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**ECONOMIC  
AND  
POLITICAL  
CHANGE  
IN THE  
MIDDLE EAST**

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TABLE 6.5  
SELECTED INPUTS IN AGRICULTURE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	% Change in Tractors in Agriculture (1969/71-81)	No. of Arable HA per Tractor (1980)	Fertilizer Consumption (per Hectare of Arable Land)			% Change in Irrigation (1969/71-80)	Irrigated Land as % of Arable and Permanent Crops (1980)
			(1969/71)	(1980)	% Change		
Algeria	8.6	172	174	320	101.2	24.9	5.0
Bahrain						0	50.0
Egypt	44.7	108	1,282	2,324	81.3	.5	100.0
Iran	187.6	264	76	359	372.4	13.8	37.0
Iraq	62.4	236	35	169	382.9	18.9	32.0
Israel	68.9	12	1,394	1,987	42.5	20.1	49.0
Jordan	63.8	263	20	104	420.0	39.3	6.0
Kuwait	337.5	29	0	4,400		0	100.0
Lebanon	19.2	80	1,279	764	-40.3	21.43	24.0
Libya	262.0	125	64	374	484.4	28.6	11.0
Morocco	99.5	297	130	335	157.7	64.7	7.0
Oman	210.0	194				18.7	93.0
Qatar							
Saudi Arabia	94.5	867	44	352	700.0	16.2	36.0
Sudan	118.1	1,124	31	65	97.1	40.0	14.0
Syria	201.6	190	67	220	228.4	9.8	9.0
Tunisia	61.9	94	82	135	64.6	61.11	3.0
UAE			0	2,692		0	38.0
Yemen AR	300.0	1,370	1	35	3,400.0	16.7	9.0
Yemen PDR	20.0	148	0	98		75.0	34.0

Source: FAO Production Yearbooks.

in the intensity of tractor use continue. In Israel there was one tractor for every 12 hectares in 1980; Sudan had one tractor for every 1124 ha; Kuwait, Lebanon, Tunisia, and Egypt ranked after Israel, in that order. The use of other machinery has been less extensive. In general, the mechanization of agriculture has been selective both with respect to country and district within a country.

Another significant change has been the increase in consumption of chemical fertilizers. The largest increase was in Yemen AR and the UAE, where fertilizer had almost never been used before. Next in line were Saudi Arabia, Libya, Jordan, Iraq, and Iran. Lebanon experienced a decline, and Israel, Tunisia, and Egypt experienced the lowest increases, between 1969-1971 and 1980. These increases are misleading in that Egypt, Israel, and Lebanon had already reached the three highest rates of consumption per hectare in 1969-1971. The use of fertilizers may be used as an indication of the changing technology, as may irrigation and, to a lesser extent, mechanization.

One distinctive feature of Middle Eastern agriculture has been the emphasis on large irrigation and hydroelectric projects. The efforts expended on irrigation may

be gauged by the structure of investment in the various countries. Israel, for example, spent 12.9% of its agricultural investment budget on irrigation networks between 1950 and 1967, and another 5.7% of its planned investment for 1967-1971; the decline was due mainly to the lack of water resources to improve. Israeli efforts have been redirected toward desalination. Tunisia designated 31.2% of the agricultural budget to irrigation between 1962 and 1964; between 1960 and 1965, Egypt allocated 38.9% to irrigation and drainage, in addition to 27.8% designated for the High Dam. Syria allocated equally high percentages during the 1950s. Syria's pride has been the Euphrates Dam, which has just been completed. To understand the impact of the Euphrates Dam, a comparison with the Aswan High Dam may be instructive, as follows:<sup>8</sup>

*Euphrates Dam*

Built from earth and gravel for a height of 60 meters

Width 512 meters at the bottom, 19 at the top, length from the left side 4,500 meters

Lake Assad is 630 square kilometers and 80 kilometers long

Electrical generating capacity 800,000, which may be extended to 1.1 million kilowatts

Capable of increasing irrigated land by 640,000 hectares

*Aswan High Dam*

Built from granite for a height of 111 meters

Width 1,000 meters at the bottom, 32 meters at the top, length 3,500 meters

Lake Nasser is the largest artificial lake in the world, 4,000 square kilometers in area and 500 kilometers long

Electrical generating capacity amounts to 2.4 million kilowatts

Capable of increasing irrigated land by 2 million feddans or 840,000 hectares

In contrast, the Naccache Dam on the Litani of Lebanon is about 65 meters high, holds 288 million cubic meters of water, and is capable of generating 21,000 kilowatt-hours of electricity.<sup>9</sup> Iraq, Iran, and Morocco have also constructed large dams and irrigation projects, as indicated by the increase in the land area irrigated: in Iraq by 130,000 hectares, in Iran by more than 1 million hectares, and in Morocco by more than 280,000 hectares between 1961-1965 and 1977. Nevertheless, except in Egypt, agriculture is still largely dependent on rain.

In spite of these efforts, and partly because of them, agriculture in the Middle East, with the exception of Israel's Jewish sector, suffers from duality, with one sector exhibiting backwardness, low productivity, and small-scale, archaic techniques, and the other benefiting from advanced technology with relatively large-scale operations and good management. Therefore, the rates of growth in agriculture have been modest, and the policies attempted have met with only limited success. It might be suggested, however, that these policies could not have been more successful, because they were in some ways inherently weak and limited. Agricultural policies in general and reform policies in particular were faced with handicaps and constraints that were bound to reduce their effectiveness. These