

AN ANALYSIS OF AGRICULTURAL MECHANIZATION IN THE CHUKUROVA (TURKEY)

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Twenty-five years ago when Dr. John Morrison investigated the rural occupance in the central Anatolian village of Alishar he found that the farmers were not utilizing mechanized farm equipment such as tractors, tractor-drawn plows, harvesters, combines, and seed drills (Morrison, 1938). Instead they were using simple wooden plows and hand rakes in much the same manner as their ancestors had for centuries. Conditions similar to those at Alishar were common throughout much of Turkey. Only in the western and southern valleys of Anatolia were a few of the farmers utilizing modern mechanized farm equipment.

The mechanization of agriculture in Turkey proceeded at an extremely slow pace until the end of the Second World War. In 1944 less than 1,000 tractors were in operation in the country (Brandow, 1953: 22). The number of tractor-drawn plows was even less. In contrast there were well over a million wooden plows in use in the country. Since 1944, however, the amount of mechanized farm equipment in Turkey has increased spectacularly. The number of tractors increased to almost 10,000 in 1950, to more than 31,000 in 1952, to nearly 38,000 in 1954, and to more than 40,000 a year later (Turkish Republic, 1957). The numbers of most other types of mechanized farm equipment also increased rapidly.

However, the mechanization of agriculture has not occurred throughout all of Turkey. It has been confined largely to the wheat lands of Konya and Ankara provinces, and to the cotton-producing areas in the Chukurova, a deltaic lowland on the country's Mediterranean coast, and in the river valleys of Aydin, Manisa, and Izmir provinces.

This paper is an analysis of the mechanization of agriculture in one of these areas, the Chukurova. Three points are considered: 1) the distribution of mechanized farm equipment within the area; 2) the factors present which might account for the presence of mechanized farm equipment; and 3) the results of agricultural mechanization in the Chukurova.

DISTRIBUTION OF MECHANIZED FARM EQUIPMENT

The tractor and the tractor-drawn plow are the two most widely utilized types of farm equipment in the Chukurova. These two pieces of equipment are used to prepare the fields for planting and to cultivate the growing cotton, sesame, and cereals. The tractor hauls farm produce to market, provides motive power for construction projects, and serves as a means of transportation for rural families.

Although tractors and tractor-drawn plows are found in all parts

of the area, they are most highly concentrated in the vicinities of three of the Çukurova's major cities—Adana, Tarsus, and Ceyhan (Fig. 1). The Adana concentration, which contained nearly half of the Çukurova's tractors and tractor-drawn plows in 1950, is to a large degree correspondent with the most important cotton-growing area in the Çukurova. Here tractors can be found in nearly every village and on all of the large estates. Associated with this concentration of tractors and tractor-drawn plows is a variety of other types of farm equipment such as cotton planters, discs, seed cleaners, and grain-harvesting machines.

A second area of concentration lies directly to the west of Adana. This area, which centers on the city of Tarsus, is a market-gardening and rice-growing area, as well as a major producer of cotton. Here, as in the vicinity of Adana, at least one tractor can be found in almost every village, and nearly all the larger estates are mechanized.

In the Ceyhan area, to the north and east of Adana, is a third concentration of mechanized farm equipment. In this area, unlike the other two, cereals are of major importance although cotton is still grown extensively. As a result of this greater importance of cereals, there are more combines, threshing machines,

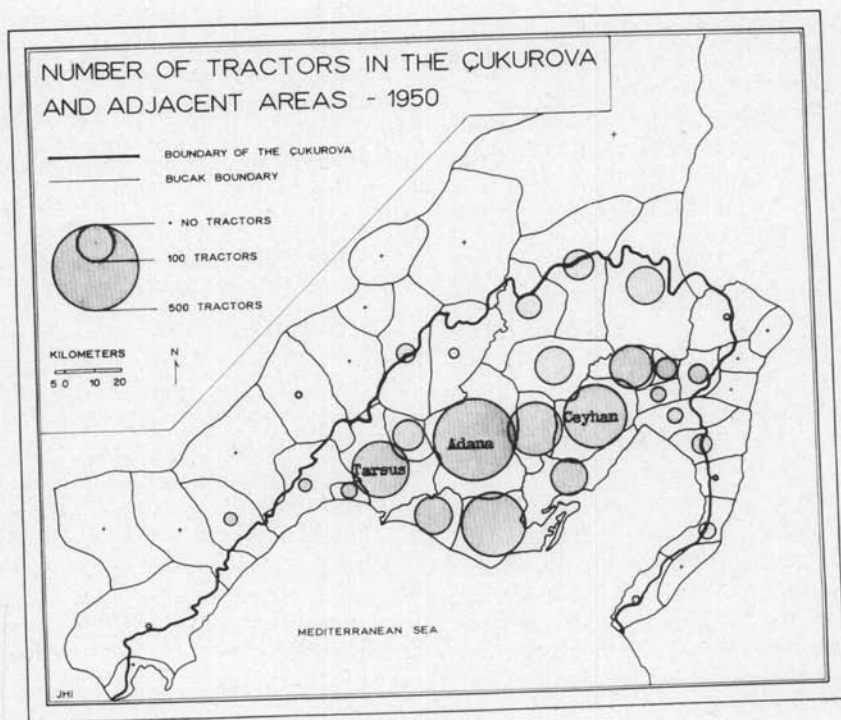


FIGURE 1.

and binders around Ceyhan than in any other part of the Chukurova.

There is much less mechanized farm equipment outside these three areas. Reduced size and fragmentation of land holdings, prevalent in these areas, eliminate many of the advantages of mechanization and only the most prosperous farmers can afford expensive farm equipment.

Between 1950 and 1955 the amount of mechanized farm equipment increased rapidly in the Chukurova. The number of tractors increased by 250%. In the vicinity of Ceyhan and in the lowland areas to the north and east of Ceyhan, the increase in the number of tractors was especially rapid. The number of tractors in the Tarsus area and immediately to the west of it around the city of Mersin also increased. In the vicinity of Adana an increased number of tractors was noted, although this increase was proportionally less than that in either the Ceyhan or Tarsus areas. The total numbers of several other types of mechanized equipment also increased during the same period.

Since 1955 the amount of mechanized equipment has remained nearly constant. This is in large part due to the rigid import and foreign exchange controls imposed by the government on both new equipment and replacement parts. However, it is also a result of the saturation of the farm machinery market and a more complete and economical utilization of the available farm equipment.

Although the total amount of mechanized agricultural equipment has increased rapidly in the Chu-

kurova since the Second World War, the expansion has not been uniform. The increased number of tractors has not been accompanied by an increased number of certain types of cultivating equipment. The planting of both cotton and cereals is, in most sections of the Chukurova, still done by hand and there are only a few mechanized cotton pickers. In addition, the supply of replacement parts and repair facilities for existing farm machinery is far below demand.

FACTORS CONDUCTIVE TO THE MECHANIZATION OF AGRICULTURE

Agricultural mechanization has occurred extensively in these three sections of the Chukurova as a result of a number of factors. The three areas are all lowlands with very slight local relief. As a result there are few barriers to the movement of farm equipment. In contrast the local relief is much greater in other parts of the Chukurova and the utilization of many types of equipment is impossible.

The larger sized land-holdings in these three areas have been an added incentive for mechanization. Most farmers who operate farms larger than 40 acres find that they cannot effectively farm with a water buffalo, a wooden plow, and a hand rake. In contrast, outside these three areas the mean size of farms is less and mechanized equipment is generally not needed by the farmer.

A third incentive to mechanize has been the increased commercialization of the Chukurova's agricultural economy. A market, both in the Chu-

kurova's cities and in other parts of Turkey, has developed for some of the area's agricultural produce. The demand for cotton, wheat, and rice has been especially great. Since farmers have been successful in marketing more, an increasing amount of capital has been injected into the agricultural economy, and the purchase of mechanized farm equipment has been possible. Where the marketing of agricultural produce is less successful there has been far less agricultural mechanization.

RESULTS OF MECHANIZATION

The results of agricultural mechanization in the Chukurova have been numerous. The amount of land under cultivation has increased slightly since the Second World War, and the amount left fallow or in pasture has declined. Cotton has increased in importance. The area planted in cereals, except wheat and rice, has decreased. The mean yield of several crops has increased and generally the quality and marketability have improved.

In the cities the effects of mechanization can also be noted. Surplus farm population has been driven into the cities, particularly Adana, by labor efficiencies effected by mechanization and shifts in the organization of land holding. This growth of urban population has stimulated industrial development and has further enlarged the market for agricultural produce. Finally, retail establishments, especially service stations, automotive repair shops, and implement dealers, have sprung up on the outskirts of the Chukurova's towns and cities.

SUMMARY

The mechanization of agriculture, which has consisted chiefly of an increase in the numbers of tractors and tractor-drawn plows, has been largely confined to three sections of the Chukurova.

The factors which have stimulated agricultural mechanization are the slight local relief and the lack of major barriers to the movement of agricultural equipment, the larger sized land-holding, and the commercialization of the agricultural economy.

Agricultural mechanization has contributed to a shift of the crop pattern in the three areas. It has also contributed to a rapid growth of population and industry in the Chukurova's cities, and has further stimulated the demand for the area's agricultural produce.

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