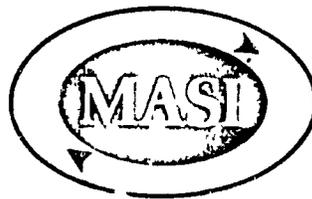
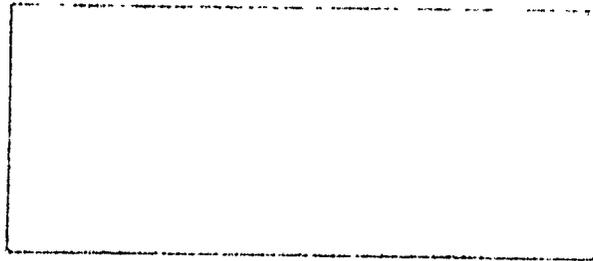


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**Multinational Agribusiness Systems Incorporated**

AGRICULTURAL SECTOR ASSESSMENT

PORTUGAL

An Analysis of Policy, Institutional and Organizational  
Constraints on Production and Recommended Priorities  
for USAID Assistance

Work Performed Under Contract # AID/SOD/PDC-C-0218  
Work Order #2

November 7, 1979

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November 7, 1979

Mr. Donald Finberg, AID Representative  
Office of the AID Representative  
Lisbon, Portugal  
Agency for International Development  
Department of State  
Washington, D.C. 20523

Dear Mr. Finberg:

We are pleased to submit the enclosed assesment of Portugal's agriculture sector. The report presents an appraisal of past development programs, as well as priority problems and constraints to development. Certain possible courses of action are suggested in the summary.

In addition to the inputs of Drs. Newberg, Fletcher and Ream we have incorporated the suggestions and modifications received from your office in Lisbon.

MASI wishes to thank you for considering our firm for this assignment and hopes the report will serve a useful purpose in your planning efforts.

Sincerely yours,

Gaylord L. Walker  
Vice President and Director  
Development Services Division

GLW:amt  
Enc.

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## PREFACE

In September, 1979, the Agency for International Development contracted with MASI (Contract # AID/PDC/SOD-C-0218, Work Order #2) to carry out a brief assessment of Portugal's agricultural sector. The scope of work called for a team to:

- Review the past and current performance of Portugal's agricultural sector and its present and potential role in relation to overall economic development.
- Assess the effects of past policies and public interventions on performance of the sector and identify areas where changes are needed to improve the sector's performance.
- Examine the organization and structure of agricultural production to identify major constraints on increased output, such as rural institutions and services, infrastructure, levels of technology, market conditions, and labor supply.
- Evaluate public and private investment levels, income levels, investment returns and incentives, adequacy of credit, and price and subsidy policies.
- Review the role of U.S. funding in addressing important constraints and recommend priorities for future USAID assistance.

MASI arranged for a team of three U.S. agricultural development specialists, Drs. Fletcher, Newberg and Ream, to carry out the study. After background briefings in Washington by World Bank, AID, State Department and USDA personnel, the team visited Portugal from September 6 to September 23 to discuss the agricultural sector and its potential problems and needs with Portuguese officials, and to visit principal production areas to observe at firsthand conditions under which production is carried out 1/. The team was cordially received and extensively briefed by officials in various sections of the Ministries of Agriculture and Fisheries, Commerce, Planning and Internal Affairs, and IFADAP 2/ and other agencies. The team was fortunate in having access to a large number of Portuguese Government reports and planning documents, several economic, sectoral and project studies of the World Bank, and U.S. Government reports. These reports, all of which are publicly available, provide detailed background information on the past and present overall economic and agricultural sector situations, discussion of problems confronting agriculture, and projections for the future.

This large amount of available background information is only summarized briefly in this report. The team concentrated most of its time on appraising impacts of past actions, establishing

1/ The team traveled nearly 2,000 km by car visiting first the Alentejo Region and later the East, N.E., N.W. and Littoral Regions.

2/ Financial Institute for Agricultural and Fisheries Development - a department of the Bank of Portugal.

priority problems and constraints requiring attention, and identifying specific courses of action that might most appropriately be taken. In so doing, the team has considered the possible impacts of anticipated entry of Portugal into the EEC in 1983-4.

## SUMMARY

The 1974 Portuguese Revolution initiated a process that resulted in an abrupt and radical transformation of the country's political and economic systems. The Colonies, which previously were integrally linked economically with Portugal, were separated and began to pursue independent economic development and trade policies. This territorial contraction brought with it significant changes in Portugal's trade relationships and internal economic patterns. The Revolution resulted in profound changes in the land tenure structure especially in the South (Alentejo) where large private holdings previously predominated. Much of the land in large holdings in the Alentejo was taken over by landless workers and formed into collective or cooperative production units. Many large-scale financial, transportation, utility, commercial, and industrial enterprises were nationalized. Unions were encouraged, minimum wages were established, and restrictions were placed on employers' rights to discharge or layoff workers. Worker absenteeism increased and productivity declined. Confidence and willingness to invest in the private sector plunged both in agriculture and non-agriculture.

During the decade prior to 1974, agriculture had suffered from a low rate of investment, deficiencies in publicly provided services, and policy distortions, partially related to dependence on colonial food production and emphasis on internal industrial development. Agricultural production lagged well behind the

overall growth rate in GDP, imports of food and other agricultural products grew more rapidly than exports, and the disparity in rural and urban income levels contributed to a major exodus from rural areas to urban industrial centers in Portugal and EEC countries.

After 1974, agricultural production, especially principal cereal crops, stagnated and imports of both food and feed grains grew rapidly. A large number of costly subsidies were implemented to stimulate production and moderate the impacts of inflation and the decline in the value of the escudo on the cost of living. The overall public sector deficit grew from U.S. \$330 million in 1974 to U.S. \$1,620 million in 1976 (10% of GDP). Portugal's export receipts declined and imports increased in real terms. As a result, the balance of payments on current account, which was in surplus by U.S. \$350 million in 1973, shifted to a strong deficit. In 1977, the deficit on current account reached U.S. \$1.5 billion. In 1978, it fell to about 0.8 billion and is expected to be at about that same level in 1979.

The large increase in population resulting from decolonization and return of Portuguese citizens to Portugal was an important factor in the increases in consumption and imports. However, the most serious and continuing adverse factor has been the stagnation of domestic agricultural production, with the consequent large imports of wheat for subsidized human consumption, feed grains and protein concentrates for subsidized livestock production, vegetable oils and oilseed.

The large internal fiscal deficits and adverse balance of payments experienced since 1974 have resulted mainly from high consumption, low rates of savings, heavy domestic subsidies, and efforts to maintain high investment rates (near 20%) despite the low domestic savings. However, external factors have also contributed, particularly the sharp increase in fuel prices and the slowdown in world trade and economic activity. Particularly in the case of the EEC, the latter reduced job opportunities for Portuguese workers abroad and export demand for Portuguese goods.

The need clearly was to reduce domestic demand and imports and to increase savings and exports. Several measures were introduced in 1977 including higher taxes, ceilings on real wages and salaries, increases in utility and fuel prices, reduced subsidies, relaxation of price controls, devaluation of the escudo, and special export incentives.

However, credit to private enterprises, cooperatives and collective farms offset much of the budgetary impact of these measures. Recognizing that deficits of the levels of 1977 could not be long maintained despite Portugal's large gold reserves, assistance from the IMF was sought and in 1978 special credits were extended. The principal conditions negotiated by the IMF emphasized more stringent measures to reduce consumption and increase domestic savings. These measures were expected to result in elimination of some marginal industrial enterprises and to increase unemployment. The escudo was further devalued and allowed to move freely. Interest rates were raised. A large standby credit was negotiated

which included a U.S. commitment of US \$ 300 million in addition to regular Foreign Assistance Act and PL-480 funding. By mid-1979, these stringent measures had begun to show some favorable impacts on the country's external balance of trade.

The relatively unfavorable crop output expected for 1979 coupled with high grain and oilseed prices may make this improvement of relatively short duration unless stronger and more effective measures are taken in agriculture. In the August 8, 1979 report the USDA estimated total grain production in Portugal in 1979 would be 908,000 m.t., down 7.8 percent from 1978, while total disappearance was estimated to be up 5.3 percent, requiring substantially increased imports, drawdown of stocks, or both. Major factors in this continued adverse trend of decreased production and increased consumption are policies involving a complex system of price controls and subsidies that affect almost all parts of the agricultural sector. Excessive moisture also contributed to the 1979 decline in crop output. Livestock production is expected to continue to grow, based largely on subsidized, mostly imported, feed supplies.

In addition to low investment rates in agriculture (probably negative net investment in recent years) and distortions brought about by pervasive subsidies, weaknesses in institutions serving agriculture (research and extension), inadequacy of credit (both in quantity and direction), weakness in the marketing structure, high levels of rural illiteracy, and poor tenure structures (small, fragmented holdings in the North and large, inefficiently

operated cooperative and collective units in the South) have all contributed to the present state of Portugal's agricultural sector.

The natural resource base for agriculture, though not abundant, is reasonably good in terms of population density and the availability of cultivated land. For example, Portugal has about 2/3 of the population of Holland and about four times the land area. Population density is only slightly over 2 persons per cultivated hectare.

Rainfall is generally adequate for cropping from October through June. Winters are mild except in the mountains of the north. Soils are generally shallow and low in fertility, yet research indicates they are potentially much more productive than suggested by present average yields. Irrigation water though used by large numbers of farmers on a small scale, is generally not well developed nor efficiently utilized.

Yields of most crops are low and areas planted to most crops are declining. The low yields reflect very low levels of use of fertilizer, limestone and improved seed, especially for grains, legumes and forage crops. The large amount of interplanting, especially of grains and pasture with tree crops, probably also is a factor contributing to poor cultural practices and low yields. Relatively efficient and high levels of production of tomatoes, wines and poultry products are bright spots in Portuguese agriculture.

Yields of major field crops currently are about the same as they were a quarter of a century ago. For most crops, yields increased somewhat from 1955-9 to 1970-4, but have declined since then. Except for rice, which is produced in small quantities under irrigated conditions, yields of most crops are but a small fraction of yields in EEC countries producing the same crops.

There are significant disparities among different parts of the country in per hectare value of production. A line drawn from north to south through Vila Real and Setubal separates the areas in the West with generally higher and more rapidly growing value of production per hectare and increasing population from those in the East with low value of production per hectare and declining population. There are distinct regional variations in the latter area, with the North characterized by very small, fragmented lower productivity farms and low incomes and the South by large farms and higher per capita incomes but still low productivity per unit of land area.

The long list of existing structural and policy constraints on Portuguese agriculture suggests a need for a comprehensive restructuring of agriculture and the policies, programs, and institutions designed to serve it. The comprehensive nature of these restructuring needs and specific programs and projects addressing these needs have been pointed out in several GOP and World Bank reports. The team believes it can be most helpful in identifying constraints that are considered critical and suggesting specific measures to reduce their impact. Our overall recommendations include the following:

1. Policies and programs to increase the use of improved seed, fertilizer and limestone on grain and forage crops.

Emphasis should be on improvements in supply and in the distribution system to make essential yield-increasing inputs readily accessible to all farms within short distances at reasonable prices. For fertilizer, prices currently are not excessive relative to prices of most crops, but access does appear to be a problem, in part, because the policy on pricing and trade margins appears not to provide adequate incentive for private wholesalers and retailers to pursue an aggressive marketing policy. For limestone, which is essential to correct the low pH of most soils and increase effectiveness of fertilizer in raising yields, both price and availability are serious constraints on greater use. Adapted, improved varieties of seed are needed for cereal, oilseed, vegetable and forage crops.

2. Rationalization of livestock, grain and mixed feed policies and prices.

Livestock, feed grains and mixed rations are subject to a complex set of price control subsidies that result in distortions in production and consumption, a heavy drain on the public budget for subsidies, and large expenditures of Foreign Exchange on feed imports. The distorted price relationships supported by costly subsidies have resulted in a domestic livestock industry heavily dependent on imported concentrates which, in the case of ruminant livestock

(especially beef cattle), would be more economically based on locally produced forage. A part of the resources used to import feeds and subsidize mixed rations should be utilized to carry out a major forage production program based on high yielding, improved forage varieties and application of fertilizer and limestone.

3. Improvement in research and extension services, particularly to expand and make research more relevant to farmers' problems and more rapidly deliver research results to farmers, both large and small.
4. Resolution of major land tenure problems, especially in the Alentejo Region where unsettled tenure is inhibiting production-increasing investment.

More detailed recommendations, including the objectives, targets and expected costs of priority investment programs, are given in Chapter IV of the text.

## I. OVERALL ECONOMIC SITUATION AND IMPLICATIONS

### A. Structural Change and Agricultural Stagnation, 1960-73

The late 1960's and early 1970's were years of rapid economic growth in Portugal. Real growth in overall GDP averaged 6-7 percent per year during the 1960's, and then accelerated to near 10 percent per year between 1970 and 1973.

Manufacturing was the leading sector in the Portuguese economy in this period. From 1963 to 1973, industrial output grew at 11 percent per year. By 1973, industry accounted for 37 percent of GDP, employed 25 percent of the labor force, and contributed 60 percent of total goods exports (See Tables I-1 and I-2). This impressive industrial growth was led by textiles, clothing, shoes, metal products, machinery and transport equipment.

Up to 1973, Portugal relied on private ownership and investment, stimulated by government policies that provided attractive fiscal incentives, tax concessions, wage level and import protection. Some inefficient industries serving captive domestic and colonial markets prospered under these incentives and protective policies. Other industrial producers, taking advantage of the low wages and investment incentives, successfully supplied markets in the U.S. and Europe. In 1973, a year in which investment reached 23 percent of GDP, industrial investment accounted for a third of total investment. It was concentrated in metal products, machinery, petrochemicals, textiles and foodstuffs.

Table I-1. PORTUGAL: GROSS DOMESTIC PRODUCT,  
POPULATION AND LABOR FORCE

<u>GDP BY SECTOR</u> (Constant 1963 Prices)	1970	1973	1974	1975	1976	1977	1978
Agriculture, Forestry and Fisheries	19,557	19,590	19,226	18,712	18,990	16,100	16,738
Industry	46,891	64,801	66,890	60,493	63,305	69,319	71,593
Construction	6,607	9,248	9,575	8,063	8,478	9,410	9,880
Utilities	4,029	5,409	6,157	6,352	5,721	6,865	7,311
Services	48,441	63,494	63,577	65,141	76,415	78,680	81,057
TOTAL (GDP at Factor Cost) (Millions of Escudos)	125,525	162,542	165,425	158,761	172,909	180,374	186,579
<u>POPULATION</u> (thousands)	9,013.7	8,978.2	9,218.4	9,633.1	9,694.1	9,766.2	9,810.
GDP PER CAPITA (Thousands of escudos per persons)	13,926	18,104	17,945	16,480	17,836	18,469	19,019
<u>EMPLOYMENT</u> (thousands)			3,757	3,728	3,815	3,775	3,802
Agriculture, Forestry and Fisheries			1,312	1,265	1,286	1,228	1,170
Industry			978	955	978	921	1,003
Construction			306	297	284	313	321
Utilities			16	16	18	19	20
Services			1,145	1,195	1,249	1,294	1,288
TOTAL			3,757	3,728	3,815	3,775	3,802
<u>GDP PER WORKER</u> (Thousands of Escudos)							
Agriculture, Forestry and Fisheries			14,653	14,792	14,766	13,110	14,305
Industry			68,394	63,343	64,729	75,264	71,378
Construction			31,290	27,148	29,852	30,063	30,778
Utilities			384,813	397,000	317,833	361,315	365,550
Services			55,525	54,511	61,180	60,803	62,932
TOTAL (GDP/WORKER)			44,031	42,586	45,323	47,781	49,073

Source: National Statistics Institute and Bank of Portugal

Table I-2 PORTUGAL: SECTORAL COMPOSITION OF GDP

SECTOR	1970	1973	1975	1977	1978
	(Percent GDP at Constant 1963 Prices)				
Agriculture, Forestry and Fisheries	16	12	12	9	9
Industry	37	40	38	38	38
Construction	5	6	5	5	5
Utilities	3	3	4	4	5
Services	<u>39</u>	<u>39</u>	<u>41</u>	<u>44</u>	<u>43</u>
TOTAL	100	100	100	100	100

Source: Based on Table I-1

In contrast, agricultural output had been virtually stagnant since the mid-1960's. In the late 60's and early 70's, while overall economic growth surged in excess of 6 percent per year, agricultural output grew less than one percent per year. As a result, the share of the agricultural sector (including forestry and fisheries) in total GDP declined from around 33 percent in the late 50's to 12 percent in 1973 (See Table I-2).

Investment in agriculture in this period was low relative to output (less than 10 percent) and lagged somewhat relative to the economy. What investment there was had little effect on output. The only major increase in inputs used was the number of tractors and combines, both of which tripled during 1965-74. These capital goods were substituted for the labor that migrated from the sector, but in a context of generally stationary yields and output.<sup>1/</sup>

The demand for labor in industry, construction and services, combined with a rapidly increasing migration of Portuguese workers to Europe, were sufficient to maintain near-full employment in the economy, despite the major sectoral shifts in workers. Open unemployment in 1973 was measured at only 2.2 percent of the labor force.

Between 1970 and 1973, total employment actually declined slightly. In these years, the full equivalent of the annual

<sup>1/</sup> See Section I.C. for a more complete discussion of capital formation in agriculture.

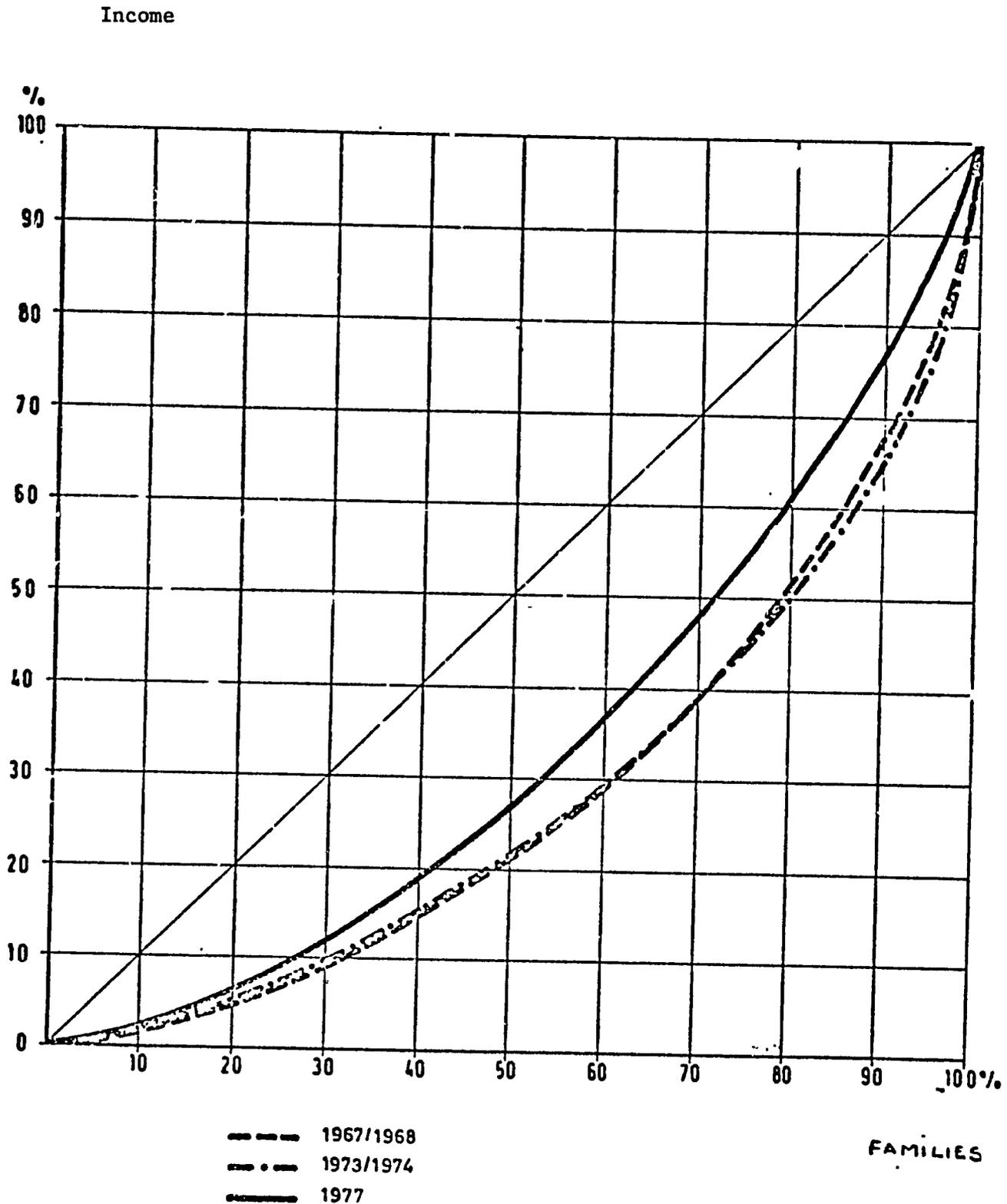
increment in the economically active population emigrated abroad. In 1973, some 800,000 Portuguese workers were working in Western Europe, equivalent to one-fourth of the total labor force remaining in the country. While the agricultural labor force continued its absolute decline, agricultural employment still accounted for 27 percent of total employment in 1973.

In the face of a sluggish rate of growth in output, even the exodus of workers from agriculture resulted in only a modest gain in output per worker of 3.8 percent annually. If this figure were adjusted to take account of the absolute decline in the labor input, the underlying increase in labor productivity would have been less than one percent per year.

In relation to other sectors, agricultural GDP per worker was two thirds as high as overall GDP per worker in 1950. By 1973, this ratio had declined to .37. That decline signaled a growing productivity gap between agriculture and the rest of the economy. It indicated that productivity and income in agriculture were lagging behind other sectors, creating continuous pressure for workers to shift to higher-income occupations.

Generally, social services and infrastructure were deficient especially in the lagging rural areas. Income distribution was highly unequal. In 1973, the poorest 25 percent of households in the country received only 7.3 percent of total income, while the richest 25 percent received 56 percent of the total, a distributional pattern that had prevailed since the 1960's (See Figure I-1).

Figure I-1. Family Income Distribution  
(concentration curves) in  
mainland Portugal in 1967/68,  
1973/74 and 1977 (Lorenz curves).



Source: Ministério da Habitação e Obras Públicas, Gabinete de Planeamento e Controlo, Estimativa da Distribuição das Famílias por Escalões de Rendimento em 1977, Nov. de 1978.

Labor's share in national income barely exceeded 50 percent (See Table I-6).

An overview of the effects of industrialization, heavily concentrated in the Lisbon and Oporto areas, agricultural stagnation, and labor exodus is given in Tables I-3 through I-5. Estimates of GDP per capita by district are shown for 1964 and 1970 in Table I-3. In those years of rapid economic growth, high investment and consistent balance of payments surplus, output per person almost doubled. Per capita GDP increased in every district except Lisbon, where an influx of rural migrants entered low-paying unskilled occupations leading to a slight decline in per capita product. The largest increases occurred in Viseu and Setubal. In relative terms, per capita output is lowest in the eastern, north-eastern and northwestern provinces, and these districts also registered average or lower increases in per capita output.

The distribution of the agricultural labor force (in 1970) and agricultural output (GDP) in 1973 are shown by district in Table I-4. These are then used to calculate an index of agricultural output per worker, which shows a geographic distribution similar to that for overall GDP.

Agricultural GDP per unit of cultivated land is analyzed in Table I-5 for each district for 1960 and 1970. This measure of land productivity fell during 1960-70 in Faro, did not change in Vila Real, and increased very little in Braganca. Lower-than-average increases were generally recorded in the poorer districts.

Table I-3: PORTUGAL - Regional Per Capita GDP

<u>District</u>	<u>1964</u>	<u>1970</u>	<u>Index 1964</u>	<u>Index 1970</u>
<u>Northwest</u>				
Viana do Castelo	5.2	9.3	53	50
Braga	6.9	14.9	70	81
Porto	11.0	19.1	111	103
Aveiro	10.0	12.1	101	65
Coimbra	7.6	13.3	77	72
<u>Northeast</u>				
Vila Real	5.2	9.3	53	50
Braganca	5.3	10.5	54	57
Viseu	5.4	15.8	55	85
Guarda	5.4	12.3	55	66
<u>Center</u>				
Castelo Branco	6.5	13.3	66	72
Leiria	7.9	19.1	80	103
Lisbon	18.0	17.4	182	94
Santarem	9.3	18.4	94	99
Setubal	15.3	33.3	155	190
<u>South</u>				
Portalegre	7.6	18.6	77	101
Evora	8.3	20.5	84	111
Beja	6.4	15.9	65	86
Faro	<u>7.1</u>	<u>18.0</u>	<u>72</u>	<u>97</u>
Total	9.9	18.5	100	100

Source: World Bank, Portugal - Agricultural Sector Survey,  
November, 1978. p 163.

Table I-4: PORTUGAL - Regional Agricultural Employment and GDP

	Agricultural Labor Force 1970		Agricultural GDP 1973		Agricultural GDP/Worker <sup>1/</sup> (Esc.)	Index
	Number ( <sup>'</sup> 000)	% of Total	Value (Mil.Esc.)	% of Total		
Viana do Castelo	63.8	7	1,443	4	22,620	57
Braga	90.9	9	2,492	6	27,410	69
Porto	58.0	6	2,794	7	48,170	121
Aveiro	52.4	5	2,618	7	49,960	125
Coimbra	57.6	6	2,221	6	38,560	96
Vila Real	55.8	6	1,776	5	31,830	80
Braganca	40.2	4	1,121	3	27,890	70
Viseu	87.4	9	2,921	7	33,420	84
Guarda	41.6	4	1,541	4	37,040	93
Castelo Branco	44.7	5	1,616	4	36,150	90
Leiria	57.4	6	2,545	7	44,340	111
Lisbon	51.2	5	3,382	9	66,050	165
Santarem	66.0	7	3,662	9	55,480	139
Setubal	40.4	4	2,131	5	52,750	132
Portalegre	35.0	4	1,567	4	40,770	102
Evora	36.8	4	1,820	5	49,460	124
Beja	52.0	5	2,292	6	44,080	110
Faro	<u>46.1</u>	<u>5</u>	<u>1,139</u>	<u>3</u>	<u>24,710</u>	<u>62</u>
TOTAL	977.3	100_ /	39,081	100_ /	39,990	100

<sup>1/</sup> Figures have been rounded.

Source: Same as Table I-3

Table I-5 PORTUGAL: AVERAGE LAND PRODUCTIVITY  
(GROSS AGRICULTURAL PRODUCT/CULTIVATED AREA)

(Contos 1/ per Hectare)

DISTRICTS	In 1970		In 1960	% Increase at constant 1960 Prices
	at Current Prices	at 1960 Prices	(Current Prices)	
Porto	9,6	7,2	5,1	+26
Lisboa	9,0	6,7	4,6	+46
Braga	9,0	6,7	4,6	+46
Aveiro	7,6	5,7	4,1	+39
Viana do Castelo	7,3	5,4	3,7	+46
Viseu	5,5	4,1	3,2	+28
Leira	5,3	4,0	2,7	+48
Coimbra	4,4	3,3	2,5	+32
Vila Real	4,2	3,1	3,1	0
Santarém	4,1	3,1	2,3	+35
Setúbal	3,0	2,2	1,5	+47
Guarda	2,3	1,7	1,3	+31
Portalegre	2,1	1,6	1,4	+14
Evora	2,0	1,5	1,2	+25
Faro	2,0	1,5	1,6	- 7
Castelo Branco	2,0	1,5	1,2	+25
Bragança	1,7	1,3	1,2	+ 8
Beja	1,7	1,3	1,0	+30
Country	3,5	2,6	2,0	+30

1/ 1 Conto = 1,000 Escudos

Source: Pereira, M. Some Elements for Characterizing the Regional Asymmetry of Portuguese Agriculture, Agrarian Economics Research Center, Gulbenkian Foundation, 1974.

Table I-6. Portugal: Structure of GDP by Expenditure  
(In current prices)

	1973	1974	1975	1976	1977	1978
			Percents			
GDP (at Market Prices)	100.0	100.0	100.0	100.0	100.0	100.0
Consumption	81.1	90.6	96.2	93.1	89.6	91.0
Private	(67.9)	(76.1)	(80.8)	(76.7)	(74.6)	(76.0)
Public	(13.2)	(14.5)	(15.4)	(16.4)	(15.0)	(15.0)
Savings	18.9	9.4	3.8	6.9	10.4	9.0
Investment	26.3	24.9	16.3	19.9	25.2	23.0
(fixed investment)	(23.8)	(19.8)	(19.6)	(18.6)	(20.2)	(20.0)
Exports (goods & NFS)	25.8	26.0	19.6	16.4	17.4	20.0
Imports (goods & NFS)	33.2	41.5	32.1	29.4	32.2	32.0
Labor Share in National Income	51.6	52.2	63.4	61.8	54.9	51.5

Source: World Bank; Bank of Portugal

The information in Table I-5 was combined with population data to identify the regions of lowest value productivity of land and of the highest absolute decreases in population (See Figure I-2). This figure shows that the low-productivity districts in the northeastern, eastern and southern areas are also the areas that suffered the largest population losses during the 1960-70 decade. The littoral districts were the location of a growing concentration both of population and of agricultural output.

B. Revolution and Reform: The Portuguese Economy from 1973 to 1979.

GDP in real terms rose slightly during the revolution year of 1974, but then fell in the first post-revolution year (1975). From this low point, a fairly strong recovery took place in overall output in 1976 (9 percent). More modest increases of 4 and 3 percent in GDP were registered in 1977 and 1978, respectively (See Table I-1). The leading growth sector in recent years has been the public sector, which has shown a growth rate since 1973 of 16% per year. By 1978, overall GDP per capita had climbed again to its 1973 level, a remarkable achievement given the profound structural changes and influx of labor in the economy in the post-revolution years.<sup>1/</sup>

The Revolution resulted in a major shift in relative availabilities of factors of production. Some 600,000 civil servants,

<sup>1/</sup> World Bank, Portugal: Current and Prospective Economic Trends. 1978, p. 4.

LEGEND

Division of highest  
and lowest land  
productivity:  
1960 -----  
1970 \_\_\_\_\_

Population decreases  
of over 15% - - - - -

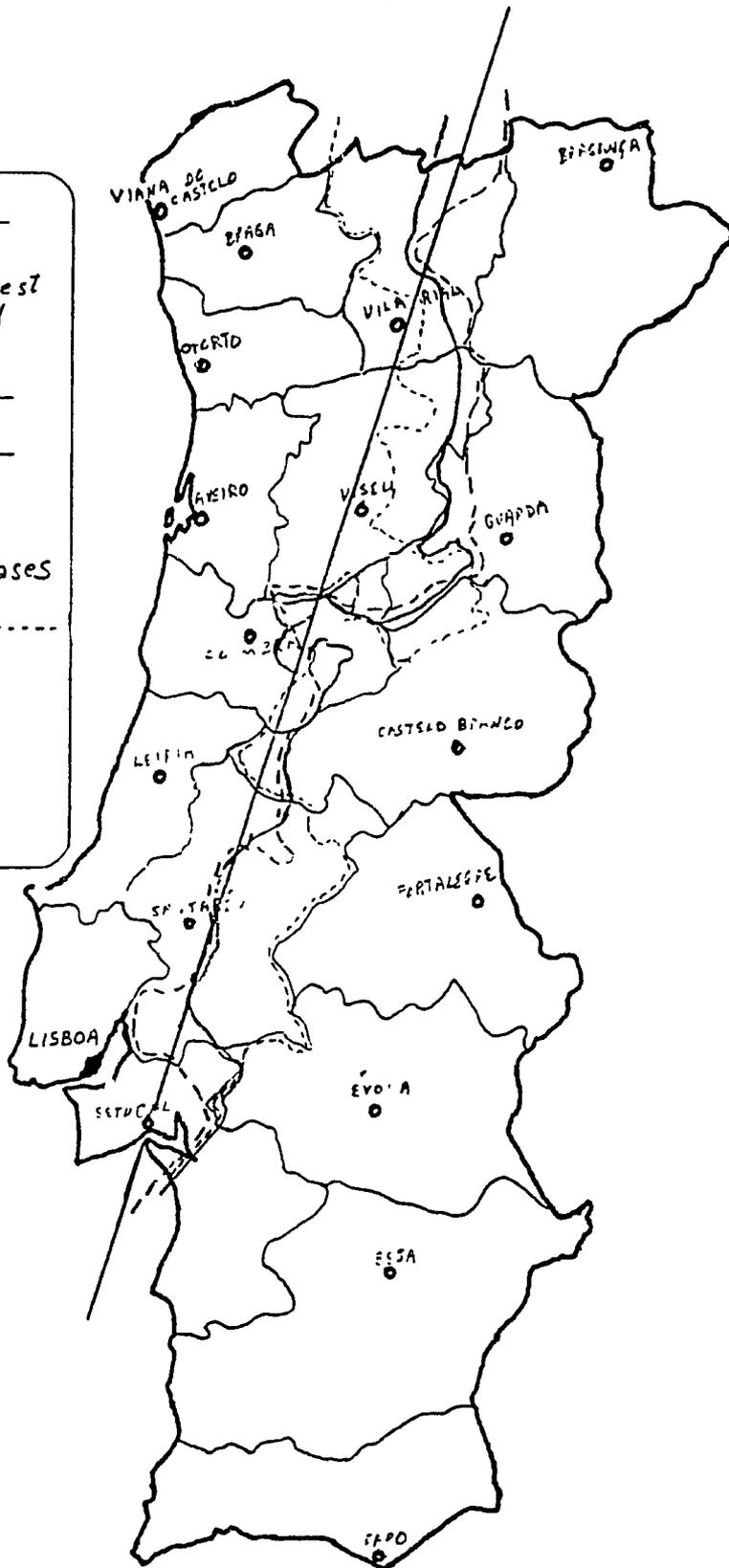


FIGURE I-2 Highest and Lowest Land Productivity,  
and Population Decreases of Over 15 Percent

settlers, soldiers and their dependents returned after decolonization. In addition, a marked reduction in European demand for resident Portuguese workers had an equally important effect on the domestic labor supply by reducing outmigration and causing some workers to return. In 1978, some 590,000 Portuguese were working in EEC countries. This increase in labor supply coincided with a sharp decline in labor demand in the troubled domestic economy. Open unemployment rose to 8 percent or more of the labor force.<sup>1/</sup> Equally important, underemployment rose in agriculture with a consequent decline in output per worker.

Different estimates of the number of workers in the agriculture, forestry and fishing industries exist. Possibly the most satisfactory for recent years are those that come from regular labor force surveys carried out by the National Institute of Statistics, although the level of employment in these surveys is higher than that reported in other data sources on employment.

In Table I-1, estimates of sectoral employment from that survey are given for 1974-78, although comparable figures for 1970 and 1973 were not obtained. These figures suggest that some absolute increase may have occurred in the level of agricultural employment during 1974-76 as an aftermath of the Revolution, and especially the change in land ownership in the Alentejo. As a minimum, they reveal a strong decline in the rate of migration of workers from the sector. Just as important, they show that almost one-third of

<sup>1/</sup> Other estimates, placing unemployment in 1976-7 as high as 14-15 percent, are available.

the total labor force remains in this sector, and that this large group of workers 1) contributes only 9 percent of total GDP, and 2) produces only 30 percent as much per worker as the average for the overall economy. The productivity gap between agriculture and the rest of the economy widened rather than narrowed in the post-Revolution period.

Consequences of the fundamental changes in economic and social structures that came with the Revolution are apparent. In 1977, the share of income going to the poorest quartile of households had risen to 9.2 percent while that received by the highest quartile had fallen to 45.5 percent. Even more impressive gains in income shares were registered for the second and third quartiles. What this means is that income was shifted from the upper quartile to the three lower income classes, especially the 2nd and 3rd quartiles, leading to a significant increase in equality of income distribution.<sup>1/</sup> (See Figure I-1).

This income shift was associated with a marked increase in both public and private consumption (See Table I-6). In 1974-76, consumption rose as a percentage of GDP, led by a sharp increase in the level of private consumption. The increase in consumption followed the increased equality of income distribution, which came about through an increased share of wages in total income.

The full nature of the shifts in income and their long-term consequences for the economy are not yet clear. One result was a

<sup>1/</sup> The magnitude of the shifts in income distribution is unusual, especially in a short period of time.

sharp decline in savings. Surprisingly, gross fixed investment has been maintained at a level of 20 percent of GDP despite the fall in the savings rate (See Table I-6).

Another consequence was an increase in the demand for food, most of which had to be imported. Because of a decline in exports, tourism and workers' remittances, the growth in food and other imports in recent years has led to a serious deterioration in the country's trade balances.

In 1973, Portugal enjoyed a favorable balance on current account of \$348 million, including worker remittances and other transfers (See Table I-7). By 1977, this had changed to a net unfavorable balance on current account of \$1.5 billion, despite worker remittances of \$1.2 billion. The major factor in the drastically changed situation was an increase in imports from \$2.7 to \$4.6 billion, while exports grew only from \$1.8 to \$2 billion. The rapid growth in imports of agricultural products was an important contributor to the unfavorable shift in the balance of trade.

During this period, the terms of international trade turned somewhat against Portugal. Based on an index of terms of trade of 1970 = 100, the index had improved by 1973 to 105, but in 1977 was only 84. (See Table I-8).

Since 1977, the GOP has undertaken a series of strong short-term stabilization measures to curb the high domestic consumption level and large imports and to stimulate exports and domestic savings. In 1978 these stringent measures were further strengthened in

Table I-7. Portugal: Balance of Payments

(In Million US Dollars)

	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
Exports (F.o.b.)	1,843	2,278	1,935	1,823	2,031	2,433
Imports (f.o.b.)	2,745	4,277	3,605	3,932	4,562	4,748
Trade balance	-902	-1,989	-1,670	-2,109	-2,531	-2,315
Nonfactor services (Net)	67	-74	-169	26	77	-96
(Tourism receipts, gross)	(550)	(513)	(360)	(332)	(405)	(431)
Net Investment income	86	129	-14	-133	-177	N.D.
Transfers (Net)	1,097	1,111	1,037	972	1,136	N.D.
of which: workers' remittances	(n.a.)	(n.a.)	(821)	(914)	(1,176)	(1,671)
Current account balance	348	-823	-817	-1,244	-1,495	-776

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Source: Bank of Portugal and World Bank.

Table I-8. Portugal: Terms of Trade  
(1970 = 100)

	Export Price Index	Import Price Index	Terms of Trade
1970	100	100	100
1971	104.0	102.7	101.3
1972	110.6	104.5	105.8
1973	125.4	119.6	104.8
1974	171.9	177.2	97.0
1975	167.2	194.8	85.8
1976	177.9	217.6	81.8
1977	237.0	280.9	84.4
1978	289.7	337.4	85.9

Source: Bank of Portugal; Ministry of Finance and  
Ministry of Planning.

connection with standby credit provided by the IMF and a consortium of donors. Some improvement in the current account balances occurred in 1978. A better export performance combined with a slackening in the growth in imports and increased workers' remittances reduced the current account deficit to \$776 million.

The balance of payments is expected to continue to improve somewhat in 1979, at least in part as a result of the measures taken in 1977 and further reinforced in 1978 under terms of the IMF consortium standby agreement. The current account deficit is expected to decline by about \$100 million from the 1978 level of \$776 million, primarily due to growth in workers' remittances (up \$200 million) and tourism (up a net of \$150 million) while the trade imbalance will be worse (about \$100 million).

The commodity composition of exports and imports is shown in Tables I-9 and I-10, respectively. Traditional exports (fish, wine, cork, wood, textiles, shoes) dominate exports along with machinery and transport equipment. Agricultural products (mainly food) represent the largest import category, having registered a strong increase in 1977. Oil, machinery, and industrial raw materials are the other largest categories of imports.

Total foreign currency reserves are expected to grow to about \$7.8 billion in 1979, largely due to the rapid increase in the value of Portugal's gold stock at world prices. The country's foreign debt is expected to increase by about \$500 million. These general trends are expected to continue in 1980 and 1981.

Table I-9. Portugal: Exports of Some Main Products  
(in millions of escudos, current prices)

	1974	1975	1976	1977 <sup>1/</sup>	% of Total in 1977
Fish (preserved)	1,145	1,214	1,532	2,259	2.9
Wines	3,795	3,318	3,543	5,069	6.5
Wood and wood products	2,009	1,172	1,759	2,721	3.5
Cork and cork products	3,798	2,972	3,742	5,719	7.4
Wood pulp	2,517	2,391	3,525	3,644	4.7
Textiles and clothing	16,251	13,424	14,489	20,435	26.3
Footwear and leather articles	1,128	1,522	1,620	2,622	3.4
Metal products	1,249	1,300	1,178	2,037	2.6
Machinery (non-electric)	2,280	1,949	1,727	3,444	4.4
Machinery (electric)	3,821	3,530	3,566	5,314	6.9
Transport equipment	<u>1,257</u>	<u>996</u>	<u>1,654</u>	<u>2,753</u>	<u>3.5</u>
Sub-total (a)	39,250	33,588	38,335	56,017	72.1
Total exports (b)	58,014	49,310	54,779	77,665	100.0
<u>Memo item</u>					
Exports of main products as % of total exports (a/b)	67.7	68.1	70.0	72.1	

<sup>1/</sup> Estimates

Source: World Bank and Ministry of Commerce.

Table I-10. Portugal: Imports by Major Categories

	1977 <sup>1/</sup> (Million Escudos)	% of Total	Annual Growth Rate in Constant Prices			
			1974	1975	1976	1977
Agricultural products	34,446	18.2	22.2	-20.2	9.3	17.1
Mineral products (petroleum)	30,862	16.3	16.5	-7.8	7.5	4.4
Chemicals and related products	25,066	13.2	-5.9	-24.2	55.7	13.4
Wood, cork, pulp and paper	6,875	3.6	7.2	-33.4	22.3	60.6
Textiles, clothing & footwear	16,021	8.4	-10.8	-27.1	33.5	-4.9
Metals & metal products	18,972	10.0	36.1	-31.6	18.0	38.7
Machinery & appliances	32,518	17.1	23.4	n.a.	19.5	13.2
Transport equipment	16,379	8.6	13.6	-33.8	12.6	22.2
Miscellaneous	8,856	4.5	-7.5	-	11.2	-
<u>TOTAL</u>	<u>189,993</u>	<u>100,0</u> <sup>2/</sup>	<u>6.3</u>	<u>-24.7</u>	<u>17.5</u>	<u>13.1</u>

<sup>1/</sup> Estimates

<sup>2/</sup> Figures may not add due to rounding.

Source: World Bank and Ministry of Commerce and Tourism.

Since 1973, internal public sector financial accounts have shown a generally unfavorable trend, with the public sector fiscal deficit growing rapidly. Subsidies, which have been an increasingly large factor in agricultural production and food consumption, have contributed heavily to the growing public sector deficit. Between 1974 and 1978, subsidies grew about 7-fold. The negative public balance of capital expenditures, which grew about 6-fold, was another important contributor to the growing public sector financial deficit.

Since there is virtually no virgin land to be brought under cultivation in the country, the basic need for increased agricultural production can be met only by intensification of production and increasing output per hectare. Other important objectives are: to raise the income of the rural population, to contribute to the country's balance of payments equilibrium, and to mobilize additional savings to meet the sector's requirements for capital investment.

Additional labor transfers from agriculture are likely in the long run and even desirable from the standpoint of narrowing the gap between agricultural and non-agricultural incomes. This would require a renewal of the process by which workers have been led to leave agriculture by the lure of more lucrative employment opportunities in other occupations and abroad. The rate at which this transfer can - or should - take place over the next 5 to 10 years, however, is open to question.

Given the recent increases in urban unemployment and the poorer prospects for emigration of workers, it will be extremely difficult for Portugal to generate enough new non-agricultural jobs each year to absorb the expected increments in the work force and avoid increases in unemployment. That makes the likelihood of absorbing the current stock of underemployed agricultural workers even more unlikely. Thus, while a long-term continuation of the "structural transformation" of 1960-73 is needed, concentration in the medium term should be on possibilities for increasing productivity in agriculture without prematurely displacing large numbers of workers.

After a long stagnation, it may have seemed in 1973 that the agricultural sector could not worsen its performance. It was contributing only 12 percent of GDP, employing a third or more of the labor force, and providing a third of total exports. Nonetheless, further declines in production were ahead. The disorganization in the Alentejo subsequent to the Revolution accounted for most of the decline in 1974 and 1975. Exceptionally poor weather in 1977 reduced agricultural GDP by as much as 10 percent. Some recovery in output occurred in 1978. Production of major crops and livestock products in 1978 is compared to the 1972-76 average and to 1977 in Table I-11. All crops except potatoes were lower in 1978 than in the 72-76 period, some by as much as 50 percent. In 1979, further declines in crop production are being experienced.

Within the agricultural sector, the livestock subsector, which has benefitted from the largest subsidies, has grown relative to grain

Table I-11. Portugal: Crop and Livestock Production

(1,000 Metric Tons)

	Wheat	Maize	Rye	Bar- ley	Oats	Rice	Pota- toes	Toma- toes	Oran- ges	Ap- ples	Wine (1000 hl)	Olive Oil (1000 hl)	Meat			Milk	Eggs
													Beef	Pork	Poul- try		
1978	252	442	104	39	59	135	1 080	679	111	117	5 563	321	88	102	142	822	62
Increase % 78/72-76	-57	-5	-31	-51	-42	-2	+2	-11	-7	-13	-46	-36	+6	+41	+50	+36	+48
Increase % 78/77	+12	0	+1	-1	+1	+33	-10	+2	-4	+24	-16	-2	+19	+17	+6	+22	+19

Source: National Institute of Statistics

crops, wine and olives. In fact, production of most crops has declined significantly during the 1970's (See Table I-11). Illustratively, wheat production declined between 1974 and 1979 from 534,000 m.t. to 210,000 m.t. For 1979, total grain production is expected to be less than 1 million m.t. - only about one fourth of domestic disappearance. Furthermore, it is not only grain production that has declined during this period. Production of most fruits has also declined, and wine and olive oil production in 1978 was well below earlier years.

Total production of beef, goat and sheep meat combined was up 4,000 m.t. between 1974 and 1977, with beef production up about 5,000 tons and sheep and goat meat down slightly. Pork production grew from 78,000 to 117,000 tons and poultry meat from 82,000 to 117,000 tons. Egg production was up about 13,000 m.t. Milk production changed little, with fresh milk down about 160,000 m.t. and cheese production up 16,000 m.t. There are indications that cattle, sheep, goat, swine and horse numbers all declined between 1972 and 1976.<sup>1/</sup> However, the USDA Agricultural Attache estimates increases in numbers, especially for sheep and swine, in 1977 and 1978.<sup>2/</sup>

Particularly disturbing developments in agriculture have been the declines in investment, use of inputs, and in hectares of field

<sup>1/</sup> World Bank, Portugal, Agricultural Sector Survey 1978. pp. 192-4.

<sup>2/</sup> USDA Report, May 1979.

crops harvested. As a result, imports of feed grains and protein supplements to support the modest growth in total livestock production have risen rapidly. 1/ Yields have increased very little for any field crops during the past 25 years and have declined significantly for some. 2/

The stagnation in production is closely related to the quantities of the physical inputs going into agricultural production. As noted, the area planted to most crops has declined; that area planted to annual crops declined by about 20% between 1974 and 1977 (1.8 million ha to 1.5 million ha). Employment in agriculture has declined by about one-third since 1960. Production increases inputs and investments, such as fertilizer and irrigation, that were about the same in 1978 as in 1970. Only about 10% of the total agriculture and forestry area of 7.2 million ha is irrigated. Traditional irrigation increased by only about 5% between 1955 and 1970 and publicly funded irrigation has increased by only about 1,000 ha per year since 1972. Further, the extent of use of irrigated areas is estimated to be only 50%.

Fertilizer consumption between 1972 and 1978 increased from 126,000 to 138,000 m.t. for nitrogen, 68,000 to 71,000 m.t. for  $P_2O_5$ , and 24,000 to 34,000 for  $K_2O$ . (For nitrogen and potassium combined the growth rate was only about 1% per year; for  $K_2O$  about

1/ Every percentage point in growth of livestock GDP in 1971-76 was associated with a 10 percent increase in imports of feed grains.

2/ See Chapter 2 for a more complete discussion of land-use production and yields.

6% per year. The latter may reflect greater emphasis on potatoes.) These growth rates are low compared to the generally high growth rates worldwide in fertilizer consumption. Limestone application is practically zero despite high acidity of most soils. Use of improved seeds is low.

An overall view of the deplorable agricultural trade situation is given in Table I-12. No specific way for calculating an "agricultural balance" exists. Nor is it necessarily the case that a country is always better off to seek self-sufficiency in a certain class of products. That said, the value of total imports related to agriculture was 162 percent of exports in 1978, which was only slightly lower than the 170 percent recorded in 1977. The contribution of the sector to total exports was down to 25 percent in 1977. This performance has exacerbated the country's balance of payments problem, as well as contributing to domestic inflation. (Food prices rose by 32 percent in 1977 compared to an overall inflation rate of 27 percent). The generally unfavorable agricultural trade situation is continuing in 1979.

### C. Rate of Capital Formation in Agriculture

One of the important factors in the decline in agricultural production, and consequently in the increasing dependence on food and feed imports, is the low rate of investment in agriculture which has persisted for decades. The overt policy of encouraging investment in industry through a wide variety of protective subsidy and credit measures diverted resources to industry that

Table I-12. Portugal: Foreign Trade in Major Agricultural Products and Offers Related to the Sector -28-

(1 000 Contos)<sup>1/</sup>

	Exports (Jan./Nov.)		Imports (Jan./Nov.)	
	1977	1978	1977	1978
<u>Agricultural &amp; Livestock Products</u>				
<u>Food</u>				
Meat	x	x	2 245	1 018
Wheat and Rye	x	x	1 717	4 096
Fats and Oils	x	x	306	425
Tomato	1 789	1 849	x	x
Wine	4 580	6 289	x	x
Coffee	x	x	1 583	1 094
Sugar	263	22	2 230	1 732
<u>Animal Feed</u>				
Corn and Sorghum	x	x	6 176	9 720
Oil, Meats and by-products	x	x	2 392	2 811
<u>Forestry Products</u>				
Wood (Whole and sawn)	1 989	2 573	1 827	1 029
Cork and by-products	5 118	6 543	x	x
Paper pulp	3 321	2 954	x	x
Turpentine	1 012	1 768	x	x
<u>Raw Materials</u>				
Oil, Seeds	x	x	3 842	5 714
Cotton	x	x	6 398	6 479
<u>Inputs from other sectors</u>				
Fertilizers and Pesticides	717	1 045	532	777
Machinery and Agricultural Equipment	x	x	2 727	2 415
<b>T O T A L</b>	<b>18,789</b>	<b>23,043</b>	<b>31,975</b>	<b>37,310</b>

<sup>1/</sup> 1 Conto=1,000 Escudos

Source: Ministry of Planning.

might otherwise have gone into domestic agriculture. Competition from agricultural opportunities in the colonies was also an important factor prior to the recent decolonization process. More recently, the tenure changes in the South and uncertainties created by these tenure changes have introduced new disincentives when the domestic investment climate might otherwise have been tilting toward agriculture. Internal agricultural policies, especially pervasive Government controls and unpredictability of future price actions, have introduced additional risk and uncertainty.

Whatever the causes, the rate of capital formation in agriculture and forestry has been dramatically low compared with the sector's contribution to employment and GDP. Since 1970, fixed capital formation in agriculture, forestry and fisheries has varied between 4 to 6 percent of the total for all sectors while its contribution to GDP has been 10-13 percent (depending on the base) and it has contributed about 27-30 percent of total employment (See Table I-13). Annual investment per worker has been only about 12% of the per-worker level of fixed capital formation in the overall economy. Considering the low level of gross fixed capital formation in agriculture relative to production, net capital formation (net of depreciation) has probably been substantially negative in most years.

The nature of the capital formation that did take place is also a matter of concern since it does not appear to have been efficient in increasing production. As noted above, fertilizer use has grown at only about 1% per year in the 1970's. Limestone, which

Table 1-13. Portugal: Gross Fixed Capital Formation (G.F.C.F.) in Agriculture and Forestry Sector

(Current Prices)

Millions of Escudos

	T o t a l	Agriculture & Forestry	Percentage (2)/(1)
1970	31,255	1,775	5.68
1971	37,259	1,901	5.10
1972	47,526	2,048	4.31
1973	57,256	2,382	4.16
1974	66,761	2,808	4.21
1975	73,992	3,368	4.55
1976	78,784	4,678	5.93

Source, MAP.

should be very important and widely used, is hardly used at all, and there currently appear to be no plans to promote its case. Improved seeds are not widely used. Pasture and forage is largely natural growth rather than seeding of improved varieties with fertilizers, limestone and good management. Irrigation receives little attention or resources. Research receives about 0.2% of agricultural GDP compared with 1-2% as a reasonable target. There has been some planting of tree crops, but it is not certain whether this represents a net increase in potential production or simply replacement.

In contrast to low levels of investment in these potentially productive inputs and services, the number of tractors increased by nearly 70% (to an estimated 121,000 in 1978) between 1973 and 1978. 1/

In Table I-14, fixed capital formation in agriculture in EEC countries is compared to that in Portugal. This is one of the most revealing indicators of what entry into the EEC portends for resource allocation in Portugal. Portugal's annual investment in agriculture will need to go up by 200-300 percent to be on par with the ratio in the lowest EEC country and by 600 percent to be on par with the highest. And that level of annual investment would do nothing to make up for the low level of capital formation that has existed for two decades or more!

1/ USDA, FAS, Portugal; Agricultural Situation. 2/5/74, p. 4.

Table I-14. Ratio of Gross Capital Formation  
in Agriculture to Agricultural  
Gross Domestic Product

(Current prices)

	1970	1973	1974	1975	1976
Germany	27.5	28.7	28.7	28.8	31.1
France	18.1	20.3	23.6	23.2	24.1
Italy	15.5	15.0	17.2	17.8	20.1
Netherlands	18.5	24.2	27.1	20.3	24.2
Belgium	14.4	19.2	21.0	16.7	19.0
Luxembourg	31.2	30.9	35.9	39.3	51.5
Ireland	22.6	25.2	16.3	10.1	24.1
Denmark	18.4	30.7	32.6	35.2	39.6
Portugal	6.5	6.1	6.2	6.6	8.0

Source: MAP, Algunos Aspectos Documentais da Agricultura Portuguesa, p. 48.

D. Credit

The World Bank analysis of the agricultural credit situation in Portugal, published in its recent (November 1978) agricultural sector survey, indicates the inadequacy of institutional credit available for financing production and investment in agriculture, forestry and fisheries.<sup>1/</sup>

The report notes that though the sector contributes 11-12% to GDP, it received only 5% of the total institutional credit, and that availability of credit was heavily oriented toward short-term lending. Institutional credit reached only 10% of the 800,000 farmers while private lenders, including input suppliers, may have reached another 15%-20%. Major sources of formal institutional credit were:

- a. Caixa Geral de Depositos (CGD), a central savings and loan bank;
- b. 142 Caixas de Credito Agricola Mutua (CCAM), a system of mutual or cooperative savings banks;
- c. Instituto de Reorganizacao Agraria (IRA), which administers 4 special funds;
- d. Commercial banks, (now nationalized);

<sup>1/</sup> World Bank, Portugal, Agricultural Sector Survey. November, 1978, pp. 265-88.

- e. Banco de Fomento Nacional (BNF), a public sector development finance company;
- f. Special funds for investment and subsidies in forestry, fisheries and livestock, administered by entities of the Ministry of Agriculture and Fisheries;
- g. Regulatory boards, commissions and institutes (also officially considered as "economic coordination entities") concerned with commodity stabilization and marketing of oils, fruits, wine, livestock products and cereals.

The amounts of credit supplied by formal institutional sources in 1973 and 1974 were:

BANK LOANS TO AGRICULTURE AND FISHERIES  
(Amounts outstanding in million Esc. at end of year) 1/

	<u>Short-Term</u>		<u>Long-Term</u>	
	<u>1973</u>	<u>1974</u>	<u>1973</u>	<u>1974</u>
Bank of Portugal	699	651	--	--
Commercial Banks	6780	5866	392	412
Caixa Geral de Depositos	75	74	2486	2287
Caixas Economicas	138	124	136	168
Non-Banking institutions	<u>--</u>	<u>--</u>	<u>333</u>	<u>338</u>
Total	<u>7692</u>	<u>6715</u>	<u>3347</u>	<u>3205</u>

Source: Banco de Portugal, Annual Report, 1974. No data is supplied in the 1975 Annual Report as to the composition term of credit to agriculture for that year.

1/ Excludes financing by Government agencies such as IRA and non-government institutions.

The World Bank Mission observed:

"The government has searched for a satisfactory way to resolve the institutional and financial problems of agricultural credit since 1975. The participation of the Ministry of Agriculture and Fisheries (MAP) in the process and the establishment of an agricultural development bank have been uppermost considerations. With the role of the MAP assured, by virtue of providing technical assistance to borrowers, the pending issue is whether an agricultural bank is indispensable at present. An alternative proposal to establish an agricultural trust fund has been deemed more expedient by the Bank of Portugal and the MAP. Such a fund, the Financial Institute for Agricultural and Fisheries Development (IFADAP), has been legally established in the Bank of Portugal.

The creation of IFADAP is propitious because institutional and financial conditions do not yet exist to create an agricultural bank from one of the nationalized commercial banks. This is because (a) some of the existing institutions, e.g. the Caixa de Depositos and the CCAM, have a continuing and expanded role to play in agricultural credit in the country as a whole, and should become part of the new system; (b) a new bank takes considerable time in establishing itself and accumulating sufficient capital; and (c) a new bank can best grow out of the existing entities and assets that the IFADAP would manage." 1/

The team met with the Director of IFADAP and discussed credit with other GOP officials. We were favorably impressed with the

1/ World Bank, Portugal, Agricultural Sector Survey. 1978, p.73.

directions being taken or planned by IFADAP, including procedures, priorities and criteria to be applied. IFADAP will function basically to rediscount loans to agriculture and agro-industry that meet its criteria. Priority will be given to improved forage, improved production of cereals on better land, tree crops, fruits and vegetables for processing, and more efficient use of irrigating water especially in smaller systems. Agro-industry lending will be particularly oriented to cooperatives. To obtain credit both cooperatives and collectives must demonstrate an adequate accounting system, plan to use resources productively on economically viable activities, and show adequate management capability.

Interest rates will be:

One year or less	20%
1-5 years	21.25%
over 5 years	22.25%

For the first 5 years bonuses will be given in the form of payment of interest to lower effective rates to the following:

<u>YEAR</u>	<u>RATE IN %</u>
1	10.75%
2	12.75%
3	14.75%
4	16.75%
5	19.75%
6	22.25%

For short-term loans the rate is to be 13.25%. (By comparison bank deposits of 6 months now receive 19% interest and deposits of 1 year receive 20% interest.) Farmers must contribute at least 15% of the total costs of the project for which the loan is made. In general IFADAP regulations are neutral with respect to farm size.

While IFADAP is a new organization, it appears to be moving in the right way to provide better coordination and more adequate financing of agriculture, forestry, fisheries and related agro-industry. We suggest that USAID follow closely the development of IFADAP and its implementation of loan procedures. A major part of PL 480 counterpart funds, as well as other U.S. aid to agriculture, might well be channeled through IFADAP, with somewhat more specific criteria on priorities in use of U.S. provided resources and requirements for timely reporting on actual use.

E. Migration from the North and Need for a Special Program

The North of Portugal is the area from which many migrants have left the country to work abroad. The pattern of migration, although international, has existed over several generations. It involves both periodic returns and, for many migrants, an eventual permanent return. Most migrants own some land which was received under the prevailing inheritance system that gives shares to each child on the death of a landowner. A major reason for migration, therefore, is to preserve a rural way of life in the village to which the migrants are tied by property ownership, not to escape from their peasant traditions.

This pattern of international, return-oriented migration contrasts with the domestic interregional and intersectoral migration that has characterized the latifundia regions of the South. In southern Portugal, for small owners and the landless, a permanent exodus of the entire family to Lisbon or other urban centers was the more common pattern.

Migration to work abroad is mostly by males. Hence, agriculture in the North is increasingly left in the hands of females. This is another factor that often leads emigrants to view their departure as temporary. A good deal of the money earned abroad returns to the villages and is used to buy more land, build a new house, or buy a new car. These people, often blue collar workers, manual laborers and domestic servants in France and Germany, are the same people who are investing in new houses, furniture and automobiles in the rural villages of the North. They are the new Portuguese rural middle class.

The impact of this pattern on northern agriculture is not clear. It brings in outside funds and new resources by which a rural family can move up the social ladder. If this means "all the perquisites of life that emigrants' salaries can buy," little agricultural change results. If it means knowledge, equipment and materials to improve farming, and even the acquisition of new land, movement toward a more viable and productive agriculture may well result.

Agriculture in the north has been increasingly left to women, the old, the young, and the unambitious. Many who remain live better than they did 20 years ago, but this is due more to remittances than to rising productivity. While men have left, land continues to be farmed today largely as it was years ago by those remaining, whose sons, husbands and fathers are working abroad. Though the size of a farm unit grew by about 50% in the 1950's and early 1960's - a trend that probably will continue - farm size,

fragmentation and technological backwardness continue to limit production. As a result of the changes that have taken place, the social problem (low income) that argued for a major effort in the Northeast is slowly disappearing. Further, while yields are low, the production prospects and rural structure do not appear to justify a level of effort there that would be more intensive than efforts elsewhere in the country. Some of the programs needed to improve agriculture nationally which are suggested later in this report - improved forage, lime and fertilizer, better seed, better incentives and better technology - might be somewhat more intensively directed to the region. In our opinion, however, there does not appear to be economic justification for a highly concentrated and costly integrated rural development effort devoted to the area.

F. Portugal's Entry into the European Economic Community

Three countries of Southern Europe are involved in the second enlargement of the European Economic Community (EEC)--Greece, Portugal and Spain. The Portuguese application was submitted in 1975. Initial accession is expected around 1983-4 with full membership phased in by 1990. Formal negotiations aimed at identifying the main problems for Portuguese entry have already begun; negotiations on agricultural problems are expected to begin in 1980.

The loss of its African colonies has finally closed the long historical cycle associated with Portugal's overseas territories and trading patterns. Economic realities of trade and factor flows (capital and labor) underlie the Portuguese decision to join the process of economic integration in Western Europe.

The EEC treaty is neutral in regard to public or private ownership of enterprises. Western European economies on the whole are based on private enterprise and market forces but with a large public enterprise sector and strong governmental intervention and regulation. The main impact on Portugal will be to open its internal market to European competition and end the market monopoly of many state-owned enterprises.

Portuguese industry involves a large proportion of small scale enterprises that developed serving the reserved domestic and overseas markets, and were maintained by protection and fiscal incentives. EEC entry will imply a significant loss in effective protection and threaten the survival of inefficient industrial enterprises. In addition, generalized preferences granted to LDC's by the EEC may create further problems, given the importance of products such as textiles, footwear, clothing and foodstuffs in Portuguese exports. Similarly, Portugal will itself be competing with Greece and Spain in the EEC as well as the existing nine member countries.1/

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1/ Portugal's major competitive problems on entry into the EEC probably will be from other Mediterranean countries with similar growing conditions and hence generally similar comparative advantage. For example, the accession of Spain to the EEC is expected to bring the EEC degree of self-sufficiency for fresh fruits up from 85.4% to 90.5%, for citrus up from 49% to 83%, and for fresh vegetables up from 98% to 99.7%. Spain has a relatively well organized production and marketing structure and is already a major exporter of table olives (\$124 million), edible tree nuts (\$117 million), citrus (\$505 million), wine (\$241 million), olive oil (\$112 million), fresh vegetables (\$234 million) and processed vegetables (\$135 million). (Figures in parentheses are recent annual dollar export values). Spain has a substantial potential for expansion of these generally labor intensive crops (land resources, cheap labor, basic marketing infrastructure).

Since Portugal's GDP represents only about one percent of the total EEC output, the impact of Portugal's membership on the existing members will be slight. One of the main benefits that Portugal can expect will be the technical and financial aid that will flow to the country under the various policies and mechanisms of the EEC.

Under present circumstances, Portugal's food imports bill would rise because it would likely have to buy more farm products at higher EEC prices, either by paying the EEC import levies or shifting imports to higher cost EEC production. Where Portuguese prices are lower than EEC (fruit, wine), largely due to the progressive devaluation of the escudo, entry would benefit domestic producers and stimulate local production. At the same time, these price changes will generate inflationary pressures on domestic food prices and adversely affect Portuguese consumers. EEC entry will probably further raise consumer prices due to the termination of the large existing subsidies as Portugal brings its policies into line with the EEC's common agricultural policy.

One important question concerns the free movement of labor. EEC entry will ultimately end the restrictive policies on worker immigration followed over the last several years by EEC countries, but a long transition period is expected before free movement occurs. This suggests that EEC membership may ease long-term structural adjustments in Portugal but do little to reduce the importance of developing labor-intensive agriculture and industry over the medium-term.

## II. AGRICULTURAL RESOURCES AND PRODUCTION

### A. Land Resources and Utilization

Portugal has a total land area of about 90,000 square kilometers and a population of some 9.8 million, giving it a population density of 110 persons per square kilometer. The total area cultivated is about 0.5 ha per capita, which suggests a fairly favorable agricultural resource base relative to population. Except for the recent return of 600,000 people after decolonization, the population has been about stable, with a birth rate of only 1.8 per thousand and sufficient emigration to virtually balance the otherwise natural increase in population of 1% per year.

Out of the 8.9 million ha land area of Portugal, about 7.2 million ha are used for agriculture and forestry. Although existing land classification puts total area suited to cultivation at only 2.6 million ha (i.e., arable), the area cultivated including tree crops (grapes, olives, other fruits, nuts and cork) and cultivated forage currently is about 4.5 million ha per year and 1 million ha are fallow in a given year.

It is estimated that 6.1 million ha, or 10% of the land area, are unsuited for crop production. About 2 million ha are classified as unsuitable for improved pasture and forage. Considering the total area in annual crops, tree crops and fallow, a fairly

large percentage of crops are apparently on land not considered arable, and hence not suitable for cultivated annual crops. The remaining 3.9 million ha of land are in forest (1.6 million ha), natural, unimproved grassland (1.6 million ha) and mixed forest and grassland (1.0 million ha).

The irrigated area totals about 650,000, of which 90-95% is traditional-type irrigation. It is estimated that only about 50% of the irrigated area is planted in any given year, and yields generally are much below the potential on irrigated lands.

About 350,000 ha of land are planted in grapes, about 310,000 ha are in olives, and 277,000 ha in fresh fruits and nut crops. Although approximately 2 million ha are considered suitable for improved forage and pasture, only about 0.38 million ha are actually in improved pasture (planted to improved species).

The area planted to the principal cereal crops has steadily declined in the past two decades with the sharpest reduction beginning about 1965 (See Table II-1). Pulses also declined, while the trend in area planted in potatoes has been steadily upward. Recently, oilseeds, sunflower and safflower have been introduced on about 35,000 ha, and the area in tomatoes has expanded to about 20,000 ha. The overall area in principal crops has declined in the 1974-1977 period by over 850,000 ha compared to the 1960-1964 era. The area in cereals dropped from 1.9 million ha in 1960-1964 to 1.4 million ha in 1976 and 1.06 million ha in 1977. Declining soil fertility on the already poor quality

Table II-1 PORTUGAL: AREA PLANTED IN PRINCIPAL CROPS000 HA

	AVERAGE									
	<u>1955/1959</u>	<u>1960/1964</u>	<u>1965/1969</u>	<u>1970/1974</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u> EST	<u>1979</u> EST
WHEAT	813	710	545	479	462	462	532	259	351	369
RYE	258	302	259	219	210	211	219	190	—	—
RICE	37	37	34	40	33	30	22	34	—	—
MAIZE	474	489	461	387	360	372	349	361	347	327
BARLEY	150	123	112	89	94	101	143	67	72	74
OATS	304	279	215	163	171	207	215	145	204	189
POTATOES	88	104	106	111	112	107	116	125	—	—
PULSES	444	550	512	407	383	381	353	329	—	—
<b>TOTAL</b>	<b>2,568</b>	<b>2,594</b>	<b>2,244</b>	<b>1,895</b>	<b>1,825</b>	<b>1,871</b>	<b>1,949</b>	<b>1,251</b>		

of land, the generally depressed international prices, the increased opportunities for agricultural workers offered by expanding employment opportunities in Europe, and particularly the political and land tenure situation in the Alentejo, have all contributed to this decline.

## B. Climate and Soils

Major climatic classification 1/ of areas for agricultural production in Portugal are shown in Figure II-1.

### 1. Temperate Moderate Rainfall Zone

This zone is characterized by mean monthly temperatures above 10°C for 6 to 9 months and with moisture sufficient for production of crops for eight months. Moisture is deficient during the four months June to September. Annual rainfall ranges from 1000 mm at lower elevations to over 2000 mm in the mountainous areas. Much of the land is on moderately steep to steep slopes, which are best suited for forests or pasture. Level lands in the valleys and sloping lands generally have soils deep enough for production of cereal and other crops. Soils are generally acid with pH of 4.0 to 5.5, are low in fertility, and will respond to liming and fertilizer application. The farms are generally small

1/ Classification as proposed by Hargreaves in World Water for Agriculture, Agency for International Development, January, 1977.

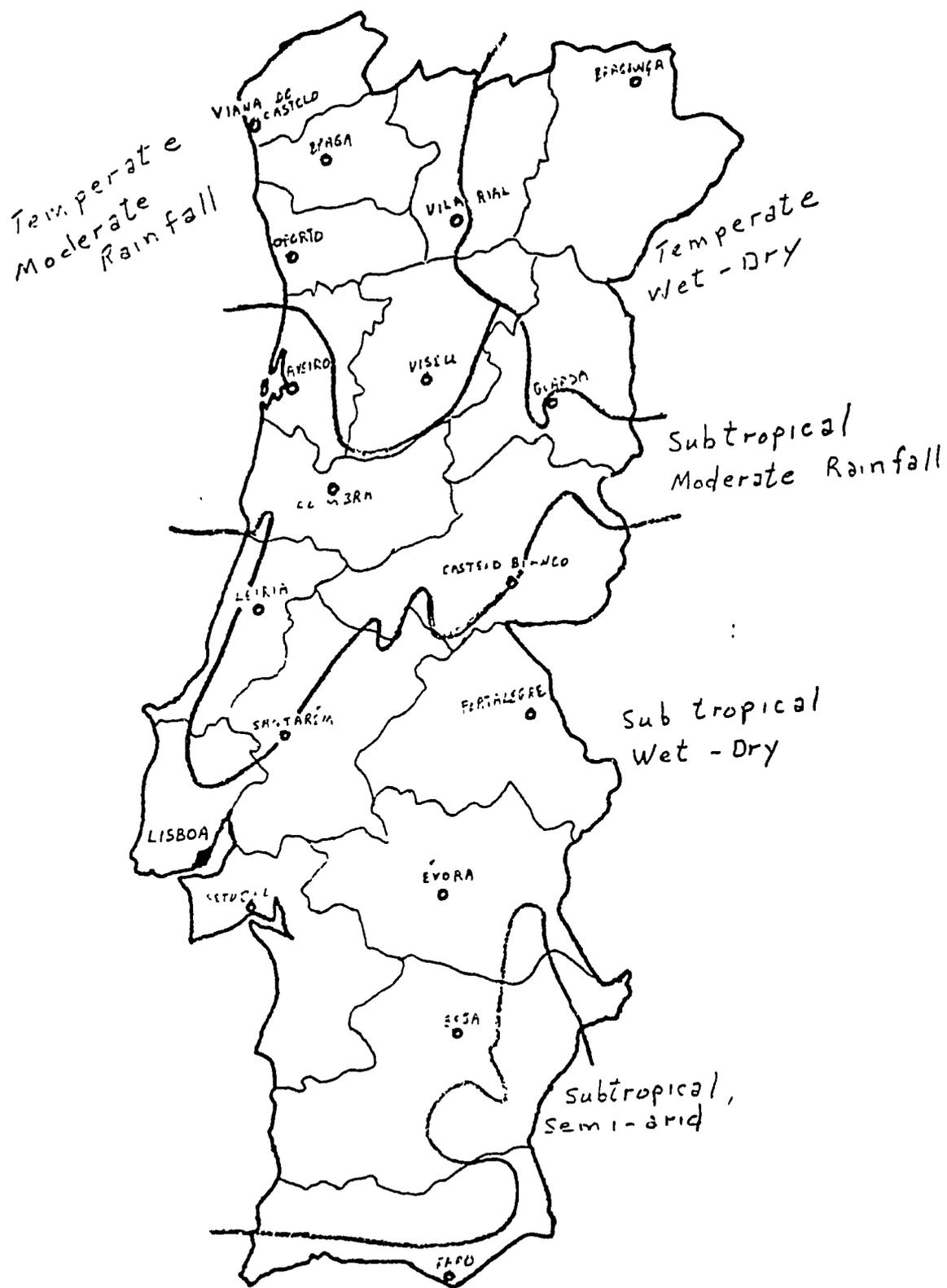


FIGURE II-1 Climatic Zones

mixed-farming units, family-owned and operated with occasional hired labor and with a relatively high proportion of the output being consumed on the farms (vegetables as well as meat and milk). Corn is the main crop and is generally double cropped with beans or potatoes. Rye is also widely grown. Most farms have some livestock, largely dairy cows, and raise some wine grapes and fruit trees. Average per hectare yields of potatoes, corn, wheat, rye and oats are above average for the country. However, compared with similar areas in Spain, yields are much lower. Correcting soil acidity and applying higher amounts of suitable fertilizers would result in much higher yields of these crops. The area is well suited to year-round production of forages. With the introduction of improved grass and legume species, adequate lime and fertilizer, good management of forages, and upgrading and properly managing ruminant livestock, meat and milk production could be substantially increased. Dry matter production of 1520 tons per ha of a combination of corn and improved grass - legume forages has been achieved on some farms.

## 2. Temperate Wet-Dry Zone

Mean monthly temperatures in this zone are above 10°C for at least six months. Moisture is adequate for crop production during 6 or 7 months, with moisture deficiency occurring during the May to September period. Annual rainfall is 600 to 800 mm. Soils are generally shallow and steep. However,

there are sizeable areas of deeper soils on moderate slopes in the eastern and east central part of the zone. Soils are acid with a pH of 4.0 to 5.5 and low in fertility. Farms are small and mostly family operated. Main field crops are rye, wheat and potatoes, with these often intercropped in olive, chestnut or almond groves. Grapes are also widely grown. Multiple cropping is limited to irrigated areas because of the long dry season (up to 6 months). The potential for increasing yields per hectare is not as great as in the first region, because of this shorter growing season and the shallow infertile soils. However, by correcting acidity and appropriate use of fertilizers, crop yields could be substantially improved over the present very low level. Research is needed to determine if summer annual legumes, such as medicagos, hairy indigo, lespedezas, or sweet clover, might be seeded in winter grain crops to add to the soil nitrogen supply and to provide some additional grazing for the cattle and sheep population during at least part of the dry season. Improving permanent pastures with legumes and better grass species would make it possible to increase beef and lamb or mutton production substantially. Establishing improved perennial pastures on the 180,000 ha of unimproved communal lands in the north part of the zone would also increase the spring and summer forage supply.

### 3. Subtropical Moderate Rainfall Zone

This zone, also called the littoral, is characterized by mean monthly temperatures of 10°C during 10 or more months of the

year and having moisture sufficient for crop production for 6 to 8 months of the year. Annual rainfall is 800 to 1200 mm. The soils are the best in the country, and a large proportion of those suitable for cropping are derived from calcareous material and are neutral or only slightly acid in reaction. Main field crops are corn, wheat and potatoes, with substantial areas of rice on irrigated lands. Grapes are widely grown. Corn yields are the highest in the country. However, the average per hectare production is still only 1.5 tons, which indicates that yields still could be substantially improved. There are large areas of land unsuited for cropping, with annual rainfall from 1200 to 2000 mm, on which improved pastures could be developed. Since these areas are close to a number of large urban centers and not too distant from Lisbon, dairying could be promoted on that land.

#### 4. Subtropical Wet-Dry Zone

Temperatures in this zone average 10°C or more for 10 months or more per year and five or more months each year have moisture sufficient for crop production. Annual rainfall ranges from 600 to 800 mm. Predominantly, the soils are shallow and in the south (just north of the Algarve) are extremely so, with only a few cm of soil covering the rocks. However, through the central and east central part of the zone, there are fairly large areas of soils on moderate slopes that are suitable for cropping. Wheat and oats are the dominant cereal crops grown. These are the most favorable areas for their production. Nevertheless, these

cereals are widely grown in olive groves and cork plantations where soils are often marginal. The result is low yields with wheat averaging 900 kg/ha and oats about 300 kg/ha in 1977. Most of the chickpeas produced in Portugal are grown in this zone. Recently safflower and sunflower have been introduced into the area and appear to offer good prospects on some of the better soils in the area. In the southern part of the zone some 23,000 ha of corn are grown each year with yields of only about 500 kg/ha. It appears that sorghum would generally be a more productive crop than corn under the climatic conditions in the area.

It is estimated that 1 million ha of land which is left fallow, each year, or periodically planted in cereals, should be in pastures or cereal-pasture rotations. For some of the areas with annual rainfall of 700-800 mm, research is needed to determine whether or not summer annual legumes (such as those suggested for the Subtropical Moderate Rainfall Zone) might be interseeded with the wheat or oat crop to provide nitrogen and to furnish additional grazing for livestock during part of the dry season. It is estimated that there are over 2 million ha of pasture land that could be improved in this zone. Research and application on extensive pasture areas has demonstrated that carrying capacity can be increased at least five-fold from the one-half to one animal unit per hectare that can be presently grazed on unimproved pastures to 4 or 5 animal units through the application of limestone, phosphate fertilizers and seeding with subterranean clover and grasses. Further research is needed to

determine if other legumes and grasses can be introduced to fit the wide range of conditions, and how best to fit pastures on cropland and both dryland and irrigated pastures into livestock enterprises and farming systems in the zone. This zone is the main cork producing area and also has extensive areas of olives.

#### 5. Subtropical Semi-Arid Zone

Mean monthly temperatures are over 10°C for all months of the year, but annual rainfall is less than 500 mm and there are only three or four months when sufficient moisture is available for crop production. Oftentimes moisture supply is unreliable in the Algarve. Much of the present production of cereals, vegetables and fruits is on soils which generally are too shallow to support crop continuous production.

#### C. Crop Yields

Yields per hectare have not increased appreciably in the past two decades for any of the principal crops (See Table II-2). Yields have remained almost constant since 1965-1969 with a decided reduction in 1977 and 1978 when unfavorable weather apparently affected yields materially. Yields in Portugal are lower than those of Spain and Greece which have similar agricultural environments, and decidedly lower than those of the United States (See Table II-3).

That increased production can be attained under similar environmental conditions is evidenced by the fact that with little more

Table II-2 YIELDS PER HECTARE OF PRINCIPAL CROPS

TONS

<u>CROP</u>	<u>AVERAGE</u>									
	<u>1955/1959</u>	<u>1960/1964</u>	<u>1965/1969</u>	<u>1970/1974</u> <sup>1)</sup>	<u>1974</u> <sup>2)</sup>	<u>1975</u> <sup>2)</sup>	<u>1976</u> <sup>2)</sup>	<u>1977</u> <sup>2)</sup>	<u>1978</u> <sup>3)</sup> EST.	<u>1979</u> <sup>3)</sup> EST.
WHEAT	.81	.74	1.02	1.05	1.16	1.30	1.29	.87	.72	.60
RYE	.71	.54	.70	.69	.68	.69	.75	.54	—	—
RICE	4.20	4.54	4.46	4.10	3.93	4.39	4.36	2.96	—	—
MAIZE	.93	1.15	1.21	1.36	1.35	1.22	1.09	1.23	1.28	1.29
BARLEY	.56	.45	.61	.74	.80	.86	.82	.59	.54	.39
OATS	.35	.28	.46	.56	.58	.58	.59	.41	.29	.26
POTATOES	12.1	10.2	9.9	10.2	10.0	9.4	7.9	9.6	—	—

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SOURCE: 1) OECD; 2) *Estatísticas Agrícolas, 1977*, Instituto Nacional de Estadística;  
 3) *Estimates of USDA Foreign Agricultural Service, PT 9040, 8/8/79*

Table II-3 YIELDS OF PRINCIPAL CROPS - 1974TONS / HA

	<u>Portugal</u>	<u>Spain</u>	<u>Greece</u>	<u>U.S. (1979 Est.)</u>
WHEAT	1.1	1.4	1.4	2.3
RYE	.7	.9	.7	1.6
BARLEY	.8	1.1	1.8	2.6
OATS	.6	1.0	1.2	1.9
CORN	1.4	2.6	3.4	6.6
RICE	3.9	4.8	6.0	5.0
POTATOES	10.0	12.0	13.4	--

than appropriate fertilizer applications and improved crop varieties, Spain raised its average maize yields by 50% and wheat by 40% between 1962 and 1974.

Yields of the principal crops vary in the various regions of the country as reported by the National Statistics Institute (See Table II-4). Wheat and rice yields are generally higher in the southern regions with corn, rye, oats and potatoes more productive in the north.

#### D. Livestock Production

The number of ruminant livestock (beef and dairy cattle, sheep and goats) has not changed much in the last 25 years (See Table II-5). During the 1960's and early 1970's sheep and goat numbers declined but since 1976 their population has increased to the mid-1950 level. Pig numbers increased only slightly from 1955 to 1976, but a substantial increase is estimated for 1978. The trend in poultry numbers is upward. Dairy cow numbers have declined somewhat from about 268,000 in 1972 to 225,000 in 1978. Mules, horses and donkeys number about 190,000.

Beef production increased steadily from the mid-1960's until 1975 (See Table II-6). There has been a decline since then because of the slaughter of the breeding stock following the agrarian reform of 1975. The increase from 1972 to 1975 was largely achieved without any appreciable increase in cattle numbers. This was due to the feeding of large quantities of feed grains and concentrates

Table II-4 YIELDS PER HECTARE OF PRINCIPAL CROPS BY REGIONS 1977

		<u>TONS</u>						
	<u>Region</u>	<u>Wheat</u>	<u>Rye</u>	<u>Rice</u>	<u>Maize</u>	<u>Barley</u>	<u>Oats</u>	<u>Potatoes</u>
I	Viana do Castelo Braga	.766	.788	-	1.58	-	.548	11.4
II	Porto	.854	.510	-	1.66	.512	.552	14.0
III	Vila Real Bragança	.895	.613	-	.870	.588	-	9.9
IV	Aveiro	.778	.870	.692	1.708	.551	.529	9.5
V	Viseu (Norte)	.731	.836	-	.997	.935	-	7.9
VI	Viseu (Sul)	.575	.602	-	1.073	.510	.352	12.0
VII	Guarda	.693	.354	-	.612	.481	-	8.8
VIII	Castelo Branco	.659	.389	-	.841	.514	.320	10.7
IX	Leiria - Lisboa	1.040	.487	-	1.218	.796	.421	7.1
X	Santarém	.867	.444	3.403	1.160	.951	.530	11.2
XI	Portalegre	.957	.348	2.563	.431	.983	.354	6.6
XII	Évora	.901	.389	2.834	.528	.639	.509	11.6
XIII	Setúbal	.734	.334	4.009	.356	.334	.302	7.6
XIV	Beja	.893	.337	3.238	.605	.592	.362	7.6
XV	Faro	.516	.307	4.264	1.343	.402	.369	8.0
XVIII	Coimbra	.549	.463	2.004	1.097	.404	.459	8.3

SOURCE: Estatísticas Agrícolas 1977, Instituto Nacional de Estatística.

Table II-5 NUMBER AND TYPE OF MAJOR LIVESTOCK

<u>TYPE</u>	<u>(THOUSANDS)</u>					
	<u>1955</u>	<u>1968</u>	<u>1972</u>	<u>1976</u> <sup>1)</sup>	<u>1977</u> <sup>2)</sup>	<u>1978</u> <sup>2)</sup>
CATTLE	904	905	1,072	1,010	1,000	1,115
PIGS	1,419	1,515	1,977	1,500	2,200	3,300
SHEEP	3,593	1,287	2,420	3,000	3,840	3,840
GOATS	707	531	741	--	--	--
POULTRY						
LAYERS	--	--	3,574	4,500	--	--
BROILERS	--	--	3,924	5,500	--	--

SOURCE - 1) Instituto Nacional de Estatística y Ministério de Agricultura e Pesca for 1955 to 1976 Figures.

2) USDA Foreign Agricultural Service, Lisbon, Report PT 9003 - 2/5/79.

Table II-6 PRODUCTION OF LIVESTOCK AND LIVESTOCK PRODUCTS

<u>KIND</u>	1963/65	1973	1974	1975	1976	1977
<u>MEAT</u> 000 TONS						
BEEF	53	81	84	98	70	74
LAMB & MUTTON	21	20	18	18	19	20
GOAT	-	3	3	4	4	3
PORK	49	69	70	81	78	87
POULTRY	33	89	100	100	115	134
MILK - Million Liters	375	582	600	626	638	674
CHEESE - 000 Tons	21	25	21	22	25	28
EGGS - 000 Tons	33	40	43	45	44	52

SOURCE: Estadísticas Agrícolas 1977, Instituto Nacional de Estadística.

which meant a higher annual offtake from both beef and dairy herds, and also because farmers were paid a higher price for finishing younger animals at heavier weights.

Lamb and mutton production has remained quite constant despite the fact that in the 1960's and early 1970's farms were evidently overstocked, and destocking in later years has also been accompanied by an increase in animal productivity. Pork and poultry production has increased substantially in the last decade. Larger pork production has resulted from an increase in numbers but not from improvement in production per animal. Offtake has been only about 53%, whereas countries with reasonably efficient hog production normally expect to achieve an offtake of at least 160%, or more than three times that of Portugal.

Milk production has increased substantially since the 1960's. Between 1973 and 1977, it increased by about 100 million liters per year despite a 50,000 head reduction in dairy cattle. This indicates that production per cow has gone up somewhat. However there is considerable opportunity to improve dairy cow performance since annual milk production per cow is only about 2,600 liters.

#### E. Farm Size and Tenure

Distribution of farm size varies greatly from one region to another with large farms predominating in the South and small, fragmented holdings predominating in the North. The 1968 census reported 811,000 holdings, of which 314,000 had less than 1 ha and averaged only about a third of a ha - mostly too small to support

a family (Table II-7). Of the remaining 495,000, about 315,000 (almost 60%) were in the 1-4 ha range with an average size of just under 2 ha. About 1/3 were in the 4-20 ha size range, with an average of 7.5 ha. Together these latter two size categories accounted for 35% of the area. About 0.2% of the farms were 500 ha and above and accounted for 30% of the land area reported in farms.

Since 1968 there has been some combination of small farms, especially in the northern half of the country where small farms predominate and out-migration has been heavy. In 1968, 71% of the land area was owner-operated and 29% was rented. A total of 64% of the farms operated only their own land, 17% operated only rented land, and 18% operated rented land in addition to land they owned. 1/

Fragmentation of holdings is a serious problem especially in the North. In 1968, the average size of farms was 6.1 ha and the average number of parcels was 6.4. 2/ The high average age of farm operators is expected to contribute to future farm consolidation and reduced numbers. In the 1960's, 45% of the operators were 55 years or older, and only 10% below 35. 3/ With the large out-migration of young people, the percentage over 55 probably has

1/ World Bank, Portugal Agricultural Sector Survey, November, 1978, p. 181.

2/ Ibid., p. 183.

3/ Ibid., p. 184.

Table II-7 Distribution by Number and Size of Farms

Size of Farms	Number		Area	
Holdings without land	2,852	0.4	--	--
0.05 to under 1 ha	313,775	38.6	125,887	2.5
1 to under 4 ha	314,855	38.7	617,629	12.4
4 to under 20 ha	153,225	18.8	1,181,631	23.8
20 to under 50 ha	17,716	2.2	504,238	10.1
50 to under 100 ha	4,494	0.6	297,826	6.0
100 to under 500 ha	3,599	0.5	739,380	14.9
500 to under 1,000 ha	652	0.1	442,766	8.9
1,000 to under 2,500 ha	375	0.1	560,754	11.3
2,500 ha and over	<u>113</u>	<u>--</u>	<u>505,046</u>	<u>10.1</u>
Total	811,656	100.0	4,974,157	100.0

Source: The 1968 Census of Agriculture. Census Bulletin No. 5, February, 1974 FAO, Rome, 1974, pp. 24-25.

increased rapidly since then. Between 1952/54 and 1968 the average size of farm increased from 5.1 to 6.1 ha. In the North it increased from about 1.7 to 2.5 ha while in the South it declined from under 50 ha to under 40 ha (Table II-8). These trends probably have continued in both areas since 1966.

The 1974 Revolution resulted in major land tenure reforms in the South, leaving the North relatively untouched. During 1975, over 1 million ha, or one-quarter of the agricultural land in Portugal, were taken over and latifundia converted into collective and cooperative units of rural workers. To legalize the occupation of lands within established limits, two Agrarian Reform Decrees were published by the Government in 1975, and in September 1977 a more comprehensive Agrarian Reform Law was enacted. The new law reaffirms the principle that expropriations and nationalizations shall occur only in formally declared "agrarian reform zones" where latifundia are prevalent and only for properties larger than the equivalent of about 30 ha of good land. In already expropriated land, the enactment of the compensation legislation is a major step towards completing the land reform in the South and reducing risks of investments in land and farm improvements. The Government estimates that of 3.5 million ha in agrarian reform zones (mostly in the Alentejo), when the reform is completed about 1.4 million ha will be in collective or cooperative farms, 0.7 million ha will remain with former owners, and 1.4 million ha will be in small and medium-sized farms. Once the complex issues of land distribution rights and compensation are settled, much greater land use intensity could result in the South. This will, of course, require a considerable amount of capital for modern

Table II-8 SIZE OF FARM IN SIX DISTRICTS OF THE NORTH AND SOUTH

	1952/54	1968
<u>Portugal</u>	5.1	6.1
<u>North</u>		
Braga	2.0	2.2
Vila Real	2.0	3.8
Viana do Castelo	1.0	1.5
<u>South</u>		
Evora	66.3	50.1
Portalegre	31.0	29.0
Beja	45.9	36.1

Source: "Sobre a Questão Agrária" Arma/Critica, No. 5, March 1976, Table II, p.6 (Note: The 1952/54 figures refer to cropland only).

inputs, major improvements in the management of cooperatives and collectives, more effective research and extension services, and less uncertainty about government price and subsidy policies.

F. Fertilizer and Limestone

Portugal's fertilizer needs are met mainly by domestic production of nitrogen, imports of phosphate rock for manufacture of phosphate fertilizer, and imports of potassium. Despite heavy subsidies, which have moderated price increases in Portugal while world prices rose rapidly, use of fertilizer is very low and the growth rate disappointing (See Table II-9).

Since 1972, use of nitrogen has grown by only 8% (1% per year), phosphate by 3% (0.5% per year) and potassium by 40% (about 5% per year). Potassium started from a low base, and the growth in potassium could be explained in part by growth in potato production which requires high levels of K. The 1978 level of fertilizer use if spread on the total 45 million hectares of all crops, including fruit and nut crops, would provide an average level of application of only 31 kg of N, 16 kg of  $P_2O_5$  and 7.5 kg of  $K_2O$  per hectare. Spread over both pasture and cultivated area the average application rate would be even lower. Even applied to the smaller cultivated area, the application rate is only a fraction of levels normally recommended for modern agriculture. For Portuguese soils, which are presently low in fertility, and for which legumes in rotation are insignificant, the problem is even more serious. This low level of use of fertilizer is an important

Table II-9 FERTILIZER CONSUMPTION (THOUSAND NUTRIENT TONS)

<u>YEAR</u>	<u>NITROGEN</u>	<u>PHOSPHATE (P<sub>2</sub>O<sub>5</sub>)</u>	<u>POTASSIUM (K<sub>2</sub>O)</u>
1965	83	51	14
1972	126.5	67.8	23.9
1974	126.8	67.5	27.6
1978	107.9	59.4	21.3
1976	142.4	72.9	33.0
1977	135.3	69.9	33.6
1978	137.8	71.0	33.6

Source: Ministry of Commerce.

factor in the low yields of most crops, yields that are only one-third or one-fourth the levels possible under similar soil and moisture conditions.

This stagnation in fertilizer use at such low levels cannot be attributed to an adverse price relationship between crops and fertilizer, though perceived price uncertainty may be a factor. Over the last decade, for most grains it has required less than 2 kg of grain to buy 1 kg of nitrogen in the form of urea and only slightly more for forms such as ammonium sulfate. If marginal grain output were only 8 kg per kg of N applied, the increase in the value of the marginal product would be 4 times the cost of the kg of nitrogen. Urea presently costs farmers about Esc. 6,360 per m.t., ammonium sulfate Esc. 3,160, normal super phosphate (18%  $P_2O_5$ ) Esc. 3,010 and potassium chloride (60%  $K_2O$ ) Esc. 4,440. (This would be US \$127 per m.t. for urea and \$62 per m.t. for ammonium sulfate). <sup>1/</sup> These prices are well below most countries and below world prices while prices of most crops are near or above world prices.

Factors that may account for low levels of use of fertilizer are:

1. High acidity of most soils and consequently low returns to fertilizers.

<sup>1/</sup> Ministry of Internal Commerce, Portaria No. 54 8/78 of 14 September, 1978.

2. Inadequate margins for wholesalers and retailers and consequently a passive rather than active and aggressive approach to marketing.
3. Lack of research and extension.
4. Lack of credit.
5. Lack of confidence and general political and economic uncertainty.
6. Agroclimatic conditions that do not permit high yields and returns.

The soils over most of Portugal are acid with pH commonly 4 to 5.5. The littoral is the principal exception with generally calcareous soils and large deposits of limestone. Even those soils are likely to benefit from limestone application. Highly acid soils cannot be expected to provide as high returns as would be the case on soils in the 6.5/7.5 pH range. Further, most legumes do not do well on acid soils, and consequently their role in low cost natural nitrogen fixation is limited unless lime is provided. Practically no lime is now being applied to soils. We heard estimates of only 1000 to 5000 tons being used annually in all of Portugal, but maintenance needs alone on 4.5 million cultivated ha probably would exceed 3 million m.t. per year under modern high-fertilizer-use technology.

## 2. Seeds

Corn, rice, wheat, barley and forage seed production, certification and distribution are controlled by the government. The amount of seed needed is based on amounts applied by local officials. EPAC (Empresa Publica de Abastecimento de Cereais) contracts with farmers for production of the seeds and pays them 3 escudos per kilo over the market price. Fields are inspected and harvested; seeds are cleaned, tested, bagged and tagged as certified seed. Only certified seed of these crops can be sold through the 130 EPAC offices, or in some cases by private dealers. All seed importation is carried out by EPAC.

It is estimated that 70% of wheat, 30% of rice, 15% of corn, 10% of oats and 95% of malting barley seeds planted by farmers are improved varieties. There are indications in some of the remote areas that farmers are unable to obtain seeds when they need them.

## 3. Water

About 14%, or 700,000 ha, of Portugal's cultivated land is irrigated. Traditional irrigation from small privately operated systems, mostly in valleys in the mountainous and coastal areas north of the Tagus river, covered about 622,000 ha in 1970 compared with 592,000 ha in 1955 (See Table II-10). These include a wide variety of systems from very small garden plots to medium size farms of some ten

hectares or so in fertile valleys. A few systems of about 100 ha each are found in Alentejo. These are served by private storage dams impounding more than a million cubic meters of water. The main crops irrigated are fruits and vegetables, corn, and some pasture.

Table II-10

AREA IRRIGATED BY TRADITIONAL MEANS

	<u>000 HA</u>	
<u>REGION</u>	<u>1955</u>	<u>1970</u>
NORTH	235	237
CENTER	279	286
LISBON	42	52
SOUTH	36	47
	<hr/>	<hr/>
TOTAL	592	622

In general, water is abundant during the early growing season, but generally storage is lacking and supply diminishes rapidly during the summer months, with almost none during August and September.

#### 4. Farm Machinery

The most significant increase in modern inputs in agriculture is in the number of tractors, harvesters and combines. Tractors increased from 15,000 in 1965 to 57,238 in 1977, harvesters from 5,568 to 6,302 and combines from 935 to 4,234 in this same period (See Table II-11).

Table II-11

TRACTORS, HARVESTERS AND COMBINES ON FARMS

	<u>NUMBER</u>				
	<u>1965</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
TRACTORS	15,335	42,024	44,452	49,784	57,238
HARVESTERS	5,568	6,161	6,190	6,245	6,302
COMBINES	935	3,654	3,815	4,113	4,234

Source: Instituto Nacional de Estadística, Estatísticas Agrícolas 1977.

The increase in number of tractors employed reflects the growing substitution of machines for both labor and draft animals.

G. Institutions and Services

Portugal has an existing institutional framework for the development of effective educational, research and extension programs to serve agriculture and to aid in bringing about the improvement needed in this sector. The need is to gear these institutions toward training people and developing and transmitting information which is directed at solving the actual problems of farmers in the various climatic zones of Portugal.

Recently AID has funded a project to assist three Polytechnic Institutes in developing curricula to train extension agriculturists and agri-business people and conducting applied research aimed at meeting local needs. Cooperation of the Ministry of

Agriculture, and integration of its efforts in extension and research with these institutes in the framework of its recently initiated decentralized organization, will be necessary for the successful development of these institutions and for providing the needed services for improvement of agriculture.

Agricultural research and extension are presently undergoing extensive reorganization and changes in direction. The extent to which these can be effectively brought about will have a profound effect on the future of Portugal's agriculture.

The World Bank Agricultural Sector Survey, published in 1978, pointed up the shortcoming of agricultural research and extension in Portugal as follows:

"The technical services required to underpin future agricultural development efforts are ill-equipped to engage in agricultural research and technical assistance to farmers. In the past both research and extension played a passive role in agriculture. The functions were dispersed among at least 12 autonomous jurisdictions, with little geographical coherence. Both services are seriously understaffed, short of funds, and isolated from actual farm problems in every way. Greater government commitment in agriculture and the consolidation of institutions and services in the sector calls for a systematic and complete "overhaul" of research and extension. Both have been virtually paralyzed for some time, and unable to meet farmers' needs. Research, with only one main center and

several demonstration stations, must first be consolidated under a single authority to meet national needs and simultaneously decentralized to respond to local situations for specific commodities.

### Agricultural Research

Priority has been assigned by the Government to consolidate all agricultural research under INIA. This means, for example, that numerous programs formerly conducted by autonomous institutions such as the Cereals Institute and the Sugar and Alcohol Institute have been absorbed by the INIA. Transfer of responsibility will not, however, be sufficient. Research work will need staff, budgets and redirection of methods and goals toward all factors relevant to plant and animal life, rather than those specific to each of the several scientific disciplines viewed in isolation. Aside from the results of the pasture improvement program by the National Plant Improvement Center in Elvas, no well-conceived major agricultural research effort has been designed to increase yields. For example, problems with soil acidity, plant nematodes, maize and rice crosses and planting techniques, optimal rotations, and storage of major crops need urgent attention. INIA lacks sufficient specialized staff to do these tasks. Integrating the work of soil scientists, plant pathologists, and chemists, etc., into plant breeding and selection, and the latter into seed production, and coordinating the whole with a yet-to-be-established extension service, will take considerable facilities, manpower and time.

### Agricultural Extension

Portugal has numerous physical facilities for agricultural extension which are out of proportion with their inability to help farmers. It is equipped with a mixture of some 140 stations and field headquarters, 13 regional services, which are being phased out, and technicians assigned to the irrigation associations at 19 irrigation projects. The system, however, has several jurisdictions, with little geographical coherence. It continues to suffer from a shortage of experienced middle-level technical staff. The stations lack vehicles and consist mostly of dilapidated facilities. Demonstrations and field days with farmers are rare, and there is little evidence of knowledge of the important agricultural problems or potential of the area by agents.

The new regional services will absorb all existing facilities and staff. However, with few experienced technicians especially for preparing and appraising farm investment plans, a considerable amount of recruitment and in-service training will be required. To attract and retain qualified field staff, salaries, which are low, will have to be supplemented by incentives for living and working in rural areas. The incentives need not always be direct compensation but may be fringe benefits such as housing, vehicle, study leave for professional development, and other emoluments geared to job performance."

A consolidation of research under INIA has been undertaken, but expansion of research and decentralization from Lisbon to investigate and help solve farmers' problems in the various regions has moved forward only very slowly. There is a need to establish the necessary facilities and undertake research directed at solving specific problems in the climatic zones outlined earlier in this Chapter. Special emphasis should be on research in soil fertility, improving crop varieties, crop cultural practices, forages and pasture improvement, irrigation water management and livestock feeding and management. These areas are pertinent to provide information to extension workers in their efforts to help farmers increase crop and livestock production.

A General Directorate of Extension has been established at the national level and has embarked on a training program aimed at training extension workers to staff the regions. Regional programs under the new organization have apparently not been implemented and evidently must await the completion of training now underway. Training is geared toward teaching modern extension methods. These should be helpful. However, to launch the kind of program needed to assist farmers' increase yields of crops and livestock will require intensive field training on soil fertility, crop cultural practices, forage and pasture production, and livestock feeding and management. A program should be developed to provide this kind of training.

There is some indication that it will be difficult to recruit college trained extension workers who would be willing to live and

work in rural areas. Consideration should be given to selecting local high school level trained people and having them work directly with farmers with training and supervision provided by regular extension personnel.

The GOP has signed a project with FAO and UNDP under which US \$406,654 will be made available to assist with extension improvement. The funds will be used to finance 43 person-months of technical assistance mainly on training. Participant training is budgeted to receive \$84,500, and \$54,000 is budgeted for equipment. As noted earlier AID will assist the 3 Technical Institutes (2 in agriculture) with long- and short-term technical assistance, training and some budgetary support.

#### H. Agricultural Production Potential

While agricultural resources in Portugal are not as favorable as in some countries, there is considerable potential for improving crop and livestock production. To achieve this potential will require a concerted effort on the part of the government and the provision of incentives as well as a well coordinated cooperative effort by the research and extension services.

##### 1. Increasing Crop Production

Sufficient technology is available, if effectively applied in the climatic zones based on land capabilities, to materially increase yields of adapted crops. Expansion of the use of

new improved varieties, particularly of corn, rice, oats and rye, needs to receive high priority. Correction of soil acidity and increased fertilizer application on cropland will be necessary. Emphasis needs to be placed on increasing yields of corn and potatoes in the Temperate Moderate Rainfall Zone and in the Subtropical Moderate Rainfall Zone, on rye and potatoes in the Temperate Wet-Dry Zone and on wheat, safflower, sunflower and the substitution of sorghum for corn in the Subtropical Wet-Dry Zone. Efforts to increase rice yields are essential on irrigated land in the Subtropical Moderate Rainfall and Wet-Dry Zones.

By reducing the marginal land area planted to cereals, particularly wheat in the Subtropical Wet-Dry Zone, and increasing the area planted to corn through multiple cropping, along with application of the measures listed above, the possible gains in crop yields indicated in Table II-12 could undoubtedly be achieved. Even much higher yields are possible.

## 2. Increasing Livestock Production

Portugal has favorable conditions for expanding livestock production. Meat production has been constrained by the extractive nature of livestock management and scarcity of good pastures. Increases in beef and veal production have occurred mainly by relying on feedgrains to fatten heifer as well as steer calves for slaughter, thus sacrificing the

Table II--12

POSSIBLE GAINS IN MAJOR CROP YIELDS AND PRODUCTION BY 1985-90

	1973-75			Yield Increase (%)	1985-90		
	<u>Yields</u> (tons/ha)	<u>Area</u> ( <sup>'</sup> 000)	<u>Production</u> ( <sup>'</sup> 000)		<u>Yield</u> (tons/ha)	<u>Area</u> ( <sup>'</sup> 000)	<u>Production</u> ( <sup>'</sup> 000 tons)
Wheat	1.18	466	550	30	1.5	450	675
Rye	.72	200	144	30	.9	200	180
Rice	3.25	44	143	40	4.8	50	240
Maize	1.30	371	482	50	1.9	400	760
Barley	.82	90	74	30	1.1	105	115
Oats	.60	168	100	60	1.0	168	168
Potatoes	9.50	111	1,053	30	12.0	120	1,400
Pulses	.21	391	84	100	.4	400	160

Source: World Bank, Agricultural Sector Survey for Portugal, 1978.

opportunity to expand the cattle herd. The number of sheep has declined in the last two decades while lamb production stagnated and wool declined proportionally. In general, Portugal has relied on massive feed grain imports rather than improving large areas of potentially productive pasture and range lands, while neglecting factors which influence per animal productivity such as upgrading animals, calving and lambing rates, and size of cattle and breeding herds and sheep flocks. Price policies have encouraged the slaughter of a large number of younger beef animals.

To increase pork production it will be necessary to replace traditional strains with more productive breeds of sows and boars, manage herds to achieve an offtake to 140%, and bring African swine fever under control. Further gains in poultry can be achieved without major problems. Thus, livestock development should be aimed at replacing a substantial amount of imported feed grains and concentrates with pasture and forage, or at least not increasing concentrates fed to ruminants, by achieving needed production increases from forages. This will call for (1) an intensive program of limestone production and use, application of fertilizer and seeding of improved legumes and grasses on pasture areas, (2) improving and expanding the cattle herd, (3) expanding the number of sheep and goats on improved pastures and (4) introducing better genetic quality and improving management of swine, as well as bringing African swine fever under control.

Dryland pastures totalling 3.3 million ha offer the greatest promise for increasing beef, mutton and milk production. This includes 1.3 million ha of largely unimproved natural grasslands, of which about 225,000 ha is irrigated, 1 million ha of mixed forest-grassland range, and 1 million ha of annual fallow in the cereal production areas, mainly in the Alentejo.

The three major livestock areas, each with distinctly different forage production potential, are (a) the Temperate and Subtropical Moderate Rainfall Zones, which together comprise the main dairy region, and (b) the Subtropical Wet-Dry Zone, which is the main beef and sheep production area, and (c) the Temperate Wet-Dry area of the northeast which is a mixed dairy-beef-sheep area.

a. Increasing Livestock Production in the Temperate Moderately-Wet and Subtropical Moderate Rainfall Zones

Approximately 61% of Portugal's dairy cattle or about 140,000 cows are found in this area. Milk production is estimated at about 420 million liters annually. Milk production per cow in 1977 was about 2,900 liters.

Rainfall is adequate for production of forage nearly year-round, with a combination of winter forages with summer cereals and summer forage crops. Increasing the yield of maize both for grain and forage by correcting

soil acidity, using more fertilizer, and improving forage varieties would provide more feed and feed of better quality. This, together with upgrading the animals, would increase the milk production per cow and cow numbers could be increased substantially. Milk production could perhaps be doubled in the next ten years.

b. Increasing Livestock Production in the Subtropical Wet-Dry Zone

This is the most promising area for pasture improvement. Approximately 2.4 million ha could be improved and used more intensively for both cattle and sheep production. 1.6 million ha of this is land unsuitable for crops partially in oak and cork-oak plantations with an additional 650,000 ha of annual fallow. Large-scale pasture improvement trials, involving liming, fertilizing with phosphates, and seeding subterranean clover and grasses has demonstrated that fallow and cork-oak land could be profitably improved. Carrying capacity could be increased from 1 sheep per two ha to 3 to 5 sheep or more per ha. Trials on irrigated pastures seeded to alfalfa, clovers and grasses have supported 5 steers per ha whereas unimproved irrigated pastures could carry only one steer per ha.

c. Increasing Livestock Production in the Temperate Wet-Dry Zone

Portuguese technicians estimate that the number of beef and dairy cattle could be increased from 86,000 to 120,000 with the improvement of 20,000 ha of non-irrigated pasture and part of the 180,000 ha of communal grazing lands. The scarcity of cropland further makes the region highly dependent on livestock, mainly cattle and sheep. Two of the districts, Braganca and Vila Real offer great potential for livestock development because of their largely understocked and unimproved pastures. All in all, it is estimated that the zone could at least double its income from livestock.

### 3. Potential from Improved Forage

The team has been very impressed with the great potential for development of forage, both from its own first-hand observations and from observations and analyses widely quoted to us by officials in Lisbon and other parts of Portugal, and from conclusions reached by other foreign technicians.

The GOP studies which are the most detailed start with available data on land capability and current land use, and, assuming that crops such as fruits, nuts, olives, cereals, oilseeds and vegetables will have a higher priority on land suited to their uses, arrive at the residual land area suitable and available for forages. They then calculate the amount of forage that would be produced in terms of feed units with moderate levels of improved forage planting and

management. These feed units were then assumed to be utilized by indigenous ruminant livestock and a comparison made of livestock products from this improved system was compared to present production, with the following results:

<u>PRODUCT</u>	<u>PRODUCTION</u>	
	<u>PRESENT</u>	<u>WITH IMPROVED FORAGE</u>
		(Metric Tons)
Beef & Veal	74,000	148,000
Lamb & Mutton	20,000	67,500
Goat Meat	3,000	8,400
Wool	10,000	23,000
Milk	674,000	1,645,000

#### 4. Summary: Achievement of Agricultural Production Potential

Achievement of Portugal's agricultural production potential will require:

- a. Using high-yield practices on the 1.6 million ha of arable land now in crops, which could increase yields by 200-300 percent.
- b. Putting the arable land now in fallow into intensive high yield crops with adequate fertilizer and limestone (1.0 million ha), with some possibly going into improved forage.

- c. Increasing intensity of use and yields on presently irrigated area (0.6 million ha).
- d. Planting the large area suited to improved forage with improved varieties and applying fertilizer and limestone (1.6 million ha).
- e. Better management of natural, unimproved grassland (1.3 million ha), and of mixed forest and grassland (1.0 million ha).
- f. Upgrading livestock and improving livestock feeding and management.

### III. PRICE POLICIES AND SUBSIDIES

#### A. Nature and Extent of Price Controls

Agricultural products and production inputs are subject to a complex array of price controls, price supports and subsidies. Input subsidies exist for fertilizer, feed concentrates, credit and machinery. These subsidies and price support of products are designed to stimulate production. Other subsidies and price controls on a variety of foods and agriculture-based commodities are designed to moderate the rate of increase in the cost of living.

The extent of price controls and subsidies, which even prior to 1974 were substantial, were increased greatly following the 1974 Revolution. The following excerpts from a recent World Bank report briefly describe the nature and extent of price controls affecting Portuguese agriculture. 1/

1. "The Legal Framework. Decree Law No. 329-A/74 of July 10, 1974 as amended by Decree Law No. 750-Q/77 of February 28, 1977 constitutes the legal framework under which price controls are exercised in Portugal. Under these laws, the Ministry of Trade (specifically the Secretary of State of Internal Trade) can determine the price regime applicable to a commodity ("controlled" or "free") and also fix the price of the commodity. In practice the Ministry of Trade exercises its price control functions in coordination with the concerned ministries.

There are currently four distinct controlled price regimes involving (i) maximum fixed prices, (ii) "declared" prices, (iii) commercial trade margins, and (iv) contract prices:

Maximum fixed price regime: While this is theoretically applicable to any commodity, its most important application is to the "commodity basket" and the essential goods. The "commodity basket" currently comprises

1/ World Bank, Prices and Subsidies on Portuguese Agriculture, July 31, 1979, pp. 3-6. (Tables III-1,2,3, taken from the World Bank report, have been renumbered to fit MASI text).

nineteen products viz. bread (first and second quality), pasta, crackers, corn meal (for human consumption), rice, sugar, margarine, vegetable oil, milk, powdered milk, cheese, whiting fish, eggs, chicken, pork (nationally produced), sausages, Italian sausage and soap. The composition of the basket and the appropriate level of prices are fixed by Cabinet decision, and the prices of goods involved are guaranteed by the Government to remain unchanged for one year.

Another important category of goods controlled by the maximum price regime is a so-called "essential goods" which currently comprises seven products viz. butter, pork, beef, coffee, sandwiches and cakes. In their case, the Government undertakes that it will "do its best" not to change the "maximum prices" during the course of the year but does not guarantee against changes as is the case with the "commodity basket."

Declared price regime: Under this regime, firms with total annual sales exceeding 50 million escudos and individual product sales exceeding 10 million escudos have to make a request for price changes for the product to the Ministry of Trade. The Ministry has 60 days either to agree, disagree or come up with a counterproposal (which is then promulgated). The regime regulates the major industrial enterprises (automobiles, other consumer durables, textiles, etc.).

Fixed trade margin regime: For the commodities covered under this regime, the Government (Ministry of Trade) determines the commercial trade margins allowed in percentage terms. Items covered include salt, ham, preserves, dried fruit, beer, wines, and metallic and electrical products.

Contract price regime: Here the Government public sector negotiates changes in prices with firms, groups of firms and employers associations. Commodities whose prices are regulated in this way include tomatoes, hops and flax.

Non-Controlled Prices: Prices of non-controlled items may be increased after a period of ten days from the date of informing the Ministry of Trade of the proposed increase.

Prices for Agricultural Products: Agricultural product prices are fixed in most cases at both the producer and consumer level, and necessary subsidies are granted to processing and marketing organizations. While the overall price review is formally undertaken by the Ministry of Trade, initiative for price increases could come from the Ministry of Agriculture (e.g., wheat producer prices for the 1978/79 crop season), organizations under the Ministry of Agriculture (e.g., EPAC for maize, sorghum, and rice producer and consumer prices in the 1978/79 crop season or JNPP for livestock or milk prices), organizations under the Ministry of Trade

(IAPO for vegetable oil seed and olive oil, JNF for fruits, AGAR for sugar and alcohol, JNV for wines), or from producer organizations. Agencies involved in the agricultural price review include the Ministry of Agriculture and the Trade Unions. Implications of price changes on the general level of consumer prices (and specifically its impact on the family budget of various income groups) are studied in the Planning Department of the Ministry of Trade.

#### Extent of Price Controls

An exercise to evaluate the extensiveness of price controls in Portugal was undertaken recently by the Ministry of Planning. Commodities were defined as "controlled" or "non-controlled" with the former encompassing price regimes falling under "maximum prices", "declared prices" and "fixed mark-ups." Their relative share in three areas viz. private consumption, total intermediate demand and gross fixed capital formation were examined. The results of the study are summarized below.

Private consumption: About 46 percent of private consumption is subject to some form of price control. Food items are subject to the greatest amount of controls (83 percent controlled, 65 percent through the mechanism of "maximum prices"). (See Table III-I).

Table III-1  
PRICE CONTROLLED GOODS IN PRIVATE CONSUMPTION

Category of Goods	Percentage Weight in Private Consumption	Weight of Price Systems Controlled Goods Private Consumption	Percentage of Category Controlled
Food	33.1	27.4 (21.5) <u>1/</u>	83
Non-food	28.9	18.5 (5.4)	64
Services	28.1		0

Source: Ministry of Planning

Intermediate demand: Agricultural and livestock products destined for meeting "intermediate demand" are most affected by price controls (51 percent of products originating in the primary sector and destined as inputs into the food industry have controlled prices). Conversely intermediate goods originating in manufacturing industry are least subject to price controls although they have the greatest input in total intermediate demand (See Table III-2).

Table III-3, which reviews post-1974 consumer price behavior shows that the "food and drink" component of the CPI experienced substantial price increases throughout the period. This was almost inevitable, given the fact that the price of imported food (on which Portugal is heavily

1/ Subject to "maximum prices."

dependent) continued to rise and the Portuguese escudo had to be depreciated continuously in order to combat balance of payments difficulties. It is important to note, however, that the increase in food prices would have been substantially higher in the absence of food subsidies (which were retained at a level between US \$250-300 million per annum in the period 1976 - September 1978). In addition, emphasis was placed on moderating food price fluctuations through the institution of the "commodity basket" under which food items composing the "basket" had their prices fixed for one year."

#### B. Impacts of Price Controls

The general intent of the complex structure of price controls and subsidies is to hold food prices down while still providing adequate incentives to farmers. However, evidence suggests that the net impacts have been to reduce incentives to invest even in inputs, such as fertilizer, which provide short-term returns.

Average prices paid to farmers for most commodities were stable or increased only moderately between 1963 and 1973. Beginning in 1974 price increases tended to be more in consumer items such as livestock products, pulses and oils (See Table III-4). For some commodities, most notably wheat, beef, and milk, producer prices were allowed to rise substantially while consumer prices were held in check, and the differences were made up by increasing Government subsidies. A similar policy was followed for some inputs such as corn, fertilizer, and mixed feeds. (See Tables III-5, III-6, and III-7 and III-8).

Available price data (principally from INE) indicate that some relative prices for grain producers were deteriorating before 1974 and have continued to do so since. As an example, the amount of rice, corn, and wheat required to buy a gallon of fuel or rent a piece of machinery increased about 25% between 1972 and 1976 despite subsidies and price support programs.

Farm wages also have increased more rapidly than these crop prices. Farm prices of wheat, rice and corn more than doubled between 1970 and 1977 while rural wages for males almost tripled (and for females almost quadrupled).

Table III-2

## PRICE CONTROLLED GOODS IN INTERMEDIATE DEMAND

	Structure of Intermediate Demand (%)	Percentage of Sector Production Subject to Price Controls
Agriculture	4.9	48.0
Forestry	0.8	36.4
Livestock	5.5	60.0
Extractive Industry	2.5	28.0
Mining Industry	69.5	26.5
Services	20.0	28.6

Source: Ministry of Planning

Table III-3  
 BEHAVIOR OF CONSUMER PRICES  
 (Annual Percentage Changes)

	1974	1975	1976	1977	Jan.-Sept. 1978
<u>Consumer Prices, Lisbon</u>					
Total, without Housing	29.2	20.4	19.4	27.3	21.6
Food and Drink	32.6	23.6	23.3	31.9	22.0
Clothing and Shoes	31.9	8.5	1.8	18.7	18.2
Housing	9.6	-8.0	32.1	26.5	24.3
<u>Memo</u>					
Average Unit Import Value	48.3	14.0	12.0	7.5	6.0
Exchange Rate Against US\$	4.8	-11.7	-14.8	-26.3	-14.5
Average Wages in Manufacturing	41.0	32.0	19.0	18.0	12.0

Source: INE and Mission Estimates

Potato prices have improved relative to fuel, machinery and wage costs.

Prices of all the major crops relative to fertilizer costs have improved. Between 1963 and 1973 prices of most grain crops increased very slowly while prices of fertilizer declined. It was only in 1973-74 that fertilizer prices began to rise sharply. The introduction of heavy subsidies, however, has resulted in fertilizer/crop price ratios that have continued to be quite favorable for producers. 1/

1/ See Section III-C.

Table III-4. Portugal: Average Prices Paid to Farmers for Major Commodities 1970-75 <sup>1/</sup>  
(Esc/kg)

Product	1963	1968	1970	1971	1972	1973	1974	1975	Index (1970=100)
Wheat	3.02	3.26	3.26	3.55	3.55	3.55	4.26	4.94	152
Rye	2.31	2.61	2.65	2.67	2.68	2.70	3.24	4.11	155
Maize	2.15	2.46	2.34	2.77	2.77	2.62	3.88	5.83	249
Oats	2.18	1.80	2.25	2.29	2.18	2.33	2.81	3.23	144
Barley	2.44	2.13	2.53	2.45	2.43	2.74	3.45	3.70	146
Rice/ <sup>2</sup>	2.80	3.55	3.71	3.68	3.62	3.62	5.03	6.17	166
Potatoes	1.15	1.24	1.25	1.61	2.17	2.42	2.98	4.38	350
Beans	4.99	7.38	8.05	8.86	9.64	11.43	16.41	25.59	318
Broad beans	3.04	3.83	4.56	5.27	5.05	5.97	7.65	7.20	158
Chick peas	4.99	4.79	6.63	8.09	11.08	13.76	15.48	17.06	257
Olive oil/ <sup>3</sup>	13.10	16.9	17.13	16.90	19.25	24.57	42.57	49.25	288
Wine/ <sup>3</sup>	2.22	4.00	5.00	5.22	6.20	7.23	5.51	6.39	128
Tomatoes/ <sup>4</sup>	n.a.	0.60	.60	.60	.60	.64	1.23	1.34	223
Beef	22.2	29.7	31.6	36.6	39.30	46.40	53.00	61.40	194
Lamb/ <sup>5</sup>	n.a.	n.a.	28.04	34.92	47.18	51.78	60.68	70.92	253
Pork/ <sup>6</sup>	n.a.	n.a.	29.61	33.77	40.49	37.66	48.11	52.02	177
Poultry/ <sup>7</sup>	n.a.	n.a.	18.64	20.57	19.40	20.62	23.81	29.96	155
Milk/ <sup>8</sup>	n.a.	2.70	2.70	3.30	3.40	3.40	4.60	6.40	237

<sup>1/</sup> Producer prices are average prices weighted according to quality, month, and region unless otherwise indicated.

<sup>2/</sup> Paddy.

<sup>3/</sup> Per liter.

<sup>4/</sup> For industrial use, simple regional average.

<sup>5/</sup> Based on prices for Beja district, young lamb.

<sup>6/</sup> Based on prices for Evora district, finished hog of six months.

<sup>7/</sup> Based on prices for Lisbon district, industrial poultry, liveweight.

<sup>8/</sup> Guaranteed price, Class A.

Source: INE, Estatísticas Agrícolas, various issues, Lisbon; Government Legislation; CEEA, Gulbenkian Foundation, Lisbon; mission estimates.

Table III- 5

Portugal: Price Structure for Wheat, 1971-78 1/

	<u>1971-74 2/</u>	<u>1975-76 2/</u>	<u>1978</u>			
	-----Esc/kg-----					
<u>Base Price to Farm 3/</u>	<u>1.51</u>	<u>4.20</u>	<u>7.50</u>			
- Crop subsidy	2.00	-	-			
- Crop reconversion subsidy	-	-	-			
- Subsidy on small deliveries	-	1.40	-			
<u>Farm Price</u>	<u>3.15</u>	<u>5.60</u>	<u>7.50</u>			
- Differential for storage, etc. (average)	0.09	0.30	0.45			
- Allowance to INP/EPAC	0.03	-	-			
- Allowance to F.A.	0.20	-	-			
- Subsidy by F.A. (-)	-	1.40	1.95			
<u>Price to Miller</u>	<u>3.83</u>	<u>4.50</u>	<u>6.00</u>			
- Margin to miller	0.39	0.53	1.35			
- Gross value of by-product	0.49	0.73	-			
- Allowance paid to F.A. on by-product	-	-	-			
<u>Value of 1 Kg of Wheat Transformed in Flour 4/</u>	<u>3.73</u>	<u>4.30</u>	<u>8.31</u>			
- Allowance paid to F.A.	-	-	-			
<u>Price of 1 Kg of Wheat Sold to Baker 5/</u>	<u>3.73</u>	<u>4.30</u>	<u>8.31</u>			
	<u>Bread 7/</u>		<u>Bread 8/</u>		<u>Bread 9/</u>	
	<u>Small</u>	<u>Large</u>	<u>Small</u>	<u>Large</u>	<u>Small</u>	<u>Large</u>
- Margin to the baker	1.95	1.91	5.95	6.79		
<u>Price of 1 Kg of Wheat Transformed in Bread</u>	<u>5.68</u>	<u>5.64</u>	<u>10.22</u>	<u>11.09</u>		

FOOTNOTES:

- 1/ All values have been converted to kilograms of wheat equivalent and subsidies (reductions in costs) are marked as negative values. All values concern first class flour.
- 2/ All crop years are credited to the second year when the bulk of the harvests are recorded. Most legislation affecting these prices has appeared in late summer or early fall.
- 3/ For a specific weight of 79, the most common wheat. Prices are scaled up or down slightly according to the specific weight of the production delivered.
- 4/ First class flour: 1 kg wheat/0.71 kg flour.
- 5/ First class bread: big bread: 1 kg flour/1.28 kg bread  
small bread: 1 kg flour/1.20 kg bread
- 6/ Price of 1 kg of flour = 5.40; price of 1 kg of wheat transferred in flour =  $0.71 \times 5.40 = 3.83$ .
- 7/ The margin is small bread - 2.60/kg of flour per kg of wheat will be  
 $2.60 \times 0.71 = 1.85$ .  
large bread - 2.50/kg of flour per kg of wheat will be  
 $2.50 \times 0.71 = 1.78$ .
- 8/ The margin is small bread - 2.74/kg of flour per kg of wheat will be  
 $2.74 \times 0.71 = 1.95$ .  
large bread -  $2.69 \times 0.71 = 1.91$ .
- 9/ The margin is small bread - 8.34/kg of flour per kg of wheat will be  
 $8.34 \times 0.71 = 5.92$ .  
large bread - 9.56/kg of flour per kg of wheat will be  
 $9.56 \times 0.71 = 6.79$ .

Sources: Legislation, MC and MAP, 1965, 1970, 1973 and 1976; Fundo de Abastecimento; Institute of Cereals; CEEA, Gulbenkian Foundation; World Bank estimates. (MASI notes certain irregularities in this table but is unable to correct because of lack of access to primary sources.)

Table III-6 Portugal: Price Structure for Beef, 1969-1976 1/

	1969-71		1972-74		Oct. 1974-1975		Jan. 1976		Apr. 1976	
	Y	A	Y	A	Y	F	Y	A	Y	A
	----- Esc/kg -----									
Guaranteed base price to production/2	35.00	30.00	40.00	36.00	65.00	52.00	76.00	64.00	85.00	73.00
Conservation subsidy for first calving/3		(500)		(500)		(500)				
Conservation subsidy for second calving/4		(750)		(750)		(750)				
Subsidy for slaughter of young males	3.00/5		3.00/6		3.00/7					
Subsidy for first phase "calf-rearing"/8	2.50		2.50		2.50					
Subsidy for second phase "calf-rearing"/9	1.25		1.25		1.25					
Subsidy for "finishing"/10			2.85		2.85					
Average price to producer/11	41.75	35.00	49.60	36.00	74.60	52.00	76.00	64.00	85.00	73.00
General subsidy to wholesaler in slaughterhouse	5.50/12	5.50/12	5.50/12	5.50/12			20.00	15.00	29.00	24.00
General subsidy to wholesaler in slaughterhouse	4.50/13	4.50/13	4.50/13	4.50/13			4.00/14		4.00/14	
Slaughter fee/15	1.55	1.35	1.55	1.55	1.55	1.55	2.90	2.90	2.90	2.90
Average price ex-slaughterhouse	37.80	31.05	45.65	32.05	76.15	53.55	54.90	51.90	54.90	51.90
Purchase price by retailer/16							54.90	51.90	54.90	51.90
Average price of imported beef (adult, c & f)/17	-	19.51	-	30.35	-	37.00	-	27.87		

- /1 All prices and subsidies have been converted to equivalent kilogram carcass weight, as shown in footnotes. Y refers to young and A to adult animals: both are in first class meat, and most females are slaughtered as adults while most males, young.
- /2 Guaranteed prices are set by law.
- /3 Conservation subsidy in Escudos per head for first calving of dairy (exotic) and local breeds.
- /4 Conservation subsidy in Escudos per head for second calving of dairy (exotic) breeds.
- /5 For males slaughtered at more than 150 kg/carcass weight.
- /6 For males slaughtered at more than 180 kg/carcass weight.
- /7 Beginning in 1973 females are included in the subsidy if slaughtered after first calving, before the permanent teeth appear and at 180 kg/carcass weight or over.
- /8 Subsidy on male and female calves fattened between 3 weeks to 3½ months and live-weights at beginning of 45 kgs, and at end of 90 kgs for females or 110 kgs for males:
- /9 Subsidy on male and female calves fattened between 3½ months to 6 months and live-weights between 70 - 150 kgs for females and 110 - 190 kgs for males.
- /10 Subsidy for final stage of fattening young animals of more than 380 kgs live-weight, or adults of more than 500 kgs live-weight, gained. Based on an animal slaughtered at 200 kg/carcass weight and having gained 190 kgs of live-weight (190 - 380 kgs). This is applicable to farmers fattening 100 or more heads annually, although groups can pool deliveries.
- /11 Up to January 1976 prices are calculated, thereafter set by legislation.
- /12 Paid for slaughterers affected in Lisbon, Oporto and Funchal slaughterhouses plus all industrial slaughterhouses.
- /13 It applies to areas other than those mentioned in footnote 12.
- /14 Subsidy assumed to be paid by FA.
- /15 Slaughter fee is fixed by law.
- /16 Fixed by decree.
- /17 Averages based on the same period as the prices of domestic production.

Sources: Junta Nacional dos Produtos Pecuários; Fundo de Abastecimento; Government legislation; Ministry of Economy executive orders; CEZA, Gulbenkian Foundation; mission estimates.

Table III-7 Portugal: Price Structure for Milk, 1965-1976 1/

Item	1965/66 <sup>12</sup>		1967/70 <sup>13</sup>		Common in Bottle	1971/72 <sup>14</sup>		Common in Bottle	1972/73 <sup>14/15</sup>		Common in Bottle	March 1974 <sup>16</sup>		Sept. 1974 <sup>17</sup>		1975 <sup>18</sup>		1976 <sup>18</sup>	
	A	B	A	B		A	B		A	B		A	B	A	B	A	B	A	B
I. FARM PRICE <sup>12</sup>	2.40	2.00	2.70	2.30		3.30	3.00		3.40	3.10		4.10	3.70	5.20	4.00	6.40 <sup>19</sup>	5.80 <sup>20</sup>	7.50 <sup>21</sup>	6.80 <sup>21</sup>
Subsidy for organized collection (-)																		0.10	0.90
II. PRICE PAID BY MILK PROCESSOR	2.40	2.00	2.70	2.40	2.40	3.30 <sup>22</sup>	3.00 <sup>22</sup>	3.00	3.40	3.10	3.10	4.10	3.70	5.10	4.0	6.40	5.20	7.00	6.30
Improvement subsidy (-)						0.40	0.40	0.40	0.50	0.50	0.50	0.80	0.70	1.20	0.90	1.70	1.40	1.70	1.40
Subsidy to pasteurized milk (-)																1.80		1.70	
Subsidy to fluid milk (-)																	0.90		
New improvement subsidy (-)																		1.10	1.10
New subsidy to reduce costs (-)																		0.70	1.70
Processing margin	(1.30)	(1.30)	(1.00)	(0.60)	(0.80)	(0.80)	(0.60)	(0.80)	(0.60)	(0.60)	(0.80)	(1.10)	(0.70)	(2.10) <sup>23</sup>	(1.10) <sup>23</sup>	(2.90) <sup>23</sup>	(1.30) <sup>23</sup>	(3.70) <sup>23</sup>	(3.00) <sup>23</sup>
III. PRICE PAID BY RETAILER			3.70	3.00	3.70	3.70	3.20	3.40	3.70	3.20	3.40	4.40	3.70						
Margin			0.40	0.20	0.20	0.40	0.20	0.20	0.40	0.20	0.20	0.50	0.30						
IV. RETAIL PRICE	3.70	3.30	4.10 <sup>23</sup>	3.20 <sup>23</sup>	3.40 <sup>23</sup>	4.10 <sup>23</sup>	3.40 <sup>23</sup>	3.60 <sup>23</sup>	4.10 <sup>23</sup>	3.40 <sup>23</sup>	3.60 <sup>23</sup>	4.90 <sup>23</sup>	4.00 <sup>23</sup>	6.00 <sup>23</sup>	4.60 <sup>23</sup>	6.00 <sup>23</sup>	4.60 <sup>23</sup>	6.00 <sup>23</sup>	4.60 <sup>23</sup>

<sup>12</sup> Up to 1974 only pasteurized milk and "common" milk have fixed prices. After September 1974, all types of fluid milk have fixed prices. The system of prices referred applies to regions where a structure of organized milk collection exists. Other regions are of small importance in milk production. The main types of milk consumed are pasteurized and "common" milks. The consumption of "special" milk has been increasing after 1972-73, but nevertheless, pasteurized and "common" milk remain the principle types consumed; 80% to 90% of the total consumed.

<sup>13</sup> No subsidies

<sup>14</sup> Subsidies not included in prices: (a) 0.4 Esc/1 of milk A and B classes to producers who deliver more than 3,000 l per cow per year, (b) 0.40 Esc/1 of milk A and B classes to producers who initiate their milk production in any of these years.

<sup>15</sup> Subsidies not included in price: (a) 0.20 Esc/1 of A class to producers located in regions 6 (Fátima), 7 (Ribatejo), 8 (Fvora), 9 (Portalegre), 10 (Baixo Alentejo), 11 (Algarve); (b) 0.10 Esc/1 of class A to producers who deliver more than 50 l per day; (c) 0.20 Esc/1 of class A to producers who deliver more than 150 l per day, (d) 0.10 Esc/1 of class A to producers who are equipped with refrigeration system; (e) producers who wish to establish collective stables equipped with mechanical milking and refrigeration system obtain subsidies corresponding to 20% and 30% of the respective costs, (f) in region 1 (Entre-Douro-e-Minho), A class milk is paid to the farmer at a price of 2.90 (March-August) and 3.10 Esc/1 (September-February) plus a subsidy of 0.15 Esc/1 -- see footnote 4, (a) through (f) for 1972-73.

<sup>16</sup> Subsidies not included in price: (a) 0.20 Esc/1 of class A to producers located in the regions 1 (Fátima), 2 (Ribatejo), 3 (Fvora), 4 (Portalegre), 10 (Baixo Alentejo), 11 (Algarve); (b) 0.30 Esc/1 of A class of producers who deliver more than 100 l per day; (c) 0.30 Esc/1 of A class to producers who are equipped with a refrigerator system, (d) producers who wish to establish collective stables equipped with mechanical milking and refrigeration systems obtain subsidies corresponding to 20% and 30% of their respective costs.

<sup>17</sup> Subsidies not included in price: (a) 1.60 Esc/1 of A class to producers who are equipped with mechanical milking and refrigeration systems; (b) 0.30 Esc/1 of A class to producers who are equipped with mechanical milking, (c) 0.30 Esc/1 of A class to producers who are equipped with refrigeration systems; (d) producers who establish collective stables obtain a subsidy of 30% of the cost, (e) producers who establish equipment for mechanical milking and refrigeration systems and cooperatives which establish milk treatment plants can obtain subsidies of 20% and 30% of their respective costs.

<sup>18</sup> Subsidies not included in the price: (a) 0.60 Esc/1 of class A to producers who are equipped with mechanical milking and refrigeration systems; (b) 0.30 Esc/1 of class A to producers who are equipped with refrigeration system; (c) 0.20 Esc/1 of class A to producers who are equipped with mechanical milking; (d) small and medium farmers who establish equipment for mechanical milking and refrigeration can obtain a subsidy of 80% of its cost; (e) small and medium farmers who establish collective stables can obtain a subsidy of 80% of its cost.

<sup>19</sup> From 1972 to 1974, farm gate prices are given at the average farm prices between two delivery seasons, March to August (3-2) and September to February (5-2), as follows:

	1967/70		1971/72		1972/73		March 1974		September 1974	
	Class A	Class B	Class A	Class B	Class A	Class B	Class A	Class B	Class A	Class B
Guaranteed	3-8	9-2	3-8	9-2	3-8	9-2	3-8	9-2	3-8	9-2
Farm price	2.60	2.40	2.30	2.50	3.20	3.40	2.90	3.10	3.20	3.60

<sup>20</sup> The guaranteed farm gate price is net of collection costs, paid for by the producer, amounting to Esc 0.80/1 of milk delivered to pickup station.

<sup>21</sup> The guaranteed farm gate price is net of collection costs, paid for by the producer, amounting to Esc 1.30/1 of milk delivered to pickup station.

<sup>22</sup> It includes both processing and retailing margins.

<sup>23</sup> The fixed retail price can be increased by Esc 0.20/1 for door to door deliveries.

<sup>24</sup> The fixed retail price can be increased by Esc 0.30/1 in pasteurized milk or Esc 0.10/1 for common milk.

<sup>25</sup> The fixed retail price can be increased by Esc 0.30/1 for door to door deliveries.

Sources: Junta Nacional dos Produtores Pecuários; Fundo de Abastecimento; Government legislation; Ministry of Economy executive orders; CEZA, Ombudsman Foundation; mission estimates.

Table III-8 Portugal: Price Structure for Corn, 1965-1976

<u>Item</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
	----- Escudos/kg -----											
1. Guaranteed price to farmer					2.30-2.50 <sup>/1</sup>					3.40	5.00 <sup>/2</sup>	5.00 <sup>/2</sup>
2. Average producer price <sup>/3</sup>	2.63	2.49	2.43	2.46	2.43	2.33	2.77	2.77	2.62	3.88	n.a.	n.a.
3. Imported grain for sale to industry set at	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	3.70	4.30	4.30
4. Price to feeder <sup>/4</sup>	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	3.70	3.70	3.70
5. Price to millers <sup>/4</sup>					2.35-2.47 <sup>/5</sup>					3.70	3.70	3.70
6. Price to concentrate industry <sup>/4</sup>	2.15	2.15	2.15	2.15	2.15	2.15	2.30	2.30	2.15	3.70	3.70	3.70
7. Average import price <sup>/6</sup>	1.88	1.92	1.89	1.90	1.86	2.10	1.98	1.79	2.52	3.90	3.52 <sup>/7</sup>	4.05 <sup>/7</sup>
NPC (2/7)	1.40	1.30	1.29	1.29	1.31	1.11	1.40	1.56	1.04	0.99	1.42 <sup>/8</sup>	1.23 <sup>/8</sup>

<sup>/1</sup> Varies between harvests. No guaranteed price was in effect during June-August when a large part of the crop is harvested.

<sup>/2</sup> Includes a subsidy of Esc 1.00/kg, above the guaranteed price of Esc 4.00/kg, to be paid to small and medium producers. The legislation does not define the producer size and deems the subsidy will cover most of the Portuguese producers (Ministerial Order of April 11, 1975).

<sup>/3</sup> National average producer price, weighed by season and region.

<sup>/4</sup> Prices applicable to all corn, whether domestic or imported.

<sup>/5</sup> Slight variations due to the type of miller it is destined for.

<sup>/6</sup> Average price within a calendar year, c.f., from INE statistics.

<sup>/7</sup> Mid-point between highest and lowest price within calendar year. No weighed data available. From IC.

<sup>/8</sup> Based on the guaranteed price instead of average price.

Sources: Estatísticas Agrícolas (various issues), INE; IC; FA; Government legislation; CEEA; World Bank estimates.

Price relationships between most livestock products and feed have been maintained at favorable levels by large imports of feed concentrates and feed subsidies. From 1965 to 1973 the price of corn to feeders was Esc. 2.30 per kg. In 1974 it was raised to 3.7 and maintained at that level through 1976. During this period the price of a liter of milk was increased from Esc. 2.0 - 2.4 in 1965/66 to Esc. 3.10 - 3.40 in 1972/73 and to Esc. 6.80 - 7.50 in 1976.

In the first part of the period, it took one liter of milk to buy a kg of corn, but by the end of the period it took only a little more than half a liter to buy a kg of corn. Farmers were guaranteed Esc. 30-35/kg of beef in 1969/71 while corn was Esc. 2.3/kg and Esc. 73/kg in 1976 when corn had gone up only to 3.7/kg. The price of beef increased by over 100% while that of corn increased by only 55%. Poultry prices moved up at about the same rate as corn between 1965 and 1975 (55%) as improvements in technology and feed conversion apparently offset increases in other costs. The World Bank Report expresses particular concern over the high rates of feeding high-cost imported feed grains to ruminant livestock, especially beef animals, which it notes cost more in foreign exchange for feed than importing carcass beef. The costs of this system point to the importance of forage-based livestock production, as recommended in Chapter IV.

### C. Fertilizer Price and Marketing Policies

Fertilizer margins that have been too low to stimulate aggressive merchandising by wholesalers and retailers appear to be a real

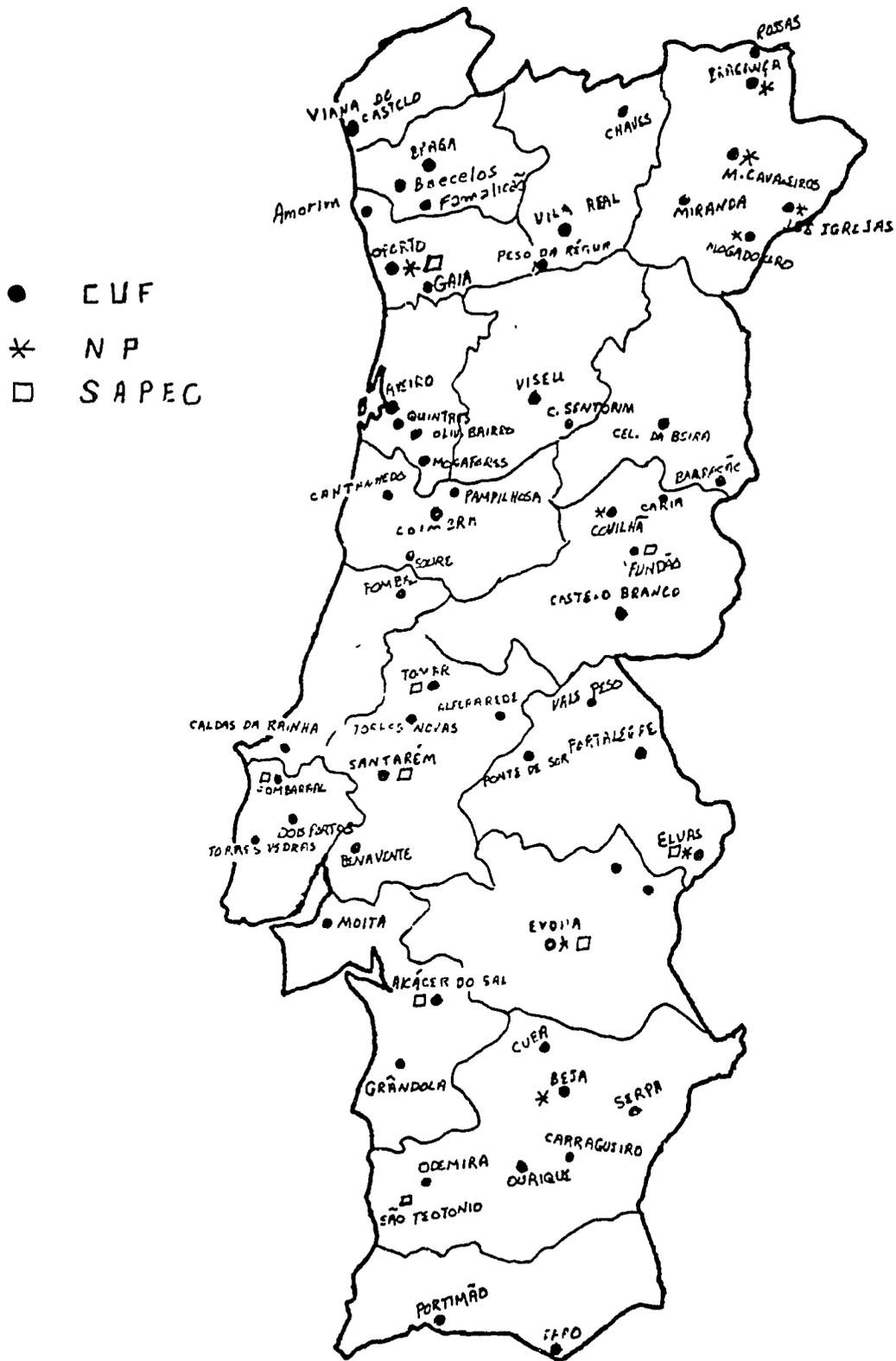


FIGURE III-1 Wholesale Outlets for Fertilizer

limiting factor in promoting fertilizer use. Prices and distribution margins are generally limited to 4-5% of the price to farmers. Moreover, wholesalers and retailers are apparently charged 6.2% interest for 90-day credit on fertilizer. These margins would appear to be so low as to discourage any real effort to stock fertilizer in quantity and actively promote its use.

Figure III-1 shows the distribution of wholesale outlets prior to nationalization, which left only SAPEC in private hands and created a new Public Company QUIMAGAL that took over other companies and their warehouses. Private wholesalers and retailers are counted on to sell a major part of total fertilizer to farmers, although farmers or anyone else can buy from the wholesale outlets. Prices and margins established in September 1978 for the 1979 crop year are shown by type of fertilizer in Table III-9.

The cost of transportation and the wholesale distribution function are included in the fixed price at which fertilizer is sold to wholesalers. One possible improvement is to disaggregate production and distribution costs, establish separate, adequate margins, and let private wholesalers and dealers pick up fertilizer at the factory if they want to do so. Farmers might well be better off with somewhat higher prices, including adequate distribution margins, and additional services that might be forthcoming from distributors. Soil testing is needed, as well as advice on needs for lime applications. A recommended program is outlined for a national limestone program of sufficient magnitude to have a major impact in Chapter IV.

Table III-9 Portugal: Fertilizer Prices and Margins, September 1978

Adubos	Preço máximo de venda ao consumidor, por saco (a)	Margem de comercialização, por saco (a)
<b>I — Elementares</b>		
<b>Azotados:</b>		
Sulfato de amónio a 20-21 % .....	158500	7590
Diluições de nitrato de amónio a 20,5 %	170550	8550
Diluições de nitrato de amónio a 26-26,5 % .....	207500	10550
Diluições de nitrato de amónio a 33,5 %	261500	12590
Sulfonitrato de amónio a 26 % .....	206550	10550
Nitrato de cálcio a 15,5 % .....	158500	7590
Cianamida cálcica a 20,5 % em pó, oleosa .....	259500	12590
Ureia a 46 % .....	318500	14530
<b>Fosfatados:</b>		
Superfosfato de cal a 18 %, em pó .....	130550	6530
Superfosfato de cal a 18 %, granulado	134550	6560
Superfosfato de cal a 42 %, granulado	331500	14530
<b>Potássicos:</b>		
Cloreto de potássio a 60 % .....	222500	7590
Sulfato de potássio a 50 % .....	245550	10260
<b>Binários:</b>		
0-21-21 .....	257550	15500
7-21-0 .....	237550	15500
10-20-0 .....	212500	15500
10-40-0 .....	397550	21550
14-36-0 .....	399500	21550
18-36-0 .....	428550	22500
20-20-0 .....	327500	18560
21-53-0 .....	510550	22590
<b>Ternários:</b>		
6-15-6 líquido .....	194500	13560
7-14-14 .....	231500	15500
7-14-14 c/Mg .....	265500	15500
7-14-14 c/B e Mg .....	263550	15500
7-21-7 .....	258500	15500
7-21-21 .....	305500	18560
8-16-8 .....	232550	15500
10-10-10 em pó .....	207500	12540
10-10-10 .....	211500	13560
10-15-15 .....	262550	15500
10-15-15 c/B .....	268550	15500
12-24-12 .....	332550	18560
12-24-12 c/B .....	340500	18560
15-15-15 .....	301500	18560

(a) Saco de polietileno, com excepção do adubo complexo 6-15-6 líquido cujo preço se refere a 50 l.

Source: Ministry of Commerce.

A part of the present high fertilizer subsidy could be diverted to help finance the limestone program. The fertilizer subsidy for 1979 is estimated to total Esc. 2-3 billions.

D. Subsidy Costs

The total costs of subsidies for 1975-1978 on agricultural products and fertilizer are shown in Table III-10. Although costs in 1978 declined somewhat from 1977, they still were about US \$30 per capita. A major part of the subsidy cost was offset by profits on petroleum, but those profits could have been realized anyway and in no way offset the real costs of the agriculture and food subsidy programs in the economy (Table III-11).

E. Impacts of EEC Entry on Agriculture

The problems in adjusting to EEC policies are likely to be more serious for food consumers than for agricultural producers. At current exchange rates, Portuguese retail beef and dairy prices are well below EEC target prices. Grain prices are generally about 75 percent of EEC target prices, except for feedstuffs which are heavily subsidized and well below the EEC price (where feeds are subject to import tariffs). Fertilizer, heavily subsidized in Portugal, is likely to rise substantially in price, while machinery, which is taxed and is more costly, may be expected to decline in relative terms.

For some specialized commodities, such as wine, olive oil and processed tomatoes, Portugal should have little adjustment to make since it is already successfully competing in EEC markets.

**Table III-10 Portugal: Subsidy Expenditures on Agricultural Products**  
(in million escudos)

	1975	1976	1977	1978
Cereals and Flour	2,380	2,710	4,700	4,304
Meat	1,100	2,130	379	342
Milk and Products	-	-	1,881	2,418
Fish	-	-	111	208
Sugar	-	-	12	9
Vegetable Oils	-	1,337	3,936	2,614
Potatoes	20	333	326	500
Fertilizers	-	1,148	905	1,888
<b>TOTAL (million escudos)</b>	<b>3,500</b>	<b>7,658</b>	<b>12,250</b>	<b>12,283</b>
<b>(million US dollars)</b>	<b>(137)</b>	<b>(255)</b>	<b>(320)</b>	<b>(273)</b>

Source: Fundo de Abastecimento (Fund for Basic Stores and Commodities, such as basic foodstuffs, fertilizer, steel, cement, and petroleum products).

Table III-11 Portugal: Financial Operations of Fundo de Abastecimento 1/  
(in million escudos)

	1977	1978
<u>Receipts</u>	<u>13,694</u>	<u>16,267</u>
Profits on Trade of Agricultural Products	1,139	1,965
Price Differential on Petroleum	12,555	14,302
<u>Expenditures</u>	<u>18,452</u>	<u>20,765</u>
Subsidies on Agricultural Products	10,045	12,396
Subsidies on Petroleum Consumption	8,407	8,369
<u>Net Profits (loss) million escudos</u>	<u>-4,758</u>	<u>-4,498</u>
(million US dollars)	(-124)	(-100)

1/ Fund for Basic Stores and Commodities, such as basic foodstuffs, fertilizer, steel, cement, and petroleum products  
Source: Fundo de Abastecimento

Comparative Portuguese and EEC target prices are shown in Tables III-12, III-13, and III-14. While there has been considerable year-to-year variation in price relationships, grain prices in Portugal have generally followed fairly closely to the EEC target price levels. Wheat and corn have been maintained near EEC levels while rye, barley and rice have been consistently a little lower (Table III-12). Beef and veal have been consistently below EEC target levels while milk has followed more closely the EEC price targets (See Table III-13). During 1974-76, consumer prices of bread, beef, milk, cheese and butter were maintained well below EEC consumer price levels while pork tended to be near EEC levels (See Table III-14). As previously noted, fertilizer is relatively cheap in Portugal, while machinery is expensive. Relative to EEC costs, farm labor is cheap although increasing in cost. Feed grains and mixed rations for livestock are cheap due to the large subsidies on imported feedstuffs.

#### IV. CONCLUSIONS AND RECOMMENDATIONS

The overall objective for the agriculture sector (crops, livestock, forestry and fisheries) should be to raise the growth rate to 5-6 percent per year and to increase gross investment in agriculture to 3-5 times the level in recent years. The accomplishment of this goal will require a concerted and coordinated effort by public agencies as well as the full participation of private producers. We have grouped our recommendations for priority actions to assist in reaching this goal under A) Policy Recommendations, and B) Investment Programs.

Table III-12 Portugal: Comparative Average  
Prices for Major Cereals

(Esc/kg)

Product	Portugal EEC	1973 1973/74	1974 1974/75	1975 1975/76	1976 1976/77	1977/78 1977/78	1978/79 1978/79
<u>Wheat</u>							
Domestic producer prices		3.55	4.26	4.94	6.00	7.00	7.50
Import prices		3.90	5.61	5.05	4.55	4.23	
EEC target prices		3.68	4.31	5.26	6.46	7.90	10.56
<u>Maize</u>							
Domestic producer prices		2.62	3.88	5.36	5.35		7.50
Average import prices				3.95	3.26	2.66	4.80
EEC target prices		3.29	3.87	4.76	5.86	7.25	9.57
<u>Rye</u>							
Domestic producer prices		2.70	3.24	4.11	5.00	6.30	
Average import prices		2.28	3.87		4.21		
EEC target prices		3.60	4.21	5.23	6.34	7.76	10.08
<u>Oats</u>							
Domestic producer prices		2.33	2.81	3.23	3.90	5.00	5.40
Average import prices							
EEC target prices							
<u>Barley</u>							
Domestic producer prices		2.74	3.45	3.70	5.50	6.50	7.00
Average import prices		2.85	4.64	5.64			
EEC target prices		3.37	3.91	4.79	5.86	7.75	9.57
<u>Rice (Paddy)</u>							
Domestic producer prices		3.62	5.03	6.17	6.17	7.30	9.60
Average import prices <u>1/</u>		4.36	8.22	6.96	7.14		
EEC target prices		4.21	4.83	5.84	6.98	8.58	11.37

1/ Imported milled. A conversion factor of 0.7 has been applied to bring milled prices to paddy equivalent.

Source: Portuguese producer prices from Estatísticas Agrícolas; Average Portuguese import prices from EPAC; EEC target prices from The Agricultural Situation in the Community, using "green rates" for Portuguese escudo.

Table III-13

PORTUGAL: COMPARATIVE AVERAGE PRICES FOR  
LIVESTOCK PRODUCTS AND OLIVE OIL

(Esc/Liters/kg)

Product	Portugal EEC	1974 1973/74	1974 1974/75	1975 1975/76	1976 1976/77	1977 1977/78
<b>Beef</b>						
Domestic producer prices		36.0	36.0	52.0	64.0	73.0
Import prices						55.2
EEC guide prices		55.2	68.2	82.8	101.5	127.8
<b>Veal</b>						
Domestic producer prices		40.0	40.0	65.0	76.0	85.0
Import prices				47.0		
EEC guide prices		66.5	79.9	97.1	118.2	
<b>Milk (+3%FC)</b>						
Domestic producer prices		3.4	4.6		7.5	12.0
Import prices		4.6	6.2			15.3
EEC target prices		4.2	4.7	5.9	6.9	9.0
<b>Olive Oil</b>						
Domestic producer prices		42.57	49.25	52.75	60.41	
Import price		51.46	63.32			
EEC target production prices		49.28	54.49	78.34	88.34	
(EEC target market price)		(34.20)	(38.55)	(61.39)	(69.19)	

Source: Portuguese producer prices for Estatísticas Agrícolas; EEC target prices from The Agricultural Situation in the Community, using "green rates" for Portuguese escudo.

Table III-14

PORTUGAL: COMPARATIVE<sup>1/</sup> CONSUMER PRICES  
FOR UNSPECIFIED AGRICULTURAL PRODUCTS

(Esc/kg/liter)

	1974	1975	1976
<u>Bread</u>			
Portugal	12	12	12
Most Expensive EEC country (Germany)	19	22	25
Least Expensive EEC country (Italy)	17	18	12
<u>Beef</u>			
Portugal	100	100	130
Most Expensive EEC country (Germany)	250	279	346
Least Expensive EEC country (Italy)	133	168	177
<u>Pork</u>			
Portugal	107	135	190
Most Expensive EEC country (Denmark)	157	190	243
Least Expensive EEC country (Italy)	96	109	128
<u>Milk</u>			
Portugal	5	6	6
Most Expensive EEC country (Germany)	10	11	13
Least Expensive EEC country (Holland)	8	10	11
<u>Cheese</u>			
Portugal	56	75	75
Most Expensive EEC country (Italy)	134	142	155
Least Expensive EEC country (Holland)	75	88	105
<u>Butter</u>			
Portugal	58	56	56
Most Expensive EEC country (Italy)	88	106	112
Least Expensive EEC country (Holland)	71	109	100

1/ Portugal and Euro '6'.

A. Policy Recommendations

1. Price policies and subsidies

Systematically review the entire framework of price controls and subsidies on farm products to reduce government costs and improve producer incentives and confidence, including these actions:

- a. Reduce subsidies on mixed feeds especially for ruminant livestock and use a part of the savings to stimulate establishment of improved pastures and forages. We recommend an investment program to provide medium-term credit for establishment of improved pastures (See Section II).
- b. Determine whether a lower level of feed subsidies for poultry and duck production is justified considering the buoyance of demand for meat.

Grain prices: In 1978 the support price was Esc. 7,400/m.t. for sorghum. For 1979, harvest prices of corn and other grains were raised by an average of about 15% (corn from Esc. 7,500 to 8,800) while the price of sorghum was held at Esc. 7,400. Given the competitive advantage sorghum should enjoy, relative to corn, in some areas and its nearly equal per kg feed value, this shift is likely to create a disincentive to sorghum and misallocations of resources between corn and sorghum. Relative prices of other grains also need to be reviewed and adjusted to avoid other distortions.

Subsidies: Costly subsidies both on inputs (feed) and final products have been provided for most livestock products and vegetable oil. The effect has been to hold consumer prices down and stimulate an artificially high rate of growth in consumption of these relatively costly and generally import-dependent products. The need for these controls and subsidies should be reviewed, especially considering their likely low impact on the poorest families in the country and needed adjustments made in the level of subsidies.

Wine: Wine consumption, though down somewhat, is still higher than in any country except France. With recent production declines Portugal has found its exports declining and has imported some wine. A surtax on wines for domestic consumption might be considered to reduce consumption of high quality wines which compete most successfully in export markets. Such a tax directed to more expensive wines should have little impact on the cost of living of lower-income families.

Tractors: Growth in numbers of tractors has been very high, probably creating a significant distortion in use of scarce resources available to agricultural investment and an excessive bias from labor to mechanization. Policies that stimulate tractor imports, subsidies and credit should be reviewed and appropriate adjustments made. Financing now available for tractors might better be diverted to other uses and the subsidy on tractor purchases eliminated. (We were told that this subsidy is now 25% of the retail cost of a tractor).

## 2. Water use policies

There is need to improve the efficiency of irrigation water use both from public and private systems. In most cases, when farmers are not supplied with information on consumptive use rates and not assisted in measuring or accurately estimating amounts applied, they use much more than is needed. The result is a smaller area planted, lower yields and loss to leaching of costly fertilizer nutrients. Losses in distribution systems are also frequently high.

## 3. EEC Entry

An intensive study of requirements of, and opportunities for, Portuguese agriculture in the EEC, particularly in its ability to compete, considering cost, type and quality of products marketed, or likely to be marketed, should be initiated. ( A good basis for this study exists in the preliminary analysis that is underway in the Planning Office of the MAP).

## 4. Seed production

Conditions for private enterprises in production and distribution of improved seeds both to increase seed quality and to permit adjustment for entry into the EEC should be created. This is particularly important for forage, vegetables, and hybrid grain seeds.

## 5. Land tenure

The land tenure situation in the Alentejo has created an unwillingness by private operators to invest either from their resources or by using institutional credit. There is general agreement that this problem requires priority attention to:

- a. Establishment of efficient and profitable systems of operation for the cooperative and collective production units.
- b. Prompt resolution of the issue of reserves to be returned to previous owners and expeditious distribution of this land. (The longer the delay, the more difficult the distribution is likely to prove).
- c. Early and appropriate remuneration of former owners for their losses of land and other assets.
- d. Other measures necessary to increase confidence of private owners as a means of stimulating production-increasing investments appropriate for Portuguese conditions.

B. Agricultural Development Investment Programs

1. Technical collaboration and assistance in research and extension

There is need to increase the overall level of investment in research and extension services to 3 percent or more of agricultural GDP. At the same time, the aim of the research and extension programs should be focused more sharply on the most serious problems and the areas where payoffs are potentially greatest.

Although some larger-scale investments may be needed for this purpose, the team is of the opinion that for the longer term the US could best assist Portugal in this area by establishing a continuous program of technical cooperation between institutions and agencies in the two countries. The basis for this program already exists in the technical assistance program for the polytechnic institutes and the grant funds available for consultants and training. We would like to see this element of U.S. assistance greatly enlarged and extended.

Much expertise exists in U.S. institutions that could be brought to bear on Portugal's priority problems of development programs. Natural resource evaluation, planning and policy analysis, technical research on forage improvement, crop/livestock production systems under low rainfall

conditions, soil fertility, extension methods, farm consolidations, marketing, cooperative organizations and rural social service delivery, are among some of the important ones that we have noted.

Precedent also exists in Portugal. World Bank staff members have cooperated with personnel of the Planning Office of the Ministry of Agriculture and the Gulbenkian Foundation in constructing agricultural sector models and carrying out studies of price policies and subsidies. These are among the most useful analytical studies we have found.

We believe that returns in improved research and extension capabilities from this type of technical collaboration could be high in the next 5 to 10 years. The election of a new government in 1980 carries with it a constitutional requirement for the preparation of a development plan for 1980-84. Portugal's entry into the Common Market in the early 1980's presents an opportunity and a requirement for fundamental improvements in its agricultural sector, which is a high priority task whether or not the country joins the EEC.

This program would work best if it provided dollar funding for continuing technical support and specialized collaborative and training activities. Creation of a special fund administered by the Planning Office of the Ministry of Agriculture, with authority to contract with US institutions

and individual professionals, would permit this program to operate with a minimum of direct USAID operational involvement.

A 10-year, U.S. \$10 million program is recommended for dollar expenses. The first 5 years should cost about US \$4 million, which could be obligated in FY 1980. In addition, escudo funding should be programmed from PL 480 currencies to help pay local costs of these studies, research and extension activities, and support the participation of non-GOP research and training entities. The project paper should establish the procedures for operating the program and initial areas of work that will be given priority.1/

In general, priority should be given to studies, research and extension activities which affect the largest part of Portugal's agriculture, forests and fisheries, and which offer the best prospects of achieving major increases in productivity, efficiency and social benefits in the short- and medium-term.

Physical research probably should be concentrated initially on large-scale adaptive trials, both on experimental stations and on private farms, accompanied by large-scale demonstrations of higher yielding, more efficient technology.

1/ Considerable planning has been done on a similar relationship between the U.S. and India, and an initial project documentation has been completed. It might be desirable to obtain copies of these documents. There also have been discussions of such a professional relationship between Brazil and the U.S.

We conclude that an allocation of local currency of about US \$6.0 million to carry out an expanded problem-oriented research effort would be justified over a 5-year period. To complement this investment in research, about US \$7 million in local currency should be provided to expand and improve extension service operations to insure that every farmer knows of, and has access to, better production information and is motivated to begin the adoption process.

We estimate the cost of different elements of such a program will be approximately as follows:

	<u>Dollar Costs</u>	
	<u>Cost/year</u> <u>US \$000</u>	<u>5 Year</u> <u>US \$000</u>
Professional exchange		
Portugal to the U.S. 20/year, 60 PM \$3,000/MO	180	900
U.S. to Portugal 15/year, 30 PM \$10,000/MO	300	1,500
Annual Meeting of Executive Board	30	150
Books, Periodicals, etc.	30	150
Scientific supplies, equipment	100	500
Exchange of plant materials	20	<u>100</u>
Subtotal	660	3,300
Contingencies	<u>140</u>	<u>700</u>
TOTAL	US \$ 800	US \$4,000

Local currency costs

Research: US \$6.0 million for 5 years.

The funds would be used to staff field units doing applied research, especially field trials on fertilizers, lime and improved varieties on a large-scale both on research farms and private farms. Research personnel should cooperate with extension service on field trials and demonstrations on farmers' fields and on conduct of field days. In addition to financing supplemental staff, funds would be used for travel, materials and other costs for trials and for supporting laboratory development and operation, and for staff training and supervision.

Extension: US \$7.5 million for 5 years.

Funds could be provided for additional staff to develop widespread field trials and demonstrations on farmers' fields to improve crop and forage yields, involving lime fertilizer and improved varieties, as well as improved management practices. In addition, equipment and materials for conducting these field demonstrations and travel costs will be financed, along with funds for staff development, training and supervision.

The next steps in the development of this technical cooperation program should be:

- a. Discussions with appropriate government officials concerning their interest and support of this activity and administrative arrangements to name and convene a joint working group composed of the following:

<u>TYPE</u>	<u>PORTUGUESE</u>	<u>U.S.</u>
Research Planner/Administrator	1	1
Extension Planner/Administrator	1	1
Soils Specialist	1	1
Crops Specialist	1	1
Pasture Specialist	1	1
Agricultural Development Economist	1	1
Animal Scientist	-	1
Veterinarian	1	-

b. The Working Group would meet and identify research and extension priorities both in terms of geographical area and problems to be addressed. They would also outline an organizational structure and procedures to be used in implementing the project. They should provide fairly definitive estimates of the costs for the first year. The team should plan to spend about 3 to 4 weeks working together for the initial planning activity. Subsequent meetings of one week should be held annually.

c. An agricultural specialist experienced in AID project development should accompany the team and continue in Portugal for the time necessary to prepare a project paper conforming to AID requirements. This will probably take 5 to 6 weeks additional time.

## 2. Land, pasture and livestock improvement programs

Based on our analysis, we recommend that priority for use of available PL 480 counterpart and AID funds be given, first, to the research/extension program outlined above and,

secondly, to the land, pasture and livestock improvement activities outlined in this section:

a. National Crushed Limestone Application Program

Goal: To increase yields and incomes of farmers particularly on small and medium sized farms.

Purpose: To correct soil acidity on crop and pasture land thereby increasing yield and returns to other modernizing inputs such as fertilizer, improved varieties and labor.

Target: In terms of hectares limed:

<u>Years</u>	<u>000 ha</u>
1	25
2	50
3	75
4	100
<u>5</u>	<u>150</u>
Total	400

Outputs: Over a five-year period the limestone required based on an application of 4 m.t. per ha will be:

<u>Years</u>	<u>000 Limestone</u>
1	100
2	200
3	300
4	400
<u>5</u>	<u>600</u>
Total	1,600

Inputs: Financing for crushers and transportation, three-year financing for applications of limestone by farmers at an estimated cost of US \$20 per ton; five dollar per ton subsidy on up to 4 m.t. per ha for the first five years; technical assistance to farmers provided under extension program discussed previously. The total credit requirements and subsidy costs of this program would be:

<u>YEARS</u>	<u>TOTAL CREDIT REQUIREMENTS (Million US\$)</u>	<u>SUBSIDY COSTS (Million US\$)</u>
1	2	0.5
2	4	1.0
3	6	1.5
4	8	2.0
<u>5</u>	<u>12</u>	<u>3.0</u>
TOTAL	32	8.0

This program should be balanced by reducing the subsidy on fertilizers. It is based on the utilization of limestone that is abundant in the country. Thus, balance of payments effects will be minimal.

b. Forage and pasture and livestock development program

Goal: To increase income of farmers through more efficient livestock production, thereby improving the nation's supply of livestock products derived from ruminants and simultaneously reducing requirements for imported feed grains while at the same time promoting better land use.

Purpose: To increase production on existing permanent pastures and on fallow and other land converted to permanent or rotational pastures by applying limestone and fertilizer according to soil tests, by seeding adapted legumes and grasses, and by grazing management.

Outputs: Pastures will be improved as follows:

<u>Years</u>	<u>000 HA PASTURES IMPROVED</u>
1	25
2	35
3	45
4	60
<u>5</u>	<u>75</u>
TOTAL	240

Inputs: Credit for each hectare of pasture improvement and stocking is estimated to be:

<u>ITEM</u>	<u>COST PER Ha-US</u>
Limestone 4 tons @ \$20	80
Seed - 12kg legume + 4kg grasses	50
Fertilizer - 100 P <sub>2</sub> O <sub>5</sub> + 50 K <sub>2</sub> O	60
Land Preparation, plowing, disking and seeding	60
Fencing, corrals, improved sires, additional livestock (estimate is an average; some farms will need greater increases in live- stock than others)	<u>150</u>
TOTAL	450

- c. Total credit needs for forage, pasture and livestock improvement

A total fund reaching some US \$50 million per year would be needed by the end of five years considering expected repayment rates and new credit extended annually. This assumes three-year credit terms with repayment beginning at the end of the first year.

### 3. Agricultural Credit

The World Bank Sector Survey cites lack of credit as a major factor in low rates of investment in agriculture. We agree that credit has been a constraint but probably not the most serious constraint. Available credit has often not been used for high priority, production-increasing purposes. We suggest increases in availability of institutional credit until it reaches 50-75% of total GDP generated by agriculture, but with very careful allocations of credit during this credit expansion period. (Specific recommendations for allocations of PL480 counterpart and AID funds are given below).

Available PL480 counterpart funds not allocated to the priority programs recommended above in parts 1 and 2 should be made available for:

- a. General agricultural credit especially directed to smaller farms, and

- b. Financing of marketing, processing and storage of farm products and distribution of production inputs and provision of production services, especially in the private sector.

APPENDIXPL 480 Loans and Use of Counterpart Funds

The team was requested to examine the terms of past PL 480 agreements, allocations of counterpart funds to date and plans for the future. The time available for this review was very limited. The results of our brief review are summarized in this Appendix.

A.1. Use of funds generated

Through PL 480, the United States financed a variety of agricultural imports in FY 1976-79, including rice, wheat, feed grains, cotton and tobacco. PL 480 loan funding and counterpart funds generated each year from 1976 through 1978 were:

FY 1976	US\$25 million;	Esc 655 million
FY 1977	US\$70 million;	Esc 2,281 million
FY 1978	US\$40 million;	Esc 1,507 million
<u>TOTAL</u>	<u>US\$135 million;</u>	<u>Esc 4,444 million</u>

In FY 1979, another US\$40 million in loan funding for PL 480 imports was provided. An additional US\$40 million has been programmed for FY 1980, but no commitment had been made at the time this report was prepared.

The 1976 agreement stated:

"Self-help Measures":

- a. In implementing these self-help measures, specific emphasis will be placed on contributing directly to development progress in poor rural areas and on enabling the poor to participate actively in increasing agricultural production through small farm agriculture.
- b. The Government of Portugal agrees to:
  - (1) Construct bulk grain handling facilities at an appropriate deep water port and continue construction of inland grain handling facilities.
  - (2) Construct wholesale fruit and vegetable markets near population centers as marketing aid to small growers and distribution aid to all consumers including the lowest income sectors of the urban population.
  - (3) Develop the capability of collecting and analyzing agricultural data necessary for the formulation of rural and agricultural development policies, including the development of an adequate market news service.
  - (4) Develop an area sample frame to provide estimates for production for all major crops grown within the country.

- (5) Increase the level of credit and the means of making it more readily available for private agribusinesses and privately organized cooperatives.
- (6) Establish a nationwide service to provide farmers with frequent, current market information.
- (7) Develop the fishing fleet.
- (8) Create a special line of credit for farmers, private entrepreneurs, and privately organized cooperatives to finance medium- and long-term investments in production, processing, and marketing facilities, with special emphasis on the development of the crop and cattle production.

Economic Development Purposes for which Proceeds Accruing to Importing Country are to be Used:

- a. The proceeds accruing to the importing country from the sale of commodities financed under this agreement will be used among the reporting country's major regional subdivisions to the extent possible, approximately in proportion to the geographical distribution of its population and for financing the self-help measures set forth in the agreement and for the following economic development sectors: agriculture and all fishing.

- b. In the use of proceeds for these purposes emphasis will be placed on directly improving the lives of the poorest of the recipient country's people and their capacity to participate in the development of their country."

By 1979, these provisions had been modified somewhat and read as shown below:

"Self-help Measures":

- a. In implementing these self-help measures, specific emphasis will be placed on contributing directly to promoting development in poor rural areas and to stimulating the participation of farmers in achieving increased agricultural production in accordance with the objectives and norms established by the Government of Portugal in its national and regional programs for agricultural development.
- b. The Government of Portugal agrees to:
  - (1) Open a special line of credit for private entrepreneurs and agricultural cooperatives to finance medium- and long-term investments in agricultural production, marketing and processing facilities.
  - (2) Construct bulk grain handling facilities at an appropriate deep water port and continue construction of inland handling and maintenance facilities.

- (3) Construct support infrastructures for cattle breeding as aids to farmers in marketing their products.
- (4) Construct wholesale food markets near population centers as aids to growers and consumers.
- (5) Develop the capability of collecting and analyzing agricultural data necessary for the formulation of rural and agricultural development policies, and to establish a nationwide service to provide farmers with frequent and current market information.
- (6) Organize a study program designed to identify, prepare, and analyze integrated rural development programs.
- (7) Develop the fisheries sector, including production, processing, and marketing.
- (8) Encourage applied agricultural research and improve the efficiency of rural extension services.

Economic Development Purposes for Which Proceeds Accruing to  
Importing Country Are to be Used:

- a. The proceeds accruing to the importing country from the sale of commodities financed under this agreement will be used for financing the self-help measures set forth in Item V of the agreement, and for the following economic development sectors: agriculture and fisheries.

b. The allocation of proceeds generated under this agreement, except as otherwise agreed herein, will be used in support of the Government of Portugal's agricultural development plan, and will support:

(1) Investments directly related to regional production programs being initiated in accordance with the above-mentioned plan; and

(2) Elements of national programs which are directly related to infrastructure development.

c. In the use of proceeds for these purposes, emphasis will be placed on directly improving the lives of the poorest of the recipient country's people and their capacity to participate in the development of their country.

The following utilization of PL 480 counterpart funds has been made to date:

From FY 1976 funds:		
Grain silos	Esc.	300 million
Storage, milking facilities and a Poultry Farm	Esc.	300 million
	TOTAL	Esc. 600 million
	BALANCE	Esc. 55 million
From FY 1977 funds:		
Fruit Facility	Esc.	62 million
Credit to cooperatives	Esc.	80 million
	TOTAL	Esc. 142 million
	BALANCE	Esc. 2,140 million

To be programmed from 1976-8 funds:	
1976 balance	Esc. 55 million
1977 balance	Esc.2,140 million
1978 total	<u>Esc.1,507 million</u>
 FY 1976-8 TOTAL	 Esc.3,450 million

Of these funds, the following uses have been agreed upon:

	In Million Escudos
1. EPAC	
New and Expanded port facilities	201
Expanded Regional silos	15
Complementary projects	20
 2. Complex of Cochao	
Slaughter House	160
 3. State Organizations	
a) JNPP	
Mechanical milking stations	18
Livestock collection points	54
New slaughter plants	134
Refrigerated warehouse in Lisbon	56
Egg classification center	56
Wool warehouse	17
Dairy center in Beja	27
b) Para-statal organizations and cooperatives	418
c) Polytechnic Institutes and MAP	
INIA	150
MAP Central Administration	2
Facilities for Region MAP offices	50

Approximately US \$42 from FY 1976-8 have been allocated to IFADAP, but the use of those funds is yet to be jointly programmed. In addition the US \$60 million from FY 79 requires programming. IFADAP is expected to be assigned most of the 1979 funds as usual.

#### A.2. Observations

Our examination of the use of counterpart funds for activities and

projects was necessarily extremely brief. The brief review did indicate that programming to date has been generally consistent with the priorities of the GOP and the proposed areas for allocation as set forth in the various agreement. In the absence of time to review the supporting studies for the various investments we are not able to go beyond that general observation.

In the past most of the funds were allocated to Government units and investments of one type or another. This orientation is now being shifted, with resources hereafter going mainly for credit to fund private or cooperative production and marketing activities and for improvement of government services considered essential to agricultural development, such as improved research and extension services. This appears to us to be a desirable shift in the utilization of counterpart funds.

A.3. Suggested Priorities for Future Resource Use

We suggest the following be given priority in allocation of the remaining US \$83 million in counterpart escudos and for any additional local currency resources that may be generated under PL 480 import financing in future years:

- a) Creation of a special fund of about US \$135 million equivalent to be used to greatly expand applied research, on-farm trials and demonstrations, with activities to be carried out by research and extension personnel working closely together.

b) Expansion of IFADAP credit resources with priority given to the following:

1. A major limestone production and distribution program, including 3-year credit for farmers applying lime and initially a subsidy for application on up to 4 ha. per farm. Credit would also be provided to construct limestone crushing plants and for transportation.
2. Three-year credit for pasture and forage improvement and for increased stocking of livestock on the improved forages. (Sufficient funds should be reserved for a major program in this area as per our recommendations in Chapter IV).
3. Farm credit for use of fertilizer and other production-increasing investments, principally in the North. (The World Bank has made a loan to help in the South).
4. Credit to help finance private investment in marketing, processing and storage facilities for agricultural products and supply of production inputs and services.

The recommended programs and possible costs are discussed in more detail in Chapter IV.

A.4.        Self-Help Requirements

Considering the stagnation in Portuguese agriculture and lack of a coherent set of programs and policies, more and better self-help requirements might have been expected than those set forth in the various agreements. We have not devoted time to recommending improved self-help measures, but more attention should be given to their development if any PL 480 funding is approved in FY 1980 or future years. This report identifies several important areas where we think policy and program changes are needed or where there is need for additional study. We would suggest that these be further examined in the context of decisions on future PL 480 financing.