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Food Imports in the Middle East: A Growing Problem

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A Research Paper

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*NESA 87-10007
February 1987*

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Food Imports in the Middle East: A Growing Problem [Redacted]

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A Research Paper

This paper was prepared by [Redacted] the
Office of Near Eastern and South Asian Analysis.
Comments and queries are welcome and may be
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Division, NESAs [Redacted]

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Food Imports in the Middle East: A Growing Problem

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Key Judgments

*Information available
as of 2 January 1987
was used in this report.*

The Middle East has the world's most rapidly growing region-wide food deficit despite concerted efforts since 1974 to boost production. Between 1973 and 1985, Middle Eastern food imports soared from \$4 billion to almost \$30 billion. The current regional recession will make it increasingly difficult to maintain this level of imports or to increase incentives for domestic production. []

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Spurred partly by a fear that the West would counter the Arab use of the oil weapon with a food embargo, Middle Eastern countries launched programs in the 1970s to close the gap between domestic production and consumption. There have been a few instances of significant increases in production—notably of extremely high-priced wheat in Saudi Arabia and hothouse vegetables in the United Arab Emirates—but overall food production has not kept up with population growth. Behind this lagging production record are decades of low agricultural productivity and public policies that have slighted the rural sector, major resource constraints, and regional conflicts that have disrupted production. []

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Meanwhile, consumption was stimulated by large increases in general income and by public policies aimed at raising nutritional levels. Thus, countries that only a decade or two ago were close to self-sufficiency in important food crops or that had a favorable food trade balance are now major importers of food. The region depends on imports for at least 60 percent of its requirements for several major items, such as wheat, and at least eight Middle Eastern countries import at least 60 percent of their total food requirements. []

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The food gap is likely to continue to widen, and nearly all Middle Eastern countries will probably be worse off in terms of food self-sufficiency by the end of the century than they are today. Production will probably continue to make modest increases, but the major forces behind higher consumption—including urbanization, population growth, and a shift to better diets—show no signs of diminishing. []

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Mounting budget deficits and dwindling foreign exchange holdings will make it increasingly difficult for many Middle Eastern countries to maintain ample supplies of low-cost food. This will increase the risk of political instability in the area, as such supplies are widely seen as a basic

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human right and part of a social contract. Attempts to reduce food subsidies have sparked riots in Egypt, Tunisia, Morocco, and Algeria. Similar riots might recur in countries such as Egypt if the government attempts to cut subsidies again, despite the economic arguments for such cuts. [redacted]

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The United States probably will not regain the share of the Middle Eastern food market it had five years ago, because there are now more exporters and they are competing vigorously for sales. Even more countries with surplus crops are likely to enter the Middle Eastern market over the next several years, and competition for food sales will intensify. Markets for food-related products such as food-processing equipment, however, may open up for US businesses. [redacted]

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Poorer Middle Eastern nations with large food deficits will probably request food aid from the United States. Friendly Arab nations will regard the US response as an indicator of US reliability as an ally. Provision of food aid—especially as outright grants—might allow regimes to postpone reforms that would be necessary to increase the efficiency of their agricultural sectors. [redacted]

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Figure 1
Arable Land and Urban Centers
in the Middle East



○ Arable land

Boundary representation is not necessarily authoritative.

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**Food Imports in the Middle East:
A Growing Problem**

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The Food Gap

Food security has been a major concern of Middle Eastern nations since the oil boom in the 1970s raised standards of living and consumption of food.¹ A food gap—an excess of consumption over production—opened in the Middle East in the 1970s and has widened greatly since then. This gap increased concern about food security, as many governments feared that Western nations might use the food weapon to retaliate against Arab oil export policies. Most Middle Eastern regimes perceived this weapon as real, even though we do not believe that market conditions have ever favored the formation of an OPEC-like food cartel.²

to develop and sustain effective and profitable agricultural systems. Behind rising food imports are low agricultural productivity and public policies that slight the rural sector, regional conflicts that have disrupted production, and major resource constraints.

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Food imports have increased rapidly throughout the region, rising in value by about 650 percent between 1973 and 1985—from about \$4 billion to just under \$30 billion, according to academic research and the US Department of Agriculture (USDA). Although the dollar value of imports peaked in 1984, the volume of imports has often continued to increase as world prices have declined. In Egypt, for instance, corn imports increased from about 1.7 million metric tons in 1984 to slightly more than 1.9 million tons in 1985, while the value fell from \$295 million to \$247 million.

The region's food production has not kept up with its rapid population growth of about 3 percent per year. In Libya, for example, food production increased by 31 percent from 1976-78 to 1985, according to USDA data, while the population increased by 42 percent. Total food production in Iran decreased by 2 percent from 1976-78 to 1985, while total population increased by 27 percent. Overall, per capita Middle Eastern food production in 1985 was just 96 percent of the 1976-78 level, according to USDA data.

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In many Middle Eastern countries, investment in the agricultural sector is less than investment in industry—reflecting an urban/industrial bias on the part of planners. Planners often believe that economic development means copying patterns of Western industrial societies. Overall investment in agriculture was not more than 15 percent of total investment in the Middle East in the 1970s and early 1980s, according to an academic study.

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Trends in Production

Middle Eastern agriculture has not progressed as rapidly as agriculture in other parts of the less developed world. Despite the influx of large amounts of capital into the region over the past decade, the Middle Eastern countries have shown limited ability

Arable Land. The scarcity and uneven distribution of arable land impose a constraint on agriculture in the region. About 14 percent of the land in the Middle East is arable, and almost half of this is in one country—Sudan.³ Only about 1 percent of the land in Mauritania is arable, and in some Persian Gulf states the percentage is virtually zero. Countries that have the most arable land—Sudan, Iran, Morocco, and

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¹ Twenty-one Middle Eastern countries are covered in this study: Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, North Yemen, Oman, Qatar, Saudi Arabia, South Yemen, Sudan, Syria, Tunisia, and the United Arab Emirates (UAE).

² For a cartel to be effective, suppliers must have a common interest, they must maintain the discipline necessary to pursue it, and there should be no readily available substitutes for the particular item involved. None of these conditions exist in markets for food.

³ Most land-use percentages are rough estimates. In some cases land reported as "arable" is that under cultivation rather than the total area fit for cultivation.

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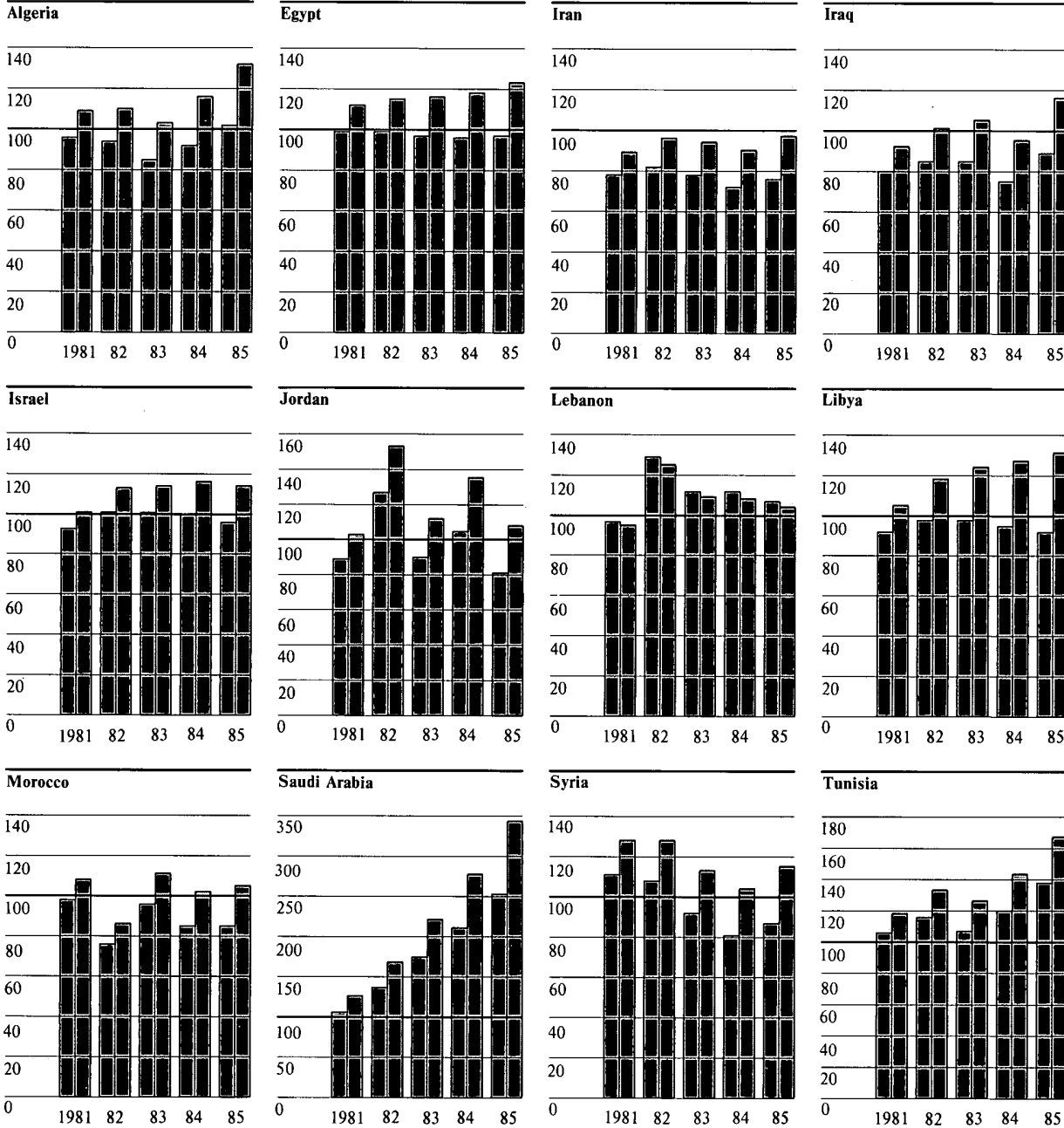
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Figure 2
Middle East Food Production, 1981-85

Index: 1976/78=100

Note scale change

■ Per capita food production
■ Total food production



[Redacted]

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Lebanon—have not significantly increased the portions of arable territory under cultivation in recent years because of civil strife, war, lack of capital, and/or distorted economic policies toward agriculture. [redacted]

In Iran, irrigation and swamp reclamation projects allowed cultivation of about 1 million new hectares between 1962 and 1983. Some new farms, however, proved to be economically unviable and have since been abandoned, according to an academic study. In one province, only 10 percent of the reclaimed land remains under cultivation. According to the same source, the overall result has been no net addition to the amount of arable land, because land about equal to that created was being abandoned in other parts of the country. [redacted]

Soil erosion has reduced the amount of arable land and limited agriculture in parts of Syria, Lebanon, Israel, and Jordan, according to a geographic study. Lack of rainfall, shifting sand dune patterns, shifting cultivation, lack of fertilizers, and overuse of land have resulted in increased desertification in countries such as Algeria and Libya. Furthermore, in some parts of Syria and other countries, soil fertility has been declining for about the last 30 years. Population pressure has led to some plots being used every year, instead of being allowed to lie fallow periodically. The result is that in many cases the land is wearing out, according to a report by an agricultural research institute. [redacted]

Arable land has increased in only a few countries—most often through irrigation and reclamation projects—and has not increased significantly overall. The total area of arable and permanently cropped land in the Middle East increased by only about 1 percent per year from the early 1960s to 1981, according to an academic survey:

- In the 1960s and 1970s the amount of arable land increased by 0.28 percent per year in Algeria, according to an academic survey. Similar findings were reported for Iraq and Sudan.
- Syria's arable land decreased by 1.25 percent per year over the same time period.

- In the 1960s and 1970s irrigation and reclamation projects were more successful in Jordan, Lebanon, and Saudi Arabia, and the amount of arable land—total and per worker—increased. The largest increase in total arable area was Jordan's 0.66 percent per year. The largest increase in arable land per worker was Lebanon's 5.22 percent. [redacted]

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Water. Lack of water has been the most important constraint on the region's ability to provide its own food. Rainfall is inadequate—often less than 100 millimeters per year—throughout most of the region. Rainfall is sufficient to support agriculture without irrigation only in the Fertile Crescent—a narrow band from the Levant east to Iran—and in another band along the North African coast of Algeria, Tunisia, Libya, and Morocco. Even there, however, rainfall varies greatly from year to year, with a scarcity of rain having a severe impact on harvests in four years out of 10. [redacted]

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Elsewhere in the region low levels of rainfall and high rates of evaporation make irrigation necessary. Outside of Israel, Jordan, and small parts of Saudi Arabia, however, irrigation projects have not been especially well managed, according to studies by geographers. Traditional Middle Eastern irrigation practices are generally inadequate and wasteful. Often they are harmful, as when application of excessive amounts of water leads to waterlogging and/or soil salinity. In Qatar, for instance, about one-fourth of the land cultivated in 1970 was out of production by 1980 because of waterlogging and salinity caused by profligate irrigation practices, according to an academic study. Planners of irrigation projects have often been overly optimistic. Many projects have lasted less than half of their intended lifetime because silt has caused more rapid wear of viaduct surfaces than anticipated. [redacted]

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In some areas, such as parts of Saudi Arabia, much of the groundwater is found in deep underground deposits created in earlier geologic periods. These deposits are often fixed pools and are seldom renewable. Elsewhere, as in parts of Libya, Qatar, and the UAE, the groundwater is found in aquifers that are much

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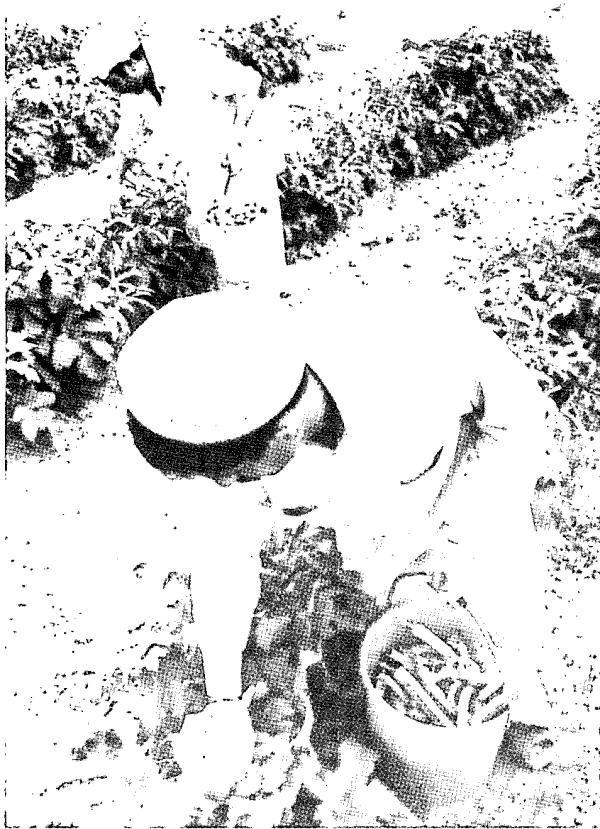


Figure 3. Harvesting okra in Qatar. Expansion of production is limited by shortage of water. [redacted]

closer to the surface and can occasionally be recharged by careful practices. Attempts to recharge aquifers were begun only recently, however, and it is too early to evaluate their success, according to hydrologists. There is reliable evidence that in parts of Iran the water table is falling significantly; as a result, the quality of fresh water is dropping. In Libya, Qatar, and the UAE, the extraction of large quantities of groundwater near oceans has resulted in saltwater intruding into the fresh water aquifer. [redacted]

Middle Eastern states have only limited opportunities to increase their available water supplies. Some states, such as Syria and Sudan, have the potential to develop their surface water resources, but at the expense of downstream neighbors. Sudan, for example, is not taking all of the Nile water to which it is entitled under an agreement with Egypt. Sudan can take more water, but that would leave less available for Egypt. [redacted]

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**The Great Manmade River:
Pipeline or Pipedream?**

Water shortages in the Middle East are so acute that even some projects that Western observers consider foolish get consideration if they promise to provide water. Libya, for example, has undertaken the Great Manmade River Project to tap large reserves in aquifers in the southern part of the country. A hydrological study predicts the reserves may be sufficient to meet the project's plans for 50 years. Cost estimates for the project range from \$11 billion to more than \$20 billion. Cost overruns have plagued the Libyans from the outset, and completion is in doubt because of engineering difficulties and greatly reduced oil revenues. The project uses 75-ton, 4-meter-diameter pipe, the largest in the world. Scheduled completion of just the first of five phases of the scheme would require the installation of one piece of pipe every five minutes for five years. In one long portion of the pipeline, water will have to flow uphill from a reservoir. Although that is technologically possible—with enough pumps—we believe that it is not economically practical. [redacted]

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Agricultural Productivity. The productivity of agricultural labor in the Middle East has rarely increased sufficiently to offset shortages of arable land. In fact, the average productivity of agricultural labor decreased from 1960 to 1980 in most countries of the region, according to an academic survey.⁴ Most of the few notable gains in productivity have been made from an extremely low base. Substitution of machinery for labor has been slow, with the average Middle Eastern farm plot being too small to permit the economically efficient use of such machinery. Even in states with socialist economies such as Libya and

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⁴ Changes in productivity were measured as changes in the ratio of agriculture's contribution to GDP to its share of the total labor force. (Other measures of productivity, however, show more cases of increases.) The most dramatic gain in productivity is found in Syria. If real prices are used, value added per agricultural laborer increased from \$50 to \$311 between 1960 and 1981. [redacted]

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Algeria there has been a cultural antipathy toward cooperatives or other means to join farms together to further the mechanization of agriculture.

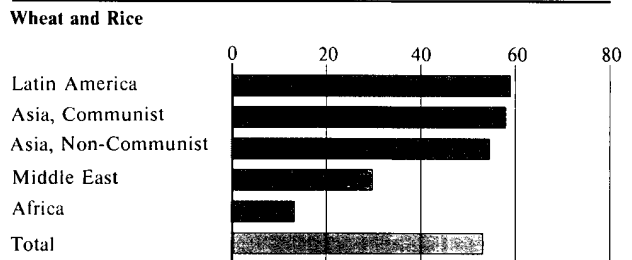
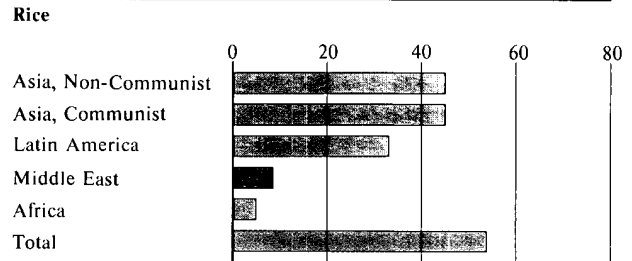
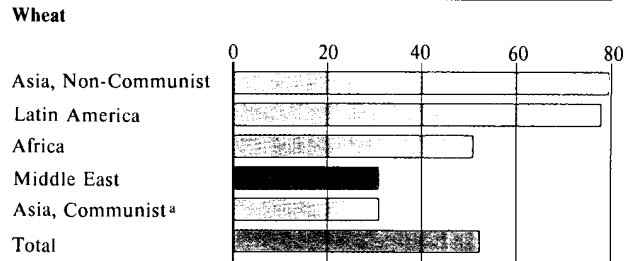
The introduction of some new high-yield variety (HYV) crops such as wheat and rice into the region has had disappointing results, and Middle Eastern countries rely less on HYVs than almost any other developing region, according to studies by geographers. HYV seeds that grow well elsewhere do not grow well in the Middle East because they:

- Require ample and/or reliable supplies of water.
- Require more fertilizer. The use of HYV wheat peaked in Egypt in 1974 and has declined since then because the 12-percent additional yield was not enough to compensate farmers for the additional cost of, and care in, application of fertilizer, according to the US Agency for International Development (AID).
- Are not climate resistant. The heat and aridity of the Middle East present problems not encountered in other regions. In Morocco, for instance, two specific HYVs that seemed promising in the first two years of use were subsequently found to be especially susceptible to a climate-related disease that appears periodically. Use of the varieties decreased significantly, according to AID. Today less than one-third of Morocco's wheat is grown with HYV seeds.

Increases in productivity from the HYVs in the Middle East have been much smaller than the increases that resulted when the same varieties were introduced in other regions. In addition, almost no Middle Eastern country has been able to sustain increases in yields: wheat and rice harvests in Iraq, for instance, often vary by more than 50 percent from one year to the next.

State Policies. State policies have sacrificed—often consciously—the interests of the agricultural sector to promote urban and industrial development. Agriculture has frequently been viewed as a source of funds to promote industrial development. There has often

Figure 4
Estimated Area of High-Yield Varieties of Wheat and Rice as a Portion of Total Area in Developing Nations, 1982-83



* Incomplete estimate of proportion of varieties in China.
 Note: Taiwan and North Korea are not included in this survey.

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The International Center for Agricultural Research in Dry Areas

One major reason for declining food self-sufficiency in the Middle East is the lack of successful research into the special problems that the arid climates of the region present. The International Center for Agricultural Research in Dry Areas (ICARDA) was established in 1977 near Aleppo, Syria, to investigate ways to improve the productivity of agriculture in the region. Funding—about \$15 million in 1984—comes from about a dozen Western governments and several private philanthropic institutions and international agencies. The center's principal concerns are improving farm management techniques and developing higher yield seeds. ICARDA is the world center for development of better barley, lentils, and faba beans. It is also the regional center for research in bread wheat, durum wheat, chick-peas, and pasture forage crops. [redacted]

Although ICARDA is a member of the international research group that pioneered "the green revolution," we believe it will not achieve comparable breakthroughs soon because:

- It has chosen to limit its primary research to areas that get limited winter rainfall. Any successes it might achieve may not be transferable to areas requiring irrigation—which includes most of the region.*
- Successful high-yield seed development may take as long as 20 years from the time seeds are first selected to the time farmers harvest the first crops using the new seeds.* [redacted]

been considerable discussion about increasing agricultural investment, but the reality has seldom measured up to the rhetoric:

- Over the past two decades in Iran, total annual agricultural investment never exceeded 12 percent of government expenditures. Actual investment in agriculture has consistently been less than planned even when the agricultural sector was to have been given special emphasis.

- Under North Yemen's first two development plans (1974-81), agriculture was scheduled to receive about 15 percent of all investment, but it actually received only 8 percent. [redacted]

We believe the procurement policies of many Middle Eastern states destroy the incentive to produce food domestically. Governments often pay farmers artificially low prices for crops. In Algeria, for instance, under the 1980-84 development plan, farmers were frequently paid less than their cost of production for crops. Low procurement prices are probably intended to serve a number of government goals:

- Most Middle Eastern governments probably consider city dwellers more important politically than farmers.
- Low procurement prices may be seen as a way to transfer wealth from agriculture to urban industries.
- If food prices are held down, city dwellers are less likely to demand wage increases that may hurt development efforts.
- Low procurement prices hold down the overall cost of food subsidization programs. [redacted]

The low prices paid by the governments are, in effect, taxes on production, and farmers respond by restricting output, switching to crops whose prices are not regulated, or quitting farming. An IMF study of several Middle Eastern states concluded that, unless major changes are made in food procurement policies, domestic production of several crops will remain stagnant. The survey found that, for at least 19 crops in five separate Middle Eastern countries, a 1-percent increase in procurement prices would lead to virtually no increase in quantity supplied. [redacted]

Patterns of Consumption

Total food consumption has grown rapidly in almost all Middle Eastern countries since the early 1970s. Consumption of staples such as cereals grew more than 5 percent per year throughout the 1970s. During this period, many Middle Easterners altered their tastes and began to eat more meat, fresh vegetables and fruit, and packaged convenience foods. [redacted]

Price. World food prices have fallen precipitously in the 1980s, adding significantly to the quantity of food demanded by Middle Eastern countries. Composite

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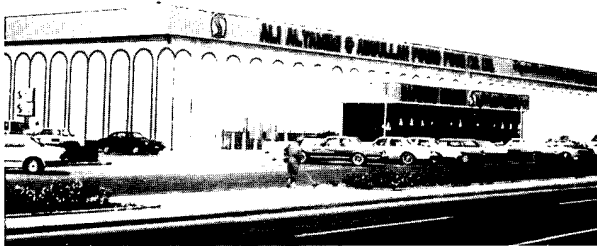


Figure 5. Safeway supermarket, Riyadh, Saudi Arabia [redacted]

indexes of food prices on international markets fell between 20 and 35 percent from 1980 to the end of 1985. Consumer prices often fell as a result. In other cases price increases were not as rapid as they otherwise would have been. By late 1985, wheat and sugar prices, in real terms, were at their lowest levels since the early 1930s. The low prices have resulted from abundant stockpiles in exporting countries and vigorous competition among sellers. Middle Eastern states are using the buyers' market to great advantage. Algeria, Tunisia, and North Yemen, for example, have frequently played one seller off against another to gain favorable terms. [redacted]

Subsidies on Consumption. Middle Eastern countries have increased the quantity of food demanded by using subsidies to keep domestic prices artificially low even as real incomes increased. Subsidies are often unrelated to consumers' incomes and not restricted to items most frequently eaten by the poor. [redacted]

In our view, food subsidies are so firmly established as policy in Middle Eastern states that they cannot be modified easily. Subsidized food is often regarded as a basic human right, part of a social contract under which wealth is distributed to consumers. In many oil-producing countries subsidies are a vehicle to distribute oil revenue to the people. Further, because a cheap and steadily available food supply is one of the most visible indicators by which citizens evaluate government performance, governments are reluctant to make cuts. Tunisian officials, for instance, have stated

in published interviews that bread and cooking oil subsidies are so politically sensitive that they cannot be phased out in less than 10 years without significant risk. In Morocco it was only under pressure from the World Bank and the IMF that the government announced in 1985 that subsidies on selected food items would be gradually phased out through price increases. To cushion the impact and reduce political opposition, Rabat ordered a simultaneous increase in the minimum wage. Riots erupted in Egypt, Tunisia, and Morocco between 1977 and 1984 when the government tried to modify food subsidies. [redacted] 25X1

Many governments of the region have increased budget deficits and depleted foreign exchange to maintain subsidy levels. When expenditures must be cut, other areas are often sacrificed to preserve food subsidies. Saudi Arabia has run budget deficits, drawn down currency reserves, and postponed some development projects in large part to maintain subsidies, according to the US Embassy in Riyadh. Tunisia has stated an intent to reduce its investment in textiles, construction, and tourism rather than reduce food subsidies. [redacted] 25X1

Income. As Middle Easterners' incomes rose during the oil boom, consumers—who often began at fairly low levels of nutrition—improved their daily diets by eating more food staples such as grains. When incomes rose to high levels, as they did in many oil-exporting countries, consumers improved the quality of the food, adding items such as meat and fruit. The average daily diet in Kuwait, for instance, increased from 2,500 to 3,400 calories per day, according to USDA reporting. Currently, high-valued items such as beef, dairy products, and fresh fruits account for about 70 percent of the value of Kuwait's food imports, according to the same source. [redacted] 25X1 25X1

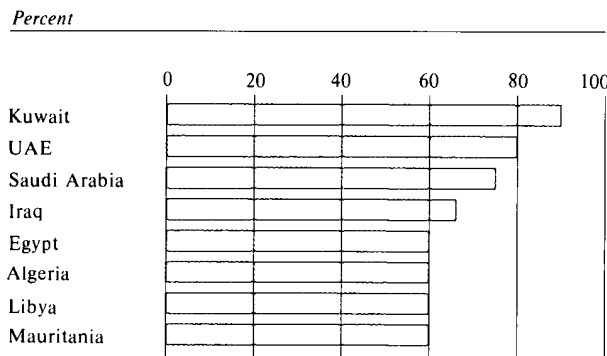
Food imports in the Middle East have not decreased by as much as personal income has fallen during the current regional recession. Other factors, such as the adoption of new and better diets, lower food prices, and subsidization of consumption, have intervened to prevent the declines that might otherwise have occurred. [redacted] 25X1

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Figure 6
Food Imports as a Share of Total Consumption in Selected Countries, 1986



Population. The region's rapid population growth—almost 3 percent per year, or more than 7 million people in 1985—has been a major factor in increasing food imports.⁵ Only two countries of the region—Israel and Lebanon—have population growth rates below 2 percent per year. In contrast, nine have growth rates exceeding 3 percent.

Trends That Affect Production and Consumption

Urbanization. Urbanization in the Middle East is proceeding rapidly, adding to the demand for imported food. The region's urban population is increasing by about 4 percent per year.

In 17 of the region's 21 countries, urban populations are growing more rapidly than the national population, according to the same study.

Urbanization in the Middle East increases food imports in a variety of ways:

- People who move from farms to urban areas no longer produce their own food. In Libya in the 1970s, for instance, government policies caused

⁵ In contrast, the US population grew less than 1 percent in 1985.

many private farmers to leave their land and move to cities. Frequently their land was not maintained in use and domestic production fell, according to an academic study.

- Agricultural laborers who move to urban areas are often relatively young and educated; those remaining behind are often less productive.
- Wages are often higher in urban areas than in rural areas, allowing consumption of more food.
- Urbanization is frequently associated with changes in consumption patterns. A UN Food and Agricultural Organization (FAO) survey found that in Tunisia, for example, urbanites consume more meat—both absolutely and as a share of total calories—than do rural residents.

- Urban areas compete directly with rural areas for land. In the Middle East, cities and farming areas are often close together since both must be near water. As “urban sprawl” encroaches on surrounding areas, farmland is absorbed.

- Urbanization is associated with industrialization and increases demand for water. We believe that urbanites—with higher average incomes—will frequently be able to pay more for the scarce resource and win the competition for it.

Migration. Migration—most frequently of laborers—has significantly reallocated the consumption and production of food. Several million North Africans, for instance, now reside in Europe and have reduced the Maghreb's consumption of food.⁶ A different pattern exists in Saudi Arabia, where an increasing proportion of the agricultural labor is performed by South Asians. Even though they produce much of the country's large wheat crop, we believe they consume enough other food so that their net impact is to increase overall food demand. In addition, expatriates in urban areas clearly increase total consumption of food. We believe the net regionwide effect of migration has been to increase demand for food.

⁶ The Maghreb states are Mauritania, Morocco, Algeria, Tunisia, and Libya.

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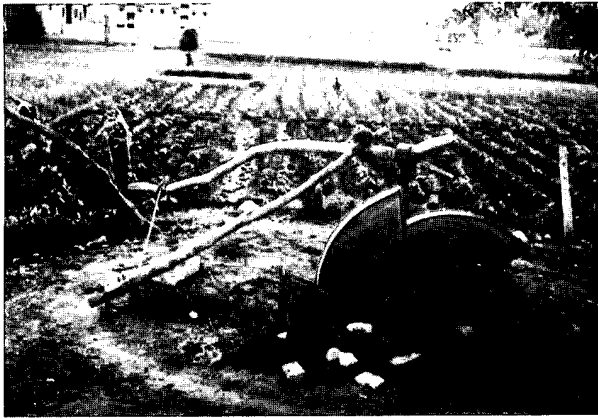


Figure 7. Irrigation equipment on a farm on the outskirts of an Egyptian city.

Outlook

We believe that there is virtually no chance the Middle East will be able to produce enough food to meet its needs and that the food gap will continue to widen for the rest of this century. We judge that at least 20 of the region's 21 countries—Saudi Arabia is the only possible exception—will be further from food self-sufficiency in the year 2000 than they were in 1985.

The region's population will grow from 236 million people in 1985 to more than 367 million in the year 2000 if present rates of increase continue.

In addition, in all 21 Middle Eastern countries the percentage of the population that is urbanized will increase by the year 2000.

Urban populations will be about 64 percent of the total population by the end of the century—up from about 49 percent in 1985. Urbanization will be associated with industrialization and will continue to stimulate demand for scarce water.

⁷ The USDA and the FAO classify countries as food self-sufficient if the amount of food produced is at least equal to the amount consumed, both measured in calories. Countries are food self-reliant if they are food self-sufficient or if they can export enough goods and/or services to pay for imports. We believe that for the rest of the century no Middle Eastern country will attain food self-sufficiency, even for a short period of time. Some of the wealthier oil-exporting states attained food self-reliance during the oil boom. A few may still be self-reliant, and others will probably regain food self-reliance if oil prices rise.

A reliable geographic study concludes that the amount of arable land in the Middle East would have to double to make the region self-sufficient, given the regional population that is likely at the end of the century. We believe there is little chance that irrigation schemes or other development plans will lead to such a doubling.

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Lack of water may become an increasingly severe constraint in the near future and force several Middle Eastern countries to reassess their irrigation practices. Continuation of current practices will almost surely deplete pools and aquifers more rapidly than they will be recharged. Only states located on major river basins will be able to increase readily the amounts of water available, and then only at the expense of downriver states. In all other cases it will be necessary to improve the management and productivity of existing water resources. A technical study of regional irrigation systems, however, concludes that no significant improvements in management techniques or engineering practices can be expected within the next five years.

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Agricultural productivity in the region will remain low. We do not foresee much chance for a major productivity-increasing breakthrough in agricultural technology. Agricultural geneticists, for instance, report that, given their current state of knowledge, it is not clear that it is possible to develop climate- and disease-resistant HYVs for the region.

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Middle Eastern states will continue to benefit from a buyers' market in food for several years. Worldwide there are large—and increasing—stockpiles of many food items, allowing Middle Eastern states to obtain favorable prices by playing one seller off against another. The future value of food imports is less clear because of changing commodity prices. If present consumption and production trends continue, the value of food imports may increase by 40 percent by the year 2000.

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If—as many experts believe—oil prices increase during the 1990s, there will be a further major stimulus to food consumption. We share the widely held view

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of academic economists that consumption increases when income goes up but does not decrease as rapidly when income goes down. [redacted]

We believe that Middle Eastern leaders facing severe financial difficulties will continue to resist pressure from international donors and lenders to reduce food subsidies. We believe many of these leaders are deeply worried that major changes will spark unsettling opposition, including violent protests. High levels of food imports and low consumer prices, however, will continue to be protected only at great cost:

- In Egypt, the dire need for economic reform is, and may continue to be, stymied by the Mubarak government's reluctance to risk the political consequences of reduced food subsidies.
- In Iran, virtually all foreign exchange earnings will continue to be spent on military goods and food. Imports of raw materials and spare parts for civilian industry have been sacrificed. This has increased unemployment as well as the general level of discontent.
- Saudi Arabia may continue to draw down financial assets, curtailing other spending and postponing projects rather than cutting subsidies on food imports.
- Tunis may give up investments in textiles, construction, and tourism rather than cut food imports and subsidies. [redacted]

Food problems per se will not topple a Middle Eastern regime, but they could become the catalyst for a larger collection of economic, social, and political grievances that could make future food riots far more important than those of the recent past. We believe that food problems will pose the greatest risk to political stability in the Maghreb states and Egypt. [redacted]

Even a buyers' market, however, will not allow Middle Eastern states to ignore mounting economic problems and diminishing resources to pay for food imports. Scarce foreign exchange and credit facilities combined with shrinking government revenues will

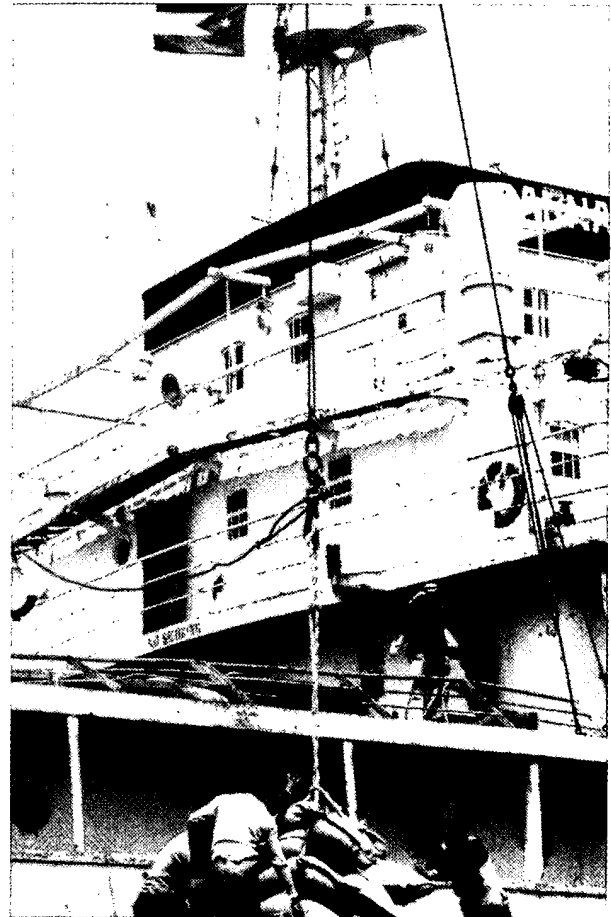


Figure 8. Unloading grain at the port of Al 'Aqabah, Jordan. [redacted]

make it more likely that lenders such as the IMF will insist on agricultural reforms as a condition for loans. [redacted]

Implications for the United States

Although food imports will remain high, the US share of the Middle Eastern market for most commodities, especially wheat, is decreasing and probably will continue to do so. We believe there is little chance that the United States will regain the market share it had five years ago. The value of US food sales to the Middle East fell 14 percent, or \$429 million, between 1983 and 1985, while European Community (EC)

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sales increased 14 percent, or \$824 million. The EC's share will probably continue to increase because of aggressive marketing techniques and heavy subsidization of agricultural exports. Furthermore, the appearance of new sellers such as Brazil and Thailand in some Middle Eastern markets has also eroded the US share. We believe that within the next five years several countries, including India, Argentina, and Indonesia, may emerge as sellers and erode the US share even more.

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Despite the drop in the US share of the Middle Eastern food market, new related markets in the area may open up, and some countries may look to the United States for help in improving agricultural yields and processing food. Algeria, for instance, is a good prospect as a market for US seeds, agricultural machinery, irrigation equipment, and expertise, according to the US Embassy in Algiers. There may also be an opportunity to sell food-processing technology and packaging machinery and to build turnkey plants.

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Poorer Middle Eastern states that are experiencing difficulties getting sufficient food supplies through commercial channels probably will ask the United States for help in meeting food needs. Friendly nations, such as Egypt and Morocco, hope that Washington will offer more food at reduced prices or as outright grants. They will judge the response as an indicator of the United States' reliability as an ally. Large US food aid programs, however, may enable recipient nations to postpone agricultural reforms that would increase production efficiency.

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Appendix

Country Profiles: Egypt and Saudi Arabia

The following case studies illustrate how food imports by Middle Eastern countries have changed in response to the forces of supply and demand in both domestic and international markets. Egypt is typical of countries where an array of environmental and policy variables ensure a continued need for large amounts of imported food. Saudi Arabia, in contrast, may be able to reduce imports of certain crops—but only at tremendous cost and what many experts believe to be a major misallocation of resources. [redacted]

Egypt

Egypt has virtually no chance to attain food self-sufficiency or self-reliance in this century. In fact, it is slipping backward. Egypt first became a net importer of food about 1974, and since then imports have risen—to \$4.3 billion in 1985 or about 60 percent of total consumption. Egypt will probably be even further from food self-sufficiency in the year 2000 than it was in 1985. [redacted]

Egypt's population growth rate of 2.8 percent per year, with a base population of 50.5 million in July 1986, adds 1 million people about every nine months. Programs to slow population growth have been largely unsuccessful, according to reliable press reports. The population will be about 74 million by the end of the century if present rates continue. [redacted]

The proportion of Egyptians living in urban areas—and consuming food without producing it—has increased constantly since at least 1950, [redacted] [redacted] Currently about 45 percent of Egyptians live in urban areas, according to reliable estimates. By the year 2000, more than 57 percent of the population will be urban, [redacted] [redacted]

Urbanization has resulted in a significant loss of agricultural land. Urbanization in Egypt between 1960 and 1980 absorbed about 18 percent of the arable land, according to the FAO. Urbanization has removed from agricultural use an area equal to that

brought into agricultural use by the Aswan Dam project, according to the same source. [redacted]

Egypt's policies on subsidies and procurement create a high need for food imports by increasing consumption while simultaneously decreasing domestic production. Food consumption is supported by heavy subsidies, available to almost the entire population, regardless of income. Money prices have been held so artificially low, even as income has risen, that real food prices have fallen significantly. For instance, real bread prices fell by more than 5 percent per year from 1970 to 1980. Per capita consumption of wheat increased by more than 3 percent per year, and wheat imports increased by more than 11 percent per year over the same period, according to a report of the World Bank. Wasteful consumption, such as feeding bread to livestock, is common, [redacted]

Egypt is under great pressure from international lenders to make basic reforms in its food subsidy programs. Some minor and tentative steps have been taken—the price of a loaf of bread went up from 1 to 2 piasters, while the size of the loaf was increased but not doubled. We believe President Mubarak will resist any basic reform because food subsidies are so politically and socially sensitive. Cairo will make cuts in import-dependent industries before it will significantly reduce food subsidies. [redacted]

Low procurement prices distort production incentives and lead to production of the wrong crops. Prices paid to farmers for wheat, for instance, were increased by 39 percent in 1985, but wheat production rose by only 3 percent because, even after the increase, it was still four times as profitable to grow clover, according to the USDA. The price of clover is not regulated, so it can be sold at a profit as livestock feed or fertilizer. We believe many more farmers would like to shift from wheat to clover production, but land use restrictions prevent the shift. Many agricultural experts

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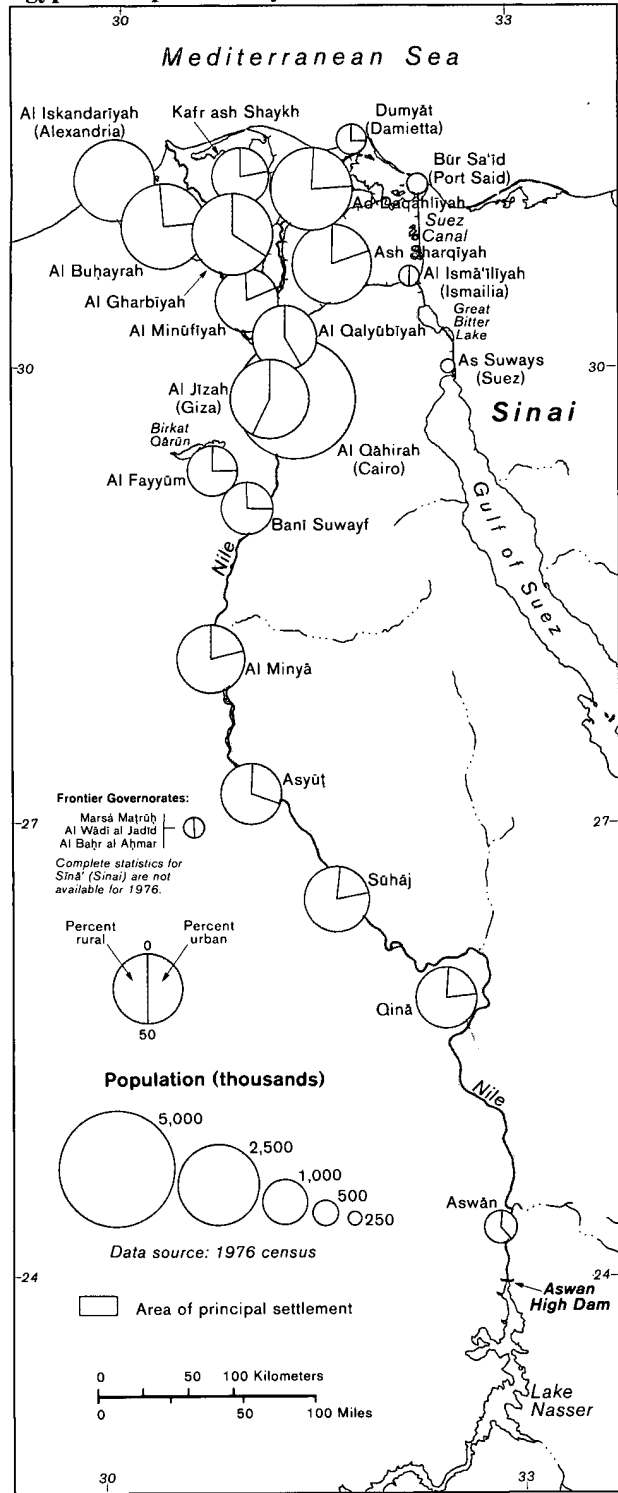
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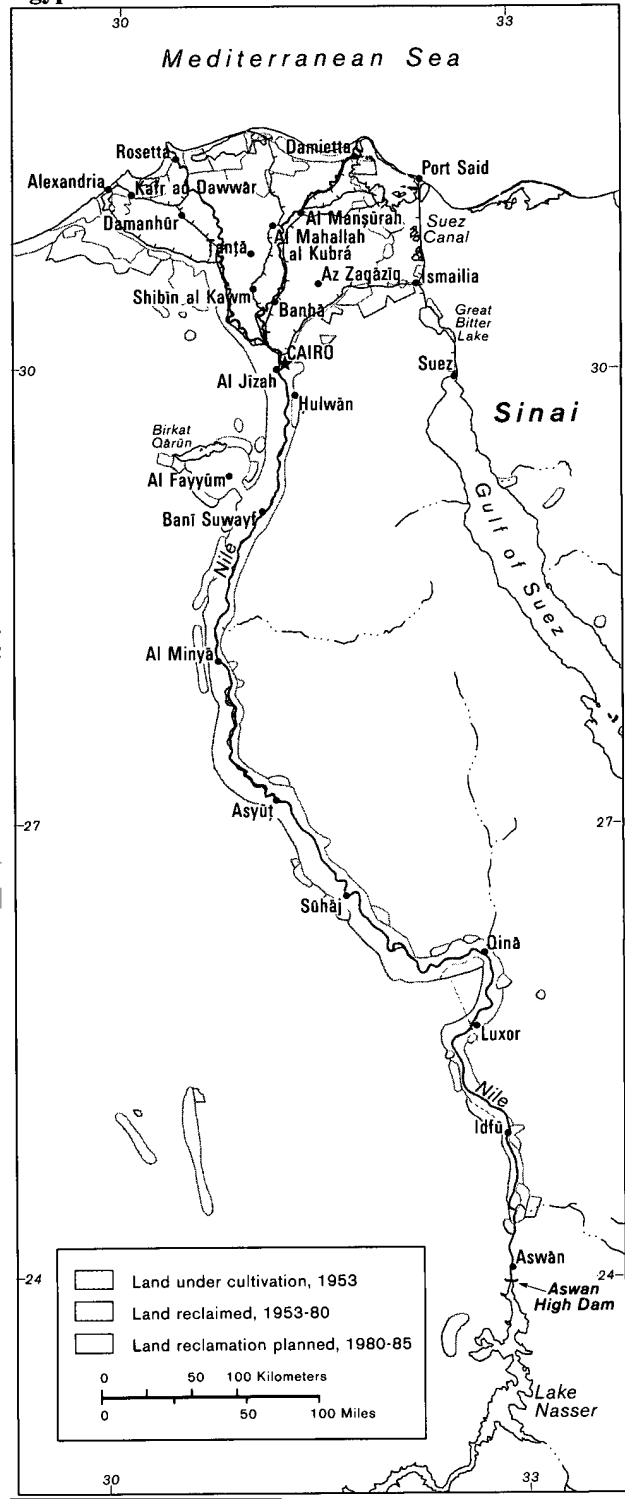
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Figure 9
Egyptian Population by Governorate



Egyptian Cultivated Land



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believe that it was economically inefficient for Egypt to devote its resources to clover in a year in which it imported 4.75 million tons of wheat at a cost of just under \$700 million. [redacted]

Attempts to introduce high-yield varieties (HYVs) into Egypt have failed. In 1984 a Japanese HYV rice seed was found to be severely susceptible to a local plant disease and is no longer recommended for use in Egypt, according to published AID reports. It was replaced by a hardier Philippine HYV that has a long grain. Egyptian mills are geared to short grain rice, however, and Egyptian consumers strongly prefer short grain rice, according to the same source. Rice production in Egypt decreased in 1985, according to the USDA. The Egyptians have tried HYV wheat seed with some success, but HYV wheat use peaked in 1983 and has probably fallen each year since, according to the same source. [redacted]

All arable land in Egypt requires irrigation. Yet traditional techniques are wasteful and inefficient and create problems on some plots even as they benefit others. For example, plots are often so small that it is unfeasible to meter and charge for water. Without metering, farmers have no incentive to conserve water, which seems free but is actually a scarce and valuable resource. Attempts to increase efficiency by getting farmers to adopt new methods have been unsuccessful. As soon as the outside experts leave, farmers revert to old, wasteful ways, according to published analysis. Further, to ensure that adequate amounts of water reach the far ends of canal systems, so much water has to be put into the near ends that land there often becomes waterlogged and/or saline.⁸ [redacted]

Competition among sellers in international food markets is so intense that Egypt—which is at least \$36 billion in debt—has thus far been able to arrange credit terms on sales. Currently, about half of Cairo's food imports is based on credit, and most of the rest is based on countertrade, according to the USDA. About 85 percent of US food sales to Egypt involve US Government discount programs. We believe it will [redacted]



Figure 10. Egypt: Primitive agricultural methods [redacted]

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become increasingly difficult to arrange traditional cash sales as Egypt seeks to conserve its limited foreign exchange. [redacted]

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The United States is losing ground in the Egyptian food market—the largest market in the region for US food.⁹ According to the USDA, in 1985 Cairo imported food from the United States worth \$891 million, less than in 1984 and 1983, while it increased its imports from the EC and other sellers such as Australia. [redacted]

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Saudi Arabia

Despite the progress that Saudi Arabia has made in agriculture, the kingdom is still the Middle East's largest—and the world's third-largest—market for imported food. Food imports by Saudi Arabia were worth about \$5 billion in 1985. The US share decreased, while the shares of the EC and other sellers increased. [redacted]

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Developments in the Saudi food market have been driven by the country's vast oil wealth and the regime's commitment to alter the composition of food imports. Saudi Arabia, more than any other country of the region, has had the wherewithal and determination to pursue food self-sufficiency through domestic

⁹ In 1985 Egypt was the world's ninth-largest market for US food. Sales in all top 10 US food markets fell, but the decline in Egypt was smaller than the decline in Spain, allowing Egypt to move up to ninth place. [redacted]

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Figure 11. Saudi Arabia: Shipment of imported grain

production while shifting consumption to be more in line with the patterns of a wealthy society. This commitment, made in years of increasing revenue, has continued through several years of declining revenue and increasing budget deficits. We believe it will continue for the next few years.

Food consumption is heavily and widely subsidized, and, as oil revenue increased, consumption increased significantly. For instance, per capita daily consumption of protein increased by 68 percent between 1965 and 1982, while per capita daily caloric consumption increased by 33 percent. Malnutrition was the lot of the average Saudi in 1961, but by 1982 the Saudi diet compared favorably with that of Western Europe or North America, according to the USDA. We believe improvements in the diet will continue and that imports of high value and convenience foods will increase. The volume of fresh meat and fruit imports increased in 1985, and per capita consumption rose rapidly, according to the USDA. Imports of canned meats and fruit and preserved milk also increased in volume in 1985, even though the value of food imports in general declined, according to the USDA.

Low food prices will become increasingly important in import decisions as the Saudis shop for better deals. For instance, although total imports of rice remained constant—at about 500,000 tons—from 1984 to 1985, imports from the United States declined by about one-fourth, while cheaper rice from Thailand increased by about one-third.

Saudis will process more of their own food, and this also will shift the composition of imports from processed to unprocessed food items, according to the USDA. A large soybean-processing facility recently opened and led to decreasing imports of soybean meal but increasing imports of unprocessed soybeans. Consumption of soybeans as food has increased as the facility has expanded. In similar fashion, Saudi imports of beverages are forecast to fall by about \$500 million in 1986 as locally produced items are substituted for finished imports. We believe the Saudis will try to increase domestic meat production. If they succeed, meat imports will probably fall, but feed grain imports may well increase.

By using extravagant subsidies Saudis have attained self-sufficiency in wheat and may soon attain it in poultry, eggs, milk, and some vegetables, according to reliable economic press reports. Saudi farmers get a variety of generous benefits at no charge. They receive land, seeds for some crops, pesticides, and transportation of dairy cows. They also receive subsidies on equipment, engines, pumps, animal feed, fertilizer, irrigation water, and loans. Total subsidy payments have sometimes almost equaled all of the costs of production, according to an academic study. Procurement prices are often several times the market price. For instance, the procurement price for wheat in 1986—as much as \$570 per ton—was about three times the average price in international markets.

Saudi farmers responded to the wheat subsidies by increasing production from about 3,000 tons in 1975-76 to about 2 million tons by 1984. The 1984 harvest was equal to about twice the amount consumed domestically. The surplus exceeded the capacity of silos, and part of it had to be stored on the ground. The market for wheat imports, 1 million tons per year as recently as 1982, virtually vanished in 1985. Wheat prices cannot legally be lowered until 1988, but, in part as a ploy to discourage excess production, the government has delayed payments to farmers.

Saudi wheat production is based upon successful—if expensive—planting of HYVs developed elsewhere. Until early 1984, 98 percent of all acreage planted in

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wheat used an HYV from Mexico. Since then all seed imports have come from the United States, according to AID.

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Subsidization of agriculture has distorted production incentives. Even with a record wheat harvest there was a shortage of barley, and 4.5 million tons were imported. Because the procurement price of barley is so much lower than that of wheat, there is no incentive to shift production even though the shift would help reduce both the wheat surplus and the barley shortage. Reliable economic press reports indicate that farmers are switching from barley to wheat production even though that aggravates both problems.

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The water outlook in Saudi Arabia is uncertain. Hydrologists who have studied water resources in the kingdom have been unable to estimate the extent of reserves. It is known that much of the water used in agriculture comes from layers of rock near the surface and that the resource is being mined—used up in quantities that are not replaced by the meager rainfall. We believe that it will be expensive for the Saudis to switch to other forms of irrigation because the country has no major river that can be dammed or used as a major source of water. It is possible that the Saudis will reassess the value of using such large quantities of water for irrigation once they determine the extent of their reserves.

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Several major industrialization projects may compete with agriculture for water in the future. At present, much of the water used in cities comes from desalination plants. Desalination is not widely used for irrigation because of its high cost. Should the heavily subsidized desalination efforts be curtailed because of the financial crunch or should industry and urbanization demand more water than planned, amounts available to agriculture may fall.

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Expatriate laborers in Saudi Arabia—more than 3 million in late 1985—also have increased the country's food import bill. They, along with Saudi citizens, enjoy heavy and widespread subsidization of food. Even though agricultural labor is performed almost exclusively by expatriates, and progress in crops such as wheat would probably not have been possible without their labor, Saudi Arabia must import large amounts of other food items for them. The net effect is to increase food imports.

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