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**FOREIGN
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X ISRAEL'S
Agricultural
Economy
in Brief X

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by Henrietta M. Holm

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SUMMARY

In the first 12 years of Israel's statehood, its index of farm production increased from the 1948/49 base (100) to 489. But agriculture has rarely contributed more than about 12 percent of the national income or employed more than an average of 17 percent of the labor force. Most presently cultivable land is fully used. Neither unused national resources, opportunities for employment, nor marketing possibilities now indicate the potentials for an increase in the agricultural sector comparable to that of the 1948/49-1958/59 period.

Improved production techniques have reduced the number of farmers required to sustain and reasonably increase farm production. Many older farm settlements cannot base themselves entirely on agriculture; industrial activity is becoming increasingly important as an adjunct to seasonal fluctuations in farm income. In some of the newer rural settlements on marginal lands, the role of agriculture is definitely subsidiary to that of industry.

Israel's population doubled between 1949 and 1959; much is heard of the ingathering of an additional million in the next 10 years. To approach and maintain economic viability, Israel must increase the quantity and quality of the total national product for home consumption and export. But future growth of income from agriculture will have to come largely through better production techniques in presently developed areas and increased marketing efficiency.

POPULATION

Israel's population was estimated to be 2.4 million in December 1963 and increasing at a rate of 3.5 percent annually. Population density is about 325 persons per square mile, mainly concentrated in the northern third of the country. Rural population, including Israeli's in rural settlements and workers in fisheries and forestry, is 21 percent of the total. Literacy rate in Israel is 90 percent, the highest of any country in the Middle East.

Nearly 90 percent of the population is Hebrew. Two-thirds of the Hebrews are foreign born. The remainder of the population is mainly Arab. Religion in Israel is predominately Judaism; Islam and Christianity are in the minority.

ECONOMIC SITUATION

Gross National Product in 1963 was \$2.4 billion (at 1962 prices), about \$1,000 per capita. Israel's exports in 1963 were 52 percent of the value of its imports.

Economic Assistance.--While Israel has an expansionist economy, its growth has been heavily dependent on receipts from abroad, including donations from world Jewry, reparations and personal restitution payments from Germany, foreign loans, and aid from the United States. An imbalance of trade has characterized the economy since 1949 (minus \$324 million in 1963).

The United States has exported substantial quantities of farm products to Israel under special government programs, which have permitted Israel to import without using dollar exchange. By mid-1963 the total estimated market value of such shipments under Title I, P.L. 480, alone, had reached \$210 million.

The United States maintained an extensive technical assistance program in Israel until 1962, when operations began to phase out due to the high degree of development attained in the country. Continued emphasis on Israel's agricultural research programs is being given by a large number of research grants made by the U.S. Department of Agriculture.

Economic outlook.--With limited natural resources, Israel has made astonishing progress toward self-sufficiency in its 16 years of existence. Ingenuity, persistence, and massive foreign aid have permitted the country to reach a degree of economic development far out of proportion to the age of the state. Without foreign assistance, however, attainment of economic self-sufficiency in the foreseeable future is questionable. But prospects are good for continuing foreign support in the country's development.

PHYSICAL FEATURES AND AGRICULTURAL PATTERNS

Israel occupies a land area of only 7,800 square miles between Lebanon on the north, the Syrian Arab Republic and Jordan to the east, the United Arab Republic and the Mediterranean Sea. Only about half of this meager, low-lying country can be cropped or used for supporting livestock. Water, rather than land, is the decisive physical resource in Israel's agricultural development.

In the central coastal plain, average temperatures rise from a January minimum of about 45° F. to 90° F. in August. Average annual rainfall varies from 20 to 26 inches, with heaviest precipitation occurring in December and January--a seasonal pattern common to all rainfall in Israel. Most vegetable and citrus crops and many of the other fruit crops, peanuts, and cotton are grown in the northern coastal plain; market gardening and poultry raising are concentrated in the area; fodder crops for dairy cattle are grown; and grains are dry farmed. Further south on the plain, dry farming increases as rainfall and irrigation become less plentiful. But the land is generally fertile, supporting vineyards, citrus groves and dairy and poultry farming based on barley and irrigated forage.

The eastern hills are cooler and less humid than the coastal zone in summer and receive more rainfall during the colder winters. Deciduous fruits, grapes, and olives are grown in the mountain regions. There are irrigated orchards. Green fodder crops are cultivated and pastures are used for sheep raising.

Farming in southeastern Galilee is mainly dryland cultivation of wheat and barley. Northern inland plains and valleys support forage crops, vegetables, sugar beets, cotton, and deciduous fruit under irrigation. The region also provides seasonal grazing.

Most of the Jordan Valley receives little rainfall; the average is from roughly 22 inches a year near the Syrian border to about 2 inches on the southwestern shores of the Dead Sea. Practically all farmland must be irrigated. But Jordan water, and high temperatures, permits very intensive farming. Principal crops are alfalfa and bananas, vegetables, dates, pomegranates, cotton, grapefruit, and table grapes. Milk and eggs are also produced. There is little natural grazing land.

Semiarid in the north, the Negev becomes extremely arid from Beersheba south to Eilat. The region is warm in summer, cold in winter, and dry throughout the year, with sharp fluctuations in both daily and annual temperatures. Annual rainfall at Beersheba has historically averaged about 8 inches a year; further south, readings range from about 4 inches to less than 1 1/2 inches in the southern desert. Agriculture in the Negev is mainly limited to dry farmed grains, although pipelines from the north permit irrigated cultivation of cotton, peanuts, and some vegetables.

Small amounts of off-season vegetables, grapes, and semitropical fruits are grown on the western side of the Dead Sea. Several oases along Ha'arava Rift support date groves. Government experimental farms supply Eilat and vicinity with vegetables, eggs, and poultry. But without irrigation water, most of the Negev is of little value for agriculture.

Three-fifths of all Arab farms in Israel are less than 8 acres. On Jewish farms, the range is from diminutive to about 25 acres, with an estimated average of less than 10 acres per family. But in Jewish farming, at least a third of the cultivated land is farmed in considerably larger units. Separate plots belonging to members of two of the three types of communal settlements--the collectives (kibbutzim) and the collective smallholders' settlements (moshavim shitufiim)--are farmed jointly by the community as a single managerial operation. Also, there are "managed farms" of suitable size for profitable production of crops such as cotton, peanuts, and sugar beets.

Most farms held by Jews are given in long-term leasehold at moderate rentals by the Jewish National Fund, which holds the land in trust for the state. Much of the initial expense of farm settlement is financed through the Settlement Department of the Jewish Agency, with part of the funds collected abroad by the United Jewish Appeal.

Jewish farms are highly mechanized and are farmed intensively with modern techniques to produce mainly for commercial markets. Use of chemical fertilizers is widespread. All manufactured fertilizers consumed are produced in Israel, and considerable quantities are exported. Selected seed is commonly used on Jewish--and on some non-Jewish--farms. Excellent pest control work is done by several government agencies, and manufacture of pesticides, selection of imports, and granting of sales licenses are rigidly controlled.

Farm organizations.--Jewish agriculture is highly organized and many of the various farm societies are quite powerful. The workers' settlements, of themselves, are multipurpose co-operatives, or collectives, able to offer credit, buy supplies, provide for pooling of heavy machinery, and market farm produce. The collective settlements--by nature of their farming operations--provide these and other services. Private cooperative villages have multipurpose cooperative societies; Agra Cooperatives fulfill a similar function for the independent farmer.

Most Jewish Farmers belong to one of three large farm organizations and its central service cooperatives. The largest of these is the Agricultural Workers' Organization, with its Agricultural Center, which is affiliated with the Histadrut (General Federation of Jewish Labor). Members of the Agricultural Workers' Organization automatically become members of the other

Histadrut affiliates--such as Tnuva, the most prominent marketing cooperative in Israel--that service them.

A large proportion of Israel's citrus planters and private farmers belong to the Farmers' Federation, which numbers among its main associates Pardess Syndicate, the largest citrus growers' organization in Israel; Mehadrin, a plantation development company; Amir Supply, a central supply organization; Amir Bial Marketing Company; and the Farmers' Audit Union. A number of general farm organizations, such as the central marketing cooperative, Tenne; the Private Farmers' Fund; Aspaka Corporation, a central supply cooperative; and Bahan Audit Union are affiliates of the Agricultural Council.

Jewish farmers usually also belong to various federations within their home settlements; these are mainly concerned with internal function, such as education, training, and providing credit. There are many professional or trade organizations in Israel. Among them are the Grain Growers' Association; the Cattle Breeders' Association, the Poultry Breeders' Union; the Union of Hatchery Farms; and the Vegetable Growers' Association.

There are also commodity marketing boards, which coordinate the activities of organizations dealing with each commodity, and the Joint Agricultural Produce Export Company. Other organizations (set up by the Government and the Jewish Agency) include the Joint Center for Agricultural and Settlement Planning; the Joint Agricultural Training and Extension Center; and the National Water Planning Authority (Tahal), which functions in irrigation planning and research. Both the Jewish Agency and the Jewish National Fund play major roles in the agricultural economy. As administrator of a large part of the funds collected by the United Jewish Appeal, the Jewish Agency has considerable influence on the course of Israel's agricultural development.

LAND USE

Utilization of cropland in Israel is given in table 1.

Table 1.--Israel: Use of cropland, 1961/62 1/

Crop category	Jewish farms	Non-Jewish farms	Total	
			Area	Percent of total
	1,000 acres	1,000 acres	1,000 acres	Percent
Field crops	524	170	694	68
Vegetables <u>2/</u>	57	11	68	7
Fruits.....	163	31	194	19
Other crops <u>3/</u>	50	4	54	5
Fallow land <u>4/</u>	5	---	5	1
Total cropped area	799	216	1,015	100
Irrigated land.....	348	7	355	35

1/ Cropped area rather than physical area; an area is counted as many times as it is sown. 2/ Includes potatoes and peanuts. 3/ Includes flowers, nursery stock, fish ponds, and auxiliary farms. 4/ Newly cultivated land, plowed and prepared for sowing grains the following year.

Table 2.--Israel: Area under irrigation, by type of crop,
1948/49, 1954/55, 1961/62 1/

Crop category	1948/49	1954/55	1961/62		Total
			Jewish farms	Non-Jewish farms	
			<u>1,000 acres</u>		
Field crops	16	65	122	---	122
Vegetables <u>2/</u>	13	59	58	5	63
Fruit plantations	37	70	134	2	136
Other crops <u>3/</u>	<u>8</u>	<u>26</u>	<u>34</u>	<u>4/</u>	<u>34</u>
Total	74	220	348	7	355

1/ Cropped area rather than physical area; an area is counted as many times as it is sown. 2/ Including potatoes and peanuts. 3/ Includes flowers, nursery stock, fish ponds, and auxiliary farms. 4/ Less than 500 acres.

The cropped area under irrigation has increased more than 50 percent since 1955. The long-term plan calls ultimately for further expansion of irrigation by some 250,000 acres, much of this in the Negev.

AGRICULTURAL POLICY

Settlement in locations unfavorable for agriculture is dictated by national security. Absorption of unpredictable numbers of immigrants and dispersion of a growing population on the land are other key factors by which Israel's agricultural policy is determined.

Major limitations on agricultural policy are: (1) Government ownership (or ownership by the "nation", as embodied in the Jewish National Fund) of nearly all of the land; (2) virtual control of the use and distribution of Israel's scant water resources by government-affiliated bodies (these in effect subject to government policy decisions); (3) government-directed settlement of most Jewish farmers on the land, initially to guarantee new farmers a reasonable standard of living; and (4) present and potential overproduction of many farm products for domestic use, in excess of the needs arising from rapid population expansion.

The Government of Israel assumes responsibility for providing farmers the means of earning a living. Equitable distribution of land, water, and credit is designed to prevent discrimination against new farm settlements in poor, hilly, and desert areas in favor of more experienced farmers located in better agricultural areas.

Basic agricultural goals are to increase production of commodities for export and reduce or eliminate the need for some import items, such as meat and sugar. Little emphasis is given to increasing domestic production of grains, vegetable oils, and oilseeds. A goal of doubled farm output for export (except for citrus) in 3 to 4 years carries with it a policy of discouraging the production of any commodity not competitive on world markets at Israel's devalued rate of exchange (Devaluation of the Israel pound, from 1L 1.80 equals U.S. \$1 to 1L 3.00 equals U.S. \$1, occurred February 9, 1962).

Special attention has been directed to agricultural research extension programs and agricultural education. A reasonable balance between industrial and agricultural growth is actively sought.

In the first decade of statehood, government expenditures for agricultural development overshadowed those for any other sector of the economy. Recent heavier emphasis on industrial development follows the line of government plans for decentralization of the population and for economic occupation of the 70 percent of the land--the unproductive northern hills and the Negev desert from Beersheba to the Gulf of Aqaba--that is too dry or too rugged for full development based on farming alone. A current Five-Year Plan for opening up the southern desert for settlement is largely based on the premise that only about one-fourth of the total labor force of the area will be able (with present water resources) to find full-time work in farm pursuits; the majority of the people will have to rely for support on manufacturing and mining projects.

AGRICULTURAL PRODUCTION

Israel's most important agricultural products are citrus, other fruits, vegetables, milk, eggs, and poultry. Output of sugar, peanuts, cotton, and tobacco is small, but is emphasized as a means of earning and conserving foreign exchange. Local farmers normally grow only about 15 to 20 percent of the wheat required and 30 percent of other grains. Roughly four-fifths of the meat and oils and fats, and nearly all dairy products are domestically produced. But a substantial part of Israel's dairy and livestock products and edible oils are produced with imported feed grains and oilseeds, mainly from the United States. Israel is self-sufficient in vegetables and fruits and has been exporting about 70 percent of its citrus, substantial quantities of shell eggs, and some poultry meat. Sugar production is far below national needs.

Production trends of principal farm commodities for 1963/64, compared with previous years are shown in table 3.

Table 3.--Israel: Production of principal agricultural commodities, annual 1948/49, averages 1952/53-1954/55 and 1957/58-1959/60, and annual 1962/63 and 1963/64

Commodity	1948/49	1952/53- 1954/55 av.	1957/58- 1959/60 av.	1962/63	1963/64 <u>1/</u>
			1,000 metric tons		
Wheat	16	32	73	60	50
Barley.....	9	82	64	52	29
Sorghum.....	3	13	38	43	44
Corn.....	9	17	27	7	8
Sugar.....	---	<u>2/</u>	<u>2/</u>	27	31
Potatoes.....	31	60	93	111	122
Other fresh vegetables...	106	196	259	281	315
Peanuts, unshelled	---	9	15	13	15
Citrus fruit.....	191	360	530	580	664
Eggs	14	21	57	72	63
Milk	<u>3/</u> 97	171	292	371	373
Meat (includes poultry)...	6	13	66	82	87
Cotton lint.....	---	1	5	16	13
Cottonseed	---	1	11	36	26
Tobacco.....	1	2	2	<u>4/</u>	<u>4/</u>

1/ Preliminary. 2/ Negligible. 3/ 1948-50 average. 4/ Less than 500 tons.

Expansion of the livestock industry between 1948 and 1962 is shown in table 4.

Table 4.--Israel: Livestock numbers, by specie, 1948 and 1962

Specie	1948 <u>1/</u>	1962		Total
		Jewish-owned	Non-Jewish owned	
		<u>Thousands</u>		
Cattle	34	207	40	247
Sheep	22	125	67	192
Goats	<u>2/</u> 5	<u>2/</u> 30	<u>3/</u> 134	164
Horses and mules	5	16	6	22
Asses	2	5	14	19
Camels	---	---	10	10
Laying hens	1,426	7,300	250	7,550
Geese, ducks, and turkeys ..	21	950	---	950
Beehives	23	52	<u>4/</u> 1	53

1/ Jewish-owned only. 2/ Purebred. 3/ Local breeds. 4/ Except primitive hives.

AGRICULTURAL CONSUMPTION

Israel enjoys a better-balanced national diet than that of any other country in the Middle East. Per capita intake is estimated at close to 2,800 calories daily for the 1959-61 period. The diet has emanated from the policy of settling immigrants on small plots of land where they produce high-quality, labor-intensive food products, and from internal pressures to maintain for Israel western levels of consumption. Consequently, consumption has tended to rise; total food requirements have increased faster than population.

AGRICULTURAL TRADE

Israel is a net importer of farm goods. Imports of principal agricultural products in 1963 were valued at \$142 million, roughly 20 percent of the value of all imports. Principal agricultural exports (excluding manufactured fruit juices, preserved fruits, and other processed food products) totaled about \$125 million in 1963, about 35 percent of the value of all exports.

Fresh fruits--largely citrus--contributed about 22 percent of the value of all exports and over 62 percent of the value of farm exports in 1963. Most citrus products find markets in the United Kingdom or western Europe. Western Europe also takes the greater part of Israel's export of other farm commodities. These are chiefly fruits other than citrus, edible oils, potatoes, peanuts, and eggs. Arab hostility has prevented trade with neighboring countries other than Turkey and Cyprus. Although there has been increasing cultural exchange with non-Arabic Africa in the last few years, the market there for Israeli agricultural exports is small.

Agricultural imports into Israel mainly consist of wheat and feed grains, fats and oils, oilseeds, meat, sugar, hides, and wool. The United States has been Israel's primary source of agricultural imports (table 5). Other important source countries in the past have included Turkey,

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the Republic of South Africa, and Canada for grains; Brazil, Cuba, and Turkey for sugar; the United Kingdom for wool; the Republic of South Africa for hides and skins; and Greece for cotton. Israel's agricultural imports from non-Arabic African countries is not large.

Under Israel's most recently formulated economic policy, Israel's farmers are being called upon to increase production for both consumption and export, and to increasingly substitute locally produced goods for imports. Government support of agricultural industries will be limited to those of proven competitive ability in both domestic and world markets.

Table 5.--United States trade with Israel, 1962 and 1963

U.S. exports to Israel			U.S. imports from Israel		
Commodity	1962	1963 ^{1/}	Commodity	1962	1963 ^{1/}
	1,000 dollars			1,000 dollars	
Wheat and wheat flour..	19,382	14,173	Wines.....	358	501
Corn.....	7,717	9,934	Citron and citron peel:	30	125
Grain sorghum.....	6,977	8,438	Vegetables and prep...	54	6
Barley.....	1,145	446	Hides and skins.....	6	---
Rice, milled.....	863	1,408	Bulbs, roots and		
			root stocks.....	101	50
Soybeans.....	11,004	19,225			
Soybean oil.....	5,138	4,350	Animal hair, unmd....	21	48
			Fruit and prep.....	55	462
Dairy products.....	683	1,170	Cotton.....	51	17
Cotton, unmd.....	1,516	1,156	Dairy products	1	12
Tobacco, unmd.....	376	398			
Other agricultural.....	<u>3,204</u>	<u>5,099</u>	Other agricultural.....	<u>256</u>	<u>78</u>
Total agricultural.....	<u>58,005</u>	<u>65,797</u>	Total agricultural...	<u>933</u>	<u>1,299</u>
Nonagricultural.....	103,063	88,446	Nonagricultural.....	40,109	45,766
Total exports.....	161,068	154,243	Total exports.....	41,042	47,065

^{1/} Preliminary.