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TRIP REPORT
ON
MOROCCAN OILSEED INDUSTRY
October 17 to 29, 1982

International Development Cooperation Agency
U.S. Trade and Development Agency

TRIP REPORT

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**Submitted to: Trade and Development Program
International Development and
Cooperation Agency**

**Submitted by: Foreign Agricultural Service
Department of Agriculture**

MOROCCAN OILSEED INDUSTRY

Introduction

For a period of two weeks, a group of U.S. specialists visited Morocco and studied their transportation system, ports, livestock production, grain storage, vegetable oil and oilseed industry and other infrastructure problem areas with the purpose of identifying problems and recommending courses of action.

The team included: Dr. James E. Ross, FAS-USDA, team leader; Lloyd Harberts, FAS-USDA, economist; Dr. Terrance J. Voracheck, Midwest/African Director of the U.S. Feed Grains Council; James A. Caron, Office of Transportation-USDA; Dr. Harry B. Pfost, Development Planning and Research Associates, Inc., storage specialist; Dr. R. J. Krueger, Applied Economics Inc., poultry specialist; Joe C. Givens, representing the American Soybean Association, oilseed processing specialist; Donald M. Taylor, American Agricultural Associates Inc.; and Ronald Bobel, IDCA/Trade Development Program.

The writer's specific objective was "to assess the current status of Morocco's oilseed industry, the current and future demand for vegetable oils and protein meals, the sources of supply of current oilseeds, vegetable oil and meal stocks, and to identify and recommend the specific infrastructure and policy actions needed to efficiently supply Morocco's oilseed needs."

The "team" was divided into three groups and each group made a series of prearranged visitations to various offices whose personnel were familiar with areas of speciality of someone in the group. Some of these visits were very informative and were entirely too short to fully cover the information needed. The writer came away from Morocco as a "two week" expert on their oilseed industry. The problems encountered had many facets and time was not sufficient to delve deeply or check and cross-check. Please consider the conclusions and recommendations in this light.

Supply of Oilseeds and Vegetable Oil

Morocco produces only a small portion of their needs for oilseeds. Although the Government of Morocco (GOM) has had a program to promote the growing of oilseeds, success has been limited. (1) (11) (13) Lack of adequate rainfall, shortage of usable land, and competition by other crops for irrigated land has prevented large enough production of oilseed crops to substantially contribute to Morocco's need for vegetable oil. The outlook for increased oilseed production is not optimistic.

- Sunflower production promotions have not been successful. Sunflowers have been grown mostly as a second crop to fill in after the regular crop has failed. In 1982, from 18,000 to 20,000 hectares were planted. Yields vary tremendously. Cultural practices have not been perfected. Harvesting of the crop by birds is a serious problem. Sunflower production is expected to decrease. (13)

- Rapeseed is being promoted for dry-land farming. There has been a problem in harvesting this crop. If it is not harvested at the proper time, much of the seed is lost and the soil infested with seed. Farmers do not like this crop; only about 1,000 hectares are expected to be planted in 1983.
- Safflower is being promoted in semi-arid areas, but there is not enough experience to predict how it will succeed as a viable crop.
- Soybeans have shown good promise on irrigated land -- mostly as a second crop following sugar beets. (1) (13) Lack of nitrogen fixing bacteria in Moroccan soil is a problem. (9) (13) Inoculation of seed has not been particularly successful. The maximum area of irrigated land which could be planted in soybeans is 15,000 to 20,000 hectares.
- Cotton is one of the principal crops. Production over the last few years has varied considerably -- from 10,000 to 15,000 metric tons of cottonseed has been available for "crushing."
- Olives are the traditional source of vegetable oil in Morocco. Production of olives, however, has tended to decline. About half of the olive trees are planted to control soil erosion and are usually poorly maintained. The GOM has initiated a program to improve the care of neglected olive trees. The GOM is also promoting an increase in acreage devoted to carefully tended olive trees. New regulations should benefit the farmer more and offer more incentive to increase the land devoted to this crop. Olive oil now provides about 19 percent of the vegetable oil needs of Morocco. By 1990 the GOM plans that olive and olive seed oil will furnish 48 percent of the vegetable oil. (13)

Vegetable Oil Supply

Morocco suffered a severe drought in 1981 which cut the yields of grains and oilseeds in half and changed the need for imported vegetable oil and oilseed meal. The feed industry was not able to supply adequate amounts of livestock feed. Many livestock were forced to be slaughtered.

Because of the variations in weather and the world economy, there is no such thing as a typical year of supply and utilization of oilseeds and vegetable oil. If there were such an average, the picture of supply and utilization would look something like this. Morocco has been utilizing roughly 200,000 metric tons of vegetable oil annually. Of this amount of oil, only 20 percent originates in Morocco (17 percent from olives and about 3 percent from cottonseed and sunflowers). Approximately 60 percent of the total is soybean oil (10 percent from imported soybeans "crushed" in Morocco and 50 percent from imported soybean oil). Approximately 20 percent is rapeseed oil (or Canola oil).

An understanding for the reasoning for the above picture can be obtained by studying the following tables, which give the source, supply and distribution of oilseeds, vegetable oil and oilseed meal in recent years.
(16)

TABLE I
MOROCCO

SUPPLY AND DISTRIBUTION
FOR OIL BEARING MATERIALS
(Hectares and Metric Tons in Thousands)

Commodity and Mktg. Year Ending September 30	SUPPLY					Total Supply/ Distrib.	DISTRIBUTION				Meal Pro- duction	Oil Pro- duction	
	Planted Area	Harvested Area	Begin. Stocks	Pro- duction	Imports		Exports	Domestic Use					Ending Stocks
								Crush	Food Use	Feed/Seed Waste			
SUNFLOWERS													
(80)	30.5	15.5	*	18.1	0	18.1	0	14.5	1.0	2.6	*	6.1	5.4
(81)	9.4	8.5	*	7.9	0	7.9	0	3.5	1.4	2.5	*	1.5	1.4
(82)	15.0	9.8	*	5.6	0	5.6	0	5.7	0.7	1.0	*	2.4	2.3
(83) FORECAST	12.2	12.1	*	10.9	0	10.9	0	7.0	1.4	2.5	*	2.4	2.4
COTTONSEED													
(80)	8.5	8.3	*	10.3	0	10.3	0	9.8	0	0.3	0.2	4.6	1.6
(81)	13.1	12.8	0.2	14.6	0	14.8	0	14.5	0	*	0.3	6.6	2.3
(82)	11.5	11.4	0.3	13.5	0	13.8	0	11.2	0	0.2	2.4	5.2	1.8
(83) FORECAST	10.6	10.4	2.4	12.5	0	14.9	0	12.3	0	0.2	2.4	5.7	2.0
SOYBEANS													
(80)	*	*	1.5	TEST STAGE	36	37.5	0	36	0	0.3	1.2	18.4	6.4
(81)	*	*	1.2	" "	11	12.2	0	11	0	0.6	0.6	9.1	2.2
(82)	2	1.7	0.6	0.2	14	14.8	0	14	0	0.4	0.7	5.0	3.3
(83) FORECAST	*	*	0.4	*									
RAPSEED													
(80)	*	*	0.5	*	14	14.5	0	9.9	0	*	4.6	5.6	4.0
(81)	*	*	4.6	*	5	4.6	0	14.6	0	*	0	8.3	5.8
(82)	*	*	0	*	*	*	0	*	0	*	0	*	*
(83) FORECAST													
PEANUTS													
(80)	26.4	26.4	*	27.4	0	27.4	0	0	27.0	0.4	*	0	0
(81)	27.7	27.7	*	31.8	0	31.8	0	0	31.7	0.4	*	0	0
(82)	31.8	31.8	*	17.8	0	17.8	0	0	17.7	0.4	*	0	0
(83) FORECAST													
OLIVES													
(80) END OCT	395	234	*	434	0	434		26.4	6.3	*	*	-	39
(81) " "	300	239	*	277	0	277	35.0	166	57.7	*	*	-	23
(82) " "	305	234	*	330	0	330	42.0	148	65.1	*	*	-	36
(83) FORECAST	310	234	*	250	0	250		150	60.0	*	*	-	28

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TABLE II
MOROCCO, IMPORTS BY COUNTRY
ON A CALENDAR YEAR--IN METRIC TONS

<u>Commodity</u>	<u>Source</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982 (7 Months)</u>
Soybeans	U.S.A.	20,249	22,390	9,845	18,742
	Brazil	9,000	0	0	0
	Argentina		2,045	803	0
	TOTAL	29,249	24,435	10,648	18,742
Rapeseed	Canada	21,000	13,250	0	0
	Holland	0	750	0	0
	France	0	0	5,178	0
	TOTAL	21,000	14,000	5,178	0
Soybean Oil	France	25,156	3,000	12,302	42,712
	Holland	7,415	0	6,290	3,100
	Portugal	9,515	0	24,282	15,008
	Spain	94,815	92,606	71,448	0
	U.S.A.	9,475	0	0	6,000
	Brazil	2,865	0	0	23,700
	Canada	0	11,822	5,807	11,721
	Belgium	0	0	0	14,657
	TOTAL	149,240	107,428	120,129	116,897
Rapeseed Oil	France	3,084	15,440	43,815	0
	Holland	2,850	3,000	0	0
	W. Germany	8,771	6,151	0	0
	Canada	9,078	12,315	0	0
	U.K.		3,150	0	0
	TOTAL	23,782	40,056	43,815	0
Sunflower Oil	France	**	**	0	0
	Spain	0	3,100	0	0
	TOTAL	0	3,100	0	0
Soybean Meal	W. Germany	3,000	6,000	2,000	3,000
	France	0	0	54,000	0
	Canada	0	0	50,000	0
	TOTAL	3,000	6,000	106,000	3,000
TOTAL OILSEEDS	All Countries	50,249	38,435	15,826	18,742
	U.S.A.	20,249	22,390	9,845	18,742
TOTAL OILS	All Countries	173,022	150,584	163,944	116,897
	U.S.A.	9,475	0	0	6,000
TOTAL OILSEED MEALS	All Countries	3,000	6,000	106,000	3,000
	U.S.A.	0	0	0	0

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Conclusion.

Morocco has limited land suitable for growing oilseeds, much competition from more profitable crops for the land available, and a lack of adequate rainfall. It is very unlikely Morocco will ever be able to meet a substantial portion of its oilseed needs by its own production.

Oilseed Processing

Morocco's oilseed processing industry consists of two small oil extraction plants and 14 small vegetable oil refineries. These plants are privately owned.

One company dominates the oil extraction and vegetable oil refining business. This is UNGRAL Cristal of Casablanca, which also owns the SEPO organization of Casablanca. SEPO has the only viable oil extraction plant in Morocco and the third largest oil refinery (120 metric tons daily). UNGRAL and SEPO refineries together can refine over 300 metric tons of vegetable oil a day. The largest refinery at a single location is LESIEUR AFRIQUE at Casablanca, which has a capacity of 220 metric tons daily. LESIEUR AFRIQUE is a subsidiary of the LeSieur Company of France. The fourth largest oil refinery is OLEOR at Kenitra, which has a daily capacity of 60 metric tons. Kenitra is about 160 kilometers (100 miles) northeast of Casablanca. The other ten refineries would be considered very small by U.S. standards. Approximately 70 percent of the refining capacity is located at Casablanca.

The Government of Morocco (GOM) regulates and controls this industry very closely. The GOM controls the amount of imports of oilseeds and vegetable oils by issuing licenses. The GOM sets the import taxes and determines the selling price of oil and oilseed meals. The GOM subsidizes the transportation, the processing oilseeds, the refining of oil, the bottling of oil, the marketing of oil and the plastic used to make the oil bottles.

The principal oil extraction plant is
SEPO
Ste D'exploitation Des Produits Oléagineux
2 Rue Caporal Corbi
Casablanca

Their management includes: Mohamed Smires, Directuer General
Mohamed Boutayeb, Chef de Fabrication
Abderrahman Mah, Technical Director

The SEPO extraction plant is part of a manufacturing complex which includes the oil extraction plant, an oil refinery, a soap factory, a plastic factory and a baby food factory (UNICEF formulas). The extraction plant will extract the oil from up to 250 metric tons of oilseeds daily. The oil extraction plant is about 20 years old. Some of its equipment is not suited for processing soybeans. It has a DeSmet extractor. The plant was designed to operate on high oil content seeds such as cottonseed, sunflower or rapeseed. It was not set up to do a good job of processing soybeans. It had six small screw presses to prepress the seed. It did not have conventional flaking rolls for making flakes. Instead, five high crushing rolls, such as are used in cottonseed mills, were used to make flakes.

The equipment appeared oversized for the stated capacity. For example, the extractor was said to have a retention time of three to four hours. This is twice as long as is usually used for prepressed seeds and over four times as long as is usually used for soybeans. With the installation of different preparation equipment, the production of this plant on soybeans could probably be increased substantially.

This extraction plant had many conditions which would be considered unsafe in the U.S. If it were in the U.S., it would be doubtful if insurance could be obtained to cover it or if OSHA would allow it to operate.

The plant was operating on Canola seed at the time of the visit. Canola was said to be more profitable than soybeans. The average residual oil was said to be 0.7 percent, which is excellent. Solvent loss was said to be 10 liters per metric ton, which is excessive. The plant was clean and in relatively good repair.

The management of SEPO stated that their greatest problem was to sell the oilseed meal produced. Lack of storage for meal, both at the SEPO plant and at their customers' plants, was another problem.

Several times during the visit it was stated that SEPO could meet Morocco's need for oilseed meal. Also, that another oil extraction plant is not needed. Sepo is considering building a new oil extraction plant.

Management seemed knowledgeable and competent. This was also true for the operating supervisors who were thoroughly familiar with this plant and what it would do. They did not seem familiar with processing as it is done in other countries.

The second oil extraction plant in Morocco is
SIGOGHARB
Kenitra
Idriss Oulahna, Assistant Director

This plant was said to have a potential capacity of 120,000 metric tons a year. This does not seem possible in the near future. The plant has two oil extraction systems. The older system was installed by Speichem Company of France, which is affiliated with the French Oil Mill Machinery Company of Piqua, Ohio. The extraction machinery was of the French Oil Mill Machinery design and said to be able to process up to 250 metric tons daily. The plant was not in good repair and did not appear to have been operated for many months.

The second oil extraction system was in a locked building and could not be observed closely. It was built by DeSmet of Belgium and is supposed to have a capacity of 120 metric tons a day when the installation is completed. The installation of machinery has been being made for over three years and is not completed. There was no sign that there had been any construction done here in recent months.

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The visit to this plant gave the impression that this oil extraction business had serious problems. It did not appear to be a going business.

The refinery at Kenitra was visited. This is the fourth largest oil refinery in Morocco. It is:

OLEOR
Oleagineux du Gharb
Rue 13, Quartier Industriel
Kenitra
Mr. Elhadar, Directeur Général
Mr. Mohamed Berriga, Directeur Technique

This plant refines 60 metric tons of vegetable oil daily. In 1982 it will refine 16,000 metric tons. In 1983, they expect to refine 18,000 metric tons of oil. The crude oil is delivered by tank truck -- mostly from Casablanca. It is refined using European equipment (Wesphalia centrifuges and a Gianozza deodorizer and other equipment). It blows its own plastic bottles. It bottles, labels, packages and distributes the oil.

The OLEOR plant is owned by a brother of King Hassan.

The OLEOR plant was clean, orderly, and well maintained. The oil looked and tasted good. The business seemed to be prospering.

There are relatively few people in Morocco who are knowledgeable and experienced in oilseed processing and vegetable oil refining. The management and technical people at SEPO and OLEOR were university educated and competent. No one was interviewed who had experience in extraction plants or oil refineries outside of Morocco or had even visited plants outside of Morocco.

Exchange Rates

Several people interviewed stated that the change in conversion rate of Moroccan dirham to dollars was a strong deterrent to buying soybeans, soybean oil, soybean meal, or anything from the U.S. The dirham to dollar exchange rate was 3.9 in 1979, 3.8 in 1980, 5.0 in 1981, 6.0 in early 1982 and 6.25 at the time of the team's visit. (17)

Government Regulations

The GOM regulates and controls most aspects of the oilseed industry. It sets the prices for each step of the processing, including the price to be paid for oilseeds to the prices to be charged for vegetable oil and oilseed meal. The GOM requires licenses to import oilseeds and vegetable oil (Category B). Soybean meal is banned from import (Category C), except by special permits. The GOM has high import taxes. The GOM subsidizes many aspects of the industry including transportation of oilseeds, oil extraction, oil refining, oil bottling, oil marketing, and even the plastic used to make bottles.

Import taxes on a few items were as follows, at the time of the visit (12):

Soybeans:	Basic duty (ad valorum)	2.5%
	Special tax on commodity	15.0
	Stamp tax	<u>1.75</u>
	Total	19.35%
Soybean Oil:	Basic duty (ad valorum)	10.0%
	Special tax	8.0
	Tax on commodity	17.7
	Stamp tax	<u>1.48</u>
Total	37.18%	
Soybean Meal:	Basic duty (ad valorum)	10.0%
	Tax on commodity	15.0
	Special tax (17% of 1.25 x cost)	21.25
	Stamp tax	<u>4.625</u>
Total	50.875%	

Prices -- The following were the prices in effect at the time of the visit. (11) The figures given in dollars were calculated using a conversion of 6.25 dirham to the dollar.

Soybeans (determined by tender plus taxes)	1800 dirham/metric ton or \$7.84/bushel
Soybean oil (wholesale)	4000 dirham/metric ton or \$0.29/pound
Soybean meal (to a feed mixer)	2000 dirham/metric ton or \$290/short ton
Sunflower meal (to a feed mixer)	1100 dirham/metric ton or \$160/short ton
Linseed meal (to a feed mixer)	1100 dirham/metric ton or \$160/short ton
Cottonseed meal (to a feed mixer)	900 dirham/metric ton or \$131/short ton
Canola meal (to a feed mixer)	1000 dirham/metric ton or \$145/short ton

Soybean Processing -- An example of how the system works is the scheme for processing soybeans.

The processors, along with the GOM planners, determine the needs for imported soybeans. The capacity of the extraction plants and the other oilseeds available to be processed are taken into account. The GOM arranges for and calls for tenders from the various grain companies who have offices in Morocco; i.e. Bunge, Cargill, Continental, etc., for the amount of soybeans needed. After the price is arrived at, the GOM negotiates an agreement for processing with the "crushers." The result is agreed prices to be allowed; i.e. subsidies, for extracting and refining the oil and prices to be charged for the oil and meal.

At the time of the visit, the following were the conditions for processing. Prices were as shown previously. The "crushing" subsidy was 350 dirham/MT. The oil refining subsidy was 400 dirham/MT. The scheme was planned using an oil yield of 18 percent and a meal yield of 75 percent, which leaves a loss on processing of 7 percent.

In processing one metric ton of soybeans:

Return from sale of meal = yield x price	(.75 x 2000) = 1500 dirham
Return from sale of refined oil = yield x price	(.18 x 4000) = <u>720 dirham</u>

Therefore, the total return is 2220 dirham

The cost of the soybeans for one metric ton was 1300 dirham

The difference is allowed the "crusher" and refiner and = 420 dirham

This difference of 420 dirham is almost exactly the subsidy allowed for "crushing" of 350 dirham plus the subsidy allowed for refining of oil of 72 dirham. The oil subsidy is calculated using the yield (.18) times subsidy/MT (400) or (.18 x 400) dirham is 72 dirham. That is, 350 + 72 = 422 dirham. These subsidies are to pay both the costs of operating and provide profit.

The extra return from improving the yields of meal and oil were not mentioned. The seven percent processing loss is at least four percent more than would be expected in the U.S. for processing. If the "crusher" is allowed to keep this four percent improvement on loss, it would increase his operating margin by about 89 dirham. This would make his total margin for crushing to be 350 plus 89, or 439 dirham per metric ton. This converts to \$1.93 per bushel processing margin using 6.25 dirham to the dollar.

In the U.S., processing costs vary from \$.50 per bushel to \$.75 per bushel, depending on the size, age, energy usage, labor, etc., of the "crushing" plant. The principal crushing plant is small, old, and inefficient on soybeans. Even so, its oil extraction operations should not be more than twice as expensive as a U.S. processor. "Crushing" soybeans appears to be very profitable in Morocco.

In like manner, the subsidy allowed for oil refining of 400 dirham per metric ton converts to 2.9 cents per pound. This is about twice as high as it costs to refine oil in the U.S. The refining business also appears to be very profitable.

Oilseed Meal Utilization

There are differences of opinion about the availability and utilization of oilseed meal. SEPO states that their largest problem is to sell the oilseed meal. This "crusher" processes cottonseed, sunflower, rapeseed, as well as soybeans. Only one oilseed can be processed at a time. This leads to storage problems, both at the crushing plant and at the feed mills, and an inability to supply the various oilseed meals at the time and in the quantities that the feed mills want them. Also, the poultry industry's demand for feed is quite seasonal and there are times (in the summer) when feeding is sharply cut back. SEPO says the feed industry has difficulty planning their needs far enough in advance.

Two animal feed manufacturers were visited in Casablanca: CICALIM and INAM-Provini. INAM-Provini has the largest feed mill in Morocco and manufactures about 28 percent of the feed in Morocco. Last year it mixed 74,000 metric tons of feed. It has plans to build a new mixing plant which will triple its volume. At one time, this plant was 50 percent owned by Central Soya. Now, 50 percent of the ownership is Swiss. This probably means either Arab or African ownership. CICALIM is apparently the second largest feed mixer in Morocco. They also have plans to build a new feed mill.

The largest volume of commercial feed mixed is for the poultry industry (90 to 95 percent). Feed mixers are required to use fish meal and inferior oilseed meals, i.e. rapeseed, cottonseed and sunflower, to reach the needed protein levels in their feeds. They would like to use more soybean meal if they could get it. The price of soybean meal is set high (by the GOM) in order to allow sale of cheaper oil. Soybean meal prices are set 2000 dirhams per metric ton, while world prices are at 1,500 dirhams or less. The 50 percent import taxes on soybean meal are too high. Soybean meal is in Category 3 (banned from import) and permits are difficult to get.

Broiler feeds have 22 percent protein, which is the same as in the U.S. However, much of the protein comes from the use of fish meal (up to 12 percent of the feed), which gives problems. These problems include microbiological, high salt resulting in diarrhea, fishy tasting meat, fish smell and poor feed conversion. The Moroccan broiler feed has energy levels of 3000 cal/kg compared to 3300 cal/kg in the U.S. The conversion rate of feed to chicken weight in Morocco is 2.5. to 1, versus 1.9 to 1 in the U.S. In Morocco, birds are fed 63 days before slaughter, while in the U.S. similar sized birds are fed 49 days. In Morocco about 50 million chickens are fed commercially mixed feed each year and approximately 30 million are grown non-commercially.

In Morocco about 11 pounds of chicken per capita are used. (17) This compares with about 60 pounds per capita annual usage in the U.S. In the mid 1940s the U.S. consumed from 15 to 18 pounds of chicken per capita. Commercially grown chickens is the least expensive source of animal protein. Chicken consumption is planned to increase dramatically in Morocco. If this happens, consumption of soybean meal will also increase dramatically.

Increased chicken production depends on better availability of soybean meal.

Plans for a New Soybean Plant

A feasibility study has been prepared by:

Compagnie Financiere D'Investissement
 27 Rue Des Ait Boomrane
 Casablanca
 Idriss Zarrouch, Director

Mr. Zarrouch is the former technical director of LeSieur-Afrique. He speaks good English and has visited the U.S. a number of times. He is the principal author of this study and also the chief promoter. The study was in French and a copy was not received. He explained the study as follows:

The soybean oil extraction plant is proposed to be built near the port of JORF LASFAR at the town of DOUKKALA. The site borders on the harbor facilities of the principal port for exporting phosphate rock.

The plan, in brief, would be to process soybeans from the U.S. These soybeans would be transported in ships carrying 100,000 metric tons of cargo. These ships would return to the U.S. with phosphate rock. Moroccan phosphate is competitively priced with the U.S. mined phosphate. The freight rates would be much lower than the soybeans now coming into Casablanca in ships carrying 22,000 metric tons. The plant would process 150,000 metric tons of soybeans a year, or 500 metric tons daily.

Mr. John Sharp of the University of Ohio has made a study of this movement, i.e. soybeans and phosphate, for the Early and Daniel Company of Cincinnati.

The port of Jorf Lasfar is to be a free port. Soybeans would be allowed into the plant for processing and soybean oil and meal would be allowed out of the plant for export without payment of taxes. The import duty to be levied on oil and meal used in Morocco was not made clear, but is presumed to be the same as it would be for soybeans being imported.

This plant would produce approximately 27,000 metric tons of oil and 115,000 metric tons of soybean meal annually. Since approximately 160,000 metric tons of vegetable oil is imported annually, the oil supplied by this plant would only furnish 17 percent of the oil imported. By 1985 (the year this plant would be completed), the demand for soybean meal in Morocco is expected to be 97,000 metric tons, based on 17 percent of the projected tonnage of commercially mixed feed. The demand would be 125,000 metric tons, based on a 22 percent level of soybean meal (as is used in the U.S.) in commercially mixed broiler feed.

Spain's soybean processors already have a capacity to produce more soybean oil than is consumed, but they do not produce enough meal to satisfy the demand in Spain. This soybean meal deficiency amounts to 150,000 metric tons annually. Mr. Zarrouch is of the opinion an agreement can be reached to sell the excess meal into Spain. Other nearby countries also have need for soybean meal.

For purpose of the study, Mr. Zarrouch assumed total variable costs to be 97.26 dirham per metric ton and administrative, overhead and financial costs to be 188.35 dirham per metric ton. Using the present conversion rate of 6.25 dirham to the dollar, these amounts convert to:

Variable processing costs	= \$15.56/MT or \$0.42/bushel
Administrative and overhead	= <u>30.14/MT or \$0.82/bushel</u>
Total	= \$45.70/MT or \$1.25/bushel

The overall cost of the soybean plant is expected to be 60 million dirham, which converts to \$9,600,000, and working capital to be 10 million dirham, which is \$1,600,000. These costs appear too low. They probably reflect the exchange rates of several years ago. The amount of storage, steam source and other details are not known.

Compagnie Financiere D'Investissement is now capitalized at 10 million dirham (\$1,600,000). If the project is approved, additional stock will be sold in the Casablanca market. They would like to have a U.S. partner.

Considering the explanation given, the project seems feasible and logical. It also could be improved upon.

The GOM is encouraging this project. At the Ministry of Commerce it was learned that the GOM is encouraging the building of two 500 TPD oil extraction plants. GOM incentives include buying land, forgiving some taxes on imported equipment, facilitating export of earnings by foreign partners, foreign investors could invest up to 100 percent of the cost, guarantees for investors to take out their profits and get back their initial investment, a one-time subsidy for every new job created, and more.

To the writer it would be more logical to build one plant having the potential of processing at least 1,000 metric tons per day. This is about as small a plant as can be built and still be able to compete with the U.S. and European plants. It is large enough to make investment in energy saving devices practical. Its operating cost per ton would be about 25 percent less than plants half its size. The total investment would only be about 50 percent more than a 500 TPD plant. There is a ready market in Morocco now for the oil from a plant of this size. If need be, the plant could be built in two stages. The first stage would have preparation equipment and storage equipment sized to handle 500 TPD while the extraction equipment, steam generating equipment, conveyors, etc., be sized to process 1000 MTD. This would cost about 25 percent more than a plant limited by design to processing 500 TPD.

For the last year most soybean processors have been losing money -- partly because the industry is overbuilt, partly because of currency conversion rates (i.e. strength of the dollar), and partly because of less demand for products. It seems ridiculous to suggest building another processing plant for Morocco when products are already being sold for less than cost. However, this situation cannot last. Also the savings in freight in shipping soybeans versus shipping equivalent amounts of soybean oil and soybean meal would almost justify building such a plant. The large "backyard" market plus the freight savings, the GOM incentives, and other details (labor rates, new efficient plants, energy savings, etc.) almost insure that this is a good investment.

If a soybean oil extraction plant is to be built in Morocco, the best location would appear to be at the port of Mohamedia. This port, like Jorf Lasfar, is also planned as a "free" port. Mohamedia will be able to handle large vessels having 100,000 MT capacity. It is near Casablanca and the concentration of vegetable oil refiners and the feed mixers. The land surrounding the port is better suited to industrial development than at Jorf Lasfar. The Mohamedia location should offer large savings in transportation of both soybean oil and soybean meal.

At either port, it would be desirable to have the soybean plant located near enough to the receiving storage facility to use its storage tanks for operations. The savings to be had by not duplicating storage would be considerable. Also, if a power generating plant is to be built at either port, it would be advantageous to have it located near enough to the soybean plant to allow use of its waste steam for processing. Electricity and steam costs are usually from 40 to 50 percent of the variable costs in processing soybeans. Co-generation of steam and electricity can save 30 percent of these costs.

Recommendations

A number of things can be done to reduce the cost of providing Morocco's vegetable oil and oilseed meal needs. Some of these are:

1. Allow easier and less expensive imports of oil and meal by reducing or eliminating the import taxes. Since most of the world's oilseed processors are losing money on their operations at this time, i.e. selling their meal and oil at below costs, oil and meal purchases are a great bargain.
2. Eliminate or modify the subsidy and price fixing system now being used. In effect, this system protects and supports the least efficient producers. In the case of soybean oil and meal, it allows an old and inefficient plant, not suited to processing soybeans, to not only operate but to really prosper. This plant is protected from competition by high import taxes and maintained by a subsidy system which lets it coin money. The result is both soybean oil and meal are higher priced than they should be.
3. Remove the ban on importing soybean meal. This will allow increased production of poultry at a lower cost, which will help the Moroccan consumer.

4. If the subsidy system cannot be removed, see that the GOM negotiates its operating subsidies with sharper pencils. The soybean example is probably only one out of many in which the Moroccan people end up paying too much.
5. If a soybean processing plant is to be built, make certain the parties involved have good information on how to build a plant, good engineering and good choices of equipment options. Assist the promoters of such a plant in locating suitable, experienced U.S. partners for the venture.
6. If SEPO is to increase their capacity to process soybeans, see that they get the information they need.
7. Assist SIGOGHARB in solving their problems, if possible.
8. Improve the knowledge of the technical people responsible for processing oilseeds by exposing them to how things are done elsewhere. This need not cost the U.S. taxpayer anything more than allowing them access to observe and learn. The Moroccan oilseed processing and refining companies should be able to well afford the cost of allowing their people to learn. In this regard, a processing and refining seminar given in Morocco and in French should be helpful to both processors and oil refiners.

Visits and Sources of Information

1. October 20, 1982
GOM Ministry of Agriculture
Regional du Gharb office
Kenitra
Lou Ah Abdellatif, Chief of Agro-Economic Studies
Karmoussi M'Barek, Chief Agri-Production
2. October 20, 1982
SIGOGHARB Oilseed Processing Company
Kenitra
Idrissi Oulahna, Assistant Directeur
3. October 22, 1982
CICALIM Feed Plant
Casablanca
Dr. Ahmed Berdai, Director General
Dr. Ahmed Amaqdouf, Veterinarian
4. October 22, 1982
INAM-Provini (feed plant)
Casablanca
Mr. Louis DeFoort, Managing Director
5. October 22, 1982
SEPO (processing plant)
Societe D'Exploitation Des Produits Oleagineux
Casablanca
Mohamed Smires, Directeur General
Abderrahman Mah
Mohamed Boutayeb, Chef de Fabrication
6. October 23, 1982
Port of Casablanca
SOSIPO (public storage facilities)
Mr. Mohamed Berrada, Director
7. October 23, 1982
Port of Mohamedia
Casablanca
8. October 23, 1982
Mr. Idriss Zarrouch, Directeur
Compagnie Financiere D'Investissement
37 Rue des Ait Boomrane
Casablanca
9. October 25, 1982
Hilali Abdelali, Plant Biologist
Institute Agronomie
University of Morocco
Rabat

10. October 25, 1982
Les Oleagineux du Gharb (OLEOR)
Kenitra
Mr. Elhadad, Directeur General
Mr. Mohamed Berriga, Directeur Technique
11. October 26, 1982
GOM Ministry of Agriculture
Rabat
Mr. Abbes Massile, Director of Livestock
Mr. Taleb Bensouda, Assistant Director
Mr. Ben Touhami, Director of Feeding
12. October 26, 1982
GOM Ministry of Commerce
Mr. Rabat Mustapha Slimani, Director of Agro-Industry
13. October 26, 1982
GOM Ministry of Agriculture
Mr. Abdelhai Bouzoubaa, Director of Vegetable Production
14. October 27, 1982
Societe des Cooperatives Agricoles du Maroc (SCAM)
Marabesh
Mr. Ohayon, General Manager
15. October 28, 1982
Port of Agadir
16. U.S. Agriculture Attache office records
Rabat
17. Agriculture Attache Report, number MO-2004
Dated March 5, 1982
18. Dr. R. J. Krueger
Applied Economics
Richmand, Virginia