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Kingdom of Morocco: Agribusiness Sector Assessment

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EXECUTIVE SUMMARY

With the removal of many policy and regulatory constraints to development, the Moroccan agribusiness sector is entering a period of rapid growth. There are indications of a strong upward trend in investment by both Moroccan and foreign investors. This is particularly true in horticultural industries, but it is also true in other, smaller niche industries. Some growth will occur in the Moroccan domestic market with rapid population increases, but much of the potential is in the further development of exports to Europe; the Maghreb Arab Union (UMA); and new, non-Mediterranean markets. The proposed USAID Morocco Agribusiness Promotion (MAP) Project will help to address additional constraints that would slow the realization of this substantial development potential.

The assessment team spent most of its time in Morocco interviewing businessmen, farmers, government officials, researchers, and other knowledgeable sources (see List of Contacts, Annex Two) concerning the current state and future prospects for agribusiness development in the following 16 subsectors and industries:

Cereals	Fresh Fruit	Wine
Oil Seeds	Fresh Vegetables	Dairy
Sugar	Processed Fruit & Vegetables	Feeds
Seeds	Orange Juice	Leather
Cut Flowers	Olives	Fish
	Dates	

The results of these industry profiles are presented in Annex One; they then are used as the technical basis for many of the generalizations on sector opportunities and constraints that make up the rest of the report.

In doing this work the team paid systematic attention to four sets of options that will determine much about the possibilities for investment and value-creation in Moroccan agribusiness:

- The comparative advantage of Morocco's resource base to produce basic agricultural products or raw materials;

- Technological options for production, processing, and marketing of agriculturally based products;

- Options for vertical market coordination of these technologies, which depend, in large measure, on current and future industry structure and the existence of supportive public and private sector environments for business development; and

- Options presented by domestic and international markets, particularly to the extent that the products in question can be differentiated from standard ones.

In the main report, the chapters are organized as follows:

Chapter One provides background on the assessment and the methodological approach used.

Chapter Two is a review of the **economic context** for Moroccan agribusiness development. The chapter reviews relevant macroeconomic trends in the 1980s (with a particular emphasis on structural and sector adjustment measures that now are beginning to pay handsome rewards); the importance of agriculture and agribusiness in the health of the overall economy; and the potential for agribusiness products in Morocco, in the vital EEC market, in the UMA, and in other international markets.

Chapter Three summarizes our understanding of the **climate for agribusiness** development with emphasis on the important positive impact of recent legal and regulatory reforms by the Government of Morocco, the functioning of key facilitating services and institutions, and sources of investment capital and export promotion services.

Chapter Four (technology and transport) presents summary assessments of the adequacy of production, input, and processing technologies in common use by Moroccan agribusiness concerns and options for improvement over time. In addition, the chapter ends with a special analysis of a severe constraint on export-oriented development: high road, sea, and air transport costs and peak seasonal lack of capacity. These are highlighted with suggestions for possible approaches to breaking this bottleneck.

Chapter Five ends the report with **conclusions and recommendations.** The conclusions contain highlights of key points from the industry profiles, a listing of the dozen most important constraints the MAP project should address, and a brief description of the five proposed project activities:

- Direct promotion of agribusiness formation and possible joint-ventures or partnerships between U.S. and Moroccan firms;

- Financial promotion measures, namely, a grant or loan fund that can be used to provide risk-reducing support to pre-investment research and development, market, and feasibility studies;

- A studies fund, which could cover needed industry diagnosis and policy work, market prospecting, and investigations of very specific opportunities for technology transfer and adaptation;

- A training component, with both formal (degree training in agribusiness management and international marketing) and informal (study tours, apprenticeships, industry extension work) elements; and

- An institutional strengthening component, which will assist both public institutions (including MARA, EACCE, IAV, and INRA) with regulatory and technology development issues, and private institutions, such as industry associations and specialized private service providers.

CHAPTER ONE

INTRODUCTION

PURPOSE OF THE ASSESSMENT

USAID/Morocco plans in the near future to design an agribusiness promotion project to stimulate private sector business initiatives in the country's agricultural sector. The members of this assessment team were contracted to assist in this process by:

- Conducting a rapid appraisal of key industries in the Moroccan agribusiness sector and the overall climate for business development;
- Producing this *Agribusiness Sector Assessment* Report, including an analysis of constraints facing the sector and ways in which USAID could help address those constraints; and
- Interacting with members of the USAID/Morocco's Agricultural Development Office staff as they began to prepare the Project Identification Document (PID) for the Morocco Agribusiness Promotion (MAP) project.

RELATIONSHIP TO A.I.D. DEVELOPMENT PROGRAMS

The MAP project is one of a number of agribusiness assessments and promotion projects being prepared in the countries covered by the Asia, Near East and Europe (ANE) Bureau of A.I.D. (see Grant et al., 1990; ASAC, 1989; and ASAC, 1990). The MAP project reflects efforts undertaken by ANE to enlarge the scope of traditional bilateral aid approaches to work more directly in the promotion of private sector agribusiness growth. This has required substantial rethinking of the ways in which A.I.D. conducts its project business, and calls for an important effort to incorporate greater participation of the U.S. agribusiness community in this search for new operational approaches (Newman, 1989).

ANE's "Food Systems Strategy for Growth in the 1990's" (USAID/ANE, 1990) has identified agribusiness development as one of the critical components of sustainable economic growth, as countries make the transition from cereals-based agriculture to light industrial and service-based economies. Agribusiness can contribute to growth of production through the efficient coordination of vertical marketing channels — from input provision through processing and marketing to domestic and foreign consumers. Thus, it can add substantial value to basic agricultural production and provide for growth in employment, national income, consumer disposable income, and needed foreign exchange.

The MAP project also represents a change in operational emphasis for the agricultural program of USAID/Morocco. In the past, much of the USAID/Agricultural portfolio has been focused on the strengthening of public institutions so that they could play a more effective role in the promotion of agricultural growth and the larger objectives of income and employment generation. Thus, the following projects are in the current portfolio:

- An applied research project focused on increasing the dryland crop research output of INRA, the national agronomic research institute in the Ministry of Agriculture and Agrarian Reform (MARA);

- An institutional strengthening grant (part of 20 years of continuous support) to the national agricultural university, the Institut Agronomique et Vétérinaire (IAV) Hassan II, also under MARA;

- Several projects to increase MARA's statistical data collection and policy analysis capacity; and

- Focused projects in locust control, PL 480, and the use of supplemental irrigation technologies.

One of the challenges in the design of the MAP project will be to build links between the older projects in the portfolio and the proposed components of the new MAP effort. Preliminary ideas toward this end will be explored in the final chapter of this report.

TEAM APPROACH

The Rapid Appraisal Approach

In the past 15 years, agricultural and social scientists working in agricultural development have generated a series of rapid diagnostic approaches for the study of agricultural production systems and the identification of key constraints to their further development. This approach has been most fully elaborated in the methodology of farming systems research and extension, in which the first step in the research and problem-solving process is the rapid reconnaissance survey. Also during this period, agricultural marketing specialists began to apply the same techniques to the initial diagnosis of agricultural and food marketing systems.[1]

The agribusiness assessment team has employed elements of this approach in its rapid appraisal of some of the industries that make up Moroccan agribusiness. The most important dimension is the use of a simple set of organizing principles, initially developed in industrial organization (IO) studies done in the United States over the past 50 years. In this work, it has been shown that there is a strong and predictable relationship between the structure of an industry (for example, the number of firms in the vertical channel) and the methods that can be used to provide for the coordination of production, processing, and final product marketing.

This approach provides a practical, applied complement to the contribution to agricultural marketing studies derived from neoclassical economic theory. The IO approach has its strength in the fact that it is based upon the observation of what exists in the structure and operation of industrial (or agroindustrial) production and marketing and not what might exist if the theoretical assumptions of perfect market competition were met. On the other hand, it is more limited in its potential for quantitative abstraction in that it lacks the simplifying assumptions about reality that permit elaborate model building based on

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[1] A good description of this approach is contained in "Rapid Reconnaissance Guidelines" (Holtzman, 1986).

standard economic theory. The IO approach is, above all, a descriptive and diagnostic approach appropriate for use in rapid agribusiness assessments such as this.

The Importance of Industry Structure and Vertical Coordination

The most important aspect of a simplified IO approach for a rapid review of Moroccan agribusiness is the relationship between the structure of a set of vertically related industries and the type of coordination of information and product flows up and down marketing channels (*les filières* in French). This relationship can be seen by briefly considering the difference between two very different Moroccan industries: domestic barley production and marketing and the Moroccan orange juice industry.

In Morocco barley is grown by a large number of dryland producers who produce a fairly standard, undifferentiated product. This product is sold in a hierarchy of local and wholesale markets where the classical laws of supply and demand are the dominant forces affecting price and the quantities bought and sold. The process of interregional arbitrage (in the case of regional surpluses or deficits) is less than perfect because the Government of Morocco (GOM) has not been in the habit of providing a classical government service — widely publishing local grain prices. Otherwise, this is an unconcentrated industry with vertical coordination taking place through classical market mechanisms.

The Moroccan orange juice industry presents a sharp contrast. Only one firm, FRUMAT, purchases and processes orange juice, 80 percent of which is destined for export markets. The major variables at work affecting the level of output of this industry are the aggregate level of citrus production in Morocco and conditions in the European orange juice market, which, in turn, are primarily dependent on weather conditions in Florida.[2] Vertical coordination in Morocco is assured largely by the FRUMAT company, with its state-of-the-art juice production equipment and sophisticated international marketing apparatus. FRUMAT's biggest domestic problem is fluctuating supply from domestic growers who prefer to sell their oranges on fresh markets during years of low Moroccan production. Predictably, FRUMAT, in an attempt to reduce this risk, would like to integrate upstream into production, either by owning its own groves, or contracting with growers, or both.

As we shall see in the industry profiles in this assessment (Annex 1), the possibilities for investment and value-creation in Moroccan agribusiness depend, for the most part, on four sets of variables or options:

- The comparative advantage of Morocco's resource base to produce different basic agricultural products or raw materials;
- Technological options for production, processing, and marketing of agricultural-based products;
- Options for vertical coordination of these technologies, which depend, in large measure, on current and future industry structure and the existence of supportive public and private sector environments for business development; and

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[2] Florida orange production levels determine the world concentrate price through their influence on the level of U.S. imports from Brazil. When Florida production is good, U.S. imports from Brazil are down and the surplus Brazilian concentrate lowers the price on world orange juice concentrate markets.

- Options presented by domestic and international markets, particularly as the products in question can be differentiated from a standard product (for example, FRUMAT's "Marrakech Brand" fresh orange juice in colorful aseptic packaging versus orange juice concentrate sold through the cold storage tank farms of Rotterdam on an undifferentiated, competitive per-ton basis).

TYPES OF MOROCCAN AGRIBUSINESS REVIEWED

The scope of work for this assessment asked that the team consider constraints and options for three segments of the agribusiness sector — businesses engaged in:

- Agricultural input supply and distribution;
- Import substitution agroindustries; and
- Agroprocessing industries, including fish, for domestic and export marketing.

The team devoted most of its time to the last category of agribusinesses because there is greater potential for new employment creation and income generation in these areas than in the first two. However, input supply and import substitution have not been neglected in the subsector and industry summaries in Annex I. In this Annex, we cover in some detail the following industries and subsectors: sugar, cereals, oil seeds, and the seed industry. Under the discussion of cereals (which make up 80 percent of seeded land in the country), we discuss other aspects of potential agribusiness development that have to do with the provision of input supply, and product storage, marketing, and transformation services, to traditional field crop production.

Table 1 on the following page lists the subsectors and agribusiness industries examined in this assessment with a notation as to the level of detail in the coverage. However, even those in the more detailed category represent only a summary of major findings organized in a generally consistent manner across industry types.

READING TIPS FOR THOSE THAT FOLLOW

For someone new to Morocco and interested in agribusiness development, there are, besides this report, several other documents that would be useful as an introduction to the country, its agriculture, and its agriculture and agribusiness institutions.

First, the USAID Mission's agricultural sector review (USAID/Morocco, 1986, soon to be updated) provides an excellent overview to Morocco's agriculture and agricultural institutions. *Moroccan Mirages* (Swearingen, 1988) presents an interesting history of agricultural development and policies covering the protectorate period to the 1980s. The coverage of cereals, irrigation, and citrus development are particularly useful to see the continuity in Moroccan agricultural development strategies.

TABLE 1

MOROCCAN AGRIBUSINESS SUBSECTORS AND INDUSTRIES EXAMINED

Subsector & Industry	Treated in Detail	Treated in Summary Notes
1. Field Crops		
Cereals	X	
Oil Seeds	X	
Sugar Crops	X	
Food Legumes		X
2. Seeds	X	
3. Cut Flowers	X	
4. Fruits and Vegetables		
Fresh Fruit	X	
Fresh Vegetables	X	
Processed F & V	X	
Olives	X	
Orange Juice	X	
Dates	X	
Wine Industry	X	
Bananas		X
5. Livestock Subsector		
Dairy	X	
Feed Industry	X	
Leather	X	
Poultry		X
Apiculture		X
Wool Rug Industry		X
6, Fish Subsector	X	
7. Miscellaneous		
Cork		X
Spices		X
Medicinal & Aromatic, Essential Oils		X
Gums & Waxes		X

For an introduction to the Moroccan private sector and changes in key institutions see Keesing, 1989 (particularly the Morocco Annex No. 5) and Ernst and Young, 1989. For a clear presentation of economic background, trade policy, and trade statistics, see GATT, 1989.

Finally, for a useful listing of 200 Moroccan agribusinesses, see CNPE, 1986. The "Section Agro-Industriel" in MARA is a good source of some detailed information on Moroccan agribusiness, such as their 1987 report on a survey of the canning industry (MARA/SAI, 1987), which has also been updated with data to be stored in a microcomputer database. Many other useful references are contained in the bibliography at the end of this report.

CHAPTER TWO

ECONOMIC CONTEXT FOR AGRIBUSINESS PROMOTION IN MOROCCO

In this chapter the stage is set for our more detailed examination in later chapters of opportunities for the promotion of Moroccan agribusiness development. The stage is set by briefly reviewing:

- The main characteristics and recent evolution of Morocco's overall economy;
- The importance of the agricultural sector and agroindustries to the health and future development of the economy; and
- The development of markets for the products of Moroccan agribusiness — specifically the domestic market, and those in the European Economic Community (EEC), the UMA (the Maghreb Arab Union), and elsewhere in the world.

GENERAL ECONOMIC SETTING

Morocco's economy is solidly middle-income (GDP/Capita of over US$ 700 in 1988), driven by two strong domestic primary sectors: agriculture and mining, that made up at least half of national income in 1987. Industrial production — the processing of agricultural and mineral raw materials and the production of textiles and finished garments — is also dominant; these three industry groups make up 65 to 70 percent of the value of all industrial output. The rest is composed primarily of the manufacture or assembly of consumer products, largely for the domestic market. The mining sector revolves around phosphates; Morocco is one of the top three producers in the world and possesses an estimated 75 percent of the world's known reserves. The importance of phosphate production comes both through the export of phosphate ore but also through phosphate-based fertilizer and chemical production.

The country's geographical location near Europe and its history and natural beauty account for two other important sources of national income: Moroccan laborers in Europe, and tourism. About 10 percent of the male labor force has been in Europe in recent years and their remittances are an important source of foreign exchange.

Over the last 20 years Morocco's economy has been affected strongly by a number of exogenous developments, including the sharp rise in oil prices, which began in the mid-1970s; the rapid expansion and subsequent contraction of the international phosphate market in the 1970s and 1980s; a tightening of Morocco's traditional export markets; and persistent droughts severely reducing agricultural output. These, coupled with the fiscal burden engendered by military expenditures incurred since 1975 with the recovery of the Saharan provinces, led to a drastic degradation of the country's fundamental economic accounts.

The Moroccan economy was particularly strong during the early 1970s. A boom in the international phosphate market led to a 14 percent real increase in GDP from 1973 to 1975, at which time

the government budget deficit was at its nadir. However, the surge in value of phosphates exports was short-lived. While accounting for as much as 28 percent of GDP in 1974 at the height of the phosphates boom, their value sank back to 16-18 percent by the late 1970s. Other government costs mounted at the same time that the value of phosphates crashed. Public consumption, which had surged in response to the phosphate boom, saw its base undercut by the late 1970s.

The ensuing economic crisis provoked two responses from the government. The first was one of protectionism. The economic liberalization programs of the early 1970s were severely curtailed in favor of policies promoting domestic industry and import substitution crops over export commodities. Quantitative restrictions and import deposit requirements, in effect from 1965 through 1968-1969, were reintroduced between 1978 and 1981-1982. The second government response to the economic crisis was postponement of adjustment via recourse to international capital markets, which resulted in mounting indebtedness. From 1975 to 1983, Morocco's foreign debt grew from US$ 1.8 billion to US$ 13.9 billion, at which point it represented about 120 percent of GDP and 355 percent of foreign exchange earnings. Debt service totaled 53 percent of receipts from the export of goods and services in 1983, with interest payments alone equivalent to 20 percent of export revenues.

The government responded to these fiscal pressures by undertaking a series of stabilization and structural adjustment programs. A series of IMF stand-by arrangements supported a devaluation of the Dirham, a reduction in average tariff levels, and a cutback in public expenditures, especially through the reduction of subsidies and a freeze in the size of the public administration. The combination of the Fund-supported stabilization program, which reduced imports by nearly 12 percent between 1981 and 1983, and a trade liberalization program supported by the World Bank, which helped to increase exports in value and volume, set Morocco back on the road to international competitiveness. Rescheduling of public debt due in 1983 and 1984 and the securing of new loans from international agencies further eased short-term fiscal pressures.

With immediate financial and economic disequilibria mitigated somewhat by the stabilization program, the government directed its attention to longer-term structural reforms to be undertaken in a number of priority sectors. Industry and agriculture were the first sectors to receive heavy scrutiny. In agriculture, the sector adjustment program, which has been underway since 1985, covers a number of subsectors, including inputs, sugar, oilseeds, livestock, and cereals. Changes in these sectors, plus administrative and legal reforms, have contributed to strengthening the potential for Moroccan exports, as is detailed below.

IMPORTANCE OF AGRICULTURE AND AGRIBUSINESS TO ECONOMY

Agriculture: A Strong Basis for Future Prosperity

Morocco's agricultural sector is the largest in the Maghreb region, in terms of arable and irrigated land, as is shown in Table 2 below. Numerous temperate and semiarid microclimates allow it to produce a wide variety of crop and livestock products. In climate, geography, agricultural potential, and types of irrigated crops that can be produced, it is similar to the state of California in the United States. (One of the big differences is that more than 80 percent of California's crops are produced on irrigated land, while the reverse is true in Morocco.)

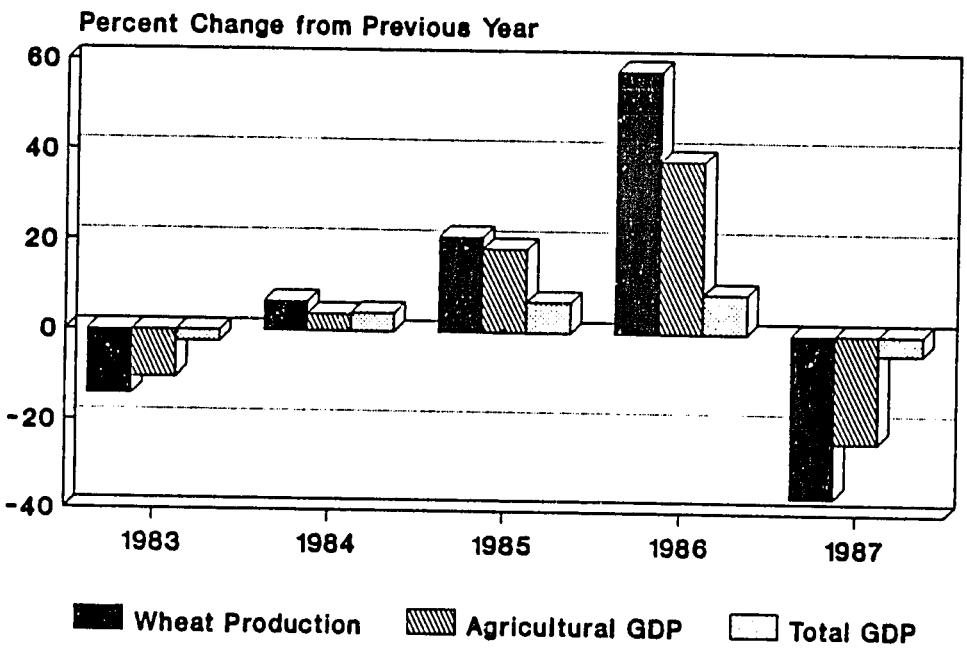
TABLE 2

ARABLE AND IRRIGATED LAND AND POPULATION FOR MOROCCO AND COMPARABLE AREAS

Country or Area	Land (in '000 Hectares) Total	Arable	Irrigated	Population (in Millions)
Morocco	71,085	8,275	900	23
Algeria	238,174	7,000	338	23
Tunisia	16,361	3,398	215	8
Spain	50,478	15,564	3,217	39
California	40,350	11,300	3,230	28

Morocco's agricultural production has two important parts, dryland and irrigated farming. Dryland farming occupies over 80 percent of the arable land and is dominated by the production of cereals (mostly barley, soft wheat, and hard wheat) and legumes. Given the semiarid environment of most producing zones, aggregate production is largely determined by levels and distribution of rainfall. The impact of fluctuating dryland production on Morocco's overall economy is shown in Table 3, which shows that change in annual wheat production is a good predictor of both the value of aggregate agricultural production and national GDP.

TABLE 3
WHEAT OUTPUT, AG AND TOTAL GDP



Source: F. Sands, AID/Rabat

The second part of Moroccan agriculture, modern irrigated production, has expanded rapidly over the past 30 years and is clearly the most dynamic part of the country's agriculture. From the initial larger-scale schemes of the 1930s, irrigated perimeters have seen the introduction of new crops and some of Morocco's greatest agricultural successes: first, the rapid development of citrus (Morocco today is the world's number-two exporter of oranges and tangerines after Spain); then, the large-scale production of sugar beet and cane (which has raised domestic supply from 10 percent of total to approximately 60 percent). These are often felt to represent the beginnings of modern Moroccan agriculture. They have been followed by the widespread development of early vegetables for export (*primeurs*), such as tomatoes, potatoes and onions, which have led to the recent introduction of more exotic vegetables and cut flowers as promising crops for the export market.

The dimensions and responsiveness of the agricultural system are important in judging how Morocco will respond to innovation in agribusiness. A number of generalizations are possible:

- Morocco has substantial agricultural resources and is still a predominantly agricultural country. [1] Its stock of both dryland and irrigated land should allow it substantial leeway to divert land resources to higher value opportunities as those present themselves in the future;

- The relatively low cost of Moroccan agricultural and industrial unskilled or semiskilled labor is clearly a large part of the country's actual and potential comparative advantage in the Mediterranean basin;

- From the days of the protectorate, the central government (as in all countries with strong agricultural sectors) has played a major role in the provision of infrastructure, the reorganization of land holdings, and the provision of a variety of price and protectionist incentives to increase the production of certain crops. In some areas, cropping patterns were dictated by the state. In the development of new agricultural industries (such as citrus, sugar, and oil seeds), the state in the past has played a dominant role in assuring vertical coordination in marketing channels;[2]

- In critical contrast to the agricultural sectors of many less developed economies, Moroccan agriculture has shown its capacity to respond to positive incentives (regardless of how uncomfortable these may have made economists and GOM budget officials feel). This is clearly demonstrated by success in the production of sugar, oil seeds, citrus, and bananas. The key questions are: what signals are to be given to farmers and processors, by whom, and at what cost to the state? and

- Although there are still many opportunities to produce and market bulk products (cereals, legumes, fresh citrus, primeurs, and so on) efficiently, the brightest future markets are those for the production of more specialized, differentiated products that will require even more

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[1] An excellent set of descriptive statistics that confirm the importance of agricultural production and related processing and transformation businesses to the Moroccan economy are contained in Fenton Sands, "Agriculture: Now and Towards the Year 2000," Rabat: USAID/ADO briefing paper, 1990.

[2] For an excellent description of the nature and continuity of important agricultural strategies and policies in Morocco, see Swearingen, 1987.

vertical coordination than the bulkier products of yesterday's agricultural growth. This can most likely only be done by allowing for this organization to be done by larger private firms or by new groupings of associated firms that can respond to rapidly evolving markets. In this new environment, there will still be important tasks for the state, but these will be largely the more classical roles of the provision of infrastructure, regulation of health and safety standards, legal enforcement of contracts, and the facilitation of transfer of productive resources from owner to private owner.

Some trends demand caution, however. One involves patterns of exploitation of promotional programs and government subsidies by early adopters of new technologies for production and processing. This often leads to excess profit going to a smaller number of producers, excess costs for the state, and a real net loss to the economy. Great caution should be taken in the use of extensive subsidies to promote new products or technologies.

Importance of Agribusiness in Overall Trade

Exports are vital to the health of the Moroccan economy and the products of agribusiness are crucial to Moroccan exports. This can be seen in the detailed export statistics in Table 4. There we see that in 1987 Morocco had total exports of approximately US$ 2.8 billion. Of that total, mineral products and chemical products — both largely derived from phosphates — made up about 40 percent,[3] while textile products (carpets, knitted and crocheted articles, and clothing) made up about 21 percent. Textile products have been increasing fairly rapidly in relative importance and take advantage of the country's relative cheap but skilled labor force.

Table 4 indicates that almost a third of the value of Morocco's exports in 1987 were from products that can be grouped under the heading of agribusiness. From the table detail we note that the top five agribusiness export categories, making up a quarter of all Moroccan exports, are the following:

Category of Export	$US Million	Percent of Total
Fish	$267	10
Edible Fruit and Nuts	181	6
Edible Vegetables	113	4
Preparations of Fish, Meat	94	3
Preparations of Fruit, Vegetables	84	3

[3] It should be noted that the percentage of the value of exports made up of phosphates and phosphate products is highly dependent on world prices which, in the 1980s, have been quite low.

TABLE 4

MOROCCAN EXPORTS BY MAJOR AND SELECTED MINOR CATEGORIES, 1987
(millions $US and percentages)

Categories		Millions $US	Percent of Total
Animal Products		$ 267	9.5%
98% = (Fish, crustaceans, and mollusks	$262)		
Vegetable Products		350	12.5
100% = (Bulbs, roots, cut flowers	7		
Edible vegetables	113		
Edible fruits and nuts	181		
Spices	8		
Oleaginous seeds and fruits	25		
Gums and resins	13		
Basket materials	3)		
Prepared Foodstuffs		192	6.9
98% = (Preparations of meat, fish, etc.	94		
Sugars	4		
Preparations of vegetables, fruit	84		
Beverages, spirits, vinegar	6)		
Leathers and Skins		47	1.7
Wood Products, Cork, Baskets		21	0.8
[SUBTOTAL AGRIBUSINESS		$ 877	31.3%]
Mineral Products		520	18.6
Chemical Products		577	20.6
93% = (Inorganic chemicals	429		
Fertilizers	107)		
Textile Products		581	20.8
86% = (Carpets	84		
Knitted and crocheted articles	131		
Apparel and clothing	282)		
All Other Exports		243	8.7
GRAND TOTALS: ALL EXPORTS		$2,798	100.0%

Source: GATT, 1989, Table V.3, pp. 53-56.

Many of the detailed agribusiness categories in Table 4 will be explored in more depth in the industry profiles contained in Annex 1 to this report.

AGRICULTURAL SECTOR REFORM: PAVING THE WAY FOR AGRIBUSINESS GROWTH

A final important dimension to Moroccan agriculture has been the sectoral reform that has been undertaken since the mid-1980s. It is beginning to bear fruit and should help open up substantial new opportunities for agribusiness development in the 1990s. The reform program has been spearheaded by two world Bank agricultural sector adjustment loans (ASAL I and II), which have been supported by complementary actions by other international and bilateral donors. These GOM programs have affected Moroccan agribusiness in four major areas:

Cereals[4]

The objective in this subsector was to reduce substantially GOM direct control over prices and marketing of the main staple cereals. This was to lead to greater efficiency in cereals marketing and to lower average marketing margins. It was anticipated that there would be substantial agribusiness opportunities developing in the supply of inputs and the storage, marketing, and processing of production, once decontrol was fully implemented. To date, the following has been accomplished:

- Liberalization of prices and domestic marketing for hard wheat, barley, and maize (leaving only bread wheat with substantial controls);
- Linking of the controlled price for bread wheat to international cost of production through formula and limiting tariff protection to 25 percent over the world price;
- Production of an action plan to deregulate domestic cereals marketing, except for 1.2 million tons of bread wheat, which is milled and the subsidized flour distributed by the Ministry of Interior to Morocco's neediest consumer groups; and
- Allowance for higher extraction rates and liberalization of other aspects of wheat milling.

Oils and Sugar

The development of these two subsectors has been the product of heavy state involvement and large subsidies. Both have been quite successful in raising the levels of domestic self-sufficiency, but the policy questions are focused on efficiency and cost. The reforms are designed to reduce the level of subsidies, loosen state control of prices, and begin the process of privatization of key marketing and processing firms. To date the following has been accomplished:

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[4] See the industry profiles in Annex 1 for more details on the cereals, oils, and sugar subsectors.

- Agreement on an operational deregulation plan for edible oils, available since December 1988;

- For sugar, limits on increases in producer prices (inflation less 1 percent);

- Freezing sugar incentive payments; and

- An action plan to deregulate the sugar industry is in place; privatization of many processing companies is planned.

Input Supply

Supply of inputs to both dryland and irrigated agriculture has been another area of heavy state involvement and subsidy. As that involvement diminishes, there are a variety of opportunities for private agribusiness development, particularly in the areas of seeds and fertilizer. Accomplishments to date have involved:

- Charging higher irrigation water rates to get closer to full cost recovery;

- Closing 40 percent of state fertilizer outlets, increasing reference prices, and consideration of privatization of FERTIMA; and

- Consideration of privatization of SONACOS and additional liberalization of the seed industry.

State Trading and Trade Regulation

Also on the ASAL I and II agendas have been important measures designed to liberalize Moroccan trade. The following changes, coupled with modifications of the "Moroccanization law" and other measures to ease investment constraints, are probably the most important for the future of export-oriented agribusiness:

- Elimination of the monopoly of OCE (Office de Commercialisation et d'Exportation) on the export of most horticultural products (became effective in 1987-1988);

- Elimination of import licensing requirements for agricultural inputs and the surprise elimination of the "B List" of dutiable inputs as of the end of July 1990; and

- Development of an official program to liberalize trade in all agricultural products over the 1989-1992 period.

MARKET PROSPECTS FOR MOROCCAN AGRIBUSINESS PRODUCTS

There are four major markets for output of Moroccan agribusiness that will be reviewed here:

- The domestic market;
- The EEC market and its potential expansion to incorporate all or portions of Eastern Europe;
- The UMA or Maghrebian market; and
- Other international markets, including that of the United States.

As a first cut, it is useful to group the agribusiness product categories examined by this report (and the more important reported on in detail in Annex 1) into those whose growth will be primarily for export marketS, for the domestic market, or for some combination of the two. This rough grouping is contained in Table 5 below.

TABLE 5

MAIN TARGET MARKETS TO ABSORB GROWING PRODUCTION FROM MOROCCAN AGRIBUSINESS

Primarily Export	Combination of Both	Primarily Domestic
Cut Flowers	Food Legumes	Cereals
Citrus Fruit	Seeds (as inputs)	Oil Seeds
Orange Juice	Olives	Sugar
"Fancy" Processed Fruit and Vegetables	Fresh Temperate Fruit	Bananas
Wine	Basic Processed Fruit and Vegetables	Dairy
Fish	Small Ruminants	Beef
Cork	Leather	Poultry
Medicinal and Aromatic Plants	Wool Rugs	Apiculture
Gums and Waxes	Spices	Animal Feeds
Essential Oils		
Algae/Seaweed		

Uncertainties about Domestic Demand

There are uncertainties about the potential Moroccan market for agribusiness products for two reasons: one, poor data on actual demand in forms useable to companies considering the production or marketing of specific products and, two, uncertainties about the direction of shifts in Moroccan consumer

preferences and to what extent existing estimates of income elasticities of demand would hold up today for specific retail products.

In 1985, a GOM Food Strategy Group (reference is made to this study in USAID, 1986, but it seems never to have been formally released by the GOM) assessed the food situation and prepared supply and demand projections for year 2000. Projections were based mainly on past trends and did not take into account possible changes in cropping patterns that might occur during the period as a result of policy changes being implemented by the government. This study showed Moroccan self-sufficiency ratios slipping for almost all major food items except eggs and sugar.

Some of these projections have already proven wrong by not accounting for significant policy changes and positive responses by farmers and other operators. For example, a favorable oil seed price policy has led to a significant increase in sunflower production and a significant increase in self-sufficiency, which will attain about 50 percent in 1990. Good rainfall and continued favorable support prices for bread wheat caused a sharp rise in aggregate domestic cereals production over the past three years.

Recent econometric analysis based on data collected during the 1985 household survey (MAE/Direction de Prix/1990) has concluded that income elasticities are significantly positive and price elasticities are significantly negative for main agricultural and food products, as shown in Table 6 below. In layman's terms, this means that for every 1-percent increase in income (or prices), the elasticity provides the proportion of that 1 percent in terms of potential increased (decreased if negative) purchase of that item.

TABLE 6

INCOME AND PRICE ELASTICITIES FOR SELECTED COMMODITIES

Product	Income elasticity	Price elasticity
Hard wheat	0.54	-1.00
Soft wheat	0.47	-1.53
Soft wheat flour	0.18	-0.17
Bread (s.w.)	0.49	0.26
Olive oil	0.83	-0.16
Table oil	0.47	-0.93
Butter	0.66	-0.81
Beef	0.79	-1.41
Mutton	0.95	-0.99
Poultry	0.64	-0.53
Sugar	0.51	-0.51
Milk	0.95	(-0.75)

Source: (MAE/Direction de Prix, 1990)

It is clear that Morocco's growing population, **if fully employed**, will account for substantial increases in domestic demand for many basic agribusiness products. This is also true of productivity gains that translate into price reductions. Population is increasing at the estimated rate of 2.5 percent per year. There are signs that the birth rate may be decreasing with urbanization. The Ministry of Planning has forecast growth of GDP at an annual rate of 4-5 percent per year. This seems realistic, but depends very much on rainfall-dependent agricultural production; thus growth could exceed this figure with favorable climatic conditions.

The domestic market will offer important opportunities that may divert some producers from export-oriented production. This implies that exports to sophisticated markets such as EEC and North America will develop only if strong vertical coordination or outright integration is insured. Foreign partners, who are attempting to secure reliable supply, may be the best insurance against diversion of production to the local market at certain key periods, if the export strategy for the agricultural sector is maintained.

The Top Market: The European Economic Community

At little more than 10 kilometers from Morocco's northern tip, the newly enlarged and rapidly evolving EEC is Morocco's most important trade partner. Over the 1984-1988 period, about 56 percent of Morocco's exports were directed to the EEC and 46 percent of its imports originated there. Trade is quite concentrated within the EEC, particularly with France. The top four individual trade partners in the EEC are shown below:

Trade Partner	Percent Moroccan Exports	Percent Moroccan Imports
France	26%	22%
Spain	7	8
West Germany	6	6
Italy	6	5
Total Top 4	45%	41

Trade Agreements

With progress in European economic integration, trade agreements with the EEC are becoming more important than the older bilateral trade agreements with France. The 1986 Cooperation Agreement, which initiated the so-called EEC Mediterranean Policy, covers trade and aid and was signed for an indeterminate period. Trade concessions are nonreciprocal. Moroccan industrial products have free access to the EEC except for agricultural (raw or processed) products, which are covered by the Common Agricultural Policy (CAP), and textile products for which so-called "voluntary quotas" were negotiated.

Concerning **agricultural products**, the 1986 agreement includes preferential access to the community for most, but not all, Moroccan products with export potential. Provisions are made, however, which limit this preferential access. These include quotas for annual imports, export periods or "windows," the necessity to respect marketing regulations, and safeguard clauses to protect European producers. Tariff concessions range from 20 to 100 percent and cover most of Moroccan agricultural exports:

- Products that are not produced by the community, such as dates, can enter free of duty;

- Fruits and vegetables, such as citrus and tomatoes, which are also produced by the community, are subject to a number of restrictions. Flows of traditional Moroccan exports can enter free of duty provided they do not exceed quantitative limits. Products that enter in direct competition with EEC products and are sold in season are subject to the fruits and vegetables **reference price system**, by which a countervailing duty is imposed, equal to the difference between the entry price and the reference price (supposed to reflect "typical" EEC production and distribution costs).

- Preferential treatment is also granted to fresh vegetables when they are sold on community markets off-season.

- The reference price system applies also to table wines (with an overall quota of 200,000 hectoliters) and duty-free entry granted for quality wines within a limit of 50,000 hl.

Independently of the agreement with EEC, Morocco benefits from a specific trade agreement with France that gives duty free access to the French market for specific products such as potatoes, fruits, vegetables, and wines within quotas. As will be discussed below, some of these bilateral agreements will disappear with the ascent of Single Market standardization.

Impact of EEC Inclusion of Spain and Portugal

The entry of Greece and, more recently, of Spain and Portugal has weakened Morocco's position in trade negotiations with the EEC. With Spain and Portugal, EEC self-sufficiency has increased considerably for mediterranean crops: self-sufficiency rose from 88 to 109 percent for olive oil, from 51 to 98 percent for citrus, from 94 to 99 percent for tomatoes, and from 98 to 104 for wines. Imports from third countries will, hence, go against the principle of "Community Preference" underlying the CAP.

The full impact of EEC enlargement has not materialized yet, as a 10-year transition period was included as part of the entry agreement with Spain and Portugal. During this period, EEC duties on Spanish and Portuguese exports are progressively reduced. Following the EEC enlargement, Morocco obtained several trade concessions in the 1988 additional trade agreement:

- For selected Moroccan agricultural exports, such as fresh and processed fruits and vegetables, EEC tariffs are removed progressively under the same schedule as that for Spanish and Portuguese exports. When different tariffs levels apply to imports from Spain and Portugal, the higher one is applied to imports from Morocco. When the tariff on imports from Morocco is already lower, it is reduced only when the tariff on imports from Spain or

Portugal has decreased to the Moroccan level. These reductions are limited to certain quantities of agricultural products:

Potatoes	39,000	tons/year
Onions and Garlic	4,200	
Tomatoes	86,000	(w/ a 15,000 t quota in April)
Oranges	265,000	
Small Citrus	110,000	
Green Peas and Beans	8,700	
Orange Juice	15,000	
Flowers	300	
Kiwis	100.	

- Tariffs on ordinary wine are removed under the same conditions as above within the limit of 85,000 hl. Quality wines (*vins d'appellation d'origine*) can enter the EEC free of duty within a 50,000 hl limit.

- Tariffs on canned tuna fish were reduced by 60 percent and canned sardines can be imported into the EEC free of duty within a 17,500 ton limit.

In sum, Moroccan exports enjoy the same tariff conditions as the least favored of Spain or Portugal, although this applies only to selected products and within restricted periods when no or little European production is on the market.

Conclusions on Export Potential to the EEC

As a consequence of the above trade agreements with the EEC, export opportunities for Morocco can be summarized by crop and "window" as follows:

- **Off-season vegetables**: potatoes (January 1 to March 31), fresh peas (October 1 to April 30), beans (November 1 to April 30), onion and garlic (February 15 to May 15), artichokes (October 1 to December 31), eggplant (December 1 to April 30), and squash (December 1 to March 15);

- Olives, capers, and avocados;

- Oranges (particularly late varieties), mandarins and clementines;

- **Off-season fresh fruit:** table grapes (November 15 to April 30), strawberries (November 1 to March 31), melons (November 1 to May 31), and watermelons (April 1 to June 15);

- Canned fish, including tuna;

- Dates; and

- Oranges juices: concentrate, fresh, and mixes.

In many cases, quotas imposed by the EEC are not attained and are not the major constraint to the development of Moroccan exports.

Future Changes in Europe

Approaching the year 2000, the EEC faces two major challenges:

- Reinforcing the community especially in relation to the free movement of goods, services, and people between member countries (the so-called Single Market), and monetary cooperation (the Single Currency); and

- Assisting the Eastern European countries during their transition to fuller use of market economies. East Germany is de facto part of EEC and certainly will be de jure by December 1990.

The Single Market (1992) will have little direct impact on Morocco's trade position with the EEC. The main consequences will be in 1993 when there will be:

- A tighter enforcement of grades and standards, with harmonization "from the top" (the most constraining standards will likely be extended to all member countries) as goods will be allowed to move freely within the EEC;

- A partial loss of French bilateral quotas for some off-season fruits and vegetables. The recent Renovated Mediterranean Policy provides a framework which should guarantee that these changes do not significantly affect Moroccan exports, as maintenance of traditional export flows by mediterranean countries to Europe is considered as a legitimate objective for both parties.

Despite or because of the new developments in Eastern Europe, the EEC Council decided in November 1989 to implement a "Renovated Mediterranean Policy" whose aims are to:

- Contribute significantly to the development of Mediterranean Third Countries (MTC);

- Support the economic and political liberalization occurring in these MTC;

- Contribute to the conservation of the environment around the Mediterranean sea; and

- Maintain "balance" between the EEC and major groups of neighboring countries: the EFTA, Eastern Europe, and the MTC.

The necessity for the EEC to maintain a politically stable Mediterranean rim is certainly the decisive factor which resulted in this Renovated Mediterranean Policy. A key question is how likely is this policy to lead to significant real trade concessions in favor of Maghreb countries, and Morocco in particular.

Undoubtedly, business opportunities for European firms are far superior, in the short term, in Eastern Europe, particularly in East Germany. Most European firms currently are shopping for

enterprises in East Germany, Czechoslovakia, Hungary, and to a lesser extent the other East Block countries. Capital may not be, despite what is said, the main limiting factor. In fact European firms may be more limited by their capacity to explore all strategic investment opportunities and correctly manage recent acquisitions. Western European economies have been restructuring at a very fast pace in recent years and this acquisition and merger activity has already been occupying a substantial portion of all top management capacity.

Eastern Europe, especially East Germany receives top priority and Mediterranean projects come second, but higher on the scale than sub-Saharan African ventures. This has resulted in a general impression by the *Maghreb* countries of a western "lack of interest" in direct investment and economic cooperation. The above considerations, however, appear to offer strong arguments for increased support for the Renovated Mediterranean Policy by Western European governments. Public financial transfers to Mediterranean countries should increase significantly for basin countries judged to be most worthy. Morocco, whose efforts at liberalizing its economy are very positively viewed and which has always expressed its eagerness to collaborate with the EEC, is in a good position to benefit from these policies.

It should be remembered that Morocco has applied to join the EEC; this candidacy has not been formally reviewed by the EEC but it shows Morocco's determination to link its economy more closely to Europe. Although democratization is far from complete in Morocco, some limited multiparty activity is tolerated, which makes the present regime politically "acceptable" in European eyes. In summary then, Morocco, along with Tunisia, is very likely to be one of the main beneficiaries of the Renovated Mediterranean Policy.

Southern EEC countries such as Spain, France and Italy, which have favorable political and trade positions in MTC's and which are concerned, in the light of political developments in Eastern Europe, with a shift in the EEC center of gravity towards Northern and Eastern Europe, will be the main supporters of aggressive use of the Renovated Mediterranean Policy. It should also be noted that the northern Mediterranean rim (again Spain, France, and Italy) is the fastest growing region in Europe, especially in industries and services related to new technologies.

The Arab Maghreb Union (UMA) Market

Present Situation

Trade between Morocco and Arab Maghreb Union countries (Algeria, Libya, Mauritania, Morocco, and Tunisia) is relatively marginal. Over the 1984-1988 period, exports to UMA countries accounted for only 3 percent of Moroccan exports, and imports from the UMA only 1 percent of the total. Trade within the UMA is fully duty-free. In the case of Tunisia and Algeria, the fiscal levy is also waived. Sectoral negotiations to solve problems with "sensitive products" have been initiated among UMA members

In 1987, Morocco and Tunisia signed a bilateral agreement by which all "originating" goods can be imported free of import duties except for local production taxes. In 1988, Morocco and Algeria established a program to improve economic relations that includes formulae for parallel trade exchanges within the framework of a financial volume of US$ 100 million.

Outlook

Trade between Morocco and UMA countries could increase substantially, especially if Algeria could solve the problem of its currency overvaluation and reduce the portion of its oil revenues devoted to serving exterior debt. Morocco has strong potential trade complementarities with Algeria:

- Algeria is a major oil and gas producer and could become Morocco's main supplier of energy. Moroccan petroleum imports averaged DH 7.3 billion per year over the 1984-1988 period;

- Algeria has massively invested in industry over the last 20 years. Modern plants are being used significantly below their capacity because the domestic market for industrial goods was vastly overestimated. Morocco, in some cases, could find an adequate supply of industrial components in Algeria (for example, electric motors and iron products); and

- Algeria is a large importer of agricultural products. It is estimated that about 60 percent of overall food consumption comes from imports. Algeria imports large quantities of products for which Morocco has no excess production to export: cereals, milk powder, oil and oil-seeds, sugar, and meat. However, fresh products — some of which Morocco could export (fruits and vegetables, eggs and dairy products) — are in very short supply in Algeria, and prices are extremely high because of limited imports. Demand is thus severely restricted by unusually high prices. Algerian Agriculture has been devastated by 30 years of collectivization and anti-private-sector agricultural policies. Hence, despite recent policy changes, agricultural production will not recover in the near future. Because of high population growth, food deficits will increase for all products, including basic staples, and others that have become luxury goods (oranges, for example).

The Algerian market offers nearly unlimited export potential for Morocco if bilateral political relations continue toward normalization and if Algerian monetary policy is liberalized. Overvaluation of the Algerian Dinar and the low average levels of disposable consumer income are the major obstacles to the development of expanded trade between the two countries.

If the opening of the Algerian market provides very favorable prospects to Moroccan agricultural and food product exports, it also could have negative effects. Presently, the Algerian market is a very undemanding one: the consumer has been used to poor quality products, especially in fresh markets. Hence, exporting to Algeria would be less demanding in terms of quality and sanitary standards, packaging, technology, and seasonal timing than exporting to the North American or European markets. The opening of the Algerian market could result in the short run in reduced interest in the European market and slow the present trend of improvement in Moroccan technology and marketing practices to meet the demands of the European market, which may be more important to Morocco in the longer run.

Other International Markets

Other Regional Trade Agreements

Morocco has preferential trade agreements with the countries of the Arab League that result in partially or totally reduced custom duties. Bilateral trade agreements have been maintained with other African countries such Senegal, Côte d'Ivoire, Niger, and Guinea. Trade agreements are also maintained with the Soviet Union (involving the export of phosphates by Morocco in exchange for petroleum products) and other Eastern European countries.

These trade agreements have not resulted in the creation and development of continuous and diversified trade flows as is the case with EEC trade. Sizable trade is limited to a few major products, such as phosphates and petroleum products, and does not include agribusiness products.

Further Penetration of North American Markets

There is great interest in Morocco in expanding exports to North American markets, particularly to the United States because of close political and historical ties between the two countries. It has been easier for Morocco to penetrate the Canadian market than that in the United States, due primarily to less stringent inspection standards and less organized resistance from powerful domestic lobbies (such as the citrus industry in the United States).

Penetration of the U.S. market has been hampered by a number of factors, including:

- Distance, when compared to European markets;
- Language differences and lack of shared cultural ties;
- Tight U.S. phytosanitary regulations;
- Size and complexity of the U.S. market; and
- Consumer ignorance of Morocco and its products. (An example was seen in the olive oil industry where substantial quantities of Moroccan olive oil were being shipped to the United States via Italy because of the perception that olive oil comes from Italy and to a lesser degree from Spain and Greece.)

It will not be easy for the MAP project to have any great impact on changing most of these factors, but the proposed project, through its promotional components, can contribute to making a start at greater exposure for Moroccan products. In addition, U.S. companies may have an easier time getting Moroccan agricultural production to U.S. consumers through the use of well-recognized U.S. labels.

CHAPTER THREE

THE CLIMATE FOR AGRIBUSINESS

EVOLUTION OF PUBLIC POLICY TOWARD PRIVATE SECTOR AGRIBUSINESS

The Moroccan climate for private investment in general, and for agribusiness in particular, has undergone substantial change in recent years. Many of these changes occurred as a result of liberalization measures undertaken at the instigation of the International Monetary Fund (IMF) and the World Bank, beginning in 1983/1984. The agribusiness sector, which is heavily export-oriented, benefitted directly from liberalization measures aimed at improving foreign trade.

Among the early reforms affecting the agribusiness sector were the following:

- Reduced protection for domestic industries through reduction of import tariffs on competing goods and simplification of import procedures;
- Currency devaluation;
- Decontrol of domestic prices on many final and intermediate goods;
- Tax reform aimed at encouraging investment in export industries;
- A series of investment codes for various sectors that provide for tax advantages to foreign investors in the form of exoneration of taxes and import duties; and
- Special credit facilities available to exporters.

According to a recent study (World Bank, 1989), the rate of private investment in Morocco declined in the 1980s, after correcting for inflation. The Moroccan cost of capital was relatively high due to government borrowing to finance a very large public sector debt. This debt burden gave rise to uncertainty about future government policies and discouraged investment. Credit ceilings imposed on banks led to credit rationing. Finally, high interest rates (which were still as high as 12 percent on time deposits and 14 percent on government bonds in 1990) encouraged savings rather than investment.

As a result of this situation, investment in the 1980s tended to be oriented toward the domestic market, where external factors would have less impact, and into construction rather than manufacturing, where tax benefits were available and the pay-out appeared to be faster. However, by 1987, the picture had begun to change as the cumulative effects of structural adjustment measures increased investor confidence in the economy, and government liberalization actions, together with favorable rainfall and improved prices for Moroccan commodities, led to increased private investment in agribusiness. The termination of the export marketing monopoly of the OCE in fruit, vegetables, and wine had a positive effect.

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THE CURRENT BUSINESS CLIMATE

As of July 1990, a general mood of optimism prevails in the Moroccan business community. There appear to be very few major constraints to accelerated growth in agribusiness. The important production factors — land, labor, and capital — are available in abundance. The government has removed virtually all restrictive regulations affecting investment in agribusiness. The Chamber of Commerce and Industry of Casablanca reports that there is a land boom in the Marrakech area; businessmen, government officials, and real estate speculators are buying agricultural land at a rapid rate. Those who follow developments in the private sector, such as the International Executive Service Corps in Casablanca, cite a number of new food processing plants being planned or constructed, several with foreign capital. Transport, a remaining problem area, is discussed in Chapter Four of this report.

Moroccan agribusiness needs new investment to realize its considerable potential. Foreign capital can play a major role here, since it can serve as a vehicle for helping to provide the two elements Morocco needs most — new technology and new foreign markets. In this connection, repeal of the implementing legislation required by the 1973 "Moroccanization" law in January 1990 has created a much more favorable investment climate for foreign companies.[1]

Reliable figures on the level of investment in agribusiness in Morocco are hard to come by. The International Finance Corporation (IFC) office in Casablanca estimates that in 1989 actual new investment in all sectors of the Moroccan economy in 1989 reached some 3 billion DH (nominal investment 6 billion DH), of which approximately one-fifth or 600 million DH was in agribusiness, including fish. Ministry of Commerce and Industry figures show "realized investment" of 1.1 billion DH in 1988, almost double the nominal level of new investment in 1984 (MCI, 1989). Foreign capital invested in private agribusiness ventures is 10 percent of total (MCI, 1989), but given the degree of interest in Morocco being shown by European and American firms, this percentage is expected to increase dramatically in the next few years.

GOVERNMENT REGULATION AND CONTROL

A series of reforms has resulted in an extremely liberal climate for foreign investment. The following measures are relevant to the agribusiness sector:

Controls on foreign ownership: With the repeal of measures implementing the 1973 "Moroccanization" law, there are no controls on foreign ownership of enterprises in Morocco. Foreigners may hold up to 100 percent of the value of plant and equipment, but may not own land. Land may, however, be leased for terms of up to 30 years. (The latter policy is under review and may be further liberalized.)

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[1] The law requiring 51 percent or greater Moroccan ownership is still on the books, but it was effectively disabled through removal of the administrative decrees specifying to which sectors of the economy it applied.

Foreign exchange controls: The role of the Office de Change in regulating foreign exchange transactions has been abolished. Commercial banks now handle all such matters. A foreign investor does not need prior authorization to bring in foreign exchange. Invested capital may also be repatriated without restrictions, as may dividends. Funds to repay hard-currency loans from abroad may also be transferred up to the value of the equity investment (including interest to a maximum of 17.5 percent). At dissolution of an enterprise, the original invested capital may be repatriated, along with a bonus amount for goodwill value.

Formalities to establish a business: Formerly these took as long as six months. As a result of a Royal letter in 1990, a new procedure requires the government offices involved to respond within 60 days and, if not, the application is considered approved. In practice, most applications are being processed in six to 10 weeks, including time to correct deficiencies in submissions.

Tax regime: Corporate income taxes were reduced from 50 to 44 percent in 1989. In addition, there is a value-added tax (TVA) of 19 percent applied to agribusinesses. There are no taxes on profits from agricultural operations. There are some inequities in the application of the TVA, which have hurt certain industries (such as the feed industry, since on-farm feed manufacturing is not subject to the TVA), but these are well known to the GOM and could be easily changed.

Import duties on industrial inputs: Many items have been transferred in recent years from the "B List" (dutiable) to the "A list" (duty-free) of the "Programme Générale d'Importations." As of July 1990, the B list has been eliminated entirely.

Price controls: Administered prices remain on only a small number of staple products — those produced by state enterprises or under state pricing and marketing supervision, such as sugar, soft wheat flour and bread, and edible oils.

FACILITATING SERVICES AND INSTITUTIONS

Morocco offers a wide variety of services to facilitate investment in agribusiness by local and foreign investors, although improvements are needed in some areas. In the balance of this chapter we briefly review those services involved in:

- Investment promotion;
- Export promotion;
- Export insurance;
- Other services for exporters;
- Financial sector services;
- Professional associations and Chambers; and
- Educational and research institutions.

Investment Promotion

Office de Développement Industriel (ODI)

This is a holding company for state-owned enterprises (SOEs), many of which are being privatized. ODI also takes start-up venture capital positions in new firms. ODI's activities in investment promotion include providing information on potential investors, feasibility and marketing studies, publications, round tables, and portion of contacts between foreign and Moroccan investors. ODI also prepares investment projects for small and medium-size enterprises (SMEs), formerly free of charge but now on a fee basis. Some 30 studies have been prepared, directed at encouraging investment in selected industries; these are available for a fee.

In venture capital, ODI takes equity positions in selected firms with the objective of selling these positions for a profit. It has invested in at least 30 firms, including 12 in agribusiness. ODI invests where private partners have a majority share of the capital and disinvests by selling to the private partner. ODI can enter into joint ventures with foreign partners without any restrictions. It also operates an office in Paris for the promotion of joint ventures with European firms.

In agribusiness, ODI has recently conducted the following preinvestment studies (available for sale):

- Dairy sector analysis and investment opportunities in powder and UHT production units;
- A study of options in olive oil processing for multiple clients;
- A pesticide study;
- Feasibility of a yeast production unit;
- Analysis of horticultural crops produced in plastic row tunnels; and
- Poultry investment possibilities.

ODI has invested in 12 agribusiness firms and sold its interests in five of them. Three of those projects were in the dairy area. ODI participation helped to start the Laiterie de Doukhala (share sold to ONA's Centrale Laitière), the Laiterie Halib Souss, and SLCM in Fez (in both cases, shares were sold to the original private partners). ODI has identified good opportunities for future investment in:

- Medium-sized olive oil pressing plants;
- Cold storage operations;
- Greenhouse horticultural crops, particularly fresh vegetables and cut flowers for export;
- Confectionary and chocolate processing; and
- Poultry businesses.

Ministry of Commerce and Industry (MCI)

MCI is active mainly in the creation of industrial parks, but also operates overseas offices to promote Moroccan exports. It has many special credit lines with funds provided from multilateral and bilateral sources. Until 1987, it had a monopoly on all long-term and medium-term investment lending. (See discussion on financial resources.)

Banque Nationale de Développement Economique (BNDE)

With French government aid, BNDE finances on a loan basis up to 80 percent of the cost of selected feasibility studies by foreign investors. (See below for more detail on the BNDE.)

International Executive Service Corps (IESC)

The IESC's Trade and Investment Services (TIS) program, run out of its Casablanca office, is engaged mainly in locating buyers for Moroccan products in the United States. In a new initiative beginning in September 1990, the IESC will attempt to match Moroccan and American investors, with initial emphasis on agribusiness.

The various Chambers of Commerce and Agriculture also have a role in investment promotion, particularly the one in Casablanca. This is discussed below.

Export Promotion

Centre Marocain de Promotion des Exportations (CMPE)

This government agency has primary responsibility for export promotion. Its mandate includes organizing commercial missions abroad, bringing exporters and importers together, and preparing market studies. It also publishes a monthly bulletin and has available a detailed "Guide for Moroccan Exporters" (CMPE, 1988) intended to help new exporters get started. The International Trade Center, in a recent study, proposed to reorganize the CMPE, turn it into an autonomous government agency with private sector representation on its board, and expand its services.

A draft World Bank report by Donald Keesing (1989) had some strong reservations about the utility of proposed changes to the CMPE. Keesing felt that Moroccan exporters would be better served by fostering the development of specialized service firms in Morocco and facilitating access to service suppliers abroad. Further study of current CMPE operations would be needed to evaluate more fully the potential of this organization to play a cost-effective role in the expansion of Moroccan agribusiness exports and determine the way that the MAP project might work with it.

Etablissement Autonome de Contrôle et de Coordination d'Exportations (EACCE)

Until 1986-1987, OCE had two major functions: monopoly exporting of Moroccan horticultural products (vegetables, fruit, and wine) and assuring the development and implementation of grades and standards and related activities required for export promotion and coordination in vertical marketing channels. When the OCE monopoly ended, the second set of functions were moved to EACCE, which was reorganized and now operates much more like the original Office Chérifien established in 1932 by colonial growers, and which operated until 1965. EACCE operates on funds generated by a 0.6 percent tax on exports of the products for which it sets standards (in other words, all agricultural exports except cut flowers. Moves are under way to put flowers under its jurisdiction).

EACCE inspections take place at ports, or in packing houses and canning plants for products which leave the country by truck. It is also responsible for setting all sanitary and product quality standards and advising producers on how to meet standards in foreign markets. These powers extend to establishment of product marketing strategies (for example, industry-wide market strategies for the use of market windows in the European Economic Community [EEC]) that are imposed on growers. These substantial coordination powers are reinforced through EACCE power to license companies that engage in exports.

When the OCE export monopoly ended, there was a several-year period when the levels of some Moroccan horticultural exports dipped because private companies had not set up replacement exporting arrangements. These were quickly established, particularly in the more concentrated and better organized industries, such as citrus. This has still not happened to the same degree in other industries such as fresh and processed vegetables, and those industry groups are still largely dependent on EACCE for much of their information services and industry coordination. EACCE is a very important organization on the Moroccan agribusiness "institutional landscape" and its relationship to proposed MAP project activities needs careful exploration during project design.

Banque Commerciale du Maroc (BCM)

BCM is one of the more active of the commercial banks in export promotion activity. It operates a "Club Invest/Export" (formerly Club Export), which Moroccan businesses may join for an annual fee of 2240 DH. For this fee, they receive information on regulations in foreign markets, Dunn and Bradstreet reports on specific firms, a newsletter on trade developments abroad, and a welcome service for foreign businessmen that puts them in contact with Moroccans and with local financial and consulting services.

Export Insurance

Export insurance, formerly a deficient area in Morocco, now seems to be taken care of by the Société Marocaine d'Assurance à l'Exportation (SMAEX). With USAID help, this agency — owned half by the government and half by commercial banks — now provides insurance for Moroccan exporters against political and catastrophic risk, as well as for nonconvertability of currency. SMAEX actively promotes its services through commercial banks and direct contact with exporters.

Other Supporting Services to Exporters

In the development of modern, export-oriented businesses, other specialized enterprises have emerged in developed economies to provide tailored support services. These include the following:

- Accounting, audit, tax advice, and management consulting;
- Market information and research services;
- Consulting on export market development and marketing techniques;
- Product inspection and quality control certification; and
- Product testing.

Keesing (1989) finds Morocco lacking in most of these categories, particularly the latter three. Pointing out that a recent World Bank study found that public sector export promotion and marketing assistance is rarely effective in increasing exports, he proposes to foster development of competing service suppliers in the private sector with the help of foreign consultants. He also notes that Moroccan exporters are not accustomed to using such services and that suppliers will have to actively promote their services.

This team concurs with these observations and stresses that the provision of these specific information services will be vital to the broader development of Moroccan agribusiness. In some industries, these services will be provided through joint venture arrangements between foreign and Moroccan companies. For other industries (such as fresh and processed vegetables and fruit) the EACCE is providing some of these services. A major question to be addressed by MAP — industry by industry — is how these services, vital to modern management, marketing, and vertical coordination, can be fostered.

Keesing recommends that the World Bank or another international agency establish two grant funds to subsidize the use of support services by exporters. The two competing funds would provide matching grants to exporters to encourage them to seek help in such areas as systems engineering quality control, production scheduling, management training, and market research and development. Foreign travel by exporters as a means of training could also be included. Exporters seeking such assistance would have to have demonstrated an export capability and have a coherent plan to develop a market for a new or improved product. These recommendations deserve close study during the MAP design phase.

Financial Sector Services

Availability of Credit from Private and Public Institutions

Commercial Banks: The commercial banking sector has been in the process of liberalization since 1988, as credit ceilings and reserve requirements imposed by the central bank have been progressively relaxed. The government is committed to instituting a system of indirect controls based on interest rates and monetary reserves, possibly by the end of 1990. Rediscounting facilities will also be improved.

These changes eventually should benefit the private agribusiness sector, particularly the SMEs that often had difficulty qualifying for loans due to high collateral requirements. In the past, commercial bank resources were strained by substantial government borrowing. This factor, together with the direct controls mentioned above, have led banks to ration credit to larger, more credit-worthy borrowers and to demand collateral at the rate of 150 percent or more.

Until 1987, all medium- and long-term business investment lending came from the BNDE; private banks are only now reestablishing their capability evaluate and administer longer-term lending. Banks also cite other problems as well as those mentioned above as reasons for restrictive lending practices, such as accounting practices that do not produce reliable company financial statements, and general economic uncertainty. It appears that some of these constraints are also on the way to resolution.

Banque National de Développement Economique: Created in 1960, the BNDE is a state-owned development bank that has been a major financier of larger-scale agroindustrial projects, particularly when it had a monopoly on the provision of medium- and long-term credit funds (until 1988). There is evidence that BNDE has lost substantial market share in longer-term lending since 1988. The Caisse Nationale de Crédit Agricole (CNCA) and the commercial banks have been aggressive competitors in this market. BNDE indicates, however, that its long-term lending has continued to grow (it has gone from 1.4 million DH in 1988, to 1.8 million in 1989, and is estimated to reach 2 million in 1990). Following GOM policy leads, substantial emphasis was put on the funding of input-substitution industries, particularly sugar mills. The agroindustrial portfolio at BNDE is second only to its portfolio in textiles and leather. The BNDE portfolio in 1989 represented about 60 percent of bank financing for all industrial projects registered or licensed by the Ministry of Commerce and Industry.

The BNDE has had a number of special credit lines from the World Bank and other multilateral and bilateral donors. A US$ 120-million line, which funds export industries, has been largely exhausted. Under its "classical lending," BNDE lends to all sectors, with no ceilings, but generally for amounts exceeding 1 million DH. It will finance between 50 and 70 percent of the total investment (including preliminary and design studies) for periods between 2 and 15 years at interest rates of 12 percent for less than seven years and 13 percent for more than seven. The normal sorts of loan documentation are required as are solid internal rates of return well above the interest rate.

It is clear that the BNDE has been an important player in the financing of larger-scale Moroccan agribusiness. It has a large staff of sector specialists and project analysts. This bank will remain a major player in the promotion of business development, but will face increasing competition from the CNCA and the commercial banks. It is not clear what special role, other than as one of a number of financial collaborators, the BNDE could play in the MAP project as envisioned by USAID at this moment.

Caisse Nationale de Crédit Agricole: Another major state player in Moroccan agricultural financial markets is the CNCA, which has traditionally been the primary source of public investment capital for smaller-scale agriculture. With changes in Moroccan banking regulation, this situation is rapidly changing as CNCA expands the number and range of its financial products. CNCA receives policy input from the Ministries of Finance, Interior, and Fisheries, as well as MARA. The Caisse has received large amounts of capital for relending from multilateral and bilateral donor groups. The World Bank has been the traditional leading donor (*chef de fil*) but funding has also been provided by such organizations as the Kreditanstalt für Wiederaufbau (KfW), the Arab Fund for Social and Economic Development (FADES), African Development Bank, the European Investment Bank (BEI), BID, and the French Caisse Centrale. CNCA also gets capital from special bonds sold, on an obligatory basis, to commercial banks, and from rural savings collected particularly at harvest time.

The agroindustrial section of the CNCA headquarters in Rabat is headed by a very capable administrator who was hired to move the Caisse aggressively into new areas of lending when changes took place in Moroccan lending in 1988. The portfolio has expanded rapidly over the past three years. Much of the growth came in short-term lending, which was opened to greater CNCA participation in 1988. The CNCA has not been able to use risk capital funds (described below) as effectively as the BNDE. It can enter into joint venture operations but this facility, too, has not been used extensively.

The CNCA agroindustrial section has five units to handle its portfolio grouped by subsector: cereals and related industries, fresh and processed fruits and vegetables, poultry, fish (with two subunits: one covering marine construction and the other fishing and fish processing), and a miscellaneous unit that handles all other agroindustries. In addition, there is a loan monitoring unit that covers the entire portfolio in a systematic way.

Sources of Equity Capital

Much investment capital for Moroccan agribusiness comes from private sources. There is no lack of private investment funds, and Moroccan investors are actively seeking foreign partners. Some commercial banks have set up investment companies, and several Moroccan-foreign joint ventures have deemed it advisable to have banks as minority shareholders.

In the public sector, the Office de Développement Industriel is empowered to invest venture capital in new firms; these tend to be the larger ones.

The International Finance Corporation, with an office in Casablanca, has a US$ 150 million portfolio of equity investments in Moroccan industry. In agribusiness, this includes shares in FRUMAT and a fishing company. IFC shareholdings are generally in the 30 to 35 percent range. IFC is seeking new investments and would like to diversify its holdings by investing in a U.S./Moroccan venture.

The EEC Financial Cooperation Agreement

Special EEC programs are another likely source of investment capital in Morocco. Several of these are available under the EEC-Morocco financial cooperation agreement, signed for a five-year period ending in 1991. This agreement includes 160 million ECU (European Currency Units) in grants, 150 million in loans through the BEI, and an 11-million pilot venture capital fund. Also in the financial area is a 30-million ECU contribution to the Agricultural Development Fund through a line of credit to CNCA.

The most significant EEC program for our purposes is the venture capital fund. BEI loans are usually channelled to beneficiaries through lines of credit to commercial banks. Firms request mid- to long-term financing for their investment projects and the banks refinance these loans on the BEI line of credit. The venture capital program can finance up to 50 percent of the equity of a Moroccan partner entering into a joint venture with a European firm. The program is restricted to SMEs in productive economic sectors; hence larger firms in Morocco, which generally have adequate financing sources, are excluded from this program.

These venture capital loans are for periods of up to 25 years, with a five-year grace period, payment of interest for the next 20 years (at a low interest rate), and capital reimbursement in the last five years. The venture capital program is administered directly by BEI through Moroccan banks (commercial banks, CNCA, or BNDE) without the intervention of the GOM or the EEC delegation in Rabat. Banks promote this financial product among their clients, set up project documents, and forward them to BEI. The GOM and the EEC delegation are informed, ex post, of projects being financed.

Negotiations for the next EEC Cooperation Agreement, to start in 1991, have not been completed. Sector priorities should be similar to those embodied in the current agreement, with more emphasis on private sector support. The joint venture program will undoubtedly be expanded.

The Cheysson Facility

Another EEC program targeted primarily at assistance to European firms entering joint venture relationships with third world partners is the "Cheysson Facility." This program (formally entitled the EEC International Investment Partners) consists of financial interventions in the creation of joint ventures with European firms. It is offered to developing countries of Asia, South America, and the Mediterranean Region. Financial facilities are offered through this program to:

- Assist in the identification of investment projects and potential partners (eligible beneficiaries are financial institutions, chambers of commerce, professional associations, and public institutions);

- Help create joint ventures through marketing and feasibility studies, construction of pilot units, fabrication of prototypes (eligible beneficiaries are local or European firms willing to engage in a joint venture);

- Provide equity or quasi-equity funds to facilitate the creation of joint ventures between one local partner and european partners from one or several member countries; and

- Provide training and management assistance to these joint ventures.

A ceiling of 500,000 ECU is imposed on total assistance through all program windows on any single project. Services (studies, training, and management assistance) are financed up to 50 percent of their cost; equity financing cannot exceed 20 percent of capital. A potential joint venture in which the Moroccan and European partners were able to take advantage of both the Cheysson and local BEI programs would be receiving significant assistance indeed.

Special World Bank Programs

The Small-Scale Industry Program: Since 1979, the World Bank has committed US$ 90 million in funds through the BNDE, ODI, and commercial banks for the promotion of small-scale industry start-ups. The main objective (and decision criterion) was the investment cost per job created. This program could finance up to 70 percent of total investment excluding land. The World Bank loaned funds to the Moroccan Treasury, which, in turn, refinanced loans through the national and commercial banks. Lending conditions were 15 years with a four-year grace period at commercial interest rates.

The Export Industries Program: In 1987, the World Bank initiated the Export Industries Project with the BNDE and Moroccan commercial banks. World Bank financing was US$ 70 million. The project was designed to support new investment projects in export industries. At the end of 1989, 68 percent of World Bank funds had been disbursed and 90 percent of the remaining was already committed. Seven start-up agribusiness firms had been financed in agroprocessing, fish canning, fruit and vegetable canning, and cutflowers, representing a total investment of DH 70 million and loans for DH 41 million. An estimated total of 780 new jobs had been created through the program. Total investment in existing operations was DH 31 million, financed partially by loans for DH 15 million.

Bilateral Programs

Several bilateral cooperation programs include or are planning to include specific lines of credit for the promotion of private sector joint ventures:

- West Germany provides free or subsidized consulting services to set up joint ventures between Moroccan and German firms; and

- France is considering introducing the same program that it has been using in Tunisia: soft loans to finance feasibility studies as well as investments in Franco-Moroccan joint ventures. This program would be based on loans from the French Treasury, reloaned by commercial banks and administered by the Caisse Centrale de Coopération Economique (CCCE).

Summary on Capital Availability and Constraints

Investment capital is abundantly available both from private and public banking institutions, and interest rates, while fixed, may not be too unrealistic. In addition, the special programs to promote joint ventures may present some very attractive subsidies to new ventures. (So far the biggest problem with these special programs has been their small size, which has led to administrative rationing of program access.) The biggest constraint from the business-promotion perspective is the high level of collateral required for all Moroccan regular bank lending. There are a number of ways of dealing with risk in lending:

- To require high levels of collateral;
- To have substantial loan guarantee facilities;
- To let interest rates float and charge higher rates for customers perceived to be at greater risk of default; and
- To develop greater levels of banker-client confidence, partly through a larger and more professional group of bank loan officers.

The last three options would represent changes in Moroccan banking practice, with the last being the most desirable long-term solution but one which may take a number of decades of banking evolution to achieve, even with reforms looming for the Moroccan banking system. Movement in this direction should occur if banking reform continues and interest rate ceilings are lifted. Already, Moroccan commercial banks are beginning to demonstrate more aggressive and innovative approaches to investment under the partial liberalization of the system.

Special guarantee mechanisms can be used in very focused project activities but are not that meaningful if the project objective is to provide assistance to a broad range of agribusinesses. In this situation, the need might be for a larger, national institution that could lower collateral requirements in priority sectors through its programs. Morocco has such an institution in the "Caisse National de Guarantie," but this institution seems to be largely moribund and its actions are felt by some bankers to add only rigidity to the system and push collateral requirements even higher. Many doubt the wisdom of attempting to reform this institution and such a major undertaking would clearly be beyond the scope of the MAP project.

In summary, high collateral rates will most likely remain a fact of life in Moroccan banking for years to come. One way in which smaller borrowers, relatively more affected by this constraint, can deal with it is through the use of some form of group borrowing through cooperative or private association structures. For example, cooperatives in the Agadir area have pooled their resources to qualify for loans from the CNCA to finance packing house and cold storage construction. This is an encouraging indication of the demand for investment funds from the agribusiness sector.

Professional Associations and Chambers

The 20 or so Chambers of Commerce and Industry and a similar number of Chambers of Agriculture (addresses given in CMPE, 1986), located throughout Morocco, have been seen as being quite ineffective in the past several decades. However, they are quite important in the formal Moroccan political process since they select a certain number of representatives to the national parliament. Financed by the government and paying government-scale salaries, the Chambers could not attract the most qualified staff. However, steps are being taken to change this situation, beginning with the Chamber of Commerce and Industry of Greater Casablanca. By means of a special tax levied on members, the Chamber has raised salaries and has been able to hire a Director General and five department heads with private sector experience. The revived organization offers its members information and documentation services, training and assistance to SMEs, assistance in contacting foreign buyers, and promotion and public relations activities. Plans are being made to reorganize the other chambers along the same lines.

The Confédération Générale Economique du Maroc (CGEM) represents the interests of the larger enterprises in Morocco. Dating back to French protectorate days, it is modeled on the French *patronat* or employers association. It might also be compared to the National Association of Manufacturers in the United States. It regards itself as complementing the Chambers of Commerce, which tend to represent the smaller enterprises. The CGEM recently opened an office in Fez, and intends eventually to be represented in all regions of Morocco.

There are numerous trade associations (called professional associations in French) in Morocco, one for every branch of industry. These apparently function as lobbying organizations but did not develop into strong voluntary organizations since many key functions were assumed by state organizations such as OCE and Office National Interprofessionnel de Céréales et Légumineuses (ONICL), which had the formal charge of serving as the organizations to represent and coordinate different "interprofessions." The team was unable to meet with the two associations representing the canning industry, and as far as could be told, they do not play an active role in promoting investment, improving standards, contacting foreign investors, prospecting new markets, or other such activities that strong voluntary associations might play. Since many of these organizations are just now emerging from the shadows of GOM monopolies, they will presumably be strengthened at the request of enterprise members. The degree to which the MAP project could help strengthen some of these potentially vital voluntary associations (and the way this would be done) needs to be explored in the project design.

Educational, Research, and Extension Institutions

Relatively speaking, Morocco has a strong set of institutions of higher education and research in agriculture, which can be of use to agribusiness promotion efforts. Extension functions are handled by regional extension and rural development organizations, the DPAs or Directions Provinciales de l'Agriculture (dryland areas), and ORMVAs or Offices Régionals de Mise en Valeur Agricole (largely irrigated areas). The extension services are seen as being fairly weak and they are being strengthened through a World Bank Training and Visit (T & V) project. In addition, in some areas, privately financed extension services are provided through grower funding. These are particularly important for producers of higher value horticultural crops, such as in the case of citrus where SAMSA provides this type of service for fee.

Institut Agronomique et Vétérinaire, Hassan II (IAV)

IAV is a unique Moroccan institution of public higher education in agriculture, which has received substantial assistance from USAID over the past 20 years. It combines elements of both the French and U.S. systems of higher agricultural education and the hybrid has been favorably reviewed for its responsiveness and contribution to the solution of applied agricultural problems (Lowenthal et al., 1988). In certain fields IAV graduates are very highly regarded and it is increasingly common to see Ingénieurs Agronomes (or Vétérinaires) in responsible positions in larger firms as well as in the public sector. The 300-plus faculty members have teaching and research assignments in various combinations but there is in not as much of an extension emphasis as there is in the American land grant model.[2]

Of particular interest to this project are the Département des Sciences Humaines (which contains most of the economists and agricultural economists in IAV); the Food Technology Section (Section Agro-Alimentaire), which has broad expertise in processing technologies; and the second, specialized IAV campus, the "Complex Horticole" in Agadir. The latter facility contains the department of horticulture and four other departments that provide specialized training and research opportunities in the high-potential area of the Souss-Massa region (see Larsen, 1986, for more details).

Ecole Nationale d'Agriculture (ENA)

This is an older state institution, founded in 1947, which provides undergraduate training in agricultural disciplines. Located in the heart of the rich farm lands around Meknes, this institution produces BS-level *ingénieurs* who are distributed widely throughout the public and the larger-size private agricultural institutions and farms. ENA has a strong agricultural economics department and is expanding its program to provide relevant managerial training in addition to technical skills.

There are two areas where Morocco's educational and research institutions could contribute to the development and implementation of the MAP project: one is the adaptation to Moroccan conditions or straight transfer of agricultural production and processing technology to Morocco, and, two, the development of adequate advanced training programs for agribusiness management and international marketing of agricultural products. On the question of technology transfer, IAV and ENA have personnel who can make a contribution to this process on an individual or institutional consulting or research basis. The degree to which the MAP project would be directly be involved in specific technical questions depends on the definition of the project and on how narrowly it will be focused on the types of agribusinesses it will promote. If, for example, the project only worked with the fruits and vegetables subsector, then it might get more involved in these technology questions than if it were to remain broad in its focus and promote enterprise development across the whole range of Moroccan agribusiness.

Concerning training for agribusiness management and advanced agricultural product marketing, it is clear that there is a real need for more Moroccans with these skills. USAID may very well wish to consider contributing some resources to one or more Moroccan institutions to help establish or strengthen

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[2] There are efforts under way to increase the outreach and extension liaison functions of IAV units. During the first weeks of the team's visit to Morocco, these efforts were being encouraged by a seminar sponsored by the University of Minnesota and IAV on the "sustainablity" of IAV research and teaching through greater emphasis on special programs to meet client needs.

this type of training program. In addition to IAV and ENA there are several Moroccan institutions which might play a role in this type of training program. These include two additional GOM training facilities: ISCAE (Institut Supérieur de Commerce et des Affairs Economiques) in Casablanca (Morocco's public business management training school), and ISSEA (Institut Supérieur de Statistique et de l'Economie Appliqué) in Rabat (largely training in applied statistical analysis), and a series of commercial business colleges located in a number of Moroccan cities. Some of the latter seem to be very active in providing some level of MBA-type training; some even advertize on Moroccan television.

The institutions that seem the most promising for USAID to work with in agribusiness training are IAV, ENA, and ISCAE. This team briefly discussed the possibility of USAID providing some level of support to all three institutions under a cooperative program to expand relevant agribusiness management and marketing training. Students from ISCAE in a business program might get complementary agricultural production and processing training at IAV or ENA, and students from the more technical, agricultural programs might receive a period of complementary business training at ISCAE. This is a complicated matter involving levels of training, the degree to which institutions can collaborate, the adequacy of current curricula, and so forth, and one which should be investigated in more depth at the design stage.

Institut National de Recherche Agronomique (INRA)

Modeled on the same institution in France, INRA is the main agricultural research institution in the country and is almost entirely state funded. INRA operates a large network of experimental stations throughout the country, including some 78 stations and 64 experimental farms (some of which were slated to be closed), linked to 14 regional centers, to cover the agroclimatic diversity of the country. However, given limited staff resources, this number of stations has been seen as dispersing scientific talent too widely to be optimally productive. In addition, given the lack of personnel and the underutilization of its research facilities, the inadequate collaboration with IAV (which has more senior, trained scientists) represents wasted opportunities for practical problem solving. USAID has channeled significant levels of funds into the dryland research activities of INRA through the significant expansion of the Aridoculture Center in Sattat. Lack of organized producer support and control of the INRA research program has limited the practical contribution it might have made to the resolution of immediate production and processing problems hindering the expansion of Moroccan agribusiness.

CHAPTER FOUR

TECHNOLOGY AND TRANSPORT

In this chapter we briefly present general conclusions as to the adequacy of production and processing technologies used by Moroccan agribusiness, highlighting opportunities for MAP project involvement, and then describe what appears to be a most important constraint to agribusiness growth, the high rates and inadequate services provided by Morocco's transport industries. These generalizations are drawn from the detailed descriptions of major Moroccan subsectors and industries contained in Annex 1.

ADEQUACY OF PRODUCTION TECHNOLOGY

Production technology is relatively advanced in Morocco in comparison with most of the rest of the African continent. This is reflected in the higher rates of use of inputs, particularly of fertilizer, pesticides, irrigation, machinery, and improved seed varieties. For example, the recent FAO study of the future of African agriculture contains the following estimates of aggregate fertilizer use (on a kilogram/ hectare basis):

Country or Area	Average All Crops	Export/Non-Food Crops	Food Crops
Morocco	39	69	39
Algeria	51	100	50
Tunisia	22	11	25
Sub-Saharan Average	9	32	5

Source: FAO: *African Agriculture: The Next 25 Years*, 1986, Annex 5, Table 9.

All three North African countries show use-rates which are much greater than those of Sub-Saharan agriculture. Egyptian use is higher, primarily because of the large proportion of irrigated and multiple-cropped land. Tunisia's averages are lower than those for Morocco because of the smaller relative area of irrigated land and lower cropping intensities in Tunisia.

Crop yields in Morocco are lower than they could be with improvements in early-season land preparation, supply and management of inputs, more rapid varietal development and seed distribution, and improvements in harvesting and post-harvest handling technology. In the large expanses of irrigated areas in Morocco (about 900,000 hectares including smaller perimeters irrigated using traditional means), the GOM has undertaken a restructuring of management of water, input, credit, and marketing services to improve efficiency. Reduced subsidization of services, imposition of water and energy charges more in line with costs, and the privatization of input supply, harvesting, and transportation services (or their

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shifting to more specialized parastatals) are among the major restructuring efforts being undertaken. In turn, producers and industries have found that they have to become more productive if they are to maintain the financial profitability of their operations. The changes in strategy have created new room for technological innovation as service providers, farmers, and processors feel the pressure to improve the returns from each unit of land, labor, capital, and input used.

Morocco's agricultural research and development system has been under restructuring since the early 1980s. INRA, the national research institution, has been defining national research program priorities with producers, agroindustry, and public policy makers. Attempts are being made to regionalize research so that local technology needs can be addressed more directly. Capable researchers have been trained, many with USAID assistance, at INRA and the IAV Hassan II agricultural and veterinary faculty. These institutions are developing more mature research programs and are consolidating operations. While many of the INRA and IAV researchers have contact and work with private growers and agribusiness, businessmen and the institutes themselves point out that the linkage between the public research and training institutions and the private sector is not as strong as it should be.

The pace and direction of research in the institutes, particularly for higher value commodities, lag behind the technology importation and adaptation being undertaken by the more advanced Moroccan agribusiness industries. This phenomenon is found in many parts of the world, including the United States, where high value crops are being grown and industries must innovate in response to rapid changes in their marketplaces (due to shifting consumer preferences, changes in regulation, and so forth). In Morocco, faced with the need to innovate to maintain market share and enter new markets, agribusinesses often buy new technologies from overseas. They are frequently confronted with the need to adapt the technology and meet O&M needs that were not foreseen. Special requirements exist in field crops and fruit and vegetable crops for specialized laboratory services for soil, plant tissue, and pesticide residue analyses. Processing industries expressed the need for operations research and plant redesign to improve capacity utilization and decrease water and power consumption. The public sector agricultural R&D institutions are clearly not meeting these needs as they are currently operating.

Technological innovation often comes from *les Domaines Royals*; in recent years these farms owned by the royal family have been early users of plastic greenhouse technology, innovative irrigation systems (use of sprinkler, drip, and center pivot systems), and tissue culture developments. Some of these pilot innovations are then adopted by other larger-scale, modern farms, and introduced into national commodity plans supported by special development and credit programs for wider diffusion.

As described in the chapter above, Moroccan commodity associations (largely redundant in some industries due to the presence of state monopolies until 1985) are not playing an adequate role in producer interest representation or paying for R&D activities. Few if any commodity associations commission and pay for research from national institutes. The sugar industry is an exception; the sugar mills and refineries (still mostly state owned) pay for all services provided by ISERF, which has become a private corporation working on an industry-directed agenda of research, technician training, sugar mill and refinery efficiency, testing of raw material and intermediate products of sugar processing, and new product development.

The most important general conclusion is that Moroccan farmers and agribusiness operators can and do respond to production opportunities that are opened to them. In the past, the number of these opportunities has been limited by government attempts to manage agricultural production as well as other

aspects of the economy. Now, even as Moroccan agricultural is being opened to market forces in many areas, there is a strong tendency to place undue reliance on the use of subsidized approaches to introduce the use of new technologies or to encourage the production of new crops. While this approach results in quick spread of a technology, it can also result in its spread into areas which may well be marginal for the technology in both technical and economic terms.

Morocco's agricultural history has shown repeatedly that the beneficiary interest group will continue to lobby for tariff or nontariff walls of protection for their commodity and special access to credit and other services long beyond the point where these subsidies can be justified. This is the dilemma the country faces in assessing, for example, the technical success of expansion of the production of sugar beets, greenhouse bananas, and sunflowers for oil. All of these crops are now costing Moroccan consumers substantially more than the equivalent products imported from foreign sources. Some level of protection may be justified from a food-security or strategic point of view, but because of the costs of administration and the chances to pervert nonmarket administrative mechanisms, this is not a policy route to commodity development that we would recommend. Its continued use for certain industries in Morocco may divert scarce resources from other, more productive, public expenditures.

PROVISION OF MAJOR INPUTS

There are a substantial number of opportunities for private business development in the provision of inputs to general dryland or more-specialized irrigated farm production.

Seeds and Planting Material

Cereal seeds are provided primarily by SONACOS, a parastatal that may be privatized in the near future. Corn and sorghum are not restricted to SONACOS, and private companies (such as Pioneer and Dekalb) have begun to set up operations in Morocco. These firms see a market for hybrid seed in cereals, oilseeds, grain legumes, and forage seeds. Dryland producers of wheat and barley adopt new varieties but save most of their seed.

Vegetable seeds are mainly imported, and seed quality is at international standards. However, some of the tomato and onion seeds of open pollinated varieties are showing signs of deterioration of quality with virus and other disease carry-over. The IAV Complexe Horticole at Agadir is working on true potato seed production to develop potato varieties that might be multiplied within Morocco. This work is being done in collaboration with CIP.

Tree crops are produced in state nurseries and by farmers. These are of varying quality. Attempts are being made to set up certified nurseries for tree and vine crops, under a program to be established with the DPVCTRF (Direction de la Production Végétale, du Contrôle Technique et de la Répression des Fraudes).

Private seed companies operate in Morocco, many with an export focus on food legumes. The seed subsector section (see Annex 1) discusses these companies in greater detail.

Rapid biotech approaches to varietal development and plant propagation are not yet in use in the private sector, with the exception of one tissue culture facility at a *Domaine Royal* farm near Meknes. Given the level of trained personnel available in Morocco, joint ventures with biotechnology and seed companies with biotechnology capacity could accelerate varietal research. It is an avenue which should be explored by any agribusiness promotion project.

Mechanical Technology

Machinery use is widespread and increasing, even at the smallholder level. Tractors and plows are most widely used followed by combine harvesters and balers. Missing are seedbed preparation equipment and planters. Current import policy frees new equipment imports from customs duties but heavily taxes spare parts, leading to the practice of running equipment into the ground and then replacing it. Combines, tractors, and bailers are driven thousands of kilometers by custom service operators, causing rapid depreciation. Lowbed hauling trailers do not benefit from duty-free importation, so operators see little reason to incur a cost equal to that of purchasing a combine and a self-propelled bailer.

The current policies may also bias equipment suppliers to the importation of machinery targeted towards larger growers, although this is speculation. Aridoculture researchers based in Settat have been working since the mid-1980s on the testing of smaller-scale equipment and have begun working with a machinery workshop to produce prototypes. These machines target the smallholder and hillside farmers. To date no market analysis of smaller scale machinery impact has been done by the Aridoculture program. The MAP project might be able to assist in promotion of appropriate technology adaption as the basis for a series of potentially profitable agribusinesses.

Fertilizers and Agricultural Chemicals

Lack of flexibility in fertilizer formulation and inefficiency in fertilizer and other chemical input supply is a constraint to agricultural production in Morocco. Current fertilizer formulation is not oriented to regional differences in fertility and markets. Although the state is loosening its grip on the fertilizer industry (FERTIMA, the marketing parastatal is soon to be privatized), producers do not yet see more adapted products on the marketplace. In anticipation of decontrol, a number of Moroccan companies, either alone or with foreign partners, are exploring the potential for the establishment of production and packaging facilities and distribution networks.

This is an area in which an agribusiness promotion project might provide support — funding market studies of what fertilizer products are in demand and needed by producers. In addition, a specialized market exists for fertigation fertilizers. As more emphasis is placed on market entry and meeting the new EEC standards for agricultural commodity safety, supporting services in residue testing for fresh products that are state certified are needed. This team recommends that the possibility of active support to a new fertilizer production and marketing industry be given high priority in the MAP design phase.

POST-HARVEST TECHNOLOGIES

Storage

Grain Storage and Handling Facilities

For the major field crops, there are opportunities for the development of a broader private and cooperative ownership of grain storage and bulk-handling equipment so that farmers will be able to take advantage of wider marketing opportunities as the decontrol of the cereals subsector proceeds. The ability of farmers with different size farms to access bulk handling facilities will be a major determinant of the profitability of domestic wheat and barley production. This is one of the topics to be studied by the USAID-funded Cereals Marketing Reform project and may result in opportunities for business investment to provide these new decentralized storage and handling facilities.

Cold and Controlled Atmosphere Storage

Cold storage is used extensively in Morocco, but the potential for fully integrating cold facilities into modern production and marketing channels is much greater. There is almost no use of controlled atmosphere storage, which has also has great potential in temporary or longer-term storage of cut flowers and fruit. There is good information (see MARA/DPV, 1990; and BNDE, 1989) on the current status and future prospects for Moroccan cold storage. According to these data the current national capacity of about 200 thousand tons of cold storage is now 15 times greater than the cold-storage capacity of the country in 1959.

Much of the country's cold capacity was originally built in Moroccan ports and managed by Moroccan ministries. Now the GOM owns 37 percent of the total capacity and the private sector 63 percent. Three quarters of the capacity is specialized for one type of storage and the rest is general-purpose. About half of the capacity is located in three Moroccan cities: two ports — Casablanca (33 percent) and Agadir (10 percent) — and Meknes (8 percent) in the heart of Moroccan apple and pear producing areas where much of the storage allows longer supply of domestic markets. As indicated below, fruit and vegetable storage makes up the bulk of Moroccan cold capacity:

Type of Storage	Percent of Total Capacity
Meat	3%
Fruit and Vegetables	78
Fish	10
Ice	1
Other	8

Morocco has very little controlled atmosphere (CA) storage, but this will be very important if Morocco is able to increase its exports of fresh fruit and flowers. To date this technology has largely been used to take advantage of the domestic fresh fruit market. During the past three years, a large controlled atmosphere storage unit was established by a private grower in the Meknes area. The facility is used to store several thousand tons of apples for periods of up to eight months. The advantages of controlled atmosphere (reduced O2 and elevated CO2) are the control of fruit ripening, reduction of respiration, retarding softening, and greatly prolonging the storage life of the product. The grower in Meknes has benefitted from seasonal price increases for local produce sales.

Processing and Packaging Technologies

Morocco has lagged behind other countries and has not made use of some of the newer post-harvest handling and storage techniques for fresh fruit and vegetables. Grading, packing, and storage facilities are inadequate except for those of a very few large producers and some cooperatives. The principle problems in grading, packing, and storage are the lack of technical expertise; regulatory standards; poor organization of shipping and trading arrangements; and lack of packing supplies, equipment, and cold storage facilities.

New regulations in the EEC, particularly for fresh fruit packing, may require costly changes to Moroccan packing plants. This also appears to lead to concentration of ownership, and although modernization may lead to higher efficiencies, it may also reduce competition in the subsector.

Processing plants are old and inefficient, particularly in energy and water use. Processing wastes are not handled well in many plants. This will become a problem in urban areas over time although it is not perceived as such by managers. These areas offer opportunities for technical assistance. In canning plants, the cost and range of packing materials available and the ability to print high-quality labels are clearly identified constraints across all industries that pack into cans, particularly those that must ship into discriminating foreign markets.

Modernization of processing plants is only just beginning. A few have aseptic filling equipment and flash freezing is becoming more common. However, the vast majority of these plants are canning and bottling operations and use outdated equipment. Extensive use of hand labor is still practiced and the successful companies produce a differentiated, high-quality product on a small scale. The newer, larger plants competing internationally will require more automated equipment for health inspection and modern marketing reasons. It is clear that technical assistance in the areas of modern processing and packaging will be critical to the further development of Moroccan fruit and vegetable industries. The question for the MAP project is how this might best be accomplished.

Assembling Technologies into Modern Vertical Production and Marketing Chains

The MAP project will achieve success if it can facilitate the adoption of appropriate technologies that fit into vertical chains of producing and marketing well-defined products by Moroccan businesses. In the shorter run, this will be accomplished most easily through the promotion of partnerships between Moroccan and foreign companies, in which the foreign firm will contribute what is most lacking in modernizing Moroccan industries: the production technologies and the market knowledge to master the

coordination of a complex chain of steps from the field to the retail display in the modern destination market on a reliable and consistent basis.

The project may also wish to contribute to longer-run solutions that involve human capital formation and the development of Moroccan governmental, training, and research institutions, which will contribute needed support services so that an increasing percentage of the technology and market development work can be done in Morocco by Moroccans. These two thrusts are complementary, with elements of the shorter-run business promotion portion of the project contributing and receiving benefits from the longer-run training and institution-building parts of the project.

In addition, through the detailed examination of the development needs of the Moroccan industries described in Annex I, more specific mixtures of project elements — appropriate to the development of that industry — will be more obvious. In many cases, these will involve increased vertical coordination, if not throughout the entire vertical chain, at least in part of it. For example, in the vegetable and fruit industries, organization of raw material supply is a key to improved plant efficiency. Contract growing operations need to be explored and assistance in organizing contract growing provided to the industry.

TRANSPORTATION: AN IMPORTANT BRAKE ON AGRIBUSINESS GROWTH

Three types of transportation are important to Moroccan export-oriented agribusiness: sea, air, and truck freight. The price rate structures and shipping procedures of all three are dominated by state companies: COMANAV (Compagnie Marocaine de Navigation) for sea freight, Royal Air Maroc for air cargo services, and ONT (Office National de Transport) for truck cargo. Air and sea cargo prices are set in a cartel-pricing manner by the two state companies, with reciprocal market-allocation arrangements particularly important with foreign airlines. Truck transport is becoming increasingly important as a means of supplying the European market, particularly through the use of refrigerated trucks, largely owned and operated by European firms (particularly Spanish companies, which have a special advantage in crossing Spain with minimum problems to supply other European markets).

Many agribusiness owners interviewed by this team in Morocco (and a substantial number of government officials as well) perceive transportation as a brake on their plans to expand sales of high value products to export markets. This constraint takes different forms depending on the industry. However, almost all industries identified transport-related problems in their operations. The greatest problems occur in the fresh produce and cut flower industries.

Transport Problems in Produce and Cut Flowers

Fresh Citrus

The major transport routes for citrus are by sea and road to Europe, with air shipments made less frequently to more distant markets. Increasingly, tractor trailers from Spain and France are hauling citrus from Morocco to European destinations. However, access to the Spanish overland route is restricted for all but the earliest citrus. 1989-1990 was an exception because the rapid opening of Eastern European markets far exceeded Spanish supply and an exceptional easement was provided for Moroccan

citrus. Sea transport to the Middle East faces a price disadvantage compared to that faced by Iberian producers. Moroccan exporters are required to use Moroccan flag vessels to these ports, and service is infrequent and very expensive compared with European shipping lines. Finally, USDA's APHIS requires a 14-day sealed controlled atmosphere storage of citrus designed to ensure that no viable Medfly larvae are imported into the United States. Currently, Morocco does not appear to have access to CA containers, nor the port container plug-in facilities for them, which would enable Moroccan citrus to meet U.S. phytosanitary standards while in transit.

Fresh Tomatoes

A similar situation also affects Moroccan tomatoes, which are also excluded from the EEC as European greenhouse and open field producers come into the market each year. Overland truck routes through Spain close at that time to protect Spanish producers. Sea transport slows produce delivery and adds the cost of multiple loading and unloading of tomatoes at each point in the distribution chain. Risk of heating and mechanical damage increases with each handling step, particularly when break-bulk shipments are made, even when these are palletized, as they are from Agadir. Transhipment of produce through France using "roll-on/roll-off" equipment would be one way of decreasing handling costs and risks, but Morocco has few roll-on/roll-off facilities.

Cut Flowers

The perishability of cut-flowers requires that they be shipped by air. However, over the past several years, the growing demand by Europe for fresh, high value seafood has led to the development of a fresh fish, cephalopod, and shellfish export in ice-packed cold boxes. Thus, fish exporters compete for limited air freight space with producers of flowers, vegetables, and fruit. The high value of the fish product and relatively larger margins allow them to out-compete the produce and flower shippers. One observer described the scene at the Agadir airport as one approaching an auction market where trucks line up and shippers "bid" for space on departing airplanes. Royal Air Maroc basically controls the supply of air freight space (see Agro-Concept, 1989, for a detailed examination of the air-cargo situation). Its exclusion of charter operators (or imposition of special landing fees or service charges on them) effectively prevents shippers from finding the lowest cost supplier of air transport service and from locating additional space when scheduled flights are insufficient. A related problem is that air freight shipments of roses, in particular, are subject to bluing (discoloration of buds and uneven petal opening) when shipped in mixed lots of fruit and vegetables, which produce ethylene.

As fresh produce and flower producers face large annual and seasonal swings in prices and substantial competition from other countries, it is in their interest to find ways to reduce the cost of transport, meet the special transport requirements of different produce and markets, and increase their access to new markets. Greater space availability, reliability, and lower transport costs would enable growers and shippers to make greater investments in production, post-harvest handling, and packaging of their produce. Less costly transport would also improve the market reach of producers of processed agricultural commodities.

It should be emphasized that the problems cited generally had to do either with the price of transport services or their availability when needed, and not Morocco's transportation infrastructure, which is regarded as adequate. Morocco has recently completed a number of large new port facilities

(Agadir and Jorf Lashfar) and has been modernizing and expanding the cargo capacity of a number of its airports. In addition, its primary road system is excellent, although farm-to-market roads are inadequate in some areas such as Souss-Masa, where cultivation has expanded dramatically in recent years.

A large, descriptive transport study (funded by the World Bank) was recently completed in draft but was not available to this team. It is strongly recommended that the MAP design team review the results of this study and look carefully at the extent of the transport constraints identified here. What is needed is policy change that will open the transport industry to more competitive forces. Initial studies could consider a number of options in dealing with the issue of supplying better freight services at lower cost.

Policy Options

Reduce the Cartel Powers Given RAM, COMANAV, and ONT. Opening, if only seasonally, the airfreight market to other airlines and charter operators would be a low-cost way to stimulate growth in exports of fresh products. If COMANAV cannot provide competitive services to foreign ports, then its cartel pricing of Moroccan shipping should also be reconsidered as a policy point. These positions obviously require route, freight volume, and comparative pricing studies to support policy recommendations. The GOM may also be persuaded through appropriate analysis of the potential benefits to the privatization of the three key state transport companies, but this needs substantial additional study.

Promote the Development of Private Sector Transport Brokering. It is often difficult, or impossible, to convince a national government or regional governments to give up their state transport company. The reciprocal rights agreements with foreign carriers usually do not provide sufficient flexibility or operating profits for either airlines or shipping companies to modify services, put on larger or additional equipment, or provide new port or airport handling services (CA containers, air containers). These added services represent high initial costs and risks. Both the financial and risk elements are especially important when the freight carried makes up a relatively small part of total volume or is strongly seasonal. Minimum freight levels required for new services may not be available. In these circumstances it is sometimes possible to pool carrier risk in a holding company (or companies) that pre-contracts for the minimum space required to add new services and is then responsible for paying for the space, whether occupied or not.

The holding company then can forward contract with shippers, further spreading their risk and providing the opportunity for growers and shippers to generate additional product. The advantage for RAM, which has recently embarked on fleet renewal, is that it can avoid making capital purchases or spot leases of larger aircraft because the holding company can position aircraft that are already part of another carrier's inventory. The other carriers benefit from greater access to a market that would otherwise remain closed to them or from fuller use of equipment. Careful structuring of ownership and operating procedures may permit higher operating profits for carriers that are part of the holding company. Sea freight could also be handled by the company.

It should be noted that shares of the company could be held by producer associations and existing freight forwarders, as well as transport companies and other investors. To the extent that these are EEC companies, they may become allies in the discussion of agreements to open up access of the EEC to Moroccan products. The brokerage option would have to be studied by an industry specialist to

determine its feasibility for the routes and modes of importance in Morocco. Information requirements (some of which may have been satisfied by the recent World Bank study) include:

- Reliable estimation of current and future product flows to specific markets, required modes of transport, and seasonality of freight flow. Assessment of shipper needs for space and special services;
- Current service and freight charge structure;
- Interest of transport providers in share holding in the transport brokerage company;
- Analysis of financial risk and the means of spreading this risk through forward contracting, GOM or donor guarantees, and so forth;
- Potential sources of investment and operating financing for the company and for contract purchasers of space;
- Legal regulation of transport brokering and political risks; and
- The potential for wholesaling space and the retail price strategy for space.

CHAPTER FIVE

GENERAL CONCLUSIONS AND RECOMMENDATIONS

In this chapter we offer some general conclusions about the potential for future development of Moroccan agribusiness, review highlights from the industry profiles which are presented in Annex 1 which follows, summarize the major constraints to agribusiness growth identified by this team, and discuss recommendations for core activities and key issues for the design phase of the MAP project.

Moroccan Agribusiness: Poised for Substantial Growth

With the removal of most constraints to development, the agribusiness sector is entering a period of rapid growth. There are indications of a upward trend in investment both by Moroccan and foreign investors. This is particularly true in the fruit and vegetable subsector but in other, smaller niche industries as well. Some growth will occur in the domestic market with rapid population increase but much of the potential is in the further development of exports to Europe, the UMA, and new non-Mediterranean markets. The proposed AID Morocco Agribusiness Promotion (MAP) project could help to address constraints which may slow the realization of this substantial development potential.

High Production Potential and Market Opportunities

Morocco's climate and resource base give it substantial production potential, particularly for high-value export product development. The production areas of southern Morocco are largely frost-free and the mild climate of many other areas has allowed unheated greenhouse production to develop rapidly. The country has substantial land resources, both for rainfed crop production and under irrigation (approximately 900,000 hectares in all irrigated areas). In both irrigated and dryland areas, much of the land area is devoted to basic cereal, oil and sugar crops. This presents the opportunity — over the long run — for land to shift to higher-value uses while still meeting national food security concerns through changing combinations of sensible, diversified staple imports and domestic production.

The most critical variable in the Moroccan cost of production equation is the relatively low cost of agricultural and industrial labor. This gives the country a great advantage in the production of higher-value, export-oriented products with a higher labor content (eg. processed fruit and vegetables requiring a substantial labor input to produce a clearly differentiated product.) One already sees the innovative mixing of capital and labor-intensive steps in some smaller export industries directed to specific niche markets. The future challenge will be to apply these principles on a larger scale through new forms of agribusiness coordination and integration.

Reestablishment of a Favorable Business Climate

The business climate in Morocco has greatly improved since 1984 when general and agricultural sector liberalization measures were begun. After a time lag of several years, the agribusiness sector appears to have gained confidence in the future and is poised for substantial growth in the years ahead. The key to this growth is new investment, particularly from abroad.

Government actions to liberalize the economy have succeeded in removing most constraints in such areas as foreign exchange controls, ownership by foreign investors, taxes, and registration of enterprises. One of the most difficult things to accomplish has been the identification and removal of vestiges of the old policies of heavy state involvement in marketing, pricing, and in certain industries, in direct production. This process is not yet complete and we have seen how remaining controls in one industry can affect related industries which are up and downstream (eg., interconnections among the oil seed, feed, and dairy industries). However, the general pattern is one of increasingly total reliance on market mechanisms to guide pricing and investment with government being called on to play its more classical and appropriate roles.

Opportunities for Technology Transfer

Moroccan agribusiness, from production through exporting, has examples of virtually all levels of technology, from very traditional to the most sophisticated, state-of-the-art techniques. There are numerous opportunities for the additional transfer of modern technology in response to rapidly evolving domestic and foreign market prospects. These opportunities are generally identifiable at the subsector and industry level and may be at the levels of crop or raw material production, processing, marketing and packaging. These opportunities need to be identified in the coordination and management of information and product flows in domestic or international vertical marketing channels (les filieres).

The transfer of new technology in agricultural production, processing, and marketing has been hindered by the lack of substantial foreign investment which might have served as its vehicle.

Industry Structure, Vertical Coordination, and Product Differentiation

We have stressed the importance of two related industry characteristics in our rapid assessment of constraints and opportunities facing that industry and for initial ideas on what needs to occur within the industry as it modernizes, particularly to take advantage of very specialized market opportunities. These characteristics are:

- The structure of the industry (number and size of firms), particularly at the processing/marketing levels; and

- The definition of vertical marketing channels for specific industry products and how the flows of product and information are coordinated in those channels.

For industry structure, the key variable is the number of firms in the industry. On the production side, almost all production of raw product in Morocco (wheat, oranges, fish, etc.) takes place through the efforts of many competitive firms (farms). At the processing/marketing level, the situation is much

more variable with some industries very concentrated, being dominated by the one or a couple of firms (orange juice, seed oil processing, dairy processing and marketing, carob gums, etc.) and some quite nonconcentrated and competitive (fresh fruit and vegetables, processed vegetables, cut flowers, etc.). This is important in the selection of industries which could be targeted for improvement by the MAP project.

We also see a wide range in how coordination is assured in the vertical marketing channels. In some highly concentrated industries (such as orange juice) coordination takes place through "functional integration" within one firm. In this case FRUMAT handles all steps in processing and marketing from the purchase of fruit from growers or wholesalers through processing, packaging, and shipment and sale to brokers or wholesalers in export markets. In other less concentrated industries (such as production and shipment of "primeurs" or early vegetables), purchasing, packing, and shipping of the product may take place by three different market participants. In contrast, new entrants into the high quality French tomato market handle all aspects from production, harvesting, grading, packaging, refrigerated shipping from Morocco, and wholesaling to specific market outlets, all within one firm. The big difference is that the latter is able to exercise much greater control over quality and the flow of product and information and, as a consequence, can sell predictable quantities of tomatoes at 50 percent above the average market price.

The important point is not that industries must be concentrated or integrated to be successful, but that there must be a reliable flow of information and clearly defined and differentiated products in modern agribusiness marketing channels. The objective in agribusiness development is to achieve those ends through a variety of industry-specific mechanisms.

Highlights of the Industry Profiles

In Annex One to this report, 16 profiles of important Moroccan agribusiness subsectors and industries are presented, along with summary notes on a half dozen others. In these profiles we have looked systematically at Morocco's comparative advantage in the production of the raw product, at industry structure and vertical coordination in processing and marketing, at the role of the GOM and key policy issues, at current and potential domestic and foreign markets for industry output, and at opportunities for industry growth. Highlights of these findings are contained in Table 7 on the following two pages.

Summary of Constraints to Moroccan Agribusiness Development

Based on extensive interviews (see Annex Two for a list of contacts) and analysis of secondary sources as part of the team's review of key agro-industries, we have isolated a dozen factors which we feel are most constraining to the development of Moroccan agribusiness employment and income generation. These are the factors which the activities of the proposed MAP project should address as possible:

TABLE 7

SUBSECTOR AND INDUSTRY CHARACTERISTICS AND POTENTIAL

Subsector or Industry	Production Potential Comparative Advantage	Structure of Processing/ Marketing Industry: Degree of Concentration	Vertical Coordination or Integration	Role of GOM; Policy Issues	Domestic and/or Foreign Market	Investment or Development Potential
Cereals	80% Total Seeded Area. Greatest comparative advantage in hard wheat; others are neutral: soft wheat, barley, maize.	Quite competitive with 83 industrial mills and many more small hammer mills through-out the country.	Market forces except in soft wheat; linked to world prices; depends on prod. level	GOM sets prices in bread wheat channels, controls official wheat movement, imports; use of *prélevement* on all imports	Almost all domestic (occasional barely exports when surplus). Self-sufficiency: 50% - 80%	Potential to develop hard wheat marketing. Opportunities in inputs marketing; smaller scale storage; milling; and development of new products
Oil Seeds Sunflower Rape Cotton	Good dryland production of sunflower and rape. Negative comparative advantage unless costs down, yield up.	Highly concentrated: 2 industrial crushers, 14 refinery (ONA) COMAPRA purchases	Provided by GOM and ONA. All purchases at farm by COMAPRA	GOM: Large Role Prices fixed; 2x world price for sunflower; COMAPRA monopsony, sunflower cake price controlled	100% Domestic; Morocco is about 50% self-sufficient (with olive oil).	Little potential for investment except under subsidy
Sugar	Lots of irrigated land in beets and cane. Negative comparative advantage	14 processing plants; 11 are state-owned	GOM sets prices; mandates production. Role of ORMVAs in production	High role for privatization looming; likely World Bank major involvement	All domestic market; Morocco is about 70% self-sufficient	Little potential in industry expansion. Some help possible in privatization, plant for pollution control and heat recycling.
Seeds	Good potential; need partnerships with foreign companies to expand	SONACOS dominates cereals; rest is competitive.	SONACOS for cereals; otherwise industry groups and market forces	Privatization of SONACOS considered; otherwise minor issues	Both domestic and foreign markets important	Good opportunities to improve quality of domestic seed; opportunities for partnerships with foreign firms
Cut Flowers	Climate excellent for production; use of green-houses gives unlimited potential	Industry is competitive	Provided by direct contacts between growers and buyers; could be improved substantially	Few issues: air-freight rates and availability; incorporation under EACCE control pending	Primarily export market	Great development potential; but industry is very competitive
Processed Fruit & Vegetables	Enormous potential. Comparative advantage in labor costs and irrigated land	Many small- and medium-scale producers. Very little concentration	Need for vertical coordination to assure raw material supply. Smaller processors will be unable to compete in future	Few policy issues Liberalizing sea and air transport would help exports	Most processors export to Europe. A few have opened U.S. markets. Need to improve "fancy" grades	Considerable potential for investment, especially with foreign partnerships

Subsector or Industry	Production Potential Comparative Advantage	Structure of Processing/ Marketing Industry: Degree of Concentration	Vertical Coordination or Integration	Role of GOM; Policy Issues	Domestic and/or Foreign Market	Investment or Development Potential
Fresh Vegetables	Excellent potential Comparative advantage in off-season production for EEC market	A few large and many small growers; cooperatives formed in some areas among small growers	Vertical coordination to include packing houses fairly common. Integration into transport needed	Few policy issues here. Liberalizing sea/air transport would help exporters	Virtually all export to Europe vulnerable to EEC competition. Need to diversify mkt & product	More investment needed in large pack-houses, cold storage, and help in industry coordination
Fresh Fruit	Growth potential for grapes, peaches, strawberries, dates. Citrus still dominant	Both small and large producers. Cooperative packing houses being constructed	Vertical integration common	same as above	Almost all citrus to Europe. Some clementines exported to U.S. New markets needed	New investment needed in modern packing houses & cold storage, plus new varieties
Olives	Good land for olives; cheap labor gives advantage.	Industry has large, medium, and many traditional processors.	Market forces for traditional products; integration more critical for "fancy" products	Few policy issues, but there is national olive program	Both markets. Expansion larger in export market	High-end products by larger firms; medium firms/ cooperatives to take over from Maasrass.
Dates	Excellent growing conditions bur harmed by Boiyond Disease	Traditional industry; no concentration	Through market	Limited to research and promotion	Both but Morocco is importing	Everything is linked to disease-resistance; ESSA genetics interest
Wine	Very good growing regions; inappropriate varieties for top wines	Very concentrated due to dominant role of SODEA	SODEA; administered prices	Role of SODEA; administered prices make international competition difficult	Small domestic market; most potential is in exporting good wine	French and Italian companies are coming back to the industry; good opportunities in a competitive industry
Dairy	Good production potential; substantial feeds available; can increase feed efficiency	High concentration with Centrale Laitiere and Cooperatives. Licenses with European firms	Strongly organized by processors; more could be done by feed industry	Price structure controlled by GOM Industry needs to be restructured. Feed issues are key	Production only for domestic market	New firms to service high productivity farms in reorganized industry
Feed	Good potential if industry liberalized	Competitive industry except where raw materials come from oil processing	Complicated by selective fixed prices	Industry economics hurt by price and tax policies. Needs restructuring	Production only for domestic market	Potential only if industry liberalized, restructured
Leather	Limited by number of hides; poor quality	High concentration by few large firms	Could be strengthened substantially	Little state involvement	Both are important; more growth potential in exports	Substantial opportunities due to lower labor costs; Pollution will be a problem in future
Fish	Atlantic off-shore fishery one of world's most important. Fish are a major export	Competitive	Organized by processors and international buyers	Repatriation of Moroccan deep-sea fleet; Control of foreign fleets are key problems	Foreign markets most important but domestic area developing	High risks in investment due to biological, policy and market problems

- Insufficient new investment in agribusiness by Moroccan investors, due to traditional risk-aversion and conservative investment attitudes. The latter, in turn, are strongly influenced by uncertainty about government policies, general economic conditions, and the presence of high-yielding, low-risk, government-sponsored alternative investment opportunities;

- Insufficient new foreign investment, which could serve as the vehicle for rapid access to new technology and markets;

- High transport industry rates, procedural inflexibility, and seasonal unavailability of adequate capacity, partially due to the inefficiencies and cartel pricing practices of RAM, COMANAV, and ONT. (Transport infrastructure, on other hand, is generally very adequate);

- Extremely high collateral requirements and other indicators of an over-controlled, highly conservative banking industry;

- Lack of vertical integration between agricultural producers, processors, and structures for the wholesaling and retailing of products in destination markets;

- Lack of information for the penetration of specialized export markets;

- Inadequate knowledge of Moroccan consumer habits and patterns of existing and potential product demand. Reanalysis of the 1984-85 budget and consumption data is not sufficient since the expenditure categories are not "product-oriented" and the data are out of date;

- Remaining policy problems in important industries, particularly dairy, feeds, edible oils, bread wheat, sugar, and wine/wine grapes. Many of these have been identified in other studies and some of them are on the road to resolution through the ASAL II;

- In some industries, lack of or weak producer, processor, and/or marketer trade associations or groups that can represent interests of members and contribute to vertical integration. In some export-oriented industries this can be attributed to the OCE monopoly, recently withdrawn by the GOM;

- Weakness of Moroccan public research and training institutions to meet the specialized, longer-term needs of agribusiness groups for advanced technology transfer and adaptation;

- Insufficient development of private supporting service organizations in such areas as market analysis, export promotion, new product development, industrial planning, and management consulting; and

- Inadequate numbers of well-trained agribusiness managers (who know something about the production base of their industry), international marketing specialists, and specialized agro-industrial engineers.

Potential AID Intervention

The above listing of constraints to Moroccan agribusiness development should in no way be interpreted as diminishing the team's enthusiasm for sectoral development prospects. They simply provide a rationale for the further development of the project and guidance as to what project activities might be most useful. Bilateral aid projects have well-known strengths and limitations. The MAP project needs to be designed to take maximum advantage of the things that can be done well under grant funding and where the US has substantial, relevant capacity to assist Morocco, both in the short and longer terms.

In the short run, the major thrust of the project should be on the promotion of private sector agribusiness growth, particularly where there are opportunities which can be realized in a relatively short time frame. This will be accomplished in two, often related, ways:

- Identification of where existing industries are being constrained from developing their immediate, realizable potential by things that can be "fixed" relatively rapidly (by policies and regulations that can be changed; by new production, processing, or marketing technologies that are "on the shelf" and can be identified and used, etc.); and

- Facilitating Moroccan businesses access to new markets by taking advantage of specialized knowledge or technologies which are most rapidly available through partnership or joint venture arrangements with US and other foreign firms.

Regarding longer-term objectives, the emphasis of the MAP project should be on the development of greater Moroccan capacity to do the things for which reliance is being placed on outside help in the short-run. This is done primarily by human capital development (ie., training) and by institutional development. It is also important to stress that both of these sets of actions -- the long and short-term components — will be strengthened and more effective to the extent that they overlap and reinforce each other. Practical ways to do this need to be refined during the design and implementation phases of the MAP project.

Some of the team's project design recommendations are covered below in summary comments on the core activities that we feel should make up the MAP project: [1]

MAP Project Core Activities

Promotion of Agribusiness Development

This should be the heart of the MAP project. It involves activities to assist in the expansion of the product lines, volume of production and income of existing firms, and to facilitate the creation of new firms to take advantage of new market opportunities, particularly in higher-value export markets or

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[1] These project activities were jointly identified with the staff of the USAID/Morocco Agricultural Development Office as they were developing the MAP project identification document (PID) concurrently with the this team's sector assessment work.

strongly expanding domestic markets. Recent experience with agribusiness promotion projects in other countries has shown that this activity, while one of the easiest to identify, is one of the hardest to implement in practice. Project mechanisms need to be very carefully crafted to avoid conflicting agendas, inefficiencies and conflicts of interest, as representatives of a public agency operate to promote private business development.

Additional project resources could be applied to the rather low-key efforts of the IESC or GOM organizations, such as the CMPE and the ODI, to attract foreign investment. As pointed out by experienced observers in Morocco, investment in joint ventures is often preceded by establishment of trading relationships — which may be accompanied by technical assistance in product quality and packaging and training of local technical and managerial staff. Investment promotion and export promotion efforts, including market studies, are therefore complimentary and should be undertaken jointly. In addition, project resources can be used to finance participation in focused study tours, attendance at trade fairs, representation and contracting assistance in Morocco, all of which can help Moroccan businessmen to meet potential clients and partners.

In terms for promoting joint ventures with US firms, the present AID-sponsored promotion efforts should be expanded to include placing French-speaking expatriate staff to work with qualified Moroccan professionals (most likely by an implementing contractor, ideally composed of a joint-venture arrangement between US and Moroccan firms) and by providing long-term support in the U.S. to maintain contact with U.S. firms interested in Morocco. An important element of this program would be sponsorship of pre-feasibility studies and other means of reducing risk or total investment costs for the potential partners.

Financial Promotion

One of the means of encouraging Moroccan and foreign investors to take greater investment risk is through the subsidization of part of that risk-taking. There are number of new multilateral and bilateral programs in Morocco which have taken this approach, some making using subsidized long-term credit and others subsidizing part of the cost of feasibility and market studies or bringing new products to the demonstration stage. USAID has indicated that it is interested in the second approach although this pushes at the limits of what is usually allowable under the rules governing US bilateral aid.

This team feels that this will be an important project ingredient in meeting MAP's promotion objectives. This can be done through the use of matching low interest loans or grants to U.S. and Moroccan firms to cover the costs of conducting studies in Morocco or in target market areas. The terms and implementation mechanisms for this mechanism will have to be worked out carefully in the design stage.

Most analyses of Moroccan business development have noted that Moroccan firms make suboptimal use of specialized business-support services. Two recent reports (Keesing, 1989, and Ernst and Young, 1989) recommend encouraging — through the use of small grants — of greater use by smaller Moroccan enterprises of services which can be provided by local (and foreign) firms. The potential services include:

- Accounting, audit, tax advice and management consulting;
- Market information and research services;
- Consulting on export market development and marketing techniques;
- Product inspection and quality control certification;
- Advice on business start-up and structuring;
- Systems engineering and production scheduling.

We feel that this proposal should also be given serious consideration during project design. This would have the dual effect of assisting enterprises in target industries to modernize and expand, and of strengthening the local service industry, which in many areas is still in the fledgling stage. Some study would be required to identify the existing companies providing such services, to determine which are adequately equipped and staffed, and possibly to provide technical assistance where there are deficiencies.

Studies: Analysis of the Agribusiness Environment

This probably the easiest potential MAP activity to design and implement and, as we have indicated in the report, there is substantial need for a studies component. This is a component which should use appropriate combinations of outside and Moroccan expertise to conduct three types of studies:

Policy reform and subsector/industry studies. AID should continue to assist the GOM in liberalizing the agricultural economy through studies and technical assistance in the sugar, edible oils, dairy, and feed industries. It has a new small project beginning soon in MARA to do the same thing with the cereals subsector. In these areas, policy reform are a necessary precondition to other agribusiness development work. In addition, all of the above-mentioned industries with policy problems are interrelated to varying degrees and change in one will have important impacts on the others. For example, freeing price controls on oilseed presscake would have an important effect on the animal feed industry.

In addition, two policy studies which should have high priority are: problem diagnosis and reform in the transportation service industry (described in detail in Chapter Four); and a study of the special needs of small and medium-scale agribusinesses. On the second topic, a recent AID-sponsored study (Ernst and Young, 1989) studied the small and medium-scale industry sector in Morocco and recommended regulatory, administrative, and legal reforms, increased support services, and expanded credit availability.

We feel that additional study is required in the agribusiness sector — particularly in fruit and vegetable processing — where there is a need for vertical and horizontal integration among the multiplicity of small enterprises, many of whom will be unable to compete as the sector modernizes and larger enterprises begin to dominate the scene. A study could identify the opportunities for merger or joint operation of groups of small processors (horizontal integration) and could demonstrate the advantages of better integration of crop production and processing facilities (vertical integration). One

aspect of this study would be the feasibility of farmer associations operating fresh fruit and vegetable packing houses acting as suppliers of produce on a contract basis to processing enterprises.

The two other categories of studies are more focused in nature and can be used to support other specific business promotion actions. These are: **market studies** (such as the market potential for processed olive products in the US, or semi-finished leather in Europe, or the potential for new convenience foods based on food legumes in Morocco) and **technology transfer and adaptation studies** (for example, opportunities for greater use of on-farm hydro-cooling and cold storage in the export of fresh vegetables, or potential improvements in the harvesting and processing of Moroccan cork).

Human Capital Development

There are two dimensions to this proposed MAP project component: formal and informal training.

In the formal category, Moroccan agribusinesses report the need for more skilled management and international marketing expertise. This type of training has not been a core part of the curricula for the major Moroccan agricultural and business training institutions. The options for providing some support to the step-by-step establishment of an agribusiness management and international marketing program should be explored in the project design. (This project component and aspects of technology transfer and adaptation might be of interest to a consortium of US universities.) The primary candidate institutions are IAV, ENA, and ISCAE and we suggest that flexible program funding which might involve all three institutions (so that students get a mixture of both technical and business skills) be explored. The danger for the MAP project is that this component may be too large a task and "crowd out" other project activities.

The MAP project should definitely have resources that can be used for more informal training in the practice of agribusiness as well. This could include:

- Study tours abroad for Moroccan business persons. Foreign travel by exporters as a means of training could also be included. Exporters seeking such assistance would have to already have demonstrated an export capability and to have a coherent plan to develop a market for a new or improved product;

- Specific apprenticeship programs in technology, business management or marketing, for Moroccan personnel who might be part of a joint-venture arrangement with a US firm; or

- A variety of training seminars, workshops, radio broadcasts and home-study materials which might be produced by subcontractors and used in MAP assistance provided to particular industry groups.

Institutional Strengthening

The second longer-term component to the MAP project would be a series of actions designed to strengthen both public and private institutions that can play important supporting roles in agribusiness development.

Major progress in the development of agriculturally-based industries almost always involves an appropriate partnership between private business action and supporting government actions in infrastructure, research, regulation, and policy. In the Map project there would be two main foci for public institutional strengthening:

- An appropriate program of short term technical assistance would be worked out to provide MARA departments and the EACCE with assistance in the development of commodity regulation, phytosanitary and quality standards, industry promotion (until such work can be shifted to producer associations), and the supervision and contracting for industry diagnostic and policy studies. It is anticipated that much of the regulatory and standards work, as it pertains to increasing exports to the US market, would be done under contract with the US Department of Agriculture; and

- Technology transfer and adaptive research. There are important roles for INRA, IAV, and other institutions to play in these areas. While by general third world standards these are very competent institutions, they still have room to be more effective and responsive to the needs of rapidly changing industries that are often in the lead in terms of the use of new technologies. The MAP project can perhaps help in the development of additional methods for them to conduct grant and contract research to direct benefit to industry groups.

It is also important for the MAP project to contribute to the strengthening of appropriate private institutions which can support agribusiness growth and development. Specifically, we are thinking of:

- Work in the strengthening and development of producer and industry associations, many of which have never played important roles in representing producer interests, partly because that role had been taken by state-sponsored organizations in the past 25 years. This can be done by the project implementation contractor using a variety of promotional, training, and study resources; and

- Take similar actions to promote the growth of private service businesses, as described above under financial promotion.

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ANNEX ONE

PROFILES OF MOROCCAN AGRIBUSINESS SUBSECTORS AND INDUSTRIES

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FIELD CROPS

CEREALS SUBSECTOR

Overview of the Structure of Production, Marketing and Policy Reform

The cereals subsector is the heart of Moroccan dryland agriculture and the agribusinesses which supply producers inputs and marketing and storage services should receive attention from the MAP project. In addition, the related wheat milling and wheat-flour using industries face important changes as they are freed from the heavy controls which dominated these industries until just a few years ago. In addition, barley, wheat processing byproducts and maize are important components to the animal feed industry discussed below.

Cereals production covers about 60 percent of arable land in Morocco, or 80 percent of actually seeded area. Less than 10 percent of this production is under irrigation (but irrigated cereals still make up 40 to 50 percent of Morocco's extensive irrigated land), the rest being produced under dryland conditions. Four main cereals -- bread wheat, durum wheat (for couscous, pasta, and bread production), barley (used for both human and animal consumption), and maize (an important input into the animal feed industry) -- and lesser quantities of rice, sorghum, triticale, etc. are produced. While durum has traditionally been preferred by Moroccan consumers, bread (soft) wheat now competes for favor as a result of long-standing government subsidies to consumers of bread wheat products.

Of the land cultivated for the four main cereals, close to 50 percent is devoted to barley production, another 25 percent is used for durum wheat production, bread wheat is produced on about 15 percent, and maize is produced on the remaining 10 percent. The area under bread wheat production has been expanding recently in response to more active government support policies for this commodity, particularly in the irrigated and higher rainfall zones. The northwest portion of the country (north of a line from Safi to Oujda) contains most of the dryland production zones. Bread wheat is concentrated further north where there is higher rainfall and barley production is concentrated further south and on the driest cereal lands.

Total cereals production fluctuated largely between 35 and 45 million quintals (3.5 to 4.5 million metric tons) from the 1960s to the early 1980s, yet attained levels more on the order of 75-80 million quintals in the latter half of the 1980s.[1] This reversed a downward trend in per capita availability which had begun in the early 1970s. Aggregate production of all major cereals fluctuates greatly from year to year since most production is rainfed. This is shown for the four major cereals in Table A-1.

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[1] This result was probably due both to better rainfall and to liberalization of the subsector, although relative weights of the two factors are nearly impossible to assess.

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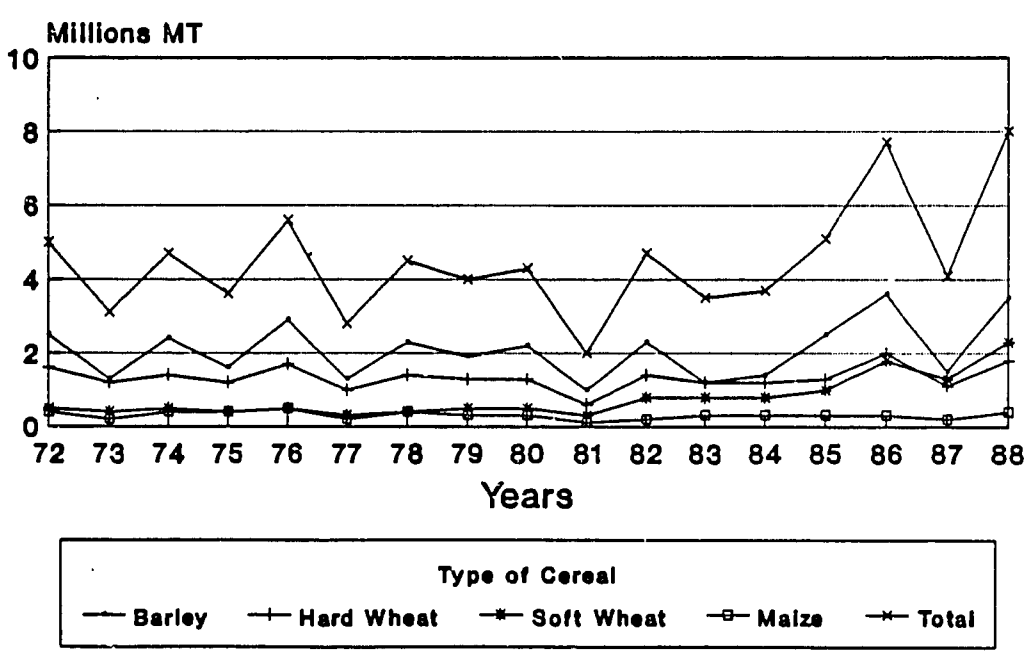
TABLE A-1

MAJOR CEREAL PRODUCTION IN MOROCCO, 1972-88
(in millions MT)

Year	Hard Wheat	Soft Wheat	Barley	Maize	Total
1972	1.6	0.5	2.5	0.4	5.0
1973	1.2	0.4	1.3	0.2	3.1
1974	1.4	0.5	2.4	0.4	4.7
1975	1.2	0.4	1.6	0.4	3.6
1976	1.7	0.5	2.9	0.5	5.6
1977	1.0	0.3	1.3	0.2	2.8
1978	1.4	0.4	2.3	0.4	4.5
1979	1.3	0.5	1.9	0.3	4.0
1980	1.3	0.5	2.2	0.3	4.3
1981	0.6	0.3	1.0	0.1	2.0
1982	1.4	0.8	2.3	0.2	4.7
1983	1.2	0.8	1.2	0.3	3.5
1984	1.2	0.8	1.4	0.3	3.7
1985	1.3	1.0	2.5	0.3	5.1
1986	2.0	1.8	3.6	0.3	7.7
1987	1.1	1.3	1.5	0.2	4.1
1988	1.8	2.3	3.5	0.4	8.0
Average	1.3	0.8	2.1	0.3	4.5

TOTAL PRODUCTION MAJOR CEREALS
MOROCCO, 1972-1988



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Information on the structure of cereals production is difficult to obtain. One estimate of size distribution of farms put the average Moroccan farm at about 5 hectares (USAID, 1986). The same source estimated that in 1974 almost 25 percent of Moroccan rural households had no cultivatable land while a small number of farms (0.1% of all rural households) had farm sizes of 100 hectares or more, holding about 10% of the arable land and producing about 20 percent of the funicle earnings from agriculture. In sum, there are large numbers of very small cereals farms in Morocco using traditional animal traction methods of production and a smaller number of quite large farms using the latest mechanized production techniques. Mediumisized farms may own some or all of their own machinery, particularly tractors and plows, but rely on custom operators for more specialized or expensive machine services such as combine harvesting.

Cereals imports are largely confined to bread wheat (on the order of 15-20 million quintals per year, or about 50 percent of total national requirements in recent years) and, to a far lesser degree, maize (1.5-2.5 million quintals, equivalent to 40 percent of total consumption). Morocco used to export some barley and durum in surplus years, a policy which was abandoned during the years of agricultural sector crisis and which has recently reappeared due to a large barley surplus in ONICL stocks.

Pre-1987 Market Controls; Still in Effect for Bread Wheat

Official intervention in domestic cereals markets has existed since the colonial period. Based on the French cereals board model, OCIC (Office Cherifian Interprefessionel des Cereales[2]) was formed in 1937, in order to stabilize the domestic and export markets for cereals produced by both French colonial and Moroccan farmers. In 1971 the Moroccan Government, prompted by public pressure to ensure that basic foodstuffs would be available at "affordable" prices, passed additional legislation to regulate prices of goods and services at all stages of production, processing, and distribution. A Central Pricing Commission, under the direction of the Pricing Directorate of the Ministry of Economic Affairs, oversaw intra-governmental price policy arbitrage. In 1973 there was a major revision of cereals legislation and OCIC became ONICL (Office National Interprofessionel des Cereales et Legumes). ONICL was created to oversee grain and pulses procurement from producers at official prices, and storage and milling margins and was also given monopoly powers to organize all grain importation.

As a consequence of these policies, cereals production was marketed along two distinctly different channels, an official market with prices and movement of grain and flour controlled by ONICL, and a parallel market. The official side of this dual system was, and still is, more important for bread wheat than for the other major cereals. Official prices were offered by licensed traders and state cooperatives at official collection centers. Alternatively, producers sold grain at local markets at prevailing parallel prices. Yet millers were precluded from procuring bread wheat directly from farmers or at rural markets. All movement of domestically purchased "official" and all imported grain were authorized by ONICL permits. However, ONICL, in contrast to many other state marketing boards for cereals, never became the official owner of their cereals whose movement it controlled. Table A-2 is a schematic diagram of

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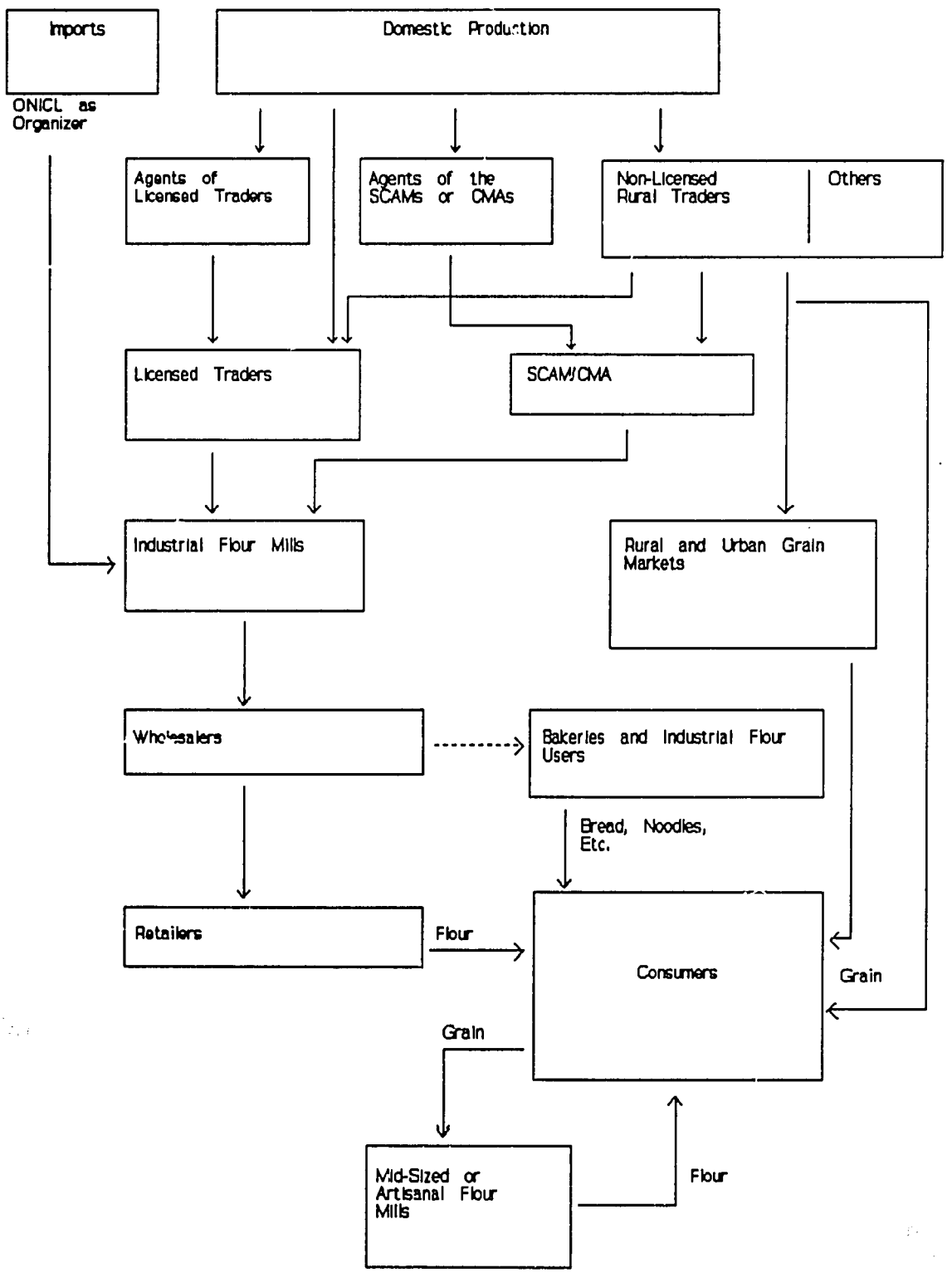
[2] It is important to note the "interprofession" designation in both the OCIC and ONICL names. This refers the philosophy of organized collaboration among the major private actors in the vertical marketing channel (the interprofession) -- i.e., farmers, wholesalers, industrial millers and bakers -- all collaborating under the direction or guidance of the marketing board.

TABLE A-2

AGENTS IN THE VERTICAL MARKETING CHANNELS FOR MOROCCAN BREAD WHEAT AND WHEAT PRODUCTS



(Source: Omar Aloui, Agro-Concept)

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marketing channels for the pre-reform cereals subsector, although it is still largely correct for the current channels for bread wheat marketing.

By the late 1970s and early 1980s, the Moroccan cereals economy was in serious jeopardy. Declining domestic producer price incentives; increased intervention in marketing, storage, and transformation; an increasingly overvalued dirham which increased the competitiveness of imported cereals; and the public finance crisis had all taken their toll. As total output declined, only about 25 percent of total bread wheat production and 15 percent of total maize production were captured by the official market; durum and barley sales to ONICL were insignificant. For these reasons reform of cereals marketing was an important component of the agricultural sector policy reforms targeted by the World Banks major Agricultural Sector Adjustment Loans (ASAL I and II) beginning in the early 1980's.

Cereals Policy Reform

The negotiations and the terms of cereals policy reform have been detailed and complex. For the purposes of the MAP assessment, what is important is where things stand in mid-1990. In sum, the reform program has resulted in the following changes in the subsector:

- Complete liberalization of domestic pricing and trade policies for durum wheat, barley, and maize. ONICL still supervises the importation of any of these cereals (mostly maize) and collects a special import tax (a "prelevement") which is supposed to promote the further development of competitive domestic production;

- All prices and movements in the official channels for bread wheat are still controlled by ONICL as are wholesale and milling margins, and the consumer price for basic types of bread composed entirely of bread wheat flour;

- The producer price for soft wheat is set by a negotiated relationship to world market prices (25% above a five year moving average of the international reference price, not to be lower in real terms than the previous year's real domestic price, and not lower than the 1986 real domestic price) with ONICL coordinating all imports and the application of the floating tariff;

- Pending eventual total elimination of the consumer subsidy program, subsidization of the consumer bread wheat flour price was to be limited to a fixed quantity of farine nationale (1.2 million tons of wheat; this is still equal to about 50 percent of the bread wheat milled by industrial mills), produced at a higher milling ratio than was previously allowed, in accordance with production quotas set for each mill. In addition, the coverage of existing consumer entitlement programs was to be expanded; and

- Settlement of GOM arrears with the industrial milling industry and the transporters who moved all bread wheat and flour around the country at fixed, subsidized rates.

There are still additional policy changes that will be required to help this vital set of Moroccan cereals industries function at maximum efficiency and these changes will be the subject of a two year program of work under the USAID Cereals Marketing Reform project with MARA/DPAE. This project will work with the Government of Morocco to develop a new, coherent set of policies regarding import

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and export management; the impact of policy changes on the agribusinesses which assure the marketing, transportation, storage, milling, and financing of domestic grain production; the future role of ONICL; and provision of adequate food or income assistance to Morocco's poorest groups.

Unlike the sugar and oilseeds subsectors in Morocco, whose processing industries have already undergone significant scrutiny in terms of their long-run financial and economic viability, the Moroccan wheat milling and flour industries have not yet been exposed to such examination. The main issues to be addressed are what are the likely impacts of different options for additional cereals decontrol on the agribusinesses which market, transform, and use domestically-produced and imported wheat? What are the current relative rates of technical and economic efficiency of the various industrial components of the cereals subsector? What changes will be most important for each industry group? Will programs to provide compensatory payments or investment in new physical plant be necessary to help mitigate possible negative business or employment consequences from decontrol?

The cereals policy changes introduced thus far are dramatically altering the way flour mills and animal feed companies procure their cereals supplies. How has the milling sector responded to the quota system for production of farine nationale? What has been the fiscal impact of the new system? How are animal feed companies responding to deregulation of maize trade, especially in light of the slower pace of reform with regard to the oilseed subsector? Are there additional regulatory constraints in the system which prevent the flour mills and animal feed companies from responding most efficiently to changes in market demand and supply conditions?

Opportunities for Agribusiness Development in the Cereals Subsector

There are both upstream and downstream opportunities for private agribusiness development to occur to serve field crop producers in response both to growth in production but more importantly to industry decontrol. On the upstream side are businesses which produce, package and sell inputs to farmers. On the downstream side we can anticipate changes in the businesses which market, store, transport, process, and make use of flours and other intermediate cereals products. The degree to which some of these business opportunities develop will be partially determined by changes in aggregate consumer demand for different cereals which can also be influenced by GOM policy and investments in food technology research.

Input Supply Businesses

There are four major types of inputs which agribusiness can supply to Moroccan field crop producers (not including irrigation water). These are seeds, fertilizer, other agricultural chemicals, and agricultural machinery. The Moroccan seed industry is discussed separately in a section below in this annex. This team was not able to spend time examining issues related to agricultural chemicals. One can note, however, that the use of certain agricultural chemicals is generally more critical to the production of horticultural crops than it is to the major field crops discussed here.

General Trends. Moroccan dryland crop production is likely to see a continuation in the trends of land consolidation and a decrease in the numbers of farms (a tendency which has occurred in almost all countries as the agricultural sector modernizes). More larger farmers will obtain their production

inputs from specialized input retailers and the representatives of input wholesalers and manufacturers, and fewer from input suppliers in the souks. Thus, while there will be substantial change that occurs in this type of agribusiness, the aggregate effects on income and employment may be fairly small. In otherwords growth will occur but more through changes in the structure of production and supporting industries than in a wide-spread growth in numbers. On the downstream side, if Morocco follows predictable development paths, there is likely to be substantially more growth in the processing of field crops into new products with a higher emphasis on packaging and convenience foods.

Machinery. Machinery use is widespread and increasing, even at the smallholder level in Moroccan field crop production. Tractors and plows are most widely used followed by combine harvesters and balers. Missing are seedbed preparation equipment and planters. Current import policy frees new equipment imports from customs duties but heavily taxes spare parts, leading to the practice of running equipment into the ground and then replacing it. Combines, tractors, and bailers are driven thousands of kilometers by custom service operators, causing rapid depreciation. Lowbed hauling trailers do not benefit from duty-free importation, so operators see little reason to incur a cost equal to that of purchasing a combine and a self-propelled bailer.

The current policies may also bias equipment suppliers to the importation of machinery targeted towards larger growers, although this is speculation. Aridoculture researchers based in Settat have been working since the mid-80's on the testing of smaller-scale equipment and begun working with a machinery workshop to produce prototypes. These machines target the small-holder and hillside farmers. To date no market analysis of smaller scale machinery impact has been done by the Aridoculture program. The MAP project might be able to assist in promotion of appropriate technology adaption as the basis for a series of potentially profitable agribusinesses.

Fertilizer. Lack of flexibility in fertilizer formulation and inefficiency in fertilizer supply is a constraint to agricultural production in Morocco. Current fertilizer formulation is not oriented to regional differences in fertility and markets. While the state is loosening its grip on the fertilizer industry (FERTIMA, the marketing parastatal is soon to be privatized) producers do not yet see more adapted products on the marketplace. In anticipation of decontrol, a number of Moroccan companies, either alone or with foreign partners, are exploring the potential for the establishment of production and packaging facilities and distribution networks.

This is an area in which the MAP project might provide support, i.e., funding market studies of what fertilizer products are in demand and needed by producers. In addition, a specialized market exists for fertigation fertilizers. As more emphasis is placed on market entry and meeting the new EEC standards for agricultural commodity safety, supporting services in residue testing for fresh products are needed which are state certified. This team recommends that the possibility of active support to a new fertilizer production and marketing industry be given high priority in the MAP design phase.

Marketing and Processing

Marketing, Storage, and Transport of Cereals. As Moroccan cereals production continues to modernize and to be decontrolled at the same time, there will be important changes which occur in the primary marketing and storage of cereals and in related transportation. This will be particularly true in bread wheat where ONICL control has been most significant. As the system of "state-authorized traders"

operating under fixed price margins is replaced by a freer market there will be new opportunities the development of more modern and efficient trading concerns. The same is true in grain storage where the old SCAMS (Societes Cooperatives Agricoles Marocainnes) are either privatized or radically transformed. The large portion of the country's large scale grain storage capacity is still operated by the SCAMS, the private industrial mills, and in several of the larger ports, all still under ONICL supervision.

For the major cereals, there are opportunities for the development of a broader private and cooperative ownership of grain storage and bulk-handling equipment so that farmers will be able to take advantage of wider marketing opportunities as the decontrol of the cereals subsector proceeds. The ability of farmers of different size to access bulk handling facilities will be a major determinant of the profitability of domestic wheat and barley production. This is one of the topics to be studied by the AID-funded Cereals Marketing Reform project and may result in opportunities for business investment to provide these new decentralized storage and handling facilities.

Cereals Processing and Secondary Flour Industries. These are the two main types of downstream agro-industrial users of Moroccan or imported wheat:

- The milling industry made up of industrial flour mills (still heavily controlled by ONICL through the farmine national program and remaining movement and price controls), mid-sized modern milling businesses, and the large number of traditional, local "artisanal" hammer mills (see Table A-2); and

- Flour-using industries, largely composed of bakeries (large and small scale) and pastery-making; and pasta, cous-cous, and cookie manufacturing.

The large-scale milling industry faces the need for substantial modernization, consolidation and relocation to operate under free-market rather than an administered system. The industry is currently receiving help from US Wheat with a training program for millers having been established. There is substantial opportunity for the further development of the mid-sized modern milling businesses to develop and to produce a broader range of products, particularly specialized hard-wheat flours and blends, many of which are produced through the use of the hammer mills, which will probably begin to diminish in importance. There seems to be substantial business opportunities
in the modern packaging and marketing of hard wheat flours which are still preferred by most Moroccan consumers for much of their bread consumption.

There is also likely to be substantial growth in the flour-using industries as the result of population growth, decontrol of bread wheat and flour, changing consumer tastes, and the inevitable need for more convenience and fast food preparations. There is a strong need for demand research and food technology research to anticipate demand for new products and help create or borrow ways of making use of wheat and food legumes.

14

OIL SEEDS

Resource Base

Stimulated by very favorable guaranteed producer prices, oil-seed (mainly sunflower) cultivated area and production have increased very rapidly since 1982. Area cultivated in sunflower increased from around 12,000 hectares in 1982 to 120,000 ha in 1989. While in the 1970's sunflower was mainly cultivated in the Gharb, production is now extends to the Sais, the Loukos and Zaer. Production of soybeans, rapeseed and other oil seeds remains marginal but rapeseed production is expanding and there is substantial interest in that crop.

Cotton is the second most important oil-seed produced in Morocco; cultivated area has fluctuated widely in the past: production started in the early 1950's, increased to a record of 22,000 hectares in 1965, followed by a decreasing trend with wide fluctuations until 1984 when production rebounded and since has been on a regular upward trend. Production is concentrated in the Tadla, Gharb and Doukkala irrigated areas.

Moroccan edible oil production, after having stagnated for many years, has been increasing very rapidly since 1985:

- Sunflower oil production has progressed from around 4,000 tons in 1980 to 12,000 tons in 1985, and to 160,000 tons in 1989;
- Increases in cotton production have been significant though less spectacular. Down to around 14,000 tons in 1984, in 1988 recovered its previous maximum of 30,000 tons (previously reached in 1964); and
- Production of other oil seeds is increasing rapidly but remains marginal; around 6,000 tons in 1987.

Total oil consumption was estimated to be 260,000 tons in 1986 and is projected to increase to 390,000 tons by the year 2000. Seed oil has been substituted increasingly for olive oil by Moroccan consumers (particularly in rural areas) as total consumption has increased due to lower prices for seed oil and, until recently, the general neglect of the olive oil industry. These trends are shown in the following figures:

Changes in Per Capita Oil Consumption
(Kilograms per capita)

Types of Oil	1970	1985
Olive	5.0	2.8
Seed	5.3	10.1
Total	10.3	12.9

Morocco's self-sufficiency in edible oils was around 17 percent in the early 1980's, mostly due to significant olive oil production. With the rapid growth of sunflower production, this self-sufficiency ratio is increasing rapidly and is estimated to reach about 50 percent in 1990. This is a significant agricultural achievement but there is growing concern over the total cost of the producer price subsidies which have been required to reach and sustain this level of national production. This, plus rapid increases in olive tree plantings, and changes occurring or needed in the linked animal feed industry, have created a priority need for serious analysis and major changes in national edible oil policy.[3]

Structure of Oil Seed Marketing and Processing

The Moroccan oil seeds industry, at the marketing and processing levels, is highly concentrated. This is illustrated by the following:

- COMAPRA, a parastatal, has the monopoly for collecting both seed-cotton and sunflower seeds from producers, buying a official fixed prices. As COMAPRA gins all the seed-cotton production it is the sole supplier of cotton-seed;

- Oil seed processing (crushing and extraction) is performed by one firm, SEPO, a subsidiary of the ONA Group. Processing capacity has been expanded recently to 200,000 tons/year. SEPO buys all its oil seeds from COMAPRA. SEPO processes seed oil for the GOM and receives a "processing fee" based on an analysis of the costs of processing done in 1974 and updated annually; and

- Oil refining is performed by 14 plants in Morocco with a total capacity of 350,000 tons/year. BURAPRO acts as a refiners coordinating office and includes representatives of Lesieur, Cristal, SEPO and CMH. Since the first three of the above refining companies are subsidaries of the ONA Group and given that these firms control 55 percent of refining capacity and the entire crushing capacity, it is obvious that the ONA group is playing a major role in, if not de facto controlling, the oil seed sub-sector.

Oil imports are controlled by the GOM; bid for tenders for imports of raw seed oil (mainly soya and rapeseed oil) are organized by the Ministry of Commerce and Industry and importation of refined oil is prohibited. Imports of raw seed-oil are allocated to the 14 refineries according to quotas that follow, but not strictly, each firm's processing capacity. Some refineries resell their quotas to others.

The main features of GOM price policy for seed oil are:

- Fixed producer prices for oil-seeds with unlimited guaranteed purchase by COMAPRA; the producer price is now fixed in relation to the world price with a protection coefficient;

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[3] There have been at least five major studies of different aspects of national edible oils policy done in the past 15 years. The last two, "Programme de Developpement des Oleagineux" a joint UNDP/FAO/GOM effort, and a controversial study done by the French consulting firm of Mars et Co. would have been extremely useful to this analysis, but neither were available for the use of this team.

- Fixed consumer price for refined seed-oil and free consumer price for olive oil;
- Processors are guaranteed a crushing-extraction and refining processing fee, based on their cost structure, with estimates revised annually;
- High level of subsidies to match fixed producer prices, guaranteed processing margins and consumer prices; and
- Prices for oil cake, a key input into the feed industry, are also fixed.

The producer price policy works against the interests of cotton producers: the ratio of world market cotton seed to sunflower price varies between 70 and 81 percent, whereas the same ratio for domestic prices is only 48 percent. The low subsidized consumer price of refined oil (7 DH/l) and free market price of olive oil has been the main cause for the substitution of seed oil for olive oil. Olive oil increasingly has been considered a "superior" if not a "luxury" good demanded for its specific qualities.

Opportunities for Possible AID Intervention

This is a complex subsector due to its own policy issues and to its link to the livestock sector through the feed industry. More analytical work is clearly called for and this could be contributed by the MAP project. It is also possible to envision some research and industrial technology assistance, particularly in the area of olive oil productivity and medium-scale processing. Otherwise, this is such a concentrated and politically-sensitive subsector that this team sees few opportunities for substantial direct involvement from the MAP project.

SUGAR BEETS AND SUGAR CANE

Resource Base and Natural Comparative Advantage

Sugar cane was grown and processed in Morocco from the 12th century, but production disappeared in the 18th century as tropical sugar cane production expanded. The modern era of sugar beet and sugar cane production began with research done in the early 1900's. Larger-scale sugar beet production began after major development of large irrigation perimeters in the late 1950's and early 1960's . Sugar cane production technology was developed in the 1960's and was put into application in 1973 in irrigated perimeters. Sugar beets are also produced under rainfed conditions in the northern perimeters under ORMVA management.

Sugar crop productivity and sugar content of crops is higher in the central and southern irrigation perimeters. Recent studies (Mars et Co., 1987) indicate that the northern perimeters of the Gharb and Loukkos are at climatically marginal for sugar cane and rainfed sugar beet production. The Moulouya perimeter in the north is subject to heavy frosts and is probably beyond the marginal zone for both sugar crops. Southern perimeters in the Tadla and Doukkala have the highest natural comparative advantages based on climatic factors. Sugar crop productivity measured as yield is lower than countries with more favorable climates for sugar beet and sugar cane production.

Industry Structure and Use of Technology

The sugar industry has historically been vertically integrated and publically controlled to ensure responsiveness to the requirements of the strategic **Plan Sucrier**, which seeks to maximize national self-sufficiency of sugar production. Year 2000 targets are 135,000 hectares of sugar cane and 70,000 hectares of sugar beet. In 1989, 15,200 hectares of cane and 63,100 hectares of beet were produced. These figures vary from year to year, but decreases in the subsidy for sugar cane production make it unlikely that cane targets will be met. Total sugar production in Morocco has risen steadily since the early 1960's with most of the gain coming from irrigated sugar beet. Sugar imports have been fairly constant from 250,000 to 300.000 tons a year. Total consumption is about 650,000 tons according to the Ministry of Agriculture's 1989 review of the sugar sector. Consumption is expected to reach 880,000 tonnes by the year 2000. The nation is now about 70 percent self-sufficient in sugar production. National production has developed rapidly enough to keep up with population growth and allow for an increased per capita consumption of sugar, which has risen from about 26 kg/capita in 1963-65 to about 36 kg/capita in the 1986-89 period (DPAE, 1990).

Sugar production takes place on and near irrigated perimeters run by the ORMVAs of Moulouya, Loukkos, Gharb, Tadla, and Doukkala. Until 1988, the ORMVAs were responsible for organization, input supply, production financing, some harvesting, and managing the transport of raw materials to the sugar mills. Beginning in 1988 as part of the ASAL II conditions, responsibility for financing, input supply, and management of transport has moved to the sugar mills themselves. The Office National de Transport (ONT) remains responsible for movement of the crop from farms to the mills, but is now paid by the sugar mills. There is also some consideration of direct transport of beet and cane to the mills by producers themselves. Farmers are organized into Associations des Producteurs at each irrigation perimeter. The sugar mills and refineries are members of the Association Professionelle Sucrière.

The sugar industry is supported by three research institutions. The Institut Sucrier d'Etudes, de Recherche, et de Formation (ISERF), a private company supported by the sugar milling industry, studies industry problems, provides agronomic and industrial research for the sugar beet industry, provides analytic services to sugar mills and refineries, and trains sugar industry personnel. The Centre Technqiue de la Canne a Sucre (CTCAS) provides research and cane plant multiplication services in cooperation with the ORMVA's and INRA. The IAV Hassan II provides research and training services to the industry and performs analytic services primarily for the private sugar mills.

Pricing policy for the industry is set by the Interministerial Commission for Prices; the ministries of Agriculture, Commerce and Industry, Finance, and the Interior are represented. Sectoral adjustment and GOM budget concerns have led to a drive for greater efficiency in production and to reduce subsidies and recover the costs of irrigation water and other services supply. These pressures should lead, over time, to concentration of sugar cane production in the more southern perimeters, away from frost zones, and further stimulate the already evident decline in rainfed sugar beet production.

The recent **Prices and Incentives** study (MARA/DPAE, 1990) shows that in net economic benefit terms, sugar production is an inefficient use of Moroccan production resources, perhaps rivaled by the level of protection afforded U.S. and European sugar crop producers. Competitiveness of Moroccan sugar beet without protection would require raw sugar prices of about 15 to 18 cents a pound versus the world price of 10.17 cents a pound calculated by the study. Unprotected sugar cane would require world

prices in the neighborhood 22 to 32 cents for refined white sugar from cane to be competitive. Yields would have to increase by 30 to 70% in order to reach a Domestic Resource Cost of 1 for sugar beet and double or triple current yields for cane to be efficient for refined sugar production.

These levels of protection and subsidy are higher now than they were before since world sugar price levels have fluctuated enormously over time. While these policies have been justified in the past in terms of saving foreign exchange and protecting fodd security, those goals can be better met if there are higher return, export-oriented alternative uses for irrigated land.

Sugar Processing

Thirteen publically-owned mills/refineries and two private refineries exist in Morocco. There are three refineries which are capable only of converting raw sugar into white sugar, seven which can produce raw sugar and refine it into white sugar, and five which can only produce raw sugar. Seventy-five percent of milling capacity is designed for sugar beet, twenty-five percent for sugar cane, and one mill in the north-eastern part of the country has both sugar beet and sugar cane pulping and crushing lines. The public mills/refineries operate under the guidance of the Ministry of Commerce and Industry. No raw sugar or dark sugar products are sold in the retail market for national consumption. The ultimate product is in all cases white sugar sold in granular, cube, or loaf form.

Milling and refining operations use existing plant capacity at levels which fluctuate widely from year to year with sugar crop harvest and the level of raw sugar imports. The sugar mills which produce raw sugar tend to have slightly higher capacity use levels than those which refine white sugar fluctuating between 55 to 95 percent. With adjustment policies squeezing the operating margins of mills and refineries, the industry has begun in earnest to tighten its processing operations. There is high variability in efficiency throughout the processing steps from milling through to raw and finished white sugar. The mills have begun also to work with producers to study the factors which lead to high extractable sugar content and good milling and extraction efficiencies. The mills currently face high energy prices, excessive water consumption, an environmental problem of safe disposal of waste water, and the need to make many of their raw material handling and process operations much more efficient. Raw material deterioration from the field to the plant and in storage at mills is considered to be a major constraint to improved extraction efficiencies.

By-products of milling are molasses, wet beet pulp, dry beet pulp pellets, and bagasse. Molasses exports vary widely from 20 to 80 percent of molasses production. Molasses is used domestically in the livestock industry as a feed supplement, as a substrate for yeast production, and as a feedstock for ethyl alcohol and citric acid production. Beet pulp is sold to livestock producers. Bagasse is consumed at the mills and refineries as an energy source. Waste heat is not used as an energy source at most mills, although some studies have been made of its potential use by ISERF.

Market Opportunities: Domestic and Foreign

There are few viable export opportunities for the sugar industry of Morocco. Molasses export is a low value-added operation. While the world sugar markets are highly volatile, it seems safe to assume that Morocco's current policy of seeking a level of production which will buffer its economy from big

swings in sugar prices is a sensible approach, but levels of price risk have to be carefully compared to anticipated budget costs. Long-term trends in sugar prices project further decline in average real prices. The increasing use of artificial and natural sweeteners will maintain pressure on sugar prices, even in the face of large swings in world production due to climatic or political factors. Protection of the sugar producers in many nations is going to remain a part of the world sugar market for the foreseeable future as the current round of GATT talks do not seem to be leading to reduced tariff and quota protection.

Domestic consumption of sugar has increased steadily since the 1960's. Per capita consumption increased from about 23 kg in the early 1960's to about 36 kg in the late 1980's. The **Prices and Incentives** study (MARA/DPAE, 1990) implies that part of this growth in consumption has occurred because of the national policy to hold consumer prices low. Morocco is moving towards setting an optimal level of self-sufficiency which will establish a level of protection for sugar producers and refiners after many subsidies are removed. Population growth, urbanization, and income increases are likely to continue growth in the domestic demand for sugar because sugar will remain a cheap source of energy for a large part of the population even after market-oriented adjustment measures are fully implemented. However, it appears likely that there will be a shake-out of both production and milling capacity, with inefficient producers losing market share or leaving production.

Growth in urban population and urban incomes should provide opportunities for growth in use of byproducts of the sugar industry. Greater domestic processing of molasses is one area of opportunity. Soft drink, canning, fruit juice, and preserve consumption is increasing in Morocco and should provide the opportunity for greater citric acid production.

Special Opportunities for Project Involvement

Opportunities fall in the area of greater levels of use of processing byproducts and in the improvement of milling and refining plant efficiencies. These include:

- Molasses citric acid production;
- Processing improvements to reduce current inefficiencies;
- Energy generation from processing waste heat;
- Water recycling systems to reduce water costs and waste water and pollution containment problems; and
- R&D in new product development from byproducts, such as the use of bagasse and molasses as feedstocks and substrates for specialized organic chemicals.

Assistance from USAID could be provided in research and development of crop production techniques. Mechanization of sugar crop harvest should be studied to decrease sugar losses from the field to the mill. Improvements in plant and processing engineering could make major differences in the economic efficiency of the industry.

U.S. suppliers of equipment to the sugar industry may find opportunities to provide machinery and

process engineering assistance to the sugar mills and refineries. Retrofitting of mills to reduce energy consumption and water use may also provide sales opportunities. USAID is proscribed by law from providing direct assistance to sugar industries overseas. However, the treatment of water discharged from milling and refining plants is an area in which A.I.D. assistance could be provided.

NOTE ON FOOD LEGUMES

In Morocco, as in many semiarid agricultural environments, food legumes are an important part of traditional farming systems and important in nutrition since they often provide excellent sources of complementary proteins to those provided by the basic staple cereal crops. There are four major varieties of legumes grown in Morocco as shown in the figures below:

	Averages 1972-1988		
Type	Area Planted (000 Ha)	Total Yield (Qx/Ha)	Production (000 MT)
Fava Beans	200	8.6	171
Chick Peas	74	7.3	54
Green Peas	75	6.6	50
Lentils	53	5.3	28

Source: MARA/DPAE, "Series Historiques", 1990

Total legume production seems to have peaked in 1974 when there were excellent yields and reached its lowest production level during the drought of 1981. Many of these legumes have increased in total production in the 1980's but this may be as much a function of favorable rainfall as anything else. Legumes themselves and legume seed are both exported in considerable quantities. Fava bean production has been hurt by farmers abandoning the crop after it became infested with broom-rape (see the Seed Industry profile which follows for more detail).

All of these legumes are included in small quantities in traditional Moroccan cooking but there is evidence that the legumes in general are considered to be "inferior goods" by consumers (as income goes up, consumption goes down as consumers switch to other foods) which seems unfortunate due to Morocco's ability to produce these crops and their nutritional value. A number of observers have suggested that the food legumes would be a good target for applied food technology research into new food products or simply borrowing food preparation ideas from neighboring countries in the middle east and south asia that make much greater use of the legumes in their cuisines.

Immediate business opportunities may lie more in the areas of improved production for export but, in the longer-run, new food products in Morocco might offer interesting business opportunities for dryland producers or small businesses in producing regions.

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SEEDS AND SEED-RELATED INDUSTRIES

Resource Base and Natural Comparative Advantage

Morocco has many of the climatic characteristics sought for seed, spice, herbal and aromatic plant production. It has a range of elevations and microclimates for production of different ecotypes of crops. It has a developed irrigation network in a Mediterranean climate, permitting production of warm season seed crops under optimal conditions for growth and dry down. It also has a high diversity of native and introduced species of spice, herb, and aromatic plants which grow naturally in forest reserve areas.

Industry Structure and Technology

The seed industry is dominated by the major crops of Morocco -cereals and grain legumes. Moroccan cereal seed production is carried out mainly by farmers and small traders who save their own seed or exchange small lots of seed on local markets. Officially, all wheat and barley seed is produced by the national seed system through the parastatal, SONACOS. Varieties are developed and maintained by INRA. They enter the national catalogue through the DPVCTRF, a section of the DPV of MARA, which is responsible for overseeing varietal testing and maintaining the national catalogue for all crops. Companies can propose varieties for the national catalogue which may be tested by INRA, parastatals, or under contract to commercial companies with public supervision. For these services there is an inscription fee of 20,000 DH and a testing fee of 10,000 DH; these are not seen as a constraint by commercial seed companies.

The national seed marketing parastatal, SONACOS, is responsible for multiplication of varieties in the national catalogue following estimations of seed requirements. SONACOS runs some seed farms, but contracts for much of the production of cereal seed. It has a monopoly on bread wheat seed multiplication and distribution. SONACOS owns a large share of the seed conditioning equipment in the country. According to one observer, SONACOS handles about 20% of wheat seed, the informal sector and some organized seed cleaners handle about 80%. Under ASAL II, SONACOS has been targeted for privatization in the near future.

INRA is responsible for development of cereal varieties. The USAID-assisted Aridoculture program in Settat has concentrated on developing crop varieties for the "bour defavorable" zones. It has made recent breakthroughs in the development of varieties of wheat with single gene resistance to Hessian fly, but which need additional agronomic and grain quality improvement.

Corn is grown for fodder, feed grain, and grilled corn. Both the public and private sectors are involved in R&D and seed multiplication and sale. Substantial quantities of US and international hybrid varieties are being imported. Pioneer, DeKalb, Northrup King, and Ceiba-Geigy have begun to increase their presence in Morocco. Pioneer recently established Pioneer Maghreb as a national company to work on corn, oilseed, fooder and forage crop seed for both the Moroccan and Maghrebian markets.

Morocco is an exporter of grain legume seed and of grain legumes in general. It is a major producer of winter grain legumes, especially fava or broad beans, chickpeas, and lentils on about 500,000

hectares of land. Production ranges from 250,000 to 400,000 MT. Grain legume is produced locally and exported. While INRA varieties are delivered to SONACOS to produce seed, the private sector is highly active in the grain legume seed trade. Both food and seed production is threatened in many traditional growing areas by Orobranche (broom-rape). ICARDA is phasing out its fava bean program and has selected Morocco as the new international home for this program. Tolerance to broomrape has been found in small-seeded Spanish varieties. The joint INRA/ICARDA program will attempt to incorporate this resistance into the large-seeded commercial lines produced in Morocco.

There has been a rapid expansion of demand for oilseeds following the national decision to try to substitute national production for imported oils. COMAPRA is the lead parastatal agency for oil seed promotion. SONACOS also involved in seed production and distribution. COMAPRA has been promoting the testing and extension of imported sunflower varieties. Many of these are Northrup King varieties. The Pioneer Maghreb representative has begun testing Pioneer hybrids. Dekalb and Ceiba Geigy varieties are also being used. Growth in demand for other spring crop oilseeds, such as canola (rapeseed), will increase if production incentives are maintained.

Given the large expanses of dryland agriculture in Morocco, livestock production is an important harvester of range and pasture vegetation, the GOM has tried to encourage greater utilization of forage legumes in pure stand and in grass and forage mixtures. The public strategy is to provide improved nitrogen fixing forage and to improve fallows. The government currently provides a 40 percent subsidy to seed suppliers and gives a tax and duty exemption for imported seeds. In the dryland areas Australian medics and a range of Mediterranean vetches are used. Almost all of the medic seed is imported. For the irrigated areas, many seed companies import berseem, clover, and alfalfa seed. Pioneer Maghreb is currently testing berseem and alfalfa varieties in Morocco.

Range and fodder grass seed was the subject of major USAID investment in Morocco in the late 1970's and early 1980's. Concentrated assistance was provided to the El Jadida seed farm. The German GTZ program worked with INRA on some of these species as well as forage legumes. Much of this seed moves through MARA and SONACOS channels to range improvement programs. Morocco is a traditional exporter of Canary grass (alpiste) seed for range improvement, bird seed, and ornamental uses, although production has shrunk continually and dramatically over the past 20 years. Irrigated areas are becoming important consumers of hybrid fodder. Pioneer, Northrup King, and Dekalb are all testing sorghum-sudan grass hybrids targeted to the needs of the dairy and livestock fattening industries.

Vegetable seeds are mainly imported. One commercial firm interviewed felt that the quality of imported vegetable seed has historically been poor. The tender system used has led to low bid supply of low quality seed. Essentially all of Morocco's potato seed is imported. Some firms perceive SONACOS to have a monopoly on importation, because most potato seed moves through its cold storage facilities. Most potato producers carry over a portion of their crop for the late summer planting and buy imported seed in the late winter for the spring crop. Researchers at IAV Hassan II CHA in Agadir are researching true potato seed multiplication approaches, but have not yet identified commercially acceptable clones.

All of Morocco's sugar beet seed is imported. Approximately 32 varieties are in the national catelogue, mainly polygerm varieties with some monogerm. ISERF is attempting to select among these and others to identify regionally adapted varieties.

Specialty seeds and plant parts are produced in great diversity in Morocco. Spices, herbs, and gum species are primarily collected species. The production is found in forest reserves and on some private lands in the foothills and the Atlas. Eaux et Forets provides collection licenses. There is a chain of middlemen who organize collectors, purchase odd lots, do some conditioning and deliver seed and plant parts to exporters and processors. Seed for these species is collected by Eaux et Forets for planting efforts which are part of erosion and soil conservation work. There is some movement towards plantings on private land (carob, capers, coriander). Seed for aromatic and fragrance plants is both produced in Morocco and imported.

Processing

Table A-4 provides a listing of companies in seed or seed-related industry extracted from the 1986 CMPE export industry catelogue. The sample is biased by its concentration on industries which focus on exports. The diversity of products handled reflects the fact that many of the companies listed are or were trading companies which have added seed cleaning, conditioning, and specialty drying and processing lines over time. Excluded from the list are companies which are primarily food processors who purchase seeds, spices, and other plants as raw materials for canning or freezing.

The list also excludes the parastatal companies of SONACOS, SODEA, SOGETA, and COMAPRA which have by far the greatest seed conditioning, handling and storage investment in the country. The distribution of these companies by the five most important seed products is as follows:

Herbs	24
Legumes	23
Carob	11
Seeds	10
Cereals	10

The concentration of the private sector in grain legumes and herbal plants should be noted. Most of businesses involved in the seed trade are diversified companies.

Market Opportunities

The Domestic Seed Market

Moroccan sugar industry workers indicate that they do not expect Morocco to become a producer of sugar beet seed. US producers of sugar beet seed may find an opportunity here for monogerm varieties, particularly if mechanical planting of sugar beets or mechanical transplanting increases.

Seed companies in Morocco have identified hybrid varieties of oil seed crops as a major domestic market potential. They seek joint venture partners to produce hybrid sunflower varieties in country. Seed companies also see hybrid vegetable seed production as a likely growth industry, particularly for onions, peppers, and tomatoes.

True potato seed and seed potato supply may become important if researchers find commercially acceptable varieties.

The Foreign Seed Market

The Maghrebian market for grain legume seed is likely to remain strong, and there is the potential for increased sales of seed (which has an important labor component) to the EEC. Development of Orobranche-resistance in fava beans would provide Moroccan companies with a special advantage on the market place.

Canary grass seed should continue to be an important export seed to parts of the world with Mediterranean climates.

Morocco has good growing conditions for flower seeds and bulbs, but the flower seed business is highly competitive. A joint venture approach with a company already well-established in the industry would probably be the best approach.

Special Project Opportunities

SONACOS is on the GOM's "privatization list". The issue is whether the public sector goals of the **Plan Cerealier** can be met without a public structure producing the seed. It has acquired more profitable business (potatoes) to offset the heavy reliance on a low-return seed (wheat, barley). Undoubtedly, private firms would prefer to purchase the most profitable part of the business (potatoes and vegetable seeds), and not purchase the wheat seed part of the business. According to some seed industry representatives, the climate for investment in the seed industry in Morocco is good. The country recognizes international plant variety laws and patents. In addition, the investment climate is very favorable as described in Chapter Three of this report. The following represent potential opportunities which may be considered by the MAP project design:

- Study of the privatization of SONACOS;
- Study of the production potential for specialty seeds, especially flower, spice seeds;
- R&D to identify and produce pure lines of Carob and improve coriander selection;
- Promotion of partnerships between Moroccan firms and US or foreign subsidiaries for the production of vegetable and forage seed;
- Joint ventures or buyouts by US spice companies;
- Joint Ventures with biotech firms for Orobranche-resistance in fava beans and other grain legumes.

CUT FLOWERS

GENERAL ASSESSMENT OF CONSTRAINTS, OPPORTUNITIES AND POSSIBLE AID INTERVENTIONS

The Moroccan cut flower industry is unique in that more than 90 percent of the flowers are produced for export. Morocco's favorable climate allows for the production of high quality flowers during off-season production periods. The Moroccan industry is small, high value and mostly composed of small family business in which 90 percent of the exports are roses. The export period is primarily from October to May with France as its principle market (80 percent) while other markets included Germany, Switzerland, Canada and some limited shipments to the US. Other cut flowers crops include Strelizias and Gladioli and a limited quantity of other species.

The main production areas are Marrakech, Tadla, Agadir and El Jadida. Currently over 380 hectares of cut flowers are produced in open fields and plastic greenhouses. Since 1981 greenhouse rose production has increased significantly from 86 tonnes to over 800 tonnes in 1988. The major greenhouse production areas are: El Jadida, Haouz, Souss Massa and Tadla. The use of greenhouse technology has improved flower yields and quality.

Yields under open field conditions are 90,000 flowers/hectare while production in unheated greenhouse are 260,000 - 300,000 flowers/hectare. Rose yields of 500,000 flowers/hectare can be obtained in plastic greenhouses provided with supplemental heating and automatic ventilation and humidity control. Some greenhouse growers have experienced downy mildew and nematode problems. Fungicides and nematocides have been introduced and are used by some of the more innovative growers.

The main rose varieties grown in Morocco are Visa, Sonia, Samantha, Omega, Cocte:, Vega, Jacavanda, Champagne and Frisco. In some areas hedge roses are grown for perfume either by drying or by distillation.

Many Moroccan flower growers lack the experience necessary to manage a large export-oriented operation. Current export standards are not well established and no clear marketing policies have been developed. Farm labor is readily available at comparatively low cost, but workers lack technical skills and experience in greenhouse management, improved cultural practices, irrigation, quality, grading standards and post harvest handling technology to meet market demands in Europe, Canada and the US. The industry lacks the infrastructure from production, packaging, storage, transport and marketing necessary to advance the industry rapidly. Cut flower prices vary and are risky but remain relatively high compared to other high value crop exports. The industry needs new technology in production, post-harvest handling, transport and marketing.

Potential AID Intervention and Project Opportunities

Cut flower production has great potential in Morocco and the industry has just begun to develop some of that potential. There are many aspects of current production and marketing technologies which need assist to develop correctly. The following are a sample of possibilities:

- Prefeasibility studies to expand production areas and diversify crop mix to include other cut flower crops i.e. Carnation, Gerbera, Lily, Alstroemeria, Freesia, and Phlox;

- Promote and develop export marketing opportunities by establishing contacts with brokers or wholesalers in major European, Canadian and US cities serviced by Air Maroc. Explore Gulf state market opportunities;

- Promote the establishment of working relationships between broker, flower organizations or individual growers to insure good product mix and quality standards;

- Provide technical assistance to growers, extension agents and researcher in the form of workshops and seminars and long-term assistance through both public and private sector institutions;

- Help the industry establish grades and standards that meet market expectations;

- Develop joint ventures between Moroccan and foreign firms to stimulate technology transfer and marketing development opportunities;

- Develop infrastructure that can provide production technology, market promotion, transportation and post-harvest handling and packaging;

- Develop soilless and artificial soil mixes for propagation of cut-flower seedling and crop production in greenhouses. Explore CO_2 enrichment to improve plant growth, flower quality, and water use efficiency; and

- Develop biological pest management practices for insect control in greenhouse crop production and field production.

FRUITS AND VEGETABLES SUBSECTOR

FRESH VEGETABLE INDUSTRY

Resource Base and Natural Comaparative Advantage

Morocco's subtropical climate allows for a wide variety of high quality vegetable crop production for export and domestic consumption. Morocco has a varied climate but typically it is semi-arid with distinct seasons. The Atlantic coastal regions from Tarfaya/Agadir in the south to Casablanca/Rabat in the north rarely experience damaging frost. January is the coldest month with an average minimum temperature of 7C.

Morocco's latitude gives it a natural climatic advantage over northern EEC countries for vegetable production. In some years, as in the 1989/90 season, killing frosts in Europe and a long, cold winter made Moroccan produce extremely valuable in European markets. Even European greenhouse producers could not compete economically last year because they could not afford to heat their greenhouses. However, winter vegetables in Morocco also face risks of frosts, which can occur from the northern zones in the Loukkos area to those of the Souss valley inland from Agadir.

Winter growing temperatures in Morocco are suitable for open-field production of cool season vegetable crops and for warm season crops grown under protective coverage and greenhouses. Vegetable production under plastic including plastic houses, row covers, floating covers, and plastic mulch is increasing. Most plastic greenhouses are 3-4 meters high, 9-10 meters wide and 50-60 meters long. Two types of plastic greenhouse structures are used: (1) the hemi-cylindrical with aluminium pipe structural support and (2) the block-type with wood supporting structures. Vegetable greenhouse production is concentrated in two areas: the Atlantic coast from Casablanca to Oualidia (1200 ha) and the Souss and Massa valleys of Agadir (370 ha).

The southern coastal region from Tarfaya north to Agadir, in which frost may occur only once every four years, offer a climatic advantage over other regions for growing winter vegetables for export markets. Production requires irrigation in which ground water from wells and surface water from dams and weirs are used. New irrigation technology has been introduced. The most common system used is furrow irrigation. However other water distribution systems such as trickle, microjet and sprinkler have been introduced and are expanding rapidly. In the case of greenhouse and plastic row cover cultivation, trickle is very common. In open field production, live windbreaks of Cypress and Acacia trees as well as bamboo fences are used for wind protection.

Morocco's soils vary greatly from extremely productive to very poor with an alkaline pH from 7 to 9. Salinity is not a constraint in the Souss and Massa valleys which benefit from very fertile loamy-sandy soils. However salinity is becoming a problem in some of Casablanca's production regions, where wells may have 2-3 grams of salt per liter. Water remains the most limiting factor in most production regions. Recent construction of dams and reservoirs has allowed production areas to expand.

Morocco produces approximately 3 million tonnes of fresh vegetables on about 190,000 hectares (Table A-3). Of the total area approximately 22,000 hectares are produced during the winter season.

The major greenhouse vegetable crop in tomato. Production of vegetables for domestic markets and for processing comes from open-field production and include traditional crops of tomatoes, potatoes, carrots, eggplant, beans, peas, zucchini and onions. Seasonal vegetables for local consumption are produced in all agricultural zones.

TABLE A-3

APPROXIMATE VEGETABLE CROP PRODUCTION AREAS, 1988/89

Crop	Area (Hectares)
Potato	42,000
Melon	28,000
Watermelon	25,000
Tomato	20,000
Onion	17,000
Peas	5,000
Zucchini	5,000
Snap Bean	4,000
Sweet Pepper	2,500
Others[1]	41,000

[1]Artichokes, beets, broccoli, cabbage, carrots, cucumber, cauliflower, chinese cabbage, eggplant, fennel, lettuce, okra, pumpkin, squash, sweet potato, turnips, parsley.

Source: Lasheen, 1989

The Ministry of Agriculture reports the data shown in Table A-4 for the main vegetable crops for the 1987/88 season. The figures combine seasonal and winter vegetable production, though other available data indicate that about 25% of tomato production and 20% of potato production are grown in the winter.

TABLE A-4

AREA, YIELD, AND PRODUCTION OF VEGETABLE CROPS, 1987/88

Crop	Area, hectares	Yield, tons/ha	Production, tons
Tomatoes	19,600	33.0	646,800
Potatoes	42,100	20.4	858,800
Onions	21,100	14.3	300,300

Source: MARA, 1989

The Moroccan vegetable export industry is based on "primeurs" (winter or early vegetables) produced from November to April, especially fresh tomatoes, cucumbers, peppers, eggplant, melons and potatoes. Tomatoes and potatoes are the major export crops. In the 1989/90 season, Morocco exported 90,000 tons of fresh tomatoes, 65,000 tons of potatoes, and 9,000 tons of miscellaneous fresh vegetables (Lasheen 1989). Fresh lettuce, asparagus, green onions, beans, and peas are also produced in limited quantities and represent good expansion opportunities for diversification.

Potato production both for winter export and for local markets is increasing. Currently most virus-free seed potatoes as well as most vegetable hybrid seeds are imported. Research on true potato seed is currently underway at the IAV Complexe Horticole in Agadir. There exists a good opportunity to produce certified potato seed using new tissue culture and biotechnology techniques developed at the center. Growing potatoes from seed has the advantage of avoiding potato viruses which commonly affect seed potatoes.

Industry Structure

In Morocco, prior to 1986, vegetable exporting was a monopoly of the government export marketing board, the Office de Commercialisation et d'Exportation (OCE). The board actively promoted reforms in export marketing practices. However vegetable growers, who were unorganized and slow to conform to expected cropping patterns, had difficulty diversifying their production. Most growers relied on the traditional practice of producing tomatoes. More recently, through the efforts of the World Bank and the OCE, the industry has benefited from credits for greenhouse construction, purchase of irrigation equipment for both greenhouse and open field production, installation of some packing and quality control stations, greenhouse construction for propagation of vegetable seedlings, as well as short-term credit for operating costs.

Today, as part of Morocco's marketing and trade regime liberalization program, the government has eliminated its export monopoly of the OCE, although they are still an active participant in SME export markets. OCE quality control and standard functions were split off and given to a new public sector enterprise known as the Etablissement Autonome de Controle et de Coordination des Exportations (EACCE). Its functions include export quality certification and coordination of production through consultation with the major producer/exporters.

Marketing

Morocco's vegetable export industry is based on primeurs (winter crops) shipped from November to April. Export volumes vary greatly according to weather conditions, especially the availability of water. The value of vegetable exports shown in Table A-5, show substantial year-to-year variations. Comparable data on prices reported by GATT, indicate a general upward trend for tomatoes and other fresh vegetables over this period, though potato prices dropped substantially in 1988 compared to previous years.

TABLE A-5

FRESH PRODUCE EXPORTS, 1984-1988
(millions of Dirhams)

	1984	1985	1986	1987	1988
Fresh tomatoes	291	323	389	457	391
Fresh vegetables	100	146	215	238	290
Potatoes	127	136	193	172	98

Source: GATT, 1989

During the 1960's and 1970's Morocco was a major supplier of both winter and summer vegetables, primarily tomato and potatoes to France, Germany and a few other EEC countries. In the mid-70's, Morocco's vegetable production and export declined dramatically due mainly to competition from Spain, lower producer prices, and EEC restrictions on vegetable exports from May to October. The EEC is the largest regional importer of fresh vegetables with Germany, France and UK as the largest importers. Although the EEC countries are largely self-sufficient in production of fresh vegetables on an annual basis, climatic factors restrict the range and timing of their EEC production, which then permits off-season entry of Moroccan imports.

A World Bank vegetable marketing project in 1978-85 formulated a development plan for the winter vegetable subsector. The government plan was to double the value of vegetable exports. The project was successful in expanding greenhouse production but failed to stimulate open-field production, crop diversification, and market development. It did not meet the project objective of doubling exports of winter vegetables.

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Morocco is anxious to develop joint venture opportunities, to develop markets and increase production for export. However a more aggressive marketing policy must be initiated to expand exports, especially in the areas of introduction of new high value crops, and improvements in post-harvest handling. Quality control must also be strengthened.

Opportunities and Constraints

The Moroccan government's export liberalization program and the elimination of the OCE monopoly on vegetable export has created new optimism in the vegetable industry. The private sector is beginning to respond to new opportunities. However, as noted above, a more aggressive marketing policy must be initiated. Increased export of fresh vegetables and high value crops has a good potential in Morocco because of its favorable climatic conditions and good fertile soils. Water is a limiting factor but increased dam construction should expand irrigation and recharge acquifers. Morocco's irrigation potential is not utilized to its maximum capacity. Salinity is becoming a serious problem in some vegetable production areas but is not a constraint in the Souss-Massa Valley area which is one of the major production areas with good soils, adequate water resources and relatively frost-free environment.

Nemotode infestation has become a serious problem in several greenhouses and production areas especially in the coastal sandy soils. Resistant plant varieties that are adopted to Morocco should be introduced, tested and evaluated. Soil fumigation is an expensive input but has been successfully introduced in several production areas for control of nematodes and soil-borne diseases.

Vegetable crop yields are generally low and this is one of the main reasons for high production costs. Farm labor is readily available at comparably low cost, however lack of technical knowledge of improved production practices, irrigation technology, quality and grade standards and post harvest handling are constraints at the farm level. There is growing interest in "fertigation" -- the application of fertilizer through drip irrigation systems, which was introduced first in greenhouse cultivation of bananas and other crops.

Transport to local and export markets is also a serious constraints. Morocco does benefit from a good road system but post harvest handling, refrigeration, packaging, and preparation for market does not, in some cases, meet EEC standards. Overland trucking to Europe has not yet been adequately developed. Air and sea transport is available but is hampered by a high cost structure resulting from cartel control by government-owned companies.

In summary, Morocco's climate and lower labor costs provide opportunities for increased export of fresh vegetables. In time, production of some crops may shift to Morocco from higher-cost areas in Europe. American companies seeking a production base to supply the European market may find Morocco an attractive place to invest.

Possible AID Interventions

Marketing organization development and promotion: Conduct feasibility and market studies for expanding export possibilities of early vegetables. Promote small farmer organization to facilitate marketing and development of improved production techniques, post harvest handling, packaging, cold

storage, modified atmosphere storage, controlled ripening and quality control technology. Promote use of Moroccan brand names for recognition and establishment of high quality control standards.

Technical assistance: Research and extension in the public and private sector in irrigation technology for greenhouses and open field production, introduction and evaluation of improved varieties, introduction of improved cultural practices, introduction and development of greenhouse soilless mixes and propagation media for production of seedlings for early planting in open field and greenhouses. Develop and strengthen use of new technology in open field production of early vegetables during winter months by expanding use of plastic tunnels, floating covers and plastic mulch technology. Diversify exports from tomato and potatoes to include other warm season crops such as pepper, eggplant and melons.

Improved quality standards: The project could help develop new quality standards and post-harvest handling techniques and transport of vegetables for export. Harvesting at optimal maturity, reducing injury due to handling, reducing microbial infection through proper sanitation and maintaining optimum temperature and humidity of the harvested crop are extremely important parameters in maintaining post harvest quality. Once these primary factors have been satisfied further maintenance of produce quality can be achieved through control atmosphere (CA) or modified atmosphere (MA) packaging.[1].

Promote Moroccan private sector involvement in the transport sector: The purpose would be to stimulate the use of refrigerated trucking of early vegetables from Morocco to Europe, and better and more efficient use of air and sea shipment space for export of vegetables.

Special studies: Pre-feasibility studies in such areas as private investment in cold storage facilities, full privatization of air and sea transport, private sector service laboratories for soil and plant tissue and for nutriclean certification labs for pesticide residues, introduction of fertigation equipment and related fertilizer formulation and control instrumentation, markets for packaged prepared salads in European markets, and markets for new crops such as Chinese vegetables, beans for sprouting, and baby vegetables, and the expansion of crops such as asparagus, artichokes, and lettuce. The comparative advantage of the industry is based on the mild winter climate and new irrigation, plastic greenhouse and row cover technology.

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[1]The high degree of atmosphere regulation associated with CA is capital intensive. In Morocco, CA is more suitable for long term storage of fruit crops such as apples and pears. Modified atmosphere storage (MA) requires a lower degree of gas concentration control. Normally, initial atmosphere conditions are established for a transient period and the physical environmnet maintains conditions within broad limits. New technology in the design and manufacture of polymer films with a wide range of gas permeability characteristics have stimulated the creation and maintainance of modified atmospheres within film packages. Such modified atmosphere packaging could be applied to shipping containers of vegetable produce from Moroccan ports.

FRESH FRUIT INDUSTRY

Resource Base

The total area under fruit production is estimated at 547,100 hectares representing approximately 7% of the total cultivated land. Morocco's favorable climate allows production of most fruits, however the mild winters limit the production of some decideous fruits varieties with high chilling requirements. Estimated production areas for a number of fruit crops are shown in table A-6. Olives and dates are included for the sake of comparison, but are discussed in detail in separate sections of this annex.

TABLE A-6

AREAS OF FRUIT CROPS, 1988

Fruit	Hectares/1000	Percent of Total
Olives	332	58
Citrus	70	12
Grapes	56	10
Almond	34	6
Dates	20	3
Apricots	14	2
Apple	10	2
Prune/Plum	5	1
Pear	2	1
Peach	1	1
Quince/Nefarine	2	1
Cherry	1	1
Banana	2	1
Others	27	5
Totals	576	100%

Citrus Fruit

Citrus is by far Morocco's most important agricultural export crop representing almost 70% of all agricultural exports. There are three main citrus production regions. The Souss-Massa Valley (30%), the Gharb (30%) and the central valleys of Marrakech and Fes - Meknes (40%). Data on production of citrus and its disposition is shown below in Table A-7.

TABLE A-7

PRODUCTION AND UTILISATION OF CITRUS FRUIT, 1982/83 TO 1986/87
(000 tons)

	1982/83	1983/84	1984/85	1985/86	1986/87
Production	960	1017	960	1185	960
Local consumpt'n	286	348	274	393	442
To juice prod'n	81	148	144	178	48
Fresh export	601	522	542	607	470

Source: Annuaire Statistique du Maroc, Ministry of Plan, 1988

The figures indicate that about 15% of production goes to juice in a normal year, around 50% for fresh export, and the rest for local consumption. In a low production year, such as the 1986/87 season, it appears that fresh exports take precedence over juice production, and the juice industry is deprived of supplies. This conforms with statements from FRUMAT that their supplies come primarily from surplus or sub-standard fruit from fresh fruit packing houses.

The citrus export industry has stabilized in recent years, however, the volume and prices of individual varieties exported vary from year to year.

TABLE A-8

EXPORTS OF VARIOUS CITRUS CULTIVARS,
1988/89 AND 1989/1990
(tons)

Cultivar	1988-89	1989-90
Clementine	185,000	108,800
Kekeria	1,390	960
Mandarine Temple	1,300	1,580
Sunerine	800	1,700
Ortanique	1,650	2,300
Montreal	-	500
Navel	150,900	70,300
Salustianaa	22,200	20,950
Washington	32,580	32,140
Oranges fines	-	5,900
Morocco Late	244,640	186,800
Total	640,620	431,930

Source: Lasheen, 1989

Table A-8 indicates that the Morocco Late, Clementine, and Navel varieties dominate the fresh export market. Comparing the total export figures with those of Table A-7, it will be seen that the substantial fluctuations in export volumes continued through the 1989/90 crop year. The fresh export market is characterized also by huge price fluctuations. Some sources indicate export prices varying by as much as a factor of three from year to year.

The deciduous fruits grown in Morocco include apricot, apple, prune, plum, pear, quince, peach and cherry. Most deciduous fruits are grown for the local market. Peaches and cherries have been exported in limited quantities to Europe. Most apricots are used for jam and preserves. Apple production is well developed with mm 106 root stock. Most apple orchards are using high density planting in which the major varieties grown are delicious and golden delicious. New varieties are being introduced and planted (e.g. Granny Smith).

Several larger growers have installed cold storage capacity with modified and control atmosphere facilities. These facilities have allowed the fruit to be sold on a year round basis for local consumption.

Prune, plum, pear and quince are produced in limited quantities, however with the introduction of new varieties and new irrigation technology production is expected to increase. The production of dry prunes for both local consumption and export has increased. The yield of strawberries and avocado are good with local demand increasing. Limited quantities of strawberries for export to French and Germany are grown, however this crop faces competition from Italy, a large producer and exporter of early

strawberries. Almonds are produced in low-density planting for local consumption. Some farms in the Marrakech areas have expanded almond production and introduced new irrigation technology.

The grape industry produces wine grapes, table grapes and raisins. A large portion of grapes are produced on government-owned farms by SODEA. In the 1988-89 season 48,100 hectares of grapes were produced of which approximately 14,000 were used for wine production.

Bananas are a relatively new crop produced in plastic greenhouses as a result of restriction of banana imports imposed to save foreign exchange and to encourage local production. Banana production under greenhouses has increased from a few hectares in 1980 to over 1500 ha in 1989. Banana prices to growers have dropped from 18 DH/Kg to 7 DH/Kg. during this period due to increased domestic production.

Industry Structure and Marketing

With the exception of grapes, most fresh fruit is grown on privately owned farms varying in size from less than 1 hectare to over 500 hectares. Except for citrus and olives most fruit is produced for local consumption.

Morocco's fresh fruit export industry is based on citrus. The industry is international in scope and relatively well organized from the standpoint of production techniques, use of irrigation technology, transport, post harvest handling, packaging, processing for juices and exporting. Prior to 1986 fruit exports was a monopoly controlled entirely through a government export marketing board, the Office de Commercialization et d'Exportation (OCE). The government has eliminated its monopoly through the OCE and has allowed direct involvement of the private sector, with inspection and standards handled by the Etablissement Autonome de Controle et Coordination des Exportations. Fruit producers and wholesalers may export directly by obtaining an export permit and by meeting export regulation and norms established by EACCE.

Morocco has a comparative advantage in quality of several citrus fruits especially early clementines, mandarines and tangerines. Transport and marketing channels need to be strengthened, however. A large portion of Morocco's citrus is exported to the EEC, which is regulated by EEC tariffs and quality norms. Some EEC countries prohibit citrus imports (Italy) for phytosanitary reasons. The entry of Spain and Portugal to the EEC will create added completion to Morocco citrus export industry.

Opportunities and Constraints

With the EEC expansion southward to incorporate Greece, Portugal and Spain, seasonal horticultural products of these new members will compete in EEC markets with those of Morocco. The EEC will become relatively self-sufficient in fruit crops. However, seasonal advantages, patterns of production and climatic constraints will continue to provide market opportunities for Moroccan fresh fruits. The increased competition will require the better organization of producers to facilitate the flow of trade and technical information.

Based on the relative importance of fruit production in Morocco, its comparative advantage and the current stage of industry development, several fruit crops in addition to citrus and olives have export potential and offer opportunities for development. These include: table grapes, dates, early peaches and strawberries. Export markets have not been adequately developed for these crops due to inadequate grading, packaging, post harvest handling and cold storage facilities. However, several large growers have invested in new irrigation technology, improved varieties, grading, packaging and cold storage facilities and are interested in export opportunities. There is also interest in the diversification of their fresh produce to include processing of fruit which reach the market during peak production periods when local prices have dropped.

Water is the most limiting factor in expanding the production of fresh fruits in Morocco. Current plans to increase dam construction and reservoirs should increase irrigation potential. Water quality, i.e. salinity, is becoming a problem in some production areas. Several serious insect, disease, and virus problems have been identified requiring inputs of fungicides insecticides and miticides for control and highlighting the need for new resistant varieties. New integrated pest management practices are also needed. In citrus, for example, foot rot caused by phytophthora is a problem. New irrigation technology is being developed to minimize this disease. The development of resistant varieties and new rootstocks that are adopted to Morocco would provide production advantages.

Transport to local and export markets is a serious constraint for most fresh produce. New post-harvest handling, refrigeration, packaging technologies are needed.

Potential AID Project Interventions

- Marketing organization and promotion of fresh fruit for exports. Conduct prefeasibility studies to determine market potential for export of several fruit crops, i.e. strawberries and table grapes;

- Controlled atmosphere storage. Expand use and help establish several controlled atmosphere and modified atmosphere cold storage units in major fruit production areas. Set up demonstration units and conduct workshops and seminars on how reduced O2 and elevated CO2 in modified atmospheres delay fruit ripening, reduce respiration and ethylene production rates, retard softening and slow down compositional changes associated with ripening. Introduce and conduct demonstration of polymeric films that can be used to create or maintain modified atmospheres within flexible film packages that can be applied to shipping containers and retail packages of sliced commodity;

- Establish a fruit germplasm center to introduce and screen improved fruit varieties and rootstocks;

- Establish a service laboratory for soil, plant tissue and water analysis that is managed by the private sectors through a cooperative or farmer organization;

- Packaging development for export of fresh fruit that potential institutional arrangements for assistance need to be explored in the denzin phase;

- Institutional strengthening. Sponsor and provide research and extension activities at national agricultural institutions to meet needs of the industry. Priorities should include improved cultural practices, irrigation technology, post harvest handling, packaging, storage and marketing;

- Establish a tissue culture laboratory to produce disease and virus-free plant materials, i.e. strawberries, and bananas; and

- Establish a plant genetics biotechnology laboratory at a nationally recognized research center to conduct ONA experiments, gene isolation, and RFLP analysis. Techniques could be used to isolate date Bayoud-resistant and fruit quality genes.

THE ORANGE JUICE INDUSTRY

Structure of the Industry

The mixed public-private company FRUMAT, with three processing plants, accounts for all of the orange juice produced. It processes between one-quarter and one-third of Morocco's orange crop, which varies between 800,000 and 1,500,000 tons annually. Basically, fruit juice is produced from surplus fruit which cannot be exported. Amounts treated vary greatly; in the 1988/89 season (a good year) FRUMAT treated 328,000 tons, while in the 1989/90 season (an extremely bad year), only 150,000 tons were handled. FRUMAT's production capacity now is double what it was prior to 1985, when the government decided to greatly increase orange production.

The Kenitra plant of Frumat is a modern juice operation with facilities to produce and pack full-strength juice and frozen orange juice concentrate in a wide variety of containers. The plant is equipped with aseptic filling equipment for one-liter jars and Tetra-Pak cartons, five-liter and 1000 liter bag-in-box, drums, and large shipping containers. Frozen concentrate is shippped in drums and large insulated containers. Four million-liter aseptic storage tanks are used to store juice extracted during the season for later packaging as orders are received. Two additional similar tanks are available for storage of concentrate.

Raw material is obtained through contracted deliveries of fruit from growers and from fresh fruit packing houses (mainly fruit rejected because of shape, size, or skin color).

Marketing

Morocco has traditionally exported its orange juice to France, but Germany is the largest consumer of orange juice in Europe and FRUMAT exports to that country now exceed those to France. Ninety to ninety-five percent of FRUMAT production is exported. Products include full-strength juice in glass jars, 35% juice drinks in Tetra-Pak cartons, bulk juice in bag-in-box, and drums and shipping containers of both full-strength juice and frozen concentrate.

Morocco's duty-free quota for EEC imports of orange juice is 18,000 tons (in all forms). However, Brazil is now a major factor in the European market, with about 19% of the EEC market. An additional advantage for Brazil is their use of bulk shipment and bulk storage in Rotterdam, from which point they can fill orders rapidly for European customers. However, the quality of Moroccan juice is considered superior due to its color and flavor, and is often purchased for blending with Brazilian juice.

Sales to the domestic market are full-strength juice in aseptically-packed consumer cartons and concentrate to local fruit juice drink bottlers. However, as there are no restrictions on imports, bottlers tend to prefer imported concentrate for orange drinks.

Dried fruit pulp is sold for animal feed, most of it being exported. Ireland was mentioned as a major buyer. Orange oil is another by-product which is exported.

Opportunities and Constraints

FRUMAT management listed a number of constraints which they face:

- **Lack of cold storage facilities:** Due to lack of publically or privately-owned cold storage facilities at ports, FRUMAT has to rely on its own facility in Casablanca, forcing them to ship product there for export from its four plants in different parts of the country. These logistic probems add significantly to their costs.

- **Lack of port container handling facilities:** In addition to the cold storage problem, Morocco's smaller ports (including Kenitra) lack container handling facilities, another reason for shipping everything through Casablanca.

- **Raw material supply:** A major problem for FRUMAT is the great year-to-year variations in the supply of oranges, due to the fact that they have to compete with local and export markets for fresh fruit -- the supply of which varies according to weather conditions. Orange production under the direct control of the enterprise, either through company-owned orchards or long-term contracts with large growers, would alleviate the problem. However, FRUMAT management states that Moroccan businessmen are generally not interested in investing in something that will not begin to pay out for 3 to 5 years.

- **Need for bulk storage in Europe:** To compete effectively with Brazil in terms of rapid delivery to customers, FRUMAT feels that it should have access to bulk storage facilities in Europe.

Potential AID Interventions

AID is restricted from assisting the citrus industry so nothing can be done directly to assist the orange juice industry. Nor is there any real need to do so. FRUMAT would benefit from any improvements in port facilities which might by instituted by the Moroccan government. It can be expected that the private sector will eventually invest in new cold storage facilities. In fact, we understand that plans are currently being made along these lines by a Moroccan-German group.

Another potential field of action would be the promotion of joint ventures with U.S. orange juice companies, an activity which would assist rather than compete with U.S. processors. Tropicana, for example, is known to be seeking to develop new sources of supply within easy reach of major markets, including Europe. Privatization of the government share in FRUMAT would be one way to facilitate entry of a foreign investor.

PROCESSED FRUIT AND VEGETABLES

Structure of the Industry

The latest available information on fruit and vegetable processing in Morocco (MARA/DFV, 1988) lists 80 enterprises in the provinces of Casablanca (the heaviest concentration), Marrakech, Safi, Agadir, Fez, Meknes, Larache, and Kenitra. The industry is characterized by a few large plants and many small ones; in 1985, 52% of the plants accounted for only 7% of production, while 11 plants processed 68% of the total. These are privately-owned plants operating free of government control. The two exceptions are the large state-owned orange juice processor FRUMAT and the large privately owned LUKOUS firm in Larache producing dried tomato powder and flakes. Data available from 1985 indicated that there were at that time some 85 plants processing about 460,000 tons of product, which represented only about 60% of installed capacity for these plants taken as a whole. More recent data was not available.

According to 1985 figures, the industry breakdown by volume of production is as follows:

- Fruit juice (almost all orange juice) -- 37%;
- Condiments (olives, capers, gurkins) -- 35%;
- Vegetables (tomatoes, green beans, peas, peppers, etc.) -- 12%;
- Fruit (mainly apricots) -- 8%;
- Dried, dehydrated, evaporated or crushed products (tomatoes, prunes, figs, raisins) -- 4%;
- Jams and jellies -- 3.5%; and
- Frozen fruit and vegetables -- 1%.

Production figures for the main categories of processed fruit and vegetables over the 1980 - 1985 period appear below in Table A-9. The dominant position of the orange juice industry is readily apparent. Tomato paste production (and a small amount of canned whole and crushed tomatoes) is second in importance. Canned apricots (and apricot jam) are in third position, though we understand that there has been contraction in apricot canning production (less than half of the number of canners in 1988 compared to 1978). Green beans (haricot verts) is fourth, though here also the picture may have changed based on reports of increased output. There is also very limited production of processed celery, cauliflower, spinach, white beans, lentils, sweet corn, peas, chickpeas, strawberries, figs, peaches,

prunes, and raisins. There was a general upward trend in production for all categories except green beans.

TABLE A-9

AMOUNTS OF FRUIT AND VEGETABLES PROCESSED,
1980/81 to 1984/85
(000 tons)

	1980/81	1981/82	1982/83	1983/84	1984/85
Orange juice	121	169	137	246	258
Tomato (paste,canned)	35	44	46	47	52
Apricots	20	23	21	26	27
Green beans	21	12	11	11	18
Gurkins	6	6	6	9	13

Source: MARA/DPV, 1988

Figures for output in terms of final product for three recent years, provided by the CMPE, reveal an upward trend for canned fruit (mainly apricots) and for fruit juice (almost all orange juice), but no substantial growth in canned (and frozen) vegetables.

The three large orange juice operations are single-purpose plants, while most of the others handle a variety of products. Many process tomato paste and canned green beans and smaller amounts of other products. In the Marrakech area, plants canning or bottling olives, gurkins, and capers, together with canned apricots are common. Dried prunes and raisin production is concentrated in the Meknes area.

According to a 1988 study by the Ministry of Agriculture and Agrarian Reform (MARA 1988), processing plants obtain up to 90 percent of their raw materials by direct purchase, of which approximately one-third is through intermediaries, and only 10% from integrated production (company-owned farms). Direct purchases are for the most part through contracts between processor and grower, though it seems that contracts are often not observed by one or other party. There are great variations in purchasing practices between provinces and products. For example, plants in the Casablanca and Fez areas rely heavily on purchases through intermediaries, while other areas buy almost exclusively directly from growers. Another notable point is that integrated production is much more common with tomatoes than with other crops (to the extent of about 40%).

The IESC representative reports that most processors pre-sell their pack and therefor make whatever arrangements are necessary to assure the availability of supplies. This is somewhat at variance at what the team observed at several locations, where processors cited continuing problems obtaining raw material, particularly in the case of tomato paste processors. It does seem clear that a recurring problem

for processors who do not control their own production is competition on the local market for fresh produce during the main growing season. Local demand is sufficiently strong that market prices are at levels such that processors who do not have reliable contract suppliers have difficulty competing for supplies.

Many Moroccan processors are anxious to modernize their facilities and improve quality and in fact several new plants are currently under construction. Examples are the French/Moroccan firm SITRACO in Marrakech which is building a vegetable dehydration and aseptic fruit pulp plant, and the Moroccan firm TOPAGRO which has a modern olive, caper, gurkin, and apricot processing plant under construction in Marrakech. Companies with freezing facilities are also becoming more common. An interesting development is the trend toward production of higher quality crushed and whole peeled tomatoes and away from tomato paste.

Marketing

Due to limited purchasing power in Morocco, and the availability of fresh produce during much of the year, most of the processed fruit and vegetables are destined for export. Data on exports of processed fruit and vegetable products from a GATT study is presented below in Table A-10. The trends are upward in all cases, though with large fluctuations caused either by drought conditions or by the ending of the OCE export monopoly which had its greatest disruptive impact on horticultural exports in 1987.

TABLE A-10

EXPORTS OF PROCESSED FRUIT AND VEGETABLES, 1984-1988
(millions of Dirhams)

	1984	1985	1986	1987	1988
Canned vegetables	377	494	483	505	564
Fruit and veg. juice	161	251	144	84	368
Canned fruit & jams	59	80	123	112	103
Dried vegetables	52	85	117	48	164

Source: GATT, 1989

Exports have traditionally been to the European market. During the 1984 to 1988 period, between 90 and 95% of processed fruit and vegetables went to EEC countries, mainly France and Germany. However, with the help of the IESC office in Casablanca, Moroccan exporters of olives, anchovies, capers and whole peeled tomatoes have succeeded in exporting over $2 million worth of products to the United States during the first half of 1990.

Opportunities and Constraints

A major constraint to expansion of fruit and vegetable processing is the lack of control by processors over raw material supplies. As already noted, processors obtain most of their supplies directly from the farmer or through intermediaries who deal with farmers. There is very little vertical integration of production and processing functions. Contract farming is practiced but has frequently resulted in problems due to weak ability of the ponderous legal system to enforce contracts and participants tendency, thereofre, to ignore them. Processors state that individual farmers do not observe contracts, even when seeds and other inputs have been advanced on credit. They state that farmers tend to sell wherever the price is higher and repay the credit in cash or sometimes not at all. Those who see it from the farmers' side, say that processors offer very low prices, and if market prices are even lower at purchase time, they seek ways to avoid honoring the contract. Basically, Moroccan processing industries are purchasing surplus production which is not absorbed by the fresh market, rather than creating a market for these crops.

For these reasons, processors are not in a position to influence either the quality of the product or the timing and volume of deliveries of raw materials. The problem is due in part to the small size of processing industries and lack of financial resources, which makes the owners of these businesses reluctant to assume the risk of purchasing land and going into agricultural production. On the other hand, farmers tend to act individually rather than collectiveiy and are thus not in a position to negotiate firm contracts for delivery of specified quantities -- which might overcome these supply problems. Cooperatives are being formed in the fresh fruit and vegetable industries. Integration of the fresh and processed markets would seem to offer advantages to all parties.

Profitability of these small-scale processing enterprises is generally low, stemming in part from supply problems which result in low utilization of installed equipment. Another factor is the high cost of packaging materials, particularly cans.

With the exception of FRUMAT and LUKOUS, the fruit and vegetable processing industry is in great need of new investment. Along with investment, some degree of vertical and horizontal integration will have to take place. A multiplicity of small processing plants with uncertain sources of supply does not provide a solid base on which to build a modern industry able to compete in European and other markets. One solution is to attract more foreign investment to joint venture with Moroccan investors, bringing a portion of the needed new capital, together with improved technology and access to new markets abroad. U.S. firms interested in locating sources of supply near the huge European market are likely targets.

Potential AID Interventions

Promotion of foreign (mainly American) investment in the processing industry: AID could play a role -- through qualified consulting firms, universities, or U.S. industry associations -- in promoting U.S. investment in fruit and vegetable processing industries in Morocco, either wholly-owned or joint ventures with Morcoccan investors. This effort could be an expansion of the IESC program or a complementary effort. In any case the extensive contacts developed by IESC in the Moroccan agribusiness sector should be utilized. While the larger U.S. companies may prefer to set up entirely new

large-scale operations, it may be possible to match smaller American firms with the smaller-scale existing Moroccan firms.

Study to establish the benefits of vertical and horizontal integration among smaller Moroccan processors: Such a study could serve as a basis for discussion among small processors, possibly through one of their trade associations, about the benefits of larger-scale operations (by expansion or by merger or acquisition), and the advantages of direct investment in farming or in encouraging long-term arrangements with farmer groups to assure more regular supply of raw material. Contract growing of selected early and late varieties with farmer groups could be shown to extend the processing season and make better use of equipment. The possibility of ownership of processing plants by growers, individually or through farmer associations, should be investigated as it could be another way to tie grower and processor together. To be useful, the study would have to show that such measures would lower costs and make Moroccan products more competitive on world markets.

Technical assistance to processors in quality control and packaging: Provided it was accompanied by the measures described above, technical assistance from experienced U.S. industry specialists could assist processors to meet the standards of U.S. and European buyers. Of course, a joint venture in marketing and/or processing remains the best way to transfer such new technology.

Studies of the feasibility of linking processors and fresh fruit shippers: Farmer associations are already being formed in the fresh fruit and vegetable export industry. There are several cooperatively-owned packing house/cold storage complexes and a large number of smaller cooperative packing houses. This has not happened in the processing industry because it is in many ways an appendage of the fresh produce industry. Processors buy surplus or rejected fruit and vegetables from these packing houses, but supply is very uncertain. Studies are needed to determine the feasibility of linking processors to the fresh fruit packers as a way of assuring a more regular supply of better quality produce. The cooperative could serve as a contracting party to assure an agreed upon minimum tonnage to be delivered, independent of the actual surplus available.

Upgrading of Moroccan processing enterprises through local and foreign consulting services: This subject is discussed extensively in the Business Climate section of the report where a proposal is made to provide matching grants to processors who use such services. Clearly, most of the small and medium-scale operators could benefit from improved production planning, market research and planning, new product development, and management training.

OLIVES

Resource Base and Natural Comparative Advantage

Morocco has been a producer and exporter of olive oil and olive products for over two millenia. Its mediterranean climate and calcareous soils provide good growing conditions for this tree crop. The country has two main growing areas. The first is in the North Central interior portion of the country in the "bour favorable". Olives are grown predominantly under rainfed conditions, production is subject to high fluctuation due to annual rainfall variation which reinforces the inherent alternate bearing trait of olives. Rainfed olive production provides about 30 percent of total production. Production also extends into the drier interior valleys of the country (Tadla, Haouz, etc.) in which olives must be irrigated. This area accounts for about 75 percent of production. Olive production is slightly earlier in Morocco than in more northerly countries, but this does not translate into substantial economic advantage, because longer day-length in the more northern countries in the Mediterrean basin provide for higher yields.

Industry Structure and Technology

Olive trees cover an area of about 370,000 hectares producing about one MT/ha on average. The total surface represents about 52 percent of the total tree crop area in the country. Over seventy percent of the olive trees are of the dual purpose (oil and canning olives) variety "Picholine Marocaine", a mutant discovered in Morocco in a grove established from "Picholine de Languedoc", or "Francaise" which covers about eighteen percent of the surface area. Much of olive production is done on small holdings of under ten hectares. While there are a few large private groves, the largest single holdings are in the hands of the state (about 3,700 ha under SODEA management). Input use has been low historically, particularly in the dryland areas. INRA researchers estimate that about 80 percent of the olive area receives no fertilizer nor plant protection measures. More intensive pruning, fertilizing, and pesticide treatments are used in irrigated areas. Olive production has lagged behind national demand for oils. The government has recognized that many groves were too old to be very productive. A **Plan Olivier** has been developed that would renew old groves and provide new trees (at no cost to growers) to establish new plantings and replant old stands. By 2010 the plan is intended to result in a total area in olives of 400,000 ha.

Olive research is carried out by INRA. Both single and dual purpose varieties have been identified. However, these new varieties have not been readily accepted by growers because of the perceived risks involved in shifting to single purpose varieties or even new dual purpose varieties. Canning olive varieties have also not gained very widespread acceptance, primarily because the markets require larger lots of olives to make it worth while for producers to change processing techniques.

Olive production in Morocco has lagged behind population increases. Tree stands have aged and promotional programs for other crops have also slowed investment in new plantings and renovation of stands. The early to mid-1980's drought also slowed both production and the establishment of new groves.

Olives are collected and delivered to artisanl, semi-modern, and a few larger scale processing and oil extraction plants. All olives are processed in one form or another before being consumed. Producers

belong to the "Association de Producteurs et Exportateurs des Olives"; processors to the "Association des Huileries des Olives."

Processing

From the approximately 370,000 MT of olives produced each year there result:

- 37,000 MT of olive oil;
- 48,000 MT of processed olives consumed nationally; and
- 32,000 MT of processed olives exported.

(Source: INRA Programme Olivier)

Much of the existing olive processing and oil milling capacity is very old. At the artisanal level there are an estimated 16,000 "Maasra's" or traditional oil crushing operators. These produce a low quality, high acid oil for domestic consumption. Semi-modern mills of which there are about 16 in operation also produce a small quantity of virgin oil of 3 percent acid. A few plants are undergoing significant modernization to permit continuous flow processing of olives and a major increase in virgin oils of very high quality with acid content of 2 percent. An important quality issue is the organization of the collection and delivery of olives to the plants. Major efficiency problems exist which effect extraction rates. Maasras may extract 14 percent of the available oil, semi-modern plants from 16-18 percent.

Most canned olives are processed in caustic soda and salt before canning. There is a small segment of the industry which produces preserved olives solely with a salt solution, creating a "natural" or "organic" olive. A few plants have the capacity to produce stuffed olives. The plants undergoing renovation are testing new stuffing and slicing equipment.

Plants are generally old and many have diversified operations by adding units to prepare different "fresh" olive products and to handle the by-products of oil extraction. Links to soap production are frequent. Production of energy from the olive pit grindings is a new area of plant modernization.

Special Opportunities or Constraints

In general the future looks quite bright for the olive industry due to greatly increased GOM support, to increased appreciation in world markets of olive oil as one of the "better oils" in terms of health characteristics, and in terms of low labor costs which are critical to hand operating in olive canning.

The new **Plan Olivier** plantings will take time to reach bearing. This provides an opportunity for rethinking production approaches to include intercrops of annual species to improve farmer cash flow and rate of return to investment.

The small-holder structure of production makes collection costly and time-consuming. Contractor grower arrangements are one option in conjunction with mid-sized processing plants which could be privately or cooperatively owned and managed. In existing plants there is need for white metal or

aluminum cans and for crisp and clean printing of labels, universal bar coding, and higher quality paper for labels.

In terms of exports, lower relative labor costs have improved Morocco's competitive position and this trend is likely to continue. Note that private mills feel that exports are the main market, despite the current national short-fall in vegetable oil. In the growing US market, they also point to competition traditional European exporters of oil and US consumer brand name recognition and association of olive products with Italian and Spanish producers. One large oil factory in Morocco reported that much of their oil exports went to Italy where they were repackaged and shipped to the US as Italian oil.

The biggest growth potential seems to be in sliced and stuffed olives or in specialty products such as "organic" oil which can be produced from the low-productivity, extensively grown olives in rainfed area which are not subject to any fertilizer or chemical treatment. These offer the opportunity for an organic olive for sale to health-conscious US or EEC consumer.

Potential Opportunities for the MAP Project

The EEC prohibition of support to the olive industry in Morocco opens an opportunity for USAID assistance. Depending on what the main thrusts of the MAP project will be, these opportunities might include:

- A demonstration project to share risks of new variety plantings at a scale needed to provide 50 MT lots, the size needed to convince processors to take the new crop;

- Research on intercropping with annual plants (such as cornichons) and improving apricot varieties and drying practices (a major unresolved question: can they compete with Turkey?);

- Substantial opportunities are in the promotion of cooperative or association olive collection and processing. In addition, in order to line up incentives to promote efficiency, grower associations could be given the opportunity to buy into processing plants as shareholders or part owners;

- The AID Commodity Import Program (CIP) could be used to import US machinery for continuous batch processing of olives for canning, for stuffing and slicing, and for oil extraction. Proceeds from the local sale of machinery could be placed into a trust fund for industry development and research; and

- Consulting assistance to fit or retrofit larger mills for electricity generation from steam turbines using waste heat produced by mill grindings (grignants).

DATES

Resource Base and Natural Comparative Advantage

Morocco's southern interior valleys and presaharan zone of oases have production conditions which provide a strong comparative advantage for date production. Date palms require dry and hot climates as rain inhibits pollination and good quality fruit requires ripening in average daily temperatures of 30 degrees C, low humidity, high sunshine, along with good groundwater supply or irrigation. These conditions are present in a belt of subtropical zones stretching from the presumed site of origin of the date palm in the Near East to Morocco, and in the zones of arid Mediterranean or weakly continental climates in the USA, Mexico, and South America. Attempts to produce date palms in more tropical environments have been unsuccessful.

Morocco suffers one comparative natural disadvantage, which is the presence of the Bayoud disease (Fusarium oxysporum f. sp. albedinis) a fungal soil pathogen which has decimated many of the country's date palmeries (there are now an estimated one half to one third the number of trees as there were 40 years ago). This disease has historically been limited to Morocco, but has spread to Algeria and will eventually threaten Tunisian production.

Table A-11 provides MARA's 1986 estimates of world date surface area, yields and total production. Note that yields can vary widely from year to year. Tree density per hectare reflects the wide diversity of conditions in which date palms are grown. They are grown in pure stands, in seasonally intercropped groves, and in heavily-intercropped multiple-story cropping systems.

TABLE A-11

DATE PALM - WORLDWIDE PRODUCTION STRUCTURE

Country	Area ('000 Ha)	Number Trees (Mill'ns)	Tree Density #/Ha	Yield (Kg/ Tree)	Production in MT '000
Iraq	125	22.0	176	21	462
Iran	114	22.0	192	14	302
Morocco	85	4.5	53	21	95
Algeria	45	7.5	167	22	166
Egypt	45	7.0	156	53	373
Saudi Arabia	45	7.0	156	36	252
Libya	28	4.2	153	15	61
Yemen	15	2.7	180	3	7
Oman	10	2.7	270	20	54
Tunisia	15	2.3	150	20	46
Sudan	6	1.9	317	46	88
Mauritania, Somalia, and Bahrain	4	1.0	250	35	35
USA	2	0.3	119	71	18
Others	62	3.3	54	58	193
TOTALS	600	88.3	147	24	2,153

Source: MARA, February 1986. Projet de Plan national de Development du Palmier Dattier

Industry Structure and Technology

The Moroccan date industry reflects the traditions of oasis agriculture and the transaharan farming systems in which dates are a seasonal fruit consumed predominantly in the Ramadan period and as a fruit which can be dried and stored for long periods. The dynamics of the industry have been overwhelmed by the Bayoud disease which has reduced the date palm population from about 10-15 million trees in the 1940's to under five million today. In addition, farmers' response to the disease and lack of varieties with disease resistance has led farmers to resort to growing trees from seed. As date palms are highly heterozygous plants, this practice has resulted in what one researcher calls a "forest" of wild types of date palms. While useful to researchers seeking clonal sources of tolerance to Bayoud, the effects on productivity and quality of dates has been highly negative. Yield per tree has declined and the quality of dates has deteriorated tremendously.

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As the date palm serves as the anchor for oasis agriculture, providing a microclimate for substory crops and, in the past, a major part of farmers cash income, the Moroccan government has put substantial emphasis on replanting date palmeries, organizing the date industry, and searching for Bayoud-resistant varieties. Replanting follows two pathways both of which provide complete subsidies for plants and planting. The first is replanting with high value clones such as Mejhoul and Feggous, which are susceptible to Bayoud, but bring the highest prices on the market place (30-60 Dirhams/kg). The second is to replant with clones which have shown good tolerance to Bayoud, but which do not have high commercial value (10-20 Dirhams/kg). The second strategy is pursued using offshoots from farm palms that show tolerance and from laboratory-confirmed tolerant material raised in the tissue culture lab in Marrakech. The tolerant clones selected have mediocre commercial quality. Farmer and consumer evaluation panels have not been impressed by these clones. Currently, the government supports a contract with the tissue culture nursery in Meknes (Societe de Multiplication de Meknes) to produce plants for the replanting effort. The objective is to plant 3 million date palms over the next 13-15 years.

There is a parallel breeding effort which seeks to produce clones with high commercial value and Bayoud resistance through backcrossing of resistant clones to good commercial varieties. INRA researchers have made 75 productive crosses, have selected fifteen with high tolerance and have 5 clones which are of above average commercial quality and are early-bearing. Clone number 3014 shows good tolerance and similar drying quality to Boufeggous, a selection of tolerant material used as the standard by which other clones are measured. Unfortunately the new clone shows substantial crystallization of sugar when dried, an undesirable commercial trait.

The tissue culture techniques being used by INRA, developed with assistance from an FAO regional program, produce plants ready for acclimatization and hardening after about two years. This length of time is used to produce the maximum number of plants for disease tolerance testing. Commercial tissue propagation techniques would cut this time at least in half. RFLP techniques would be useful in accelerating the search for sources of full resistance and in characterizing Bayoud-resistant races. The University of Marrakech has begun to cooperate with INRA in the biochemical study of the Bayoud fungus and its toxins.

Processing

Fresh date production is restricted by the decline in high quality varieties. MARA figures show that less than five percent of the existing trees in Tafilalet (Errachidia) and the Dra (Zagora) valleys are in high quality fresh date varieties. An additional 25 percent of palms are varieties of above average commercial quality. The rest are lower grade varieties which vary in retail price between 5 and 12 Dirhams/kg.

Date collection, drying, and marketing is carried out by numerous small producers and collectors. Two state drying and conditioning plants were established in Tafilalet (Societe de Traitement et de Conditionnement des Dattes de Tafilet -- SOTCODAT) and another in Zagora, areas where about 53 percent and 40 percent of production is marketed annually. These two plants, which sought to displace the intermediary collectors and improve date quality, were unable to acquire an important share of production.

Private companies in the zones of production and centers of consumption acquire their supply through the existing network of collectors. Date quality is restricted by heterogeneity in production, production of small lots, and collection and handling by several layers of intermediaries. As demand is high and supply low, there is a sellers' market domestically. Morocco imports dates, particularly the "fresh" date variety Deglet Noor, as can be confirmed by a visit to any of the major urban markets in the country.

Market Opportunities and Constraints

The domestic shortfall in date production is large. Average annual production is 95,000 tons. While consumption takes place year round, it peaks during Ramadan when dates are consumed as a high energy food to break the daily fast. As it takes a minimum of three to five years before date palms come into production and another three years before peak yields are reached, it is evident that the Plan du Palmier Dattier will take some time to affect national production figures. The domestic market will be able to absorb all new production for some time. How profitable date production will be to producers will depend a good deal on the quality of the dates produced, which is tightly linked to variety.
Until production increases, there would appear to be little opportunity to invest in better collecting and drying.

Foreign opportunities are limited unless a high quality and Bayoud resistant clone is found equivalent in quality to Mejhoul or Deglet Noor. If such a clone is developed there also should be an export market for Moroccan trees produced in vitro, particularly to Algeria and Tunisia.

The major constraint is the Bayoud disease. Advanced genetic techniques could be applied to speed the search for a solution. Linked to a commercial R&D activity and a tissue culture facility for multiplication, such techniques might form the basis for a company specializing in date palms.

Alternatively, the Societe de Multiplication de Meknes has indicated as needing to double its in vitro multiplication capacity to meet the objectives of the national plan. U.S. biotechnology firms already working with the date palm may be interesting in providing turn-key facilities for this effort.

Potential Project Opportunities

Of great interest is the potential to promote a joint venture R&D effort with US biotechnology firms (such as ESCAgenetics of California).[1] Note that there will be an R&D open house on October 18, 1990, on the date program in Ouarzazate as a point of opportunity in this regard. If the GOM plans to go ahead with the multiplication and distribution of date palms of high quality but with low tolerance to Bayoud, then US firms could rapidly gear up Moroccan tree production capacity with Mejhoul, Deglet Noor and other high quality varieties.

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[1] Team member Don Humpal has contacted ESCAgenetics which is potentially very interested in collaborative propagation work. They were on the verge of beginning a joint venture effort directed to repopulating Iraqui oases where trees were destroyed by war, but this joint venture work is obviously on hold, leaving ESCAgenetics with capacity which could be used elsewhere.

In the "high-tech" realm, US university assistance could be sought for the identification and mapping of genes conferring resistance to Bayoud, quality traits of dates, and to develop in-vitro screening techniques for Bayoud-resistance screening and for detecting Bayoud infestation levels in soil and plant tissue.

THE MOROCCAN WINE INDUSTRY

Resource Base

The present distribution of wine and table grape production by province are shown in Table A-12. The wine grape growing area of some 14,000 hectares constitutes roughly 30 percent of the total area devoted to grapes in Morocco. The Meknes zone alone accounts for 50 percent of wine grape production. Table grapes and raisins constitute the other domestic markets for grapes.

Wine production over the past four seasons has varied between 350,000 hectoliters and 500,000 hectoliters, as indicated in Table A-13 (although the destination for this amount of wine is unclear). Red wines, which constitute 65 to 75 percent of this volume, have the better reputation for quality. Variations in annual grape and wine production are mainly related to rainfall.

Due changes in the EEC market, such as reduction of preferred access to the French market, and "Moroccanization" policies, the Moroccan wine industry in 1990 is only about one-quarter of its 1970 size. Approximate figures are as follows:

	1970	1990
Wine grape area, hectares	70,000	14,000
Wine production, hectoliters	2,000,000	500,000

Today the Moroccan wine industry is largely controlled by the government through price controls and its ownership of most of the wine grape growing area (by SODEA) and associated wine production facilities (wine is produced by SODIVIN, a SODEA subsidiary). The government also strongly influences the domestic marketing of wine by means of a variety of taxes on production and consumption.

Morocco's favorable climatic conditions for growing wine grapes provide a significant comparative advantage over many other wine-producing countries. However, higher yields and improved adapted varieties for the production of quality wines are needed, along with improved cultural practices and irrigation technology. Any advantage which might be derived from Morocco's proximity to European markets is partially negated by EEC tariff barriers. Nonetheless, the EC provides a quota for duty-free entry of 85,000 hectoliters which Morocco has not been able to take advantage of due to marketing problems -- mainly high prices and inappropriate varieties.

TABLE A-12

TABLE AND WINE GRAPE PRODUCTION BY PROVINCE

	Total Grapes		Table Grapes		Wine Grapes	
	Hectare	Percent	Hectare	Percent	Hectare	Percent
Doukkala	12,000	25.0	12,000	35.1	-	-
Meknes	11,260	23.4	4,170	12.0	7,090	50.6
Benslimane	4,420	9.2	2,770	8.1	1,650	11.8
Khemisset	4,280	8.8	1,150	3.3	3,130	22.3
Haouz	3,430	7.1	3,430	10.6	-	-
Wilyaya de RT-Sale	2,810	5.8	2,760	8.1	-	0.4
Essaouira	2,040	4.2	2,040	6.0	-	-
Houlouya	1,840	3.8	1,270	4.0	570	4.1
Gharb	1,400	3.0	190	0.6	1,210	8.6
Chefchaouen	1,110	2.3	1,110	3.3	-	-
Safi	870	1.8	870	2.5	-	-
El Kelaa	700	1.4	700	2.0	-	-
Oujda	470	1.0	200	0.6	270	-
Al Hoceima	350	0.7	350	1.0	-	1.9
Nador	350	0.7	350	1.0	-	-
Taza	240	0.5	240	0.7	-	-
Azilal	190	0.4	190	0.6	-	-
Kenitra	125	0.3	110	0.3	15	0.1
Fes	125	0.3	100	0.3	25	0.2
Souss-Massa	94	0.2	94	0.3	-	-
Tetguan	56	0.1	56	0.2	-	-
TOTALS	48,160	100%	34,150	100%	14,010	100%

TABLE A-13

PRODUCTION OF WINE, BY TYPE, 1986-1990
(000 Hectoliters)

Production Season	Type of Wine			Total
	Red	Rosé	White	
1986-87	304	120	31	455
1987-88	302	72	21	395
1988-89	262	76	16	354
1989-90	358	111	33	502

Industry Structure

Government control of the wine industry is exerted mainly through the Societe de Developpement Agricole (SODEA), which owns 75 percent of the wine grape growing areas (which were carefully determined, planted, and recorded in the colonial era), and the Office de Commercialisation et d'Exportation (OCE), which owns 80 percent of the government wine bottling and marketing company, Sincomar (the remaining 20 percent being held by SODEA). Of the 13,000 ha of wine grapes, SODEA owns 10,500 ha. These vineyards were expropriated from French owners in 1975. The four varieties planted by the French and still in production were selected for blending with wines from the Midi in France to give them color and higher alcohol content. They are not recognized as the best varieties on the world market. In the opinion of one key figure in the wine industry, the Moroccan wine industry might well have disappeared entirely had not SODEA kept the remaining vineyards in production.

Most privately-owned wine producers went out of business in the past 15 years, leaving only two companies still in business. "Meknes Vin", located in the major wine producing province of Meknes, has 500 ha of wine grapes in production, which accounts for about 40% of its wine output. The balance is wine purchased from SODEA. The company is negotiating the purchase of 1000 ha. of government land to expand its production. In preparation for this expansion, Meknes has experimental plantings of 15 improved varieties on a 2 hectare plot.

French and Italian companies are preparing to start operations (perhaps in partnership with SODEA) in Morocco, presumably because of the repeal of regulations requiring majority Moroccan ownership earlier this year.

Marketing

Meknes Vin has 26 percent of the domestic bottled wine market, that market amounting to about 75,000 hectoliters. The GOM-owned company Sincomar has a 70 percent share, and another small private company (Hebertal or Thalvin SA?), has the remaining three to four percent.

The domestic market for wine is strongly influenced by the high taxes levied, consumption varying in inverse proportion to prevailing taxes. Meknes Vin reports that of the average DH 13/liter wholesale cost of wine it produces, DH 5.65 is tax (DH 2.65 TIC and DH 3 TVA). In the opinion of one observor, the high taxes were not so much aimed at discouraging consumption as they were a way of increasing government revenue.

Wine purchased by Meknes Vin from SODEA is costly -- DH 3.60/liter -- making it necessary to sell at higher prices than would be the case if Meknes controlled all its own production.

Morocco exports about 5,000 hl. of bottled wine to France and 3,500 hl. of bulk wine to France and Switzerland. These low levels of exports to France do not come near to reaching the 85,000 hl quota which Morocco could ship duty-free. Buyers in France are almost exclusively Mahgrebian restaurants, of which there are some 2000. Sales to other buyers are precluded by the relatively high cost of the wine.

Meknes Vin has faced two major constraints to expansion: the availability only of varieties with limited market potential, and lack of control over the supply of wine grapes due to the dominant position of SODEA. Recent liberalization measures which it is hoped will permit Meknes Vin to obtain 1000 hectares of land for new plantings should in time overcome these problems.

Meknes is anxious to gain access to the US market. They are currently negotiating a joint marketing venture with a US distributor, Brotherhood Wineries. Brotherhood is also a wine producer in New York State.

Opportunities and Constraints

The 85,000 hectoliter EEC quota for bottled wine, of which Morocco currently utilizes only 5,000 hl, clearly offers an opportunity for export expansion. And under certain conditions, it may be possible to export quality wines to the US market. However to take advantage of these opportunities, a restructuring of the Moroccan wine industry and the adoption of new marketing strategies will be required.

The Moroccan government's role as the major factor in wine grape growing, wine production, and domestic wine marketing acts as a major constraint on development of this sub-sector. The major private sector wine producer is limited in what it can do to develop export markets by its dependence for 60 percent of its production on high-cost wine from SODEA and the use of inappropriate wine grape varieties originally planted by French companies for blending or strengthening French table wine.

Wine industry restructuring will involve the planting of improved adapted varieties for the production of quality wine grapes, and most likely the introduction of improved cultural practices and irrigation technology. Along with this should go a continuing program of research and development by public and private institutions to assure wine quality and the availability of a range of wines for the international market. Improved wine quality will also require specialists trained in processing and fermentation technology.

Currently, government liberalization policies appear to have begun altering this situation. If Meknes Vin succeeds in obtaining access to substantial areas for the planting of new varieties, the company will in time be in a position to exploit export markets. The arrival of French and Italian companies, following on the heels of the repeal of "Moroccanization", will also revitalize the industry.

Government policies toward the private sector in general, and the wine industry in particular, do not in themselves appear to be a constraint. However application of these policies is uneven due to bureaucratic delays and inertia. One wine industry official cited the example of the government regulations for the wine industry which are greatly outdated.

Possible AID Interventions

Support to export promotion efforts: AID could follow the example of Canadian and French aid programs in Morocco which finance a portion of the cost of feasibility studies and promotion trips abroad by Moroccan and foreign investors. (These programs typically cover 50 percent of such costs, to be reimbursed in full or in part depending on the outcome of the promotional effort.) AID has had similar programs in the past in other countries.

Credit: Private wine companies could benefit from credit on easy terms to cover the cost of prospecting the U.S. market and for promotional costs. While commercial bank financing is available in Morocco to established firms, interest rates are high.

Investment promotion: Assistance in promoting joint ventures as a means of transferring modern irrigation technology, improved varieties, fermentation technology and biotechnology and its appropriate application.

Training: Offer training through the private and public sectors in technical, economic, and managerial services for growers, extension agents, wine producers, and wine exporters.

Privatization: Encourage privatization of government-owned vineyards and wine production facilities.

Diversification: Promote development of other grape products such as concentrated grape juice and grape jelly. If packaged in attractive containers it can be sold to local restaurants, hotels, airlines and other food distribution channels.

Technical assistance: Upgrade fermentation technology and equipment through technical assistance.

A NOTE ON BANANAS

Bananas have been grown in Morocco since the 1940's, particularly in special micro-climates in the southern part of the country. In an effort to conserve foreign exchange the GOM drastically restricted banana imports in 1978 and the prices for poor quality local Bananas rose from 3 to 20 DH/kg. Experimentation was also begun at that time in the use of plastic greenhouses to counter winds and frost and raise humidity levels. This has proven to be technologically feasible, behind a high tariff wall. This remains the basic argument concerning banana production: technological feasibility versus the cost to the consumer and society of not importing bananas (but instead importing the greenhouse production systems, particularly the plastic film on a recurrent basis).

Area in greenhouse production has increased from five hectares in 1982 to almost 1000 in 1990. The Souss-Masa region has the greatest production conditions (highest daylight etc.) for highest quality but substantial production has also sprung up around the coastal Moroccan cities of Casablanca, Rabat, and Kenitra. The most common variety is the Dwarf Cavandish which yields about 40 tons of bananas per hectare per year. Under these conditions, the investment is paid off in approximately three years at a farm price of approximately 6 DH/kg. Agronomists claim that good growers should be able to make

a reasonable return at a 5 to 6 DH/kg wholesale price.[2] Presumably flexible tariffs should be used to keep the price of imported bananas at about this price as well. A broader analysis which takes into account all the costs (including the imported greenhouse materials) and returns (including learning to use greenhouses for other crops) to banana production should be conducted.

This is an area which does not look particularly promising for MAP involvement but it does illustrate two important points about Moroccan agribusiness: one, that Moroccan farmers and business people will respond to proven production opportunities once they have been demonstrated for a few years and, two, many horticulturalists claim that even if, in the longer run, bananas do not turn out to be a viable crop for Morocco, they have introduced greenhouse technology to producers across the country who can use it more profitably for the production of vegetables, fruit, flowers and other high-yielding, high-value crops.

[2] For a good technical description of Moroccan greenhouse production systems for bananas see Janick and Ait-Oubahou, 1989.

THE LIVESTOCK SUBSECTOR

DAIRY INDUSTRY

Resource Base

Dairy products account for 16 percent of the value of total livestock production, second to red meat products which account for 68 percent. Milk production has increased from around 300 million liters in 1962 to 800 million liters in 1987 (about 7 percent per year). Increases in production were especially rapid with the launching of the MARA "Plan Laitier" in 1975. The general upward trend was interrupted in years with low rainfall. The increase in the last 5 years seems to have come from both the increase in the number of cows and the increase in milk yield per cow. The total number of cows has increased slightly since 1983 (+11 percent), most of the increase coming from the number of improved or cross-bred animals.

Milk production is mainly located on or close to irrigated areas. Milk production is very seasonal. This create a surplus situation in peak season and a deficit situation in winter. Herd feeding is one of the major factors limiting milk production; lack of dry season forages leads to unbalanced and inefficient rations.

Domestic dairy production satisfies 60 to 70 percent of domestic consumption. Much of the rest comes from imported or donated powdered milk.

The economic returns to Moroccan dairy production are highly variable but generally much lower than they should given the genetic production potential of Moroccan dairy cows. For example, returns are low or even negative for two types of dairy farms:

- Those relying heavily on imported feed (corn) and irrigated forage production; and
- Those using improved, usually imported, dairy cows that cannot reach their milk production potential. Cross-breeding between improved and local cows appears economically more profitable under current price, health, and feeding levels.

Milk Collection and Processing Industry Structure

There are around 130,000 farms delivering milk to dairy collection centers which have been provided by government programs and are now managed directly by producer cooperatives.

The industry is dominated by the Centrale Laitiere, a subsidary of ONA, the largest private business group in Morocco. The Centrale Laitiere accounts for around 60 percent of fresh milk and derived products in Morocco. Six regional milk cooperatives make up the rest of the industry milk collection and processing capacity. The coops are organized into the Union Nationale des Cooperatives Laitieres (UNCAL).

There are 19 dairy processing plants in Morocco; 11 are cooperatively owned and 8 belong to private firms. Both private and coop plants are modern, well managed and capable of producing quality products from fresh milk. Some plants produce fresh dairy products, such as yoghurts and other fresh cheeses, under licensing agreements to European firms (Gervais-Danone for Centrale laitiere, Yoplait for the Cooperative de Kenitra, Viking for a new operator).

Although progress has been made, the processing capacity for UHT milk and cheese is not sufficient to absorb the seasonal variation of milk production. The Government is providing subsidies for investment in UHT and powdered milk processing plants.

Marketing

There are two milk marketing systems in Morocco:

- The modern marketing system which, through collecting centers and processing plants, delivers pasteurized or sterilized milk to consumers and handles about 70 percent of total marketed milk; and

- The traditional marketing system which handles unprocessed milk consumed locally in production zones and handling about 30 percent of milk production.

There are about 490 modern dairy collection centers, equipped with cooling tanks. They were financed from the MARA investment budget as part of the "Plan Laitier" beginning in 1975. This investment program resulted in rapid increases in the quantity of milk delivered by farmers. The majority (410) of these centers are cooperatives of producers, the remaining belong directly to processing plants.

Total fresh milk consumption has remained constant over the last 15 years; hence per capita consumption has steadily declined from 66 to 53 liters per capita from 1970 to 1987. Low supply of milk seems to be the major cause for this decrease in consumption since potential demand for dairy products has remained high.

Sales of reconstituted milk from powder are prohibited. Milk consumption was projected to increase at a rate of 5.7 percent per year from 1980 to 2000. Given the assumed rate of increase of production of 3.2 percent, the deficit would reach 1 million tons of milk equivalent in 2000, or a self sufficiency ratio of 53 percent.

Milk Price Policy

The Moroccan dairy industry, like that in most developed countries, is greatly influenced by government price and non-price regulations. Prices are fixed at all stages of vertical marketing stages by an interministerial committee. The producer price is fixed on the basis of the estimated cost of production of a 50 cow herd. The consumer price for pasteurized milk is equal to the ex-plant fixed price plus delivery cost and a fixed retail margin. The consumer price is constant throughout the year.

The processing margin for pasteurized milk is also fixed on the basis of cost of production studies; processing plants may apply seasonal price differentials to incite producers to even out their production through the year.

Prices of imported dairy products are also administered. Imports of dairy products are controlled through authorization or licenses. Most of butter consumed in Morocco is imported. Importation of milk powder is restricted, except for WFP aid which is resold to processing firms at a high price to prevent unfair competition with domestic production.

Opportunities and Constraints

The Moroccan dairy industry seems to caught in a complex "low-equilibrium trap" where domestic production has remained stagnant due to a mixture of technical factors contributing to low milk yields, poor herd health, and poor feeding efficiency. Some of this is caused by the dietary habits of Moroccan consumers and low average purchasing power which effectively limit demand. Also important are milk and feed policy, general over-regulation of the industry, structural concentration in the processing industry, and other factors leading to an effective damping of incentives which would allow producers to reach higher yields and efficiencies.

Technically, limited raw milk production is thought to be due to:

- Insufficient forage production and poor feeding practices;
- Poor production potential of existing dairy herd and limited cow selection and improvement; and
- Poor animal health.

In addition, there is a substantial problem with milk quality. This is felt to be due to unsanitary farm conditions, poor milk handling at the farm and collection center level, and lack of refrigeration at the farm level, all of which result in low quality of milk delivered at the processing plant.

The structure of dairy processing is very concentrated: the ONA "Centrale Laitiere" dominates the sector with 50 percent of milk processed. Cooperatives, which represent around 40 percent of the market, are independently managed and appear weak in comparison with "Centrale Laitiere", especially for the development of new fresh dairy products and in the influencing of GOM dairy policy. A greater level of competition could contribute to the improvement of industry efficiency.

The official producer milk price has decreased by 16 percent in real terms between 1976 and 1989. The total marketing and processing margin has increased significantly from 38 percent to 80 percent of the producer price over the same period. It would be useful to conduct serious analyses of the respective roles of reduced government subsidies and of the lack of effective competition in the processing industry on the evolution of the official price structure.

Given the rigidity in the official marketing system, the traditional system insures overall market equilibrium through the price mechanism. Present price policy is inadequate. Rigid prices at the producer

and consumer levels prevent the modern dairy product market from reaching equilibrium. In periods of low production, prices on the traditional market increase and producers may be tempted to divert their already low production from the modern to the traditional market. This reduces even further the quantities delivered to the processing industry; in the same way, constant consumer prices maintain a constant consumer demand through across the seasons.

Possible MAP Project Involvement in the Industry

The AID Mission is already supporting a program of limited involvement in training in the Moroccan dairy industry being conducted by the international branch of the Land o' Lakes Corporation under a general USAID strengthening grant. This work seems to have begun to identify some of the technical problems affecting Moroccan production and processing.

One opportunity is certainly to conduct appropriate in-depth economic studies of the industry which may reveal some of the options for beginning to break out of the "low-equilibrium trap". In other countries the modernization of the dairy industry has generally caused the size of the average producing unit to increase in order to be able to afford some of the technologies which permit substantial gains in production efficiency.

In general, the dairy industry is an attractive one to consider for MAP involvement due to the intensive use of a variety of biological and mechanical technologies which need to be connected together in vertically-integrated chains. As we will argue below, a key to dairy industry improvement is improvement in the related forage and prepared feed industries which, in addition to machinery dealers, are the largest source of technological improvement in the dairy industries in developed countries.

To the extent that the Map project allocates its resources across different industries, serious consideration should be given to the Moroccan dairy industry.

FEED INDUSTRY

For a variety of reasons the Moroccan feed industry is currently in a severe economic slump which is contributing negatively to the development of both the important dairy and poultry industries.

Resource Base

Morocco has a substantial number of important livestock feedstuffs, many by-products of other agribusiness industries. The main agricultural products or by-products available to the feed industry are:

- Corn, domestically produced or imported;
- Wheat bran;
- Dry sugar beet pulp;

- Molasses: only one third is used in livestock feed, the remaining is used to produce yeast or alcohol or is exported;
- Dry citrus pulp, a by-product of FRUMAT the citrus juice processing firm;
- Soybean, rapeseed and sunflower meal; and
- Fish flour.

Corn

Corn is a major input into the feed industry. Moroccan production is low and is being protected in an GOM effort to develop it and increase the self-sufficiency ratio for animal feed.
Corn production is distributed by ecological zone as follows: 15 percent in "favorable bour", 42 percent in "intermediate bour", 14 percent in "unfavorable bour" and 28 percent on irrigated land. Despite GOM efforts, cultivated area is declining: 500,000 ha on average in the 1960's; 440,000 in the 1970's; and less than 400,000 ha in the 1980's.

Corn yields have been increasing slightly from around 7.3 ton/ha in the 1960's to 8.3 over the 1986-89 period. Production has been stagnant due to the decreasing area and slightly increasing yields, except in the 1981-85 period where several drought years resulted in significantly lower production. Corn imports have increased drastically since the mid 1970's, as shown below:

(Annual Averages in 000 Tons)

Period	Production	Imports	Total Supply
1961-65	405	5	360
1966-70	341	11	340
1971-75	347	26	368
1976-80	342	99	422
1981-85	236	161	397
1986-89	322	182	504

Wheat Bran

Wheat bran produced in the 78 industrial mills (between 30 to 50 percent of total production), is under ONICL control. Before 1988 the bran was allocated as follows:

- Among provinces on the basis of their flour consumption;
- Within provinces, to dairy cooperatives on the basis of their production;
- Within cooperatives, to dairy farmers on the basis of their production.

Since 1988, in a major policy reform, industrial mills sell bran directly to farmers or feed processors at a market price.

Dry Sugar Beet Pulp (DSBP)

Before 1987, all DSBP was distributed by the Direction de l'Elevage of MARA. Quantities were allocated to the Directions Provinciale de l'Agriculture (DPAs) and the ORMVAs on the basis of livestock population, taking into account the feed situation. The majority (80 percent) was distributed to farmers according to herd size and 20 percent to provinces with the highest feed deficits as part of a livestock protection program.

As part of the ASAL, the GOM liberalized the marketing of DSBP with a two year transition period during which a declining part of DSPB was still distributed by MARA. Since 1988, DSBP is sold back at a price of 1 DH/kg to sugar-beet producers who can sell it freely. Since DSBP trade was liberalized, market price has been at 50 to 80 percent above the official price.

Other Feed Ingredients

Barley is the main feed grain but it is entirely consumed on the farm or locally and is not a raw material for the feed industry.

Oranges molasses and dry pulp are little used. In order to promote the utilization of molasses, the GOM set an official subsidized price at 0.28 DH/kg, or 2/3 of the export price (0.45 DH/kg). Most of orange molasses is however still exported. FRUMAT is the only producer of orange dry pulp and around 50 percent of its production (at 1 DH/kg) goes directly farmers or feed processors and the rest is exported.

Processing and Marketing

The feed industry is composed of 30 processing units, mainly located in Casablanca an Rabat. Installed processing capacity is 1.4 million tons but production in 1988 was only 450,000 tons, a 32 percent utilization rate. This is due primarily to inappropriate price and marketing policies and to the fact that the 19 percent TVA tax is applied to industrially-processed feeds but not to farm or coop-produced feeds which has lead many larger poultry producers and supply coops to buy mills for on-farm production in order to cut feed costs, clearly an inconsistent and inappropriate policy.

ONICL has the total control over all corn imports through the granting of import licenses through a bid to tenders scheme open to around 15 authorized traders and the Cooperative Union. Imports are stored by licensed importers or by SOCIPO, a subsidary of ONICL which port cereals handling and storage, and allocated to the different users by ONICL.

Feed production is mostly (90 percent) used by poultry operations. As the feed industry could not buy sugar beet pulp and wheat bran, it has not been able to develop its product line to incorporate these inputs in feeds for ruminants.

Opportunities and Constraints

There is strong actual and potential demand for livestock sector output, especially dairy products. The dairy industry has not been able to satisfy this demand. Poor feeding practices are cited as the main cause for low yields (especially from selected improved cows) and low financial returns. The feed industry could contribute significantly to the development of dairy production by providing improved, balanced feeds and technical assistance which would improve feeding practices at the farm level. In all countries, the feed industry has played, and is playing a major role in assisting farmers in improving their feeding practices. Morocco should change drastically its feed policies and rely more on the private sector in the promotion of livestock production.

The single major constraint to the development of the feed industry is **overwhelming state involvement and control of the industry**, with private firms having little opportunity to implement development strategies. For example, ONICL allocation of corn imports to firms is such that an individual firm cannot be assured of securing the necessary supply of raw materials to fulfill contracts or markets that might develop. There are many instances where a feed processor were denied imported corn supplies by ONICL under the pretext that it was in a better position to know the real needs of the Moroccan industry. This poor allocation is not only due to the inability of ONICL to properly estimate feed processors needs but also to the outright favoring of certain operators, thereby distorting competition and leading to inefficiencies.

For many years, the feed industry has been denied access to wheat bran and sugar beet pulp since prices and marketing of these products are regulated and controlled by the GOM. This has resulted in the incapacity of the feed industry to cater to the needs of ruminant livestock producers, which account for 50 percent of the industry potential market.

For the MAP project, there are certainly opportunities to support the development of the feed industry, but it is unlikely that these would materialize before the industry is reorganized and regulating price and marketing policies for inputs and products are reformed.

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LEATHER

The leather industry in Morocco is undergoing rapid change. It is currently composed of many small operators, including those who handle hides and skins using picturesque but antiquated methods (tanneries in Fez), a string of small firms with some machinery to prepare "wet blue" skins and died leather, and a smaller group of companies which are highly mechanized. In the latter group is the largest tannery on the African continent. This tannery is one of the few in the world to handle hides and skins from cattle, goats, and sheep.

Most (about 80%) of the treated skins and leather produced in Morocco is consumed by manufacturers of leather goods within the country. The leather goods are sold domestically and exported. Byproducts, such as leather strips and cuttings are exported, and, according to one plant's technical director, may be used in the manufacture of simulated leather products.

Morocco imports hides and skins from North America, South America, Australia, and Subsaharan Africa. Imports are needed because of shortfall and the seasonality of domestic livestock slaughter. Sheep and goats are consumed primarily during the summer months, when there are major religious and secular holidays and when herds are culled. Beef is consumed to a greater extent in the fall and winter months, when the range fed goat and sheep herds are reconstituting themselves.

Products include: wet blue hides; double sided skins (hair and wool at uniform thickness on one side with wet blue hide on the other); top quality finished leather in different thicknesses and sizes for clothing; shoe liners; and suede.

The presence of an established industry and relatively low labor costs and good productivity, combined with the environmental regulation to European tanneries which will become even stricter in 1993, give Morocco a relative advantage in leather production. Its leather industry is recognized as being of higher quality than competing industries in SubSaharan Africa or South Asia. This advantage is recognizable in the interest of Spanish, French, and Italian concerns in Moroccan leather goods.

Market Opportunities

"Marocainerie" means leather goods and articles. Thus, Morocco has an established image and a relative advantage in the world marketplace. Leather is consumed domestically in clothing, furniture, and accessories providing a stable source of sales. The export market is influenced by fashion in both clothing and furnishing, but the closure of "dirty" industries in Europe is leading to new opportunities for Morocco in leather supply and perhaps manufacturing. Top quality leather for luggage and some garments is in high demand and European sources of supply are drying up. Production targeted to these markets could boost a firm's volume and operating margins.

Both the smallest leather producers and the largest face similar constraints. The supply of quality hides and skins is foremost. While domestic animal production in Morocco produces hides which are generally free of insect and disease damage and relatively uniform in thickness, there is still damage to the skins during slaughter due to the continued local use of knives and sun drying of skins after slaughter,

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rather than salt preservation and transport in a fresh state. Mechanical skin pullers at abattoirs would reduce the knife damage problem. Most skins delivered to tanneries are delivered in bulk by collectors. These skins must then be sorted by category and quality before tanning, a step that is usually done by slaughter houses in developed countries. This suggests that there may be an opportunity for organization of the supply of skins working back to slaughter houses.

Imported skins from the Americas and Australia are bought by species and category. Their quality is generally good, but prices are high. Hides and skins from SubSaharan Africa suffer from the health status of the animals from that region (skin lacerations, insect holes, and scars), major damage from knives during slaughter, and poor preservation after slaughter. Over the near term, Morocco may represent a good potential for export of US hides and skins, particularly since the value of the dollar has dropped.

Lack of contacts outside of Europe are seen as a constraint to market expansion by Morocco's larger companies. At the same time, because they do not know the markets, they are hesitant about promoting their products, fearing that their production capacity may not be able to meet the demands of a US client. This problem provides the opportunity for market study and facilitation of market contacts, perhaps including a triangular trade arrangement in which, for example, U.S. veal calf hides and skins would be exported to Morocco for transformation into leather for a specific European supplier of luxury luggage.

Managers of the tanneries point to two special constraints. One is the need to work with bankers to educate them about the stock requirements of the leather industry as it relates to seasonality of hides and skins supply and client demand. The financing constraint, while not considered a major problem, does cause some operating difficulties. The second one is the need for training of plant operators and machinery repair and maintenance personnel. Tannery machinery is very specialized and there does not appear to be adequate training from the representatives of the machinery manufacturing companies in its maintenance.

The plants visited, whether ancient or state of the art, all showed the need for better plant organization, water treatment, and energy conservation. Industrial engineering services could be promoted to the industry. Plant managers were aware of environmental regulations that were closing down plants in Europe. They feel that incorporating water recycling equipment in their plants would also put them out of business.

Potential Project Opportunities

The leather industry is a traditional industry which is undergoing modernization and which may be able to generate substantial growth in the next decade. The MAP project might be of assistance to this industry by:

- Organization of targeted marketing of Moroccan leather and leather goods to US manufacturers of fine leather products and clothing, including facilitation of travel to meet potential buyers. This could be combined with contact with US suppliers of hides and skins, particularly veal hides. Of special concern to Moroccan producers are the allowable chemical products for hide and skin treatment and dyes for the US market;

- Exploration of ways to improve hide quality and whether a new business in skinning animals and providing graded hides (probably at slaughterhouses) would be a profitable enterprise;

- Exploration of new markets in Europe for Moroccan leather and for possible joint ventures for the production of leather goods; and

- Training in machinery and equipment maintenance and repair.

NOTE ON POULTRY

In Morocco, as in other developing countries, poultry and fish provide two of the least expensive sources of high-quality animal protein. In addition, the feed conversion ratio for poultry is higher than those for ruminants. Finally, poultry is usually the livestock industry which modernizes most rapidly in the development process. For these reasons it is almost always of interest, particularly in countries where there are substantial alternative feedstuffs. All of these reasons hold in Morocco but this team did not have adequate time to explore this industry in detail. However, a few statistics (from MARA/DPV) and summary observations can be provided.

The growth rate in the consumption of poultry meat (7.5 percent/year) and eggs (6.9 percent/year) has been high since 1970. Most of the growth in the industry has taken place in private production which has risen from 29 percent to 64 percent in meat and 0.3 to 60 percent in eggs. There were 23 hatcheries producing for the broiler industry and 5 for the egg industry in 1989. These hatcheries cover an estimated 92 percent of the needs of both industries and are mostly located along the coast between Kenitra and El Jadida. Approximately 4000 producers raise broilers and 300 laying hens. The weakest part of the industry seems to be that of poultry slaughter houses and modern consumer packaging; there are four slaughter houses, but only one was operational last year. This clearly reflects the preference of the Moroccan consumer to purchase live rather than chilled or frozen birds.

In 1989 there was a drop of approximately 10 percent in the production of broilers due to a drop in the production of one-day chicks. Approximately 30 percent of broiler production comes from traditional small-scale producers and the rest from the modern industry. Industrial scale egg producers provide slightly over half of the eggs estimated to be on the Moroccan market. Prices are largely market-determined but the industries are clearly affected by policies and trends in the feed industry.

According to MARA, there has been a general switching to white meat from red as total meat consumption per capita has expanded (white is now approximately 35 percent of total while it was only 12 percent in 1970).

The poultry industry is heavily interrelated with the feed industry whose problems were described above. The feed industry and equipment suppliers usually have been the source of most technological progress in market economies. In Morocco this transmission of technology has been constrained in the past by heavy state control and, more recently, by poor price and marketing policies for feeds. These topics need to be explored more thoroughly in the development of the MAP project.

A NOTE ON BEEKEEPING AND HONEY

Moroccan beekeeping is divided into traditional and modern producers with about 23,000 of the former and 600 of the latter. The traditional producers have an average of 11 hives each and collectively are estimated to produce about 850 tons of honey per year (3.3 kg/hive). The average modern producer has almost 110 hives, each of which produces about 25 kg of honey per year, or 1500 tons in total modern honey or 65 percent of the total honey. These and other statistics and a description of beekeeping extension and industry perspectives are available from MARA personnel.

A NOTE ON THE WOOL RUG INDUSTRY

Both knotted and flat woven wool rugs are important part of artisinal production in Morocco. As was noted Table 4, Chapter Two, Morocco exported an estimated 84 Million US of rugs in 1987 which is just a fraction of those produced. The Executive Service Corps has reviewed this industry (IESC, 1990) and maintains that there is substantial room for increasing sales abroad but also in the diversification of the types of rugs produced (bigger factories in Rabat are producing modern designs for export) but also the quality of tied rugs by using more knots per inch and through the use of multiple-ply yarns for greater rug density.

THE FISHERIES SUBSECTOR

Resource Base and Natural Comparative Advantage

Morocco has both Mediterranean and Atlantic fisheries. The largest sardine fishery in the world is off its coast. The Atlantic fishery is based on the extensive zone of upwelling in the East Central Atlantic. These range from near shore fisheries, including a wide range of bottom dwelling fish, crustaceans, and shell fish. Deeper water demersals, particularly the cephalopods, are highly valuable. Deep water pelagics include both white fleshed fish and industrial fish (tuna). The high seas fishery is controlled primarily by foreign fleets. The Mediterranean fishery includes small pelagics (particularly anchovies) and a small range of demersals.

Morocco is one of the few fisheries where both spiny and clawed lobsters are taken. It also has a relatively good supply of mussels and shell fish. Some mariculture is practiced, e.g. oyster cultivation in Oualidia and unexploited lagoons exist near Larache. Agar agar production and export from coastal seaweed harvest is a growing industry. Warmer waters in southern Morocco may hold substantial promise for an algae or mariculture-based industry.

The Atlantic coastline is one of the richest fisheries in the world. Thus, Morocco has a strong comparative natural comparative advantage in fisheries. However, this advantage is offset by its sharing of the fisheries throughout the upwelling zone with Spain, by the difficulty of surveillance and regulation of the resource base, and by the poor data base available on fish catch and disposition.

Industry Structure and Technology

Fisheries data are notoriously unreliable throughout the world. Most estimates of the total sustainable Moroccan catch at about 1.5 million MT a year. The catch measured at landing points by the Moroccan fleet is somewhere between 450,000 and 500,000 tons. When high sea foreign fleets are added, the total catch is probably over 1 million MT a year. However, more important is the catch composition and the intensity of fishing of different species. One or more groups of fish have been considered to be overfished during the past two decades. Currently, with the rapid growth of the Moroccan fisheries fleet, following the Saharan conflict, general opinion is that cephalopods, demersal fish, and high seas tuna are generally overfished.

Only the small pelagics are seen as underutilized by outside observers. Government support prices for these species ensure consistent effort to increase the catch. The problem is that the coastal fishery is made up of small boats. They can not fish during bad winter weather. Sardine and mackerel catch declines and canneries slow down. This interrupts the marketing chain.

There has been a rapid expansion in the fleet and in port facilities. The number of high-sea trawlers has increased from about 20 in the 1960's to around 275 today. Landings take place in the Canaries and in Morocco, with recent GOM decisions expected to force a large portion of Moroccan ships to use new Moroccan port facilities. (This is being done by withholding licenses from those firms which do not use Moroccan ports.) The foreign fleet contains about 2 and a half times this number of

vessels. Rapid growth means declining catch per unit of fisheries effort which has been masked by increases in total fish caught and in fish product prices.

Fresh fish are produced and shipped in ice via air to Europe. This high value commodity line has led to increasing competition for limited air space. Domestic fresh fish moved inland on ice as well. Most of the catch is either frozen or canned. (See export statistics in Chapter Two of this report). Fishmeal and fish oil are produced as byproducts of the fish canning plants. Old plants, increased value of the fresh fish, and variations in overall catch lead to large annual fluctuations in the production of fishmeal and oil. When fish oil prices are low, some plants use it as a fuel domestically. In addition, heavy fishing and changing weather patterns have caused the major concentrations of fish to shift to the south along the Saharan coast. This has caused at least one fish flour plant in Agadir to close due to lack of supply of appropriate surplus fish.

Processing and Marketing Trends and Constraints

There is substantial freezing on board ship for the high seas fishery, with the catch packed in frozen form in cartons and shipped directly to markets or transit at landing points in Las Palmas, Spain, Portugal or Morocco.

The fish canning industry has quite a number of obsolete plants and is undergoing consolidation of overcapacity and updating to meet European EEC standards. The GOM has set the end of 1992 as the date by which canneries must be reequipped to meet new sanitary and quality standards. Some plants have already been put under stop work orders to avoid low quality product going onto the market. One of the main issues is the use of stainless steel lines. The opportunity is being taken by some of the more forward-looking firms to greatly improve efficiency of lines, still blending capital and labor intensity, such as the use of hand labor to do quality culling that machines would miss.

There are some moves to vertically integrate the industry. For example, in the sardine and mackerel canning industry, at least one firm is considering the use of icing on small purseiners and pumping of fish into trucks for transport to plants. There is still some unrefrigerated shipment of processing fish to plants and firms doing this are likely to be forced out of the market over time. The **Office Nationale de Peche** regulates pricing and arbitrates quality standards for delivered fish.

There are trends toward diversification of canning and labeling and the development of products for differentiated markets in the industry. Aluminum cans with pull-tab openers are becoming more important as is packaging for specific markets. There is a need for substantial upgrading in packing, including making use of cheaper aluminum and higher quality paper, cardboard, and printing in product package preparation.

The Moroccan domestic market prefers fresh fish. Currently, at least two major firms do not see much of a future in expansion of canned fish product sales in Morocco. Fresh frozen fish is an option, but requires a more extensive freezing chain and greater income levels in the interior of the country.

In export markets, different products are sold to Europe (high value), Subsaharan Africa (dried, smoked, salted, and canned), and the Gulf coast (frozen and canned) with very high-value products from the high seas fishery and demersal frozen species able to attain the premium world market.

The restructuring of the industry and the quality and health upgrading underway have reawakened past wholesale buyer interest. The canning industry needs to respond with flexibility in packaging, labelling, and product identification (such as the "Maroc qualite" campaign). Fresh and frozen markets show continued opportunity for expansion. USA markets are more difficult, and will become more so for fresh and frozen products as US inspection standards tighten at the demand of consumers. Improved packaging would increase diversity of markets attainable, including Japan. Japanese trading companies have made recent visits to explore this avenue. Japan's fleet has basically withdrawn from the Moroccan fisheries.

The EEC 1990 fisheries agreement and growing awareness of the need to preserve Mediterranean fisheries will involve all North African countries over time. This will probably provide the opportunity for substantial joint venture development of production and marketing agreements between Moroccan and European firms. In addition, there are a number of general opportunities for industry development, including:

- **Fresh species niche markets.** Ice-packed fish and shell fish to high-value markets if air transport availability improves. Biggest issue would be the availability of non-RAM flights to make better connections to the Americas and to Asia;

- **Fish stock management.** This would require better surveillance and policing. Policing is a real problem given the size of the Moroccan coast guard and navy. Overfishing is a problem around the world and management solutions will require a careful balancing of strongly competing interests;

- **Special packaging constraints.** There is a clear need to make more use of aluminum cans. Currently about 346 million 250 gram cans are consumed annually and few of these are aluminum. The current Casablanca producer is a high cost supplier. Wrapping paper and cardboard packs are good for low end of market, but not adequate to maintain consumer appeal in higher-end markets for canned fish. Need better paper, universal bar codes, and packaging adapted for each market;

- **Higher value-added cephalopod packaging.** Since this fishery is at or near extractable limits, Morocco needs to consider ways to add value to the frozen product that it ships. A fresh frozen pack for the Asian market is one area of interest. Again, the packaging industry in Morocco is a high cost supplier for higher quality packaging. There also needs to be some complementary point-of-sales market development and promotion for Moroccan seafood products.

Potential MAP Project Opportunities

Given the complexity of the fisheries subsector, AID will need to think carefully about whether it makes sense to attempt to include this subsector in a MAP project which might other wise be largely

focused on the promotion of horticultural agribusiness development. It should be clear from the above discussion that there are numerous opportunities for assistance to be given, including:

- A prefeasibility study of the Larache-Loukkos lagoons and Tan-Tan area for the potential production of oysters, mussels, and possibly algae;
- A prefeasibilty study for a frozen storage facility to extend stock availability of sardines and mackerel for the processing industry;
- Technical assistance in market research for traditional and new products and point-of-sale promotion. For example: the promotion of olive oil packed sardines and olive oil/hot pepper sardines and mackerel; fresh frozen or prepared fish filets in consumer packs, etc.;
- TA or industry consulting services to upgrade packaging and labelling of frozen and canned Moroccan fish products; and
- Assistance to bring FDA inspectors to Morocco to build understanding of new US regulations for fish products, as pending legislation in the USA is enacted and implemented.

NOTES ON OTHER AGRIBUSINESS INDUSTRIES OF INTEREST

Cork

Morocco has a number of extensive cork oak forests whose sustainable yield could be increased by better tree care and harvesting techniques. Management and exporting is currently conducted by a state company. This is clearly a very specialized business and would call for thee services of a specialist to evaluate but there may be new formulas for licensing private harvesting which might produce better care and higher yields. In addition, the use of Moroccan cork in Moroccan-made products could probably be expanded.

NOTE ON SPICES

Morocco's commonly traded spices include coriander, bay leaf, oregano, capers, cumin, rosemary, sage, thyme, saffron, and tarragon. The structure of the industry is one oriented primarily towards collection of wild or semi-domesticated materials in the foothills of the Atlas Mountains. Some small-scale production of these spices (saffron, thyme, rosemary, sage) is done as well, but it is outweighed by collection. Collectors get permits from the forestry service and sell their product in small lots to intermediaries who aggregate and deliver to a variety of traders and seed and herbalist industries. Traders and small producers sell domestically and export primarily to France. The seed and herbal companies also sell substantial quantities to US and Canadian firms. McCormack and Schilling were given as two major clients.

Morocco could become a more important supplier of these spices were more intensive production further developed, perhaps as a joint venture with a US spice company. One US company has already begun exploration of direct involvement in spice production. Moroccan producers might add spices to their farms as a diversification move.

NOTE ON MEDICINAL, AROMATIC, AND ESSENTIAL OILS

Major products in this category are Geranium Oil, Verbena and Verbena extract, Bitter Orange Leaves and Peel, Peppermint, Rosehips, Rose oils and fragrances, Lavender, Sorrel, Bergamot Oil, Wormwood Extract, and extracts of Oregano, Rosemary, Thyme, Cumin, and Tarragon. Producers and distillers of these products are legion and generally small in scale. About 24 companies are active in herbal exports. These firms are linked most strongly to French and Spanish firms which use Moroccan exports as raw material in their manufacturing or package and export the aromatic plants and oils as French and Spanish products. These firms, and others in Germany and Italy, add value to the product because they impose stricter quality control and packaging standards than the Moroccan exporters do. They also offer a broader and more consistent product mix to buyers in Europe and North America.

Opportunities for increased direct export of herbal products and essential oils exist, but probably only with direct involvement of a US firm that can provide the technology, quality control, and packaging needed to enter the US market. Feasibility and marketing studies would be required to further evaluate the potential for US investment in this industry.

NOTE ON CAROB GUM

Morocco has an important carob industry, with at least 11 companies actively involved in the primary processing and export of carob beans into gum. Carob is essentially all collected from forest reserves in much the same way as many herbs and spices. Processors and traders buy the carob bean from primary collectors. Currently, the carob industry appears to be undergoing substantial consolidation under the banner of SANOFI Biosciences Division, which is active in the essential oils, spices, herbal and medicinal plants arena as well. The SANOFI group is owned principally by French interests. However, a large proportion of the carob gum exported is destined for the North American food processing market. SANOFI now owns a majority stake in at least four of the larger companies in the carob trade. Brief interviews with one of the largest of these firms, Gum Industries, indicates that the marketing orientation towards North America will be maintained.

While market contacts might be extended in this area, the major US interest might be in carob production under more intensive conditions. It is rumored that a 400 hectare carob farm may be established soon in Beni Mellal.

ANNEX TWO

LIST OF CONTACTS

ANNEX TWO

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Agouzzal & Compagnie (Ets)
Quartier Industriel, Essaoura, BP 41, Tel: 47.22.10 and 47.27.40
Mr. Hmid Mohammed NAIT, Directeur

Agrex Maroc
Quartier Sidi Brahim, B.P. 1683, Fes
Mr. Tounasii, Adjoint au Directeur
Mr. Aloui, Responsable Conditionnement

Agrex-Iphim
Route de Ksar-El-Kebir, B.P. 120, Larache
Mr. Domminique Barrere

Banque Commerciale du Maroc
2 Bd. Moulay Youssif, Casablanca
Tel: 22.41.69
Mlle. Myriem El Bouzidi Laraki, Club Invest/Export

Banque Nationale de Développement Economique (BNDE)
Place des Alaouites B. P. 407 Rabat
Tel: (07) 660-401
Fax (07) 637.02
Mr. Amraoui, Directeur de Department Technique

Benabdellah Group
11 Ave. des F.A.R., Casablanca Tel: 20.02.94/20.02.95; Fax: 20.02.96; Telex: 23783 NOVING
Mr. Feddoul Benabdellah, Directeur Général
In charge of RIM, Marrakech and SIMCAT-SACSA in Safi

Bouhdoud Farm, Near Agadir
(This farm has 100 hectares, most in citrus but with substantial area under greenhouse production of bananas, mellons, tomatoes, and peppers)

Caisse Nationale de Crédit Agriciole (CNCA)
National Office, Rabat
Mr. Hamami, Wafi, Directeur, Department Agro-Industrie

Centre Marocain de Promotion des Exportations (CMPE)
23, Boulevard Girardot, Casablanca 01
Tel: 30.22.10/30.75.43/30.75.88 Telex: 27.847/27.897 M
Fax: 212.30.17.93
Mr. Abdelhamid Boumediene, Secretary General
Mr. Abdelali Berrada, Charge d'Etudes, Department Agro-Industrie

Chambre d'Agriculture, Settat
Mr. Ahmed El Azouazi, Deputy President of the Chamber of Agriculture, President of the Rural Commune, Manager of the REPMAC Company

Chambre de Commerce et de l'Industrie de la Wilaya du Grand Casablanca
93 Bd. Mohammed V, Casablanca 01
Tel: 26.43.27
Mr. Brahim El Amiri, Directeur Generel
Mr. Jalal Alaoui, Dept. of Foreign Trade

COFRUSOUSS
Avenue Hassan II, Agadir Tel: 842057/823094 Telex: 81970 M
Mlle. RACHDI (daughter of Lahoucine RACHDI, PDG)
(This firm processes canned green beans and tomatoe paste for export)

Conferederation Gererale d'Economie Marocaine (CGEM), Casablanca
Mr. BENNANI Smires, President
Mr. Omar Amraoui, Directeur General Berliet-Maroc and Renault Vehicules Industrieles

Cooperative Agricole de M'Brouka, near Agadir
Mr. Mouisset Abdelmajid, Business Manager
Mr. Mouisset Abderrazak, Director (absent)
Mr. Mouisset Brahim, in charge of cold storage operations
(This is a large, new packing and storage facility for citrus and vegetables. The cold storage has two rooms which can be used for frozen storage)

Cooperative Agricole Laitière de Kenitra
Route de Tanger Km. 5,8 B.P. 128 KENITRA
Tel: 632.84/651.51 Telex: 91004 M
Mr. Nouri Mohamed, P.D.G. et Ingenieur en Chef

Délégation de la Commission des Communautés Européennes
2 Bis Av. de Meknes, Rabat. Tel: 612.17/612.46
Mr. Patrick B. Renauld, Conseiler

Ecole National Agronomique (ENA)
Meknes
Dr. Ahmed Driouchi, Chef de Département de l'Economie Rurale
Mr. El Khasmr Hajib, Informaticien/Programmeur

Etablissement Autonome de Contrôle et de Coordination des Exportations (EACCE)
72, Rue Mohamed Smiha, Casablanca Tel: 30-81-22 et 30-61-98
Mr. Ahmed Jawad, Directeur General and Staff: Dr. Hassan Beqqali among others

FRUMAT
45 Av. F.A.R., Casa Tel: 31.28.40; 31.26.89; 31.42.38, Telex: 21.707 M; 25.847 M.
Mr. Tayeb Aboubakr, Directeur Administartive
Route de Mehdia, BP 144, Kenitra
Tel.: 41.05/36.43/55.70
Mr. Abdelhamid Lakhdar, Directeur de Frumat Kenitra

GEFS (part of SONAP)
Enceinte Portuaire, Agadir Tel: (8)233.44/256.87
Fax: (8)221.77/256.87
Mr. Taoufik Harouchi, General Manager
(This is a frozen fish storage facility)

Gum Industries, S.A.
Quartier Industriel de Bensouda, Fes
Mlle. Debbargh

Industrie Marocaines Modernes
Km 10 400 Ancienne Route de Rabat, BP 2625 Ain Sebaa, Casablanca
Tel: 35.01.28; 35.14.20 Telex: 26735
Mr. Heinz Krahenbuhl, Directeur de Société
(IMM is a subsidiary of Proctor and Gamble and makes soap, shampoo and other products in Casa. Mr. Krahenbuhl is also the president of the American Chamber of Commerce in Morocco. Offices for the Chambre are in the Hotel El Mansour in Casablanca at telephone # 31.14.48)

Institut Sucrier d'Etudes, de Recherche, et de Formation (ISERF)
Mr. Ahmed Mokhairi, Chef des Laboratoires
Mr. Said Chabaa, Chef du Departément Technique
Mr. Mohamed Ezekari, Chef du Departément Agronomie

Institut National de Recherche Agronomique (INRA) Rabat
Mr. H. Faraj, Directeur

INRA/Douyet
Route Principale 1, 9 km de Fez
Mr. Mahjoub, Chef de Station

INRA/Centre Aridoculture/Settat
Dr. David Keith, Entomologist, Chief of Party, MIAC
Dr. Abdelilah Sefrioui, Acting Director et Coordinateur, Systèmes de Production
Dr. Abdelmalek Azzaoui, Soil Fertility Specialist
Dr. Mohamed Derkaoui, Forage and Livestock Specialist

INRA/Centre de Recherche Régionale Agronomique de Marrakech
Mr. M. Ahmed Janati, Chef du Centre
Mr. Abdellatif Ameziane, Chef du Programme Palmier et Dattier
Mr. Mostafa Ait Chitt, Chef de Laboratoire Culture des Tissus
Mr. Mohamed Saaidi, Geneticien Palmier, Dattier
Mr. Belkacem Boulouha, Améliorateur, Programme Olivier
Mr. R. Loussert, Expert Chercher, Programme Olivier
Mr. M. Moukli, Améliorateur, Programme Olivier

Institut Agronomique et Vétérinaire (IAV) Hassan II
Mr. Abdellah Ait-Tihyaty, Ingenieur en Chef, Maitre de Conferences
Dr. Lahsen Ababouch, Technologie Alimentaire et Contrôle Qualité
Dr. Donald Johnson, Animal Health/Production Specialist, COP of University of Minnesota Team
Mr. Rachid Doukkali (AgroEconomiste, PhD Candidate), Head of Sciences Humaines

IAV Hassan II, Complexe Horticole d'Agadir
Dr. Hilali, Directeur du Complexe
Dr. Choukr'allah, Head of the Horticulture Department

Islamic Centre for Development of Trade
Tours des Habous
Av. des FAB, Casabalance, 01, B.P. 13545
Tel: 31.49.74/31.00.33
Fax: 31-01-10
Mr. Mohamed Guedira, Director General

International Executive Service Corps (IESC)
Place Zellaqa, Tour Atlas -- 5eme Etage, Casablanca 01
Tel: 30.58.59/30.91.11 poste:281 Telex: 28081 FAX: 30.00.30
Mr. David M. Sullivan, Director, Trade and Investment Services

International Finance Corporation (IFC)
30 Av. des FAR, Casablanca
Tel: 31.28.88
Mr. Younes Marrakchi, Investment Officer

Mr. Jovovic, Blagoje
Cabinet d'Etudes Techniques 7 Rue A1 OsqoPiah, Rabat
Tel: 239-18

Les Huileries de Meknes
Quartier Sidi Saïd, B.P. 2021, Meknes, Maroc,
tel: 212-05-300-84/91/92
212-05-304-77
212-05-308-48
212-05-314-82 to 86
Telex: 41034 Huilmek

Mr. Agouzzal, Moulay Messaoud Bèn Brahim, Président Directeur Général (Head of a network of companies throughout the country)
Mr. Agouzzal, Moulay Hassan ..., Son of Moulay Messaoud. (Leaving for UMass, Boston, for MBA degree in industrial management)

Mr. Eddaoudi, Hassan, Directeur General
Mr. Hmouri, Hammou, Directeur Financier

Loukos
Larache, Morocco
Mr. Ismael Nansour, Directeur Technique
Mr. Ahmed Houdou, Directeur Technique
(This is a large modern plant producing tomato powder and flakes for export to Europe, the United States, and Japan.)

MAG Conserves
Bd. Chefchaouni, Km 3; Ain Sebas; Casablanca 05
Tel: 35.08.26; 35.14.42 Telex: 26.918 M
Mr. Mohamed Zendafou, Administrateur Unique

Ministry of Agriculture and Agrarian Reform, Rabat
Son Excellence, Mr. le Ministre de l'Agriculture et de la Reforme Agraire (MARA), Mr. Othmane Demnati
Mr. Moulay Ahmend Alaoui, Sécrétaire Générale de MARA

MARA, Production Végétale
Mr. Rami Yahyaoui Abdellatif, Directeur
Mr. Anechoun, Chef de Division Projets et Agro-Industrie
Mr. Bennani, Chef Section Agro-Industrie
Mlle. Salim Mamas, Section Agro-Industrie

MARA, SOGEFRIM (Société de Gestion de L'Entrepôt Frigorifique De Marrakech)
Tel: 431591
Mr. Ouarzazi Abdelghni, Directeur

Ministry of Commerce and Industry
Mr. Benchekroun Khalid, Chef de la Division de l'Industrie Alimentaire (and staff specialists)

Ministry of Plan
BP 449, Rabat. Tel: 615.53/634.50; Fax: 645.76; Telex: 366.60 M
Mr. Omar EL Bahraoui, Directeur du Plan and his staff

NAFCO/NAFOGEL S.A.
Zone Portuaire B.P. 77 Larache
Tel: (091)31.34/30.44 Fax: (091) 42.46 Telex: 339.80
Mr. A. Legroun Abdelkrim, Administrateur Directeur General

Office Regional de Mise en Valeur Agricole (ORMVA)/Souss Massa
Rue des Administrations Publiques, BP 21, Agadir
Tel: 225.32, 231.12
Mr. Hanan Abderrahman, Directeur General
Mr. Akrim Laheen, Chef du Service de la Production Agricole
Mr. Bel Bashir Abdelkader, Chef de Bureau Agro-Industriel
Mr. Belfkir, Chef de Bureau Agro-Economique

Office pour le Developpement Indsutriel (ODI)
10, Zankat Ghandi BP 211, Rabat
Tel: 684.60/669.81 Telex: 310.53/320.78 M
Mr. Squalli Houssaini Otmane, Chef de Départment Agro-Industriel

OMACI
A fish flour and sardine processing plant in Agadir. Visit lead by the technical manager.

Omnium Nord Afrique (ONA)
1, Rue Caporal Corri, Casablanca
Tel: 354630, 354636 Telex: 25674 M Fax 354560
Mr. Hamdouch, Directeur de la Division Agro-Industrie
Mr. Driss TRAKI, Directeur General, Lesieur Afrique

Pioneer Maghreb, S.A.
59, Bd. Zerktouni, Casablanca 02, B.P. 15901
Tel. 20.20.57-58; Fax: 20.20.59
Mr. Anwar S. Boctor, Directeur Général

Price Waterhouse
4 Rue Colbert, Casablanca
Tel: 31.49.68
Mr. Aziz Bidah

SODEA (Société De Développement Agricole)
Zankat Abderrahmane, Al Ghafiqui Agdal, Rabat
Tel: 708.25 Telex: 31675 M
Mr. Kazouz Mustapha, Directeur Général
Mr. El Mniai Houcine, DG Adjoint
Mr. Boubekri Cheik, Chef De Department Participations
Mr. A. Baby Berrada, Directeur Général, SODEVI (wine production subsidiary of SODEA)
Mr. El Alaoui Ali, Chef de Départment Viticulture

SOGETA (Société de la Gestion des Terres Agricoles)
35, Rue Dait Erroumi, Agdal, Rabat
Tel: 727.69/728.34 a 37 Telex: 31704
Mr. Ihamouten Mohamed
Directeur de la Production

SURGELSTAR, (part of Conserveries TAM)
Bd. des Zenatas, Mohammedia. Tel: 32.28.35; Fax: 32.35.80; Telex: 22660 M.
Mr. Hassan Zakrani, Directeur

Tanneries Jean Carel
Boulevard Moulay Hicham, Quartier Industriel, Essaaouria
Tel: 047.20.73/047.24.30/047.20.83
Mr. Sadik Mohammed, Directeur Général

Tanneries du Maroc, Casablanca
Tel: 24.25.31/24.28.51/24.13.72 TLX: 25.855
Mr. El Harezi, Directeur General
(Part of the same set of companies as above. This one handles all exporting and marketing studies for four commanly owned tanneries)

USAID

Ms. Linda Morse, Acting Director
Mr. Richard Burns, Chief, Project Development and Private Enterprise Division
Dr. Jim Lowenthal, Chief, Agricultural Dvelopment Office (ADO)
Mr. Mohamed Hanari, ADO
Dr. John Schamper, Deputy ADO
Dr. Fenton Sands, Ag Economist, ADO
Mr. Joe Kitts, PSC, Locust Control Project, ADO

U.S. EMBASSY/CONSULATE/CASABLANCA
Mr. Samuel D. Starrett, Commercial Attache

U.S. EMBASSY, RABAT
Mr. Andrew A. Duymovic, Agricultural Attaché

Ets. Zniber
Mr. Zniber, President: Seen at his packing plant and controlled atmosphere storage facility near ENA, outside Meknes. He is also full or part owner of other enterprises, including:

Meknes Vin
11, Rue Ibn Khaldoun, Meknes
Tel: 203.60/208.07/232.05 Telex: 41306
Wine Labels: Les 3 Domaines, Guerrouane, Beni-M'Tir, Ksar, Cuvee Speciale, Cap Blanc, Moghrabi
Mr. Omar Aouad, Directeur General Adjoint

Ste. Socuprom, Agadir
Imm. SABRIM No. 35, 8eme Etage
Av. Moulay Abdellah, Agadir
Mr. Hajmou, Gerant