooded land sustain most of the livestock. In the more intensive area where all of the land is in cultivation, skillful management of available feed crops and utilization of by-products (grape dregs, leaves, twigs, etc.) offset the lack of pasture land.

Horses, mules, and asses.- Tuscany has over 35,000 horses, mostly used off the farm to provide transportation to the markets and urban centers. While in the plains of the Po Valley the bicycle is the principal means of personal conveyance, horses and buggies replace it on Tuscan farms. Horses are usually small animals of native breeds, among which the Maremmane has excellent, hardy specimens both for saddle and carriage.

Asses number over 40,000, with over one-fourth of the total in the Maremma. There are 5,000 mules, mostly in the provinces of Grosseto and Arezzo.

Cattle.- The total cattle population of Tuscany numbers only 480,000 head, over one-fifth of which are in the province of Florence. This comparatively low number is the direct result of poor natural pastures, both in the Maremma and in the mountains, and of the scant importance of feed crops in the rotations adopted in the plains and hill region.

About 40 percent of all the cattle and 60 percent of all cows are used as draft animals, and multiple-purpose breeds prevail.

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Dual-purpose cattle belong mostly to the Chianina and Maremmana breeds. The former, raised in the valley of the Arno, is a large, fast-growing breed often ill-suited for draft, with a very low production of milk. The latter is a hardy, native breed, resistant to diseases, with beef yields of 50-52 percent; it is typical of the Maremma and of some areas in the province of Arezzo.

Multiple-purpose cattle comprise the Simmenthal breed in the province of Florence and excellent native breeds in the provinces of Pisa and Lucca. The Garfagnana raises a native breed with good aptitude for milk production.

Dairy cattle are raised in Tuscany mainly to supply the urban markets, because the other breeds seldom yield milk in excess of the requirements of the calves. Brown Swiss cattle are raised around Florence, Lucca, and Pistoia, while Holstein cattle are common in the Versilia. Most dairy cattle in Tuscany are kept in the stable and seldom sent out for grazing. Only 3 percent of the milk produced in the region is converted into dairy products, the cheese industry assuming some importance in the province of Lucca.

Swine.- Large tracts in forests, with meager pastures and underbrush, have contributed to the development of a typical Tuscan enterprise: the raising of young pigs (often hybrids of the native Cinta breed with Large White or Poland China) to be sold for fattening on Piedmont's and Emilia's farms.

This practice is common throughout the region but assumes especial importance in the province of Siena, where young pigs feed on acorns, chestnuts, and other wild fruits of the forest and bushes.

A few pigs are also raised on all farms for family consumption and are fattened with corn and grain by-products. Typical of Tuscany is the wasteful practice of feeding bran to hogs, although this feed is poorly utilized by swine.

Sheep and goats.- In number of sheep Tuscany ranks third among all regions of Italy, with over 1,000,000 head reported for 1938. Sheep raising is based on mountain pastures throughout the summer and the grazing grounds of the Maremma in the winter. It is thus a migratory industry, without the extensive pasture-roads that characterize Puglia and Abruzzi. Instead, the ample river beds are used for the movement of flocks.

Over one-fourth of all sheep are raised in the province of Grosseto, where large flocks of over 200 head are the most common type of enterprise. In the other provinces, especially Arezzo and Florence, smaller flocks (100 head) predominate. Wool is the main product, supplying raw materials to the large textile mills of Prato, in the province of Florence. Wool production averages 1,000 ~~xxx~~ metric tons per year.

Consumption of mutton and lamb in Tuscany is far below what could be expected on the basis of the importance of the sheep industry. On a per

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capita basis it is somewhat lower than for Italy as a whole. Lamb consumption represents over 70 percent of the total. Sheep milk is processed into cheese and soft-curd products only in the province of Grosseto.

Poultry.- Poultry and egg production are among the important sources of income on Tuscan farms. Industrial poultry-raising is rare; chickens are usually allowed to roam at will on the farmstead grounds. Besides the Leghorn, a native breed, the Valdarno, is common. The latter is raised without coops or other facilities, with the fowls roosting in the barn and in the hayloft.

Food Problems

The food situation of Tuscany is indeed a favorable one. The diversified farming practiced all over the region insures abundant supplies of fruits and vegetables, of meat and grains. The urban centers themselves are relatively small in size, and the suburbs supply most of the requirements of their population. Most Tuscan cities have become the natural marketing center for the surrounding areas and are adequately provided with storage and processing facilities.

The altogether unimportant grain surpluses are shipped to Sardinia, Latium, and Liguria, while early vegetables are shipped to Verona and hence to foreign markets.

The war economy of Tuscany, however, may present complex problems. The first factor in this connection is the tendency toward self-sufficiency, not only of the peasant family, but also of the land-owners. Although the latter live in cities even in peacetime, a steady flow of farm supplies reached the urban household as a direct result of the crop-sharing agreements. Presumably, in wartime, household consumption of home-produced food has increased especially because most Tuscan farms are well-equipped with processing facilities. For instance, while bread-making has been abandoned on most farms of Northern Italy, baking ovens still exist in Tuscany even on commercialized farms. The second important factor is the higher level of consumption that had been achieved by the rural population in the Arno and Serchio valleys. The peasants will be inclined to maintain such levels in spite of high official prices and strict regulations. Finally, disregard of rules and ordinances is a distinctive feature of the Tuscan population, clearly evinced by crime statistics, in which minor breaches far exceed the average for the Kingdom.

By and large, hoarding and illegal consumption will create problems of great significance in connection with the supply of olive oil, potatoes, and animal products. Olive oil is merely a seasoning product in most Italian regions, but in Tuscany it constitutes an essential item of the dietary, both of the rural and the low-income urban groups. While domestic production is more than sufficient to meet requirements, much of Tuscany's oil is of high quality and therefore too expensive for low-income consumers. Thus the region exported oil in bottles (mostly from the province of Lucca) and imported oil in bulk from Puglia and Sicily.

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Mention should also be made of the economic problems of the low-income groups in Florence. In sharp contrast with the economic status of rural groups, industrial, and unskilled workers in Florence live in abject destitution and quasi-starvation. Consideration might be given to special relief distribution of protective foods in the section on the left bank of the Arno River.

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TUSCANY

Agricultural Statistics

I. Main Crops

Commodity	Area Harvested 1933-37 (1000 Ha)	Area Harvested 1940 (1000 Ha)	Production 1933-37 (1000 Qls)	Production 1940 (1000 Qls)	Yield per Ha. 1933-37 (Quintals)	Yield per Ha. 1940 (Quintals)	Planting Time from	Planting Time to	Harvesting Time from	Harvesting Time to
Wheat 1/	354.6	359.2	4,946	5,291	14.0	14.7	Sept. 25	Nov. 30	June 20	Aug. 15
Rye	5.7	6.3	72	76	12.7	12.1	Sept. 10	Nov. 15	June 10	Aug. 10
Barley	7.2	9.2	89	116	12.3	12.6	Sept. 10	Nov. 20	June 8	Aug. 15
Oats	32.5	36.3	480	522	14.8	14.4	Sept. 15	Nov. 15	June 15	July 31
Corn 2/	70.6	70.1	1,213	1,454	16.8	20.2	Mar. 20	May 1	Aug. 10	Oct. 5
Horse beans	38.9	43.1	435	321	11.2	7.4	Sept. 1	Oct. 30	June 1	Aug. 20
Kidney Beans	26.7	26.0	139	170	-	-	Mar. 20	May 31	June 1	Oct. 15
Other dried legumes	-	-	102	97	-	-	-	-	-	-
Potatoes 3/	23.0	23.6	1,613	2,346	69.5	99.8	Feb. 28	April 10	June 20	Aug. 20
Tomatoes	3.1	2.6	542	594	-	-	Mar. 15	May 31	Aug. 15	Oct. 10
Other fr. vegetables	12.4	12.2	903	824	-	-	-	-	-	-
Sugar beets	4.8	8.9	820	2,088	169.6	234.8	Mar. 1	May 10	Aug. 5	Sept. 20
Tobacco	1.9	4/	34	4/	-	-	Apr. 1	May 31	Aug. 1	Sept. 30
Cultivated meadows 5/	219.4	234.6	8,640	10,969	-	-	-	-	-	-
Natural meadows 5/	95.0	12.2	1,262	454	-	-	-	-	-	-
Pastures 5/	112.7	125.6	916	12,888	-	-	-	-	-	-
Vineyards	6/ 27.4	6/ 26.5	7/ 276	291	-	-	-	-	July 9	Oct. 15
	8/ 458.8	8/ 453.2	9/ 3,772	3,417	-	-	-	-	Sept. 12	Oct. 10
Olives	6/ 37.8	40.4	179 //	222	-	-	-	-	Nov. 10	Mar. 31
	8/ 197.0	197.0	-	-	-	-	-	-	-	-
Deciduous fruits	-	-	295	387	-	-	-	-	-	-
Nuts	-	-	1,138	10/ 15	-	-	-	-	-	-
Citrus fruits	-	-	4	2	-	-	-	-	-	-

Office of Foreign Agricultural Relations. Based on official statistics.

1/ Yields, planting and harvesting times for winter wheat only.
2/ " " " " " " spring corn only.
3/ " " " " " " common potatoes only.
4/ Not available. 5/ All production in "normal hay." Changes have been introduced in the classification of meadows and pastures in recent years. 6/ In orchards and groves. 7/ Grapes for direct consumption.
8/ In open fields. 9/ Wine (1,000 of Hls.) 10/ Does not include chestnuts. // Olive oil.

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TUSCANY

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	37,180	6,013	44,353	467,547	1/ 175740	274,870	978,613	25,590
1940	32,000	5,000	43,000	485,000	2/	297,000	998,000	22,000

B. Live Weight by Classes of Livestock (May 1938)

Horses, mules, asses	All cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
265,038	2,346,087	221,964	361,581	10,763

C. Livestock Products (1937)

Cow's milk 3/	Butter	Cow's and sheep cheese	Cottage cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
2,120	3.4	42.3	9.5	686.8

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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TUSCANY

III. Fertilizer Consumption, average 1936-38 and 1940

Fertilizer	1936-38	1940
	Qls.	Qls.
Superphosphates	1,040,975	1,098,069
Ground phosphates	12,036	8,291
Basic slag	7,106	2,150
Ammonium sulphate	60,896	95,866
Calcium cyanamide	186,782	171,918
Ammonium nitrate	13,614	18,997
Calcium nitrates	89,744	134,557
Sodium nitrate	48,403	42,827
Potassium salts	5,335	10,039
Potassium by-products 1/	500	---
Leucite	350	300
Ammonium phosphate	27,315	25,479

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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TUSCANY

IV. Consumption of Plant Sprays
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of Soda	4,755	Pyrethrum	3,592
Containing arsenite	46,874	Rotenone	1,333
Arsenates	68,757	Fluorine silicate	1,305
Sulphides and polysulphides	27,960	Oxychloride of copper	431,772
Carbon bisulphide	277,006	Other copper products	10,000
Tar oil	26,771	Sulphur	3,370,343
Tar oil products	19,905	Copper sulphur	778,142
Zinc phosphide	1,867	Iron sulphate	164,550
Zinc chloride and sulphate	408	Copper sulphate	12,791,338
Nicotine extract. common	26,132		
Nicotine extract. superior	10,330		
Nicotine powder	3,880		
Nicotine sulphate	107		
Nicotine soap	513		
Monital, nicotine	10,271		
Other nicotine products	6,108		
Quassio wood	13,825		
Quassio extract	3,861		

Office of Foreign Agricultural Relations. Based on official statistics.

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2. Marche

Types of Farming

Agriculture assumes greater importance in the economy of the Marche than in any other region of Northern and Central Italy. Over 30 percent of the total population and 66 percent of the gainfully employed are engaged in agricultural pursuits. While in most parts of Italy such predominance of agriculture is merely the indication of an undeveloped economy and of a lack of alternative employment opportunities, Marche, because of favorable natural and institutional conditions is a very prosperous region with efficient farm enterprises and high standards of living.

The region comprises the valleys of the numerous watercourses that flow from the Central Appennines to the Adriatic Sea. Altitude affords the basis for a differentiation of types-of-farming areas.

The mountains are a section of pastures and woodlands where cultivated areas are gradually being extended at greater altitude. The population is concentrated in small villages, usually in the lower part of the watershed, and earns its livelihood from farming and livestock industries. Pasture and wooded lands usually belong to absentee landlords or to the commune and are leased by them to individuals or to groups of peasants. Tillable land also belongs to absentee landlords and is operated by peasants on a one-third share arrangement. A vast area of pasture and tillable land belongs to associations of peasants, established in medieval times, with membership restricted to a few families. The associations hold the land as property in common, and each year portions thereof are assigned to members for cultivation. The population of most villages also retains lesser property rights on privately owned land on the higher mountain slopes. These servitudes usually consist of grazing rights for a few animals and of the right of gathering faggots for family needs. Potatoes, wheat and horse beans are the main crops. Rye production is negligible and limited to the province of Ascoli Piceno.

The upper hills comprise the areas between 800 and 500 meters above sea level and are characterized by the predominance of peasant ownership. Holdings are small or very small, often comprising separate tracts. Larger holdings are operated under the share-lease arrangement known as mezzadria. The natural pastures that once covered this area have been destroyed and the land is now cultivated in a rotation of corn, wheat, and clover crops. Grapes are the most important perennial crop. While the mountains have poor roads and tend toward self-sufficiency, farms in the upper hills and in the other areas are highly commercialized.

The lower hills (under 500 meters above sea level) have the most favorable climatic conditions for diversified farming. The land is divided in farms of 10 to 20 hectares operated by share tenants. Most farms are operated as independent units in contrast with the Tuscan system of larger holdings known as fattorie.

Farms in this section have achieved a better balance of field versus

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tree crops than in many parts of Tuscany. Both grain yields and livestock enterprises have been favorably affected by the introduction of alfalfa, which has here taken the place of the less productive sulla and sainfoin. Wheat and corn are the main grain crops, with flax and potatoes as the main rinnovi. Among tree crops, besides grapes and mulberry trees, production of olives for direct consumption assumes special importance around Ascoli Piceno. Marche's wines are of rather poor quality, whereas the olive oil of the region has long been in great demand all over Italy.

The plains comprise a small section on the coast and in the narrow valleys of the main watercourses. Although the regime of the latter is mostly torrential, neither floods nor malaria constitute any important problem in Marche. Holdings are here larger than in the hills (over 15 hectares in area) and mezzadria is the predominant form of land tenure. The population lives largely on isolated farmsteads but rural villages are frequent along the coast.

The fogs and winds that often reach Marche from the Adriatic Sea make cultivation of tree crops a risky undertaking except in well sheltered areas of the hinterland. Thus field crops predominate along the coast, with emphasis on wheat, industrial crops and cultivated meadows. Among the industrial crops, flax production assumes great importance, especially in the province of Ancona. In 1938 Marche produced 13 percent of Italy's total output of flax fiber and the cultivation was further expanded thereafter. The region is especially well equipped with processing plants, which furnish flax seed to cultivators and purchase the crop at prices agreed upon in advance. The retting takes place in the plant by means of controlled fermentation. Tobacco for cigarettes is produced at Ancona and Ascoli Piceno, while sugar beets are grown around Ancona and Macerata.

In recent years and especially around urban centers very small vegetable farms have been developed, sometimes sufficiently large to support a family, more often used as an additional source of income by city dwellers. In its attempts to relieve unemployment, the Government has encouraged this type of undertaking and small farms have been organized even on Land Reclamation projects. Noteworthy among them is the center of Metaurilia near Fano, where settlers have been assigned one hectare of irrigated land. Cauliflower, cabbage, and peas are the main crops.

Livestock

Animal industries hold a place of eminence in the agricultural economy of Marche, owing to a number of favorable circumstances. In many other parts of Italy, agricultural expansion has been accompanied by a reduction in feed production, with food grains taking the place of pastures. Cover crops have become the main source of fodder. In Marche, especially in the hills and plains, feed legumes are an essential part of the rotation, so that the fodder supply is abundant and of superior quality. Furthermore, in this region the share-lease contract has been made to include livestock share

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arrangements, which have only recently been adopted in other parts of Central Italy. This has greatly facilitated the improvement of native breeds, which now rank among the best in Italy. Finally, the practice of ensiling crops was widely adopted in the region during the 20th century and small silos soon became common on peasant holdings. Recent estimates place the number of silos at over 3,000, the highest in Italy.

Horses, mules and asses

Horses number in Marche about 13,000 head, mostly used for light work and transportation, Mules number about 2,500, predominantly in the mountains and upper hills. Donkeys number over 8,000. In the hills they are used as pack animals and in connection with the extraction of oil from olives. In the plains they are found mostly on the small vegetable farms of the coast, where they are used for light work (cultivating, spreading of fertilizer, and moving crops to the market).

Cattle

The cattle population of Marche consistently increased in the last pre-war years, numbering over 400,000 head in 1938. About one-half of the cattle are used as draft animals, so that dual purpose breeds are in net predominance.

The provinces of Ancona, Ascoli Piceno, and Macerata raise mostly a native breed, the Marchigiano, which is used both for beef production and for farm work. Cattle of this breed are of large size and rapid growth, with yields of meat averaging 60 percent of the live weight. In the hills calves are slaughtered at 5-6 months of age, while the plains raise mostly steers that are slaughtered at 16 to 18 months. Milk production is low and usually suffices only for the maintenance of the calves, though some farms in the plains have marketable surpluses. Butter fat content, averaging 4.5 percent, is rather high in comparison with the fat yield of most Italian breeds.

In the mountains and hills of the province of Pesaro-Urbino most cattle are of the Maremmano breed, and are characterized by great hardiness and strength. Calves are slaughtered at 6-7 months with herd culls being fattened at 3-4 years of age. Farms in the lower hills and plains of this province raise cattle of the Romagnolo breed, of large size and high yields of meat. Small herds of 5 to 20 head predominate throughout the region, herds tending to be smaller in the northernmost provinces.

Dairy cattle are of little importance in the Marche and consists mostly of Brown Swiss animals on commercial dairy farms in the coastal plains.

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Sheep and goats

The sheep population of Marche exceed 300,000 head in number, two-thirds of which are in the provinces of Macerata and Pesaro-Urbino. The sheep belong to the breeds Bergamasca and Vissana, both characterized by good production of milk and wool.

The sheep enterprise in this region is essentially based on fixed, small-size flocks. Over 90 percent of the sheep in the three northern provinces are raised in groups of 3 to 10 head by peasant landowners and share tenants. In the summer the sheep graze on the fields and in the winter are fed straw, hay, leaves and twigs. A few farmers keep rams and lend them to neighbors.

Somewhat larger flocks are to be found in the province of Macerata, averaging in size 30-50 head. The owner of the flock usually owns pasture land, part of which is leased during the summer to cattlemen. Sheep graze on pasture from spring to fall and are kept in stables in the village during the winter, being fed hay and leaves. These flocks usually include one or more sires and are supplemented by high-grade sheep purchased in other areas.

Also in the mountains are flocks of 70 to 100 head, managed by shepherds who rent privately-owned and communal pastures. The latter are well equipped with temporary sheds and with facilities for the processing of milk.

In addition to the local flocks, Marche supports during the summer migrant sheep from Latium. These are in flocks of over 1,000 head and in quality of animals and products are far superior to those of other parts of the Appennini. Professional sheep ranchers supervise the migration which takes place along highways and roads with few losses and none of the inconveniences of the tratturi of Southern Italy (see p. 77).

With regard to meat production, mutton-yielding sheep are fattened and slaughtered around 2 years of age, while lambs are disposed of at 20 to 30 days from birth. Herd culls are sold for local consumption at 6-7 years of age.

Swine number in the Marche over 150,000 head and are raised mostly in small herds of 10-15 animals. Production is mostly for family consumption, although some pork products are exported to Latium.

Poultry

Production of eggs and poultry constitutes an important economic activity on peasant-operated holdings throughout the region. It is based on the excellent native breed Ancona, and especially around Macerata often becomes the main source of farm income.

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Food Problems

Marche is a region of ample food surpluses, whose economy complements that of Latium. The railroad between Rome and Ancona is one of the life arteries of the capital city, which obtains more food products from Marche than from northern Italy. Wheat exports average 180,000 metric tons, the province of Macerata alone yielding over one-third of the total exports. Also considerable are shipments of potatoes, tomatoes and other vegetables. Olive oil is sent to Rome and to Emilia. Among animal products, lambs and eggs are sent to Rome, while steers for slaughter are shipped both to Rome and to Piedmont.

Local processing facilities for food products are ample, but canning plants are scarce. The predominance of peasant enterprises may result in widespread hoarding, which would affect the food supply of Rome rather than that of the small urban centers of the region.

MARCHE

Agricultural Statistics

I Main Crops

Commodity	Area Harvested 1933-37	Area Harvested 1940	Production 1933-37	Production 1940	Yield per Ha. 1933-37	Yield per Ha. 1940	Planting Time from	Planting Time to	Harvesting Time from	Harvesting Time to
	1000 Ha	1000 Ha	1000 Qls	1000 Qls	Quintals	Quintals				
Wheat[1]	256.4	271.7	4,311	4,763	16.8	17.5	Oct. 1	Nov.15	June 15	July 20
Rye	.1	.1	1	1	13.5	12.3	Sept.10	Nov.10	June 10	July 20
Barley	7.6	7.5	82	91	10.9	12.2	Sept.10	Nov.10	June 10	July 20
Oats	2.6	2.5	27	35	10.6	13.8	Sept.10	Oct.31	June 20	July 13
Corn[2]	66.2	62.3	940	1,164	14.3	18.7	Apr. 1	May 25	Aug. 20	Oct. 10
Horse beans	12.5	13.2	99	97	8.0	8.1	Sept.20	Oct.20	June 5	July 10
Kidney beans	23.7	26.1	27	37	-	-	Apr. 10	May.20	July 10	Sept.15
Other legumes	-	-	14	11	-	-	-	-	-	-
Potatoes[3]	12.7	11.9	816	1,069	64.2	80.7	Feb. 15	Apr.20	July 20	Sept.20
Tomatoes	1.1	1.3	284	478	-	-	Apr. 10	May 20	July 1	Sept.20
Other fr.vegetables	4.8	4.4	334	503	-	-	-	-	-	-
Sugar beets	.3	1.4	75	405	231.6	282.9	Mar. 20	Apr.10	Aug. 15	Sept.30
Hemp	.6	[4]	6	[4]	8.8	[4]	Feb. 20	May 15	Aug. 1	Sept.20
Flax	.9	3.6	6	14	6.1	3.8	Nov. 1	Nov.30	June 10	June 30
Tobacco	.5	[4]	7	[4]	-	-	Apr. 20	May 15	Aug. 15	Sept.30
Cultivated meadows[5]	314.4	340.1	9,040	11,070	-	-	-	-	-	-
Natural meadows[5]	22	7.4	178	135	-	-	-	-	-	-
Pastures[5]	131.6	134.4	640	929	-	-	-	-	-	-
Vineyards	[6] 8.6	[6] 11.7	[7] 50	[7] 58	-	-	-	-	Aug. 10	Oct.10
	[8] 359.6	[8] 362.1	[9] 1,813	[9] 1,588	-	-	-	-	Sept.15	Oct.20
Olives	[6] 1.1	[6] 1.1	18 [11]	12 [11]	-	-	-	-	Nov. 1	Dec.31
	[8] 161.8	[8] 161.7			-	-	-	-	-	-
Deciduous fruits	-	-	227	163	-	-	-	-	-	-
Nuts	-	-	68	[10] 7	-	-	-	-	-	-

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " spring corn "
3/ " " " " " " common potatoes"
4/ Not available
5/ All production in normal hay
6/ In orchards and groves
7/ Grapes for direct consumption
8/ In open fields
9/ Wine (1,000 hls.)
10/ Does not include chestnuts
11/ Olive oil.

Office of Foreign Agricultural Relations. Based on official statistics.

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MARCHE

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	13,843	2,676	8,513	417,393	1/190570	162,556	341,820	6,706
1940	12,000	2,000	8,000	456,000	2/	169,000	310,000	6,000

B. Live Weight by Classes of Livestock (March 1938)

Horses, mules, asses	All cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
76,689	2,054,794	114,271	134,393	3,341

C. Livestock Products (1937)

Cow's milk 3/	Butter	Cow's and sheep cheese	Cottage cheese	Wool
1,000 Hls.	1,000 qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
626	.09	21	2.8	138.7

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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MARCHE

III. Fertilizer Consumption,
Average 1936-38, and 1940

Fertilizer	1936-38 qls.	1940 qls.
Super phosphates	842,659	917,442
Ground phosphates	808	310
Basic slag	-	-
Ammonium sulphate	20,622	29,882
Calcium Cyanamide	80,663	54,550
Ammonium nitrate	39,930	35,241
Calcium nitrates	62,785	87,391
Sodium nitrate	15,534	27,608
Potassium salts	1,488	2,415
Potassium by-products 1/	119	300
Leucite	-	-
Ammonium phosphate	8,561	2,970

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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MARCHE

IV. Consumption of Plant Sprays,
Average 1936-38

For use against animal parasites	kilograms	For use against vegetable parasites	kilograms
Arsenite of soda	1,417	Pyrethrum	1,169
Containing Arsenites	500	Rotenone	-
Arsenates	11,480	Fluorine Silicate	152
Sulphides and polysulphides	75	Oxychlor. of copper	417,342
Carbon sulphides	350,763	Other copper products	-
Tar oil	-	Sulphur	1,339,108
Tar oil products	9,170	Copper sulphur	2,041,617
Zinc phospide	333	Iron sulphate	65,186
Zinc chloride and sulphate	1,980	Copper sulphate	2,686,633
Nicotine extract, common	7,939		
Nicotine extract, superior	937		
Nicotine powder	133		
Nicotine sulphate	274		
Nicotine soap	343		
Monital, nicotine	656		
Other nicotine products	1,364		
Quassio wood	2,263		
Quassio extract	246		

Office of Foreign Agricultural Relations. Based on official statistics.

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3. Umbria

Types of Farming

Mountainous, landlocked Umbria is essentially agricultural, with 29 percent of the entire population engaged in farming. On the other hand, the abundance of hydroelectric plants gives Umbria's heavy and chemical industries a place of eminence among all those of Central and Southern Italy, while the processing plants for foodstuffs and other agricultural products use little of locally produced raw materials. Hence the Umbrian economy is dependent upon trade, a feature altogether uncommon among mountainous regions.

Umbria comprises the upper watershed of the Tevere River and its tributaries, the region around Lake Trasimeno and the so-called South-eastern area; but the several sections differ more with regard to pattern of settlement than to types of farming. The former feature, related to topographical and institutional factors, is in sharp contrast with the conditions that obtain in other regions of Central Italy.

Over 90 percent of Umbria is 200 meters above sea level. Most of the land is flat, however, being formed by ancient lakes and basins. It could thus be said that Umbria comprises a large number of small plateaus occupying the valleys of the Tevere and its tributaries at different altitudes. Eighty percent of the population lives between 200 and 600 meters above sea level. In the Val Tiberina and in the valley of the Nera the population lives in the low, highly productive plains. In the area around Lake Trasimeno and in the valley of the Paglia the people settle mostly on the hillsides. Finally, southwestern Umbria contains but a few urban centers, but it has large areas entirely depopulated.

The first two sections, hereinafter to be referred to as the Tiberina and Trasimeno areas, have a common pattern of land tenure. Stock-share lease is the predominant form of land tenure both on small independent units and on larger holdings. The latter, referred to as fattorie, are in turn divided into family-size units operated by the share-tenant. Small tracts of land are often operated under special contract. The cultivator lives in the village and works for wages on large holdings while managing one or two acres of vineyards, olive groves, etc. The rent is usually one-half of the gross product.

In the mountains the holdings tend to become larger but only small tracts are cultivated, and most of the land is improved pasture.

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Both in the Trasimeno and Val Tiberina great emphasis is placed upon the cultivation of wheat which occupies over one-half of the land in cultivation. Yields are exceptionally low for Central Italy, averaging

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10 quintals per hectare and, in sharp contrast with the general trend, have declined significantly in recent years.

Corn ranks second among cereal crops with an average production of 500,000 quintals, assuming especial importance in the Val Tiberina. Barley in Umbria is essentially a mountain crop, which together with rye takes, at high altitudes, the place of wheat in the rotation. Horse beans and kidney beans are the main legumes, the former mostly in the province of Perugia, the latter in the province of Terni. In addition, Umbria produces significant amounts of lesser legumes (lentils, chick peas, lupines, grass-peas) for domestic consumption.

Potatoes are a typical mountain crop, with a small production of early potatoes around Terni.

Among the cash crops are sugar beets (mostly in the province of Perugia) which are processed at Foligno, with an annual production of 30,000 quintals of sugar. In tobacco production Umbria ranks fifth among all Italian regions, with production centers at Todi and Narni in the Val Tiberina.

Tree crops are of lesser importance in Umbria than in Tuscany. Vineyards are widespread and yield high quality wines, mostly consumed in Latium. Olive trees thrive only in certain sections, and their productivity suffers from bad cultivating and pruning practices. Fruit trees are never grown in specialized groves but in rows along the fields. They include cherry, fig, apple and plum trees, all to be found in the Val Tiberina.

Southeastern Umbria is essentially a region of forests and pastures. The scarce population lives in a few centers, and areas totaling 700 square kilometers are wholly depopulated. The economy of this area is a pastoral one with migratory livestock enterprises. Flocks and herds spend the summer on mountain pastures and return in the fall to the lower hills and plains. Peculiar to this area is the production of black truffles around Norcia.

Livestock

Feed crops in Umbria are of exceptional importance. The luxuriant meadows and pastures which have gained for the region the name of Umbria the Green, cover about one-sixth of the total area and support a considerable number of farm animals.

Horses, mules and asses

Horses number in Umbria about 9,000 head, as compared with 19,000 asses and 3,000 mules. The prevalence of asses is obviously related to the topography and the peasant economy of the Southeast.

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Cattle

The region has over 200,000 head of cattle, three-fourths of which are in the province of Perugia. About 50 percent of the cattle are used in farm operations, so that most of the cattle are multiple-purpose animals.

Farmers in the province of Perugia raise cattle of the improved native breed, the well known Chianina which is commonly found all over Central Italy. This breed is especially suitable for the production of beef, with net yields of 400 kilograms of meat per head. In the same area there are few herds of dairy cattle of the Brown Swiss and Holstein breeds.

Most of the cattle around Terni are of the Maremmana breed - large-size, unimproved animals somewhat similar to the Brahma cattle of the United States. This breed is raised essentially for work and produces small quantities of low-quality beef.

Swine

Swine production in Umbria is essentially a family enterprise, small herds (of 3-10 head) comprising over 40 percent of all the animals. Of the over 200,000 swine, about two-thirds are raised in the province of Perugia. Typical of the area around Norcia is the processing of pork in small plants and in the household.

Sheep

The sheep industry assumes considerable importance in Umbria, but the value of its produce is not in proportion to its size. Most of the 400,000 sheep are in the province of Perugia with a net prevalence of small flocks (over 75 percent of the sheep being in flocks of less than 50 head). The most common breed is the Vissana, which produces extremely low-grade wool. On the other hand, mutton production is high (over 1,300,000 quintals per year), and Umbria leads all regions of Northern and Central Italy in mutton and lamb consumption (1.7 kilograms per capita). Also important in the Southeast are goats, mostly in herds of over 10 head.

Poultry

Small flocks of Leghorns are to be found on all Umbrian farms, and the region produces a surplus of eggs. In the eastern part of the region the poultry enterprise constitutes an important source of income for the peasant families.

Food Problems 4221

Umbria has considerable surpluses of food products which are shipped to Rome from Perugia and Terni. The region exports grains, cattle, wine and olive oil to the capital city. It also exports vegetables and fruits both to Rome and the Marche.

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The large industrial center of Terni (arms factories, chemical industries) draws heavily upon the surrounding area for food supplies.

Umbria's processing industries include large wheat mills and factories for the manufacture of alimentary pastes and chocolate at Perugia. All of the raw materials for these industries are obtained from other regions or from abroad.

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UMBRIA

Agricultural Statistics

I Main Crops

Commodity	Area Harvested 1933-37	Area Harvested 1940	Production 1933-37	Production 1940	Yield per Ha. 1933-37	Yield per Ha. 1940	Planting Time from	Planting Time to	Harvesting Time from	Harvesting Time to
	1000 Ha	1000 Ha	1000 Qls	1000 Qls	Quintals	Quintals				
Wheat 1/	174.8	174.9	2,341	2,372	13.4	13.6	Sept.15	Nov. 10	June 15	Aug. 10
Rye	.7	.6	4	3	5.5	5.4	Sept.20	Nov. 5	June 20	Aug. 5
Barley	5.9	6.0	49	50	8.3	8.4	Sept.20	Nov. 30	June 20	Aug. 10
Oats	11.1	11.1	95	101	8.6	9.0	Sept.20	Nov. 5	June 20	Aug. 15
Corn 2/	28.0	27.2	331	423	11.7	15.5	Mar. 10	May 10	Aug. 1	Sept.20
Horse beans	13.5	15.8	63	90	4.7	5.7	Sept.10	Nov. 20	June 15	Aug. 10
Kidney beans	4.3	4.4	22	24	-	-	Mar. 1	May 15	July 1	Aug. 31
Sugar beets	1.2	1.8	270	398	226.4	216.9	Mar. 1	Apr. 30	Sept.20	Oct. 10
Potatoes 3/	15.1	16.4	635	879	44.3	53.5	Mar. 1	May 15	July 1	Sept.30
Tomatoes	.7	1.0	95	187	-	-	Mar. 1	Apr. 20	July 1	Sept.30
Tobacco	1.2	4/	22	4/	-	-	Apr. 1	May 5	Sept.1	Oct. 31
Cultivated meadows 5/	149.0	189.7	4,871	6,139	-	-	-	-	-	-
Natural meadows 5/	3.9	3.6	143	143	-	-	-	-	-	-
Pastures 5/	113.7	111.2	507	662	-	-	-	-	-	-
Vineyards	6/ 2.9	6/ 3.2	7/ 89	7/ 78	-	-	-	-	July 15	Nov. 20
	8/187.8	8/191.8	9/ 1,135	9/ 591	-	-	-	-	Sept.20	Oct. 31
Olives	6/ 9.5	6/ 9.8	10/ 72	10/ 79	-	-	-	-	Dec. 1	Jan. 10
	8/53.0	8/ 53.2			-	-	-	-	Dec. 1	Jan. 10
Deciduous fruits	-	-	76	72	-	-	-	-	-	-
Nuts	-	-	48	11/ 5	-	-	-	-	-	-

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " spring corn "
3/ " " " " " " common potatoes"
4/ Not available
5/ All production in normal hay
6/ In orchards and groves
7/ Grapes for direct consumption
8/ In open fields
9/ Wine (1,000 hls.)
10/ Olive oil
11/ Does not include chestnuts

Office of Foreign Agricultural Relations Based on official statistics.

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UMBRIA

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	9,063	3,707	19,400	183,293	69,750 1/	211,530	396,907	8,413
1940	8,000	3,000	19,000	188,000	2/	271,000	426,000	7,000

B. Live weight by classes of Livestock (March 1938)

Horses, mules, asses	All Cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
94,364	1,145,597	154,207	166,392	3,264

C. Livestock Products (1937)

Cow's Milk 3/	Butter	Cow's and sheep's cheese	Cottage Cheese	Wool
1,000 Hls.	1,000 Qls	1,000 Qls	1,000 Qls	1,000 kgs
312	1	70	19	348

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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UMBRIA

III. Fertilizer Consumption, average 1936-38 and 1940

Fertilizer	1936-38	1940
	Qls.	Qls.
Superphosphates	423,181	561,810
Ground phosphates	10	---
Basic slag	---	---
Ammonium sulphate	10,552	23,314
Calcium Cyanamide	44,391	34,838
Ammonium nitrate	4,624	7,784
Calcium nitrates	27,690	46,659
Sodium nitrate	4,932	8,750
Potassium salts	1,823	3,217
Potassium by-products 1/	171	120
Leucite	---	---
Ammonium phosphate	9,978	5,153

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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Umbria

IV. Consumption of Plant Spray, agerage 1936-1938.

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of soda	-	Pyrethrum	1,548
Containing arsenite	-	Rotenone	400
Arsenates	14,477	Fluorine silicate	9
Sulphides and polysulphides	-	Oxychloride of copper	107,867
Carbon bisulphide	93,135	Other copper products	-
Tar oil	-	Sulphur	350,383
Tar oil products	203	Copper sulphur	532,500
Zinc phospide	-	Iron sulphate	125,467
Zinc chloride & sulphate	-	Copper sulphate	2,243,900
Nicotine extract, common	-		
Nicotine extract, superior	-		
Nicotine, powder	-		
Nicotine sulphate	-		
Nicotine soap	-		
Monital, nicotine	-		
Other nicotine products	1,275		
Quassio wood	383		
Quassio extract	522		

Office of Foreign Agricultural Relations. Based on official statistics.

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4. Latium

Types of Farming

In recent years, as a result of the growth and expansion of the city of Rome and of land reclamation activities, the agricultural economy of Latium has undergone greater changes than that of any other region of the Kingdom. Industrial development and resettlement, mostly undertaken in the coastal provinces, have also affected the inland areas, so that the agriculture of the entire region is still in a stage of evolution.

The farming population comprises about 17 percent of the total, and 41 percent of the gainfully employed. The importance of agriculture varies greatly from province to province; in sharp contrast with the essentially urban province of Rome, where the farming population comprises only 21 percent of the gainfully employed, are such rural provinces as Frosinone and Rieti, with three-fourths of the gainfully employed engaged in agricultural pursuits.

In the determination of types-of-farming areas, topography and nature of soils have been the deciding factors. Only recently has the large urban agglomeration of Rome had any effect upon farming enterprises.

The agricultural area of Maremma continues from the Tuscan coastal plains into Latium, where it ends at the hills that surround Civitavecchia. While most of the Tuscan Maremma has been reclaimed and reconditioned, Latium's section of this area is still undeveloped and depopulated. It retains many features of a latifundistic economy, with large holdings belonging to the Roman nobility and managed by cash tenants. Farms are operated with daily laborers and planted mostly in wheat. Large extensions of land left in pasture or fallow are grazed by huge flocks of sheep and herds of cattle.

Between Civitavecchia and the province of Littoria, and extending inland to the slopes of the Albani Mountains, lies the area known as the Agro Romano. Agricultural exploitation of this section had long been made difficult by poor drainage conditions that accrued in part from the level of the shoreline and, to a greater extent, from the presence of a thick surface layer of impermeable limestone. The granting of low-interest long-term credit made possible the reclamation of the area. This was achieved by breaking the surface crust and by providing for the drainage of the lower sections. The land tenure pattern consists now of large or very large holdings owned and operated by corporations or private individuals, with permanent laborers and daily workers. The holdings are usually dividedin units of 80 to 100 hectares. that can be operated jointly or severally. Each unit has a farmstead with barns, stables, silos, mills and houses for the permanent laborers and the employees. Daily laborers commute to the farm from surrounding villages, although on several farms attempts have been made to adopt collective share-contracts and, at the same time, to settle the daily laborers on the estate.

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The main enterprises on the farms of the Agro are connected with the production of fluid milk for the city of Rome. The rotation is the one that prevails in the irrigated areas of Lombardy. Over one-half of the land is cultivated in legumes - mostly Ladino clover - while wheat and corn for grain occupy but one-fourth of the total area. Where water for irrigation is plentiful, Caragua maize is grown for fodder. On more sandy soils vegetables and fruits are raised, which also are destined for the Rome market. Natural pastures on these farms are often rented to shepherds from the Abbruzzi mountains.

The province of Littoria includes the much-publicized land reclamation project of the Agro-Pontino. Changes in the level of the shore-line and accumulation of alluvial material at the mouth of the torrential rivers that flow from the mountains to the Tyrrhenian sea had, in historical times, greatly impaired the drainage of this area. Before and immediately after the World War, several corporations had purchased land in the area and had constructed the main drainage works with the plan of establishing grain and livestock farms. To relieve unemployment in Northern Italy and to increase agricultural production, the Fascist Government expropriated the partly-reclaimed Agro and gave a quasi-public organization, the National Association of Exservicemen (O.N.C.) the task of reconditioning and settling the area. To this end, the land was divided in small units of 10 to 40 hectares, each equipped with a farmstead comprising housing facilities, a barn and a small granary. Upon completion of the buildings, families of farm laborers were brought to the Agro from Northern Italy, mostly from Veneto, and assigned a unit. The settlers operated the holdings as share-tenants of the O.N.C., with the latter advancing for the first few years all that was needed for the subsistence of the farm families. The Agro thus came to comprise groups of family-size units, somewhat similar to the Tuscan Fattoria but better equipped than the latter with regard to machinery (tractors, planters, etc.). At first the encouragement of a subsistence type of farming (corn, wheat, legumes) was deemed necessary. Later, cash crops were introduced, ranging from cotton and castor beans to sugar beets (processed at Sabaudia and Littoria) and tomatoes (canned at Littoria).

The results of this great project are somewhat uncertain. Independently of the economic aspects, summer droughts and low-phosphorus content in the soil make farming in the area a most risky undertaking. Thus only the units for which irrigation is available are comparatively prosperous. For some of them land tenure arrangements have been modified and purchase plans arranged. Title to the farm has been transferred to the settlers who, however, continue to operate the holdings under the close supervision of the O.N.C. In the non-irrigated sections, settlers have been unable to meet their annual obligations and need heavy subsidies from the O.N.C. for their livelihood. Farm units in this section need continuous supervision, and the settlers are merely sharecroppers of the O.N.C.

The coastal plains from Formia to the borders of Campania are sections of small holdings, with vegetables, deciduous and citrus fruits as main farm enterprises. Some of the vegetables, notably artichokes and tomatoes, are canned at Terracina; asparagus, kidney beans and other fresh truck crops are

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shipped to Rome. Important also is the production of table grapes, for which the area is first among all Italian provinces.

The inland areas present a great variety of types of farming which are closely related to variations in the nature of soils. In the province of Rieti and all along the slopes of the Appennini, soils are mostly calcareous, of low fertility, and greatly affected by droughts. Farms in this section are of medium size, operated by sharecroppers and share-tenants. Horse beans, sugar beets, and potatoes are the main rinnovi; wheat and barley are the main grain crops, rye taking their place on the upper slopes of the mountains. Essentially, however, the economy of the section is a pastoral one. Extensive pastures are grazed by flocks of sheep for 8 or 9 months per year, while herds of swine roam the forests.

The volcanic mountain ranges known as Vulsini, Cimini, Sabatini and Albani enjoy a greater fertility of soils and a more favorable climate than the other mountain sections. Most of the land is held in small, peasant-operated units, often insufficient to absorb all of the labor force of the operator's family. This is an area of very intensive farming, where tree crops (olives and grapes) are produced in specialized groves. The oil industry suffers greatly from primitive methods of processing, the local wines are mostly consumed in Rome. There is also considerable production of vegetables and fresh fruits (artichokes, asparagus, strawberries).

The apparent prosperity of this area is most deceiving. The smallness of peasant holdings is such that many peasants are forced to seek supplementary employment on the larger farms of the plains. To this end they lease tracts of wheat land (paying their rent with a share of the crop) and also work on larger units as daily laborers.

The province of Frosinone includes the important agricultural area of the valley of the Sacco River. This is a wheat-growing section, with medium sized farms operated by share-and cash-tenants. Horse beans, chick-peas and corn are the main rinnovi. Production of vegetables and deciduous fruits assumes considerable importance.

Livestock

Until recently the marshy, uncultivated areas of the coastal provinces offered a favorable environment for livestock production. In many cases livestock enterprises were the simplest form of exploitation for land that otherwise would have remained unproductive. With the changes brought about by reclamation activities, the livestock industry did not lose its importance; but significant modifications were introduced in the form and type of livestock enterprises.

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The great improvements that have been recently accomplished with regard to farm animals concern in Latium only the large, capitalistic farms. Peasant holdings have retained the low-grade livestock of the past, so that there is in this region a direct correlation between size of the enterprise and quality of livestock which does not obtain for other parts of the country.

Horses, mules, and asses.

Horses number in Latium over 28,000 head, two-thirds of which are in the province of Rome.

On some of the large dairy farms heavy draft animals of the Percheron and Belgian breeds are used for harrowing and for transportation. Light saddle horses are common on ranches around Rome. The ass population comprises 10,000 head, two-fifths of which are in the province of Frosinone. They are used mostly for pack animals and for the operation of oil mills.

Cattle.

The cattle population of Latium comprises over 200,000 head, the bulk of which are in large herds on capitalistic farms. About one-third of all the cattle are used as draft animals. Most of the work cattle are multiple-purpose animals of the Maremmano breed, with little production of meat and milk, but with great hardiness and power.

The Agro Romano has witnessed in recent years the development of dairy farms based on irrigated meadows and corn for fodder. Much attention has been given to the selection of animals, which are raised both for milk production and for the sale of purebred calves and heifers to other regions of Italy. As a result, the comparatively small dairy cattle population of the Agro includes some of the best specimens to be found in Italy and in the whole of Europe. The two most common breeds are the Brown-Swiss and the Holstein. Most of these cattle are descendants of imported sires, the Brown Swiss from Lombardy and Switzerland, the Holstein from American Carnation bulls. Partly to offset the low butterfat yields of the Holstein, cattle of this breed are often crossed with Brown-Swiss animals, the crosses being referred to as "priests" and "friars". With the exception of the latter group, all other cattle are purebred registered animals, kept, fed and milked with the methods used in the most progressive dairy regions of the United States.

Small herds of Jersey and Guernsey cattle are also to be found at Grotta-ferrata, in the outskirts of Rome.

On a few dairy farms, attempts have been made to keep water-buffaloes in stables, to increase milk production and altogether to rationalize the enterprise. In this connection, small cheese plants have been established.

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Swine

The swine population of Latium comprises 140,000 head, evenly distributed among the provinces. Most of the swine are raised by peasant families in herds of less than 10 head. Large herds of over 50 head are to be found only in the provinces of Rome and Viterbo.

Sheep and goats

With regard to sheep numbers Latium is second only to Sardinia, the total sheep population numbering over 1,200,000 head. With regard to wool production Latium occupies the first place, yielding over 25 percent of the total. Mutton and lamb production is comparatively small, per capita consumption being far below the average for the nation as a whole.

Typical of Latium is the importance of very large flocks. For the region as a whole, flocks of over 1,000 head comprise over 30 percent of the total sheep population. In the province of Rome, which has over one-half of all the sheep of the region, large and very large flocks (over 500 head) include over 60 percent of all the sheep. The enterprise thus appears closely connected with the latifundistic pattern of land tenure that prevails in the coastal plains.

Most of the sheep are considered to be multiple-purpose animals, yielding 40 to 60 liters of milk per year, which is immediately converted into cheese (8 to 12 kilograms) and into the soft curd product known as Ricotta (4 to 6 kilograms). Wool production averages 2 to 4 kilograms per head. It is customary to slaughter lambs at 20 to 30 days of age. The meat, known as Abbacchio, is sold in Rome.

Food Problems

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In no other region of Italy do problems of food supply and distribution loom as important and difficult as in Latium. This is, to a limited extent, due to the specialization of farm enterprises, but accrues mostly from the location and requirements of the city of Rome. All of the trade of Latium converges on Rome, so that the latter is dependent for its food supply upon the most remote areas of the Appennini and the coastal plains. Other regions of central and southern Italy also supply foodstuffs to the capital city.

Other large cities of Italy depend upon outside sources for a few food products; but Rome, under peacetime conditions, draws all sorts of foodstuffs from relatively distant areas. With regard to bread grains, Umbria, Marche and Tuscany are the main sources of supply. Olive oil is obtained from Puglia and Umbria. Among animal products, beef cattle are shipped to Rome from Marche, Umbria, and Sardinia, milk from Lombardy, cheese from Puglia, Campania and Abbruzzi, lamb from Marche and Sardinia, poultry from Northern Italy and Marche. Although the production of fruits and vegetables is considerable, artichokes and tomatoes are imported from Sardinia and Campania; and considerable amounts of citrus fruits have to be shipped to Rome from Sicily.

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The dependence of the milk supply from the Agro upon a comparatively small number of highly productive animals needs stressing. In the feeding of milk cows, concentrates and wheat by-products are of extreme importance. Any curtailment of feed supplies will significantly reduce milk production and increase the degree of dependence upon dairy farms of other regions.

The already difficult situation is further impaired by the dependency on a few railroads - the lines connecting Rome and Naples and Ancona - and on the small harbor of Civitavecchia. In recent years the expansion of the urban center has caused the disappearance of many of the small suburban holdings that in the past supplied the city with eggs and vegetables. Thus, the distance between Rome and the localities producing perishable commodities has increased and the supply problems have become more complex.

In addition, the rural population greatly increases during the winter, due to the arrival of immigrant sheep flocks, so that the provinces of Viterbo and Rieti might at times become deficit areas for grains. Finally, both in the Agro Pontino and in the Maremma, droughts may destroy large portions of the crops, greatly curtailing the grain supply. The Agro Pontino in particular, because of the trend toward industrial crops which was already evident prior to the war and which has greatly increased since 1939, might be considered a deficit area for vegetables, potatoes, olive oil, wine and fruits.

By and large, problems of food supply, especially for Rome, are of such gravity that they should be given most careful consideration. In this connection, it might be possible, by taking advantage of the excellent system of highways that radiate from Rome in all directions, to rely on motor trucks. Gaeta has a small harbor that could be used to avoid some of the congestion of the ports of Naples and Civitavecchia.

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LATIUM

Agricultural Statistics

I Main Crops

Commodity	Area Harvested 1933-37 (1000 Ha.)	Area Harvested 1940 (1000 Ha)	Production 1933-37 (1000 Qls)	Production 1940 (1000 Qls)	Yield per Ha. 1933-37 (Quintals)	Yield per Ha. 1940 (Quintals)	Planting Time From	Planting Time To	Harvesting Time From	Harvesting Time To
Wheat 1/	283.9	315.5	2,799	3,445	9.9	10.9	Sept. 25	Nov. 30	June 1	Aug. 10
Rye	1.0	1.1	9	11	9.5	10.5	Sept. 20	Nov. 5	June 15	July 31
Barley	3.8	5.2	38	48	9.9	11.1	Sept. 15	Dec. 30	June 1	Aug. 10
Oats	25.3	16.5	286	320	11.2	12.7	Sept. 1	Nov. 10	June 1	Aug. 15
Corn 2/	109.5	127.3	1,101	1,250	10.1	12.9	Mar. 10	May 10	Aug. 20	Oct. 10
Forse beans	24.5	29.0	198	155	8.1	5.4	Sept. 1	Oct. 30	June 10	Aug. 10
Kidney beans	36.7	33.1	147	152	-	-	Mar. 1	May 15	July 1	Oct. 10
Other legumes	-	-	116	98	-	-	Mar. 1	Apr. 20	July 1	Sept. 20
Potatoes 3/	14.5	18.6	805	1,417	54.2	84.0	Mar. 1	Apr. 30	Aug. 1	Sept. 15
Tomatoes	2.1	2.0	371	532	-	-	Mar. 1	Apr. 30	Aug. 1	Sept. 30
Other fr. veg.	8.5	13.5	1,080	1,248	-	-	Mar. 1	Apr. 30	Aug. 1	Sept. 30
Sugar beets	1.7	4.3	321	815	203.6	190	Apr. 20	May 31	Aug. 10	Sept. 30
Tobacco	.8	4/	12	4/	-	-	-	-	-	-
Cultivated Meadows 5/	87.2	101.9	3,493	4,274	-	-	-	-	-	-
Natural Meadows 5/	48.8	6.7	819	112	-	-	-	-	-	-
Pastures 5/	283.5	231.5	1,848	2.013	-	-	-	-	July 1	Sept. 30
Vineyards (6/	49.2	6/ 54.9	7/ 492	7/ 161	-	-	-	-	Oct. 1	Nov. 30
Vineyards (8/	158.8	8/ 158.5	9/ 1,694	9/ 1,269	-	-	-	-	Nov. 15	Jan. 31
Olives)6/	54.1	6/ 80.3	11/ 155	11/ 118	-	-	-	-	-	-
Olives)8/	75.0	8/ 77.4			-	-	-	-	-	-
Deciduous fruits	-	-	223	309	-	-	-	-	-	-
Nuts	-	-	211	10/ 43	-	-	-	-	-	-
Citrus fruits	-	-	169	104	-	-	-	-	-	-

Office of Foreign Agricultural Relations. Based on official statistics.

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " spring corn only.
3/ " " " " " " common potatoes only.
4/ Not available.
5/ All production in normal hay. Changes have been introduced in the classifications of meadows and pastures in recent years.
6/ In orchards and groves. 7/ Grapes for direct consumption. 8/ In open fields. 9/ Wine (1000 Hls.)
10/ Does not include chestnuts. 11/ Olive oil.

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LATIUM

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	30,587	17,770	77,143	206,020	60,170 1/	147,837	1,224,087	60,233
1940	27,000	18,000	74,000	224,000	2/	145,000	1,220,000	61,000

B. Live weight by classes of livestock (March 1938)

Horses, mules, asses	All Cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
338,629	925,274	115,336	416,848	21,218

C. Livestock Products. (1937)

Cow's Milk 3/	Butter	Cow's and Sheep's Cheese	Cottage Cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
1,304	1	70	19	2,542

Office of Foreign Agricultural Relations. Based partly on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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LATIUM

III. Fertilizer Consumption, average 1936-38 and 1940

Fertilizer	1936-38	1940
	Qls.	Qls.
Superphosphates	519,543	724,926
Ground phosphates	1,339	---
Basic slag	400	---
Ammonium sulphate	29,721	55,510
Calcium cyanamide	71,593	71,995
Ammonium nitrate	5,396	10,286
Calcium nitrates	44,297	68,244
Sodium nitrate	11,144	11,273
Potassium salts	978	428
Potassium by-products 1/	311	14
Leucite	113	---
Ammonium phosphate	21,752	6,072

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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Latium

IV. Consumption of Plant Sprays
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of soda	1,967	Pyrethrum	1,200
Containing arsenite	60,000	Rotenone	100
Arsenates	18,334	Fluorine silicate	569
Sulphides and polysulphides	467	Oxychloride of copper	586,350
Carbon bisulphide	40,851	Other copper products	100
Tar oil	900	Sulphur	1,406,366
Tar oil products	7,278	Copper sulphur	147,333
Zinc phosphide	1,440	Iron sulphate	126,130
Zinc chloride and sulphate	-	Copper sulphate	6,974.400
Nicotine extract, common	27,318		
Nicotine extract, superior	7,579		
Nicotine, powder	307		
Nicotine sulphate	156		
Nocotine soap	369		
Monital, nicotine	1,042		
Other nicotine products	3,792		
Quassio wood	2,350		
Quassio extract	1,687		

Office of Foreign Agricultural Relations. Based on official statistics.

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SOUTHERN ITALY

1. Abruzzi and Molise

Types of Farming

From a geographical standpoint Abruzzi could be considered a part of Central Italy, but the physical conditions as well as the social and economic problems of this region are essentially those of Southern Italy. However, while in Puglia, Lucania, and Calabria the institutional factors are of great importance with regard to economic problems, unfavorable physical conditions - especially the nature of the soil - are almost the sole source of the economic evils of Abruzzi.

The region is essentially rural, with a greater percentage of rural families (60.6 percent) than any other part of Italy barring Lucania. Agricultural production and processing of agricultural commodities are the main economic activities, with three-fourths of the gainfully employed engaged in agricultural pursuits. Again, in this respect Abruzzi is second only to Lucania among all other regions of the Kingdom.

Of the 1,541,344 hectares covered by Abruzzi, 3.7 percent was classified as unproductive, a circumstence which in the Peninsula is indicative of widespread cultivation of marginal land rather than of the wealth of the region.

Sixty-nine percent of the total area was classified as "mountain", with all of the remaining land being classed as hills. Thus, Abruzzi is an essentially mountainous region, with many or all of the disadvantageous features of the Italian mountains, especially of the Appennines. Moreover, the hills lack the wealth that is typical of similar areas of Tuscany or Piedmont. 42139

The topography affords the first elements for a division of farming areas: in the west there is a large plateau including lofty mountain ranges and the reclaimed lake of Fucino. In the east is the region of the hills and piedmont, with small plains at the mouth of the main watercourses.

The mountains, which comprise all of the province of Aquila and the western parts of the provinces of Teramo, Pescara and Chieti, are a poor, almost barren region agriculturally. The pattern of land tenure is one common to the whole region with the exception of Lake Fucino. The holdings are small or very small and operated by the owner. Occasionally arrangements of share-lease are to be found, with the operator contributing one-third of the operating expenditures and receiving one-third of the crop.

The pattern of land settlement in the province of Aquila, on the other hand, is unique. The people live in villages usually located in the lower part of the valley and commute daily to the fields. Thus the slopes and mountain sides are utterly depopulated and, especially where deforestation has taken place, appear desolate and abandoned

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The organization and selection of farm enterprises is one of extreme simplicity, fundamentally designed to provide food for the family and feed for the few livestock. Food grains, especially wheat and corn, are grown in the lower areas, with barley also having some importance. Rye, for which Abruzzi was once famous, is now of secondary importance. Potatoes are the mountain's main crop as a source both of food and of cash income. The legumes comprise horse beans and the less productive kinds typical of central Italy (chick peas, grass peas, lentils, etc.).

Altogether the mountain economy is a rather primitive one. Deterioration of pastures and deforestation have deprived the people of some of their sources of livelihood. In the mountains as a whole, the well-known tendency to migrate toward the plains is conspicuous.

Among the valleys, the areas around Aquila and Sulmona deserve specific mention. In the former a warmer climate makes possible a considerable production of almonds. The latter, with considerable acreage of irrigated vineyards, is important for table grapes. Otherwise, trees and vines do not thrive in the cold climate of the mountains, so that both for oil and wine this area depends upon outside sources.

The now reclaimed Lake Fucino is a region of large holdings, owned almost entirely by the Torlonia family. The population lives on the hills surrounding the basin and rents land in the plain. Here industrial crops have been successfully introduced, especially sugar beets for the great sugar factory of Avezzano, one of the largest in Italy.

The hills and the piedmont are favorably affected by the sea and enjoy an altogether milder climate. Here trees and vineyards are associated with field crops. Corn and wheat are the main cereals, while the potato loses much of its importance. Industrial crops such as tobacco, in the province of Teramo, and flax, in the province of Chieti, have considerable importance.

The importance of olive oil production cannot be gauged from the area under olive trees. Cultural methods in Abruzzi are most primitive, and the product is poor in quality and small in quantity. Olive trees are to be found scattered on small farms and grouped in specialized groves. The province of Pescara has true forests of olive trees, where pruning and harvesting are carried on in a most unsatisfactory way.

Vineyards are scattered throughout this region, with some production of table grapes.

Around Vasto, in the province of Chieti, there is a small citrus-growing section with all the features of an intensive agriculture.

Livestock

The mountains and hills of Abruzzi offer meager pastures at all levels of altitude, so that this region retains many of the features of a pastoral economy.

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Asses comprise 60 percent of all equine animals. They are used for draft on the farm and as a means of conveyance. Mule numbers show some decline in recent years and assume greater importance in the Molise than in the mountain areas.

Cattle in Abruzzi belong to two main breeds. First is the Marche's breed, well developed, of rapid growth, suitable for beef production and as draft animals. This breed is to be found in the provinces of Teramo and Chieti. The second breed is the Pugliese, a breed of large and powerful work animals which has certain similarities with the Longhorns of Texas. Two-thirds of all the cattle in Abruzzi are cows, used mostly as draft animals. Unimproved dairy cows of the Brown-Swiss type number only 6,000.

All cattle are kept on the range and brought under permanent shelter only during the coldest months.

The swine of Abruzzi belong to the native breeds of Southern Italy. These animals gain weight slowly in the earlier months of their life but, upon fattening, yield considerable amounts of lard, tallow, and soft pork products.

Sheep are Abruzzi's most important type of livestock because grazing is the only possible utilization for the mountain areas. Meadows and wells are so scarce that the sheep industry is quite primitive.

An essential feature of the sheep industry is the annual migrations. Sheep and goats are kept on the mountain pastures during the summer. On the ranges no shelter is provided for the animals, while the shepherds live in small stone houses. In September the flocks migrate toward Puglia orLatium, where they spend the winter. The migrations take place over tratturi - large grass-covered tracks where the sheep can graze. In places, wider areas, referred to as riposi, are provided where the flock rests overnight. The tratturi thus constitute an essential network of road-pastures. In recent years they have been reorganized and made the property of the State.

The sheep of Abruzzi are mostly dual-purpose animals, for milk and wool production. Typical of the region is the production of soft-curd cheese, both consumed locally and shipped to large urban centers.

Food Problems

The food problems of Abruzzi are those of a region where transportation facilities are poor and the land produces little above the needs of the population. Rationing and requisitions of food are difficult to enforce, especially in the mountains. By and large the region is probably self-sufficient, but could contribute little or nothing to the maintenance of an army of occupation and to deficit areas.

ABBRUZZI e MOLISE

Agricultural Statistics

I Main Crops

Commodity	Area Harvested 1933-37 (1000 Ha.)	Area Harvested 1940 (1000 Ha)	Production 1933-37 (1000 Qls)	Production 1940 (1000 Qls)	Yield per Ha. 1933-37 (Quintals)	Yield per Ha. 1940 (Quintals)	Planting Time From	Planting Time To	Harvesting Time From	Harvesting Time To
Wheat 1/	350.8	351.7	4,091	4,099	11.7	11.7	Sept. 10	Nov. 30	May 25	Aug. 5
Rye	1.2	1.7	9	9	8.1	8.2	Sept. 15	Nov. 20	June 20	July 31
Barley	5.3	5.2	52	52	9.9	9.9	Sept. 15	Nov. 20	June 20	Aug. 30
Oats	16.6	16.5	180	154	10.9	9.4	Sept. 20	Nov. 15	June 15	Aug. 15
Corn 2/	128.9	127.3	1,252	1,202	10.9	9.4	Mar. 10	May 20	Aug. 10	Oct. 10
Horse beans	42.4	38.4	324	312	7.6	8.1	Sept. 20	Nov. 30	May 15	Aug. 10
Kidney beans	66.6	66.8	125	169	-	-	March 10	May 15	July 10	Aug. 31
Other dry legumes	-	-	50	42	-	-	-	-	-	-
Potatoes 3/	100.1	103.2	2,933	2,916	28.7	24.0	Feb. 5	May 25	June 10	Sept. 30
Tomatoes	.9	.9	388	432	-	-	Mar. 1	May 10	July 1	Oct. 15
Other fr. veg.	2.5	2.9	317	385	-	-	-	-	-	-
Sugar beets	3.7	3.8	975	981	261.9	257.2	Apr. 10	May 20	Sept. 20	Oct. 31
Hemp	.6	4/	3	4/	4.3	4/	Mar. 1	Apr. 30	Aug. 1	Sept. 30
Flax	1.6	1.1	6	5	3.7	5.5	Sept. 20	Oct. 20	June 1	Aug. 10
Tobacco	1.4	4/	11	4/	-	-	Apr. 10	June 10	June 30	Aug. 31
Cult. meadows 5/	145.2	149.2	3,624	4,660	-	-	-	-	-	-
Nat. meadows 5/	8.7	6.5	206	157	-	-	-	-	-	-
Pastures 5/	211.0	216.9	1,428	1,331	-	-	-	-	-	-
Vineyards	63.1	63.2 7/	137 7/	261	-	-	-	-	-	-
	32.6	32.2 9/	1,430 9/	1,116	-	-	-	-	July 25	Oct. 30
Olives	13.2	14.4 10/	711 10/	144	-	-	-	-	Sept. 15	Oct. 31
	174.3	171.4							Oct. 15	Dec. 31
Deciduous fruits	-	-	482	245	-	-	-	-	-	-
Nuts	-	-	207 11/	41	-	-	-	-	-	-
Citrus fruits	-	-	8	4	-	-	-	-	-	-
Figs and prunes	-	-	37	31	-	-	-	-	-	-

Office of Foreign Agricultural Relations. Based on official statistics.

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " spring corn only.
3/ " " " " " " common potatoes.
4/ Not available.
5/ All production in normal hay.
6/ In orchards and groves
7/ Grapes for direct consumption. 8/ In open fields. 9/ Wine (1,000 Hls.) 10/ Olive oil.
11/ Does not include chestnuts.

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ABRUZZI E MOLISE

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	32,143	30,253	75,357	171,526	86,990 1/	111,833	651,177	84,043
1940	30,000	26,000	71,000	186,000	2/	114,000	740,000	80,000

B. Live weight by classes of livestock (March 1938)

Horses, mules, asses	All Cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
457,345	805,218	89,888	246,747	34,279

C. Livestock Products (1937)

Cow's Milk 3/	Butter	Cow's and Sheep's Cheese	Cottage Cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
691	.4	31	5	427

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available
3/ For direct consumption.

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Abruzzi e Molise

LII. Fertilizer Consumption, average 1936-38 and 1940

Fertilizer	1936-38	1940
	qls.	qls.
Superphosphates	500,308	500,393
Ground phosphates	5	120
Basic slag	-	-
Ammonium sulphate	9,262	18,765
Calcium cyanamide	61,449	39,906
Ammonium nitrate	23,981	21,113
Calcium nitrates	54,613	52,330
Sodium nitrate	16,647	15,417
Potassium salts	702	1,710
Potassium by-products 1/	-	-
Lecite	-	-
Ammonium phosphate	6,002	4,285

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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Abruzzi e Molise

IV. Consumption of Plant Sprays
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of soda	100	Pyrethrum	33
Containing arsenite	600	Rotenone	-
Arsenates	13,554	Fluorine silicate	87
Sulphides and polysulphides	-	Oxychloride of copper	131,300
Carbon bisulphide	50,316	Other copper products	-
Tar oil	-	Sulphur	504,300
Tar oil products	83	Copper sulphur	443,667
Zinc phosphide	-	Iron sulphate	73,800
Zinc chloride and sulphate	-	Copper sulphate	3,006,133
Nicotine extract, common	14,520		
Nicotine extract, superior	1,535		
Nicotine, powder	1,633		
Nicotine sulphate	58		
Nicotine soap	96		
Monital, nicotine	609		
Other nicotine products	215		
Quassio wood	200		
Quassio extract	72		

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Office of Foreign Agricultural Relations. Based on official statistics.

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2. Campania

Types of Farming

Fertility of soils, mildness of climate, variety and abundance of crops have given Campania, from time immemorial, a place of eminence among all Italian regions. Indeed, with the exception of rice, Campania produces its share of all Italy's crops, while leading all other regions in its contribution to agricultural exports.

Agriculture occupies a very important place in the economy of Campania, both because of the size and value of agricultural production, and as a source of raw materials for the processing industries that constitute one of the main economic resources of the region.

The farming population comprises 18 percent of the total and 47 percent of the gainfully employed. In the provinces of the interior, Avellino and Benevento, the agricultural population comprises over three-fourths of all the gainfully employed.

The agricultural areas of Campania are clearly demarcated. Nowhere else in Italy do topography and drainage conditions have such a deciding influence upon the agricultural economy.

The first area comprises the Campanian plains (excluding the lower part of the Volturno's watershed), the plateau of Cava, and the Plain of Salerno. This is a densely populated territory of high natural fertility. Volcanic soils, favorable climate, and abundance of water for irrigation make of this section one of Italy's garden spots.

Holdings are small or very small (.5 to 10 hectares), mostly owner-operated or rented for cash. The population lives on the farm (an unusual feature for a southern region), occasionally migrating to less intensive areas for short periods of the year.

Most of the land is cultivated in truck crops (especially around Naples) - tomatoes, cauliflowers, garlic, onions, legumes, kidney beans, peas, lupines, and potatoes. In the plain of Salerno, besides truck crops, sugar beets, wheat and corn (under irrigation) form a single rotation, with legumes being used for green manure. Tobacco is also of great importance. Between Naples and Caserta is one of Italy's main production centers for hemp.

Deciduous fruits are an important source of income throughout the plains. Peaches, pears, and apricots from the province of Naples, and cherries and walnuts from Nola are among the main export commodities.

Also important around Salerno is the production of carob beans, which are processed at Maddaloni to make feed concentrates.

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Tree crops other than deciduous fruits have secondary importance, but olive groves are widespread around Salerno, and huge vineyards give the plains around Naples a unique scenery.

In sharp contrast with the riches of the first area are the poverty and abandonment of the poorly-drained areas. These include the mouths of Volturno, Garigliano, and Sele Rivers, as well as the Vallo di Diano in the southeastern part of the province of Salerno. This is an area of large quasi-latifundistic holdings, with a primitive farm organization. Besides large areas in pasture (grazed by sheep), the fields are planted in wheat and corn, with small areas in legume crops. Conditions have been somewhat improved by recent land reclamation projects in the valleys of the Volturno and Sele, but the areas by and large are still infested with malaria and their productivity has not been increased to a very significant extent.

The region of the lower hills, between 100 and 500 meters above sea level, has been and is undergoing a stage of agricultural change. Once characterized by the importance of field crops, the hills are rapidly acquiring many of the features of Tuscan agriculture. Especially important is the planting of fruit trees and vineyards, which spread from the inhabited centers toward the more distant fields. This trend has been financed mainly from the savings of immigrants returned from the United States. It has also been encouraged by the adoption of tenure arrangements which specifically provide for the compensation of unexhausted improvements.

Near the villages trees almost cover the ground; at a greater distance from the centers, wheat, corn, and legumes are grown, with vineyards bordering the fields. Here again the practice of growing crops for green manure assumes considerable importance.

Over 600 meters above sea level, cultivation is limited to small tracts, with pasture, bushes, and forest occupying most of the area. Wheat and corn gradually yield to rye, barley, oats, and potatoes. On the poorest soils, after one crop of cereals the land is left fallow for one or two years. Forests, however, yield abundant products, notably hazelnuts (in the province of Avellino) and chestnuts.

Livestock

Livestock enterprises occupy a secondary place in the agricultural economy of Campania, partly because there is little local demand for animal products, partly because feed crops are difficult to introduce in the types of farming most generally adopted.

Horses, mules, and asses.- Draft animals of the equine group are used on the farm in the volcanic areas for personal conveyance and to move the truck crops to market. The provinces of Naples and Salerno account for 80 percent of all the horses. Asses (87,000) outnumber both horses and mules. The latter are often used as draft animals on farms.

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Cattle.- The native cattle of Campania belong to the podolic group: large-size, hardy animals kept on pasture the year round and only occasionally used for draft. In the plain of Salerno the raising of water buffaloes assumes special importance. Male animals are sometimes used for farm work such as transportation of feed and grain crops, but the main function of the buffalo is milk production. Buffaloes are kept wild and allowed to roam the swamps and marshy fields of the area. Once or twice a day, the ranchers call the females to special places for milking. The lactation lasts 8 to 9 months, each animal producing 1,000 liters of milk with a butterfat content of 7.8 percent. Females are often kept until they reach 17 or 18 years of age, while male calves are slaughtered at 6 or 7 months. Buffalo milk is converted into special cheese, preserved in brine, which is sold at high prices in Rome and Naples.

In the Vallo di Diano cattle of the podolic type are raised for beef and milk production.

Around Amalfi and Nocera most of the cattle are dual-purpose animals of mixed origin, with strains of the Ayrshire and Brown-Swiss breeds.

Cattle raising assumes different forms in the province of Naples. Brown-Swiss and Holstein cattle are raised around Pozzuoli and Sorrento. Beef cattle are raised at Castellammare and in the northern sections.

Swine.- Campania has a swine population of 170,000 head, mostly in the provinces of Naples and Salerno. Pigs are often purchased in the mountain provinces (where they are kept on pasture and fed on acorns and chestnuts) and fattened on corn in the coastal plains.

Sheep and goats.- Over two-fifths of the 400,000 sheep of Campania are in the province of Salerno. As usual, migrations from the plains to the mountains take place during the spring, with many flocks coming to Campania from the plains of Puglia.

Mutton and lamb consumption in the region is extremely low, the lowest of all Southern Italy.

In the mountains and around Capua there is some production of goat's milk for direct human consumption.

Poultry.- Poultry enterprises have little or no importance except for the raising of turkeys on large farms in the provinces of Avellino and Benevento.

Food Problems

Campania is especially well-equipped with processing industries and storage facilities. The region has large plants for the processing of raw materials (hemp at Frattamaggiore, sugar beets at Battipaglia) as well as canning plants for tomatoes, other vegetables and fruits, important factories for the manufacture of alimentary pastes, jams, preserves, etc.

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On the other hand the region imports grains, mostly from America, and has surpluses only of potatoes, vegetables, fruits, and wine.

Many rural areas are dependent upon outside sources for part of their staple foods. Naples, with its high consumption of alimentary pastes, depends upon other regions and foreign sources for supplies of durum wheat.

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CAMPANIA

Agricultural Statistics

I Main Crops

Commodity	Area Harvested 1933-37 (1000 Ha.)	Area Harvested 1940 (1000 Ha)	Production 1933-37 (1000 Qls)	Production 1940 (1000 Qls)	Yield per Ha. 1933-37 (Quintals)	Yield per Ha. 1940 (Quintals)	Planting Time From	Planting Time To	Harvesting Time From	Harvesting Time To
Wheat 1/	266.3	268.5	2,810	2,884	10.6	10.7	Oct. 1	Dec. 31	June 1	July 25
Rye	5.2	4.0	57	45	11	11.2	Sept. 20	Nov. 15	June 1	July 10
Barley	5.3	7.5	54	91	11	12.1	Sept. 20	Nov. 15	June 1	July 10
Oats	26.0	29.1	253	371	9.8	12.8	Sept. 30	Nov. 20	June 1	July 10
Corn 2/	116.8	116.7	1,467	1,725	11.6	12.4	Mar. 15	May 20	Aug. 15	Sept. 30
Horse beans	32.0	28.7	242	265	7.7	9.2	Sept. 30	Nov. 15	May 15	July 20
Kidney beans	77.4	74.3	373	380	..	..	Mar. 15	May 15	June 20	Sept. 15
Other legumes	-	-	122	141	-	-	-	-	-	-
Potatoes 3/	58.6	58.9	4,238	4,748	68	71.2	Feb. 25	Apr. 20	June 10	Sept. 5
Tomatoes	9.5	11.9	1,517	1,711	-	-	Apr. 15	June 20	July 1	Sept. 30
Other vegetables	20.7	24.1	2,328	2,386	-	-	-	-	-	-
Sugar beets	.3	1.8	66	300	257.4	172.2	Mar. 1	Apr. 30	Aug. 1	Sept. 30
Hemp	20.4	4/	223	4/	10.8	4/	Mar. 25	May 20	July 20	Aug. 15
Tobacco	4.1	4/	78	4/	-	-	Apr. 1	May 31	July 15	Oct. 20
Cult. meadows 5/	43.1	51.4	1,295	1,867	-	-	-	-	-	-
Nat. " 5/	54.4	6.6	589	201	-	-	-	-	-	-
Pastures 5/	129.9	161.5	963	1,317	-	-	-	-	-	-
Vineyards	6/ 61.5	6/ 51.8	7/ 295	7/ 218	-	-	-	-	July 10	Oct. 10
	8/ 171.3	8/ 167.0	9/ 3,437	9/ 2,085	-	-	-	-	Sept. 20	Nov. 15
Olives	6/ 55	57.8	10/ 123	10/ 58	-	-	-	-	Oct. 20	Mar. 1
	8/ 107.3	100.3								
Deciduous fruits	-	-	1,339	1,403	-	-	-	-	-	-
Nuts	-	-	652	11/ 253	-	-	-	-	-	-
Citrus fruits	-	-	550	272	-	-	-	-	-	-
Figs, prunes	-	-	94	217	-	-	-	-	-	-

Office of Foreign Agricultural Relations. Based on official statistics.

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " spring corn only
3/ " " " " " " common potatoes only.
4/ Not available.
5/ All production in "normal hay".
6/ In groves and orchards.
7/ Grapes for direct consumption
8/ In open fields
9/ Wine (1,000 Hls.)
10/ Olive oil
11/ Does not include chestnuts.

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CAMPANIA

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	64,020	15,880	86,830	169,870	32,390 1/	178,277	421,990	122,677
1940	54,000	14,000	83,000	184,000	2/	181,000	466,000	120,000

B. Live Weight by Classes of Livestock (March 1938)

Horses, mules, asses	All Cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
558,973	815,539	131,649	167,310	41,064

C. Livestock Products (1937)

Cow's Milk 3/	Butter	Cow's and sheep's cheese	Cottage cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
1,080	3	50	9	501

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the need of the calf
2/ Not available.
3/ For direct consumption.

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CAMPANIA

III. Fertilizer Consumption, average 1936-38 and 1940.

Fertilizer	1936-38	1940
	Qls.	Qls.
Superphosphates	501,691	556,219
Ground phosphates	312	---
Basic slag	---	---
Ammonium sulphate	301,455	455,759
Calcium cyanamide	45,313	45,349
Ammonium nitrate	6,029	8,583
Calcium nitrates	17,450	23,396
Sodium nitrate	22,280	25,679
Potassium salts	4,067	10,014
Leucite	---	---
Potassium by-products 1/	---	---
Ammonium phosphate	3,611	2,164

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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CAMPANIA

IV. Consumption of Plant Sprays
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of soda	5,000	Pyrethrum	67
Containing arsenite	400	Rotenone	---
Arsenates	95,614	Fluorine silicate	645
Sulphides and polysulphides	---	Oxychlorides of copper	323,433
Carbon bisulphide	4,747	Other copper products	---
Tar oil	3,200	Sulphur	2,580,322
Tar oil products	11,593	Copper sulphur	23,817
Zinc phosphide	433	Iron sulphate	98,533
Zinc chloride and sulphate	---	Copper sulphate	8,742,333
Nicotine extract, common	18,636		
Nicotine extract, superior	1,889		
Nicotine powder	8,343		
Nicotine sulphate	132		
Nicotine soap	348		
Monital, nicotine	2,393		
Other nicotine products	5,079		
Quassio wood	5,558		
Quassio extract	2,048		

Office of Foreign Agricultural Relations. Based on official statistics.

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3. Puglia

Types of Farming

In the agricultural economy of Italy, Puglia holds a position of utmost importance. Not only does this region yield large shares of the total production of many crops, but it also supplies essential raw materials to the processing industries of several other regions.

Within the region itself, agricultural pursuits absorb over 50 percent of the gainfully employed, or almost one-fifth of the total population. Moreover, the processing of agricultural products constitutes the main industrial activity.

As is the case for most of Italy, physiographic factors are of deciding importance in determining types and forms of agricultural production. In Puglia most social and economic problems stem directly or indirectly from the question of the water supply.

Throughout the region, from the headland of Gargano to the "heel" of the Italian boot, the land lies in low plains, terraces and plateaus. The whole region is like a huge block of limestone, generally impermeable to water but broken into gaps and ravines. Thus, water from rainfall soon disappears under the ground and the region lacks wells and watercourses. This creates a tremendous problem of water supplies for human consumption, which in turn has resulted in a unique pattern of settlement.

The population necessarily concentrates in large centers, where water has been made available through aqueducts originating in the western slopes of the Appennini. In the region as a whole, 92 percent of the population is concentrated in urban centers, one-fifth of which have over 10,000 inhabitants; so that a very small percentage of the total population lives in rural surroundings. Furthermore, large areas are entirely depopulated, noteworthy among them 1,500 square kilometers of agricultural land between Andria and Cerignola.

Because of the specific pattern of settlement, Puglia presents a unique combination of sparsely populated, extensively farmed areas, and sections of dense population and extremely intensive agriculture. All over the region, the crops are those that can withstand the summer droughts. With no water available for irrigation, the progress accomplished in the field of agricultural production has been conditioned by changes in the pattern of settlement and by improvements of varieties and techniques of cultivation of dry-climate crops.

Though climate, soil, and relief are of remarkable uniformity throughout the region, five main agricultural areas can be delineated:

a) The small peninsula or headland of Gargano in the northernmost part of Puglia;

b) The fertile plains of the Tavoliere between the Fortore and the Ofanto rivers;

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c) The plateaus and terraces of the Murge;

d) The coastal fringe, rich in harbors and inhabited centers, that lies between the Murge and the Adriatic Sea; and

e) The Salentina peninsula, which separates the Gulf of Taranto from Otranto's channel.

Gargano is a rocky, mountainous region where population centers form a circle on the slopes of the mountain of the same name. It is essentially an area of small holdings, with much of the population engaged in part-time farming and fishing. Production is mostly for home consumption and consists largely of bread grains, potatoes, olive oil, fruits and some vegetables. Noteworthy is the production of grapes around San Severo and the cultivation of citrus fruits all over the area.

The Tavoliere is a region of extensive farming. The most common type of agricultural holding is the masseria, a large estate of over 200 hectares where the agricultural labor resides in a central farmstead. Production is centered around wheat, barley and oats, with part of the land remaining fallow one or two years. This is the largest wheat-producing area of Italy, and it supplies durum wheat to most of the country. The province of Foggia alone accounts for 4 percent of Italy's total production.

Although the land tenure pattern of the Tavoliere is essentially a latifundistic one, farming practices are far from primitive. Most farms are highly mechanized and make extensive use of modern implements and machinery. Locomotives and caterpillar tractors are widely used in plowing, and binders and combines do most of the harvesting. Wheat straw is seldom used on farms; more often it is shipped to Foggia where large paper mills and cellulose factories are located. Storage facilities for grains are also typical of the region, and most of the wheat for the market is stored at Foggia in underground chambers.

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The plateaus of the Murge are also a grain-producing area. Oats is the main crop on the western slopes, with more diversified farming prevailing in the smaller holdings of the east. Latifundia, far less mechanized than in the Tavoliere, occupy the western region, while in the east small peasant-owned holdings appear around the villages. Here vegetables, almond trees and vineyards assume especial importance.

The coastal fringe is characterized by small peasant-operated holdings, with a high degree of diversification. Centuries of tenacious work and toil have converted the coastal plain into a belt of orchards and vegetable gardens that gradually extends to the southernmost slopes of the Murge. The density of population naturally increases with the intensity of agricultural exploitation, reaching 500 persons per kilometer in the area around Bari.

Among vegetable and fruit crops, the most important are onions, garlic, fresh legumes, olives, almonds, grapes for wine (around Trani), cherries (around Bisceglie). Also important around Bari is the production of carob beans, used both for human consumption and for animal feeding.

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The large plain of Salento is one of Italy's most important fruit-growing areas. Specialized fruit farms are rare; more often fruit production is combined with grain and vegetable enterprises and with some production of industrial crops. Foremost among the latter is tobacco of the light oriental type for the making of cigarettes. While in northern Italy, tobacco production is organized by licensing producers to place definite acreages under cultivation and by buying the crop after it has been cured, in Salento tobacco is cultivated under annual contracts and the crop is delivered to Government-owned plants for curing. Tomatoes, fresh legumes, and cantaloupes are the main truck crops.

Figs, olives and almonds are among the main tree crops. Especially important are the wines of Martina Franca and the dry figs of Lecce and Brindisi.

Livestock

Livestock production cannot develop in Puglia as an essential part of the farm enterprise. Large farm animals are affected by the shortage of drinking water. Pastures are productive only during the winter, while the cultivated meadows, of such great importance in other regions of Italy, cannot survive the summer droughts. Thus much of Puglia's livestock industry is not connected with agricultural exploitation and relies upon migration of herds and flocks to mountain pastures during the summer. Farm animals are used essentially for draft, yielding animal products only where the feed supply has been stabilized through ensilage and, in very limited areas, through irrigation.

Horses, mules and asses. - Typical of Puglia is the prevalence of equine animals over cattle, which is due mostly to the manifold purposes for which the former class of livestock is raised. With the population living in large centers, there is a great need for farm animals that can be used both as means of conveyance and in farming operations. Emphasis is accordingly placed on speed rather than on power because the heavier work on the grain farms is done by tractors and locomotives.

Horses in Puglia number over 80,000, mostly in the provinces of Bari and Foggia, which also have over 50 per cent of the asses, totalling 45,000. Mules assume especial importance in Puglia due to the availability of excellent sires, especially around Martina Franca in the province of Taranto. In number of mules, Puglia is second only to Sicily. The hardiness of these animals, offspring of the large native sires and Belgian mares, places them in great demand all over Italy. There is considerable consumption of horse meat in the coastal fringe and the Salento.

Cattle. - The cattle population of Puglia is among the lowest of the Kingdom, with a little over three head per square kilometer of agricultural land. It comprises about 57,000 head, mostly in the provinces of Bari and Foggia. Only 17 percent of the cattle are used as draft animals, with small herds of 3 to 20 head being the most common type of enterprise.

The breed generally raised is of the podolic type; large-size, powerful animals mostly of the dual-purpose (beef-draft) type. Only around the main

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centers are there a few herds of dairy cattle, mostly Brown-Swiss around Bari, and both Brown-Swiss and Holstein in the other provinces. Except in the provinces of Foggia, where the butter and cheese industries assume some importance, over half of the milk is sold for human consumption.

Sheep and goats. - In numbers of sheep, Puglia, with 800,000 head, ranks third among all regions of Italy. The sheep industry is here complementary to the mountain enterprises of the Abruzzi and Latium. The flocks, having spent the summer on the slopes of the Appennini, migrate in September to the pastures of the Tavoliere following the road-pastures known as tratturi (see page 77). The flock travels about 15 kilometers per day, with halts lasting 12 or 14 hours, during which the ewes are milked and some cheese is prepared. Preceding the flock is a group of caretakers, with mules, that prepare the spots for camping. The whole journey lasts but 15 to 20 days.

The tratturi belong to the Public Domain and appear as badly eroded, semi-abandoned tracts, devoid of any vegetation except for some wild grasses. They constitute a great obstacle in the path of progressive farming in Puglia, but all attempts to change this natural practice have hitherto failed. The most obvious remedy would be to provide railroad transportation for the migrant flocks and to convert the tratturi into farm fields.

For a full appraisal of the problems of sheep migration, mention should be made of the fact that the migrating flocks often become disease-carriers. Thus, for instance, in 1929 the flocks that followed the tratturi contracted hoof-and-mouth disease. Not only was the entire sheep population affected, but the infection spread all along the tratturi to the cattle and swine of the surrounding areas. It has also been stated that sheep disseminate weeds from the mountain pastures to the wheat fields of the plains.

All over Puglia an important cheese industry is connected with the sheep enterprise. Most of the cheese is manufactured in the household and sold to wholesalers in urban centers.

The sheep industry also yields over 5,000 tons of meat, or 17 percent of the total production of Italy. About one-half of all the sheep slaughtered are ewes, mostly culls from flocks. Per capita consumption is relatively low in Puglia, which ranks only fifth among all Italian regions.

Swine. - Swine in Puglia number only 26,000 head, over half of which are in the province of Foggia. In this latter area and especially in the forest of Gargano, swine graze on acorns and other forest products. Altogether swine enterprises are of negligible importance.

Poultry. - Poultry production is limited to the peasant holdings of the coastal fringe of the Gargano and the Salento. A native breed, the black hen of Puglia, is generally raised. Domestic production is not sufficient to meet the requirements of the urben population.

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Food Problems

Most of the industrial economy of Puglia is based upon processing industries. These include plants for the extraction and chemical treatment of olive oil, mills and factories for the manufacture of alimentary paste, canning plants for tomatoes (Foggia). Small processing plants are to be found in most of the inhabited centers, especially for the production of tomato pastes, brine products and pickles.

In peacetime Puglia exported olive oil, some of which was further refined in Liguria, and wheat products, dried fruits, cheese, almonds, carob beans, vegetables, and tomato paste. Rome and the northern provinces absorbed the greater part of the export trade. Puglia's wines have a high alcoholic content, thus giving origin to important exports to Veneto, where they are used to "cut" the low-alcohol wines of the Po Valley.

Puglia's food imports consisted mostly of live animals, animal products (meat and eggs) and sugar.

Problems of food supply do not loom large in most of the region, because most of the population, even in large centers, is engaged in farming. On the other hand, wheat products and olive oil are the basis of the dietary of the low-income groups in Bari, Brindisi and Taranto. Rationing of these staples works great hardship on the urban population, whose consumption of non-rationed foodstuffs is exceptionally low.

Control of wheat production is a comparatively easy task on the commercialized farms of the Tavoliere but becomes difficult in the Salento in the coastal fringe and in the southeastern Murge. Even in normal times, southern Puglia is on a deficit basis for wheat.

With regard to the coastal fringe, consideration should be given to the dependence of the population upon seafood. The small harbors that stud the coast from Barletta to the Brindisi are ordinarly used by large flotillas of fishing boats that operate in the Adriatic and near the Greek Coast. Interruption of their activities should create an acute problem with regard to supplies of animal proteins, in a region where the daily intake of these food constituents was abnormally low even in peacetime.

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PUGLIE

Agricultural Statistics

I Main Crops

	Area Harvested: 1933-37	Area Harvested: 1940	Production 1933-37	Production 1940	Yield per Ha. 1933-37	Yield per Ha. 1940	Planting Time: from	Planting Time: to	Harvesting Time: from	Harvesting Time: to
	1000 Ha	1000 Ha	1000 Qls	1000 Qls	Quintals	Quintals				
Wheat 1/	435.4	449.3	4,729	4,869	10.9	10.8	Oct. 1	Dec. 20	June 1	July 25
Barley	34.3	38.2	329	418	9.6	10.9	Oct. 1	Jan. 15	May 15	June 20
Oats	118.5	125.1	1,451	1,680	12.2	13.4	Sept. 10	Nov. 25	May 20	July 15
Corn 2/	12.2	26.3	148	191	12.2	7.3	Mar. 25	May 5	Aug. 1	Sept. 20
Horse beans	71.7	79.1	716	585	9.9	7.4	Oct. 10	Nov. 30	May 15	June 30
Kidney beans	2.8	4.0	22	34	-	-	Feb. 20	Apr. 30	July 1	Aug. 31
other dry beans	-	-	309	333	-	-	-	-	-	-
Potatoes 3/	8.7	14.7	420	948	42.0	53.1	Feb. 1	Apr. 20	June 20	Aug. 25
Tomatoes	5.7	6.8	480	891	-	-	Mar. 1	Apr. 20	June 20	Nov. 30
Other Vegetables	33.2	19.4	1,075	1,186	-	-	-	-	-	-
Flax (seed)	.5	5.6	4	45	7.5	8	Oct. 20	Nov. 30	June 20	July 31
Cotton	.1	4/	5	4/	-	-	Mar. 20	May 31	Aug. 20	Nov. 10
Tobacco	15.9	4/	135	4/	-	-	Apr. 10	May 31	June 20	Aug. 31
Cultivated meadows	5/ 5.1	2.2	200	121	-	-	-	-	-	-
Pastures 5/	279.4	274.1	2,179	2,054	-	-	-	-	-	-
Vineyards	6/ 170.6	6/ 171.5	7/ 498	484	-	-	-	-	July 15	Nov. 5
	8/ 13.7	8/ 21.7	9/ 4,408	3,033	-	-	-	-	Aug. 25	Oct. 31
Olives	8/ 352.9	293.7	11/ 677	11/ 322	-	-	-	-	Oct. 15	Mar. 15
	8/ 107.6	172.2			-	-	-	-	-	-
Deciduous Fruits	-	-	233	301	-	-	-	-	-	-
Nuts	-	-	618	10/ 712	-	-	-	-	-	-
Citrus Fruits	-	-	96	60	-	-	-	-	-	-
Figs and Prunes	-	-	335	393	-	-	-	-	-	-

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " Spring corn only.
3/ " " " " " " common potatoes only.
4/ Not available.
5/ All production in "normal hay". Natural meadows are negligible
6/ In groves and orchards.
7/ Grapes for direct consumption.
8/ In open fields.
9/ Wine (1,000 of Hls.).
10/ Does not include chestnuts.
11/ Olive Oil.

Office of Foreign Agricultural Relations. Data from Annuario Statistico Italiano.

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PUGLIE

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	82,613	62,440	46,357	63,973	5,220 1/	28,077	802,220	123,560
1940	82,000	59,000	45,000	65,000	2/	35,000	908,000	120,000

B. Live Weight by Classes of Livestock (March 1938)

Horses, mules, asses	All Cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
657,016	246,340	21,456	261,056	44,363

C. Livestock Products (1937)

Cow's milk 3/	Butter	Cow's and sheep's cheese	Cottage cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
255	1	48	14	1,051

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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PUGLIE

III Fertilizer Consumption, average 1936-38 and 1940

Fertilizer	1936-38	1940
	Qls.	Qls.
Superphosphates	569,579	548,353
Ground phosphates	367	---
Basic slag	---	---
Ammonium sulphate	106,027	151,944
Calcium cyanamide	14,003	11,792
Ammonium nitrate	10,440	7,721
Calcium nitrates	33,739	53,532
Sodium nitrate	16,030	27,561
Potassium salts	17,707	31,823
Potassium by-products 1/	---	---
Leucite	---	---
Ammonium phosphate	12,709	8,386

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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PUGLIE

IV. Consumption of Plant Sprays
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of soda	3,333	Pyrethrum	1,033
Containing arsenite	11,750	Rotenone	---
Arsenates	20,590	Fluorine silicate	299
Sulphides and polysulphides	300	Oxychloride of copper	733,600
Carbon bisulphide	11,532	Other copper products	---
Tar oil	---	Sulphur	3,503,858
Tar oil products	237	Copper sulphur	305,243
Zinc phosphide	1,300	Iron sulphate	154,100
Zinc chloride and sulphate	---	Copper sulphate	6,370,867
Nicotine extract, common	10,164		
Nicotine extract, superior	1,027		
Nicotine, powder	237		
Nicotine sulphate	59		
Nicotine soap	60		
Monital, nicotine	352		
Other nicotine products	475		
Quassio wood	192		
Quassio extract	42		

Office of Foreign Agricultural Relations. Based on official statistics.

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4. Lucania

Types of Farming

The unfavorable climate, the torrential character of watercourses, the scourges of malaria and earthquakes, and a body of complex institutional factors have made Lucania the poorest of all Italian regions. With few natural resources and industrial activities, without harbors and far from great urban centers, the region is wholly dependent upon agriculture. Over three-fourths of the gainfully employed are engaged in agricultural pursuits, while processing and marketing of agricultural commodities absorb most of the non-agricultural population. Such predominance of agriculture in the economic life of a region obtains for no other part of Italy except Abruzzi. Both there and in Lucania, this type of economy is accompanied by an extremely low level of living which often borders on destitution. Farming is the sole source of livelihood that is available. Therefrom the lower income groups eke out a miserable living, while the upper strata seek employment in other parts of the country.

Malaria, which has been fought so successfully elsewhere in Italy, is still Lucania's greatest evil. It affects not only the pattern of settlement, but also the forms of land exploitation. The coastal plains, from which other Southern regions derive much of their wealth, are in Lucania wholly depopulated. Even the important railroads that cross the region did not affect the settlement of the Ionian shores. Furthermore, man seems to avoid in Lucania even the valleys of the main watercourses. Hillsides and mountain slopes are the centers of agricultural exploitation and of economic life in general.

The western part of Lucania, which lies entirely in the province of Potenza, is a section of rugged hills and mountains. The population lives in small villages and commutes daily to the fields. Holdings are small, operated by the owner, one person usually managing several separate and distant tracts. Field crops are grains (wheat, oats and rye) and legumes (horse beans, chick peas, lentils). Corn is raised for animal consumption, while potatoes are altogether unimportant. Vineyards and olive trees scattered all over the land yield valuable products for local consumption. In recent years the savings of immigrants returning from the United States have made possible large-scale planting of fruit trees, even in the mountains.

Northeastern Lucania comprises the fertile, densely populated region of Vulture, which could well rank among the best agricultural areas of southern Italy if frequent earthquakes did not spread havoc and desolations. The population lives in the country, often operating small holdings, planted in wheat, oats and vegetables.

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Southeastern Lucania comprises the province of Matera. Most of the land is held in large units operated by capitalistic tenants with hired labor and sharecroppers. The population lives in large centers, similar to those found in Puglia, but laborers frequently spend the entire week on the farm, going back to their families only at intervals. Most of the land is cultivated in grains, especially wheat, barley and oats. Tree crops are altogether of secondary importance, except for some citrus groves in the valley of the Agri River.

Livestock

Livestock plays a comparatively important role in the agriculture of Lucania, which in many respects, retains features of a pastoral economy. Permanent pastures occupy over 30 percent of the total area in agricultural production, assuming greater importance in the ill-exploited plains.

Horses, mules and asses. Horses amount to 44,000 head, evenly distributed between the two provinces. Asses number about 28,000, two-thirds of which are in the province of Potenza, and mules and hinnies about 25,000.

All animals of this type are used for personal conveyance and transportation of small loads of grains and feed. Asses are also used to move oil presses, pumps, and small mills. Seventy-three percent of the oil presses of the region are moved by animals.

Cattle. Lucania has fewer cattle than any other region of Italy but, on the basis of population and area, is much better equipped with cattle than Puglia.

The total cattle population numbers over 50,000 head, two-thirds of which are in the province of Potenza. Only 30 percent of the cattle are used as draft animals; yet unfavorable environmental conditions have led to the adoption of triple-purpose breeds of the podolic group. The most common breeds are the Lucano and Pugliese, the latter of larger size and more rapid growth. The animals are kept on pasture during the day and in open sheds at night, where they are given some hay and straw. Small herds of less than 10 animals are the most common type of enterprise in the province of Potenza. Large herds of over 50 head prevail in the latifundia of the southeast. Small herds of Brown Swiss cattle are raised around Potenza and Matera.

Sheep and goats. The sheep population of Lucania numbers over 460,000 animals, over half of which are in large flocks of more than 100 head. In wool production Lucania ranks fifth among all regions of Italy, though part of the output is of low-quality. Cheese from sheep milk is produced in considerable amounts around Moliterno. Production of mutton and lamb reaches 1,550 metric tons per year, with a per capita consumption of over 3 kilograms, the second highest in Italy.

Swine. The swine industry assumes different features in the two provinces of Lucania. Of a total swine population of 65,000 head, over two-thirds are in the province of Potenza. In this section swine are raised in small herds, kept in pens and fattened on corn. In the province of Matera, herds of over 100 head comprise more than one-fourth of the total swine population.

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Pigs graze freely in the fields and on woodland; they are mostly slaughtered for local consumption.

Food Problems

Lucania depends to a very limited extent upon interregional trade, importing negligible amounts of agricultural products and exporting oats, fruits and olive oil. With most of the population, engaged in farming and without large urban centers, no special problem should arise in connection with the supply of food for the civilian population if the cereal crop is average. But since wheat products are the main constituents of the local diet and the region produces smaller amounts of legumes, potatoes, and vegetables than other parts of Italy, a short cereal crop assumes here a tragic significance.

Because of favorable climate, potatoes could become one of Lucania's major crops. At present, however, the enterprise is neglected in the province of Potenza, where consumption on the part of peasants is extremely low. In the area around Matera, prefernce is given to crops which can be shared with the laborers, the latter preferring products that can easily be stored and made into bread. Potato production could thus be greatly expanded by providing commercial outlets for the crop.

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LUCANIA

Agricultural Statistics

I Main Crops

	Area Harvested		Production		Yield per Ha.		Planting Time		Harvesting Time	
	1933-37	1940	1933-37	1940	1933-37	1940	From	to	From	to
	1000 Ha	1000 Ha	1000 Qls	1000 Qls	Quintals	Quintals				
Wheat 1/	199	216.8	2,394	2,021	11.1	9.3	Oct. 15	Dec. 20	June 10	July 20
Rye	.3	.3	3	2	9.5	8.7	Sept. 25	Oct. 20	June 15	July 15
Barley	11.1	11.4	125	127	11.2	11.2	Oct. 10	Nov. 20	June 1	June 30
Oats	57.2	59.6	667	711	11.6	11.9	Oct. 10	Nov. 20	June 1	June 30
Corn 2/	23.9	25.0	243	199	10.1	8.0	Apr. 1	Apr. 30	Aug. 10	Sept. 20
Horse Beans	31.8	30.0	334	147	10.4	4	Oct. 10	Nov. 15	May 20	June 20
Kidney Beans	1.6	2.6	10	12	-	-	Apr. 5	May 15	July 5	Oct. 10
Other dry legumes	-	-	24	28	-	-	-	-	-	-
Potatoes 3/	8.3	9.2	368	419	44.2	45.6	March 10	Apr. 10	July 20	Sept. 20
Tomatoes	.5	.6	62	76	-	-	March 20	May 31	June 1	Aug. 30
Other vegetables	13.4	7.7	657	514	-	-	-	-	-	-
Cultivated Meadows 4/	4.1	4.1	138	134	-	-	-	-	-	-
Natural meadows 4/	1.9	1.9	54	47	-	-	-	-	-	-
Pastures 4/	271	283.6	1,796	1,344	-	-	-	-	-	-
Vineyards	5/ 14.2	5/ 17.3	6/ 13	6/ 16	-	-	-	-	-	-
	7/ 1.6	7/ 1.8	8/ 318	8/ 267	-	-	-	-	Sept. 15	Oct. 15
Olives	5/ 18	5/ 17.7	10/ 79	10/ 61	-	-	-	-	Sept. 20	Nov. 15
	7/ 18.6	7/ 19.1			-	-	-	-	Nov. 1	Feb. 28
Deciduous Fruits	-	-	71	38	-	-	-	-	-	-
Nuts	-	-	49	9/ 16	-	-	-	-	-	-
Citrus Fruits	-	-	23	24	-	-	-	-	-	-
Figs and Prunes	-	-	11	13	-	-	-	-	-	-

1/ Yields, harvesting and planting time for winter wheat only.
2/ " " " " " " Spring corn only.
3/ " " " " " " common potatoes only.
4/ All production in "normal hay".
5/ In groves and orchards.
6/ Grapes for direct consumption.
7/ In open fields.
8/ Wine (1,000 Hls.). 9/ Does not include chestnuts. 10/ Olive Oil

Office of Foreign Agricultural Relations. Data from Annuario Statistico Italieno.

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LUCANIA

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936--38	14,040	23,833	29,937	55,883	860 1/	65,187	435,707	102,303
1940	13,000	24,000	30,000	55,000	2/	71,000	467,000	109,000

B. Live weight by classes of Livestock (March 1938)

Horses, mules, asses	All Cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
173,017	204,592	46,215	118,998	75,946

C. Livestock Products (1937)

Cow's Milk 3/	Butter	Cow's and Sheep's Cheese	Cottage Cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs
96	2	13	5	452

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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LUCANIA

III. Fertilizer Consumption, average 1936-38 and 1940

Fertilizer	1936-38	1940
	Qls.	Qls.
Superphosphates	171,414	159,082
Ground phosphates	8	---
Basic slag	---	---
Ammonium sulphate	3,340	3.387
Calcium cyanamide	2,856	2,258
Ammonium nitrate	866	362
Calcium nitrates	7,020	8,675
Sodium nitrate	1,624	780
Potassium salts	10	50
Potassium by-products 1/	---	---
Leucite	---	---
Ammonium phosphate	3,041	1,168

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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LUCANIA

IV. Consumption of Plant Sprays
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of soda	---	Pyrethrum	---
Containing arsenite	---	Rotenone	---
Arsenates	837	Fluorine silicate	47
Sulphides and polysulphides	---	Oxychloride of copper	69,483
Carbon bisulphide	3,251	Other copper products	---
Tar oil	---	Sulphur	319,233
Tar oil products	---	Copper sulphur	44,533
Zinc phosphide	100	Iron sulphate	14,387
Zinc chloride and sulphate	---	Copper sulphate	369,100
Nicotine extract, common	---		
Nicotine extract, superior	---		
Nicotine powder	---		
Nicotine sulphate	---		
Nicotine soap	---		
Monital, nicotine	---		
Other nicotine products	204		
Quassio wood	---		
Quassio extract	---		

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Office of Foreign Agricultural Relations. Based on official statistics.

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5. Calabria

Types of Farming

Agriculture is Calabria's foremost economic activity, not only because 26.4 percent of population is engaged in agricultural pursuits but because the few industries of the region are based upon the processing of locally-grown commodities.

The long, narrow, mountainous peninsula (248 kilometers in length with a maximum width of 111 kilometers) has unique features of soil and climate. The variety of environmental conditions results in a range of agricultural products which comprises both the Mediterranean and tropical crops (bananas and citrus fruits), and the continental and alpine ones (potatoes and rye).

The isthmus of Squillace, which is 28 kilometers in width, divides Southern Calabria from the northern region. Southern Calabria comprises the Mountain of Aspromonte and the citrus-growing regions around Reggio, as well as the plain of S. Eufemia. In this part the crops tend to be of the Mediterranean type. In northern Calabria the main mountain of La Sila has crops similar to those of the Alps. In the region as a whole, the economic importance of the hills and mountains is far greater than that of the plains which, in spite of the recent attempts towards reclamation, are depopulated and malaria-infested.

Large holdings with some features of the latifundia occupy less than one-tenth of the productive area. But the large estates of Calabria, especially important in the province of Cosenza, represent a somewhat more progressive form of agriculture than those of Lucania and Sicily. They have been mechanized with American machinery (Allis-Chalmers and Caterpillar tractors) for which a shortage of repair parts may have developed. The reclamation plants at Sibari and S. Eufemia require abundant supplies of fuel oil.

In sharp contrast with the large holdings are the small units of the coastal regions, where the land is more productive and more intensively cultivated. No definite pattern of land tenure may be recognized for the mountains, except that around 1,000 meters above sea level the holdings tend to become extremely small and the production unit comprises several separate and distinct tracts.

Among the field crops, soft wheat is the most important one. Though in Calabria this crop is part of a regular rotation comprising a rinnovo (horse beans or potatoes or corn) and legume crops (sulla and crimson clover), wheat yields are among the lowest in the Kingdom (about 10 quintals per hectare).

Oats and barley, together with rye in the higher regions of the mountains and in the province of Catanzaro, are also noteworthy among small grains.

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Corn assumes in Calabria an importance altogether exceptional for southern Italy. Even more significant is the fact that about half of the corn is produced after a small grain crop, a circumstance which on one side indicates favorable climatic conditions and, on the other side, makes the output of this crop a matter of chance.

Potatoes are typically a mountain crop, mostly of the plateaus of the Sila. Also in the province of Catanzaro there is considerable production of peas and kidney beans.

In the Italian economy Calabria also assumes some importance for the production of those specialty crops which are scarce in the rest of the Kingdom. Thus, peanuts are grown in the province of Catanzaro (communes of Ricadi and Tropea and valley of the Mesima) and licorice is produced in the province of Cosenza. Cotton, flax and castor beans are also grown.

Tree crops assume different importance in the different provinces and localities. Among citrus fruits, oranges are important in the provinces of Reggio and Catanzaro. The small area between the Strait of Messina and the Cape Spartivento is the production center for Bergamots. Citrons are important in the province of Cosenza.

Olive trees, both in groves and associated with field crops, are equally important in all provinces. Calabria leads all other regions of southern Italy in the production of chestnuts and silkworms. The silk is processed at Villa S. Giovanni and then shipped to Lombardy.

Livestock

As in most regions of southern Italy the smaller classes of livestock (sheep and goats) predominate over the larger ones in Calabria.

In 1938, asses (75,000) comprised over 80 percent of all equine animals, with 9,000 horses and 8,000 mules.

Cattle are kept in Calabria on the range, with summer migrations to the mountains. The cattle of Calabria are of the podolic type, large in size and with some aptitude for milk production.

In the plain of S. Eufemia, beef cattle of the Simmenthal breed are raised. Brown-Swiss cattle assume some importance around the city of Reggio.

Sheep are the most important livestock of Calabria, with wool and milk production as main activities. Swine are altogether unimportant, while goats are especially important in the mountains.

Food Problems

The agricultural economy of the region, with a variety of staple foods, is such that food shortages seem unlikely. On the other hand, the mountain economy will tend to increase its self-sufficiency in times of social and economic disturbance, so that hoarding and illegal consumption of staples may

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be expected to occur in Calabria on a very large scale.

Among urban centers, only Reggio may present difficulties accruing from disruption of supplies.

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CALABRIA

Agricultural Statistics

I Main Crops

Commodity	Area Harvested		Production		Yield per Ha.		Planting Time		Harvesting Time	
	1933-37	1940	1933-37	1940	1933-37	1940	from	to	from	to
	1000 Ha	1000 Ha	1000 Qls	1000 Qls	Quintals	Quintals				
Wheat 1/	231.3	226.8	2,450	2,188	10.6	9.6	Sept. 20	Dec. 20	June 10	Aug. 5
Rye	12.1	9.9	109	77	8.9	7.8	Sept. 15	Nov. 30	June 5	July 20
Barley	9.9	11.8	90	106	9.1	9.0	Sept. 1	Nov. 30	June 1	Aug. 5
Oats	41.7	35.5	450	409	10.3	11.5	Sept. 10	Nov. 30	June 1	July 10
Rice (rough)	.2	.1	8	8	39.7	33.6	Apr. 15	May 15	Sept. 10	Sept. 30
Corn 2/	53.4	46.5	581	491	11.1	8.5	Apr. 1	May 20	Aug. 20	Sept. 30
Horse beans	25.5	27.8	251	76	10.0	2.7	Oct. 10	Feb. 10	May 1	June 30
Kidney beans	13.0	13.5	70	89	-	6.1	Apr. 10	June 20	June 30	Nov. 1
Other dry beans	-	-	214	299	-	-	-	-	-	-
Potatoes 3/	23.1	19.6	1,231	1,093	53.2	54.7	Feb. 1	May 30	June 1	Sept. 30
Tomatoes	1.8	2.5	318	364	-	-	Mar. 15	June 15	June 20	Oct. 15
Other fr. vegetables	9.5	8.6	654	700	-	-	-	-	-	-
Hemp	.2	4/	2	4/	9.1	4/	Mar. 1	May 20	July 10	Aug. 15
Cultivated meadows 5/	69.7	73.8	-	2,159	-	-	-	-	-	-
Natural meadows 5/	34.9	.4	525	12	-	-	-	-	-	-
Pastures 5/	181.2	189.4	803	980	-	-	-	-	-	-
Vineyards	6/ 40.7	6/ 42.0	7/ 56	7/ 57	-	-	-	-	July 15	Aug. 30
	8/ 19.1	8/ 21.1	9/ 540	9/ 365	-	-	-	-	Sept. 20	Oct. 20
Olives	6/ 127.4	6/ 146.1	10/ 283	10/ 123	-	-	-	-	Nov. 1	May 31
	8/ 114.4	8/ 90.0	-	-	-	-	-	-	-	-
Deciduous fruits	-	-	411	152	-	-	-	-	-	-
Nuts	-	-	931	11/ 33	-	-	-	-	-	-
Citrus fruits	-	-	1,108	1,484	-	-	-	-	-	-
Figs and prunes	-	-	155	291	-	-	-	-	-	-

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " spring corn "
3/ " " " " " " common potatoes"
4/ Not available
5/ All production in normal hay. Changes have occurred in the classification of meadows and pastures.
6/ In orchards and groves
7/ Grapes for direct consumption
8/ In open fields
9/ Wine - 1000 hls.
10/ Olive oil
11/ Does not include chestnuts

Office of Foreign Agricultural Relations. Based on official statistics.

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CALABRIE

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	9,440	8,177	75,760	120,047	45,280 1/	140,457	443,237	243,240
1940	9,000	7,000	74,000	127,000	2/	143,000	509,000	241,000

B. Live weight by classes of Livestock (March 1938)

Horses, Mules, Asses	All cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
207,554	495,253	108,698	151,662	78,396

C. Livestock Products (1937)

Cow's Milk 3/	Butter	Cow's and Sheep's Cheese	Cottage Cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
324	.1	25	11	400

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf
2/ Not available
3/ For direct consumption

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CALABRIA

III. Fertilizer Consumption, average 1936-38 and 1940

Fertilizer	1936-38	1940
	Qls.	Qls.
Superphosphates	233,630	239,955
Ground phosphates	334	---
Basic slag	---	---
Ammonium sulphate	16,128	33,454
Calcium cyanamide	7,874	7,013
Ammonium nitrate	13	---
Calcium nitrates	16,826	38,312
Sodium nitrate	854	650
Potassium salts	---	2,350
Potassium by-products 1/	---	---
Leucite	---	---
Ammonium phosphate	21,561	41,006

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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CALABRIA

IV. Consumption of Plant Sprays
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of soda	---	Pyrethrum	80
Containing arsenite	---	Rotenone	---
Arsenates	6,558	Fluorine silicate	47
Sulphides & polysulphides	---	Oxychloride of copper	125,883
Carbon bisulphide	6,060	Other copper products	---
Tar oil	1,200	Sulphur	762,205
Tar oil products	8,217	Copper sulphur	451,075
Zinc phosphide	167	Iron sulphate	24,000
Zinc chloride and sulphate	---	Copper sulphate	833,633
Nicotine extract, common	23,605		
Nicotine extract, superior	1,148		
Nicotine powder	110		
Nicotine sulphate	60		
Nicotine soap	44		
Monital, nicotine	116		
Other nicotine products	55		
Quassio wood	---		
Quassio extract	103		

Office of Foreign Agricultural Relations. Based on official statistics.

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THE ISLANDS

The two large islands of Sicily and Sardinia are the sole regions of Italy having clearly demarcated natural boundaries of geogrophic and military significance. Physical, economic and social conditions differ widely from those of other regions and from one island to the other. Because of these circumstances, and for obvious considerations of military nature, both Sicily and Sardinia should be discussed separately and independently.

I. Sicily

Types of Farming

Many of the problems related to the administration of Sicily accrue from the prevailing patterns of land tenure and land utilization. It is therefore necessary to consider at first those features of the agricultural economy of the island which, because of their uniqueness or because of their complex nature, loom especially important with regard to production, distribution and consumption of agricultural commodities.

The first and foremost characteristic of Sicilian agriculture is the wide range of crops grown, a condition which accrues not from diversification of the operating unit but from variations in soils, topography, and pattern of land tenure. The latter in particular, while apparently similar to those patterns obtaining in other parts of Italy, is, in reality, unique. Its significance with regard to production and distribution is such that a more detailed analysis of this subject appears justified.

Large holdings, known as latifundia, prevail in the mountainous arid regions of the central part of the Island and in two plains toward the seashore, the Piana di Catania in the East and the coastal plain between Gela and Sciacca in the South. The importance of the latifundia varies from province to province. They comprise from 19 to 42 percent of the total land. The absentee owners of these large estates rent them for cash to capitalistic renters, who in turn enter into various agreements with the labor force. Contracts of share-cropping (metateria and partitanza) are usually applied to the central part of the estate. Small tracts of land at the periphery of the estate are leased for cash as independent units. Agricultural laborers live in towns or villages, operate small holdings near the inhabited centers, and find additional employment in the latifundia. On the latifundium itself, quarters are provided only for the employees, the personnel in charge of the livestock, and a few other laborers hired on a monthly or annual basis.

With regard to field crops, the latifundium cannot be considered a large-scale unit; instead it comprises a number of small units to which but a few services (plowing, harvesting) are provided.

Durum wheat is the main crop, with horse-beans and other legumes constituting the rinnovo. Cotton takes the place of beans in the plains,

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while sulla is often inserted in the rotation to provide fodder and to restore the fertility of the soil.

Perennial crops play a negligible role in the latifundia economy. Livestock are kept mostly for draft, while smaller animals, especially sheep, have some importance, particularly in the mountains.

The small owner-operated holdings are farmed under similar conditions, except that here vineyards and olive trees acquire greater significance.

For an overall appraisal of the economy of the region it is necessary to emphasize that the latifundium is more of a left-over of ages past than a modern large-scale farm. Both for the latifundia and the peasant holdings the lack of diversification is to be emphasized. That the self-sufficiency for the household may be achieved under such conditions is essentially due to extremely low levels of consumption.

The somewhat primitive farming systems as well as climatic conditions result in great fluctuations of yields of wheat and beans. Short crops are a great social problem because peasants are usually heavily indebted at the end of the harvesting season.

In sharp contrast to the extensive agriculture of the large holdings of the interior, the coastal regions are characterized by a system of commercial farming upon small peasant holdings. The farm is often exceedingly specialized, with one main tree crop being the sole source of livelihood for the operator's family, which obtains most consumption goods from outside sources.

The basic cash crop is a tree crop, with vegetables and tomatoes acquiring some importance around large centers.

First in economic importance among the crops of the coastal fringe are the citrus fruits, although this enterprise occupies only 2 percent of the land. Citrus fruits are raised in the northern and eastern coastal plains and on the lower slopes of the mountains, with lemons up to 1,500 feet, and oranges between 1,500 and 3,000 feet. Under the climatic conditions of Sicily, irrigation acquires momentous importance. Lemon production takes place the year-round and is especially extensive in the province of Catania, where special practices of forcing the tree are widely applied. Forcing is performed by uncovering the roots and suspending irrigation during the dry months. In the fall, the roots are covered again, fertilizer is applied and the trees are carefully watered. This produces a crop (referred to as verdelli) which ripens in July and brings especially high cash returns.

Grape cultivation is well scattered on the coastal fringe, with two areas of major importance in the northeast and northwest corners. Grapes for direct consumption are produced only in Trapani and Palermo. Most of the product of other areas is converted into cheap wine for local consumption, with the exception of the valuable wines of Marsala and Masculi.

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The former is a fortified wine, made from Sicilian musts, alcohol, and distilled wines. The latter is produced in the Mount Etna region.

Cultivation of olives ranks third in importance among the enterprises of the coastal regions. Most of the trees are grown in specialized groves, except in the province of Catania where olives are dispersed on open fields. Almond, pistachio, hazelnut, chestnut are also among the important tree crops. However, their cultivation is less intensive than that of citrus fruits.

Vegetables and tomatoes constitute the main field crops of the area. They are grown together with tree crops in those areas where the latter are of less importance.

The whole economic life of this section is dependent upon the returns obtained from the marketable produce. The island itself provides no adequate markets for citrus fruits, almonds, pistachio nuts, early vegetables, and high-priced wines. It is thus imperative that these products be marketed efficiently and that provisions be made for the storage of what surpluses might accrue from disruption of communications.

Processing facilities for agricultural products are far from adequate, though a greater-than-normal share of the lemon crop may be diverted to the factories of citric and tartaric acid.

Essential also for the maintenance of normal conditions in agriculture are provisions for supplying fertilizer and plant sprays. The island depended upon other regions for its entire supply of fertilizer. Protection of plants against parasites, highly important for the small farmers of the coastal regions, also calls for supplying copper and arsenic salts, hydrocyanic acid, etc.

Livestock

Numbers and composition of the livestock population in Sicily greatly differ from those of other regions of Italy.

Horses, mules and asses far exceed cattle in importance, so that comparatively little fodder is converted into edible animal products. Sicily has about 20 percent of all the equine animals of Italy, 2.3 percent of the cattle, 2 percent of the swine, 7 percent of the sheep, and 16 percent of the goats. Mules and asses in turn constitute four-fifths of Sicily's equine animals; they are raised mostly in small groups of less than two head.

Cattle are Sicily's main deficiency. The most common breed is a native one, the Siciliana. The provinces of Siracusa and Ragusa have the best specimens of this breed, with some production of milk. A smaller and less developed type is raised in the hills and valleys, especially in the regions of Catania and Trapani. Cattle in the provinces of Messina,

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Caltanissetta, Enna, and Palermo are scrub animals, of questionable profitability and usefulness.

By and large the animals are dual-purpose cattle, and are used for draft and milk production. The Sicilian breed does not gain rapidly and steers are kept as bullocks rather than for beef. Fattening of animals, as practiced in the provinces of Messina and Catania, was based on the imports of steers from Sardinia. The native breed has a very low yield of meat, with the edible portion amounting to 45 percent of the live-weight.

Swine are relatively unimportant for Sicily. The small enterprise definitely prevails, with herds of less than 10 head comprising 83.1 percent of the total, and the one-head enterprises including four-tenths of all the swine. Swine in Sicily come mostly from native breeds and constitute merely an additional source of food for the farm family.

Large flocks of sheep (100-500 head) predominate in Sicily, where they comprise about half of the total sheep population. They are important in connection with the latifundia, where they constitute the main animal enterprise.

Goats are also important for Sicily, where large flocks of these animals are not uncommon. The greatest concentration of goats is in the rugged province of Messina. Milk goats amount to four-fifths of the total, so that this class of livestock yields mostly milk for direct consumption.

Food Problems

The problems related to supply and distribution of foodstuffs in Sicily are two-fold. First, there is the problem of overall deficits and surpluses of foodstuffs which originate from the unique consumption pattern that determines exceptionally high requirements for specific commodities. Second, there is the problem of local deficits and surpluses which arise out of the geographical diversification of farm production and the specialization of the individual farm.

Throughout the island, consumption of wheat, both in the form of bread and alimentary paste, is exceptionally high, far exceeding consumption levels reported for other parts of Italy, for Poland, Finland, etc. Conversely, negligible quantities of other grains are consumed, with the exception of rice, which at times partially takes the place of alimentary paste in the dietaries of the low-income groups. Consumption of animal products is generally low, legumes and vegetables supplying the bulk of the proteins and olive oil being almost the sole source of fats. The island's trade in agricultural commodities is greatly affected by fluctuations in production of wheat, olive oil, and potatoes. By and large, Sicily exchanges its durum wheat for soft wheat and flour obtained from the mainland and from abroad; in normal years the trade balance for wheat shows

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deficit of some 40,000 metric tons, while a bumper crop leads to a neat export of approximately the same amount of wheat. Olive oil production also undergoes great fluctuations, but the island is usually on a net export basis. Grain imports include rice, approximating 19,000 metric tons, and corn.

Sicily exports large quantities of citrus fruits (over 400,000 metric tons), vegetables, almonds, filberts, and pistachio nuts. Surpluses of grapes and fresh fruits are also considerable. A large part of Sicilian wine production is exported, especially the fortified wine known as Marsala and the Mascali wine produced in the province of Catania.

While the rural areas and the smaller cities were self-sufficient with regard to meat, some 4,000 head of cattle had to be imported for the consumption of the three large urban centers. Sardinia was the main source of imported cattle, with frozen meat being also shipped to Sicily from foreign countries.

Distribution problems within Sicily acquire momentous importance because most of the staple food supply is produced in the extensively farmed areas of the center, with the coastal fringe producing export commodities such as citrus fruits and vegetables. Since the three largest cities, Messina, Catania and Palermo, which comprise approximately one-fourth of the total population, are all located in the coastal fringe, the provision for efficient food distribution is necessary if famine is to be prevented. In addition, the operators of small-holdings on the coastal fringe are dependent upon the center of the island for part of their staple food supply.

Much gravity is added to the problem by the extent of hoarding and of illegal consumption. Control of grain production in Sicily is most difficult, partly because the population is intolerant of restrictions and regulations, partly because the low degree of mechanization makes it impossible to determine the size of crop on the basis of information obtained at threshing time. Furthermore, in other parts of Italy peasants might be expected to deliver their wheat through legal or illegal channels with the intent of using the returns thereof for the purchase of foodstuffs and consumption goods. In the case of Sicily, however, the economy of rural communities is so primitive that the peasants would have nothing to buy with the cash obtained from the sale of their crops. The main effect of wartime regulations is, then, one of increasing consumption of home-grown foodstuffs, while maintaining consumption of commodities purchased from the market at pre-war levels or, anyway, at the maximum level made possible by rationing and other provisions.

In short, the main problem of food distribution in Sicily is one of moving supplies of staple foods from the interior to the coastal fringe. This problem calls for providing either a coveted type of currency-silver, (American dollars, pounds sterling for the direct purchase of foodstuffs) or consumption goods for barter.

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SICILY

Agricultural Statistics

I. Main Crops

Commodity	Area Harvested 1933-37	Area Harvested 1940	Production 1933-37	Production 1940	Yield per Ha. 1933-37	Yield per Ha. 1940	Planting Time from	Planting Time to	Harvesting Time from	Harvesting Time to
	1000 Ha	1000 Ha	1000 Qls	1000 Qls	Quintals	Quintals				
Wheat 1/	799.1	762.6	8,578	8,855	10.2	11.6	Sept. 20	Dec. 20	May 25	Aug. 10
Rye	1.4	1.3	11	11	8.0	8.2	Oct. 10	Oct. 31	July 1	July 31
Barley	85.6	52.0	597	557	10.7	10.7	Sept. 15	Dec. 31	May 20	July 31
Oats	35.4	30.6	436	289	12.0	9.4	Oct. 1	Dec. 31	May 20	July 31
Rice (rough)	.2	-	5	-	31.8	33.6	Apr. 15	Apr. 30	Aug. 25	Sept. 30
Corn 2/	3.0	4.5	34	43	11.9	8.5	Mar. 15	May 31	Aug. 20	Oct. 15
Horse beans	242.5	261.9	2,456	1,539	9.5	5.9	Oct. 1	Dec. 20	May 1	July 5
Kidney beans	2.9	3.0	16	20	7.3	6.7	Mar. 1	July 31	July 1	Oct. 31
Other dried legumes	-	-	222	108	-	-	-	-	-	-
Potatoes 3/	3.4	6.2	272	505	73.2	51.9	Jan. 1	May 15	June 1	Aug. 31
Tomatoes	5.3	8.3	1,107	1,662	-	-	Feb. 1	May 31	June 20	Sept. 20
Other fr. vegetables	-	-	1,428	1,684	-	-	-	-	-	-
Cotton	6.7	4/	16	4/	-	-	Mar. 10	May 10	Aug. 20	Oct. 31
Tobacco	1.1	4/	6	4/	-	-	Mar. 25	May 10	June 20	Aug. 31
Cultivated meadows 5/	113.3	145.3	3,348	4,797	-	-	-	-	-	-
Natural meadows 5/	52.9	-	992	4/	-	-	-	-	-	-
Pastures 5/	284.4	286.7	1,110	1,592	-	-	-	-	-	-
Vineyards	6/ 146.3	192.4	7/ 147	7/ 312	-	-	-	-	-	-
	8/ 6.9	14.3	9/ 3,156	9/ 2,444	-	-	-	-	July 10	Nov. 30
Olive trees	80.3	95.7	10/ 261	10/ 89	-	-	-	-	Sept. 1	Oct. 20
	223.9	247.1	-	-	-	-	-	-	Oct. 1	Jan. 31
Fruits, deciduous	-	-	439	179	-	-	-	-	-	-
Nuts	-	-	628	11/ 585	-	-	-	-	-	-
Citrus fruits	-	-	4,864	5,433	-	-	-	-	-	-

Office of Foreign Agricultural Relations. Data from Annuario Statistico Italiano.
1/ Yields, planting and harvesting time for winter wheat only. 2/ Yields, planting and harvesting time for spring corn only. 3/ Yields, planting and harvesting time for common potatoes only. 4/ Not available. 5/ All production in "normal hay." 6/ In groves and orchards. 7/ Grapes for direct consumption. 8/ In open fields. 9/ Wine (1,000 Hls.). 10/ Olive oil. 11/ Does not include chestnuts.

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SICILY

II. Livestock and Livestock Products

A. Livestock Numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	71,873	186,357	154,453	184,940	87,910 1/	74,373	758,697	328,103
1940	80,000	202,000	159,000	215,000	2/	70,000	837,000	327,000

B. Live Weight by Classes of Livestock (1938)

Horses, mules, asses	All cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
1,380,121	697,775	46,848	258,680	120,340

C. Livestock Products (1937)

Cow's Milk 3/	Butter	Cow's and sheep's Cheese	Cottage Cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls.	1,000 Kgs.
809	2	76	31	738

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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SICILY

III. Fertilizer Consumption, average 1936-38 and 1940

Fertilizer	1936-38	1940
	Qls.	Qls.
Superphosphates	1,216,780	976,473
Ground phosphates	1,136	---
Basic slag	---	---
Ammonium sulphate	166,794	201,154
Calcium cyanamide	10,940	7,658
Ammonium nitrate	26,723	40,960
Calcium nitrates	53,142	93,220
Sodium nitrate	36,080	25,249
Potassium salts	15,948	30,646
Potassium by-products 1/	---	---
Leucite	104	110
Ammonium phosphate	24,889	46,187

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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SICILY

IV. Consumption of Plant Sprays
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of soda	-	Pyrethrum	223
Containing arsenite	95,725	Rotenone	-
Arsenates	13,897	Fluorine silicate	199
Sulphides and polysulphides	-	Oxychloride of copper	505,250
Carbon sulphide	3,771	Other copper products	-
Tar oil	1,800	Sulphur	3,547,765
Tar oil products	1,448	Copper sulphur	207,342
Zinc phosphide	333	Iron sulphate	76,767
Zinc chloride and sulphate	-	Copper sulphate	1,103,933
Nicotine extract, common	5,622		
Nicotine extract, superior	2,509		
Nicotine, powder	15,670		
Nicotine sulphate	110		
Nicotine soap	160		
Meritol, nicotine	1,594		
Other nicotine products	215		
Quassia wood	262		
Quassia extract	126		

Office of Foreign Agricultural Relations. Based on official statistics.

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2. Sardinia

Types of Farming

The agricultural economy of Sardinia greatly differs in physical, social, and economic features from that of other regions of the Kingdom. This fact needs to be emphasized from the very beginning for two main reasons. First, statistical and economic sources often consider Sicily and Sardinia together and, with an even more questionable procedure, often deal with Sardinia as a part of Southern Italy. Secondly, unless a thorough investigation is made, the problems of Sardinian agriculture appear somewhat germane to those of Sicily and, to a certain extent, of Latium. It is therefore worth remembering that what similarities might be found between Sardinia and Sicily or Sardinia and the mainland obtain only in appearance. In reality all problems of Sardinia might be said to be unique to the Island, a circumstance which accrues from geological and climatic conditions as well as from ethnical, historical, and political factors.

The topography of Sardinia is the foremost factor determining land utilisation. The great plain of Campidano, which stretches from the Gulf of Cagliari to the Gulf of Oristano and divides the southwestern mining region of Iglesias from the mountains and plateaus of the center, is the most important agricultural region. Here farming is comparatively intensive and somewhat diversified. The pattern of land tenure of the Campidano comprises both large holdings with a few mechanized farms and small farms of the family-size type. The latter, which originated from the alienation of the public domain, are seldom in one body. More often they are made up of separate and distant tracts, a circumstance which obviously impairs efficiency of operation. The main crop here, as in the rest of the Island, is wheat, inserted in a primitive rotation where horsebeans, corn, and tobacco constitute the only rinnovo crops.

Specialty crops are also important in the Campidano, conspicuous among them being the artichoke. Also concentrated in the Campidano are most of the citrus groves of the Island, the total production of which is, however, inadequate to cover domestic requirements. Vineyards assume special importance in the whole province of Cagliari where, however, phylloxera has greatly curtailed production.

The provinces of Nuoro and Sassari, as well as the mountains of the province of Cagliari, exhibit an unique pattern of land utilisation. Most of the land is untilled, unimproved pasture with bushes and small trees. The cultivated areas are centered around the villages as concentric belts. There is a first, intensively cultivated zone both of large and small holdings which comprises tracts enclosed with stone walls or with cactus hedges. Here wheat is grown in rotation with vegetables and legumes. Vineyards, olives, and almond trees are the important arboreal crops.

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Beyond the enclosed area there are large stretches of land, part of which is cultivated in cereals, mostly wheat in the hills and barley in the mountains. The rest of the land in this belt (as much as 90 percent of the total) is left in fallow. Under war conditions greater portions of the unenclosed belt may possibly have been put under cultivation.

Beyond the cereal-fallow belt are the open pastures owned by private individuals or by communes. Thus the Sardinian equivalent of the latifundia is a range rather than a grain farm, and barley rather than rye is the mountain cereal.

The province of Nuoro has mostly a mountain economy of the type described above, with potatoes assuming some importance in the enclosed land. Vineyards in the Oliastra and Lanusei districts yield excellent wine for export.

The province of Sassari embraces the low, malarial plain of the Nurra and rich hills of Sassari, Alghero, and Tempio. Here tree crops, especially olive trees, assume unusual importance. Oaks for cork are important in the Tempio region. The once flourishing vineyards of this province have so declined that present-day production has to be supplemented by shipments from the southern provinces to meet local requirements.

The extensive farming system of Sardinia is said to accrue more from institutional factors than from physical ones. Indeed in view of the pressure of population upon resources in other parts of the Kindgom, the extensive type of land utilization of Sardinia is difficult to explain. Neither can the fallow system be justified because of specific conditions. Changes in the land utilization pattern were hindered by the extent of communal land and by the lack of capital.

The Fascist Government in its plans for production expansion gave Sardinia little consideration. Only in the plain of the Nurra (Sassari) and in the Campidano were large-scale land reclamation projects undertaken. The main project, comprising the rural center of Mussolinia, is said to have been a tragic failure due to the virulence of malaria and to technical and managerial mistakes. In fact, this undertaking received no publicity whatsoever and information thereon is scanty. It involved the resettlement of daily laborers from the province of Ferrara and might, at present, supply a labor force with some experience in the cultivation of those crops which are comparatively new for the natives.

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Livestock

The economy of Sardinia is essentially a pastoral one in which livestock of all classes play an important role. In number of livestock only, however, is Sardinia comparable with the Northern regions. In the latter, livestock are kept in stables and fed from the products of cultivated meadows and pastures (grass, hay, silage). In the former, livestock are fed from pastures, with very few of the field crops used for animal feeding. One might say generally that the livestock industry of Sardinia is to that of the Po Valley what the ranges of the West are to the dairy states of America.

Sardinia has 4.4 percent of all the equine animals, 3.4 percent of the cattle, 3.1 percent of the swine, 20 percent of the sheep, and 23.1 percent of the goats of the Kingdom. Of the total livestock of the region, goats and sheep are numerically most important (70 percent of all livestock are sheep, 15 percent goats) followed by cattle, swine, and horses (respectively 8.2, 3.5, and 34 percent of the total).

Horses, Mules, Asses. - Among the equine animals of Sardinia, totaling 89,000 head, over one-half are horses, which together with donkeys constitute 59 percent of the total. Mules and hinnies are thus less important in Sardinia than in any other region of the Kingdom, both in number and percentage. The distribution of animals by sex in the various regions is, in Sardinia, quite as typical. Male animals predominate in the plains, while mares are more important in the hills and mountains. The latter regions obviously supply colts to the plains.

Cattle. - Sardinia has approximately 200 head of cattle per 1,000 inhabitants, thus exceeding all other regions of Southern and Insular Italy.

Cattle are used mostly as draft animals, a fact which is evidenced by the comparatively low percentage of cows (52.7) and especially milch cows (19.6). Oxen and bullocks amount to 28.9 of the total.

Numbers of cattle in Sardinia were decreasing in the last pre-war years, more as a result of economic conditions than of changes in environment or type of farming. The 1938 data indicate a cattle population of 209,000 head as compared with 240,564 in 1930.

Three main breeds of cattle may be distinguished:

(a) the native or Sarda. This is a small, unimproved breed to be found mostly in the regions of Gallara and Sulcis.

(b) the brown-Sardinian breed, obtained from systematic crossings of the native cattle with brown-Swiss sires. This breed is of the dual purpose type with a comparatively high production of milk and good meat yield at slaughtering (55 percent). This breed predominates in the province of Sassari, especially around Ozieri, but it is also common in the province of Nuoro.

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The province of Cagliari, including the great plain known as Campidano di Cristano, has an entirely different type of cattle. Here cattle are raised mostly as draft animals and for meat production. Large-size animals are thus needed and a cross between the native breed and the beef cattle of Sicily (Modicana) is used.

Altogether, the Island produces annually about 70,000 head of cattle for slaughter, of which only 25,000 are consumed by the local population, yielding a surplus of 75,000 quintals of meat exported to Sicily, Genoa, Rome, and Leghorn.

Meat consumption in Sardinia is, nevertheless, comparatively high (16.44 kilograms per capita), of which 4.32 kilograms are accounted for by beef and veal. The large urban centers of Sassari and Cagliari are of course responsible for large shares of the total consumption. Per capita consumption of beef and veal at Sassari exceeds 5 kilograms per year, while it is only 2.8 kilograms in Nuoro.

Swine.- The swine of the Island include a comparatively small percentage of young animals (68 percent). Two outstanding features characterize swine production in Sardinia: first, the high consumption of sucklings; second, the raising of animals on the range which makes for late slaughtering (over one year of age) and low production of fat.

Sheep and Goats.- Sheep production is one of Sardinia's main activities. In number of sheep Sardinia, with 1,777,000 head, exceeded all other regions. There were 1,718 sheep per square kilometer (4 times as many as in Puglia), more sheep per capita than anywhere in Italy.

Sardinia follows Puglia among the regions producing mutton and lamb, with around 50,000 quintals of meat. In consumption, Sardinia is far above all other regions (5.087 kilograms per capita), accounting for 17 percent of mutton and lamb consumed in Italy. Lambs constitute only 47 percent of Sardinian consumption.

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The breeds of Sardinia that deserve some consideration in view of their economic importance are: (a) the small-size breed, to be found in Ogliastra, Sulcis, Gallura; (b) the large-size breed, to be found near Cagliari and near Macomer in the province of Nuoro; and (c) the medium-size breed of the Campidano and the province of Sassari.

In the provinces of Nuoro and Sassari, sheep migrations to the mountain pastures are the rule. In the province of Sassari the sheep industry is stationary and pastures are supplemented with small grains, especially barley.

Lambs are slaughtered between 25 to 30 days from birth, yielding on the average 5 kilograms of meat. Milk production averages 100 liters per ewe over a period of 150 days, from which 18 kilograms of cheese are obtained. Wool production is the weak side of the native-breed, averaging 1 kilogram per year per head. The product is also of very low quality.

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Large flocks of goats (of over 30 head) assume especial importance in Sardinia. They supplement the Island's meat and milk supply.

Poultry.- In sharp contrast with the importance of livestock is the negligible production of poultry and eggs. Industrial poultry enterprises are lacking, and the production comes entirely from small family flocks of 2 to 10 hens.

The island does not produce enough eggs, at least for the consumption of large centers. Cagliari in particular imported eggs from North Africa, from Turkey, and from the mainland.

Food Problems

The agricultural production of Sardinia varies greatly from year to year, so that any statement on the food balance of the Island is in the nature of a broad generalization. Size of production is affected not only by climatic conditions, especially droughts, but also by the amount of communal land that is placed under cultivation. The primitive practices used in the growing of grape vines and of olive trees are also reflected in fluctuations in oil and wine production. Finally, animal enterprises are dependent upon such uncertain sources of feed as mountain pastures and small grains; and the livestock population, especially sheep flocks, is often threatened by feed shortages.

Under these conditions, it is only possible to indicate the position of Sardinia with regard to the main foodstuffs, without much quantitative precision. The Island is clearly on a deficit basis for bread grains, net imports of cereals averaging 30,000 metric tons per year. Sardinia exchanges a surplus of durum with soft wheat and small quantities of rice. In normal years the Island is probably self-sufficient for potatoes and has small surpluses of legumes. Exportable surpluses of deciduous fruits, nuts, and vegetables average some 20,000 tons per year. Imports of citrus fruits are negligible.

The important surpluses of the Island consist of beef, lamb, pork (8,000 tons), large quantities of sheep cheese, olive oil, and wine.

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SARDINIA

Agricultural Statistics

I Main Crops

	Area Harvested		Production		Yield per Ha.		Planting Time		Harvesting Time	
	1933-37	1940	1933-37	1940	1933-37	1940	From	To	From	To
	1000 Ha	1000 Ha	1000 Qls	1000 Qls	Quintals	Quintals				
Wheat 1/	230.2	246.9	190.3	1,752	8.2	7.1	Oct. 15	Dec. 10	June 1	Aug. 15
Barley	29.4	28.6	305	233	10.4	8.1	Oct. 1	Jan. 31	June 1	July 25
Oats	13.8	18.6	158.6	182	11.3	9.8	Oct. 1	Dec. 20	June 1	July 20
Corn 2/	7.6	6.5	114	75	9.9	11.5	Mar. 25	May 15	July 15	Oct. 25
Horse beans	44.8	44.3	412	1,539	9.1	5.7	Oct. 25	Dec. 15	May 20	June 20
Kidney beans	2.0	2.3	22	20	7.6	7.3	Mar. 10	May 20	June 25	Aug. 31
Other fr. Vegetables	-	-	56	61	-	-	-	-	-	-
Potatoes 3/	3.3	3.6	229	263	66.3	74.4	Mar. 1	May 10	June 1	Oct. 20
Tomatoes	1.6	1.3	149	119	-	-	Feb. 25	May 10	June 1	Oct. 10
Vegetables	-	-	229	426	-	-	-	-	-	-
Tobacco	-	4/	2	4/	-	-	Mar. 20	May 15	Sept. 1	Sept. 30
Cultivated meadows 5/	2.2	3.6	140	229	-	-	-	-	-	-
Natural meadows 5/	2.6	4/	57	4/	-	-	-	-	-	-
Pastures 5/	1,058.6	1,122.5	5,665	6,301	-	-	-	-	-	-
Vineyards (6/	32.7	6/ 34	7/ 17	89	-	-	-	-	July 10	Sept. 15
(8/	4/	8/ 4/	9/ 363	483	-	-	-	-	Sept. 10	Oct. 15
Olive trees (6/	21.0	6/ 17.3	42	59	-	-	-	-	Nov. 15	Mar. 1
(8/	18.5	8/ 28.5			-	-	-	-	-	-
Deciduous Fruits	-	-	86	129	-	-	-	-	-	-
Nuts	-	-	100	10/ 85	-	-	-	-	-	-
Citrus Fruits	-	-	60	75	-	-	-	-	-	-

1/ Yields, planting and harvesting time for winter wheat only.
2/ " " " " " " Spring corn only.
3/ " " " " " " common potatoes only.
4/ Not available.
5/ All production in "normal hay". ~~National meadows are negligible.~~
6/ In groves and orchards.
7/ Grapes for direct consumption.
8/ In open fields.
9/ Wine (1,000 of Hls.). 10/ Does not include chestnuts, 11/ Olive Oil

Office of Foreign Agricultural Relations. Data from Annuario Statistico Italiano.

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SARDINIA

II. Livestock and Livestock Products

A. Livestock numbers

Year	Horses	Mules	Asses	All Cattle	Milch Cows	Swine	Sheep	Goats
1936-38	46,210	560	43,490	206,290	1/ 75,570	114,207	1,836,157	406,013
1940	43,000	1,000	49,000	229,000	2/	147,000	2,130,000	426,000

B. Live Weight by Classes of Livestock (March 1938)

Horses, mules, asses	All cattle	Swine	Sheep	Goats
Quintals	Quintals	Quintals	Quintals	Quintals
185,414	712,706	81,113	389,319	272,144

C. Livestock Products (1937)

Cow's milk 3/	Butter	Cow's and sheep cheese	Cottage cheese	Wool
1,000 Hls.	1,000 Qls.	1,000 Qls.	1,000 Qls	1,000 Kgs.
492	2	176	43	1,676

Office of Foreign Agricultural Relations. Partly based on official statistics, partly estimated.

1/ Includes all cows producing milk above the needs of the calf.
2/ Not available.
3/ For direct consumption.

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SARDINIA

III. Fertilizer Consumption, average 1936-38 and 1940

Fertilizer	1936-38	1940
	Qls.	Qls.
Superphosphates	232,294	221,075
Ground phosphates	3,833	1,000
Basic slag	---	---
Ammonium sulphate	6,360	14,246
Calcium cyanamide	10,487	7,342
Ammonium nitrate	13	50
Calcium nitrates	6,341	7,877
Sodium nitrate	400	50
Potassium salts	588	175
Potassium by-products 1/	---	---
Leucite	---	---
Ammonium phosphate	6,949	235

Office of Foreign Agricultural Relations. Based on official statistics.

1/ From sugar factories.

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SARDINIA

IV. Consumption of Plant Sprays
Average 1936-38

For use against animal parasites	Kilograms	For use against vegetable parasites	Kilograms
Arsenite of soda	-	Pyrethrum	223
Containing arsenites	118,483	Rotonone	-
Arsenates	1,169	Fluorine silicate	132
Sulphides and polysulphides	-	Oxychloride of copper	316,833
Carbon sulphide	203	Other copper products	-
Tar oil	-	Sulphur	247,767
Tar oil products	74	Copper sulphur	965,817
Zinc phosphide	-	Iron sulphate	15,433
Zinc chloride and sulphate	-	Copper sulphate	479,267
Nicotine extract, common	6,533		
Nicotine extract, superior	900		
Nicotine, powder	1,077		
Nicotine sulphate	219		
Nicotine soap	67		
Monital, nicotine	703		
Other nicotine products	173		
Quassio wood	917		
Quassio extract	95		

Office of Foreign Agricultural Relations. Based on official statistics.

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International Weights and Measures Equivalents

Metric Measure	Symbol	Ratio to Basic Unit	American Equivalent
1 Centimeter	cm.	.01 meters	.3937 inches
1 Hectare	ha.	10,000 square meters	2.471 acres
1 Hectoliter	hl.	100 liters	26.417 U.S. gallons (liquid)
1 Kilogram	kg.	Basic unit	2.2046 pounds, avoir.
1 Kilometer	km.	1,000 meters	.62137 miles
1 Liter (liquid)	l.	Basic unit	.26417 U.S. gallons
1 Meter	m.	Basic unit	3.2808 feet
1 Quintal	ql.	100 kilograms	220.46 pounds, avoir.
1 Square kilometer	kmq.	1,000,000 square meters	.3861 square miles
1 Square meter	mq.	Basic unit	.0002471 acres
1 Ton metric	ton	1,000 kilograms	2,204.6 pounds avoir.

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Equivalents for Reducing Italian Weights to United States Measures and Weights

Commodity		Weight in Pounds of U. S. unit	Multiply by Equivalent for Quintal
Rapeseed	bushel	50	4.4092
Barley	"	48	4.5929167
Corn, rye	"	56	3.9367857
Flaxseed, hempseed	"		
Corn meal	"	56	4.4991837
Cotton, ginned	bale	478	.4612134
Cotton, unginned	"	478	.1537378
Oats	bushel	32	6.889375
Rice, rough	"	45	4.8991111
Wheat and potatoes	"	60	3.6743333
Wheat flour	barrel	196	1.1247959

Office of Foreign Agricultural Relations.

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Italia Agricola

La Domenica dell'Agricoltore

Rivista di Zootecnia

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1. Sicily
2. Calabria, Lucania, Puglie
3. Campania
4. Lazio, Abruzzi
5. Umbrio, Marche
6. Sardinia
7. Nat. Hy. Rome
8. Tuscany
9. Emilia

MAP OF ITALY

U. S. DEPARTMENT OF AGRICULTURE NEG. 38375 OFFICE OF FOREIGN AGRICULTURAL RELATIONS

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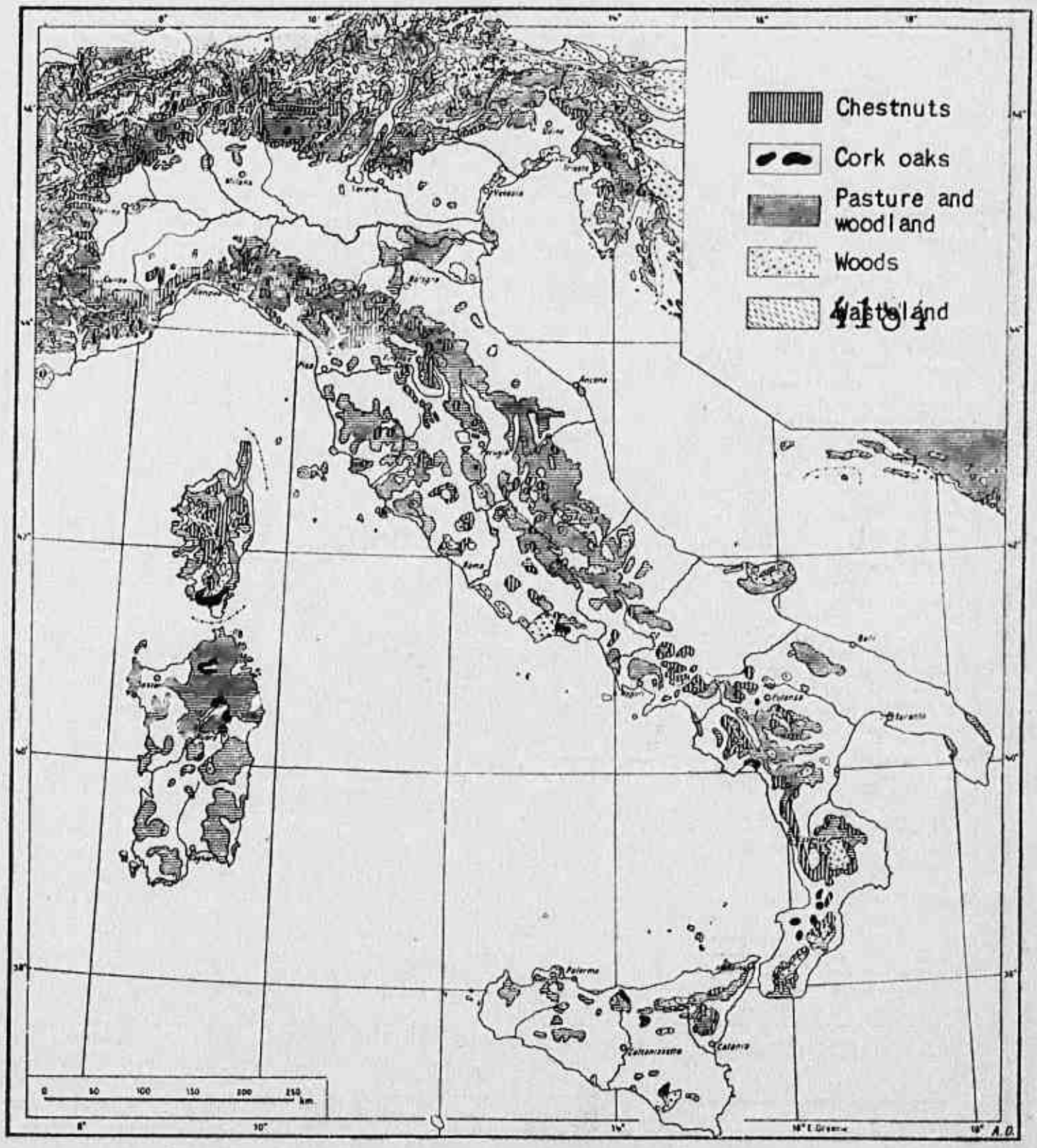

LAND UTILIZATION

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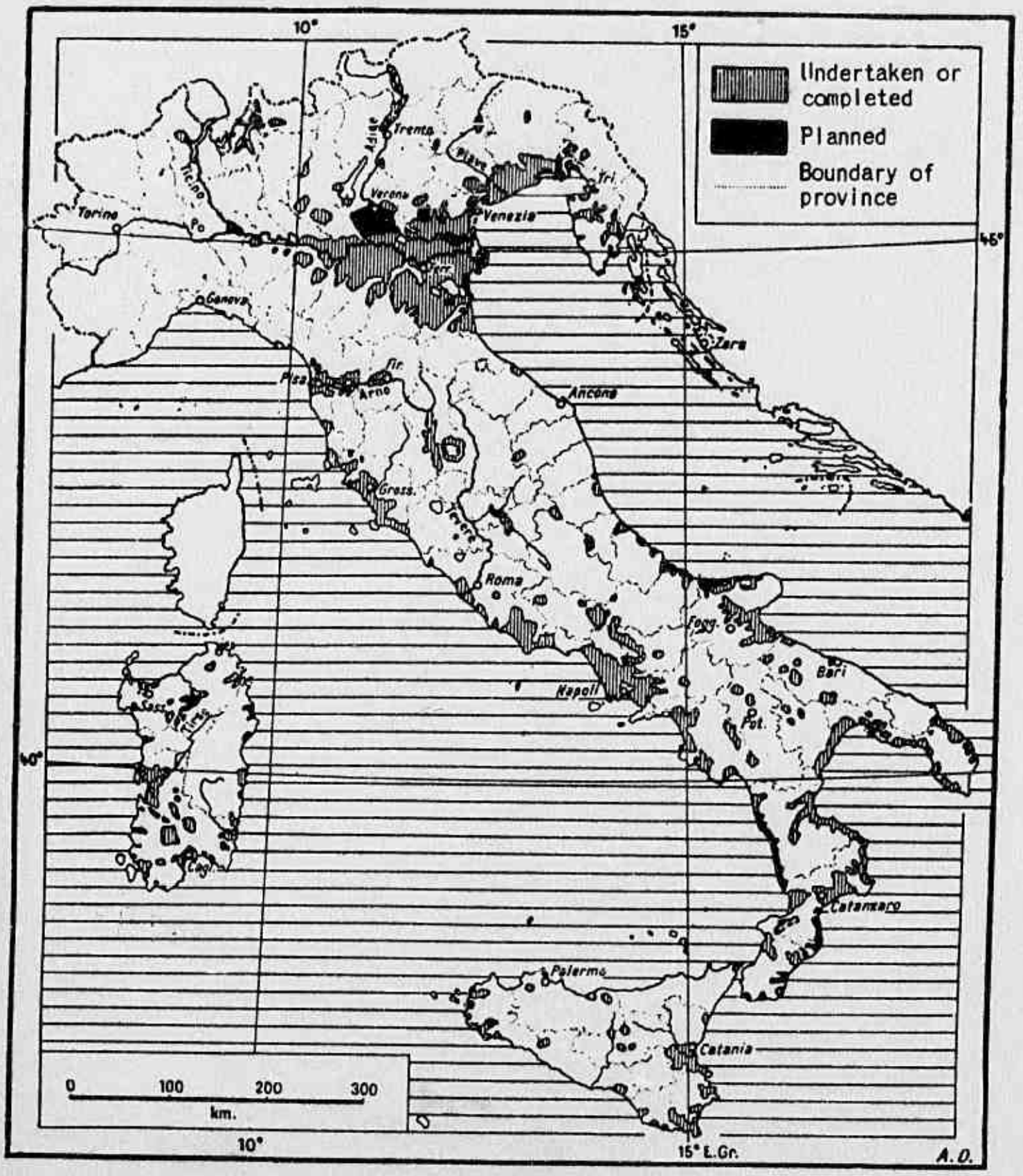

LAND RECLAMATION

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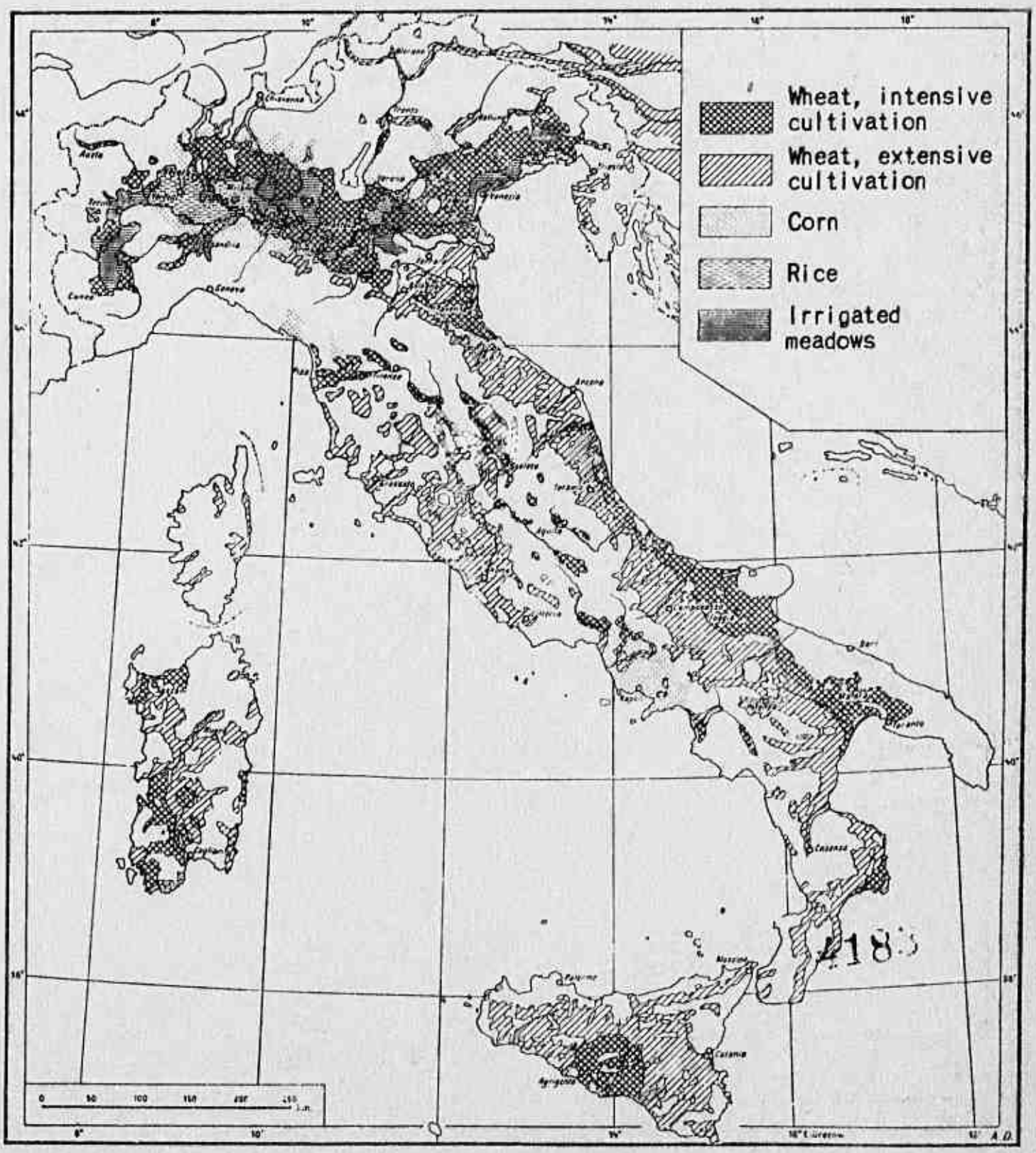

CEREALS AND MEADOWS

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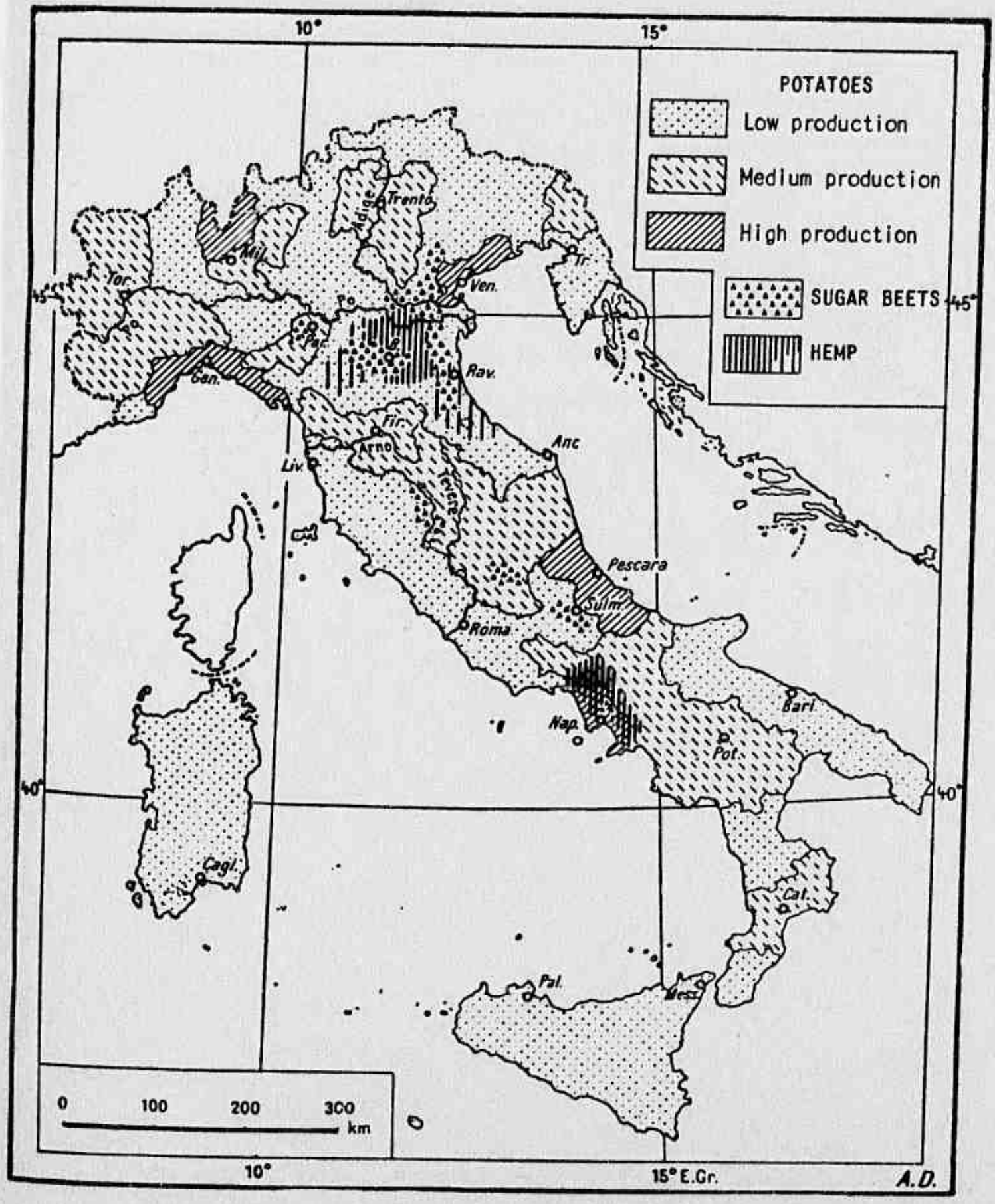

PRODUCTION OF POTATOES, SUGAR BEETS, AND HEMP

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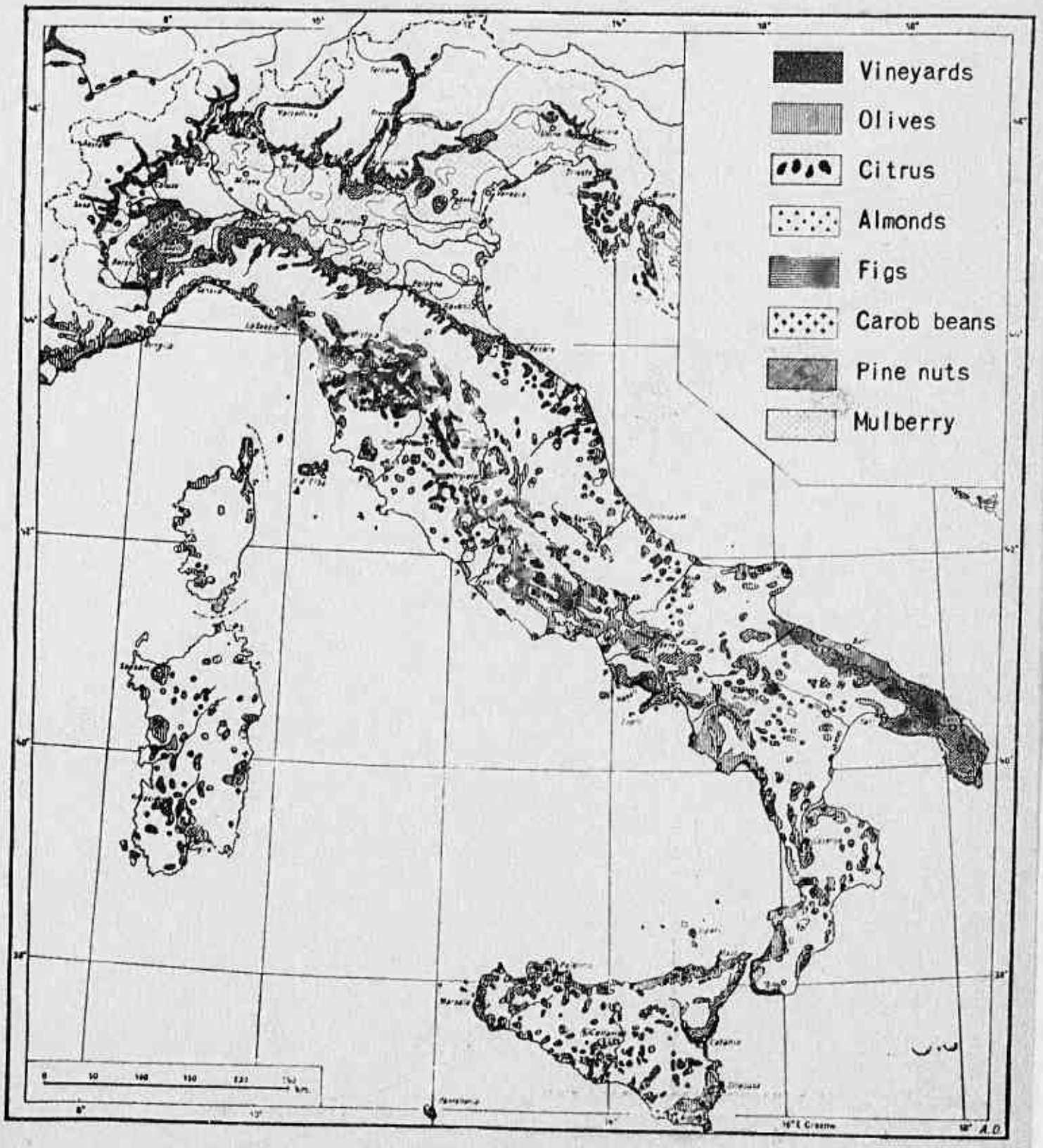

MAIN TREE AND VINE CROPS

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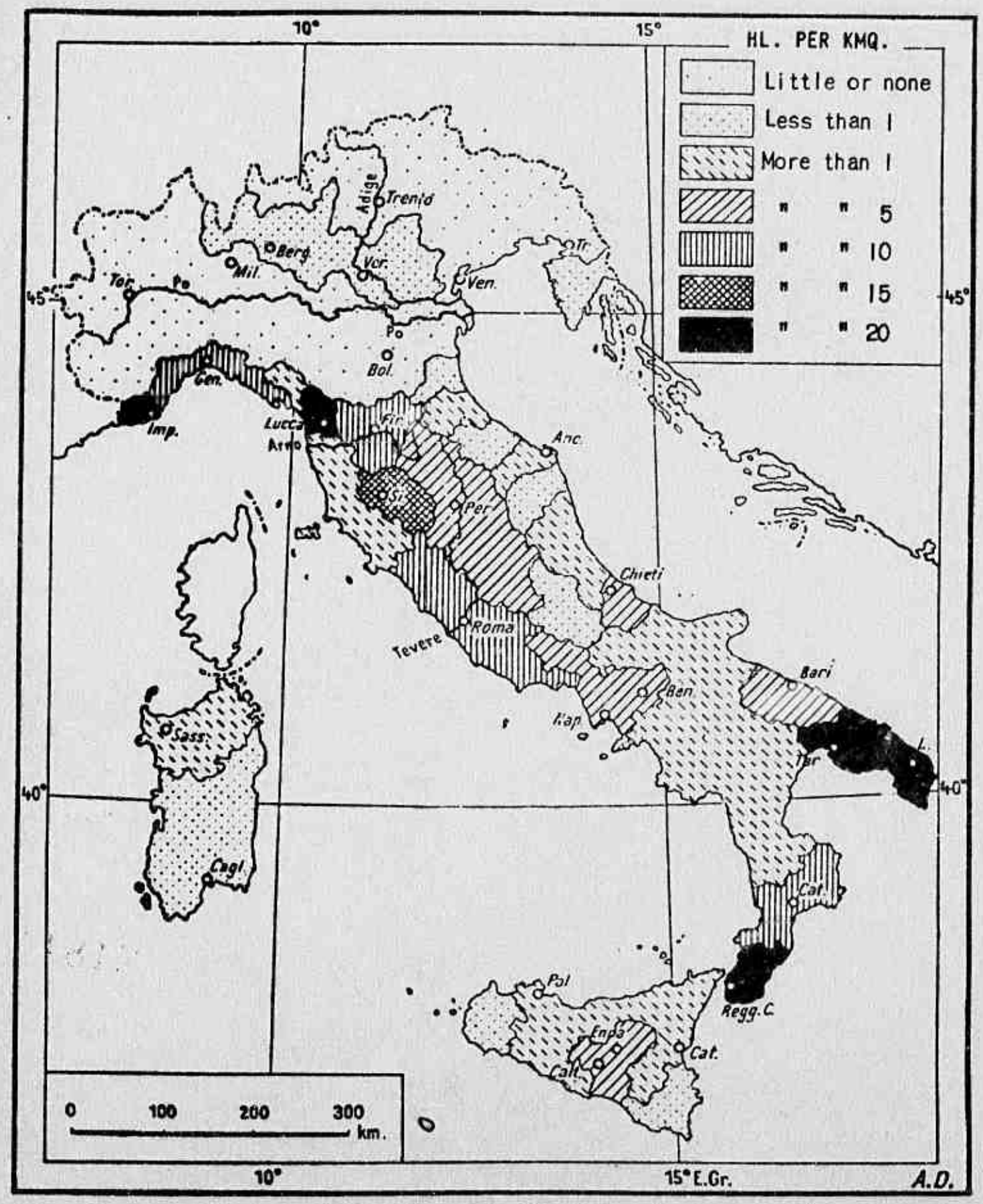

OLIVE OIL PRODUCTION

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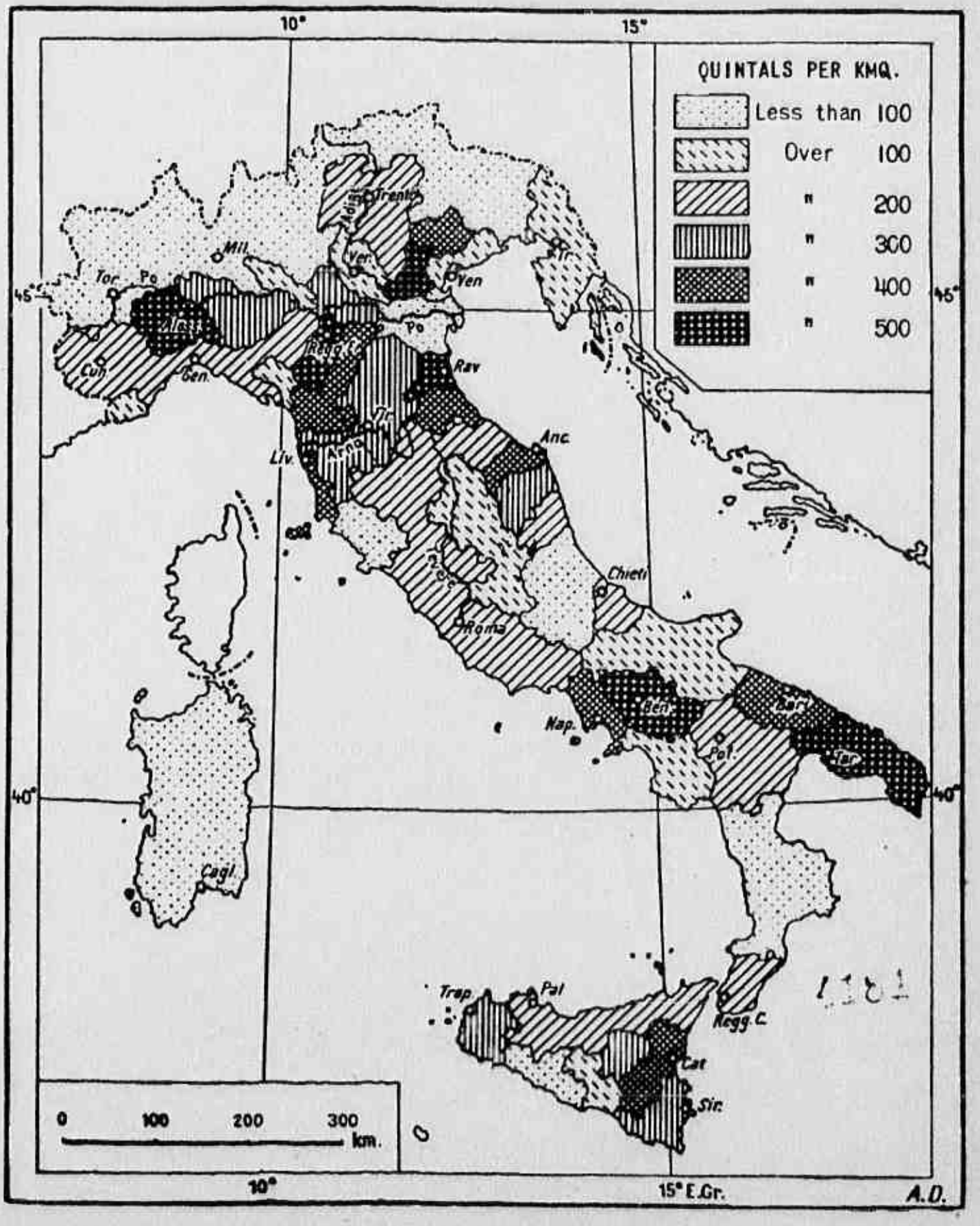

GRAPE PRODUCTION

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