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ABSTRACT

ECONOMIC ANALYSIS OF AGRARIAN REFORM IN IRAQ: PRODUCTIVITY, INCOME DISTRIBUTION, AND EMPLOYMENT

By

Yousif Suddik Hassan

The evaluation of the agrarian reform programs in terms of specific development consequences, and the effects of the post-reform economic organization in the agricultural sector, i.e., family farm system, group farming system (cooperative-collective) and state farm system, from both macro and micro economic point of view is the subject of this study.

Specifically, the objective of this study is the evaluation of Iraq's agrarian reform programs, within the setting of its agrarian structure, in terms of the following development consequences of the agricultural sector.

1. Increasing agricultural production and productivity.
2. Income distribution and its economic implications, i.e., increasing effective market demand and changing the demand structure.
3. Creation of employment opportunities in the agricultural sector as well as in the rural areas.

The technique is to demonstrate the relationships between land reform programs and the above development consequences. This is followed by an analysis of the empirical evidence, the conditions in the agricultural sector, from pre-reform to post-reform experience. The connection between land reform and income distribution is difficult to verify. While evidence on pre-reform and post-reform income distribution and expenditure patterns is extremely difficult to obtain, income distribution is inferred from statistics showing the redistribution of land ownership.

The first Agrarian Reform Program of 1958 was implemented in three phases: (1) expropriation, (2) temporary administration of expropriated land by the Ministry of Agrarian Reform, and (3) redistribution of the expropriated land to the new owners.

Review and analysis of the performance of the agricultural sector prior to the reform program revealed that the agricultural land, the fundamental and basic resource of the national economy, had been controlled by a limited number of owners in a semi-feudalistic pattern of ownership. The agricultural land owners constituted about 0.5 percent of the total population; 2.8 percent of these landowners held 70 percent of the agricultural land title deeds. While the total rural population who directly

depended on agriculture, including landowners and lessees, stood at 3.2 million in 1957, the number of the landless peasants was 2.9 million prior to the reform program.

By 1970, more than one decade after the enactment of the first reform program, the following conclusions were drawn: (1) Using the 1957-1959 average as a base period = 100, total agricultural production, crop production, and food production increased by an average annual rate of 3.4 percent, 3.5 percent, and 3.4 percent, respectively. The increase in agricultural and food production, however, did not keep pace with the increase in the demand for food that resulted from population growth and per capita disposable income. (2) The Reform Program of 1958 provided income-earning opportunities through redistribution of land to 312,019 farm families who became owner operators, i.e., almost 50 percent of the landless farm families prior to 1958. (3) The total land labor force employed in the agricultural sector increased from 971.8 thousand, pre-reform level, to 1,449.8 thousand, post-reform level, i.e., an increase of 478 thousand or 49.2 percent over more than 10 years, with an average annual increase of 4.9 percent.

It was found that, despite the accomplishment of the first Reform Program of 1958 in creating more employment and income-earning opportunities in the agricultural sector, it cannot be pronounced as a complete economic success. The

program did not bring about a substantial increase in agricultural production and productivity and/or the creation of a dynamic agricultural sector with significant contribution to GDP, at least, in the short-run. This was mainly due to the shift in development policies and priorities in the 1960's that resulted in lack of the productive structure and the structure of supporting services.

The new Agrarian Reform Law No. 116 of 1970 was one of the rigorous measures to achieve a comprehensive and integrated agrarian structure. It was designed to establish the productive structure, the structure of supporting services and to create an efficient administrative structure. The new reform program followed the principle of collective distribution and the establishment of new economic organization in the agricultural sector.

It was found that while post-reform dualism, farm family system, group farming system (cooperative-collective) and state farm system may be viable, the critical variables associated with the possible success or failure of such dualistic post-reform structures are (1) the size and the rate of growth of the industrial sector, (2) the proportion of the population in the agricultural sector, and (3) the growth rate of the total population.

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*To my wife Afaf
and my children Aous and Mazin,
for their endurance and patience
throughout the duration of my
graduate program*

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CHAPTER I

INTRODUCTION

Identification of the Problem

Iraq is a country of great economic potential with wide expanses of fertile land and alluvial soils. Iraq's Ministry of Planning reports that the nation has about 48 million donums of cultivable lands, one donum = 0.62 acre = 0.25 hectar.¹ Reports of the Food and Agriculture Organization indicate that Iraq has 11.70 million hectares of cultivable lands, 7.496 million hectars of arable land and land under permanent crops and 4.264 million hectares of permanent meadows and pasture.² The two rivers, the Tigris and the Euphrates, which drain all the land from north to south, provide valuable water both for irrigation and generation of electric energy. Iraq's well-developed Petroleum industry contributed ID. 1.9 billion, to the Public treasury from 1950-1970.³ Petroleum exports have

¹Iraq, Ministry of Planning, Evaluation of Economic Growth in Iraq, 1950-1970 (Baghdad, 1972).

²United Nations, FAO, Production Yearbook, Vol. 21, 1967.

³ID--Iraqi Dinar = \$3.3.

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not only provided a reliable source of development finance but have also assured the nation of a substantial and continuous flow of foreign exchange. This situation has spared the nation the inflation and balance of payments problems with which many Less Developed Countries (LDC's) have to contend.

For almost two decades, the ruling governments have assumed responsibility for developing the country's resources toward rapid attainment of its economic potential. The declared overall objectives of development policies, both before and after the 1958 Revolution, is the stimulation, through development expenditure, of the nonoil sectors of the economy. It has been recognized that these sectors must be developed while the nation can still profit from the export of its oil resources. Although there has consistently been a consensus regarding this objective, sharp differences have arisen regarding the means of achieving it.

In the early 1950's, a considerable number of foreign consultants were invited to study the problems of economic development in Iraq and to advise the government on policy issues. These visiting experts concluded generally that the promotion of industry, the manufacturing sector, did not merit a high rank in the priority scale of economic development. The reasoning underlying this conclusion was based mainly on the well-known principle

of comparative advantage.¹ Iraq, it was argued, possesses a comparative advantage in agriculture. Because of the growth in its population (average annual rate of growth for the period 1952-1957 was 2.7 percent) and world population, the future market for its agricultural products looked promising. In industry, on the other hand, it would have to compete with great handicaps because of deficiencies in technical skills, in the ranks of labor and management. Subsidizing or protecting industry would foster inefficiency, constitute a heavy burden on the consumer and finally increase the gap between industrial and agricultural income to the detriment of the latter.²

These arguments had some influence on the government outlook at the time, but somehow the government failed to understand that factor supplies could be substantially altered in the long-run as a result of deliberate and direct intervention in the economy, planning for economic development, and could thus lead to an altered cost structure and different pattern of comparative advantage. Such transformation has its cost. It is the task of the policymaker to weigh benefits and costs not only at the present

¹International Bank for Reconstruction and Development, The Economic Development of Iraq (Baltimore: Johns Hopkins Press, 1952), p. 40.

²Lord Salter, The Development of Iraq, A Plan for Action, Iraq Development Board, 1955.

time but in the long run as well. For example, it is in Iraq's comparative advantage to build an industrial complex--petro chemical industries--that could play a significant role in the economic development of the country, especially the development of the agricultural sector.

In pursuing its development policy, the government assigned the agricultural sector a high priority ranking and drew up two development programs during the period 1951-1954. The agricultural development policies emphasized the horizontal expansion of agricultural production, bringing new land in cultivation, rather than vertical expansion or intensification of Iraqi agriculture, and the reform of the defective agrarian structure.

Consequently, the two development programs were heavily loaded with irrigation and flood control projects, many of which were large and could not show quick results. There is no denying, of course, the high priority that must be accorded to the harnessing of water resources in a country that is preponderantly agricultural and is dominated by the flow of two rivers. To a large extent, however, these programs were engineers' lists of projects rather than economic programs. These projects were too often conceived in isolation from social and institutional change that should have accompanied them. They often ignored necessary secondary technical issues such as drainage, disalination and irrigation networks. Faulty planning did little to

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reduce the dependence of agriculture on climatic conditions. Therefore, the poor performance of the agricultural sector in terms of production and productivity of both land and labor and the land use pattern--fallow system--was the result of the political and economic institutions that dominated this sector.

One aspect of the political and economic institutions that affected the performance of the agricultural sector is the Land Tenure System. Agricultural land, the fundamental and basic resource of national economy had been controlled to an overwhelming extent by a limited number of owners and a semi-feudalistic pattern of ownership. According to the official statistics of the agricultural census prior to the Revolution of 1958, agricultural land owners constituted about 0.5 percent of total population; 2.8 percent of these land owners held 70 percent of the agricultural land title deeds, and 97.2 percent held less than 30 percent of the agricultural land title deeds. In other words, as total rural population who directly depend on agriculture (including land owner and lessees) stood at 3.2 million in 1957; the number of landless peasants was 2.9 million prior to 1958. As a result of this mal-distribution of ownership pattern, the average annual rate of out-migration, rural to urban centers, was 20,000 between 1953-1957. Most of the emigrants were unskilled, some secured work as casual laborers while others remained unemployed.

The limited improvement in the economic and social conditions for the bulk of the population and the piling up in foreign banks of 20 percent of development expenditures--government revenues--provided additional reason for popular dissatisfaction with the government and its development policies. Therefore, in a practical sense, policies for the development and management of a country's resources should recognize the need to operate within the context of a threefold physical and biological, economic and institutional framework.¹

When the new authorities took over in 1958, they were fully conscious of the criticisms leveled at the policy of the previous governments. They immediately took a series of measures; some were designed to affect real shifts in policies, others merely involved political tactics aimed at winning popular favor. The main policy targets of the new government appear to have been: (1) development of the agricultural sector, (2) expansion of the manufacturing industries, and (3) promotion of the social welfare of the poorer section of the population.

During the 1959-1969 period, three development plans were drawn up and followed. The allocation to the various sectors of the economy reflected a change in development

¹Raleigh Barlowe, Land Resource Economics (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972).

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policy, with the industrial sector receiving a higher priority in the scale of economic development than agriculture. This shift in priorities took place at a time when it is imperative that the agricultural sector has a top priority, especially at the time when a major step is being undertaken by the government that would have a profound impact on the agriculture sector.

This major step is the enactment of the Agrarian Reform Law No. 30 of 1958. The Law had the main objectives of providing for more equitable land distribution, controlling agricultural rental rates and establishing minimum wages for agricultural workers.

The land reform program was implemented in three phases: (a) expropriation, (b) temporary administration of expropriated land by the Ministry of Agrarian Reform, in those cases which the lands were leased to beneficiaries, i.e., until the necessary contracted requisits for the productive use and management of the land were completed, and (c) the redistribution of expropriated land to the beneficiaries, and the organization of agricultural cooperatives and provision of supporting institutional services for the beneficiaries.

The statistics on expropriation, land areas under temporary management and redistribution are constantly changing as the programs continue. The implementation of the program in terms of land expropriations as of

September 1968 was 12.5 million donums. The implementation of the program in terms of redistribution as of December 30, 1968 was as follows: the total area redistributed under the law to landless *fellaheen*, peasants, in the form of small family farm system was 3.1 million donums and the number of beneficiaries was 57,117 farm families. The average area redistributed per family was 40 donums. Furthermore, 6.3 million donums were rented to 186,868 farm families, but awaiting distribution. In other words, 9.5 million donums were redistributed and rented to 237,402 farm families, owner operators and tenants.

This shows that after ten years of operation the land reform of 1958, only 25.5 percent of the total land that was eligible for redistribution had actually been redistributed, while 74.5 percent was still being acquired by the government. Also, the government included in its program the reclamation and redistribution of an area of 3.3 million donums divided into 11 agricultural Projects. However, among the areas affected by the land reform law, there were, in 1968, about 3.2 million donums which were neither expropriated nor redistributed because of the uncertainty that prevailed at that time. In other words, the area included in the land reform program, i.e., expropriation, reclamation and redistribution, represented 75 percent of the agricultural land in Iraq. The level of management and production practices used on this large area

had far reaching effects at the national level on the production of crops and livestock, income distribution and the nation's employment patterns.

As a result of the implementation of the program, several varying problems appeared, arising from the social system, land use and management, relationship between the new owners and landlords and the educational level of the farmers. However, as will be indicated later, only two of these problems were major ones. There were the lack of supporting structures, i.e., the production structure and the structure of supporting services and the problem of agricultural administration and organization.

A decade after this major program of the revolutionary government went into effect, it was still difficult to evaluate the impact of the land reform program. Just as the impetus for the agrarian reform and its main targets were dictated to a large extent by political motives, most evolutions also have a political basis. However, about 40 percent of the total landless families, prior to 1958, received benefits from the land reform program that made it possible for them to become a new social class, a large owner-operator class, in rural Iraq. In other words, they had access to employment and income earning opportunities. Abolition of feudalism through land reform, undoubtedly, had a favorable profound social and political effect among the rural population in Iraq. The feudal social relationship

between former landlord and the peasants was replaced by social justice and by a recognition of the important role individual farmers could play in developing the country as real citizens.

Despite its accomplishments, the new policy could not be pronounced as a complete economic success, as it didn't result in increased agricultural production or higher productivity, although apparent or real declines in post-reform production are usually temporary and are not surprising. Reform, especially when associated with major political and social revolutionary upheavals, can be a disruptive process. In other words, the post-reform increase in production did not keep pace with the increase in demand for agricultural commodities that resulted from higher population growth and increased income. Farm management and production requisites, high yielding inputs, provision of institutions and land use, were far from adequate due to the uncertainty that prevailed. This point will be discussed in more detail later. For this reason, the Agrarian Reform Law No. 30 of 1958 was a transitional piece of legislation. The primary aim of the law--elimination of feudalism--was attained. But the subsequent aims of the law--the transformation of a large number of landless peasants into agricultural landowners, the increasing of production and productivity, and a subsequent increase in the relative

importance of the agricultural sector--were barely realized because of obvious implementation shortcomings.

On the other hand, the performance of the economy, in a relatively short time, early 1950's to 1969, managed to achieve substantial economic growth as measured in national income accounts. Measured in the magnitude and at the rate of Gross Domestic Product (GDP) at constant 1966 prices and factor cost rose from ID 384.9 million in 1953 to ID 980.1 million in 1969 with an average annual growth of 6.0 percent. The per capita Gross National Product (GNP) at constant 1966 prices rose from ID 51.3 in 1953 to ID 84.7 in 1969, with an average annual rate of 2.1 percent. This low per capita income is the result of the high population growth that absorbed most of the increase in national income. The average annual rate of population growth during the 1952-1970 period was 3.0 percent.

This total economic growth has not been spread equally among the various sectors of the economy. The agricultural sector grew at a slower rate than the manufacturing and service sectors. The value added in the agriculture sector at constant 1966 prices and factor cost rose from ID 85.2 million in 1953 to ID 186.8 million in 1969 with an average rate of 5.0 percent, while for the manufacturing and service sectors the annual rate was 8.5 percent and 7.4 percent, respectively. Furthermore, there was a wide annual fluctuation in the value added in

the agricultural sector, due to varying crops and livestock yeilds because of changing climatic conditions and development policies.

The foregoing discussion has emphasized the failure of the development policies pursued by previous governments to achieve their policy objectives. This can be shown in the contribution of the agricultural sector to GDP, which decreased from 21.3 percent in 1961 to 19.1 percent in 1969, i.e., the relative importance of this sector was declining, while that of the manufacturing sector increased from 7.4 percent in 1953 to 11.7 percent in 1969, and the contribution of the oil sector to GDP was 32.6, still the dominant sector in the economy. Yet if achievement falls short of expectation, it is because the development process requires knowledge and competence that cannot be acquired except through systematic experience over a period of time which can hardly be abridged. Furthermore, attainment of Iraq's great economic potential and achievement of the overall objectives outlined earlier requires: (1) agricultural development, (2) expanding the manufacturing sector, and (3) raising the efficiency of manpower and reducing unemployment.

It is unlikely that achievement of the economic potential of this country can be attained without the development of the agriculture sector. While economic development, in Iraq as well as in many LDC's, is frequently

identified with economic growth measured in National Accounts, development also involves complex processes and procedures of institutional change. The process of economic development as conceived in this study is one of confronting the problems of income distribution, uneven development, and employment creations, with all their economic consequence.¹

Consequently, what is needed above all is a decision to elevate the agriculture sector to a position of top priority during the coming decade. This would entail comprehensive planning, far-reaching change in institutions, devotion of more human resources to the agriculture sector than has been the case in the past and substantially greater financial resources for this purpose than seemed to have been contemplated. National attention and policy emphasis must be focused on agriculture if this sector is to provide increased agricultural production, income and employment opportunities in the rural areas. However, such strong

¹Seers (1969) has stated the issue well: "The questions to ask about a country's development are therefore: What has been happening to poverty? What has been happening to unemployment? What has been happening to inequality? If all three of these have declined from high levels, then beyond doubt this has been a period of development for the country concerned. If one or two of these central problems have been growing worse, especially if all three have, it would be strange to call the result 'development,' even if per capita income doubled [p. 3]." D. Seers, "The Meaning of Development," International Development Rev., 11 (1969): 2-6. Also see P. Dorner, "Needed Redirection in Economic Analysis for Agricultural Development Policy," American Journal of Agricultural Economics, 53 (1971): 8-16.

emphasis on the agricultural sector must not be interpreted as disparagement of industrialization. The tenet of this study is that development of the agricultural sector also calls for additional industrialization in the form of industries producing farming requisites, industries producing consumer goods and agricultural processing industries. Also, Iraq can and must be an industrial nation in the 1980's, building an industrial complex in the field of petrochemical industries and making greater use of its available raw material for the industrialization process. Within this context, a comprehensive and integrated agrarian reform program would not only profoundly improve the performance of the agricultural sector and achieve the objectives of agricultural development as conceived in this study, but it would ensure balanced economic development, which is in conformity with Iraq's declared overall objectives of development policy for the last two decades.

Objectives

It is the purpose of this study to show the past performance of the agrarian structure, particularly in the last two decades, to assess its future prospects and to point out major problems and policies that it may have to face in the realization of these prospects. In this regard, the term "agrarian structure"¹ is the complex of

¹United Nations (1970), Progress in Land Reform--Fifth Report.

interconnecting sets of relationships, within the agricultural sector, among the tenure structure, production structure, and the structure of supporting services.

Specifically, the objective of this study is the evaluation of Iraq's agrarian reform programs, within the setting of its agrarian structure, in terms of the following development consequences of the agricultural sector:

1. Increasing agricultural production and productivity.
2. Income distribution and its economic implications, i.e., increase effective market demand and change the demand structure.
3. Creation of employment opportunities in the agricultural sector as well as in the rural areas.

Methodology

During the past decade, considerable thought has been given to the methods and objectives of developing, organizing, carrying out and evaluating the land reform program. Throughout the world, land reform programs of varying concept and substance have been planned and implemented; some have enjoyed achievements and continuing progress. Failures have been frequent with the beginning of new planning and programs; since, short-term failures have been turned into successes.

Most land reform programs have been distinguished by the extent of deliberate action undertaken by the state or authority to increase the pace of economic development

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and to bring the institutional framework of the agricultural sector into line with the requirements of agricultural and rural development. Systematic evaluation of these land reform measures call for viewing them as acts of preventive economic policy in periods of drastic changes, during which the agricultural sector plays a dominant role and in which its development is of fundamental importance.

The selection of an appropriate evaluation method will be determined largely by the content of the program. Any such program of deliberate action implies objectives and assumes models of operation of the economy. It is obvious that many assumptions and hypotheses are involved in such planning, and that the results depend on a number of expected reactions. Even with fullest amplitude of statistical and other information, predictions in a complex socioeconomic situation are difficult. Consequently, evaluation in the structural field presents a problem distinct from the economic evaluation of agricultural projects.

Some economists conceive of development planning and project evaluation in terms of present private or project decision-making criteria. Their policy recommendation involving highly sophisticated models often ignore the employment and distribution aspects of projects. While an evaluation of a multipurpose or settlement project, land reform, in terms of Benefit-Cost (B/C) analysis, financial return and saving criteria is certainly inadequate, because

of oversimplification and the ignoring of secondary and indirect effects for measuring the socioeconomic effects of projects; these criteria have significance from an accounting point of view. Furthermore, socioeconomic programs call for a more specific approach to evaluation which can be adjusted to the particular feature and anticipated effects of each program, and will facilitate a qualitative analysis of the data whenever quantitative measurement is impossible or inadequate.

This study is concerned with the evaluation of land reform programs, with specific attention to the period of implementation of the structural program, organization and administrative structure, and the effects from both macro and micro economic point of view. The technique will be to demonstrate the relations between land reform programs and the development consequences, i.e., increasing production and productivity, income earning opportunities, and employment creation. This will be followed by an analysis of the empirical evidence, the conditions in the agricultural sector, from pre-reform and post-reform experience. The connection between land reform and income distribution is difficult to verify. While evidence on pre-reform and post-reform income distribution and expenditure patterns is extremely difficult to obtain, income distribution will be inferred from statistics showing the redistribution of land ownership.

General Assumption and Hypotheses

The central hypothesis, almost an assumption underlying this entire research effort, is that:

1. In addition to the equity, welfare and social justice considerations implicit in land reform programs, other major economic development purposes should be accomplished by such measures. Thus the potentialities of the land reform programs must be viewed within the overall context of economic development.
2. The widening gap between the declared policy objectives of the land reform program and their actual realization can be ascribed to the failure to reorient organization and administrative machinery for the program implementation, including administration of structural reform, inadequate training of staff, ineffective coordination with wider rural development program and virtual absence of follow-up and evaluation.
3. While the influence of the price level on investment and output in the agricultural sector cannot be disputed, the land tenure system influences farmer responses to changing prices. Thus land reform programs in providing tenure security is an important element in creating incentive structure for increased investment and production.

Significance of the Project

The findings of this study will contribute generally to the attainment of Iraq's post-1950's development policy, i.e., the stimulation of the nonoil sectors of the Iraqi economy. The findings will focus emphasis on the need to push a new development policy that favors continuous and balanced development of the agricultural and nonagricultural sector of the national economy. More directly and specifically, this study will help in the following ways:

1. In dealing with the whole agrarian structure, i.e., the production structure and the structure of supporting services, the study will help focus attention on requirements of the productive structure, especially fertilizer, pesticides, and mechanization. It will be concerned with post-reform economic organization of the agricultural sector, i.e., family farm, group farming (cooperative-collective), and state farms and their impact on productivity and employment opportunities in the agricultural sector.

2. While agricultural development and industrialization are not valid alternatives, an effective development plan must embrace both goals. In nations such as Iraq, where 50 percent or more of the population depends on agriculture, the income level of this majority is a key factor in determining the demand for goods and services produced in the economy. It may be impossible to expand the manufacturing sector, i.e., industry for consumer goods,

industry for agricultural requisites and agricultural processing industry, without a more equal distribution of income which will generate a wider and a more effective market demand. In other words, supply does not create its own demand especially under condition of skewed income.

3. The transformation of a primary agrarian population into a predominantly urban and industrial one is usually a slow process, especially when it has a high rate of population growth. Furthermore, the farm population will not decline in absolute numbers until well after it has become a minority in the population.¹ One theoretical example will demonstrate how difficult it is for a country confronting a 3 percent population growth rate and having 50 percent or more of its population in agriculture to absorb the total natural increase in nonfarm employment. If a country's population is now 50 percent rural and 50 percent urban, then given 3 percent annual population growth, the urban population would have to grow by 6 percent annually in order to hold constant the absolute number now in the rural sector.

¹ R. P. Christensen, "Population Growth and Agricultural Development," Agricultural Economic Research, 18 (1966): 119-128. For an analysis of this phenomenon, see F. Dovring, "The Share of Agriculture in a Growing Population," in Agriculture in Economic Development, ed. by C. K. Eicher and L. W. Witt (New York: McGraw-Hill, Inc., 1964); and G. Eicher, T. Zalla, J. Kocher, and F. Winch, "Employment Generation in African Agriculture," Institute of International Agriculture, Research Report No. 9, Michigan State University, 1970.

In Iraq, in 1970, 54 percent of the labor force is employed in the agricultural sector, while the population growth rate in the early 1970's is 3.25. Maintenance of the present labor force ratio in the agricultural sector of Iraq will require a sixfold increase in job opportunities in other sectors and especially in the manufacturing sector. While Iraq has the raw material basis for a complex industry, especially in the field of petrochemical and other related industries, it is highly capital intensive industry that requires high skill manpower. Thus, agricultural development should create more employment opportunities in the agricultural sector during the next decade or so.

4. Finally, this study will highlight means for improving the performance of the agricultural sector, i.e., increasing the value added 'GDP' in the agricultural sector, increasing per capita GNP and to meet the demand for more food.¹

A policy for expanding agricultural production and increasing the productivity of the agricultural sector, logically calls both for expanding agricultural exports and for reducing imports. This can be accomplished through

¹As Dorner comments, "The category 'food' is a very general one. The income elasticity of demand varies for individual commodities and consumer demands change over time as a result of income change. As per capita incomes continue to rise, the demand for some farm products will increase much more rapidly than that for others." Cropping patterns and output mix in agriculture must change accordingly.

diversification of agricultural production or mixed farming, by following an annual production plan, adopting certain crop rotations, or by careful programing of the agricultural sector.

Furthermore, recent population growth rates for Iraq have turned out to be much higher (3.1 percent in the 1960's and 3.5 percent currently) than development planners had anticipated. Moreover, this increase has been accompanied by 3.2 percent annual increase in per capita income and disposable income during the 1960's. Accordingly, the demand for food, especially vegetables and livestock and dairy products, has increased considerably.

R. D. Stevens pointed out in 1965 that changes in the demand for food are determined largely by population growth, increased per capita income and the income elasticity of demand for food, which declines as income rises.¹ However, if the increase in income is unevenly distributed, then the full impact of income elasticity of demand for food will not be realized. Agrarian reform programs have created substantial employment and income-earning opportunities which have had profound impacts on employment and income not only in the agricultural sector, but also outside the agricultural sector. Consequently, the demand for food will

¹R. D. Stevens, "Role of Growth in Food Requirements During Economic Development," Journal of Farm Economics 47, No. 5 (1965): 1208-1212.

be further increased. The rate at which the demand for food in Iraq will increase can be estimated by the following equation:

$$D = P + \partial g$$

where

D = the rate of increase in the demand for food,

P = population growth rate,

∂ = income elasticity of demand for food, and

g = rate of increase in per capita income.

While $P = 3.1$, $g = 3.2$, and assuming $\partial = 0.8$, it is between 0.6 to 0.8, and more likely 0.8 especially for the livestock and dairy products. Then the rate of increase of demand for food is:

$$D = 3.1 + 3.2 \times 0.8 = 5.6 \text{ percent.}$$

Thus, for both economic--exports and imports--and nutritional reasons, a considerable expansion in food production (supplies) is a necessary condition for economic development.

CHAPTER II

MAIN FEATURE OF THE IRAQI ECONOMY

Natural Environment

Iraq is the modern name for the old Mesopotamia, the land of the two rivers, the Tigris and the Euphrates. It is situated in Southwestern Asia. The total area is about 172,000 square miles or 110 million acres. Its population was reported as 8.1 million in the 1965 census and is expected to rise to 11.2 million in 1975. The country is a little larger than California.

With its alluvial soils, main precipitation in the north and the natural rivers with numerous tributaries that flow from north to south that provided both water and silt for the farming of a fertile delta, Iraq long ago was counted in the forefront of the world's agricultural countries. It is said that Iraq boasted at one time a population of 30 million whose main source of livelihood was agriculture. This is evidenced by the ruins of canals and dams dating back to the Babylonian and Assyrian areas,

2500 B.C. These early civilizations reached their climax in the Abbasside era.¹

Topography

Iraq possesses great physical variation for its size ranging from the mountains of the north to the alluvial plain of the west. It is an area lying between 29° and 38° north latitude, and 38° and 49° east longitude. Geographically, Iraq can be divided into four main regions: (1) the northern mountainous region, (2) the valley region, the plain lying between the two rivers, (3) the outer plain, which forms the pasture region, and (4) the desert region inhabited mainly by the Nomad Bedouins.²

Climate

Iraq has a Mediterranean type of climate, i.e., it has relatively mild temperatures. Summer in Iraq lasts from May until October. During this season no rain falls and temperatures are hot, averaging 95° F. Winter, from December to March, is cold to moderate; rain falls mainly in the winter.

¹E. L. Hadithy and E. L. Dujaili, "Problem of Implementation of Agrarian Reform in Iraq," in Land Policy in the Near East, ed. by N. R. E. L. Ghonemy (Rome: United Nations, FAO, 1967).

²Iraq, Ministry of Planning, Statistical Pocket Book, 1960-1970, Baghdad, 1972.

In the northern mountainous region, there are areas of perpetual snow; some places have up to three months of snowfall. Annual precipitation is as much as 1,300 mm (50 inches) in this area of parallel mountain ranges. The valleys are used for crop production, both for rain-fed winter grains and for irrigated summer crops. Where not too steep and rugged, the lower mountain slopes are used for grazing. The middle slopes have been and are still forested.¹

The foothills on the southwest side of the mountain area, the Kirkuk, Erbil and Mosul area, located to the northeast of the Isohyetal line, are the most important dry farming areas in Iraq. It has an annual precipitation of 400 mm (16 inches). This is one of the first areas in the world used for grain production.

The outer plain, below the Isohytol line has a desert climate with about 155 mm (6 inches) average annual Precipitation. Precipitation here is less certain from year to year and the area is very marginal for cultivated crops such as wheat and barley. It can be extensively farmed but the risk for the future is good. Well managed grazing would be a better present use than cultivation.

¹M. Clawson, H. Landsberg, and L. Alexander.
The Agricultural Potential of the Middle East (New York:
 American Elsevier Publishing Company, Inc., 1971).

Soil

The soil of Iraq, in general, is rich in organic matter and other nutrients, and is highly productive. The deposited alluvial soils of the Tigris and the Euphrates Rivers and their tributaries have added fertility to the soil.

The alluvial soils of the Mesopotamia in Iraq are primarily a product of man's activity during the last six thousand years. Most of this plain has been covered to a depth of several feet with sediments brought in suspension by irrigation water. Therefore the soils are not pedologically developed in the usual sense. It has been said that these deposits are as much as three kilometers thick.¹ These alluvial soils, grayish-brown in color, have a consistently high, 20-30 percent, content of calcium carbonate and a small percentage of gypsum. They are reasonably permeable both laterally and vertically. Textures are generally fine silt, fine loam, or fine clay. Near the rivers they are coarser than this.²

The second group of soils located in the rainfed area to the northeast of the Isohyetal line, are reddish brown. They are calcareous with a zone of carbonate accumulations to a depth of 12 to 20 inches. These excellent

¹ Ibid., p. 18.

² P. Buringh, Soils and Soil Conditions in Iraq (Baghdad, Iraq: Ministry of Agriculture, 1960).

rainfed soils are not salty and could be made to produce several times their present output.¹

The third group of soils, located southward from the reddish-brown soils, are in a zone of seirozem soil. The rainfall is less here and it is more uncertain from year to year. The soils frequently have a very high content of gypsum as well as calcium carbonate. Many are shallow. This area is very marginal for cultivated crops.

Soils in Iraq are affected by many factors. The major impediment to the use of many basically good crop soils of the Mesopotamian plain is the salt that has accumulated during their use over the last six thousand years. Much of the land has been occupied and abandoned more than once because of the salt. Although, the waters of the Tigris and the Euphrates are relatively low in soluble salts (they contain about 30 parts per 100,000 of salt at the time they enter the country) the repeated wetting and drying out of the soils has often left enough salt to reduce or prohibit plant growth in a large area.² It is estimated that 13 million donums, 56 percent of the total 23 million donums, of cultivated land in Iraq has become saline. Today it is estimated that 100,000 donums

¹W. L. Power, "Soil and Land Use Capabilities in Iraq," Geographical Review, 44 (1954): 375.

²K. Saied, "Agricultural Mechanization in Iraq" (Ph.D. dissertation, Michigan State University, 1971).

of productive land become saline every year.¹ Consequently, much of the land, especially south of Baghdad, is so salty that it can be used for cropping only in alternate years, the fallow system. Even then, the yields are very low.

A systematically planned removal of salts from irrigated land is a necessary part of any successful irrigation scheme. With proper leaching, drainage and good irrigation management, the soils could be among the most productive in the world. Without these improvements, they can only get saltier and experience a further decline in their already low levels of productivity. Many other factors, such as the absence of scientific fertilizer practices, have contributed to this decline in fertility. These and many other factors will be discussed in a later chapter.

Water Resources: The Tigris-Euphrates River System

The Tigris and the Euphrates are separate rivers until their confluence at their mouth, where they join to form the Shat1-Al-Arab which is a wide river about 400 meters across. The two rivers are similar in many respects, and a considerable part of the Mesopotamian plain can be irrigated from either, with a direct water interchange

¹ Iraq, Ministry of Planning, Evaluation of Economic Growth in Iraq, 1950-1970, Baghdad, 1972.

possible through the Tharther and Abu-Dhibbis depression and the Habbaniyok Lake. The Euphrates is the smaller of the two. It arises in Turkey and receives little net addition of water after leaving that country. It flows through Syria into Iraq. Some of its water is used in each of these countries, hence development possibilities must carefully consider multiple claims.¹ The Tigris also arises in Turkey, but only 40 percent of the total water supply of the river system comes from that country. Development possibilities on this river in Turkey are very limited, a number of rather substantial tributaries enter it in Iraq, all of which arise in the high mountains of northern Iraq. The Tigris is, thus, much more an Iraq river than the Euphrates.

The annual water discharge of the Tigris and its tributaries in Iraq is estimated at 40 billion cubic meters, 37 million acre-feet, sufficient to cultivate 13 million donums of land with winter and summer crops. This compares generally with the Missouri River at Kansas City. The water discharge of the Euphrates is 28 billion cubic meters, 28 million acre-feet, sufficient to cultivate 9 million donums. This compares generally with the Arkansas River at Little

¹ In terms of area, about 45 percent of the total basin of 440,000 km (170,000 square miles) lies in Iraq, 40 percent in Turkey, and 15 percent in Syria. Ahmad Soussa, The Flood of Baghdad History (Baghdad: Aladih Press, 1965).

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Rock.¹ Therefore, sufficient water is available to irrigate 22 million donums, which is 46 percent of the total cultivable area.² Although this figure is high in comparison with the percentage of land now being used under irrigation, 12 million donums, it is still less than half of the cultivable land. However, it could be used more effectively, given an adequate drainage system, by more intensive cropping, i.e., more than once a year.

The flow of the Rivers System varies greatly from year to year as seen in Figure 2.1. A considerable similarity in pattern of year to year variation is evident for the two streams. Both experience differences in precipitation, especially in winter snowfall, which results from year to year variation in the major storms that sweep into the area. Each stream, also, varies considerably in its seasonal flow, in not too different a pattern as seen in Figure 2.2. The low flows come at the same season and at approximately the same volume. The Tigris peaks normally in April, the Euphrates in May at a much lower level.

While the economics of water resources development depend upon many factors, including the efficiency with which the water is used. The general potential of a water

¹ Clawson, p. 21.

² Hadilhy, p. 222.

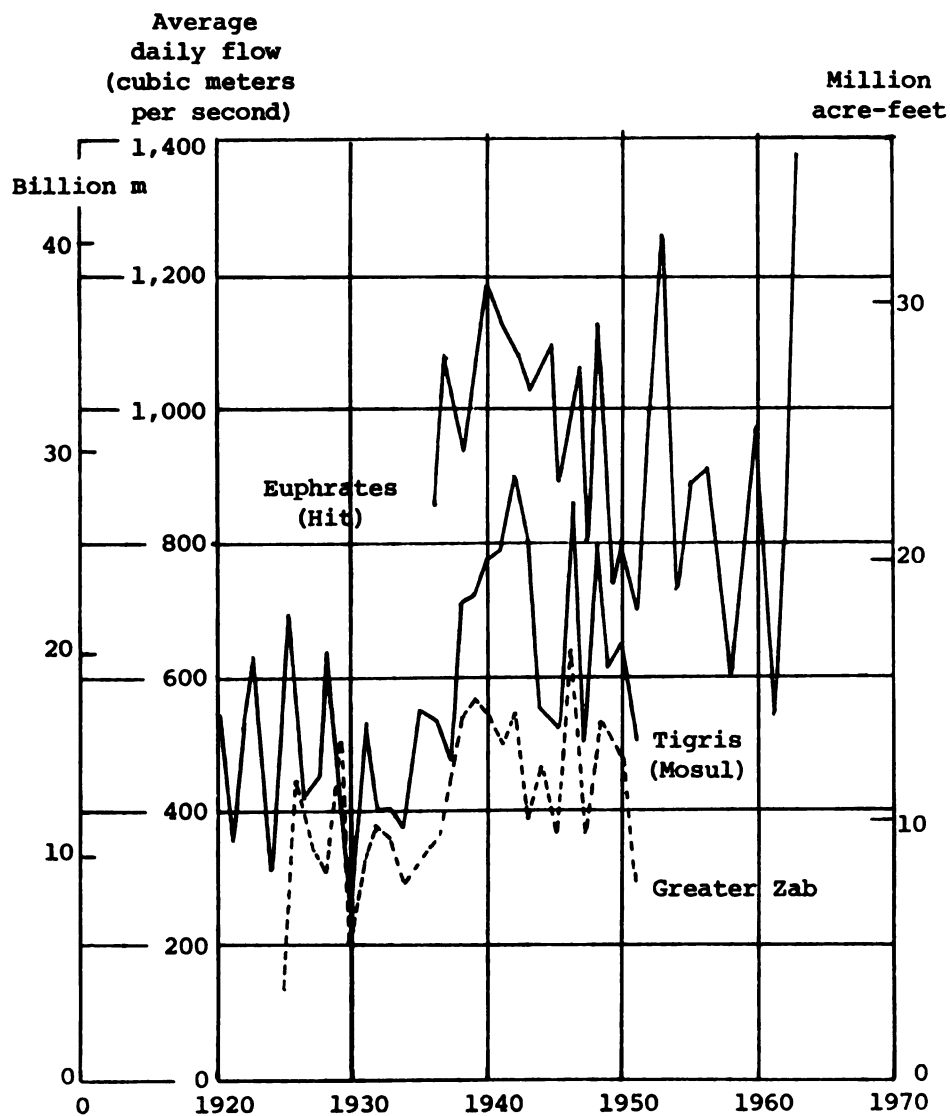


Figure 2.1. Annual flow of Euphrates River at Hit, of Upper Tigris River at Mosul, and of Greater Zab River at Eski Kelek, Years of Record, 1920-1963 (Tigris and Greater Zab: 1920-1952, only).

Source: Clawson, Landsberg, and Alexander, The Agricultural Potential of the Middle East (New York: American Elsevier Publishing Company, Inc., 1971).

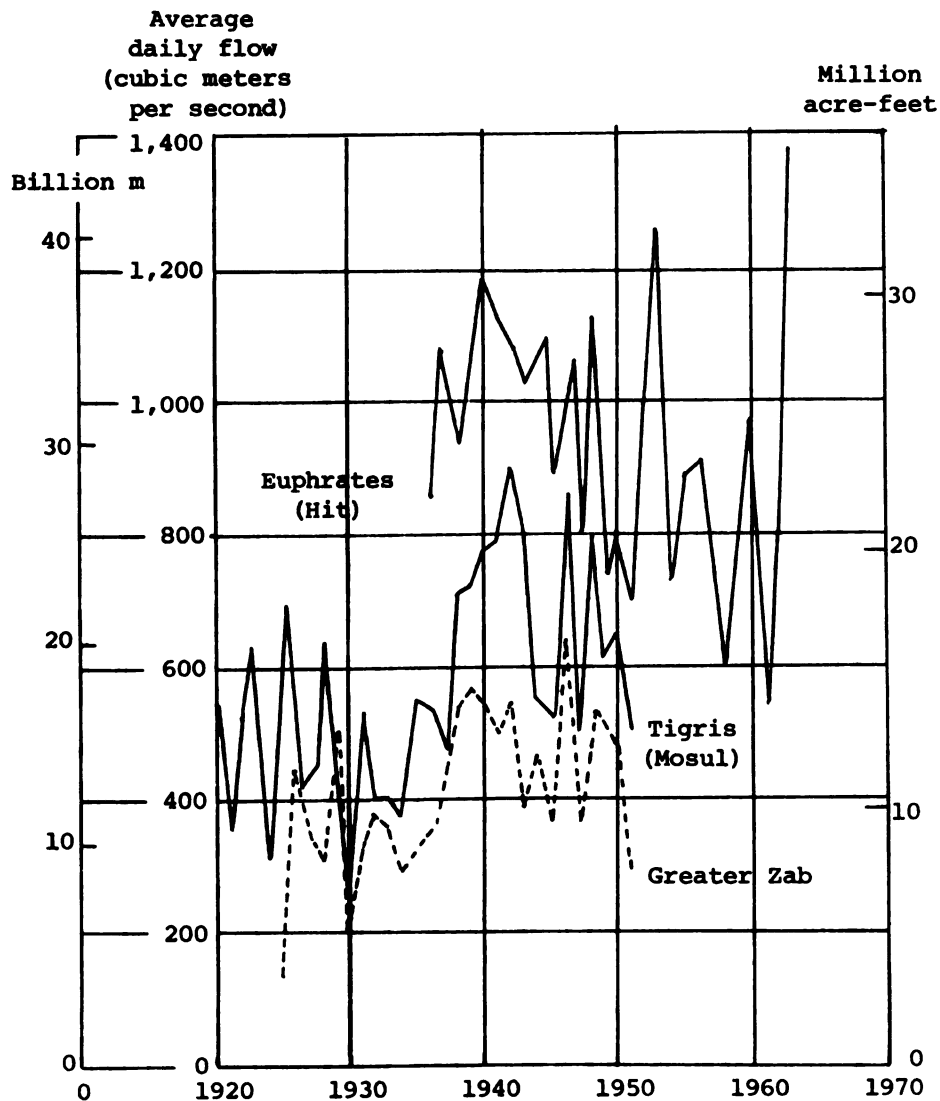


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Source: Clawson, Landsberg, and Alexander, The Agricultural Potential of the Middle East (New York: American Elsevier Publishing Company, Inc., 1971).

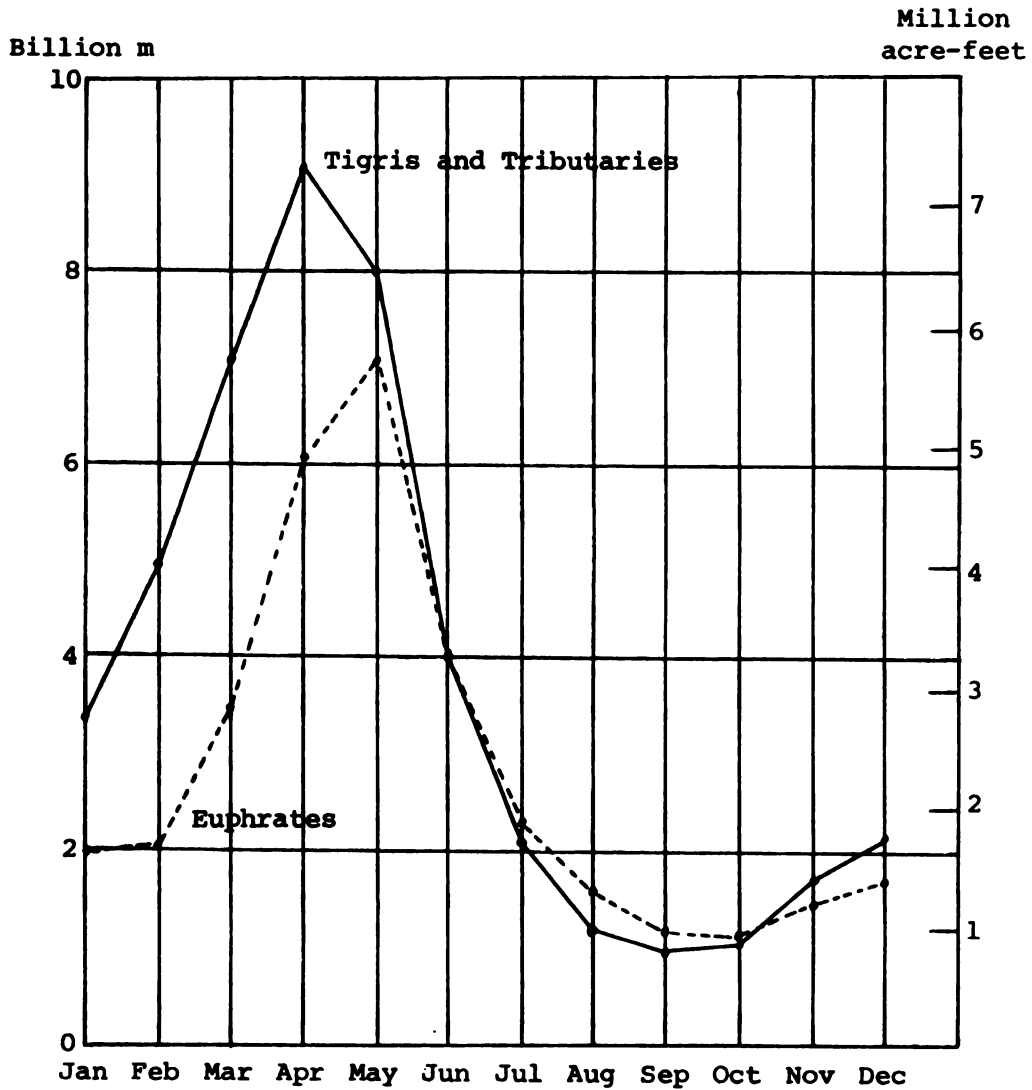


Figure 2.2. Average monthly flow of Tigris and Euphrates Rivers.

Source: Clawson, Landsberg, and Alexander, The Agricultural Potential of the Middle East (New York: American Elsevier Publishing Company, Inc., 1971).

development project for reducing flood hazard, for capturing seasonal peak flows for later seasonal use in irrigation, and for evening out the supply from year to year, should be evident from the above figures.

Population Growth, Internal Migration and Employment

The Iraq population, like any other, may be viewed as an aggregate of individuals of different types and characteristics. These types and their relative numbers in the population are the subject of the analysis of population composition. Such analysis constitutes a quantitative description of a society's human resources. Here is a brief sketch of Iraq's population growth and composition, with special reference to composition by geographical location, both urban and rural, and by economic activity, i.e., participation in the labor force, followed by a brief discussion of the internal migration and the employment pattern in Iraq.

Iraq is one of many countries which has entered a period of "demographic transition" in which its population is growing rapidly because the former balance between birth rates and death rates has been upset. Thus far, Iraq continues in the second stage, i.e., the stage of declining mortality and high or medium fertility or "transitional

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growth."¹ The average birth rate for the nation in 1957 was 48.7 per thousand, and the average death rate was 21.0 per thousand. Consequently the average annual rate of natural increase was 27.6 per thousand. While the average birthrate for the nation in 1965 increased to 49 per thousand, the average death rate decreased to 17.8 per thousand. Consequently, the average annual rate of natural increase for the nation was 31.2 per thousand in 1965.²

During the period 1934-1965, three population censuses were taken, the population increased from 3.3 million to 8.1 million persons, that is over twofold as seen in Table 2.1. Iraq's population of 5.5 million in 1952 rose to 6.3 million in 1957, 8.1 million in 1965 and 9.2 million in 1969. It is now estimated at about 10.1 million, and according to the official extrapolation is due to reach 11.2 by 1975 and 13.1 by 1980. These trends indicate a 2.8 percent compound rate of population growth in the 1952-1957 period; 3.0 percent between 1957-1962; 3.2 percent

¹The model of the process "demographic transition" is typically viewed as having three stages: (1) "high growth potential," the stage of high fertility and high mortality; (2) "transitional growth," the stage of declining mortality and high or medium fertility; and (3) "incipient decline," the stage of low fertility and low mortality. For an analysis of this phenomenon, see Judah Matras, Population and Societies (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1973).

² Iraq, Ministry of Planning, p. 15.

Table 2.1. Iraq results of population censuses and the annual compound rate of population growth for 1934-1965

Index	Year			
	1934	1947	1957	1965
Total population (thousands)	3,380	4,817	7,340	8,097
Compound annual rate (percent)	N.A. ^a	2.8	2.8	3.1

^a Not available.

Source: Iraq, Ministry of Planning, Evaluation of Economic Growth in Iraq, 1950-1970, Baghdad, 1972, p. 13.

between 1965-1970. In the period 1952-1970 the average annual rate of natural increase was 3.0 percent. In the current period it is 3.28 percent which is among the highest in the world. In other words, given the current rate of growth, the population will double every 23 years.

Population composition by geographical location, urban and rural, provides a quantitative view of the distribution of human resources. The percentage of rural population in the total population in Iraq has declined since 1947. The ratio was 64.0 percent in 1947, declined to 61.0 percent in 1957, 48.9 percent in 1965 and it was 42.2 percent in 1970. It is expected, given the official extrapolation of this trend, to drop to 36.3 in the late 1970's.¹ This estimate is based on the observation that

¹Ibid., p. 15.

the average annual growth rate of the urban population was 3.69 percent between 1947-1957, and 6.71 percent between 1957-1967. While average annual growth rate of rural population was 2.26 percent and 0.26 percent, respectively, as seen in Table 2.2. Furthermore, the statistics in the above table, reflect few facts: first, during the 23 years, from 1947-1970, the urban population increased from 1.7 million to 5.4 million persons, a total increase of 3.7 million or 214.5 percent. While the rural population increased from 3.08 million to 3.9 million persons, a total increase of 0.9 million or 29.4 percent, respectively; second, the absolute and relative increase in urban population and the relative decline in rural population was the result of "out-migration" from the rural to urban centers, especially to the metropolitan centers.

The demographic studies, conducted during the above period, indicated the trend in the process of internal migration. According to the 1957 population census, the total number of emigrants, from rural to urban areas, was 330,000 during the 1947-1957 period. It reached 0.5 million persons in 1965, and was 0.8 million in 1970 as seen in Table 2.3. Four principal reasons and motives impelled peasants to abandon their rural areas and migrate to urban centers. They are: (1) the semi-feudalistic pattern of ownership and the oppression it exercised, coupled with incidents of inhuman treatment that placed farmers in an

Table 2.2. Iraq's population according to residence in rural and urban areas for 1947-1975

Year	Urban	Rural	Total	Percentage of Urban and Rural to Total Population		
				% Urban	% Rural	% Total
1947	1,733,827	3,082,358	4,816,185	36.0	64.0	100
1957	2,445,459	3,853,519	6,298,978	38.8	61.2	100
1965	4,112,291	3,935,124	8,047,415	51.1	48.9	100
1970	5,452,435	3,987,663	9,440,098	57.8	42.2	100
1975	7,083,855	4,040,398	11,124,253	63.7	36.3	100

Source: Iraq, Ministry of Planning, Evaluation of Economic Growth in Iraq, 1950-1970, Baghdad, 1972, p. 212.

Table 2.3 Iraq's out-migration from the rural to urban center, 1948-1970

Year	Average Annual Migrants
1948-52	11,700
1953-57	19,600
1958-62	40,100
1963-65	54,000
1966-70	57,000

Source: Y. Takah, "Reverse Migration," in ATH-THAWRA, Daily News, Baghdad, May 10, 1974, No. 1760.

awkward position; (2) increasing soil salinity, which affected 56 percent of the cultivated land, prompted the migration of those peasants who did not find land to cultivate, to cities where they sought work to support themselves and their families; (3) cultural and social service neglect, such as the provision of hospitals and good schools, of the rural villages as compared with the cities, and (4) the

technical and administrative shortcomings of the first land reform law of 1958, i.e., its inability to introduce the right solution for the peasants and rural areas, have added further complications to the lives of farmers in rural areas. This point will be discussed in a later chapter.

Another key element of population composition is that of economic activity or participation in the labor force. While the labor force is a dynamic factor in the development process, its performance and development has a profound impact on the social and economic progress in the country. It is also important to study the development of the labor force in order to formulate a sound economic policy and planning for human resources.

The 1965 population census shows that 53.11 percent of the males between 10 and 59 years, and 3.25 percent of the females (4.0 percent in 1970), participated in the labor force. The ratio of the labor force, males and females, to total population rose from 28.23 percent in 1960 to 29.8 percent in 1969. Table 2.4 shows the classification of the labor force, i.e., employed and unemployed during the 1960-1969 period. The unemployment rate had steadily increased during this period from 2.48 percent in 1960 to 4.74 percent in 1964.

The distribution of the labor force according to occupation, economic sector, during the period 1947-1969 can be seen in Table 2.5. In absolute numbers, the labor

Table 2.4. The classification of labor force, employed and unemployed in Iraq during 1960-1969 period

Year	Number of Employed Persons	Unemployed Registered Person	
		Number	% Ratio
1960	1,943,701	47,740	2.46
1961	2,011,737	55,117	2.74
1962	2,083,820	78,369	3.76
1963	2,159,423	101,329	4.69
1964	2,239,534	120,384	5.38
1965	2,316,916	113,251	4.89
1966	2,398,570	110,935	4.63
1967	2,480,296	117,736	4.75
1968	2,567,294	98,219	3.83
1969	2,660,228	114,004	4.29

Source: Ibid., p. 320.

force increased from 1.8 million in 1960 to 2.1 million in 1964, i.e., 11.8 percent or at an average annual rate of 2.95 percent; in 1969, the number increased to 2.5 million, i.e., 70.2 percent or at an average annual rate of 4.04 percent. However, during the 1960-1969 period, there were no significant changes in the employment structure, i.e., the relative distribution of the labor force to various economic sectors. For the agricultural sector, the dominant sector, the ratio of the labor force employed in agriculture to the total labor force, increased from 53.0 percent to 54.5 percent. As for the service and the manufacturing sectors, the ratio dropped from 22.8 percent to 21.2 percent and from 6.69 percent to 5.5 percent, respectively. Thus, these main sectors, agriculture, manufacturing and the

Table 2.5. Iraq's gainfully employed population as distributed by economic sectors, 1960-1969

Year	Agriculture (%)	Mining (%)	Manufac-		Elec., Gas & Water (%)	Construc-		Trade (%)	Labor Force (%)			
			turing (%)	(%)		tion (%)	(%)					
1960	1,030,161	53.0	11,000	.57	130,000	6.19	11,800	.61	58,000	2.98	100,000	5.14
1961	1,066,220	53.0	11,500	.57	130,000	6.21	11,900	.59	48,000	2.88	105,000	5.22
1962	1,104,474	53.0	12,000	.58	130,000	6.24	12,000	.58	50,000	2.40	110,000	5.28
1963	1,144,494	53.0	12,500	.58	130,000	6.02	12,000	.56	43,100	2.00	175,000	5.32
1964	1,186,953	53.0	13,000	.58	130,000	5.80	12,000	.54	47,200	2.11	100,000	5.36
1965	1,227,960	53.0	13,500	.58	135,000	5.83	12,200	.53	61,000	2.13	125,000	5.39
1966	1,283,120	53.5	14,000	.58	140,000	5.84	12,400	.52	70,000	2.12	130,000	5.42
1967	1,339,260	56.0	14,000	.58	140,000	5.65	12,600	.51	59,100	2.38	135,000	5.41
1968	1,399,170	54.5	15,000	.58	146,000	5.69	12,800	.50	66,000	2.57	140,000	5.45
1969	1,449,824	54.5	15,000	.58	148,000	5.56	12,900	.48	67,000	2.57	145,000	5.45
Total												
Year	Transportation (%)	Service (%)	Employed (%)	Unemployed (%)	Labor Force (%)							
1960	110,000	5.66	445,000	22.89	1,895,961	97.54	47,740	2.46	1,943,701	100		
1961	114,000	5.67	460,000	22.87	1,956,620	47.26	55,117	2.74	2,011,727	100		
1962	117,000	5.61	470,000	22.55	2,005,424	96.24	78,396	2.76	2,083,830	100		
1963	121,000	5.60	480,000	22.22	2,058,094	95.31	101,329	4.69	2,159,423	100		
1964	125,000	5.58	485,000	21.65	2,119,153	94.62	120,381	5.38	2,239,534	100		
1965	129,000	5.57	500,000	21.58	2,203,665	95.11	113,251	4.89	2,316,916	100		
1966	133,000	5.54	505,000	21.00	2,287,630	95.37	110,925	4.63	2,318,520	100		
1967	137,000	5.52	525,000	21.17	2,362,560	95.25	117,726	4.75	2,480,299	100		
1968	140,000	5.45	550,000	21.43	2,468,975	96.17	98,319	3.83	7,567,294	100		
1969	143,000	5.38	565,000	21.24	2,546,224	95.71	114,004	4.29	2,660,228	100		

Source: Iraq, Ministry of Planning, Central Statistical Organization, Annual Abstract of Statistics, 1972.

service sector employed 81.3 percent of the total labor force in 1969.¹

From the foregoing discussion it is clear that (1) there has been a steady increase in the average annual rate of population growth; (2) Iraq is still in the second stage of demographic transition, i.e., the stage of the transitional growth; and (3) Iraq, in terms of age structure, has a relatively young population, 45 percent of the population being under 15 years of age. While GDP at constant 1966 prices and factor cost rose from ID 384.9 million in 1953 to 980.1 million in 1969 with an average annual growth rate of 6.0 percent, the per capita GNP at constant 1966 prices rose from ID 51.3 in 1953 to ID 84.7 in 1969, with an average annual rate of 2.1 percent. This low per capita income was the result of the high population growth that absorbed most of the increase in national income.

The population problem is not primarily a food problem, but it does put a great burden of adjustment on economic and social institutions and makes social transformation more difficult. In other words, a high rate of population growth means a high dependency ratio and lower ability to save. Resources are absorbed in child raising. The birth rate, however, can be reduced by the desire and capacity of the people to adjust their lives and their institutions.

¹Ibid., p. 321.

The Agricultural Sector Prior to the 1958 Revolution

The Land Tenure Structure

When the kingdom of Iraq took over the administration of the new country in 1932, the leaders were undoubtedly aware of the need for promoting a stable and productive rural economy. But they also had to sustain the system they had inherited. Years later, the president of the Miri-Sirf, state domain, land development committee in a report on settlement activities wrote:

The government had no choice in the beginning but to follow the Ottoman Law of Land. At the same time Sir Ernest Dawson, a British expert, was invited to study the tenancy problems and make his recommendations. An extensive study of the existing conditions was carried out and a final report was submitted to the government. The British expert suggesting the principle of accepting the actual existing tenancy rights and registering them officially and providing the people with documents ensuring their future. Accordingly the government passed in 1932 the Law of Settlement Land Rights No. 50, which provided for the acceptance of the actual production occupancy of land as the right holders.¹

After the Settlement Law of 1932 was passed, a Cadastral Survey was begun which modified the old land classification, but was still based on the Ottoman Land Code of 1858. The land tenure system in Iraq which was

¹ Hassan Mohammad Ali, Land Reclamation and Settlement in Iraq (Baghdad: Baghdad Printing Press, 1955), p. 62.

based on this law, was modified in 1938 with the following definition:

1. Mamlookah or Mulk, real estate land.--The lands that are registered in Tapu Registers, by which the disposer has documentary evidence, Tapu Dee, and provided that he had not neglected the disposal of lands without a legitimate excuse for 15 years prior to the announcement of the settlement. Private ownership was authorized for these lands.

2. Matruka, abandoned lands.--The lands that are earmarked for public facilities or donated to the people, or that have been used for such purpose for five years, in case of endowment lands, or 15 years in case of state-owned lands. Such land will be registered in the name of the Ministry of Finance, stating the authority to whom they are allocated and the purpose of use.

3. Awqaf lands.--Lands that have been endowed for the benefit of a charitable party in accordance with the provision of the Islamic Laws. These could be either authentic or unauthentic endowment lands. The authentic endowment applies to those lands the right of disposal of which belongs to the party for whom the endowment was made. The unauthentic endowment applies to those lands which originally belonged to the state.

4. Miri-land, state lands.--All lands that have not been proved to be real estate, endowed or abandoned. The state lands are classified under three categories:

a. State-owned alienated by Tapu, Miri-tapu.--

The lands which were registered in tapu registers before the announcement of the settlement and the owner of which produced re-registration justification, either documentary or through a survey of trees or vines that have been planted for ten years before the settlement. The number of trees should not be less than forty per donum and fruit-bearing trees should not be less than twenty per donum. This category is eligible for morkuge or will.

b. State-owned granted by Lazma, Miri-Lazma.--

The lands which are granted through heads of settlement committees to Iraqis who had worked the land during the fifteen years prior to settlement and for a period not less than five years. The state had a veto power on this category.

*c. State domains, Miri-Sirf.--*The lands for which, at the time of the settlement, no rights had been established that justify their registration as alienated by Tapu or granted by Lazma. This category is registered in the name of the Ministry of Finance and represented more than 71 percent of the cultivable land of Iraq.

The Law of 1932 was supposed to be an answer that would resolve the confusion over the tenure structure. Consequently, it perpetuated the very system it was trying to correct. Actually, it had become politically favorable for the government to have tribal lands transferred to the sheiks. By this law they became the legal owners where,

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as tribal leader, they had been land holders, without title for their people. When tribal land was titled to the sheiks in 1932 the cultivator's position changed very little. As tenant share-cropper, they worked under the direction of the sheiks who were the landlords or their representative, often a subchief or Sirkal. The tenant had few rights, little or no status and they were, more or less, legally tied to the land.

On the other hand, this law allowed a few influential people to obtain control over vast areas of cultivated land. Large tracts of cultivable land were owned by individuals, merchants, or other entrepreneurs, who owned irrigation pumps. These owners did not live on the land and did not actively serve as managers or operators of the farms. Usually they took up residence in the larger towns or cities.

Thus, while the 1932 law contributed toward the settlement of the tribal disputes over land and formalized a classification of land, it also sowed seeds of discontent, for it actually legalized feudalism.¹ As stated in the FAO, Country Report of 1959, "there was probably no single cause of object poverty greater than this system which

¹ H. C. Treakle, "Land Reform in Iraq," Agency for International Development Spring Review of Land Reform, 2 (1970): 1-68.

divided agricultural land, cultivable land, into large holdings which were subdivided into pitifully small operational units."¹

Land Settlement

Although it was conscious of the unrest among the landless and the less privileged groups of Iraq, the government was unwilling to make radical changes, at least to the extent of breaking up the large private estates that the former tribal lands had become. However, there were different opinions and policy approaches in dealing with the problems of the agricultural sector, especially those of the landless, low income and unemployed.

One of these was Warrinen's approach,

the poverty of the majority of the peasants in Iraq is the result of the low productivity and the land tenure system, the peasants' incomes are low because of low productivity and most of the produce goes to the landlords.²

On the other hand, the government policy approach was that the development programs and projects, carried on by the Development Board, in various sectors will create more employment opportunities outside the agricultural sector. Furthermore, the settlement projects on the state domain

¹Iraq, Country Report, FAO Mediterranean Development Project, FAO, Rome, 1959.

²Warriner, Land Reforms and Economic Development in the Middle East (London, 1950), p. 119.

will attract tenants and farmers and weaken the position of the landlords. Therefore there is no need for a mild or token land reform.

The State Domain, Miri-Sirf, Land Development Law of 1945, started a reform and settlement program that allowed distribution of state domain to peasant farmers. Law No. 13 in 1951 provided for distribution of all state land and fixed the size of holding at between 19.8 donums and 336.8 donums, for various regions and types of farming. This program began with the Dujaila Project when arid state-owned lands were made cultivable by the New Dujaila Canal. Nine other projects were located throughout the country. It was estimated that the cost of settlement on these projects was ID 300 per farmer.¹

In the Dujaila Project, as an example of these settlement projects, the total area was 387,096 donums, of which 241,935 donums were assigned for distribution to small farmers and some retired police and military personnel. The remainder went to private land owners who were neighboring sheiks. Much of the land that was distributed was rented out soon and ownership by the man who farmed it became an exception. This, of course, was contrary to what the law originally intended.

¹M. S. Hasan, Studies in the Iraqi Economy, Beirut, 1966, p. 26.

By 1955, 2.2 million donums had been distributed, of which 1.8 million donums was given to the sheiks of shamm-or tribe, to 15,000 peasants. This left the majority of the rural population as landless peasants.¹ Doreen Warriner, however, questioned the results of the settlement process: if this total land had in fact been distributed to small farmers, the distribution of the state land would represent a large and beneficial change in the agrarian structure. However, these figures are misleading . . . a large area of the best state land in this region had been granted in registered title to the sheiks.² Furthermore, there was no organization to direct better farming practices on the new settlement and little experimentation with new crops. As a result, the productivity, yield per donum, of the Dujaila and most of the projects, was extremely low. Dujaila project in particular suffered from lack of drainage system

Land Use and Management

While the total area of Iraq is 181.6 million donums, the cultivable land area is estimated at 48 million donums or 26.4 percent of the total. One-third of this area or 16 million donums are located in the rainfed area. This

¹ Ibid., p. 28.

² Doreen Warriner, Land Reform and Development in the Middle East (London: Oxford University Press, 1962), p. 160.

area is located to the northeast of the Isohyetal line where the yearly rainfall is equal to or more than the average rainfall of 400 mm (16 inches) annually. The remaining 32 million donums are located in the irrigated area. Only 23 million donums or 48 percent of the cultivable land is actually cultivated at present. This area is utilized according to the fallow system, i.e., 50 percent of the area is cultivated with the winter crops and 12 percent with summer crops.¹ Altogether the utilized area, at the present time, amounts to 62 percent annually of the irrigated area as seen in Figure 2.3. In the rainfed lands cultivation is limited to winter crops. This is due to the lack of rain during the summer season. Exceptions occur in some small areas that have natural wells and springs that can be used for irrigation.

Somewhat more than one-half of the recently utilized land is in rainfed agriculture. In addition, there are large areas of land used only to pasture grazing animals. Though this half of the agricultural area contributes less than half of total output, it is an important segment of agriculture. The prevailing time-honored cropping pattern is that one year of grain mostly wheat--followed by a year of weed fallow, followed by another year of grain. Two

¹A. P. G. Poyck, Farm Studies in Iraq (Wageningen, Netherlands: N. V. HoVeenman, 1962), p.

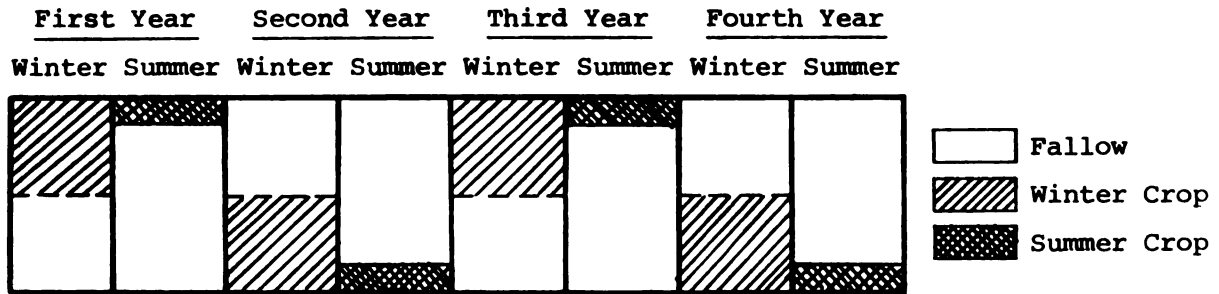


Figure 2.3. Iraq's fallow system.

Source: A. P. G. Poyck, Farm Studies in Iraq (Wageningen, Netherlands: N. V. HoVeenman, 1962), p. 60.

principal reasons have been assigned for the fallow system on the rainfed and irrigated lands. All have said that the land must be "rested," and some have said that fallowing conserves a year's moisture for the succeeding grain crop. There is a modicum of truth in the first, but practically none in the second proposition.¹ In the absence of fertilizer use, it may well be that the soil could not produce a crop of grain every year. While the change in crop from grain to weeds undoubtedly helps to hold down the incidence of disease and insect pests on the grain. However, little if any moisture is carried over from a weed fallow to the subsequent year's grain crop. Table 2.6 shows land utilization in the late 1950's.

¹Clawson, p. 128.

Table 2.6. Iraq's land utilization

Category	Area (1,000 acres)	Percent of Total (%)
Land in farm holdings ^a		
Field crops	9,858.2	9.1
Fallow	8,200.7	7.5
Orchards, groves, and vineyards	463.3	0.4
Perennial forage, meadow and other pasture	175.9	0.2
Woodland and woodlots	11.3	---
Built-on and other cultivable land ^b	<u>1,154.2</u>	<u>1.1</u>
Total	<u>19,863.6</u>	<u>18.3</u>
Land outside farm holdings ^c		
Natural woodlands and forests ^d	4,810.8	4.4
Seasonal and other grazing land	10,360.4	9.6
Non-farm land, deserts, waste- land and other ^e	<u>73,307.0</u>	<u>67.7</u>
Total	<u>88,478.2</u>	<u>81.7</u>
Total area of Iraq ^f	108,341.8	100.0

^aThe 1958/59 Agricultural and Livestock Census figures were used for the area of land in agricultural holdings and units for the 14 Liwa (Provinces).

^bA residual figure. The Census figure of 1,241,186 acres for uncultivable land included 87,026 acres of meadow and woodland.

^cArea figures for these categories were not reported by the Census; figures were derived from Statistical Abstracts (1952-1961), and the 1962 FAO Production Yearbook.

^dMuch of the natural forest areas are to some extent grazed.

^eSome areas of this category are at times grazed, but they do not provide regular, dependable seasonal grazing.

^fThe figure for the total area of Iraq includes one-half of the Neutral Zone and the territorial waters, as reported in the Statistical Abstract for 1961.

Source: H. C. Treakle, The Agricultural Economy of Iraq, U.S. Department of Agriculture, ERS-Foreign 125, August 1965.

It appears from the above that the area of utilized land at present, 23 million donums, is 48 percent of the cultivable land. While the water discharge from the Euphrates and Tigris River System is enough to irrigate 23 million donums in the irrigated land, only 62 percent of this amount is actually utilized. This is the result of the traditional type of farming, the fallow system, and also because of the traditional production relationship between tenants and landlords. With proper utilization and management of land and water resources, especially with new production pattern and land use, in the rainfed and irrigated land, production in the agricultural sector could be doubled and productivity of both land and labor could be increased more than twofold. This point will be discussed in a later chapter.

Land Tenure System, The Ownership Pattern

One aspect of the political and economic institution that dominates the agricultural sector is the land tenure system. Agricultural land, the fundamental and basic resource of the national economy, had been controlled to a large extent by a limited number of owners under a semi-feudalistic pattern of ownership. This tenure arrangement had been generally lacking in social justice. Table 2.7 indicates the mal-distribution of agricultural land ownership prior to 1958. According to these statistical

Table 2.7. Iraq's distribution of agricultural land ownership prior to the enforcement of the agrarian reform law by area, 1958^a

Area Brackets (donum)	Area (donum)	Ratio to Total (%)	Number of Owners	Ratio to Total (%)
Less than 4	102,321	0.3	73,110	28.9
4-10	243,004	0.8	40,475	16.0
11-20	411,152	1.3	30,431	12.0
21-30	419,151	1.3	18,038	7.2
31-50	841,181	2.6	22,580	8.9
51-100	2,055,856	6.4	29,884	11.8
101-500	5,799,012	18.0	31,508	12.4
501-1,000	1,992,431	6.2	2,916	1.2
1,001-4,000	6,144,121	19.1	3,125	1.2
4,001-10,000	4,966,391	15.4	835	0.3
10,001-50,000	6,029,380	18.8	319	0.1
50,001-100,000	1,725,988	5.4	25	0.008
Over 100,000	<u>1,424,835</u>	<u>4.4</u>	<u>8</u>	<u>0.002</u>
Total	32,154,823	100.0	253,254	100.0

^aIncluding registered, long-lease, free-hold, government-owned and dead hand land.

^bDonum = 0.62 acres or 0.25 hectares.

Source: Iraq, Results of the Agricultural and Livestock Census of Iraq for 1958-1959 (Baghdad: Government Press, 1961).

data, agricultural land owners constituted about 0.5 percent of the total population; 2.8 percent of such land owners held 70 percent of agricultural title deeds and 97.2 percent held less than 30 percent of agricultural land title deeds.

Table 2.8 shows the distribution of ownership for the 23 million donums of actually cultivated land. The average share per owner of this area was 138.5 donums; 2.0 percent of the landowners owned 68 percent of the actually cultivated land and 98.0 percent of the land owners owned 32 percent of the actually cultivated area. Altogether, the number of land owners and leasees in the rural area, who directly depend on agriculture stood at 3.2 million persons in 1957, while the number of the landless peasants was 2.9 million persons prior to 1958.

Elimination of feudalism represents the starting point to bring the political and economic institutions of the agriculture sector in line with agriculture and rural development. Consequently, the new authority took the initiative in early 1958 to improve the agricultural ownership pattern by means of promulgating the first agrarian reform Law No. 30 of 1958. This is the subject of the following chapter.

Table 2.8. Iraq's distribution of actually cultivated land prior to the enforcement of the agrarian reform law by area, 1958-1959

Area Brackets (donum)	Area (donum) ^a	Ratio to Total (%)	Number of Owners	Ratio to Total (%)
Less than 4	73,055	0.31	57,958	34.44
4-29	696,889	2.99	56,725	33.69
30-99	167,118	7.19	30,119	17.89
100-999	5,024,736	21.54	20,126	11.95
1,000-9,999	9,090,279	88.97	3,143	1.87
10,000-49,999	4,554,280	19.52	251	0.15
50,000-99,999	1,334,102	5.72	19	0.01
100,000 & over	<u>876,913</u>	<u>3.76</u>	<u>5</u>	<u>0.003</u>
Total	23,327,259	100.00	168,346	100.00

^aDonum = 0.62 acres or 0.25 hectares.

Source: Iraq, Results of the Agricultural and Livestock Census of Iraq for 1958-1959 (Baghdad: Government Press, 1972).

Development Programs: Agricultural
Development Policy

The Iraqi government established a Development Board in 1950 which was to receive the total revenues from oil and spend these funds on development projects. The Development Board was charged with threefold task of (1) preparing a general plan for developing the country's resources, (2) undertaking the execution of projects, and (3) turning over the completed projects to the Ministries concerned with administration and maintenance.¹

In pursuing its development policy in the 1950's, the government assigned the agricultural sector a high priority ranking in the scale of economic development. The emphasis was on horizontal expansion, i.e., bringing new land under cultivation, rather than vertical expansion, i.e., increasing productivity and intensifying agricultural production, which means reform of the defective agrarian structure. However, two development programs were drawn up and followed during the 1951-1959 period. Here is a brief discussion of the two programs and the performance of the agricultural sector during this period.

The first four year development program, 1951-1954, called for development expenditures of ID 89.8 million to be financed by estimated revenues of ID 99.9 million. Actual

¹Government of Iraq, Law No. 23 for 1950.

revenues by the fourth year were ID 107.4 million. Actual expenditures throughout the program were ID 49.1 million, which means an implementation ratio, the ratio of proposed or approximated expenditures to actual expenditures, of 54.6 percent. The allocation to the agriculture sector in this development program was ID 39.7 million or 44.2 percent of total expenditure allocated as follows: ID 32.9 million for irrigations and flood control, ID 6.3 million for underground water, forest management and pasture and livestock production. However, actual expenditures were ID 19.7 million and the implementation ratio was 49.7 percent for the agricultural sector. By the end of the program, there was a surplus, the difference between estimated and actual revenues of ID 58.2 million.¹

In the second (amended) development program, 1955-1959, development expenditures were budgeted at ID 416.6 million to be met by estimated revenues of ID 324.2 million, with a deficit of ID 92.4 million to be met by an expected increase in government revenues during the program. However, actual expenditures were ID 227.3 million and the implementation ratio was 54.6 percent. Actual revenues by the end of the program were ID 241.3 million, thus

¹ A. Al-nasrawi, Financing Economic Development in Iraq (New York: Frederick A. Praeger, 1967, p. 67.

leaving a surplus of ID 14.01 million. Allocation to the agricultural sector was ID 138.4 million or 33.2 percent of total expenditures. Of this amount, ID 120.2 million was to be allocated for irrigation and flood control. Actual expenditure on the agriculture sector was ID 61.5 million and the implementation ratio was 44.4 percent.¹

The surplus resulting from the excess of actual revenues over actual expenditures in the two development programs amounted to almost ID 72.3 million, which is about 20 percent of total actual revenues. This failure to spend funds allocated for development activities resulted from a combination of initial inexperience and technical incompetence.

The two development programs, 1950-1954 and 1955-1959, were heavily loaded with irrigation and flood control projects, many of which were large and could not show quick results. There is no denying, of course, the high priority that must be accorded to the harnessing of water resources in a country that is preponderately agricultural and is dominated by the flow of two rivers. To a large extent, however, these programs were engineers' lists of projects rather than economic programs. In a practical sense, policies for the development and management of a country's resources should recognize the need to operate within the

¹Ibid., p. 67.

context of physical and biological, economic and institutional framework. Their projects were too often conceived in isolation from social and institutional changes that should have accompanied them. They often ignored necessary secondary technical issues such as drainage, desalination, and irrigation networks. Faulty planning did little to reduce the dependence of agriculture on climatic conditions.

Several years of large expenditures on irrigation brought no visible evidence of higher production or returns in the agricultural sector. Although the area brought under cultivation with the two major crops, wheat and barley, increased more or less steadily, from 8.8 million donums in 1953 to 10.4 million donums in 1958, the production and productivity, yield per hectare, failed to show a consistent upward trend.¹ While the value of the land brought under irrigation increased, landlords without bearing any costs, were usually the principal beneficiaries of the public expenditures. The bulk of rural population did not receive a direct share in these benefits, nor did it appear likely that they would derive any appropriate indirect share through taxation and public expenditure. The fudalists (landlords) who wielded great political power in the parliament were successful in resisting the imposition of substantial taxes on land or agricultural yield.

¹Hassan, p. 27.

Furthermore, it was estimated, in 1957, that GDP at current prices was ID 292.4 million and per capita income was ID 57.3. The agricultural contribution to GDP was ID 70.0 million or 24 percent and it employed 57 percent of the total labor force, while the oil sector employed less than 1 percent.¹ This extremely low per capita income did not accurately reflect the actual economic and social conditions in Iraq. On the one hand, the national income was so skewed and so unevenly distributed as to be void of any measure of justice. It is estimated that urban income, in the form of wages, was 1.5 times the farmers real or subsistence income. On the other hand, the poor performance of the agriculture sector, in production and productivity of both land and labor, and the land use pattern, fallow system, was the result of the political and economic institutions that dominated this sector.

Profile of the Economy

Before the 1958 Revolution, the economy operated on a free-enterprise basis. However, the distribution of assets and income was highly concentrated and had little correlation with productivity. A distinguishing aspect of the economy was that of 'dualism,' a modern oil sector and traditional agricultural sector.

¹Treakle, p. 5.

Since 1958, economic organization has been profoundly transformed. This transformation occurred in two stages. In the first one, 1958-1964, the transformation consisted of (1) the redistribution of income, to improve agricultural ownership pattern, by means of promulgating the first agrarian reform Law No. 30 of 1958. This measure put an end to the malutilization of natural and human resources; (2) the 1964 Nationalization Act was promulgated to the effect of nationalizing all insurance and reinsurance companies, bank and a large number of industrial and trading companies. This measure resulted in the establishment of the public sector. Therefore the economy, in this stage, can be described as a modified free-market system.

In the second stage, 1965-1970, the transformation had several significant aspects. These happened in accordance with the principles envisaged by the July 17, 1968 Constitution and the National Charter Action. The main aspects of these transformations are:

1. Expanding the role of the public sector as it constitutes the cornerstone of all branches of the national economy to realize the task of socialist transformation. Also, to pursue the course of economic development, to attain the two objectives of sufficiency in production and justice in distribution. Within this framework, the government supported private sector activities with public sector guidance and cooperation for the accomplishment of

various tasks in the reconstruction of the national economy.

2. Planning is the procedure for the development of the national economy. The first attempt to develop Iraq's national economy on the basis of planning was that of drawing up partial and fragmented development programs. This procedure covered certain sectors of the economy or certain activities within one sector. The Development Board, established in 1950, undertook the two development programs of 1951-1955 and 1955-1959 on these bases. The second attempt was more advanced than the first one. The three economic plans drawn up after 1958, concentrated on the central government activities, though they covered all commodity and service sectors of the economy. This step of partial planning in these plans reflected medium-term planning of the central government sector rather than any other institutional sector. Therefore it implied overlooking other economic activities both in the field of production and consumption. This trend was evident in the Provisional Economic Plan, 1959-1961, the Detailed Economic Plan 1961-1965 and the Five-Year Economic Plan 1965-1970. The third attempt in the field of planning is comprehensive planning. In fact the National Development Plan 1970-1974 is considered the first serious attempt in the pursuit of comprehensive national planning in Iraq. It has covered all economic sectors, the commodity, distribution

and service sectors, and all the institutional sectors, the central government, self financed public and private sector. Its coverage extended to the prescription of targets for the various economic variables.

3. Reform of the Agrarian Reforms, to achieve this end the second Agrarian Reform Law No. 117 of 1970 was enacted. This law provided a new approach and envisaged a concept of agrarian reform both in terms of comprehensive-ness and essence. It overcame the drawbacks of the previous experiment and established an integrated agrarian structure, setting the base for agricultural and rural development.

The economy in the second stage of transformation, can hardly be described as a modified free market system. In operation, Iraq's economic organization stands between the socialist countries as a model, i.e., embarked on a series of five-year plans with detailed programs of investment allocated between the public and private sectors, and the modified market system. In other words, it has a mixed economic system.

CHAPTER III

THE AGRARIAN REFORM PROGRAMS IN IRAQ

LAND REFORM LAW NO. 30 OF 1958

When the new authority took over in 1958, they were fully conscious of the criticisms leveled at the policies of previous government. They immediately took a series of measures; some were designed to effect real changes in policies. others merely involved political tactics aimed at winning popular favor. Among the principal policy targets of the new government were the: (1) development of the agricultural sector, (2) expansion of the manufacturing industries, and (3) promotion of the social welfare of the poorer sector of the population. As a policy consequence, economic organization has been profoundly transformed. One aspect of this transformation which occurred between 1958-1964 was the redistribution of income, by means of promulgating the Land Reform Law No. 30 of 1958.

In its main provisions, the Agrarian Reform Law No. 30 of 1958 followed the Egyptian Agrarian Reform Law of 1952. It decreed:

1. The expropriation of privately owned land holdings in excess of 1,000 donums [250 hectares or 625 acres] of irrigated land or 2,000 donums of rainfed land. Requisition was to begin with the largest properties.
2. The distribution of expropriated land to occupying and other cultivators in order of priority, in units ranging from 30 to 60 donums [7.5 to 15 hectares or 18-36 acres] of irrigated land and from 60 to 120 donums of rainfed land.
3. Payment of compensation based on assessed land values to expropriated landowners; and payment by the new owners of the full purchase price of a holding over 20, in 1961 amended to 40, years.
4. Formation of Cooperative Societies, with compulsory membership for recipients of land, and wide functions including marketing of produce, supply of farm equipment, and organization of agricultural production.
5. Regulation of tenancy relationship between land owners and cultivators on land pending expropriation or not subject to expropriation. Eviction of cultivators was prohibited, and the proportion in which produce was to be divided between landowners and cultivators were prescribed according to their respective shares in cost.

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In addition to these main principles governing land in private ownership, the Iraqi law also includes provisions covering the distribution of state domain and of land held in unsettled title. Both of these categories of land are of great importance in Iraq. Their meaning requires a brief explanation, since it is easily misunderstood and usage is not consistent.

Privately owned land, subject to expropriation in excess of the maximum areas under the first clause of the law, refers to land held in two forms of title, Tapu and Lazma, formerly distinct, but now identical in conferring 'freehold ownership.' According to the Agriculture Census of 1958-1959, the total area of 'land in holding' was 32 million donums of which 23 million donums were privately owned in these two forms of tenures.

State domain, Miri-sirt, as mentioned earlier, refers to land registered as the property of the state. It includes grazing, other cultivated land or land cultivated by private owners without registered title. The state's right of ownership is nominal; it does not farm such land, exert any control over its use or draw revenues from it.

The 1958 Law empowered the government to take over and distribute uncultivated state land, without compensation to users. The position of state domain under cultivation by landowners with holdings exceeding the maximum was regulated

by the State Domain Law of 1961. This entitled occupiers to compensation for their rights of customary possession, at rates lower than those to be fixed for land held in registered title. The 1958-1959 Agricultural Census put 4.7 million donums of the total 'land in holding' in this category.

Land with unsettled title includes 3.7 million donums of the total 'land in holding.' This new classification, first used by the Agriculture Census of 1958-1959, refers to land which is also state domain. But it was actually in the usufructuary possession of sheiks and subsheiks in the marshland provinces. This point will be discussed later.

The Agrarian Reform Objectives:
Economic, Social and Political

The Minister of Agriculture, in a speech introducing the new agrarian reform law, set forth the aims of the 1958 Revolution and reviewed the law. A condensed version of his remarks follow.¹ The objectives of the agrarian reform were:

1. The abolition of feudalistic holdings as a way of agricultural production. The elimination of the political influence which the landlords enjoyed as a result of their ownership of vast areas of land and as a result of directing policies in accordance with their own interests.
2. To raise the standard of living of the majority of the people, namely, the peasants and to give them

¹Doreen Warriner, Land Reform in Principle and Practice (Oxford: Clarendon Press, 1969), p. 99.

the necessary opportunity to raise their social standards in general.

3. To raise the level of agricultural production, which, in turn, will help raise national income and strengthen the national economy.

To achieve these objectives the government regarded it as necessary to take the following steps: (a) to limit ownership, (b) to redistribute the land to peasants in a way that will guarantee them a decent living, (c) to establish a cooperative system in the production centers, that will guarantee the introduction of scientific and technical production methods, and (d) to clarify agricultural relations between those concerned by fixing a just share for every aspect of production.

The regulation of tenancy relationships, production relations, between cultivators and landowners on land not subject to expropriation was of crucial importance. These cultivators were exploited by the large share of the produce taken by the landowners. From three-fifths to two-thirds of the crop on lands under flow irrigation, were paid to the landowners. Five-sevenths of the crop was paid on pump irrigated land. These were exorbitant charges, since the landowners incurred costs only in installing and maintaining irrigation pumps. The provision of seed grain, by the landowners, was necessary because the share of the preceding harvest taken by them was so large that the cultivators did not have enough for the next season.

Had the cultivators owned the land they cultivated, they would have had enough to live on and a marketable surplus. However, when these shares were deducted, the cultivators could not live without continuous indebtedness to the landowners.

The agrarian reform law established new agricultural production relations. The law provided for the following:

1. The agricultural production relations would be extended for at least three years.
2. Eviction of cultivators was prohibited, unless the cultivators violate the law's clauses.
3. Agricultural production relations would be covered by a written contract.
4. The division of the produce as follows: if the farmer does the cultivating, harvesting and other farming work and provides the seeds, his share would be: 55 percent in the pump irrigated areas, 65 percent in the flow irrigated areas, and 70 percent in the rainfed areas. The share of the landowner who manages the land and supplies it with water would be: 30 percent in the rainfed areas, 35 percent in the flow irrigated areas, and 45 percent in the pump irrigated areas.

All those involved in the production process, whether farmers--even in the cooperatives--or landowners were to follow these rules and regulations. Table 3.1 shows the

prescribed distribution of field crop produce according to production inputs.

Table 3.1. Iraq's distribution of field crop produce according to production inputs

Agricultural Inputs	Land Classification		
	Flow Irrigation	Pump Irrigation	Rainfed
	(%)	(%)	(%)
Land	10	10	10
Water	10	20	--
Labor, seed	50	40	50
Harvesting	5	7-5	10
Management	15	15	15

Source: M. S. Hasan, Studies in Iraq's Economy, Beirut, 1967, p. 41.

Financial Aspects: Compensation and Farmer's Repayment

In certain respects, the Iraqi law followed the Egyptian law very closely, particularly with regard to the term of payment fixed for the new owners. A landowner whose land is expropriated under the provisions of article one of the law would be entitled to compensation equivalent to the price of a similar land, less the value of the government rights in the registered land if rights were held by the government.

Within five years the government was to take over land owned in excess of the limits, providing compensation

in the form of interest-bearing nominative bonds. These were redeemable within a maximum period of 20 years--amended in 1961, to 40 years. These bonds could be sold only to Iraqi nationals. However, this clause was amended in 1963. It stated that compensation for expropriated land should be paid only on land held in absolute private ownership. In other words, there would be no compensation for private land held or registered in Tapu or Lazma, i.e., free held ownership. The compensation to absolute private ownership in excess of the maximum limits would be divided into two parts. Half of the value of the compensation would be deposited in the Agricultural Bank at low interests for 20 years. The other half of the compensation would be paid in the form of interest-bearing nominative bonds redeemable within a period of 40 years. Compensation for expropriated farm machinery and equipment would be paid in bonds redeemable within a period of 20 years. Compensation was provided in cash before the amendment.

Payment for the redistributed land is spread over 20 years with 3 percent interest. This payment covers both value of the land and fixtures and an additional 15 percent for the expenses involved in administration of the program. The new owners must cultivate the land or they can be evicted within five years. However, this clause was also amended in 1963. The amendment provided that the administrative expenses be reduced from 15 percent to 10 percent.

Furthermore, it reduced the total cost of the redistributed land to the new owners by 50 percent. The other half of the land value that would be paid over a period of 40 years divided as follows: 25 percent of the land value payments would be given to the cooperatives for investment purposes. As incentives, for the productive farmers, or innovators, they do not have to pay the other 25 percent of the payments.

As for government expenditures, no data were available to estimate the cost of the agrarian reform program. Although the Ministry of Agrarian Reform is at Cabinet level, the Higher Agricultural Committee calls for the cooperation of other ministries in implementing the program. The budget of the Ministry of Agrarian Reform for its operation is as much a part of the national budget as other ministries. Furthermore, up to 1964, the financial provision concerning compensation had not been enforced, though some landowners had received cash down-payment of ID 1000 per estate.

The Assessment of the Land Reform Implementation

The Process of Implementation

When the Land Reform Law was enacted in 1958, it was decided that the whole operation of implementation would be completed in five years. Then it was extended to ten years. The land reform program was implemented in three phases:

1. Expropriation.
2. Temporary administration and management of the expropriated lands by the Ministry of Agrarian Reform, in those areas in which the lands were leased to beneficiaries; until the necessary contractual requisite for the productive use and management could be completed.
3. The redistribution of expropriated lands to beneficiaries, the organization of cooperatives and the provision of supporting structures.

Statistics on expropriated land and land under temporary management is constantly changing as the program continues. Also statistics reported by different sources vary widely. The implementation of the program in terms of expropriated land as of September 1968 was as follows:¹

	<u>Area Donum</u>	<u>%</u>
Total areas definitely expropriated	5,640,000	44
Total areas under temporary administration, but subject to legal process for final expropriation	<u>6,944,244</u>	<u>56</u>
Total	12,584,244	100

Expropriation had affected chiefly the largest estates. The law decreed that it should begin with them.

¹A. S. Hassanien, Report to the Government of Iraq on Land Reform, United Nations, FAO, Rome, 1970, p. 3.

The number of landowners subject to expropriation was 2,433. The size of the largest landholdings--five exceeding 100,000 donum, 60,000 acres--facilitated quick expropriation, because a few administrative decisions could requisition enormous tracts. However, it must be remembered, because of the previous traditional production practices, there were largely uncultivated and wasted lands by salinity and therefore unfit for distribution.

The implementation of the program in terms of redistribution as of December 30, 1968 was as follows. The total area redistributed under this program to landless peasants, in the form of small holdings, was 3.1 million donums; the number of beneficiaries was 57,117 farm families. The average area redistributed per family was 40 donums. The proportion of areas already redistributed differs slightly from one region to another: 25 percent in the North and 28 percent in the South. Altogether about half of the expropriated lands were redistributed, and the other half was under temporary management by the Ministry of Agrarian Reform. Further, 6.3 million donums were leased to 186,868 farm families, while awaiting redistribution. This large area was leased to farmers who would eventually become the new owners after the completion of legal matters related to land title, the improvement of drainage and irrigation systems and the training of technical staff to serve as supervisors for the agricultural cooperative societies.

Following are the details of the redistribution of lands:

	<u>Number of Dunums</u>	<u>Number of Beneficiaries</u>
I. Distributed (provisional title)		
a. Distribution of requisitioned area		
1. Flow of lift irrigated	951,867	
2. Rain irrigated	<u>843,987</u>	
Total	1,795,854	
b. Distribution of requisitioned government land		
1. Flow or lift irrigated	420,626	
2. Rain irrigated	<u>564,924</u>	
Total	985,550	
c. Area exploited for public utilization deemed to distributed land	<u>396,134</u>	
Grand Total a,b,c	3,177,538	57,117
II. Land rented to farmers but awaiting distribution		
1. Flow or lift irrigated	2,662,462	103,908
2. Rain irrigated	<u>3,723,699</u>	<u>82,960</u>
Total	6,346,161	186,868
Total of I and II	<u>9,523,699</u>	<u>237,402</u>

This shows that after ten years of operation, of the land reform of 1958, only 25.5 percent of the total land that was eligible for redistribution had actually been redistributed, while 74.5 percent was still being acquired by the Ministry of Agrarian Reform. Also, among the areas affected by this program, there were in 1968, about 3.2 million dunums which were neither expropriated nor redistributed because of the uncertainty that prevailed at that

time. Furthermore, the Ministry of Agrarian Reform included in its program the reclamation and redistribution of 3.3 million donums divided into 11 projects.

However, by 1970, the total area of requisitioned land was more than 8.0 million donums as seen in Table 3.2, while the number of farm families, recorded as operating land under temporary contract was 236,203 as seen in the above table; the number of farm families who had secured provisional title--redistributed land was 75,816, as seen in Table 3.3. In other words, the total number of the land reform program's beneficiaries, whether new owner or tenants under temporary contract but awaiting redistribution, was 311,019 farm families. This number amounted to more than half of the total landless farm families on the basis of the Agricultural Census of 1958-59. On the other hand, the area included in the land reform program, expropriated, reclamation and redistributed, represented 75 percent of the agricultural land in Iraq. Thus the level of management and the production practices used on this large area had far reaching effects at the national level on the production of crops and livestock, income distribution and the nation's employment patterns.

Table 3.2. Iraq's areas of land rented, and number of farmers renting them (as on December 1970) area (donum)

Administrative Units	Miri lands	Sequester- ated lands	Area of land received from Agricultural Bank	Total
Ninevah--Area	2,047,902	1,021,285	1,477	3,070,664
Contractors	30,177	20,716	25	50,918
Baghdad--Area	431,387	277,666	---	709,053
Contractors	18,486	6,902	---	25,388
Basrah--Area	19,776	7,375	8	27,159
Contractors	2,821	800	1	3,622
Other Muhafadhas				
Area	2,560,354	2,213,478	77,715	4,851,547
Contractors	91,125	63,561	1,589	156,275
General Total--Areas	5,059,419	3,519,804	79,200	8,658,423
Contractors	142,609	91,979	1,615	236,203

Source: Ministry of Agrarian Reform, Annual Abstract of Statistics, Baghdad, 1972.

Table 3.3. Iraq's distributed areas and number of beneficiaries during 1959-1970

Year	Distributed Area (donum)			Number of beneficiaries
	Sequestered lands	Miri lands	Total	
1959	---	38,402	38,402	1,144
1960	223,925	59,504	283,429	7,393
1961	293,726	198,305	492,032	9,460
1962	569,647	67,876	637,523	11,170
1963	177,161	207,772	384,933	7,530
1964	267,452	149,532	416,984	9,599
1965	52,852	27,830	80,682	1,984
1966	55,422	26,771	82,193	2,340
1967	81,281	60,156	141,437	3,290
1968	73,846	149,402	223,248	3,183
1969	166,673	54,005	220,678	3,585
1970	131,334	230,793	362,127	15,138
Total	2,093,319	1,270,348	3,363,668	75,816

Source: Ministry of Agrarian Reform, Annual Abstract of Statistics, Baghdad, 1972.

Problems of Land Reform Implementation

As a consequence of the implementation of the land reform program, several varying problems appeared. Some of these arose from the social system, land utilization and management, relations between farmers and land owners, and the educational level of the farmers. However, two major problems had a direct impact on the implementation process. These were the legal problems related to the law itself and the technical and administrative problems. These and other problems, as will be indicated later, have, to a large extent, affected the objectives of the agrarian reform program.

The Legal Problem

Settlement of land titles is a technical-legal operation carried out in cultivated and utilized areas that have been surveyed at a scale not less than 1:20,000, or at any scale in other kinds of land.¹ This operation covers land classification, ownership, determination of the rights involved, fixing of land boundaries and area and public roads. Title registration was enacted to cover all lands in Iraq with the exception of the Marshland Covernerates of Nassiriyah and Amarah. Around 3.7 million donums of lands in these two provinces had unsettled titles. As a result,

¹Hadilhy and Dujaili, p. 218.

many farmers decided to leave their land and migrate to urban centers to avoid a conflict with the landlords-tribal leaders. Although the influence of these shieks and tribal leaders had been declining, some still exercised, in the early 1960's, a strong influence in both the northern and southern part of the country. Doreen Warriner mentioned situations in several areas:

There is said to have been little evasion, though there was a strong opposition from some landowners. The head of Aniza Tribe, owner of an enormous area in Kerbela, resisted expropriation successfully for several years and his lands were not expropriated until 1963. One case in which large landowners had kept their influence was mentioned in 1964: the Shammar Sheikhs' lands, in the remote northern part of Mosul Covernerate, near the Syrian border, had been expropriated and redistributed. But the Sheikhs were known to be taking up to 90 percent of the crops from the tribesmen, now the legal owners of the land, in return for machine cultivation. The new owners did not work but simply guarded the crops on their land, and so gained nothing from ownership.¹

When the Law of 1958 was passed, the process of settlement of title in these two provinces of the marshlands had not been undertaken. In Amara Covernerate, almost the whole area in cultivation, two million donums, is held by Sheikhs who have exerted usufructory rights without registered titles since the period of foreign influence. The Amara Law of 1952, which settled title on terms favorable to the Sheikhs, caused so much unrest among the cultivators that it could not be carried out. Accordingly,

¹Warriner, p. 89.

it was rescinded in the 1958 Law. The Law's provision concerning expropriation of privately-owned land did not apply and a general clause covering expropriation of land held in the usufructuary possession was not sufficiently explicit to permit administration. Although it brought the large holding under the general provisions of the law, it did not deal with the holdings of the Sirkals or tenant heads.¹ Consequently, a supplementary law was passed in 1961, fixing the maximum size of these holdings at 150 donums of irrigated land, 300 donums of rainfed land, and 50 donums of rice land. This Law was resisted by the Sirkals. It also caused troubles because it omitted the claims of the religious people who opposed the government action for sectarian reasons.

Accordingly, another supplementary law was passed in December 1964, raising the limits for Sirkals' irrigated land holdings to 300 donums and fixing 75 donums as the maximum for religious people. A little land in this area was distributed, but it was a difficult task for the government officials to sort out land by Cadastral surveys. Therefore, the widespread migration of rural people from the marshes of Amara to Baghdad's slums before 1958 has continued. Given the economic, social and political

¹ Ibid., p. 93.

reasons, this province should have had a high priority in the implementation of the agrarian reform program.

In the Nasariyah Covernerate, the majority of the land was state-owned, appropriated by "Tapu" influence for certain people (alienation). There was a conflict concerning the claims of the Saduan family, which the family had never had been able to enforce. The 1958 Law made special provision for this Covernerate, bringing expropriation and redistribution into line with the general principles of the Law, thereby fixing maximum areas for other landowners who occupied land with usufructuary rights (Sirkals). The Law also granted compensation to the Saduan family for their ownership of the old title deeds, at the rate of 7.5 percent of the land value. This was the rate applied by the British Authority in collecting revenues for the family in the time of the mandate. Two supplementary laws of 1961 and 1964, in response to pressure from the Sirkals and other landlords, amended the limit of maximum ownership by 300 donums provided that the irrigated land should not be more than 150 donums. Some land was redistributed in the Covernerate, but on the whole the agrarian program was not applied. In 1964, as in 1954 and 1944, the land was still awaiting survey.¹ Thus, these amendments of the agrarian reform law of 1958, created major problems which hindered the implementation process.

¹ Ibid.

Technical and Administrative Problems

Dr. Alwan has pointed out that integrated reform in Egypt was comparatively easy because it was an agriculturally advanced country. Long before the reform, it had had a system of perennial irrigation controlled by a government service; some system of agricultural credit, some experience in cooperative organization and an ample even excess supply of officials trained in agriculture.¹ Iraq had none of these things, nor did it have Egypt's skilled cultivators, nor its large amount of small ownership. Iraq's problems in carrying out an integrated policy were not all political; they also sprang from the backwardness of its agriculture.

The agricultural lands acquired by the Higher Committee of the Agrarian Reform had been owned by landlords who directly managed the land or did so through their land-agents, Sirkals. Landlords worked the land by the fallow system. While the land area under their disposal was very vast, cultivation was standardized because farmers tilled the soil collectively under the management of the landlord. The landlord's main objective was to get as high a product as possible with the least effort and expense. Land was not managed according to scientific, technical or agricultural principles. It was restricted to the following functions: supervising the opening and

¹ Ibid., p. 83.

organization of irrigation work on their farm excluding drainage; plowing the land, supplying seeds, irrigating crops until ripe, then harvesting and threshing; and cleaning irrigation channels of sedimentation accumulated during the year. In other words, agriculture was primitive. There was no appropriate crop rotation; fertilizer was not applied to the soil and the land lacked technically organized irrigation networks; and drainage systems were not constructed to prevent rising water tables which caused salinization of the cultivated soils. As such careless practices had bad consequences, a heavy burden was thrown on the Ministry of Agrarian Reform. All these drawbacks emerged after the Agrarian Reform Ministry had taken over the land management responsibility. Following are some of the technical problems that influenced the implementation process.

1. Method of land redistribution.--In the beginning of the implementation of the agrarian reform, two factors were taken into consideration: area of redistributable land and number of beneficiaries. Experience has proved, however, that proper distribution must fulfill a number of requirements. The first task to be fulfilled is the preparation of modern survey and contour maps at scales varying between 1:2500 and 1:10000. Technical studies are made on these maps to determine irrigation and drainage projects for the area. Maps specifying soil survey and classification should

also be made, and cropping systems and type of crops determined.¹ None of these technical requisites were available at the time of redistribution. At first, redistribution was mistakenly made on the basis of giving one plot to every family. But in view of the dual cropping system, fallow system, cultivation was disorderly and not standardized. This made it difficult to provide the land with proper agricultural services, such as plowing, harvesting, fertilization, and combating pests. In other words, the redistribution process resulted in the fragmentation of the new holdings. Consolidation of these holdings, with redistribution allowing two or more plots, would facilitate the use of dual or triple cropping systems. It would also ensure standardization and proper irrigation and drainage, and no plots would be left to constitute intersecting fallow spots. All these considerations will facilitate the extension of agricultural services and speed up the implementation process.

2. Organization of irrigation and drainage.--Land redistribution covered two categories of lands: requisitioned lands already utilized and served by flow irrigation canals, and lands served by lift or irrigation pumps. At the time of redistribution these irrigation canals became unsuitable for the new land division system. Consequently,

¹ Hadithy and Dujaili, p. 220.

the redistributed land continued to be irrigated from the old water ways that intersect the plot in such an irregular way that it is not possible to manage the land properly. This is only possible when new roads, irrigation ditches and drains are constructed. However, construction of such facilities takes a long time during which disputes arise from the lack of water distribution control among the beneficiaries, nor is it easy to organize this work on the farm level. Furthermore, in addition to high cost, they require adequate technical organization.

Although progress has been made, the redistribution of land was a difficult task. Because of the delay and uncertainty that prevailed, it seemed wise to press on with redistribution. However, from an economic standpoint it would have been better first to prepare the land for better farming, i.e., reclamation, irrigation networks, drainage system and then assign viable holdings. One might dispute this approach on the ground that it would take too long. Consequently, the outcome was a compromise: to press on with redistribution where practical, otherwise to prepare the ground before granting title. Thus, in the early 1960's out of 2.7 million donums redistributed in irrigated area, there were 1.7 million donums that had no improvement in irrigation and drainage work.

3. Administrative problems.--The slow process of implementing the agrarian program was hindered by the failure to reorient organization and administration machinery, including administration of structural reform, i.e., inadequate training of staff, and ineffective coordination between various departments dealing with the agricultural sector. In Iraq, it is generally agreed that the major efforts for providing the input mix of services to make the agricultural sector productive must come from public organization and institutions. Little attention has been paid to upgrading the administration and management of public institutions attempting to implement the agrarian program.

In the early 1960's, in consequence to the enactment of this program, 2,091 landlords whose lands were requisitioned were removed from the land. This is in addition to an estimated 6,000 persons including assistants and head tenants (Sirkals). The official staff replacing them was 496 persons or 25 percent.¹ Ten percent of the total field staff had university degrees. In view of the fact that the area of redistributed and leased lands amounts to approximately 9.5 million donums, it appears that the area of land supervised by each of the official staff amounts to approximately 19,000 donums. This is in addition to the administrative duties such as leasing and contracting. Thus the

¹Hassanien, p. 7.

agricultural administrative structure is very small in proportion to the vastness of the agricultural lands.

In other words, the reasons for the slow process of the implementation of the agrarian reform program should not be oversimplified. As D. Warriner indicates,

to say that mistakes have been made, implying that those responsible made wrong decisions, would be inept, for no one was responsible for long. The trouble lay much deeper: in conflicting political aims and ineffective legislation; technical obstacles, and the whole magnitude of the administrative tasks, beyond the power of an inexperienced bureaucracy.¹

The Impact of the Land Reform Program of 1958

The land reform program is a complex subject. It has economic, social and political components, which have to be examined in evaluating the performance of the land reform program. In other words, the potentialities of this Program must be viewed within the overall context of economic and social development.

However, as it was mentioned earlier, this study is concerned with evaluating the land reform program in terms of specific economic development consequences, i.e., increasing production and productivity, income distribution and employment opportunities in the agricultural sector. Furthermore, to demonstrate the full impact of this program,

¹Warriner, p. 79.

this study will evaluate the performance of the supporting structures, such as the production structure and the structure of supporting services and to assess their future prospect. Table 2.7 (Chapter II, page 54) illustrates the agricultural land ownership pattern prior to the passage of the Land Reform Law of 1958. This information provides a basis for evaluating the magnitude of the impacts of the development consequences brought about by the land reform program. In the discussion that follows, their impacts are traced over time and described in detail.

The Impact of the Land Reform Program on Production and Productivity

After 1958, crop production declined and remained low for a period of two to three years. This was partly due to the long drought in the north and partly to the disruption brought about by the agrarian reform.

Using data for the 1959-1963 period, Warriner comments that: "comparison of the pre- and post-reforms averages show that grain production fell by 17 percent and rice by 20 percent; the fall in cotton production was probably greater than 16 percent as seen in Table 3.4. Warriner pointed out that the reform reduced production, first, through the extreme uncertainty caused by delay in redistribution. On requisitioned land, landowners did not cultivate more than they expected to retain, while the cultivators did not

Table 3.4. Iraq's area and production of main crops

	Average 1954-58	1959	1960	1961	1962	1963	Average 1959-63
			<u>Area (000 hectares)</u>				
Wheat	1,432	1,490	1,271	1,346	1,591	1,705	1,480
Barley	1,179	1,091	1,038	1,041	1,189	1,219	1,115
Total Grain	2,611	2,581	2,309	2,387	2,780	2,924	2,595
Rice	85	61	76	64	84	108	80
Cotton	58	37	31	37	34	---	35*
			<u>Production (000 tons)</u>				
Wheat	852	564	592	857	1,085	488	731
Barley	1,054	725	804	911	1,125	790	873
Total Grain	1,906	1,289	1,396	1,768	2,210	1,278	1,604
Rice	133	88	118	68	113	143	106
Cotton (lint and seed)	29	24	24	26	24	---	24*

*1959-62

Source: Warrinev, Doreen, Land Reform in Principle and Practice. Clarendon Press, Oxford, 1969, p. 94.

know and for the most part still do not know what land would be allocated to them. Second, it reduced production in the irrigated zone through the failure to replace the landowner's function in pump maintenance. Apart from the irrigation pumps, so little capital was used in agriculture that production could not have been much affected by its withdrawal. Cultivators could work their own animals and graze them; they could use their own seed; fertilizer was not missed because they had not been used except on the cotton crop, where the fall in production was caused by lack of fertilizer and pesticides. In the North, where tractors were generally used, the shortage of machinery was a drawback since imported machines were largely unsuitable, the engine cooling system on the tractors did not stand up to the climate; spare parts took several months to obtain, while service and repair facilities were inadequate."¹

Warriner's argument and presentation is clear and obvious. It gives an excellent description of the situation after the enactment of the reform program. However, the relationship between land reform, increased production and productivity are not always direct and positive, especially in the short-run. In other words, the time period, which is used as a base for the argument, is short enough for critical evaluation of the land reform program. Furthermore, Warriner reports that the area figures, in this time period, are also

¹Warriner, p. 95.

open to question, since land has certainly gone out of cultivation. The probably more reliable grain and rice production figures show wide year-to-year fluctuation, due to floods in the irrigated zone and the long drought in the North, which began in 1958 before the reform and continued for three years.

On the other hand, a long-run study (1958-1970) would constitute a more rigorous evaluation of the impact of land reform on agricultural production and productivity. Table 3.5 reports crops production, agricultural production and food production; it also shows aggregate production in millions of dollars, at constant prices, during the 1960-70 period. Using the average 1957-1959, as a base year = 100, the statistics show that: crops production increased from 100, the base year, to 142 in 1970, i.e., 42 percent over this period or an annual average of 3.5 percent; total agricultural production increased from 100, the base year, to 141 in 1970, i.e., 41 percent over this period or an annual average of 3.4 percent; and food production increased from 100, in the base year, to 141 in 1970, i.e., 41 percent over this period or an annual average of 3.4 percent. Therefore, in contrast to the short-run, the production of food and fiber not only recovered and exceeded the pre-reform level, but there has been a steady increase in crop production, agricultural production and food production in the long run. In other words, the apparent real decline is

Table 3.5. Production by commodity, value and indices of total agriculture and food production.
Average 1957-59-Average 1960-70

Commodity	Price Weight	Average 1957-59	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
	<u>Dollars</u>												
						<u>1000 Metric Tons</u>							
Wheat	64	814	599	816	1,088	500	640	856	700	750	1,361	1,189	1,112
Rice, paddy	96	287	295	210	350	400	390	350	370	420	450	430	500
Millet & Sorghum	34	25	24	22	22	20	23	25	25	23	28	28	26
Barley	31	994	803	911	1,125	1,002	700	750	700	700	750	1,250	700
Pulses	118	51	45	42	42	40	40	50	55	50	60	60	60
Tobacco	503	7	12	9	5	7	14	11	11	13	14	16	14
Cotton	371	11	8	9	8	6	9	10	7	10	10	11	10
Cotton seed	56	25	17	19	18	12	18	19	14	19	19	22	20
Flax seed	84	4	5	5	5	6	7	12	12	13	12	14	12
Sesame seed	136	12	6	5	5	6	5	6	6	8	8	12	8
Olive	175	10	9	8	8	8	9	9	9	8	9	7	10
Dates	33	301	281	299	300	310	400	250	400	250	320	260	280
Meat	537	89	101	100	100	110	110	110	110	100	110	110	110
Milk	111	1,187	1,200	1,225	1,250	1,250	1,300	1,300	1,250	1,275	1,275	1,300	1,300
Wool, Grasybasis	322	11	10	10	11	11	13	13	13	12	13	13	13
Aggregate of Production								<u>Million Dollars at Constant Prices</u>					
Crops		139.9	119.7	127.6	162.6	126.2	133.0	140.5	134.9	139.9	187.8	237.7	199.8
Livestock		182.9	190.6	192.9	196.0	196.0	207.6	207.6	202.1	199.1	204.8	246.8	246.8
Livestock feed deduction		-7.3	-7.6	-7.7	-7.8	-7.8	-8.3	-8.3	-8.0	-7.9	-8.1	---	---
Total Agriculture		315.6	302.7	312.8	350.8	314.4	332.3	339.8	329.0	331.1	384.5	484.5	446.6
Total food		303.9	290.1	301.4	341.4	304.7	317.2	325.4	315.7	315.9	368.6	466.4	430.1
Indices of Production								<u>(1957-1959 = 100)</u>					
Crop		100	86	91	116	90	95	100	96	100	134	169	142
Total agriculture		100	96	99	111	100	105	108	104	105	122	153	141
Total food		100	95	99	112	100	104	107	104	104	121	153	141
Per capita agriculture		100	90	90	97	85	86	86	81	81	92	110	97
Per capita food		100	89	90	98	85	86	85	81	80	91	110	97
Index of population		100.0	106.7	110.2	113.8	117.7	121.5	125.7	128.7	129.6	132.6	138.2	145.0
1958 population = 6,510,000													

Source: U. S. Dept. of Agriculture, ERS-Foreign 265.

post-reform agricultural production is usually temporary and are not surprising. Reforms, especially when associated with major political and social revolutionary upheavals, can be a disruptive process.

However, this increase in agricultural production has not kept pace with the increase in demand for food which resulted from an increase in population growth and per capita income. Disposable income, during the 1958-1970 period. Figure 3.1 shows the population growth, agricultural production and per capita agricultural and food. The difference between the supply of and demand for agricultural and food commodities resulted in higher prices, a reduction in exports and an increase in the imports of food and other agricultural commodities. This could be attributed to the lack of necessary supporting structures such as the production facilities and the structure of supporting services during the 1960's.

Furthermore, in evaluating agricultural output increases or decreases accompanying land reform, the influence of farm price levels on investment and output cannot be disputed. However, despite higher prices for agricultural commodities, the production of food and fiber did not increase enough to meet the demand for these commodities. This was mainly due to the uncertainty that prevailed during the early years of the implementation process. Farmers did not know whether they would get the

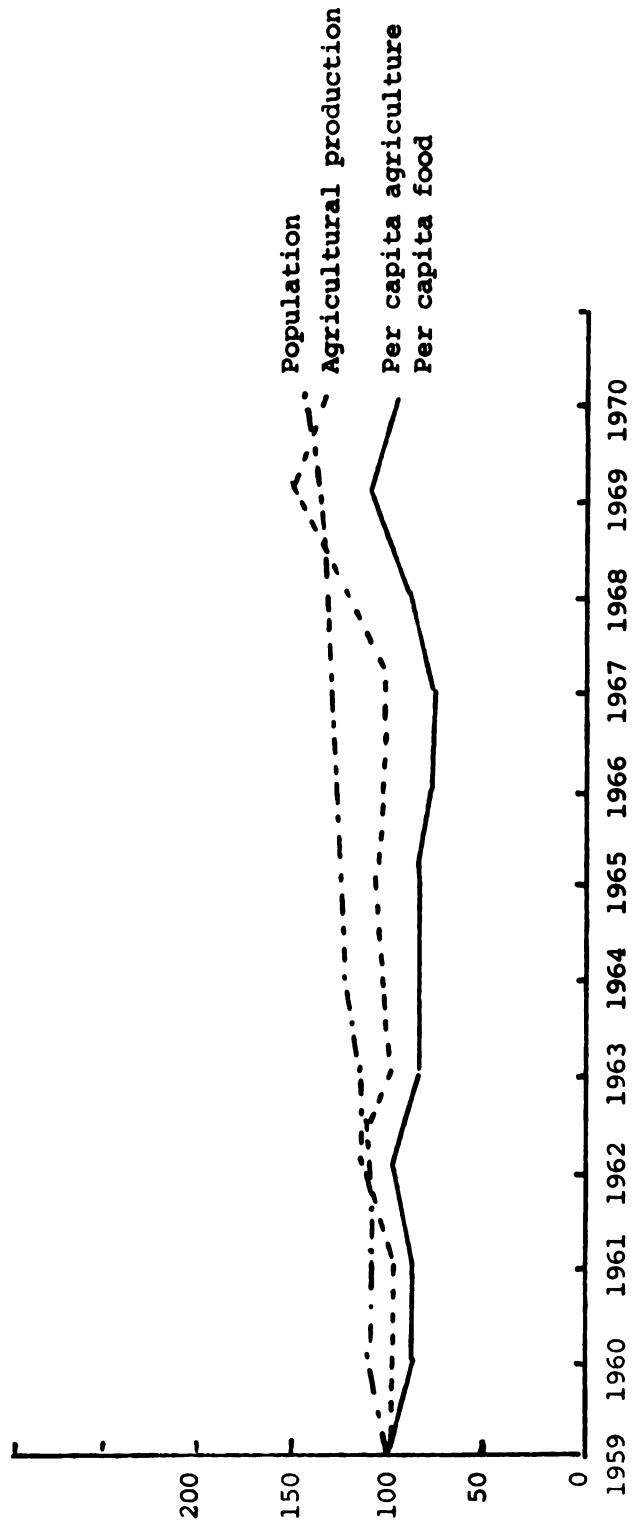


Figure 3.1. Indices of agricultural production, per capita agriculture and food and population.

Source: U. S. Dept. of Agriculture.

same land they rented under the temporary management contract. Thus, perhaps more important than prices per se, under the circumstances of agricultural production in Iraq, is the incentive structure provided by the land reform program.

On the other hand, the value of agricultural production, at current prices, increased from ID 148.7 million in 1962 to ID 206.2 million in 1969. The value added in the agricultural sector increased from ID 140.3 million in 1962, which is 94.1 percent of total value, to ID 198.08 million, which is 96.1 percent of total value, in 1969. This means, first, the average annual increase in value added during 1962-1969 was 8.2 percent; second, the average annual rate of value added to total value was 94.1 percent; and finally, for every one ID, of the value of agricultural output, the value added is ID 0.94, i.e., the agricultural sector is the most important sector for capital and income formation.¹

At factor cost and constant prices of 1966, total value of agricultural production increased from ID 148.7 million in 1962 to ID 194.8 million in 1969; the value added in this sector increased from ID 148.2 million to ID 186.87 million, with an annual average of 5.5 percent respectively.

Therefore, given the circumstance that accompanied land reform implementation, the value added in the agriculture

¹ Iraq, Ministry of Planning, Evaluation of Economic Growth in Iraq, 1950-1970, Baghdad, 1972.

sector, 5.5 percent, was a relatively good indication of the progress in this sector. However, while Gross Domestic Product (GDP) at factor cost and constant prices of 1966, increased from ID 695.27 in 1962 to ID 980.14 million in 1969, with an annual average of 4.1 percent increase, the contribution of the agricultural sector of GDP declined from 21.3 percent in 1972 to 19.1 percent in 1969 as seen in Table 3.6. This relative decline, could be attributed to the circumstances of the implementation of land reform and the higher growth rate of other sectors, especially the manufacturing and the service sector.

Furthermore, the relative importance of winter and summer commercial crops is very significant in the assessment of agricultural production and the agricultural situation in Iraq. These major crops are wheat, barley, rice, tobacco, and dates. In order to demonstrate the impact of the land reform program on increasing productivity (yield/donum), individual attention is given in the following discussion to each crop in terms of area (acreage cultivated), production in metric tons and yield per donum, as seen in Tables 3.7 and 3.8.

Wheat.--The Babylonians and Summatics grew wheat in the Mesopotamia 5,000 years ago. According to DeCondoll, wheat once grew wild in the Euphrates and Tigris valleys,

Table 3.6. Iraq's value added in the agricultural sector and its contributions to gross domestic product; at current and constant 1966 prices, 1962-1969

Year Index	1962	1963	1964	1965	1966	1967	1968	1969
Value added at current prices	140.38	109.30	148.10	162.70	172.73	181.39	190.46	198.08
Gross domestic product at current prices	658.42	670.60	761.20	830.98	888.21	882.69	989.71	1038.95
Value added at constant, 1966 prices	148.24	111.64	148.10	169.13	172.73	167.03	182.26	186.87
Gross domestic product at constant prices	695.27	684.98	761.20	863.80	888.21	812.79	947.09	980.14
The relative con- tribution of value added to gross domestic product	21.3%	16.3%	19.5%	19.6%	19.4%	20.6%	19.2%	19.1%

Source: Iraq's Ministry of Planning, Evaluation of Economic Growth in Iraq, 1950-70. Baghdad, 1972, p. 67.

Table 3.7. Iraq's acreage cultivated, production and yield/donum of the principal winter crops, 1960-1970

Kind of Crop	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Wheat*										
Cultivated Area (000 Donums)	5385	6363	6818	6507	6813	6947	6021	6736	6646	7034
Production (000 tons)	857	1085	873	807	1006	826	1029	1537	1183	1236
Yield per Donum (Kilo)	159	171	128	124	148	119	170.9	228.2	178.0	175.7
Barley*										
Cultivated Area (000 Donums)	4164	4758	4874	4391	4389	4677	3139	3614	3381	2690
Production (000 tons)	911	1125	947	623	806	832	736	992	963	682
Yield per Donum (Kilo)	219	237	194	142	184	178	234.3	274.4	284.9	253.6
Linseed										
Cultivated Area (000 Donums)	36	48	47	52	65	65	64	62	65	69
Production (000 tons)	5	7	6	7	12	12	13	12	12	14
Yield per Donum (Kilo)	134	139	135	131	185	188	198	193	177	206
Lentils										
Cultivated Area (000 Donums)	47	45	39	34	38	37	39	43	39	42
Production (000 tons)	7	8	6	6	6	6	6	7	7	4
Yield per Donum (Kilo)	156	168	159	164	176	159	160	173	167	106
Vetch Hurtman										
Cultivated Area (000 Donums)	4	4	4	3	3	3	5	4	3	4
Production (in tons)	571	722	643	530	646	818	1277	969	855	935
Yield per Donum (Kilo)	157	193	156	192	241	259	283	256	255	247
Dry Broad Beans										
Cultivated Area (000 Donums)	50	47	50	54	62	68	73	70	67	71
Production (000 tons)	15	15	14	10	16	18	19	20	18	20
Yield per Donum (Kilo)	309	313	280	186	264	263	258	291	263	283
Chick peas										
Cultivated Area (000 Donums)	27	25	17	13	20	18	19	20	21	22
Production (000 tons)	4	4	3	2	3	3	3	4	4	4
Yield per Donum (Kilo)	153	158	157	136	168	166	171	190	183	160

*1---The source of the Wheat, Barley, Rice and Cotton data for the years 1967-1970 is the C.S.O.

2---The source of the cereals data is the Ministry of Agriculture.

Source: Iraq, Statistical Pocket Book, 1960-1970, Central Statistical Organization, Baghdad, 1972.

Table 3.8. Iraq's acreage cultivated, production and yield/donum of the principal summer crops, 1960-1970

Kind of Crop	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Rice										
Cultivated Area (000 Donums)	255	336	431	438	464	443	412	435	424	584
Production (000 tons)	68	113	168	184	198	182	315	354	718	550
Yield per Donum (Kilo)	268	326	391	421	427	411	763.7	812.7	750.9	603.9
Sesame										
Cultivated Area (000 Donums)	38	39	40	50	59	63	68	69	68	73
Production (000 tons)	5	5	6	8	9	11	12	12	12	13
Yield per Donum (Kilo)	119	131	150	154	161	174	175	175	176	182.3
Millet										
Cultivated Area (000 Donums)	22	19	21	23	26	27	32	22	6	11
Production (000 tons)	3	3	4	5	5	6	8	6	1	3
Yield per Donum (Kilo)	141	154	182	221	201	228	258	249	233	260
Green Gram										
Cultivated Area (000 Donums)	30	32	34	43	47	50	65	62	58	61
Production (000 tons)	4	5	6	9	11	11	14	11	9	13
Yield per Donum (Kilo)	154	159	180	200	230	223	216	170	157.4	211.8
Maize										
Cultivated Area (000 Donums)	12	11	11	12	14	16	17	16	16	20
Production (000 tons)	2	2	2	3	4	4	4	4	5	6
Yield per Donum (Kilo)	158	173	186	225	258	267	269	282	297	301.4
Dry Cow Peas										
Cultivated Area (000 Donums)	13	14	20	24	26	26	38	30	26	28
Production (000 tons)	2	2	3	5	6	7	8	7	5	7
Yield per Donum (Kilo)	156	173	167	227	251	258	222	223	192	241.3
Giant Millet										
Cultivated Area (000 Donums)	27	24	22	25	27	26	28	23	13	17
Production (000 tons)	5	5	5	7	7	8	9	7	4	5
Yield per Donum (Kilo)	191	197	204	292	269	312	322	342	283	312.3
Cotton*										
Cultivated Area (000 Donums)	148	137	98	159	135	132	61	63	88	135
Production (000 tons)	27	26	17	29	32	29	19	26	29	41
Yield per Donum (Kilo)	182	187	171	184	234	217	305.9	413.9	330.2	308.1
Tobacco										
Cultivated Area (000 Donums)	50	50	50	60	60	58	58	59.4	59.6	58
Production (000 tons)	10.2	7.9	4.1	13.1	11.3	5.7	13.3	15.7	9	15.2
Dates										
Cultivated Area (000 Donums)	447.9	447.9	447.9	447.9	447.9	582.5	582.5	582.5	582.5	582.5
Production (000 tons)	300	320	420	320	310	280	380	330	260	480

Source: Annual Abstract of Statistics.

Table 3.8. Iraq's acreage cultivated, production and yield/donum of the principal summer crops, 1960-1970

Kind of Crop	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Rice										
Cultivated Area (000 Donums)	255	336	431	438	464	443	412	435	424	584
Production (000 tons)	68	113	168	184	198	182	315	354	718	550
Yield per Donum (Kilo)	268	326	391	421	427	411	763.7	812.7	750.9	603.9
Sesame										
Cultivated Area (000 Donums)	38	39	40	50	59	63	68	69	68	73
Production (000 tons)	5	5	6	8	9	11	12	12	12	13
Yield per Donum (Kilo)	119	131	150	154	161	174	175	175	176	182.3
Millet										
Cultivated Area (000 Donums)	22	19	21	23	26	27	32	22	6	11
Production (000 tons)	3	3	4	5	5	6	8	6	1	3
Yield per Donum (Kilo)	141	154	182	221	201	228	258	249	233	260
Green Gram										
Cultivated Area (000 Donums)	30	32	34	43	47	50	65	62	58	61
Production (000 tons)	4	5	6	9	11	11	14	11	9	13
Yield per Donum (Kilo)	154	159	180	200	230	223	216	170	157.4	211.8
Maize										
Cultivated Area (000 Donums)	12	11	11	12	14	16	17	16	16	20
Production (000 tons)	2	2	2	3	4	4	4	4	5	6
Yield per Donum (Kilo)	158	173	186	225	258	267	269	282	297	301.4
Dry Cow Peas										
Cultivated Area (000 Donums)	13	14	20	24	26	26	38	30	26	28
Production (000 tons)	2	2	3	5	6	7	8	7	5	7
Yield per Donum (Kilo)	156	173	167	227	251	258	222	223	192	241.3
Giant Millet										
Cultivated Area (000 Donums)	27	24	22	25	27	26	28	23	13	17
Production (000 tons)	5	5	5	7	7	8	9	7	4	5
Yield per Donum (Kilo)	191	197	204	292	269	312	322	342	283	312.3
Cotton*										
Cultivated Area (000 Donums)	148	137	98	159	135	132	61	63	88	135
Production (000 tons)	27	26	17	29	32	29	19	26	29	41
Yield per Donum (Kilo)	182	187	171	184	234	217	305.9	413.9	330.2	308.1
Tobacco										
Cultivated Area (000 Donums)	50	50	50	60	60	58	58	59.4	59.6	58
Production (000 tons)	10.2	7.9	4.1	13.1	11.3	5.7	13.3	15.7	9	15.2
Dates										
Cultivated Area (000 Donums)	447.9	447.9	447.9	447.9	447.9	582.5	582.5	582.5	582.5	582.5
Production (000 tons)	300	320	420	320	310	280	380	330	260	480

Source: Annual Abstract of Statistics.

but was domesticated and developed as a cultivated crop, and from there spread around the world. In Iraq, wheat is consumed on a large scale, mainly for human consumption. It is a winter crop and is usually seeded in late October or in the early part of November.

Since the early 1950's, the acreage of wheat grown annually has expanded onto sub-marginal land, where annual rainfall is too low and too variable for sustained economic wheat production. Most of the wheat production is on rain-fed land, despite the presence of extensive areas of irrigated lands, in large part because the latter are too saline for wheat production. Production in the rainfed areas in the North is usually mechanized. No fertilizer is used and production practices are similar to those used in the climatically similar regions of the USSR, the United States and Australia.

For the non-irrigated wheat, the year to year variation in yields is primarily a matter of moisture supply, and this, in turn, is closely related to total precipitation. For irrigated wheat, yields have not shown a consistent upward trend in the post-reform period. In comparison with other countries, yields are low and highly variable. They mostly fall in the 5-12 bushels per acre range. Total wheat production is greatly affected by yields per donum, hence is highly variable from year to year. For example, total output in the better years may be fully three

times the total output in poor years. In high output year, an export surplus of wheat may be produced; in low output years imports are necessary to provide for domestic consumption.

Barley.--Barley is a winter crop, grown mainly in the central and southern regions of the country. It is used mainly as fodder and as a cash crop for export. Although wheat sells for twice as much as barley, farmers prefer barley because of its tolerance to aridity and soil salinity; and because of its earlier maturity and its high resistance to pests and disease. These reasons are especially persuasive in the central region where salinity is high, sometimes reaching pH 8.3.¹

Since the early 1950's, the acreage of barley grown annually has decreased from 4.0 million donum prior to land reform to 2.6 million donum in 1970. However, a consistent upward trend in yield per donum made barley production rather stable from year to year throughout this time period. In comparison with other countries, barley yields are extremely low.

Rice.--Rice is a summer crop, grown mainly in the central part of the country. Since the early 1960's, acreage of rice grown has expanded annually. While rice production has steadily increased, the percentage increase in production has been more than the percentage increase in

¹W. L. Power, "Soil and Land Use Capabilities in Iraq." Geographical Review 44 (1954): 375.

acreage. It was 550,000 tons in 1970, more than double the pre-reform level. While the production of rice is generally affected by yield per donum, there have been encouraging signs of major improvement in rice yields in the country. Yields increased from 268 kg/donum in 1962 to 603.9 kg/donum in 1970. This is partly due to fertilizer use and partly to the incentive structure provided by the land reform.

Cotton.--Cotton is a summer crop, and is almost always an irrigated crop. It is grown in the central and northern irrigated areas of the country. Cotton is an important industrial crop which provides raw materials for the growing industries in Iraq. Since the late 1950's, the acreage of cotton grown annually has decreased, primarily because of the shortage of water supplies during the summers.

After the land reform program, the government took various measures, such as providing better seed, fertilizer and pesticides, and other supporting services, to expand production and increase productivity. In 1966, the acreage allocated to cotton production was 1 percent of the actually cultivated area. However, cotton production has increased steadily in the post-reform period. Cotton productivity, yield/donum, increased from 182 kg/donum in 1961 to 308.1 kg/donum in 1970. Given the current trend in increasing yields, it should be as high as the level of cotton yields in other major cotton-producing countries in the next few years.

Dates and tobacco.--Dates and tobacco are other important cash crops in Iraq. Dates are grown in the central and southern region of the country. The date industry plays a vital role in the national economy. According to the FAO, there are approximately 30 million palm trees in the country now; Iraq is regarded as the number one producer and exporter of dates in the world. The acreage of dates grown annually is 3.2 percent of the total cultivated area. Production and yield per donum have been rather variable from year to year due to climatic conditions and lack of pest control.

Tobacco is a summer crop, grown mainly in the northern part of the country. The acreage of tobacco grown annually has been relatively stable. It represents 0.5 percent of the actually cultivated land. Tobacco production has more than doubled the pre-reform level. Iraq has recently exported tobacco to other countries, and there are encouraging reports of major improvements in tobacco yields.

From the foregoing discussion, it is clear that Iraq raises some high value crops such as rice, cotton, dates and tobacco, and most of its fruits and vegetables. However, its total crop acreage is dominated by large areas of cereals. The acreage allocated to wheat and barley is 82.4 percent of the total acreage cultivated; while rice, tobacco and cotton represent only 4.6 percent. The value

of the two major crops, wheat and barley, as a percentage of the total value of agricultural production, at constant prices, rose from 41.3 percent in 1962 to 45.97 percent in 1967. During the same period, the value of all crops rose from 61.6 percent to 78.0 percent, respectively.

Therefore, given the circumstances that accompanied the land reform program, its impact on increasing agricultural production has been relatively moderate. The impact of land reform on increasing agricultural productivity, yield/donum, has been moderately good with some crops such as rice, cotton, and tobacco. However, in comparison to other countries, Iraq is, by and large, a country of rather low crop yields. Yields of cereals are especially low, yields of cotton and rice are moderately good, and the yields of fruits and vegetables are only fair.

The Impact of Land Reform on Income Distribution

Many economists argue that a more equilitarian distribution of income could provide a stimulus to demand and subsequent investment, especially in the light of consumer good industries.¹ Income distribution, in the context of this study, is a redistribution of income-earning opportunities through the land reform program. To verify

¹J. W. Mellor, "Review of Agriculture and Economic Development: Symposium on Japan's Experience," in The Economic Review, ed. K. Ohkawa, B. F. Johnston and H. Haneda, vol. 21, No. 2 (1970).

empirically this redistribution pattern, this study will examine Iraq's land reform experience, i.e., whether this program actually led to a more equal distribution of income and the subsequent change in the demand structure of the beneficiaries. While, evidence on pre- and post-land reform income distribution and expenditure patterns is extremely difficult to obtain, income distribution must be inferred from statistics showing the redistribution of land ownership.

Therefore, the impact of the land reform program on income distribution, income-earning opportunities for the beneficiaries, can be appreciated, because the total area affected by this program constitutes about 75 percent of the total agricultural land in Iraq. By the late 1960's, the process of implementation still continued, the total area of redistributed lands in the form of family farms, were 12 million donums to 312,000 farm families, who became owner-operators, either with provisional titles or under temporary contract. In other words, the proportion of owner-operators, increased by 50 percent from the pre-reform landless farm families level. Furthermore, the 50 percent reduction in the value of the redistributed land, resulted from the 1964 amendment, and the nominal rent paid by the tenants under temporary contract, were highly significant in transferring income from the land owning class to the landless farm families.

Consequently, the farmers who farm their own land or tenants under temporary contract, are definitely better off because they do not have to share their produce with the previous landlords. Table 3.9 illustrates the household or farm family's incomes, at constant prices, in the pre- and post-land reform program period. As can be seen in this table, the average annual farm family income during the 1953-1958 period was ID 145.9. Average annual farm family income during the 1959-1969 period was ID 205.3. Average annual income per family increased from ID 145.9 to ID 205.3, i.e., an increase of ID 59.4 or 40.7 percent. Furthermore, while the average annual income fluctuated during the pre-reform period, it has steadily increased, with the exception of 1963, in the post-reform period. The average annual income, as any statistical average does not reflect the distribution of income within the agricultural sector, i.e., the number of families who have higher or lower income than the average. Nevertheless, it does indicate quantitative changes in the income of land reform beneficiaries.

No attempt has been made to reconstruct expenditure pattern or change in the demand structure of the land reform beneficiaries. It appears that a considerable amount of the increased income was spent on a variety of consumer goods available from cooperative stores that appeared in the rural areas. Part of the increased income is re-invested to increase agricultural production and productivity. These

Table 3.9. Iraq's average annual farm-family incomes, 1953-1969

Year	Rural population	Employed in the agricultural sector	Number of farm families	Average farm-family incomes (ID)	Index of farm-family income 1953 = 100
1953	3,524,665	3,172,198	634,440	134.3	100.0
1954	3,604,322	3,248,890	648,778	164.0	122.1
1955	2,685,780	3,317,202	663,440	112.5	83.8
1956	3,769,079	3,392,171	678,434	145.5	108.3
1957	3,853,754	3,468,378	693,675	175.8	130.9
1958	3,863,893	3,477,503	695,500	143.2	106.6
1959	3,874,059	3,486,653	697,330	112.5	91.2
1960	3,884,252	3,495,826	699,165	146.1	108.8
1961	3,894,471	3,505,023	701,004	178.7	133.1
1962	3,904,717	3,514,245	702,849	210.9	157.0
1963	3,914,990	3,523,491	704,698	158.4	117.9
1964	3,925,290	3,532,761	706,552	209.6	156.1
1965	3,935,616	3,542,054	708,410	238.7	177.7
1966	3,945,971	3,551,373	710,274	243.2	181.1
1967	3,959,353	3,563,417	712,683	234.4	174.5
1968	3,966,762	3,570,085	714,017	261.0	194.3
1969	3,977,199	3,579,479	715,895		

Source: Iraq Ministry of Planning, Evaluation of Economic Growth in Iraq, 1950-1970, Baghdad, 1972, p. 69.

investments were in the form of fertilizer, irrigation pumps, and farm machinery. For example, most of the fertilizers distributed by the public sector, as seen in Table 3.10, was used by the cooperatives. The number of tractors increased from 2,400 in 1958 to 10,400 in 1970, including 623 tractors for the public sector; the number of combines increased from 1,000 in 1958 to 2,280 in 1970, including 633 combines for the public sector. In 1968, 144 cooperative societies owned 399 irrigation pumps. Therefore, the new expenditure pattern not only appeared to be based on economically rational criteria, but also the change in the demand structure of the beneficiaries seems to be in line with the consequent objective of income distribution. This point will be discussed later.

As Warriner comments in the Husseinia project, there were 15 cooperative societies with 163 members cultivating 4,000 donums. Funds were being raised for investment by joint cultivation, using a tractor which they bought with a loan in 1964. They allocated 300 donums of land to cultivate in common, using this tractor in addition to working on the member holdings for hire. Each member agreed to sow and harvest two donums of this land. The proceeds estimated at ID 1,000 per annum, would meet the cost of the tractor and other farm machinery and the cost of irrigation pumps' maintenance. Joint cultivation to raise investment funds for specific purposes was a sound

Table 3.10. Iraq's consumption of fertilizers and pesticides, 1965-1971 (metric tons)

Category	1965	1966	1967	1968	1969	1970	1971
Ammonium sulfate, 21%	523	6,520	14,381	28,740	42,662	49,610	56,279
Compound fertilizer 15/15	22	658	685	555	861	1,377	3,424
Compound fertilizer 20/20	13	190	4,289	3,084	4,735	2,395	5,190
Compound fertilizer 25/10	18	640	392	160	419	983	---
Compound fertilizer 18/18/5	---	---	---	474	968	1,495	1,790
Super phosphates 45-47%	2	---	146	2,293	4,041	3,361	10,037
Nitrogen, 26%	---	---	284	404	492	499	---
Potash				770	359	344	260
Total fertilizer	575	8,019	25,127	35,982	54,546	60,129	76,980

Source: Iraq, Trade Annual, Statistical Abstracts of Foreign Trades, Government Press, Baghdad, 1972.

idea. The outlook for cooperative success in this project is much higher than before when each farmer was working alone. According to the president of the cooperative society, the annual income per holding, using the fallow system, from winter crops, averaged between ID 70 to ID 80, some earning much more and some less. This income could be earned by growing wheat on about 8 donums of the 40 donums holding. By cultivating more of the land they could have doubled their incomes. In this settlement, the farmers seemed much better off than in the old days; certainly they were much better fed, much better dressed and more alive.¹

Fragmentary though it is, the evidence from Iraq's land reform experience, does show that the impact of land reform on income-earning opportunities resulted in substantial income transfers to the poorer rural classes. It also shows, given the significant change in the demand structure of the beneficiaries, increased participation in the money-economy, following the implementation of this program.

The Impact of Land Reform on
Employment Opportunities in
the Agricultural Sector

As Dovering comments, "the transformation of a primarily agrarian population into one predominantly urban

¹ Warriner, p. 107.

and industrial is usually a slow process, especially with a high rate of population growth. Moreover, the farm population does not decline in absolute numbers until well after it has become a minority in the total population."¹ In other words, there is a high prospect that unemployment and underemployment will become increasingly serious during the next decade or so, as a result of the combination of a rapidly growing labor force and a relative capital-intensive pattern of industrialization yielding insufficient new jobs.

Almost 50 percent of Iraq's population depends on agriculture and is likely to be so dependent for the next decade. The rate of population growth was relatively high, 3.0 percent, during the 1957-1970 period. So, while there has been a relative capital-intensive development industries, the creation of additional employment opportunities in the agriculture sector is certainly one of the main objectives of the land reform program. More specifically, the land reform must lead to improved factor combination and better allocation of land and labor. The extent to which employment can be increased through redistributive employment patterns depends very much on the prevailing conditions, such as the population in agriculture, the rate of population growth and development of the industrial sector. Thus, Iraq has had

¹ F. Dovring, "The Share of Agriculture in a Growing Population," in Agriculture in Economic Development, ed. by C. K. Eicher and L. W. Witt (New York: McGraw-Hill Inc., 1964).

through its land reform program an opportunity for restructuring the agricultural sector and for providing employment and income-earning opportunities.

From the foregoing discussion, it is clear that the distribution of ownership patterns within the agricultural sector, prior to the land reform program, was as follows: landowners constituted about 0.5 percent of the total population, 2-8 percent of the landowners held 70 percent of the agricultural land title deeds; 97.2 percent of the landowners held less than 30 percent of agricultural land title deeds; and the landless peasants accounted for 2.9 million of the 3.2 million persons who depended on agriculture. This prevailing structure had a profound impact on increasing out-migration from rural to urban centers. It caused a relative and absolute increase in urban populations and a relative decline in rural population.

Economic activity or participation in the labor force represents a key aspect of population composition. The distribution of employed labor force according to occupation in various economic sectors, during the 1947-1969 period can be seen in Table 3.11, i.e., before and after the land reform program. The data in the above table indicates the following: In 1957-58, prior to the land reform program, the total employed labor force was 1,663.1 thousands. The relative structure of the labor force, distribution to the main sectors, was 971.8 thousand or

Table 3.11. Iraq's labor force development during the period 1947-1969 (thousand workers)

Sector	1947-1948 ^a	1957-1958 ^b	1964-1965 Base Year	Five-Year Economic Plan Years 1965-1969				
				Period Prior to the Revolution			Period Following the Revolution	
				Accrued in the First Year 1965-1966	Accrued in the Second Year 1966-1967	Accrued in the Third Year 1967-1968	Accrued in the Fourth Year 1968-1969	Accrued in the Fifth Year 1969-1970
Agriculture	772.8	971.8	1187.0	1228.0	1283.2	1339.4	1399.2	1449.8
Mining and Quarrying	4.7	8.3	13.0	13.5	14.0	14.5	15.0	15.5
Manufacturing Industries	84.6	114.0	130.0	135.0	140.0	140.0	146.0	148.0
Electricity, Water & Gas	1.5	6.1	12.0	12.2	12.4	12.6	12.8	12.9
Building & Construction	13.9	38.0	47.2	61.0	70.0	59.1	66.0	67.0
Commodity Sectors--Total	877.5	1138.2	1389.2	1449.7	1519.6	1565.6	1639.0	1693.2
Transport, Communication and Storage	39.5	56.0	125.0	129.0	133.0	137.0	140.0	143.0
Trade and Finance	79.3	103.0	120.0	125.0	130.0	135.0	140.0	145.0
Distribution Sectors--Total	118.8	159.0	245.0	254.0	263.0	272.0	280.0	288.0
Other Services	289.0	365.9	485.0	500.0	505.0	525.0	550.0	565.0
Grand Total	1285.3	1663.1	2119.2	2203.7	2287.6	2362.6	2469.0	2546.2

^a Labor force figures for 1947-1948 are taken from 1947 population census and other sources.^b Labor force figures for 1957-1958 are taken from 1957 population census and other sources.Source: Iraq, Ministry of Planning, Progress Under Planning, Baghdad, 1972.

58 percent of the total labor force employed in the agricultural sector; 4.7 thousand or 0.01 percent in the mining and quarrying sector; 84.6 thousands or 6.8 percent in the manufacturing industries; and 289.0 or 22 percent in the service sector. The agricultural sector was the main sector in providing employment opportunities, followed by the service sector. Out-migration from agriculture and the slow process of land reform implementation, however, caused the relative contribution of the agricultural sector to employment opportunities to decline from 58 percent in 1957-58 to 53 percent in 1960.

The impact of the land reform program on employment opportunities can be evaluated in terms of the absolute and the relative structure of the labor force. The total labor force increased from 1,663.1 thousands, pre-reform, to 2,546.2 thousands, post-reform; that is an increase of 883.1 thousand or 53.1 percent over the decade with an average annual rate of 5.2 percent. The relative structure of the labor force in 1969-70 was 1,449.8 thousand or 54.5 percent of the total labor force in the agricultural sector; 15.5 thousand or 0.58 percent in the mining and quarrying sector; 148.0 thousand or 5.5 percent in the manufacturing industries, and 565.0 thousand or 21.24 percent in the service sector. Agriculture is still the main sector for providing employment opportunities.

Although there has been a relative decline in rural population, there has been an absolute and relative increase

in employment opportunities in the agricultural sector. The total labor force employed in the agricultural sector increased, in absolute number, from 971.8 thousand, pre-reform level, to 1,449.8 thousand, post-reform level, i.e., an increase of 478 thousand or 49.2 percent over more than a ten-year period, or an average annual increase of 4.9 percent. As for the manufacturing sector, though it had higher priority in the scale of economic development than the agricultural sector in the 1960's, and because of capital intensive approach, its relative contribution to employment opportunities decreased from 6.8 percent to 5.5 percent, respectively.

While there is a definite limit to the employment creation possibilities in the agricultural sector, major efforts are required to create employment opportunities in the non-farm sector as rapidly as possible. Resolution of the unemployment problem rests ultimately with a dynamic industrial and manufacturing sector, such as consumer goods industries, agricultural processing industries and industries producing farming requisites. In addition, there must be a labor-intensive approach with reliance on yield-increasing technical innovations in the earlier phase of agricultural development.¹ Such basic reorientation in the industrial and manufacturing sector may be impossible without a

¹P. Dorner, Land Reform and Economic Development, Penguin Books, 1972, p. 18.

restructuring of the employment and income-earning opportunities in the agricultural sector. Thus, the land reform program has profound impact on the reorientation of the agricultural sector by creating more employment and income earning opportunities in the agricultural sector.

From the foregoing discussion, it is clear that the land reform program did not achieve much in terms of increasing agricultural production and productivity. That is, the increase in agricultural production did not keep pace with the increase in demand for food, and agricultural productivity, yield/donum, is generally low in comparison to other countries. This is mainly due to investment policies in the three development plans implemented during the 1960's. If the land reform program was to contribute significantly to these objectives it would clearly be necessary for it to be undertaken in conjunction with a variety of supporting structures, i.e., the productive structure and the structure of supporting services. A brief examination of the performance of these supporting measures during the ten year period after the enactment of the land reform program, and the discussion on how these measures can and must be changed for a more productive agriculture will be dealt with in the next chapter.

Development Planning

In the post-reform period, 1959-1969, three development plans were drawn up and followed: The Provisional Plan of 1959-1961 called for development expenditures of ID 323.6 million.¹ Actual expenditures throughout the plan were ID 108.3 million, i.e., an implementation ratio of 35.5 percent. Allocations to the agricultural sector were ID 43.9 million or 13.6 percent of the total expenditures. Actual expenditures on this sector were ID 22.6 million, i.e., an implementation ratio of 51.1 percent. Allocations of actual expenditures within the agricultural sector were as follows: ID 17.5 million or 78 percent for irrigation, drainage, and water storage; ID 1.7 million or 7.3 percent for livestock production, pasture improvement and forest management; ID 0.5 million or 2.6 percent for the land reform programs. That is for land surveys and the establishment of four 'Machinery Rental Stations' as a matter of fact, nothing was spent in the first two years on the land reform program. The rest of the expenditures were for the completion of previous projects. In comparison, allocations to the industrial sector under this plan were ID 32.7 million or 11.1 percent of the total expenditures.

¹Republic of Iraq, "Provisional Economic Plan," Baghdad, 1959.

The detailed Economic Plan of 1961-1966 called for development expenditures of ID 444.7 million.¹ Actual expenditures throughout the plan were ID 204.2 million, i.e., an implementation ratio of 45.9 percent. Allocations to the agricultural sector were ID 87.4 million or 20 percent of total expenditures. Actual expenditures on this sector were ID 19.8 million, i.e., an implementation ratio of 22.7 percent. Most of the actual expenditures on the agricultural sector were allocated to irrigation and drainage. There were 23 agricultural projects which covered an area of 15.8 million donums, 9.8 million donums on the Tigris River and 6.0 million donums on the Euphrates River, to be completed in 15 years. Actual expenditures allocated to the land reform program were ID 1.04 million, for the establishment of three state farms and 13 'Machinery Rental Stations' to cover an area of 1.5 million donums. In comparison, allocations to the industrial sector in this plan were ID 121.7 million or 27.4 percent of the total expenditures.

The Five-Year Economic Plan 1965-1969 called for development expenditures of ID 668.05 million.² Actual

¹Republic of Iraq, "Detailed Economic Plan, 1961-1964," Law No. 70 for 1961.

²Republic of Iraq, The Five-Year Economic Plan, 1965-1969, Law No. 87 of 1965, published in the official Gazette 86, No. 1185 (July 1, 1965).

expenditures throughout the plan were ID 446.6 million, i.e., an implementation ratio of 66.9 percent. Given the previous implementation ratios, this plan was relatively successful. Allocations to the agricultural sector were ID 173.5 million or 26 percent of total expenditures. Actual expenditures on the agricultural sector were ID 56.2 million, i.e., an implementation ratio of 32.4 percent. One of the plan's targets was that of raising the average annual growth rate of the agricultural sector to 7.5 percent. By the end of the plan, the average annual growth rate was 2.0 percent. As in the previous plans, most of the actual expenditures were allocated to irrigation and drainage, a long-run irrigation and drainage policy was adopted. This policy called for the construction of three new dams on the Euphrates-Tigris River System in the irrigated areas. Total allocations to the land reform programs were ID 5.8 million of total actual expenditures. This was the first time a large sum of investment expenditures was allocated to the land reform program in the three development plans. In comparison, allocations for the industrial sector were ID 187.2 million or 28 percent of total expenditures.

The allocation of development expenditures, in the three development plans, reflected a change in development policy with the industrial sector receiving a higher priority in the scale of economic development than the agricultural sector. This shift in priorities took place at a time when it was imperative that the agricultural sector have a top priority, especially as major steps were being undertaken in this sector in the enactment of the land reform program. The implementation ratios for the three development plans in the agricultural sector were the lowest among the various sectors of the economy. They were 51.1 percent, 22.7 percent, and 32.4 percent, respectively. These low implementation ratios affected the performance of the agricultural sector. Furthermore, while total actual expenditures on the agricultural sector, in these plans, amounted to ID 98.4 million, only ID 7.34 million or 7.5 percent were allocated to the land reform programs. Thus one decade after the enactment of the land reform program, public investment policies still did not contribute to full attainment of the potentialities of the land reform, especially increasing agricultural production and productivity.

Reform of the Reform: The Agrarian
Reform Law No. 117 of 1970

Despite the accomplishment of the agrarian reform law of 1958, it embodied numerous legal and technical shortcomings that affected its performance. Some of the main shortcomings were:

1. The high ceiling on ownership. This ceiling was 2,000 donums in the rainfed areas and 1,000 donums in the irrigated areas. No more than 6.0 percent of the land held by landlords was distributed to the landless peasants. While this distribution pattern had profound impact on income earning opportunities in the agricultural sector, there was not enough land to be redistributed to the landless peasants.

2. The implementation process of the law, was carried out irrespective of the differences in the land use or classification, i.e., the cropping pattern, soil fertility and access to precipitation and irrigation. For example, a 1,000 donums of irrigated land for rice production has higher value than 1,000 donums of irrigated land for wheat or barley production.

3. The implementation process of the law, followed an individual pattern of distribution and sometimes led to fragmentation of the newly distributed holdings. This resulted in increased soil salinity and deterioration of agricultural production. In other words, the law did not

include, in its provisions, any measure for the consolidation of the fragmented units to ensure the use of modern agricultural policies.

4. Landlords, whose lands were requisitioned, were given the right to choose the lands allocated to them. As a rule, they chose the most productive and fertile lands that had access to irrigation and were left in control of the irrigation systems in the land reform areas.

5. Landlords were compensated for the requisitioned lands, even though most of the lands were public domain lands registered in the name of the heads of tribes. Lands held in absolute private ownership represented 4 percent of the total lands subject to expropriations.

6. The redistribution of lands to the landless peasants was implemented on the principle of the repayment of the land value.

7. The Law's provisions concerning the expropriation of land holdings in excess of the maximum limit, was not implemented in the two marshland provinces of Amana and Nasaniya. Furthermore, the 1961 amendment to the Law created complicated agricultural relationship in these two provinces.

Consequently, a decade after this major program of revolutionary government went into effect, it is still difficult to evaluate the impact of the reform program. This is true as the impetus for the land reform and its main targets are dictated to a large extent by political

motives. Despite its accomplishment the creation of more employment and income-earning opportunities in the agricultural sector, the new development policies could not be pronounced a complete economic success. They did not bring about a substantial increase in agricultural production and productivity or the creation of dynamic agricultural sector with significant contribution to Gross Domestic Product. Therefore, the land reform law No. 30 of 1958 is a transitional piece of legislation. The primary aim of the law, elimination of feudalism, is attained.

After the July 17th Revolution the national authorities took rigorous measures to achieve an integrated and comprehensive agrarian reform. These measures were designed to establish the necessary supporting structures, the productive structure and the structure of supporting services, and to create an efficient administrative structure for implementing the agrarian reform programs. One of these main measures was the enactment of the new agrarian reform Law No. 116 of 1970. In its main provisions the new agrarian reform law decreed:

1. The establishment of the Higher Agricultural Council. According to article one,

the Higher Agricultural Council shall be formed under the chairmanship of the President of the Republic and the membership of the Ministers of Agrarian Reform, Agriculture, Irrigation, the chairman of the General Union of Peasant Societies and fulltime members not less than five in number, who are very highly qualified in the following

fields: economics, irrigation and drainage, agrarian reform and two of them in agriculture.

This was the first serious attempt toward an efficient administrative structure. To avoid conflict and overlapping between various Ministries and Departments related to the agricultural sector for the planning and implementing of agricultural development strategies.

2. Limitation of agricultural ownership, article 2, part one: The area of agricultural land owned by a person or alienated to him by 'Tapu' or granted by 'Lezma' shall not exceed the following limits:

a. In the rainfed land:

- (1) 2,000 donums, in the less fertile land area located south of the rainfall line.
- (2) 1,600 donums, in the very fertile land area located south of the rainfall line.
- (3) 1,300 donums, in the less fertile land area located north of the rainfall line.
- (4) 1,000 donums, in the very fertile land area located north of the rainfall line.

b. In the irrigated land:

- (1) 600 donums, in the less fertile land area irrigated by lift (pumps).
- (2) 400 donums, in the less fertile land area irrigated by flow.
- (3) 400 donums, in the very fertile land area irrigated by lift.

- (4) 300 donums, in the very fertile land area irrigated by flow.
- (5) 120 donums, in the land irrigated by lift and cultivated with cotton or vegetables in the North Provinces.
- (6) 80 donums, in the land irrigated by flow and cultivated with cotton or vegetables in the North Provinces.
- (7) 80 donums, in the land irrigated by lift and cultivated with rice in the North Provinces.
- (8) 60 donums, in the land irrigated by flow and cultivated with rice in the North Provinces.
- (9) 50 donums, in the land irrigated by lift and cultivated with tobacco in the North Provinces.
- (10) 40 donums, in the lands irrigated by flow and cultivated with tobacco in the North Provinces.
- (11) 100 donums, in the land irrigated by flow and cultivated with rice in provinces other than the North Provinces.

In the case of holding two types of lands, the proportions must be affected according to the mentioned ratio. The Higher Agricultural Council may decrease the high limits of ownerships to half the limits fixed in this article for the land situated near the marketing centers.

3. On Redistribution, article 16, part two, The agrarian reform lands shall be distributed among the peasants individually or collectively according to the district circumstances within which the distribution is carried out, and within the limits specified hereunder:

a. In the rainfed lands:

- (1) 200 donums in the less fertile land area located South of the rainfall line.
- (2) 160 donums in the fertile land area South of the rainfall line.
- (3) 130 donums in the less fertile land area North of the rainfall line.
- (4) 100 donums in the fertile land area North of the rainfall line.

b. In the irrigated lands:

- (1) 60 donums in the less fertile land area irrigated by lift.
- (2) 40 donums in the very fertile land area irrigated by lift.
- (3) 40 donums in the less fertile land area irrigated by flow.
- (4) 30 donums in the very fertile land irrigated by flow.
- (5) 12 donums, in the lift irrigated land area cultivated with cotton and vegetables in the North Provinces.

- (6) 8 donums, in the flow irrigated land and cultivated with cotton and vegetables in the North Province.
- (7) 8 donums, in the lands irrigated by lift and cultivated with rice in the North Provinces.
- (8) 6 donums in the flow irrigated lands cultivated with rice in the North Provinces.
- (9) 5 donums in the land irrigated by lift, cultivated with tobacco in the North Province.
- (10) 4 donums in the flow irrigated land cultivated with tobacco in the North Provinces.

4. The new agrarian law did not give the landlords the right to choose the land allocated to them to increase the proper distribution of the irrigation network.

5. The new agrarian reform law abrogated the compensation principle to the landlords, and at the same time the redistribution of lands was carried out without the repayment principles.

Other provisions of the agrarian reform program covered the areas of: Production relationships between the landlords, the farmers and the agricultural laborers to protect the interest of each and to promote agricultural production. The participation of the farmers in the implementation process through their farmer organizations, the cooperatives and the General Peasants Union. The

post-reform economic organization in the agricultural sector. Finally the agricultural marketing and credit institutions. In other words, most of the drawbacks associated with the implementation of the first agrarian reform laws were corrected through the promulgation and implementation of the new agrarian program.

Implementation of the Agrarian Reform Law of 1970

The Higher Agricultural Council followed a timetable for quick and efficient implementation of the new agrarian reform law. The total area requisitioned under the first agrarian reform between 1958 and 1970 was 4.2 million. Under the new agrarian reform of 1970, 3.1 million donum were requisitioned by 1972. The area expropriated in two years was equal to 80 percent of the total expropriated land during the previous 12 year period.

The process of redistribution also worked faster under the new law than under the first law. By March 1972, a total of 5.5 million donums were redistributed to 130,882 landless farm families. As a matter of fact, the implementation process, expropriation and redistribution was completed in ten of the sixteen Provinces by 1972. It was planned to carry out the implementation process in the rest of the six Provinces by early 1974.

The first agrarian reform of 1958 satisfied the needs of 312,019 farm families or almost 50 percent of the

total landless families. The new agrarian reform allocated land to an additional 165,000 farm families by 1974. Altogether, the total number of beneficiaries, whether new owners or tenants under temporary contracts totaled 477,000 farm families under the first and second agrarian reform programs. That is almost 75 percent of the total 685,000 landless families according to the 1957-58 Agricultural Census. Furthermore, it is worth mentioning that after the enactment of the new agrarian reform law, neither agricultural production nor cultivated areas decreased. Quite the opposite, the area under cultivation increased from 12.6 million donums in 1969-70 to 14 million donums in the 1971-72 winter season and there was a large increase in the area cultivated for summer crops, especially vegetables. Thus, the agrarian reform law of 1970, envisaged a concept for agrarian program both in terms of comprehensiveness and essence. It removed obstacles and paved the way for the agricultural revolution. That is, the new law set a strong basis for a comprehensive and integrated agrarian structure. This is the subject of the next chapter.

CHAPTER IV

THE INTEGRATED AND COMPREHENSIVE AGRARIAN STRUCTURE

The foregoing discussion has emphasized the failure of the development policies by the previous government between the early 1950's and the late 1960's, to achieve their overall policy objective. The government had planned to stimulate the total economy through development expenditures of the non-oil sectors, especially the agricultural and industrial sectors. Ten years after the enactment of the land reform of 1958, however, the relative importance of the agricultural sector measured by its contribution to GDP had declined from 24.1 percent in the 1950's to 19.1 percent in the late 1960's. Agriculture is still characterized by low productivity of land and labor. Meanwhile, there is little increase in the relative importance of the industrial sector. Its contribution to GDP increased from 7.4 percent in 1953 to 10.7 percent in 1969. By 1969, the contribution of the oil and quarrying sector to GDP was 32.6 percent; it was still the dominant sector in the economy. Dualism, which had characterized the Iraqi economy in the early 1950's, still existed in the late 1960's.

It is unlikely that the achievement of the economic potentials of Iraq, the overall policy objective and the specific objectives of this study, can be attained without development of the agricultural sector. Decisions are needed that will elevate the agricultural sector to a position of top priority during the next decade. This calls for comprehensive planning, far-reaching changes in institutions, devotion of more human resources to the agricultural sector than has been the case in the past and the allocation of substantially greater financial resources for this purpose than was contemplated earlier. National attention and policy emphasis must be focused on the agricultural sector if it is to provide increased agricultural production, employment and income-earning opportunities. Within this context, a comprehensive and integrated agrarian structure would both profoundly improve the performance of the agricultural sector and insure balanced economic development. This conforms to Iraq's declared overall policy objective for the last two decades.

The enactment of the new agrarian reform of 1970 and the vigorous initiation of the supporting measures are serious attempts toward the Agricultural Revolution in Iraq. Agricultural development calls for the application of a package of special but closely interrelated programs. This is the essence of the new policy approach. Previous experience had demonstrated that single programs could have

limited and sometimes even negative effects. These same programs could be highly productive if combined with other programs in proper proportion and with proper timing.

In this and the following chapters, the author will examine the performance of the complementary structures, the productive structure and the structure of supporting services; assess their future prospects and point out major problems and policies that they may have to face in the realization of their prospects; and finally examine the impact of the agrarian structure on the performance of the agricultural sector.

Production Structure

The discussion in Chapter II about land and water resources indicated that: the annual water discharge of the Euphrates and Tigris River System is estimated at 68 billion cubic meters. This water supply is sufficient to cultivate 22 million donums with winter and summer crops. The irrigated area would represent 46 percent of the total, 48 million donums, cultivable land in the country, if all the river waters were utilized, all proposed dams and reservoirs constructed and all incoming water utilized. Though this figure is large as compared with the percentage of lands now being utilized under irrigation, it is still less than half of the cultivated land.

Of the area of land in the Tigris basin now utilized under the fallow system, 18 million donums, only 9 million donums are cultivated annually. Another 5 million donums are utilized under the fallow system in the Euphrates basin. Altogether, around 12 to 14 million donums of irrigated land are utilized annually under the fallow system. The quantity of water stored at the present time, by Dokan and Derbendkan dams and the Habbaniya Lake, does not exceed 12 billion cubic meters annually. It is used for the irrigation of the 12 to 14 million donums under the fallow system. Therefore, this very large gap between the area that could be irrigated (22 million donums) and the area that is irrigated (12 to 14 million donums) is the result of the lack of organization and control of rivers flow by measures of the construction of dams and reservoirs. It is mainly due to the fact that the very bad drainage situation necessitates a crop fallow rotation on the irrigated land.

Irrigated agricultur, in Iraq, can indeed be greatly expanded. In the forecoming five-year plan, 1975-1979, Iraq plans to construct three large dams: The Mosul and the Himrin dams on the Tigris and the Haditha dam on the Euphrates at a total cost of ID 345 million (\$1.1 billion) and with a storage capacity of 26 billion cubic meters. However, the policy approach should concentrate on more intensive use of the irrigated land, vertical expansion or increasing productivity, rather than horizontal expansion

or bringing new land under cultivation, at least in the short run. Furthermore, such intensification, if it is to contribute to higher agricultural production and productivity, must be part of a package approach for agricultural development.

While the previous discussion illustrates the possibilities of the expansion of irrigated lands, the greatest agricultural output potential in Iraq lies with the presently irrigated land. This is mainly because agricultural productivity, yield/donum, of the major crops is extremely low. The future agricultural production of the main winter and summer crops in Iraq can be seen in Table 4.1. The agricultural potential of Iraq assumes the present estimated water diversion in Iraq.¹ No increase is assumed because (1) a treaty would have to be worked out between Iraq, Syria and Turkey, to provide Iraq with additional water from the Euphrates River, and (2) a low priority is placed on additional irrigation relative to other measures that can be used to increase agricultural productivity.²

¹Clawson, p. 134.

²A recent study of the Euphrates, concerning the current water use and planned additions comes to this conclusion (figures in million cubic meters):

<u>Irrigation</u>	<u>Turkey</u>	<u>Syria</u>	<u>Iraq</u>	<u>Total</u>
Current use	1,500	2,980	12,860	17,340
Planned addition	12,140	4,610	6,040	22,700
Total future use	13,640	7,590	18,900	40,130

Gail A. Halhaway, Harry W. Adams and George D. Clyde,
Report on International Water Problems, Keban Dam,

Table 4.1. Iraq's present and potential production of main crops

Crop	Present yield (mt./ha.)	Potential yield (mt./ha.)	Present crop area (1,000 ha.)	Potential crop area (1,000 ha.)	Present production (1,000 mt.)	Potential production (1,000 mt.)
Barley	0.71		1,169		832	
rainfed		2.7	580	1,000		2,700
irrigated			590	none		none
Wheat	0.48		1,737		826	
rainfed		2.7	1,300	1,000		2,700
irrigated		6.7	400	2,000		13,400
Sorghum after irrigated						
wheat		3.0		2,000		6,000
Rice	2.2	8.0	141	100	309	800
Cotton	0.25	1.0	39	100	10	100
Sorghum and millet	1.1		15		16	
Summer vegetables			130	200		
Other crops			75	100		
Total			6,176	6,500	2,000	25,600
Total grain					2,000	25,000

Source: H. Clawson, H. Landsberg, and L. Alexander, The Agricultural Potential of the Middle East, American Elsevier Publishing Company, Inc., New York, 1971.

Far from assuming more irrigation, the study assumes that the area to which irrigation is extended will decline from 3.3 million hectars, 8 million acres, to 2.5 million hectars, 6 million acres, but the area of irrigated land cropped each year will rise substantially due to a minimum of one crop each year on all irrigated land and two crops each year, wheat and sorghum on the irrigated wheat land. Some adjustment in land use patterns, especially in the rainfed areas, also is assumed. On the basis of present irrigation water use, grain production could be increased many folds, as shown in the above table; so could the production of cotton and vegetables readily be increased.

Several other requirements must be met if Iraq is to achieve the agricultural output potential outlined in the above table. These include the best possible land, water and crop management practices, including, fully adequate drainage system, fertilizer and pesticide mechanization and other requirements regarding the institutional structures. All of these fit in with the package approach. The discussion that follows will describe these other requirements.

Euphrates River, Report to International Bank for Reconstruction and Development, December 1965. For further analysis, see: John V. Krutilla, The Columbia River Treaty, in The Economics of an International River Basin Development (Baltimore: Johns Hopkins Press, 1967).

Fertilizer and Pesticides

The use of commercial fertilizer in the pre-reform period, during the 1950's, was insignificant. Very little commercial fertilizer was used in the post-reform period, during the 1960's. Figure 4.1 gives a rough idea of nitrogenous fertilizer, the main kind of fertilizer, use in Iraq in relation to other countries as reported by FAO. It shows that Iraq uses less nitrogenous fertilizer than any other country. As for the use of other chemical fertilizers, such as phosphate and potash fertilizer, Iraq used 1,800 and 200 metric tons, respectively, in 1966. Iraq lagged behind. Indeed, for all practical purposes it may be said not to have used these fertilizers at all. It is not surprising, therefore, that the land which had been producing for thousands of years without a program of fertility maintenance has very low yields.¹

In general, nitrogenous fertilizer is used primarily or exclusively on irrigated land in Iraq. The government, with the technical help of FAO, started a fertilizer campaign in the middle 1960's, for increasing the production and productivity of rice and cotton. It started on the state-farm and experiment stations for demonstration

¹H. G. Treacle, The Agricultural Economy of Iraq (ERS Foreign 125, USDA [Washington, D.C., August 1965]).

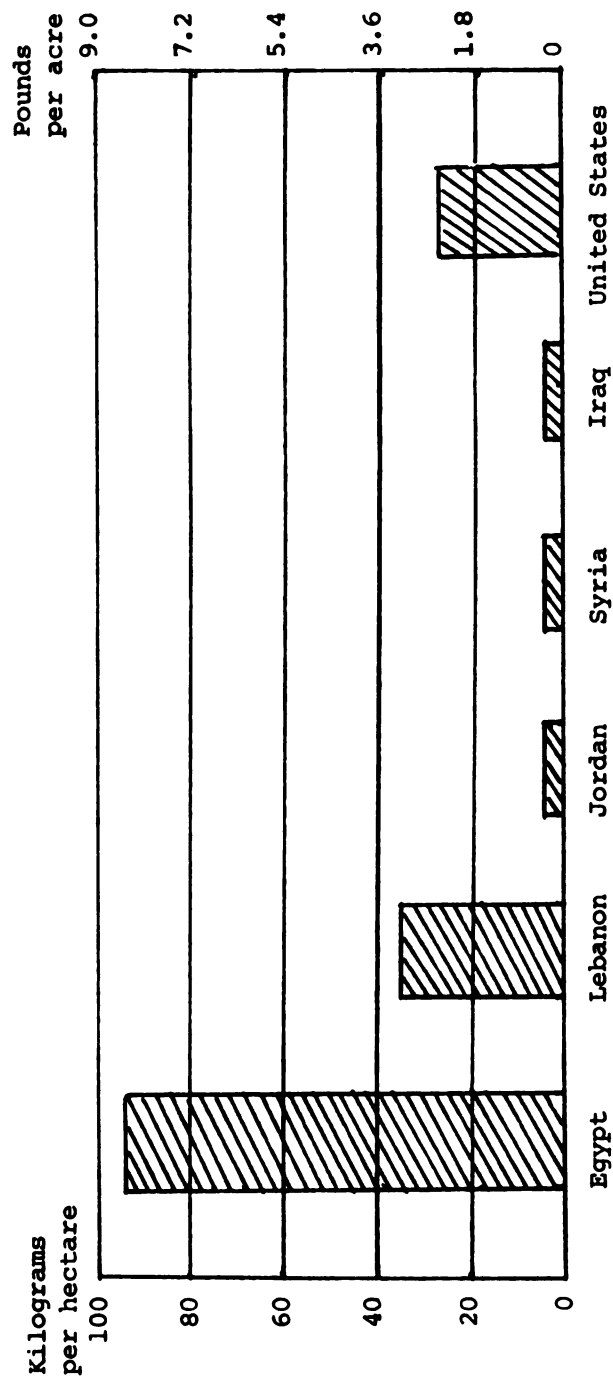


Figure 4.1. Nitrogen (N) fertilizer use per unit of arable land and land in permanent crops, by countries.

Source: FAO Production Yearbook, 1967.

purposes especially for the new rice varieties.¹

Cooperative members in areas near these state-farms and experiment stations started using commercial fertilizer on their land. Though the fertilizer campaign was conducted on a limited scale, it resulted in major improvements in the productivity of rice and cotton, as was mentioned in the previous chapter. To expand this campaign, the government established the Chemical and Agricultural Implement Company, which imports various kinds of fertilizer, chemicals and farm machinery. It makes these high-yielding inputs available to farmers and cooperative members. Fertilizer is sold at a profit margin of 10 percent. However, cooperative members and farmers involved in the Supervised Credit Program received the fertilizer at cost.

On the other hand, modern agriculture requires large inputs of diverse kinds of chemicals to control insects, plant disease and weeds and for other purposes. Insects, disease, and weeds reduce crop yields in ways which farmers often do not fully comprehend and their control has been a problem.

¹Introduction and Breeding of New Varieties with High Yield Potential Improvement of Rice Production in Iraq, FAO, International Rice Commission, Working Party, Twelfth Seminar, September 9-14, 1968.

Moderate amounts of pesticides were first used in the 1950's when Iraq had a fairly active insect control program in operation. They were used on a far more limited scale during the post-reform period. According to the Ministry of Planning, Iraq's annual losses because of insects and diseases were as follows: ID 10 million from winter crops--wheat and barley, ID 3 million from dates, 44 percent of corn production, 35 percent of tobacco and 40 percent of vegetables. However, as in the case of fertilizer use, Iraqi's use of pesticides was extremely low. Figure 4.2 gives a rough idea of pesticides and other chemicals per unit of arable land and land under permanent crops in Iraq and other countries in the area as reported by the FAO. Thus, inasmuch as increased use of commercial fertilizer and pesticides is one of the most effective technical measures for vertical expansion, it is obvious that more use of commercial fertilizer and pesticides is needed in Iraq.

The study on "Agricultural Potential of the Middle East" indicated Iraq's need of the major plant nutrients in the form of commercial fertilizer, nitrogen, phosphate, and potash. These calculations were based on data collected from areas where soil conditions are not too different from those found in Iraq.

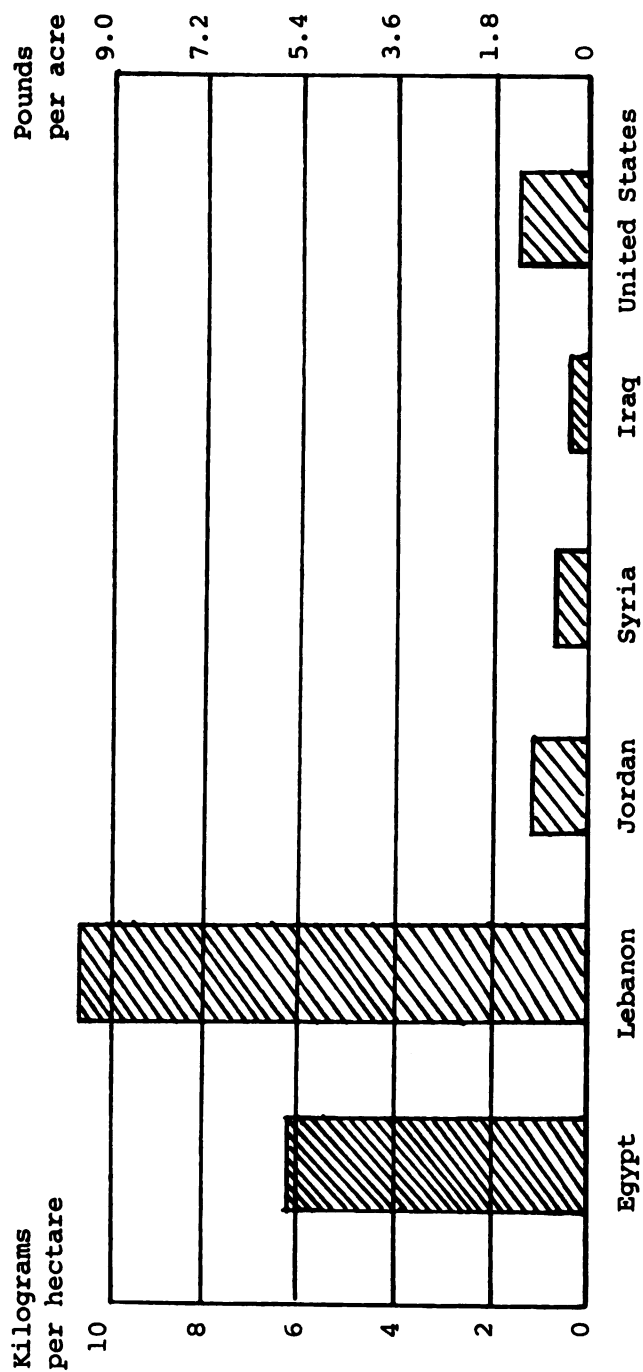


Figure 4.2. Pesticides and other chemicals, per unit of arable land and land in permanent crops, by countries.

Source: FAO Production Yearbook, 1967.

The data obtained at the agricultural experiment station at Pullman, Washington, for each bushel of wheat produced--60 lb or 27 kg--approximately 2.7 lb or 1.2 kg of nitrogen must be available to the plant root system. All of this becomes a part of the wheat plant, but all is not removed in the grain. Approximately 1.5 lb of nitrogen are found in the protein of a bushel of wheat, and approximately 1.2 lb of nitrogen in the plant roots and the wheat straw. On the other hand, while most if not all of the soils producing grain have high pH, low acidity, this would reduce phosphate availability. Therefore it is necessary to add more phosphate than the plant will use. Over a long period of time the phosphate content of the soil will build up so that eventually the need for this element may decrease somewhat. However, this takes a long time period. For potash, it was estimated that K_2O_5 would be equal in weight to the phosphate P_2O_5 , added per unit of area and that both of these would be required in one-half the amount of nitrogen.¹

These estimates are for only one grain, wheat. Most other grains have similar requirements. Rice, however, requires somewhat higher levels of phosphate and potash.

Iraq's need of the commercial fertilizer and its expected cost can be seen in Table 4.2. Obviously, there is a large gap between the amount of commercial fertilizer use, during the 1960's and the commercial fertilizer needed for the intensification of agriculture. The statistics in the above table indicate that Iraq's fertilizer needs will be 1.678 thousand metric tons with a total cost of \$329 million.²

¹Clawson, p. 145.

²Ibid., p. 146.

Table 4.2. Iraq's fertilizer requirements and costs per year of development potential, by crops and nutrients

I. Requirements				
Crop	Metric Tons			
	N	P ₂ O ₅	K ₂ O	
Cotton	20,000	10,000	10,000	
Wheat	483,000	240,000	240,000	
Barley	80,000	40,000	40,000	
Sorghum	180,000	90,000	90,000	
Summer Vegetables	40,000	40,000	40,000	
Other Crops	15,000	10,000	10,000	
Total	818,000	430,000	430,000	
II. Costs				
	Price (U.S. Cents per kg.)		Present Production	
	Present	Potential	Requirements (thousand metric tons)	Costs (million U.S. \$)
N	31	25	4.8	1.5
P ₂ O ₅	18		1.8	.3
K ₂ O	11		.2	negligible
Totals			6.8	1.8
			Requirements (thousand metric tons)	Cost (million U.S. \$)
			818	205
			430	77
			430	47
			1,678	329

Source: Marion Clawson, Hans H. Landsberg and Lyle T. Alexander, The Agricultural Potential of the Middle East, American Elsevier Publishing Company, Inc., New York, 1971.

As the consumption of commercial fertilizer increases, there will be a greater need for pesticides to control insect and fungus pests and to suppress or eliminate weeds. The kinds of chemicals used are constantly changing as newer and more effective compounds are developed. Thus, one cannot project with certainty how much and what kind of pesticides will be required for high-level production at sometime in the future. According to W. B. Ennis et al. there is a linear relationship between fertilizer and pesticide use, i.e., 30 kilograms of pesticides per metric ton of fertilizer. However, it is possible to give a fairly accurate estimate of how much it will cost. For example, one might deduce from pesticide statistics published by FAO, that Egypt was buying pesticides at an average cost of little less or little more than one dollar per pound. But the average is heavily affected by large volume of low cost sulfur and mineral oils.¹ Recent statistics in the United States suggest the cost of pesticides at the processing plants ready for use at about 70 cents based on imported pesticide price of 50 cents a pound. Adjusting the cost of the latter to 70 cents, to be representative of a wider range, and allowing for a markup

¹W. B. Ennis, "Pesticides Inputs for Agricultural Production," in The World Food Problem, a Report of the President's Science Advisory Committee, The White House (Washington, D.C.: Government Printing Office, September 1967), pp. 130-175.

after the product leaves the plant, might result in a cost per pound of perhaps \$1.25.¹ Therefore, to match Iraq's future consumption of commercial fertilizer, the country needs about 50.4 metric tons of a total cost of \$139.2 million. In other words, the total cost of future commercial fertilizer and pesticide use would be in the general order of \$468.2 million.

The above estimated costs of fertilizer and pesticides were based on the prices in the international market and at a time when there was no fertilizer industry in Iraq. However, a fertilizer plant was constructed in Iraq in the late 1960's to utilize natural gas produced in the country to produce nitrogenous fertilizer. This plant cost ID 11 million (\$36.3 million) and has a production capacity of 190 thousand metric tons annually. Production started in the early 1970's. The government has since expanded the fertilizer industries in an effort to expand the supply of this technical measure for agricultural intensification. In 1974, construction was started on a larger fertilizer plant, that will cost ID 60 million, with a production capacity of two million metric tons. Thus, Iraq should soon produce its future needs of nitrogenous fertilizers and also become an exporter of these products.

¹Ibid., p. 195.

From the foregoing discussion it is clear that Iraq needs a new combination of practices partly to adjust to recent and current changes in irrigation systems, and partly to attain the full benefits from new crop varieties. Farmers and cooperative members have three basic decisions to make in their use of fertilizer: (1) the amounts of fertilizer to use per donum, (2) the cropping system, and (3) the form and source of plant nutrients. Their choices among alternatives involve both agronomic and economic considerations.¹ Agronomic information is necessary as a basis for determining the physical input-output, or response quantities, associated with fertilizer applied in different amounts, forms, and by alternative methods on different crops. These data must be combined with correct economic principles if fertilizer is to be used in making the greatest contribution to farm profits and family living levels. Even though agronomic research provides precise knowledge of the responses expected from fertilizer on a particular soil, the optimum usage of fertilizer still depends on economic considerations. The optimum amount and kind of fertilizer to be used will differ between points in time and among farms having the same soil

¹B. M. Abdel-Sayed, "The Potential Use of Fertilizer for the Intensification and Development of Agriculture in U.A.R." (Ph.D. dissertation, Michigan State University, 1969).

and response function. It would depend on the amount of capital available, the tenure system, the ability of the operator to shoulder risks, and uncertainties and variations in fertilizer and crop prices.¹ At each point of decision, the farmers or cooperative members must apply economic principles and information in the use of a fertilizer plan which is integrated into the profit maximization goal of the entire farm.

There are three economic principles that are especially important in determining what crops should be fertilized and when and how much fertilizer should be used: (1) the substitution principle for deciding what combination of elements to use, or how far, for example, the farmer should substitute commercial fertilizer for legumes or barnyard manure and vice versa. (2) The opportunity cost principle. (3) The added cost-added return principle--the principle of diminishing returns and marginal costs for deciding how much fertilizer to apply if the operator has unlimited capital. All of these, in essence, call for comparison of the marginal value products with marginal costs.² Following is a brief discussion about these three economic principles.

¹David Hapgood, "Policies for Promoting Agricultural Development," Center for International Studies, Massachusetts Institute of Technology, 1965.

²Abdel-Sayed, p. 100.

The substitution principle.--In deciding whether to substitute fertilizer for legumes in a relation, one has to consider the nature of the soil and the cropping system. Soil test results are very effective in illustrating the influence of legume, forage crops and barnyard manure on the status of soil fertility. Legumes may be the most satisfactory source of nitrogen, if the farmer is short of ready cash and may not have the money to pay for commercial nitrogen.¹ In such a situation, a well-planned cropping system including legumes is essential to supply the nitrogen needed for growth of the non-legumes. But it should be noted that the use of green manure is not a profitable practice at the present fertilizer crop price ratio, nor when there is a shortage of irrigation water. On the other hand, when legumes are used for forage with a livestock system of farming, the problem is different. The legumes serve the dual purpose of feed for livestock and as a source of nitrogen for the grain crops. In such a system, legumes are generally essential.

The opportunity cost principle.--With respect to decisions on the crops to be fertilized, the farmer must select those crops which will give the greatest return from fertilization of specific crops to the return from the same

¹ F. E. Allison states in his article, "Nitrogen and Soil Fertility," USDA, Yearbook 1957, "that legumes may fix 200 pounds of N an acre each year if effective strains of the proper root nodule bacteria are present in the soil or are added to the seed as commercial inoculants."

capital used for livestock enterprises, or other investment opportunities within the farm business. This can be expressed in the following simple equation:

$$\frac{MVP_{x_i}(Y_1)}{P_{x_i}} = \frac{MVP_{x_i}(Y_2)}{P_{x_i}} = \frac{MVP_{x_i}(Y_j)}{P_{x_i}} = 1$$

x_i are variable resources, x to x_d used in the production of any number of crops or enterprises from Y_1 to Y_j .¹

In considering whether or not to substitute one crop for another, each farmer considers how it will fit in with his other crops. If a new variety of rice promises a 15 percent increase in yield but requires a twenty-day longer growing period, a farmer may reject it because it will

¹The equilibrium conditions for the firm, assuming two factors and two products and both factors variables may be stated as:

$$\frac{P_{Y_1} MPP_{x_1 Y_1}}{P_{x_1}} = \frac{P_{Y_1} MPP_{x_2 Y_1}}{P_{x_2}} = \frac{P_{Y_2} MPP_{x_1 Y_2}}{P_{x_1}} = \frac{P_{Y_2} MPP_{x_2 Y_2}}{P_{x_2}} = 1$$

where

P_{Y_j} = Price of j th product.

P_{x_i} = Price of i th factor.

$MPP_{x_i Y_j}$ = Marginal physical product of the i th factor used in production of the j th product.

T. Kelley White and George D. Irwin, "Farm Size and Specialization," in Size Structure and Future of Farms, ed. by A. Gordon Ball and Earl O. Heady (Ames: The Iowa State University Press, 1972), pp. 190-212.

prevent his planting the succeeding crop on time. He may likewise continue to grow a crop that doesn't seem very profitable considered by itself provided it fits well into his cropping system.¹

Risk aversion, an unwillingness to depend on the market as a source of wheat for the family consumption may favor wheat even when its monetary return seems to make it a less desirable choice. Therefore, it is apparent that the role of management in planning farms for optimum fertilizer use involves the whole farm business family complex, laying all resources together, learning how the amount of one affects the productivity of the other and then deciding on the most profitable combination for the entire farm unit.²

Marginal cost-marginal revenue principle.--It is apparent that equaling marginal costs with marginal revenue or marginal value product of the fertilizer with the price is not a simple task for the farmers or cooperative members. The production economist would even find it difficult to make such estimates because data are confused, inaccurate, and also because of the complex of the factors that influence yield.

¹Abdel-Sayed, p. 102.

²Ibid., p. 103.

Many natural factors and many management practices influence yield response and modify the operation of the above economic principle. Internal and external access to capital, and risk and uncertainty as to returns from an application of fertilizer keep cooperative members from applying as much fertilizer as would be profitable--the optimum--if there were no uncertainties as to the result. Also, the cropping systems, inadequate information, and modification in economic incentives and non-economic influences might affect the environment in which the economic theory has to function, and perhaps fail to be fully implemented.

While the impact of the price level on increasing investment and productivity cannot be disputed, the tenure structure in providing incentive structure, influence farmers' responses to the use of the fertilizer or any other technical measures. In other words, residual responses may also bring up important questions of proper fertilization rates on tenant farms under temporary management. The best rate of application for a tenant who will move at the end of the year and get no return from residual response is higher than for the owner who will stay on his farm. Thus, land tenure influences the decision of farm operators in a number of ways. The best fertilizer combination between owner-operated farms and temporary tenants, depends on the process of redistribution.

It can be shown that a tenant farmer paying all the costs of fertilization, or any other input, but getting only a share of the yields should not apply as much fertilizer for maximum profits as an owner or cash tenant. Figure 4.3 shows the difference in return on investment in different tenure structures.

Method of analysis.--The optimum or most profitable level of fertilization as farmers seek to maximize profits, in a decision making environment of unlimited capital, is defined by the equation:¹

$$\frac{dy}{dx} = \frac{Px}{Py}$$

¹A great deal of valuable work in the field of economic efficiency as it relates to leasing arrangement has been done: "Two major sets of goals--(1) maximizing of economic efficiency in resource use, and (2) attainment of distributive justice in the allocation of return between landlords and tenants--have far-reaching effects upon the determination of ideal and workable leasing systems. Economic efficiency is often heralded as one of the principle objectives to be attained under leasing arrangements."

In his valuable discussion of the "Leasing Arrangements," Barlowe points out that: "Among the leading issues that arise in the development of mutually acceptable and advantageous leasing arrangements are the concerns over (1) equitable sharing arrangement covering costs and returns; (2) comparable rental arrangement with all products; (3) opportunities for a fair return from all investment inputs; (4) flexibility, which permits adjustments for changing costs, prices and production; and (5) arrangement that recognizes social justice and welfare objectives. The first three of these issues have an economic efficiency orientation while the last two are concerned mostly with social justice."

Raleigh Barlowe, Land Reserve Economics (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972); and Earl O. Heady, Economics of Agricultural Production and Resource Use (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1951).

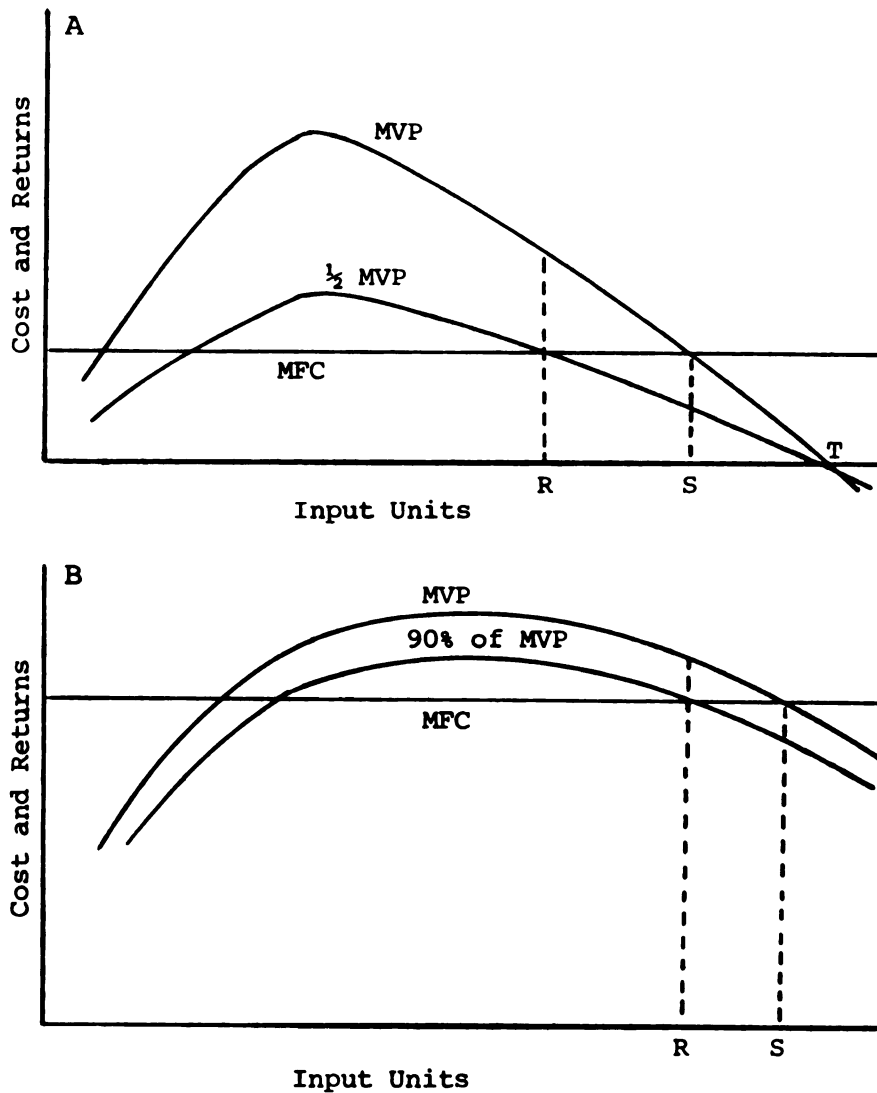


Figure 4.3. Illustration of the possible effects of (A) a one-half rental arrangement and (B) a 10 percent percentage leasing arrangement upon the tenant's willingness to apply additional inputs in the production process.

Source: R. Barlowe, Land Resource Economics (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972), p. 468.

where the term to the left of the equal sign is the marginal yield or response and the term to the right is the price ratio (price per unit of fertilizer divided by the price per unit of output). The marginal yield is the derivative of yield in respect to nutrient; it is the slope of the response function for any particular input level. It is obvious that the most profitable level of fertilizer changes as the term to the right of the equality changes. Likewise, the optimum level of fertilization will change, as the price of the crop, fertilizer or any other product or resource of the farm changes. How much change needs to be made in fertilizer use, as prices change, depends on the slope of the response function.¹

The above equation with a schedule of marginal physical products of any crop, can be used as a tool in finding the most profitable rate of fertilizer application. This can be done by dividing the cost of the unit of fertilizer (one kilo for example) by the price of one kilo of cotton, i.e., find out how many kilos of the crop could buy one kilo of the fertilizer, then compare the marginal physical product with the price ratio.²

Recently more adequate recognition has been given to the influence of price policies in product and factor markets in creating incentives for farmers which, in turn,

¹Abdel-Sayed, p. 104.

²Ibid., p. 104.

may encourage or discourage the adoption of new technology. As Schultz emphasized, there are three economic requirements for increasing agricultural production in the less developed countries. These requirements are: (1) an efficient system of prices for agricultural (farm product prices, agricultural input prices and the prices of consumer goods and services that farm people buy; (2) agricultural inputs that are profitable for farmers; and (3) the discovery and development of such agricultural inputs through organized research.¹

The farmers' incentives to invest in high productivity inputs such as fertilizers, would be increased if the ratio between cost and return is improved. This can be accomplished by higher and more stable product prices or by lower costs per inputs.

Thus, in discussing fertilizer use or any other technical measure in Iraq, the most important factor is the provision of adequate incentives for farmers and cooperative members to increase the rate of fertilizer application. While the foregoing discussion has briefly outlined the economic principles that influence the provision of adequate incentives, non-economic measures such as the structure of supporting services also are important. These will be discussed later in the chapter. Furthermore,

¹T. W. Schultz, Increasing World Food Supplies--The Economic Requirement, National Academy of Science, vol. 56 (August 1966).

more research is needed on the impact of these economic principles on the provision of adequate incentives to use fertilizer in Iraq.

Mechanization: The Use of
Farm Machinery¹

Mechanization, which in developed countries, is often thought of exclusively in terms of labor saving,

¹A great deal of valuable work in the field of agricultural mechanization has been done. There is the work which deals with an area similar in many ways to Iraq: Agricultural Mechanization in Equatorial Africa, by B. A. Slout et al. This study, the result of several years work including 18 months in the field, is a comprehensive compilation of information relevant to agricultural mechanization in equatorial Africa. A sampling of the specific information contained in the report and relevant to this dissertation include: "the importance of adequate markets before increased productivity can be profitable, the need for simple but effective methods of record-keeping for small farmers, and the fact that the cost of mechanization should be met out of resulting increase in production, and that tractors are ordinarily economical only if they can be used for a major portion of the year. . . ." Of equal importance with this wealth of particular facts is the general philosophy of mechanization which forms the essence of this report. The Preface summarizes the team's view of this important but difficult undertaking: "There is no question that mechanization will be employed; the question is at what level and to what degree. These questions do not seem difficult to answer until one considers that agriculture is only one aspect to be considered, and that mechanization is but a small segment of agriculture. In other words, questions about mechanized agriculture must be considered in relation to much broader social, economic, and political issues. Thus, . . . there is no single or simple path to development. The role of mechanization in agricultural development will continue to be a matter of opinion and conjecture."

B. A. Slout, G. Kline, D. A. G. Green, and Roy L. Donahue, Agricultural Mechanization in Equatorial Africa, Report No. 6, College of Agriculture and Natural Resources, Michigan State University, 1969, pp. 2, iii.

actually is a necessary part of the "high potential package" to which farmers must have access for timely and satisfactory land preparation, fertilizing, and planting. One of the important prerequisites for high yields in crops is a good seed bed, but this cannot be prepared, especially with fine textured soils, without adequate power for plowing, harrowing, and smoothing the soil. For example, some of the high yielding varieties of wheat will not provide good stands of plants under the traditional practice of throwing seeds on the ground and plowing them under. Instead, grain drills must be used. Similarly, the application of large amounts of fertilizer required calls for mechanized application, for best return on investment. These operations cannot be adequately handled by hand labor or by animal power in a short period of time. In addition, timeliness of land preparation, planting, and harvesting are important to high productivity. Therefore it may be critical to mechanize certain operations in order to encourage and facilitate double cropping. This possibility is favored especially by the new high yielding varieties with substantially shorter growing seasons and less photo sensitivity. Any delay in soil preparation means lost time for preparing crops and loss of income. Hence, of the inputs needed to sustain high levels of agricultural productivity, adequate farm power or implements are important.

The payoffs from machinery have been well categorized, "mechanization can . . . permit the completion of tasks with more precision, accomplish more work quickly, develop resources not presently utilized and accomplish tasks not possible with traditional techniques."¹ Furthermore, under appropriate private rental, cooperatives or state sponsored arrangements, such mechanization services could be available to farmers on small farms or to those farming under cooperative systems. The experience of Japan in this regard is very significant, especially the small scale implements and power machinery, that could be developed for small family-farm system.

The use of modern farm machinery has increased rapidly in Iraq since the early 1950's, but the quantity of machinery imported has been extremely limited in relation to the needs of the country. Most of the new farm equipment was purchased for the plains and northern farms, as the irrigated farms of the South were less adaptable to the use of large machinery for cultivating, planting and harvesting. The most advanced and highly mechanized areas are the marginal wheat and barley areas of Iraq. Farming there is of the extensive kind and mechanized units are large.

¹Lyle P. Schertz, "The Role of Farm Mechanization in Developing Countries," Foreign Agriculture (U.S. Department of Agriculture), VI, No. 48 (November 25, 1968).

In other parts of the country, much wheat and barley is still produced by primitive methods.

In the pre-reform period, 1952-1958, the flow of new farm equipment into the country was constant. Using tractors as an example, records of machinery and equipment sold indicate that an average of 300 tractors was purchased each year as seen in Table 4.3. Roughly a third of the tractors were owned by the government and were used for demonstration purposes and were hired out to farmers. While this was taking place quite slowly, a gradual change took place from dependence upon traditional practices to a more modern agricultural cultivation practice.¹

In an effort to expand mechanization in the cooperative areas, new services and supplies have been brought in during the post-reform period. The government established 20 or more machinery hiring stations throughout the country, which permitted cooperative members and tenants under temporary management to rent modern machinery and equipment from the inventory of the Ministry of Agrarian Reform. However, neither the progress of the cooperatives nor the supply of machinery available were particularly impressive. Most of the machinery was inoperative due to breakdowns, lack of spare parts and trained personnel and other management and administrative problems. By December 31, 1968, ten

¹Treakle, p. 35.

Table 4.3. Iraq's agricultural machinery and equipment sold, 1952-1962

Type	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
				Number							
Tractors	105	343	333	263	381	378	254	129	526*	743	1,096
Plows	74	187	185	186	280	222	201	99	299	529	552
Disc harrows	31	48	58	27	77	53	40	42	49	75	58
Grain drills	9	8	2	---	10	12	12	4	5	6	3
Cultivators	45	109	184	96	107	138	62	62	162	323	446
Combines	96	421	154	70	213	335	82	181	62	343	253
Threshers	2	1	---	---	6	---	9	---	10	---	---
Movers	---	NR	NR	1	1	1	4	---	---	NR	NR
Automobile trailers	NR	21	7	30	31	55	23	20	49	51	43
Blade scrapers	NR	11	10	12	21	16	16	9	13	17	34
Ditchers	3	6	6	14	15	16	13	3	14	23	28
Water pumps and irrigation equipment	NR	NR	NR	NR	NR	NR	NR	NR	NR	208	187
Other agricultural machinery	1	10	9	11	25	51	39	24	101	57	34

NR - Not separately reported.

* Includes 104 tractors imported from the USSR by the Agrarian Reform Ministry in accordance with the Technical and Economic Agreement between Iraq and the USSR.

Source: Republic of Iraq, Statistical Abstracts, Government Press, Baghdad.

years after the enactment of the first agrarian program, the number of farm machines represented only 10 percent of the country's need. The total number of farm machines, private and public, was in the following order: 8,686 tractors, 2,169 combines and 9,247 irrigation pumps.

Rigorous measures were undertaken to expand the mechanization of the agricultural sector in the late 1960's and especially after the enactment of the new land reform program of 1970. The Ministry of Agrarian Reform has followed two methods in expanding agricultural mechanization in the agrarian reform areas. The first, was to develop the Mechanical Units and Rental Stations, and promote their efficiency in the provision of the mechanical services needed for agricultural production as shown in Table 4.4. Several measures were initiated in this respect. Examples include the transferal of the Directorate General of Agricultural Machinery and Implements, formally attached to the Ministry, to the State Organization of Excavation and Agricultural Stations which has under its administration the Agricultural Mechanical Station, and the establishment of a Mechanization Institute at Abu-Ghriab for the training of technicians and drivers. In 1970, more than 1,221 technicians and drivers were trained at this Institute. This training process still continues. The government also encouraged the formation of work and wage systems that will reconcile the private interest of technicians and drivers and the public interest. Also

Table 4.4. Iraq's pumps, light and heavy agricultural machines and implements, and cars; owned by the state general organization of agricultural mechanical stations by end 1972

Unit or Station	Agricultural Machines							Heavy Machines						Water Pumps			
	Tractors	Combines	Share Ploughs	Disc Ploughs	Cultivators	Disc Harrows	Ditchers	Agricultural Wagons	Thrashers	Ditchers	Farm Bulldozers	Excavator	Dry Line	Bulldozers	Graders	Number	Total Horse Power
Nineveh hire station	28	70	4	8	8	15	2	2	10	--	2	17	--	--	--	--	--
Arbil hire station	22	40	7	1	14	4	--	--	--	--	1	15	--	--	--	--	--
Kirkuk hire station	48	55	30	--	10	8	--	6	--	1	1	29	7	5	2	1	20
al-Sulaimaniya hire sta.	40	42	41	--	1	--	--	2	--	--	1	25	1	3	--	--	--
Abu Ghraib hire station	70	80	55	4	--	20	7	12	12	--	14	45	--	--	--	24	1,376
Latifiya mechanical unit	6	17	11	--	--	2	4	2	--	--	2	8	--	--	--	14	717
Diala hire station	32	33	25	--	8	2	2	2	1	1	1	19	21	8	2	10	555
al-Anbar hire station	15	3	17	--	10	1	1	8	--	--	2	21	5	4	3	6	238
Babylon mechanical unit	18	24	16	--	--	--	1	2	1	--	1	25	12	10	5	--	--
Kerbela mechanical unit	15	10	15	--	--	2	--	3	--	--	1	13	12	5	1	--	--
Wasit hire station	36	44	35	--	--	18	4	3	2	1	2	38	17	12	2	66	4,639
Swaira hire station	25	22	17	--	--	5	2	7	--	--	1	13	4	3	1	48	3,061
Azizia mechanical unit	18	11	15	--	--	16	--	--	--	1	--	3	--	1	1	24	1,443
al-Qadisiya hire station	13	45	22	--	--	2	1	--	4	1	2	30	21	7	4	18	801
Thi-Qar hire station	30	48	32	--	--	--	2	--	--	2	2	12	20	13	1	8	332
Maysan hire station	30	26	18	--	4	3	2	--	--	--	4	20	12	7	3	29	1,677
Basrah mechanical unit	8	--	7	--	4	1	2	--	--	2	--	10	3	4	--	10	547
Muthanna mechanical unit	15	10	13	--	--	--	1	1	--	--	2	16	14	9	1	4	365
D'hok mechanical unit	17	--	20	--	6	3	--	--	--	--	1	6	--	--	--	--	--
Abu Ghraib stores	--	--	--	--	--	--	--	--	--	--	--	7	--	--	--	--	--
Mechanization Institute	--	--	--	--	--	--	--	--	--	--	--	13	--	--	--	--	--
Pumps repair factory	--	--	--	--	--	--	--	--	--	--	--	18	--	--	--	47	1,068
Total	486	580	400	13	65	102	31	50	30	9	40	403	160	91	27	309	16,839

Source: Iraq Ministry of Planning, Central Statistical Organizations, Annual Abstract of Statistics, 1972.

in an attempt to encourage the use of machinery, the government reduced the rental cost by 50 percent to the farmers and 60 percent to the cooperative members. The low rate for cooperative members favored collective mechanization by members of the local, joint and collective cooperatives. This was carried out through the purchase and ownership of the machinery and implements by the cooperatives. Encouragement of ownership of agricultural machinery by cooperatives was pushed to overcome previous drawbacks and foster improved performance in the use of the machinery and implements.

Imports of agricultural machinery have considerably increased, as is seen in Table 4.5. By 1973, the total number of machinery and implements for both the private and public sectors was as follows: 12,580 tractors, 2,673 combines, and 12,745 agricultural implements. Altogether total imports of machinery and implements increased more than fivefold between 1958 and 1973. While the statistics in the above table show that significant changes have taken place in agricultural practices since 1970, the supply of agricultural machinery and implements is still less than the country needs for adequate agricultural mechanization.

Now the question is, what is an adequate level of agricultural mechanization in Iraq? According to G. W. Giles, who discussed the question of what constitutes adequate minimum Tractive Power for general farming, concluded that the

Table 4.5. Agricultural machinery and equipment sold by 1973

Type	Public Sector 1959-1968	Private Sector 1959-1968	Public Sector 1969-1973	Private Sector 1959-1968
Combines	165	2,069	486	614
Tractors	600	8,211	967	2,203
Share and Disc Ploughs	---	180	---	1,173
Cultivators	408	2,617	463	628
Disc Harrows and Threshers	---	876	---	103
Other Implements	596	841	790	148

Source: Iraq Ministry of Planning, General Statistical Organization, Annual Abstract of Statistics, 1972.

minimum power required for high-level crop production is in the range of 0.5 to 0.8 horsepower per cultivated hectar (including animal and manpower).¹ However, the study on "Agricultural Potential of the Middle East" concluded that

for the subsequent calculation, it is assumed that an adequate level would be 0.75 horsepower. It is believed that an area with predominantly fine-textured soil would be underpowered at .05 horsepower per hectare, and that 1.0 horsepower per hectare would represent overpowering, although understandable perhaps in terms of convenience.²

While the tractor is usually the largest single item of farm expense, the most economical tractor size for Iraq differs according to different soil and terrain situations. For the fine-textured soils where cultivated areas are large enough, a 40-45 horsepower tractor will do a much better job.³

¹G. W. Giles, "The World Food Problem," a Report of the President's Science Advisory Committee, The White House (Washington, D.C.: Government Printing Office, September 1967), p. 178.

²Ibid., p. 178.

³A great deal of valuable work in the field of mechanization has been done by B. P. Pothecary. He pointed out, "Almost no developing country has based its mechanization program on tractor of low horsepower (70 hp or less). Reasons for this include unfavorable circumstances of soil, climate, crops, production levels, and skills, as well as the fact that many of the fundamental tasks to be done require more than 70 horsepower. Then, too, there is a lower cost per unit for manufacturing large tractors. Nevertheless, in India the introduction of 15-70 hp tractor with four wheels has been a great success; and a major reason for this is that farmers prefer riding a tractor to doing the manual labor which is necessary with two wheel tractors. Pothecary concludes that a 15 hp four wheel tractor would be eagerly used by farmers in developing countries. B. P. Pothecary, "The Small Tractor in Developing Countries," World Crops 21 (July-August 1969).

But the study used the 25-30 horsepower tractor size as a basis of calculation.¹ The fact that this size may be either too large or too small, depending on specific situation, does not appreciably affect the overall calculations of cost per hectare of land calculated. The manufacturing cost, at the time the study was conducted, would permit sale to the farmers at about \$120 per horsepower. Therefore, Iraq's need for additional power for attaining the production potentials would be 2.48 million horsepower; i.e., 83,000 tractors of 30 hp. and would have a total cost of \$290 million; while Iraq had 2,400 tractors in early 1960's, the difference would be 80,600 tractors. Since the number of tractors has increased considerably, 12,580 in 1974, the additional number of tractors required and the cost are likely to be somewhat lower than the results of this study.

Although the tractor is used as an example of power needs, the grain combine, serving more area than the tractor, is a more expensive piece of machinery. In considering the costs of plows, disc harrows, drills, planters, fertilizer distributor and other equipment, it is assumed that equipment can be used to its full potential. That is, one grain combine

¹Clawson, p. 150.

may harvest the area served by five 30 hp. tractors. Thus, the farm units must be rather large or else large machines must be shared by a number of farms, as is being done now in Iraq.

As Giles pointed out, "other farming implements and accessories are needed for high level agricultural production . . . it turns out that the cost of equipments other than tractor approximate the cost of the tractors. With elimination of a few items, the cost of tractors represent 56 percent of the total equipment cost."¹ The major item missing in these calculations is transportation equipment, such as trucks for hauling grains and other produce. The net outcome of the calculations, based on 0.75 hp. per hectare, \$120 per tractor horsepower, and tractor cost representing 60 percent of the total equipment cost, is total equipments' investment of \$150 per hectar, or \$61 per acre.

The cost of maintenance and repair of tractors and other major farm machinery in Iraq, as in many developing countries, has been greater than in the countries where such machinery are manufactured. This is partly due to the cost necessarily associated with imports of spare parts; lack of trained and experienced repairmen; and in part because maintenance and repairs have often been neglected until more costly repairs were necessary. This situation, it is

¹Giles, p. 178.

hoped, will improve in the future, especially as machines are used in larger numbers--providing both economies of scale in servicing and putting more machines of the same make in the country. Considering the experience of the United States, the annual replacement, repair and operating costs of this machinery should be somewhat under 20 percent of the annual cost of farm machinery and equipment.

The Ministry of Agrarian Reform in another recent study has concluded that to expand agricultural mechanization in this period (1970's to 1980), Iraq needs 36,000 tractors of 60 horsepower, 8,000 combines and 9,800 other pieces of equipment and accessories.¹

In an effort to meet the emerging demand for these machines, Iraq has started a production plant for agricultural machinery and equipment.² The agricultural machinery plant in Iskendereyah produced 530 tractors in 1971 and 1,012 tractors of 60 horsepower in 1972. Since then, the production has expanded considerably; in 1974, Iraq produced 2,100 tractors of 70 and 80 horsepower and 10,350 agricultural implements such as plows, disc harrows, planters, etc. Thus, while the process of agricultural mechanization was quite slow during the 1960's, since the early 1970's, there has been a

¹ Clawson, p. 151.

² Iraq, Ministry of Agrarian Reform, Annual Report,

a significant change in agricultural practices, i.e., from traditional and primitive cultivation to a highly mechanized farming.¹

To expand employment opportunities in the rural area, especially for those who did not benefit from the agrarian reform programs, the agricultural machinery plants are located in the rural area. The employment affect in manufacturing, distributing, and the many repair shops in the rural areas, has been very significant in providing job opportunities. In the long run, the new employment will probably not care for more than a fraction of the probable shrinkage in agricultural employment, but it nevertheless will assist in providing jobs and thus is highly important and deserves attention. While further research is needed in this area, the future employment opportunities in the agricultural sector, depends on the economic organization within this sector. This point will be discussed in the next chapter.

¹H. F. McColly lists important factors in the advancement of agricultural mechanization which include: development of industrial production, development of machines for small farms, favorable price of fossil fuels, shortage of labor, inefficient draft animals, and an encouraging governmental policy. After surveying the Japanese situation in detail the article concludes that it is a model of agricultural development. H. F. McColly and J. W. Martin, Introduction to Agricultural Engineering (New York: McGraw-Hill Book Company, Inc., 1955).

The Structure of Supporting Services

Throughout the early 1950's, prior to the enactment of the first land reform of 1958, it was felt that there was no need for a land reform program. Widespread and often uncritical acceptance was given to the assumption that the position of the small farmers, tenants and share croppers, would automatically and invariably improve with the gradual monetization of the agricultural economy through economic development. There is every reason to believe that, after the monetization of the agricultural sector, i.e., the investment by the landlord in the form of machinery and irrigation pumps, the gap between the rural rich and the rural poor had widened. This was mainly due to the defective agrarian structure.

New technology, the adoption of new varieties of wheat and rice along with the package of farming practices called the Green Revolution, has encountered some of these problems. Despite its positive results, several weaknesses and new problems created by this technology deserve recognition. As Ladejinsky has noted in speaking of India,

without minimizing the significance of the accomplishment, however, one must say that the revolution is highly "selective," even if its spread effect is not inconsiderable in certain areas. The green revolution affects the few rather than the many, not only because of environmental conditions but because the majority

of the farmers lack resources, or are "institutionally" precluded from taking advantage of the new agricultural trends.¹

It seems reasonable to believe that the green revolution has created employment opportunities, both in agricultural production and in the handling, processing and marketing of increased output. However, employment opportunities in the production phase may have become more precarious, with less permanent employment, but increased seasonal work, and fewer opportunities for renting land. As land values have risen and the prospect for profit from farming has increased, some landlords have taken their formerly rented lands for operation on their own account without hired labor.²

The new technologies are certainly the primary reason for the inequalities in the rural areas. It is not the fault of the green revolution that credit services do not serve those for whom they were originally intended, that the extension services are fairly behind expectations, that the village councils are essentially political rather than developmental bodies, that security of tenure is not given to the many, that rentals are exorbitant or that ceilings on land ownership are national. To a considerable extent these are man-made issues of long standing.

¹ W. Ladejinsky, "Ironies of India's Green Revolution," Foreign Affairs 38 (1970):763-764.

² Dorner, p. 26.

Modernization of agriculture should include a combination of technical factors geared to higher production and environments in the institutional framework to benefit the rural underprivileged.¹ The green revolution, therefore, is not a substitute for a land reform program. In fact, a comprehensive agrarian structure becomes increasingly imperative as the role of new technologies accelerates.

Therefore, the structure of supporting services should function as an integrated unit with the ability to coordinate its activities within the agrarian structure. It should be internally capable of facilitating vertical integration within itself, and complementary arrangements, horizontal integration, with other structures, the tenure structure and productive structure, to undertake the rural and agricultural development activities. In effect, the structure of supporting services should be able to perform effectively the functions previously performed by the landlords, money lenders and shopkeepers and private processors. Thus, such a proposed system should operate as an effective alternative to non-institutional structures.²

¹Ladejinsky, p. 766.

²For an analysis of this phenomenon, see the experience of Taiwan and (1) as Christensen (1968) reports: "Land reform in Taiwan was successful in increasing agricultural output and productivity for several reasons. Perhaps most important is the fact that supporting services to provide extension education, marketing, credit and production requisites had been built up. In addition, tenant

While the first land reform of 1958, emphasized expropriation and redistribution of land; lack of supporting structures influenced the attainment of its objectives of increasing agricultural production and productivity. Fortunately, in conjunction with the enactment of the new land reform of 1970, the government established new institutions and initiated rigorous measures for the reform of supporting structures. The discussion which follows examines the performance of these structures and assesses their future prospects. It also points out problems and policies that it may have to face in the realization of its prospects.

The Cooperative Movement

The first land reform of 1958 required farmers to join agricultural cooperative societies that provided them with improved seed, fertilizer, machinery and guidance.

farmers who became landowners were experienced farm operators accustomed to making managerial decisions" (p. 89). R. P. Christensen, "Taiwan's Agricultural Development: Its Relevance for Developing Countries Today," Foreign Agricultural Economic Report No. 39, U.S. Department of Agriculture, 1968.

(2) As Voeltiner (1970) reports: "The Japanese record is equally as impressive. Here too farmers received new incentives to intensify productive efforts as they became owners of land rather than tenants or share croppers. Although suffering from the exhaustion and destruction of the second World War, Japan nevertheless enjoyed many of the same favorable circumstances existing in Taiwan, and have too the role of agricultural output following the reform accelerated." H. E. Voelkner, "Land Reform in Japan," Agency for International Development, Spring Review of Land Reform, 3 (1970): 1-79.

To insure the proper functioning of these cooperatives, the Directorate General of Agricultural Cooperatives was established in 1960 to supervise these cooperatives in the agrarian reform areas. The drive for the organization of many more cooperatives was begun in 1961. But as the membership was confined to new owners, the great majority of the recipients of land "temporary tenants" could not form cooperatives at all, as they could not offer their land as security; more were entitled to get farm machinery services from the Ministry of Agrarian Reform. Later on, these drawbacks were overcome. Temporary tenants were allowed to form cooperatives, the 1964 amendment of the law, and a number of cooperatives including them were formed. This amendment also gave the right to form cooperatives to farmers whose ownership did not exceed the redistribution ceiling in the areas. The expansion of cooperatives actually started in 1964 when there were 253 cooperatives with 36,249 members. However, few of these cooperatives confined their activities to one or two lines, the provision of seeds and pesticides or the hiring of machinery; few owned tractors and some marketed produce.

Ten years after the enactment of the program in 1968, there were 499 cooperatives with 65,784 members, but it was doubtful if all these cooperatives were active. The area under cooperatives represented 41 percent of the total areas under the administration and management of the

Tlinislry. The proportion of the beneficiaries who were members of cooperatives was 24 percent of the total number of land reform beneficiaries. In addition, the cooperatives did not expand to the areas outside the agrarian reform areas.

The lack of trained personnel had been a serious problem, especially for cooperative expansion. Even the center for cooperative and extension training, which was established in 1963 with the help of FAO, could not offer training for cooperative supervisors to more than 327 supervisors in 1968. Even with all the emphasis given to these cooperatives, so that they might become links between the state and beneficiaries for the provision of services; both the number established was far below the country's needs, and their performance was limited and inadequate.

Since the 17th July 1968 Revolution, and after the enactment of the new land reform of 1970, the Ministry of Agrarian Reform has taken the initiative in expanding the number of cooperatives and improving their performance. The number of cooperatives has increased manyfold, as seen in Table 4.6, and their activities cover the provision of credit, marketing and the supply of agricultural requisites, as will be discussed later.

The questionnaire "Analytical Framework for the Evaluation of Farmer Cooperatives" that was sent to the Ministry of Agrarian Reform, revealed that by 1974, there

Table 4.6 Iraq's progress of the agricultural cooperatives, 1961-1973

Year	Number of Co-operatives	Members	Areas in Which Co-operatives Work (Donums)	Paid-up Capital (I.D.)	Reserve Capital (I.D.)
1961	17	2,306	179	2,078	494
1962	50	8,397	461	3,217	2,034
1963	65	11,404	709	7,312	3,102
1964	225	29,496	1,978	28,699	7,778
1965	298	39,241	2,387	56,377	16,612
1966	367	47,725	2,503	76,167	26,919
1967	410	54,750	2,829	100,746	41,999
1968	473	62,976	3,297	111,296	59,155
1969	608	76,171	3,612	145,925	73,604
1970	786	107,797	5,181	213,880	87,096
1971	831	126,968	6,766	267,581	154,899
1972	992	146,630	9,955	326,422	244,337
1973	1,238	230,122	11,442,065	---	---

Note: The data is related to the co-operative year which begins from 1/9 to 31/8.

Source: Iraq Ministry of Planning, Central Statistical Organization, Annual Abstract of Statistics, 1972.

were 1,361 cooperatives with 250,180 members. It also indicated significant improvement in the performance of these cooperatives.

The Ministry has encouraged the establishment of "joint cooperatives"¹ to complete the cooperative structure and increase the participation of the cooperatives in the development tasks. This task was undertaken gradually. Joint cooperatives render services to cooperative societies that they are unable to undertake individually such as agricultural mechanization and the use of pesticides. These joint cooperatives form among themselves a cooperative union

¹The noteworthy feature of experiment in Taiwan is that cooperatives have been developed and operated as part of self-contained network and an integrated system covering credit, marketing and the supply of requisites. Further, the cooperative system in fact has other functions than that of a mere supporting service structure; it has assumed all the characteristics of a development oriented agency as well as being an efficient mechanism for mobilizing rural savings. These cooperatives play a fourfold role. First, it is one of increasing the bargaining power and promoting group activity among farmers, an objective emphasized in regard to cooperatives in the industrialized countries of Western Europe. Secondly, they provide services to agriculturalists by acting as an agency specially sponsored by the State. Thirdly, they act as an extension agency for spreading knowledge of new techniques; fourthly and perhaps most importantly, they operate as an agency for mobilizing rural savings for accelerating economic development. Republic of China, "Land Reform in the Republic of China" (RU: WLR-C 66/45), pp. 35-40.

at the province level, while these local unions form the "General Union of Agricultural Cooperative" at the national level as seen in Table 4.7. The organization of joint cooperatives started in 1968, and in 1972 the General Union began its activities and rendered its services to cooperative areas throughout the country. By 1973 there were 132 joint cooperatives, representing 818 societies, and utilizing 201,242 donums. Furthermore, the General Union has expanded its activities outside the agrarian reform area. There are about seven million donums, 29.5 percent of the total area utilized annually, owned by 23,044 landowners, whose ownership holdings are less than the maximum ceiling, employing about 150,000 farm families outside the agrarian reform area. Forming cooperatives among tenants and owner-operators is essential to expand the structure of supporting services. By 1974 there were 92 cooperatives with 3,561 members.

Another important measure, aimed at improving the performance of the cooperative, was to overcome the problem of lack of trained personnel. This task was carried out and through different channels. For example, the center for cooperative and extension training, was replaced by the "Agricultural Cooperation and Extension Institute." The Ministry of Agrarian Reform paid more attention to the preparation and training of the technical staff through special training courses for the agricultural colleges,

Table 4.7. Iraq's distribution of agricultural cooperatives by governorates up to 31/12/1972

Governorate	Local Agricultural Co-operatives	Joint Agricultural Co-operatives	Collective Farms
D'hok	17	1	--
Nineveh	135	8	--
al-Sulaimaniya	42	7	--
Arbil	39	5	--
Kirkuk	70	9	--
Diala	42	7	2
al-Anbar	50	5	--
Baghdad	116	15	4
Wasit	109	6	1
Babylon	84	8	--
Kerbela	25	4	1
al-Qadisiya	76	10	--
al-Muthanna	27	--	--
Maysan	106	10	--
Thi-Qar	52	7	--
Basrah	25	3	--
Total	1,015	105	8

Local Agricultural Co-operatives: The Local Agricultural Co-operative society established or to be established and registered according to the provisions of the Agrarian Reform Law No. 117 for 1970, and the instructions of the Higher Agricultural Board No. 149 for 1972, including all the co-operative societies at the village level.

Joint Agricultural Co-operatives: Joint agricultural society consisting of two or more Agricultural Co-operatives, and working within a wider scope than the village, as it is at an administrative centre level.

Collective Farms: Agricultural Co-operative Establishment, based on collective work of members, and collective ownership of production means.

Source: Iraq Ministry of Planning, Central Statistical Organization, Annual Abstract of Statistics, 1972, p. 93.

institutes, and school graduates. These training sessions, in-service or on-the-job training, lasted from three to six weeks and covered various areas, such as cooperative administration, book-keeping, credits, marketing and processing, etc. This training process still continues. By 1973 1,202 cooperative supervisors and 314 inspectors had graduated from this Institute. They were assigned to cooperatives throughout the country. In addition, many agencies at the Ministry level continuously hold short courses for training officials on cooperative management and increasing agricultural production.

The Ministry also established 980 Adult Education Centers for the training of the cooperative members throughout the country to expand the introduction of the new technology and improve agricultural practices. These centers conduct short-term courses three to four weeks, to train the cooperative members in various agricultural practices such as, the use of the new technology, cooperative principles, maintenance of agricultural machinery, credit and marketing processes. By 1973, 450 cooperatives with about 9,000 members participated in this training program. Other training sessions, held at the agricultural colleges and Institutions, were conducted to train the members of the Board of Administration of these cooperatives. More than 470 cooperatives and 1,473 Board of Administration members have participated in this program. In addition, an agreement was reached with the German Democratic Republic for establishing an institute

for agricultural education "The Social Agricultural Institute" in Seven April Project for the training of technicians and farmers on the management of State, Collective and Cooperative farms. The Ministry planned to establish another training center in every province to expand the training and education processes.¹

The Ministry of Agrarian Reform has encouraged the participation of these cooperatives in agricultural planning and accepting crop-rotation practices. Cooperative members were formerly allowed to cultivate their land according to their individual decisions. No production plans were followed or supervised by the cooperatives. Soil fertility and natural conditions were not considered in plans for the growing of high-yielding crops and other industrial crops. These practices resulted in the deterioration of soil fertility and wastage of water and land resources. The annual production plans of cooperatives merely covered the member's needs in respect to cash and in-kind advances, especially for seeds, fertilizer, livestock and marketing. However, such plans did not cover all the cooperative members. In most cases it did not cover more than 50 percent of the members; and in other cases it only covered 10 to 30 percent of the cooperative members.

¹Al-Nowfel Sami Jawad and Mustafa Hamdoon, New Attitudes in Agrarian Reform and Agricultural Cooperation in Iraq, Ministry of Agrarian Reform, Directorate General Of Planning and Following Up, Baghdad, April 1970.

Faced with these technical and institutional problems, the Ministry drew up an agricultural plan and crop rotation plan for certain cooperatives compatible with the local conditions and resources. In addition, the Ministry was able to draw up a preliminary plan for the agricultural projects, state farms and collective farms for the 1972 winter and summer seasons. Despite the technical difficulties and the weaknesses of the planning and the executive staff. The Ministry was able to implement these plans successfully. The cooperatives participated in the production of 30 percent of the wheat and barley and 60 to 70 percent of the vegetable production.¹

The success achieved by the Ministry and the cooperatives in this partial programming of the agricultural sector has encouraged the Ministry to formulate a more comprehensive production plan for the agricultural sector. In early 1972, all the Directorate of Cooperatives, agrarian reform, state farms and representatives of the General Union of Cooperatives were asked to take all necessary measures to achieve this goal. Measures included the formulation of production plans and suitable crop rotations for each cooperative, drawing up a unified agricultural production and services for all cooperatives based on the plans prepared at the local level; and submitting these plans with the recommendations to the Ministry of Agrarian Reform.

¹ Ibid., p. 80.

In March 1972, a conference was held for the Directors of Cooperation and Agrarian Reform at the province level. The purpose was to discuss the production plan for the 1972-73 winter season. In April 1972, another meeting was held for the managers of State-farms, cooperative directors and representatives of the General Union that resulted in drawing up of this plan. At the same time, the Ministry made available all the prerequisites for the execution of this plan, i.e., the provision of seeds, fertilizer and pesticides, machinery and other institutional arrangements. Thus, the drawing up and implementing this plan is considered as the turning point in the field of agricultural planning in the agrarian reform subsector; and a significant measure toward comprehensive planning and programming of the agricultural sector, where the cooperatives have effective participation.

In other words, the reasons for the cooperative farming in the agrarian reform areas are:

1. Greater control over agricultural production, by retaining the advantages of large scale production or 'economics of scale' and the supply to urban centers.
2. Preserve infrastructure of expropriated large farm, especially irrigation pumps and other installations.
3. Prevent rise or increase of inequalities in farming community and include the landless among land reform

beneficiaries, as a result of the 1964 amendment of the reform program.

The issues of cooperative farming are included in this dissertation since it is now a major alternative for organizing and integrating farming, marketing, credits and other functions being tried in Iraq. However, cooperative farming might best be dealt with as a separate topic concerned with analyzing the experience of various models of cooperative farming in different countries, and the lessons of that experience for the advisability of using and adapting cooperative farming to various situations and policy requirements.¹

However, further research is needed in the area of "Organizational Problems of Cooperative Farming," such as:

1. Internal discipline and efficiency versus responsibility of management to membership and participation of members in management decision.

¹ There are currently three major models for cooperative structure:

- (1) The Japanese, West European, North American pattern of family farms. . . .
 - (2) A pattern of large, private farms which integrate some or many of the marketing and processing functions with crop and livestock farming in the same firms.
 - (3) A pattern of cooperative farming which dominates or forms a substantial part of the agricultural sector, as in the Socialist countries, Egypt, Algeria and Peru.
- UNRISD, A Review of Rural Cooperation in Developing Areas, ed. by Oriando Fals Borda and Inayatullah, UNRISD Series, No. 1, June 1969.

2. Orientation of management to dealing with external problems and opportunities, requiring relatively free hand from members versus conservative managerial performance and emphasis on membership relations.
3. Review of experience with cooperative farming and methods developed to deal with organizational problems.¹

Credit

Credit is obviously an imperative in any program to induce farmers to increase their use of non-farm produced inputs. Agricultural credit and financial institutions in Iraq are usually grouped into two types according to whether they are (1) a private, informal such as the traditional money-lender, and (2) public or institutional, such as the Agricultural Bank and the Cooperative Bank.

After the enactment of the land reform of 1958, the supply of credits in the rural areas was greatly affected. The landlord's functions, especially in credit provision, were imperative for the production process, even at a low level of agricultural production. The great majority of the land reform beneficiaries, tenants under temporary management and even the new owners lacked not only the

¹Donkanel, "Organization of Agriculture and Cooperative Farming," in Land Policy for Developing Nations, Land Tenure Center, University of Wisconsin, June 1972.

financial resources, but they did not have access to credit institutions. Because of this lack of security and collateral, the small farmers and tenants were almost totally excluded from these credit or financial institutions. The Agricultural Bank continued its pre-reform policy. It preferred to make loans to landowners with substantial holdings (security) or other assets. Cooperative credit as such did not begin until 1956 when the Cooperative Bank was established. It had an authorized capital of ID 250,000 of which the contributions from the Ministry of Finance was not to exceed 51 percent and the rest was to be supplied by the few cooperative societies. In practice, the bank lacked the financial resources to supply the cooperatives with an adequate amount of credit.

Consequently, the majority of the land reform beneficiaries, tenants and small farmers, turned to private or informal sources for financial needs. Throughout the country there were numerous traditional money lenders, merchants and shop keepers who would supply credit against the advance sale "green crops," i.e., before the harvest, of a specified amount of certain crops at a set price which also incorporated the interest charge. Because the terms of credit are usually settled in advance, the money lenders make sure to set the unit price of the crop to be accepted as payment low enough to insure him return of the principle with a high interest rate. Obviously, the farmers' inability to wait and market their own crops when prices are higher worked to their disadvantage.

These drawbacks were overcome to a certain extent. Temporary tenants were allowed to join the cooperatives, as a result of the 1964 amendment of the land reform law; the Cooperative Bank Law, Law No. 65, of 1956 was replaced by Law No. 163 of 1959 to make loans for cooperative members; and the agricultural Bank Law was amended by Law No. 120 of 1964 to further aid the cooperatives in obtaining credit. Furthermore, the "Higher Agricultural Committee" had guaranteed "supervised credit" to help small farmers, especially those under temporary contract to have access to the agricultural credit. This is needed because they lacked security to obtain loans for making use of the new technology. This kind of credit also helped to diversify agricultural production, especially the production of cash crops and raw material needed for the local industry.

However, the provision of credit to cooperative members and other farmers was far below the minimum needed to sustain a high production level. In 1964-65, the Agricultural Bank issued ID 18,000 loans to 225 cooperative societies, i.e., an average of ID 80 (\$250) per society. Furthermore, in 1968, ten years after the enactment of the land reform program, the amount of cash loans paid through the cooperatives totaled about ID 27,000 for an area of 3.9 million donums, with an average of '7' fills, \$0.20 per donum. The same applied to credit in kind, as for instance,

the average per donum was about 0.4 kg of seeds in areas served by the agrarian reform cooperatives.¹

These drawbacks have been overcome to a large extent, since the late 1960's and early 1970's, in part because of the various measures initiated by the Ministry of Agrarian Reform to establish a comprehensive agrarian structure. Funds are available for different kinds of credits. Easy access to credit or financial institutions and the amount of credit issued to cooperatives and other farmers has increased many folds. Table 4.8 shows the amount of credit issued by the Agricultural Bank to cooperatives and other farmers in the last decade. Furthermore, the informal or the traditional farm credit provision has been eliminated to a large extent. Since then, Iraq's experiment with the credit system is a combination of the Agricultural Bank, the major financial institution, and the Cooperative Bank.

The Agricultural Bank is among the oldest financial institutions established in the country to render services to the agricultural sector. It started operation in April 1936 under the title of the Iraqi Industrial and Agricultural Bank. In April 1946 this bank was separated into two banks: the Industrial Bank and the Agricultural Bank, each of which embarked on independent activities as of that date.² Upon

¹Hassanien, p. 11.

²United Nations, Industrial Development in the Arab Countries, ID/CONF., 1/R.B.P. 16, New York, 1967, p. 63.

Table 4.8. Iraq's number and amount of agricultural credits, 1963-1973

Year	Credit Guaranteed Under In-Kind Sureties, Estate, Machinery		Cooperatives Credit		Supervised Credit		Total	
	Number of transactions	Amount in dollars	Number of transactions	Amount in dollars	Number of transactions	Amount in dollars	Number of transactions	Amount in dollars
1963-64	2,634	654,959	---	---	---	---	2,634	654,959
1964-65	4,530	1,296,017	27	18,086	---	---	4,557	1,314,103
1965-66	2,761	814,423	122	92,452	58	1,832	2,941	908,707
1966-67	3,072	1,072,837	211	124,475	189	5,851	2,941	908,707
1967-68	4,219	1,418,899	321	246,254	195	13,124	4,735	1,678,277
1968-69	4,908	1,574,990	453	315,577	469	25,986	5,830	1,916,553
1969-70	3,664	1,157,050	946	737,852	578	44,877	5,188	1,939,779
1970-71	3,987	840,073	1,530	2,066,337	1,896	102,739	7,413	3,009,149
1971-72	4,531	891,897	1,439	2,127,158	1,907	128,074	7,877	3,147,129
1972-73	3,979	935,590	1,699	2,872,240	1,112	81,365	6,790	3,889,195
Grand Total 38,275		10,556,735	6,748	8,600,431	6,404	403,848	51,437	19,661,014

Source: Annual Report on the Operations of the Agricultural Bank, Government Press, Baghdad, 1973.

independence, the nominal capital of the Agricultural Bank was ID 0.5 million, and the paid-up capital in the 1946-47 fiscal year was ID 380 thousand, and increased gradually to nominal capital of ID 15 million, and paid-up capital ID 6.6 million until March 31, 1972. Agricultural credit loaned by the Bank to farmers in 1972-73 totaled to ID 3.8 million divided into 6,790 credit transactions of which cooperative credit constituted about ID 2.9 million on credit secured under in-kind guarantees ID 935,590, and supervised credit ID 81,365. In 1972-73 the Bank ran 30 branches and 5 divisions in all Provinces and some important agricultural districts.

Currently the Cooperative Bank provides three kinds of loans, i.e., in terms of time-period and purposes:

1. Short-term loans--These loans are provided up to three years. They are for general agricultural practices such as cultivation and harvesting, channel clearing and some in cash for the use of fertilizer and pesticides and seeds.
2. Medium-term loans--The time period for these loans does not exceed six years. They are used for livestock production, dairy industry, etc.
3. Long-term loans--These loans are issued for a period of not more than 15 years. They are provided for agricultural machinery and equipment, land reclamation and drainage and irrigation network.

Currently the Agricultural Bank carries out the following types of credit.

1. Cooperative credit.--Extended exclusively to the agricultural cooperatives set up under the agrarian reform program, against an interest rate of 3 percent. Table 4.9 shows the amount and purpose of credit issued to these cooperatives from 1964 to 1973. Since the early 1970's the procedure adopted by the Bank for facilitating cooperative credit has significantly improved its performance.

2. Supervised credit.--This kind of credit is offered to small holders, land tenants and farmers who have not joined the cooperative, at an interest rate of 3 percent. This supervised credit has two sides: (1) material, which is entrusted with the Bank in its capacity as a financier, and (2) technical, which is undertaken by the technical staff in the Directorate General of Agricultural Extension.

The productive element of agricultural credit can increase only when the borrower has learned to make proper use of credit facilities by adopting better farming practices. To encourage the use of these improved practices, supervision of credit may be desirable and should be tied to a package of inputs and practices. Loans should be granted on condition that the farmers agree to adopt a package of recommended inputs and practices.

Table 4.9. Iraq's amounts of loans paid by the agricultural bank to the agricultural cooperatives, 1964-1973

Year	Agricultural Supply	Agricultural Machines & Implements	Cooperative Marketing	Animal Wealth	Agricultural Services	Other Purposes	General Total
1964-1965	18,332	34,042	---	---	---	---	52,374
1965-1966	42,353	48,210	6,125	---	---	---	96,688
1966-1967	85,970	16,325	10,822	7,002	---	5,000	125,119
1967-1968	194,750	4,300	60,975	2,000	---	750	262,775
1968-1969	170,801	18,125	115,730	85,272	21,622	1,115	412,665
1969-1970	1,370,058	107,553	329,763	214,235	105,400	23,171	150,240
1970-1971	967,987	278,100	344,361	52,437	136,303	18,639	1,797,827
1971-1972	832,717	517,425	349,464	299,656	153,439	46,151	2,198,852
1972-1973	1,055,852	617,066	316,478	492,419	213,217	3,500	2,784,421

Source: Iraq Ministry of Planning, Central Statistical Organization, Annual Abstract of Statistics, 1972, p. 95.

The Bank gives special care to the supervised credit program as it enables a considerable group of small farmers to adopt modern farming techniques. The program is also aimed at encouraging these farmers to diversify crop production and especially the production of cash crops and the raw materials needed for local industries.

Through cooperation between the Bank and the Directorate General of Agricultural Extension this program has made profound progress among the small farmers. Loans granted to farmers in 1972 totaled ID 128,074, distributed to 1,907 transactions.

3. Ordinary credit.--Credit guaranteed under in-kind securities. These are usually extended to farmers and orchard owners against an interest rate of 6 percent. The credit utilized for various activities required for the management of farms and orchards in various seasons included the purchase of agricultural machinery and equipment. Total amounts disbursed in 1972-73 for this category of credit was ID 935,590 or 28 percent of total credit in this year, divided into 3,979 credit transactions. Since then, the Bank policy has been to increase the availability of credit in this category to expand agricultural production and increase productivity outside the agrarian reform areas.

An integrated agricultural credit system, based on a suitable combination of cooperative and state owned banks should be capable of providing credit to the new owners and tenants on an adequate scale. However, the emphasis would have to shift from loans against land security to those against production capacity as the reformed system may not necessarily permit free transferability of land rights. While in the initial stage public subsidies are required, in the long run cooperatives will have to operate on a self sustaining basis. In the short run, funds from the state owned bank may have to be introduced into the agricultural sector. Over the longer run when agricultural productivity has increased, the cooperatives can be used for mobilizing rural savings and directing local investments. Such an integrated credit system would operate as an effective alternative for non-institutional sources. Consequently, in conjunction with the land reform program, such a system will be in a position to replace the previous landlords, money lenders and traders functions. Thus it would be capable of financing all types of credit needs, i.e., short, medium or long-term for production and consumption purposes.

Furthermore, agricultural credit loses a good deal of its impact if the farmer needs of the new technology, fertilizer and pesticides and farm machinery and equipment, are not available at the proper time, in the proper place and at reasonable prices. While one of the important aspects

of the increase in agricultural production is the marketing problem, the coordination between the credit system and the system for processing and marketing on the one hand and for input supply on the other has great advantages. It would also facilitate loan repayment.

The Japanese experiment is significant in the use of cooperatives as an integral supporting structure. This has facilitated the planned shift in credit-operation from "security nexus" to "production nexus." Land reform has adversely affected earlier credit and debtor relationships, such as that between landlord and tenant or between trader, money lender and producer. It has also resulted in restrictions on the transferability and marketability of land. However, there has been no decline in credit availability, largely because of the integrated cooperative structure of credit, marketing and supply of requisites.¹ Loans given by credit cooperatives are also recovered by them, because the farmers produce is more often than not sold through these cooperatives. Also, there are experiments in other countries such as the United Arab Republic, in some parts of India and the Comilla Project in Bahgladish that could be adopted to the local condition.²

¹ T. Midoro, "Marketing of Agricultural Products in Japan," paper presented at the Agricultural Forestry and Fisheries Conference, Tokyo, Japan, n.d. , p. 33.

² For an analysis of this experience see: Robert D. Stevens, "Institutional Change and Agricultural Development,"

Iraq's experiment with its credit system is still in the initial, short-run stage. Credit provision is carried out by state owned banks. The role at which the cooperatives are promoting rural savings and local investments, especially after the recent increase in agricultural production and productivity, remains to be seen.

Marketing System

Improvements in the performance of the marketing system, agricultural product and factor markets, can encourage increased agricultural production both through thier direct and indirect effects in bringing higher prices to producers. The effect may be direct as reduced marketing costs pass directly to the farmers in the form of higher prices. The process may also work indirectly through lower prices to the consumers, which due to high price elasticities can expand the market and thereby increase total revenue to producers. Other indirect effects may include reductions in uncertainty, lower prices and greater availablity of consumer goods that may increase incentives of farmers to earn more by increasing production. Therefore, it is just

Department of Agricultural Economics, Michigan State University, 1967; A. F. A. Hussain, "The Comilla Cooperative Experiment," Review of International Cooperation, No. 57 (1964); and H. W. Fairchild, "The Comilla Rural Modernization Experiment, Its Philosophy, Underlying Hypotheses and Usefulness as a Rural Development Model," Monthly Bulletin of Agricultural Economics and Statistics (Rome, FAO, March 1968).

as important to improve marketing techniques as to improve the production itself.

However, when the land reform of 1958 was enacted, there were no institutional arrangements for processing and marketing farm surplus or factor market to achieve the objectives of the agrarian reform program. The marketing system and provision of credit followed the traditional system. Throughout the country there were numerous middlemen, usually money lenders, merchants and rural shop keepers, who seized the opportunity to exploit the farmer. They made loans when the farmer needed the cash badly and took payment in "green crops" before the harvest at a low price. This traditional system resulted not only in lower prices to the producers and higher prices for the consumers, but also in enormous profits for the middleman. Further, marketing costs were high, partly because many cooperatives areas had no roads to link them to market places in urban centers, and partly due to lack of storage capacity for fresh meats, milk, fruits and vegetables.

These obstacles created the lack of incentives to improve the marketing system; few cooperatives marketed their produce cooperatively. The government price support program could offer premiums on crops marketed cooperatively. However, in 1965, government grain prices offered no incentive.¹ The cooperatives at the Hussieniya Project had asked the

¹Personal experience of the author.

regional cooperative supervisor to market their wheat. But the official price plus transportation cost was lower than the price offered by merchants in the village.¹ Meanwhile, cooperatives at Musieyib had succeeded in selling cotton direct to the state ginning mill, and by so doing received higher prices than they would have received from local merchants.

Since the late 1960's, the Ministry of Agrarian Reform has initiated the various measures to replace the traditional marketing system by a more efficient and modern marketing system in which cooperatives have a significant role. The Agricultural Bank has provided marketing loans to cooperatives before harvest time. The government price support program is extended to cover grain production and the industrial crops. Most of the cooperatives in the area are linked to the highway system to facilitate and reduce the cost of the marketing process, and many central markets, with modern facilities, are built in the province to which the farmers could bring their produce. Also the Ministry constructed large storage facilities attached to the main cooperative office buildings to help the cooperative members store their agricultural inputs especially seeds, fertilizer, and pesticides and their produce after harvest time. Table 4.10 shows the number of cooperatives who have participated in the marketing system.

¹Warriner, pp. 98-99.

Table 4.10. Iraq's quantity marketed cooperatively from different agricultural production 1964-65 to 1972-73
(unit: metric ton)

Year	Wheat	Barley	Cotton	Rice	Dates	Tobacco	Maize	Linen	Sesame	Wool	Milk	Number of marketing members	Number of marketing co-operatives
1964-65	241	--	110	--	--	--	--	--	--	--	--	241	16
1965-66	478	--	81	19	162	--	--	--	--	--	--	787	24
1966-67	655	147	250	225	224	--	--	135	--	--	--	2,130	65
1967-68	2,026	185	274	1,538	306	--	--	201	--	--	--	3,999	123
1968-69	2,359	1,200	1,577	2,856	2,180	23	163	148	84	6	325	9,268	263
1969-70	6,219	3,745	11,357	3,758	2,267	292	1,219	795	150	65	1,033	26,246	458
1970-71	9,640	1,074	12,043	6,121	3,968	308	2,888	467	54	120	1,153	11,215	189
1971-72	32,939	25,037	16,739	15,108	6,536	174	5,140	292	200	130	1,693	--	--
1972-73	35,416	31,911	17,358	29,916	25,000	--	7,909	214	110	410	2,658	--	--

Source: al-Nowfel, S. J., New Attitudes in Agrarian Reform and Agricultural Cooperation in Iraq, Ministry of Agrarian Reform, 1972.

Also these cooperatives have increased their activities in supplying agricultural inputs, such as irrigation pumps, fertilizer and farm machinery as seen in Table 4.11. Furthermore, some of these cooperatives have established grocery stores in rural areas to provide consumer goods to the cooperative members. There are about 56 stores, each of which on the average makes more than ID 4,000 profit a year. Hence, the supervised cooperatives seem to have advantages through their contacts with government agencies, including research and extension in pioneering the effective provision of the new technology, new inputs, and new marketing services.

Table 4.11. Iraq's number of water pumps which owned by agricultural cooperatives

Details	1970	1971	1972
Number of agricultural cooperatives	225	227	256
Number of water pumps	616	636	673
Total horsepower	34,930	35,165	37,107
Value of water pumps (ID 1000)	1,162	1,166	1,193
Value of buildings (ID 1000)	153	153	158

Note: Were owned in accordance with the revolution commanding decision No. 233 of September 6, 1969.

Source: Iraq, Ministry of Planning, Central Statistical Organization, Annual Abstract of Statistics, 1972.

While intensification of agriculture, increasing agricultural production and productivity, requires the use of technical and organizational measures to increase agricultural output from given package of inputs; these measures will be more fully adopted if economic policies take advantage of the price responsiveness of supply and factor demand whenever it is positive.

It is recognized, however, that though an efficient system of prices is a necessary economic requirement for organizing and integrating the production decision of numerous farmers among each other and with the rest of the economy, it is, however, not sufficient to assure increased food supplies in semisubsistence economies. The sufficient condition, according to Schultiz' analysis is met by assuring the supply to the farmers of the new and profitable inputs. Concurring, Krishna argues that:

The growth of agricultural output has to be induced primarily through institutional and technological improvements and a great increase in the supply of inputs embodying these improvements. But price movement can either accelerate, retard, or arrest these changes. Therefore, a favorable price policy is needed alongside techno-organizational change.¹

¹Rajkrishna, "Agricultural Price Policy and Economic Development," in Agricultural Development and Economic Growth, ed. H. M. Southworth and Johnston (New York: Cornell University Press, 1967).

The Report of the President's Science Advisory Committee on the World Food Problem, volume 2, states that a reduction in the price of technical input relative to the price of a product (or a rise in the price of a product relative to the price of an input) is an important incentive for increased production. The report also adds that comparatively higher and more stable product price and the freer environment for farmers in selling their crops would increase farmer incentives. Stable and higher product prices also reduce risks in investment in high productivity inputs and would have an indirect effect on increasing production.

It must be noted that prices affect the incentives of cooperative members and other farmers if (1) farm supplies and equipment necessary to increase output are physically available, (2) marketing channels for farm products are adequate, and (3) other influences which might oppose farmer's decisions to adopt yield-increasing technologies have largely disappeared.

Price supports or price guarantees at levels 5 to 10 percent below current market prices could assist cooperative members to organize their productive activities more effectively by eliminating some of the risks and reducing the range of price expectation. However, such a guarantee usually involve very minor financial commitments by the government. Prices at or above current prices

would induce the cooperatives to use currently available resources more intensively and to adopt the package of improved inputs and agricultural practices. This could involve a significant financial and organizational commitment by the Ministry of Agrarian Reform. Since the rate of actual use of the package approach (yield increasing technology) by cooperative depends very much on the ratio between the expected return from the recommended package and the cost of the package, floor prices can improve this ratio.¹

Further research is needed in the area of "Product Price Guarantee Versus Input Price Subsidization."

The question is, if the goal is to increase the use of modern inputs, fertilizer and pesticides and farm machinery, and to increase agricultural output, is it better to subsidize modern inputs or to guarantee minimum prices of output.

If product prices are raised, guarantee minimum prices, cooperative members and farmers may or may not like the improved techniques. They may continue current practices and simply spend the extra income on consumption; if so, government expenditures on support prices will be wasted. Also higher product prices add to the income of

¹Abdel-Sayed, p. 227.

both non-innovators and innovators. This windfall income may cancel out some or all of the incentives to increase production by permitting the marginal preference for leisure relative to labor to be more fully expressed. If, on the other hand, the new inputs are subsidized, the benefit of government expenditures can be denied by the cooperative only in proportion to their use of the modern inputs.¹

Input subsidization avoids raising food and raw material prices against the growing industrial sector. Also, the cost to the economy as a whole of increasing agricultural output is likely to be lower in the case of subsidies and can be borne through the tax system.

However, input price subsidization is not a complete substitute for product price guarantees to improve the performance of the marketing system and intensification of Iraq's agriculture. As a matter of fact, both are needed as complementary instruments of policy for different reasons.²

¹Ibid., p. 228.

²In Iraq, in the early 1960's, the price incentives were based on the produce price guarantee for field crops; since the early 1970's the Higher Agricultural Council has followed the input price subsidization.

Administration of Agrarian Reform Program

In Iraq, the gap between the declared policy objective of the land reform of 1958, especially increasing agricultural production and productivity, and their actual realization can be ascribed to the failure to reorient administrative machinery for land reform implementation (including administration of structural reforms), defective land records, inadequate training of staff, ineffective coordination and absence of follow-up and evaluation. No attempt was made to adapt existing administrative structure to the need of agrarian structural change.¹

The Ministry of Agrarian Reform was established, as a new administrative organization, to carry out the implementation of the land reform program. It was planned that the Ministry would carry out this process in five years, later extended to ten years. The creation of separate administrative organization also created the problem of multiplicity of agencies dealing with the agricultural sector and a competitive demand for the already limited resources of staff and technicians. In 1968, the total staff of the Ministry was 2,000 staff members or about 10 percent of that which it ought to have been as seen in Table 4.12. Furthermore, the centralization of work was at the Ministry level,

¹John L. Simmons, "Agricultural Development of Iraq: Planning and Management Failures," Middle East Journal 120 (Spring 1965): 29-140.

Table 4.12. The distribution of employees of land reform in Iraq

Zone	Province "Liwa"	University and High Inst. ¹		Medium Level Qualifications ²			Total
		University degrees	High Inst. degrees	Medium school	High school	Others	
North	Mosul	43	6	96	6	10	161
	Sulaimaniya	16	8	39	11	2	76
	Arbil	18	2	38	9	7	74
	Kirkuk	28	4	73	13	4	117
	Total	100	20	246	39	23	428
Central Region	Baghdad	109	68	191	28	36	432
	Diyalah	33	7	63	11	7	121
	Ramadi	24	4	56	5	6	96
	Hilla	44	8	70	17	11	150
	Diwaniyah	44	15	67	19	15	160
	Kut	49	23	145	17	0	254
	Kerbala	22	7	141	12	5	87
	Total	335	132	633	109	90	1,299
Southern Region	Basrah	11	1	24	2	1	39
	Nasiriyah	23	9	48	3	10	93
	Amara	28	5	85	9	6	133
	Total	62	15	157	17	17	265
Grand Total		497	167	1,037	162	130	1,992

¹The Diplomas of the High Education Institutes in Iraq are also included.

²The medium schools include the agricultural, industrial, commercial and other medium schools.

Source: A. S. Hassaniien, Report to the government of Iraq, Land Reform, FAO, Rome, 1970.

where most of the personnel worked. This represented about 44 percent of the total staff, leaving 56 percent in the Provinces. Between 3 and 10 percent of the total field staff had university degrees.

Since 1970, the Ministry of Agrarian Reform has initiated various measures to overcome the problems of agricultural administration and organization. To upgrade the performance of the public institutions serving the agricultural sector, the number of technically trained personnel, agricultural specialists, cooperative supervisors and extension agents, has increased manyfold. In addition, the technical staff of the Ministry has now been adequately distributed at the provisional level, where cooperatives have assumed a viable role in the provision of the necessary services. Also the government established the Higher Agricultural Council to coordinate the activities of the Ministries of Agriculture, Agrarian Reform, and Irrigation.

The need for close coordination of rural and agricultural development policies and programs became especially acute in the agrarian reform areas. This has led to the merging of the Ministry of Agriculture and the Ministry of Agrarian Reform into the Ministry of Agriculture and Land Reform, based on the principle of a unified administration, concentration of efforts and concentration of administrative and technical responsibility. In an effort to improve the performance of its central and branch agencies, the new

Ministry established the Agricultural Project System in the agrarian reform areas. Each agricultural project is an administrative structure with a manager appointed by the General Manager at the Ministry's level. While technical support and services from the headquarters are insured for all field personnel, in different specializations; managerial responsibility at the Project level is centralized and fixed. Therefore, such an administrative system will insure vertical and horizontal coordination, in the provision of agricultural services, at both the national and field level.

Comprehensive administrative machinery, i.e., the creation of new administrative concepts, new administrative structure and organization to bring about and sustain the structural change in the agricultural sector is required to implement the agrarian reform program. However, it is important to realize that the agrarian reform administration cannot be studied in isolation. It must be seen in the light of the socioeconomic conditions to which it relates and the agrarian structural change that it intends to bring about. The effectiveness of the administration of the agrarian reform program is always contingent with the political will to carry it out. Even an efficient administrative structure cannot bring about land reform in the absence of the political will to do so. But, obviously, purely political action will not suffice to achieve the objectives of the agrarian reform in the absence of suitable

administrative machinery for the transmission of this political will into concrete acts of implementation at the national and field levels.

Development Planning

In the field of planning, the general and detailed framework of the National Development Plan (1970-1974) marked a turning point in the planning history of Iraq. The emphasis in planning has shifted from fragmented programs to serious attempts to draw up comprehensive national plans.

The original version of the NDP was far more ambitious than the previous five-year economic plan. It called for total investment expenditures of ID 1,143.7 million, as compared with ID 821 million, i.e., an increase of ID 322.7 million or 39.3 percent. These investment expenditures were distributed to the institutional sectors in the following manner: ID 536.9 million or 46.9 percent to the central government sector, ID 321.8 million or 28.1 percent to the self-financed public sector, and ID 285 million or 25 percent to the private sector as seen in Table 4.13.

The rise in the state oil revenues, under the recent agreements brought a corresponding increase in the plan revenues. This necessitated the revision of the NDP,

Table 4.13. Iraq's total investment expenditure in the National Development Plan for 1970-1974
Fiscal Years distributed between the public and private sectors in comparison with
the Five-Year Economic Plan 1965-1969 (Million Dollars)

Details	Investment Expenditure					
	In the Five-Year Economic Plan 1965-1969		In the National Development Plan (Original Frame) 1970-1974		In the National Development Plan (Amended Frame) 1970-1974	
	Value	Ratio to Total %	Value	Ratio to Total %	Value	Ratio to Total %
Public Sector:						
Central Government Sector	561.2	78.4	536.9	46.9	952.5	61.1
Self-financed Public Sector	78.8	9.6	321.8	28.1	321.8	20.6
Sub Total	640.0	78.0	958.7	75.0	1,274.3	81.7
Private Sector: (including Mixed Sector)	181.0	22.0	285.0	25.0	285.0	18.3
Grand Total	821.0	100.00	1,143.7	100.0	1,559.3	100.0

Source: Iraq Ministry of Planning, Progress Under Planning, Baghdad, 1972.

with a view of investing the increased revenues in NDP projects. To attain this objective, the government resolved on December 15, 1971 to promulgate Law No. 158 of 1971, which provided for raising total investment expenditure to ID 1,559.3 million, i.e., an increase of ID 415.6 million. Most of the increased revenues were allocated to the central government sector. The increase in the central government investment was from ID 536.9 million as provided in the original version or 46.9 percent of total investment to ID 952.5 million or 61.1 percent in the amended version. While total autonomous (self-financed) public sector and private sector allocation remained the same, this has intensified the role of the public sector and raised its relative magnitude from 75 percent to 81.7 percent.

Under the amended version of the NDP, the relative magnitude of the agricultural sector, within the framework of the central government sector, increased from ID 185 million or 34.5 percent to ID 336.5 million or 35.3 percent. The relative magnitude of the industrial sector fell slightly from 24.6 percent to 21.8 percent; transportation, communication, and storage fell from 11.1 percent to 10.1 percent; and building and construction sector fell from 14 percent to 12.6 percent as seen in Table 4.14. These investment policies reflected more emphasis on the agricultural sector than the industrial sector.

Table 4.14. Iraq's summary of investment expenditure under the National Development Plan 1970-1974 in comparison with the Five-Year Economic Plan 1965-1969, by economic sectors (million dollars)

Sector	Five Year Economic Plan 1965-1969				National Dev. Plan (Original Frame) 1970-1974				National Dev. Plan (Amended Frame) 1970-1974			
	Central Government Investment	Ratio to Total %	Total Investment Expenditure in the Plan	Ratio to Total %	Central Government Investment	Ratio to Total %	Total Investment Expenditure in the Plan	Ratio to Total %	Central Government Investment	Ratio to Total %	Total Investment Expenditure to the Plan	Ratio to Total %
Agriculture	142.0	25.3	157.0	19.1	185.0	34.5	211.0	18.5	336.5	35.3	434.5	27.9
Industry*	168.0	29.9	215.0	26.2	132.0	24.6	394.0	34.5	207.3	21.8	397.3	25.5
Transport, Commu- cation & Storage	91.0	16.2	119.0	14.5	60.0	11.1	149.3	13.0	96.6	10.1	185.9	11.9
Building & Services	97.7	17.4	267.5	32.6	75.0	14.0	304.5	26.6	120.1	12.5	349.6	22.4
Other Investment**	62.5	11.2	62.5	7.6	84.9	15.8	84.9	7.4	192.0	20.2	192.0	12.3
Grand Total	561.2	100.0	821.0	100.0	536.9	100.0	1143.7	100.0	952.5	100.0	1559.3	100.0

*Including Mining, Electricity, Water and Gas.

**Including expenditure of Planning and Follow-up Machinery, International Obligations and other Miscellaneous investments.

Source: Iraq Ministry of Planning, Progress Under Planning, Baghdad, 1972.

The main objectives in the development of the agricultural sector under the NDP were:

1. To achieve an annual compound rate of growth of 7.0 percent in this sector.
2. To obtain self-sufficiency in the production of the principal agricultural crops and commodities.
3. To attain self-sufficiency in the production of raw materials needed by the industrial sector.
4. Increase agricultural production, with emphasis on vertical expansion rather than horizontal expansion; i.e., intensification of agricultural production.
5. Following an import substitution policy, the substitution of the locally produced agricultural commodities for the imported one.
6. Increase the capacity of water storage for flood control and irrigation.

Three targets were set in the development of the agricultural sector. They were:

1. The NDP (1970-1974) aimed at increasing GDP in the agricultural sector from ID 198.1 million in the base year to ID 277.1 million in the plan target year, i.e., an increase of ID 79 million or 39.9 percent with an annual compound rate of 6.9 percent. Consequently, the contribution of the agricultural sector to GDP would increase from 19.1 percent in the base year to 19.7 percent in the target

year, i.e., an increase in the relative importance of this sector, which is in conformity with the overall objectives of the development policy.

2. The NDP, aimed at increasing the value of agricultural production from ID 224.5 million in the base year to ID 317.2 million in the target year; i.e., an increase of ID 92.7 million or 41.3 percent. Consequently, the relative value of agricultural production to total value of production (of all sectors) would increase from 19.8 percent to 14.9 percent, respectively.

3. The NDP aimed at increasing the size of the labor force in the agricultural sector from 1,449.8 thousand in the base year to 1,770.4 thousand in the target year, i.e., an increase of 320.6 thousands or 22.1 percent with annual compound rate of 4.1 percent. The plan also aimed at increasing the wages from ID 10.17 million to ID 11.02 million, i.e., an increase of ID 0.85 million or 8.4 percent respectively.

The Performance of the Agricultural Sector

The national economy managed to achieve substantial economic growth as measured in national income accounts in a relatively short period of time under the NDP (1970-1974). Preliminary analysis indicates that the national income, measured in the magnitude and rate of GDP at current prices,

increased from ID 867 million in 1969 to ID 2,550 million in the plan target year of 1974, i.e., an increase of ID 1,683 million or 184.6 percent against the base year with an average annual rate of 36.9 percent, a compound annual rate of 23 percent. Though most of the high increase in the national income is attributed to increasing government revenues from oil production, it is also due to the high growth rate of the other commodity sectors in the economy. Excluding the crude oil sector, the average annual compound rate of growth of GDP in the agricultural, mining, manufacturing, and construction sectors, under the NDP, was 14 percent as compared with the 6.9 percent in the largest plan. Per capita Gross National Product at current prices increased from ID 100 in the base year to ID 236 in the target year, i.e., an increase of ID 136 or an average annual rate of 20 percent. As for the expansion in employment, the number of the labor force increased from 2.5 million in the base year to 2.9 million in 1974; the wage of the labor force in various sectors, excluding the agricultural sector, increased from ID 321 million in 1969 to ID 500 million in 1974. Furthermore, as an indication or criterion for the plan consistency, the average implementation ratio was 89.3 percent against 61 percent of the previous plan.¹

¹Ath-Thawra, Daily News, 1974.

The value added, GDP, in the agricultural sector, at current prices, increased from ID 202 in 1969 to ID 302 million in 1972, i.e., an average annual rate of 15.3 percent. However, because of climatic conditions, GDP decreased by ID 50 million in 1973 as compared to 1972. In the plan's target year (1974) GDP increased to ID 350 million. In other words, GDP at current prices increased by ID 148 million against the base year or 73.3 percent. GDP in the agricultural sector, thus, increased at an annual compound rate of 14 percent against the plan's target of 6.9 percent annually.¹ Furthermore, by 1974, the plan's target year, the agrarian reform programs of 1958 and 1970 provided employment and income-earning opportunities to 477,019 farm families in the agricultural sector. That is almost 75 percent of the total 685,000 landless farm families, according to the 1957-58 Agricultural Census.

The Agrarian Structure and Reverse Migration

The first land reform program of 1958 placed little emphasis on the provision of social and cultural services, such as establishing schools and extending education, medical care, and adequate rural housing, in the cooperative areas. The economic development policies in the 1960's followed the same path of the 1950's, i.e., it placed more

¹Ibid.

emphasis and attention on the urban centers. This created a wide gap between the rural and urban centers in terms of economic, social, and cultural programs and projects.

After the July 17, 1968 Revolution, however, the government initiated rigorous measures to correct these drawbacks and to meet the challenge of out-migration. These initiatives were undertaken not only because of the profound impact of out-migration on the performance of the agricultural sector, but also because of the tremendous economic and social problems that it created in the urban centers. One of the measures within the comprehensive approach to the agrarian structure in the new agrarian reform of 1970 provided more employment and income earning opportunities to the landless peasants in the rural areas.

The Ministry of Agrarian Reform placed more attention on the provision of social and cultural services in the rural areas. The fact that many farmers live in extremely poor housing conditions and are scattered over the vast agricultural land makes provision of a suitable package of social services very difficult. To meet this problem the Ministry undertook the provision of suitable homes to cooperative members by grouping them in combined housing areas or modern villages. Varying, according to the number of farmers and the area of land they cultivate, villages are constructed of 5 to 700 brick homes with

architectural and health designs suitable to the farmers' conditions. The modern villages are normally located at sites convenient to the cultivated lands.

In 1970, as a first step, the cooperation between the Ministry and the General Farmers Union, resulted in the construction of 25 villages. In 1971, 700 modern villages were constructed in the cooperative areas through a public works campaign. In addition, the Ministry, with the technical help of FAO, started a new plan in 1974 for the construction of these modern villages throughout the rural areas.¹

Also, in order to extend education to rural areas, the Ministry opened 985 adult education centers in the cooperative areas, in addition to 100 primary and intermediate schools and 58 dispensaries and health centers. Furthermore, 130 social activities centers were opened. They are equipped with libraries, radio and TV sets, and carpentry and weaving equipment.² Hence, the provision of the social and cultural services have profoundly affected the process of out-migration.

The Ministry, with the cooperation of the General Farmers Union, also undertook a significant step to establish a pilot project for reverse migration. This project

¹Al-Nowfel, p. 70.

²Ibid., p. 72.

is located in Waset Province. In fact, it is an old settlement project known as the Shehaimiya Project. The Farmers Union made an appeal to the local cooperatives to participate in a public work campaign for the construction of 500 houses in this project. A large number of cooperative members participated in this campaign and constructed houses which were divided into six modern villages. As a result, 700 farm families moved from the capital city, Baghdad, to this project. In another nearby project, the Gesaiba Project, about 598 farm families moved to it from urban center, i.e., a total of 1,298 farm families. The total area of the two projects combined is 139,163 donums; all of their lands are irrigated. In this pilot project, four cooperatives were established. These cooperatives own large amounts of agricultural machinery--8 tractors, 9 cars, 2 bulldozers, 3 trucks, and 3 plows, in addition to 19 irrigation pumps and 8 distribution pumps. The agricultural production plan for 1971-1972 (the first plan) resulted in the cultivation of 25,000 donums of winter crops and 10,000 donums of summer crops. This has been a very successful experiment in the agricultural sector of Iraq. Thus, the comprehensive and integrated approach to the agrarian structure not only stopped the process of out-migration, but also provided the necessary conditions for the reverse or back-to-the-farm migration.

CHAPTER V

THE POST-LAND REFORM ECONOMIC ORGANIZATION IN THE AGRICULTURAL SECTOR

Size of Farm

The discussion in this chapter will focus on the post-reform economic organization in the agricultural sector, i.e., the family-farm system retaining private property or owner-operatorship, the cooperative-collective farms and the state farms; the impact of these economic organizations on the objective of the land reform program, especially on employment and increasing production and productivity; and some alternative policy implications regarding the reorganization of the agricultural sector in the post-reform period in Iraq. The reorganization of the agricultural sector, establishing any of the above systems, does not only depend on economic principles and economies of size, but also involves political and ideological consideration. The discussion in this study, however, emphasizes economic considerations.

Emphasis needs to be given to the changing size of farms with economic development in a single ecological area. Analysis of these changes is needed: (1) to understand the

present distribution of sizes of farm, (2) to analyze the interaction between size of farm and economic development, and (3) to consider issues in land reform and other policies which attempt to change size of farm.

Discussions of size of farms are sometimes confused when size is measured only in acres or hectares. Concepts drawn from the theory of the firm (factor proportions and economies of size) are useful for clarifying various dimensions in farm size. For discussions of most policy issues, the distinction between small and large farms is primarily a distinction between family farms, that is of farms with one to three workers per farm, and collective or state farms with more workers per farm. While it is more common to use acres or hectares as a measure of size, over time the acres per farm can increase without any increase in the number of workers per farm, that is without any change in the comparative efficiency of family and larger than family farms. More precisely, farm size depends on the following factors: (1) changing employment opportunities and wages outside the agricultural sector, (2) changes in technology which increase productivity of both land and labor, (3) technological reasons, if any, for achieving economies of size with a farm labor force larger than the labor supply of a farm family--reasons such as division of labor, and (4) conditions related to inadequate supplies or differential access

to market, credit, and public services.¹ Therefore, an understanding of the factors that determine farm size is important for analyzing impacts of development as well as barriers to development.

The economic argument in favor of large farms, such as collective or state farms, as against the small, family-farm system is based on the principle of economics of scale. Many agricultural technicians and economists believe that large farms are more "efficient" and indeed they are in terms of certain measures of productivity and efficiency.² However, economies of size need to be determined separately for each type of farming. The minimum efficient size with most types of farming is determined by indivisibilities of crucial forms of capital, typically the source of farm machinery and equipment. Such forms of capital usually only need one or two men per unit of capital, but require sufficient land to provide full employment to labor and capital.³ Hence, under these conditions family farms can achieve economies of size provided they have sufficient land. The question whether family farms

¹Don Kanel, "Size of Farm and Economic Development," in Land Policy for the Developing Nations, Land Tenure Center, University of Wisconsin, 1972.

²Dorner, p. 119.

³Kanel, p. 90.

are competitive with larger farms is best answered by comparing the performance of family farms that have an adequate supply of land with the performance of larger farms and not by basing comparisons on the performance of small farms with an inadequate land base.

While redistribution of land would result in fragmentation of farms into minute parcels, a condition that has been called the most endemic disease of agriculture, it is difficult to provide the necessary productive structure and the structure of supporting services. Technological advances, especially mechanization and the use of agricultural chemicals and practices, have made the cost of fragmentation prohibitive. According to Raup, these costs include:

- a. Loss of work time in travel from parcel to parcel;
- b. Loss of usable land area in field boundaries, excessive bunding, diking or ditching, and in field roads and paths;
- c. Loss of flexibility in choices of land uses, crop rotations, and disease control measures;
- d. Loss of freedom in developing livestock agriculture and pasturing;
- e. Social costs of disputes over boundaries and efficient use of irrigation;
- f. Excessive land title recording and surveying costs;

- g. Rigidity in the location of farmsteads, villages, highways and the resultant inflexibility in altering settlement patterns; and
- h. Distortion in the land market and land prices.¹

While solutions have often been attempted without a clear understanding of causes or of the experience of other countries, certain techniques can be used to overcome these problems and at the same time retain the family-farm system with the incentive of private property. One of the most promising of these is the consolidation process. The costs of this process are often very high, frequently approaching or exceeding \$1,000 per hectare. These costs are typically beyond the capacity of the farm land owners. A key problem involves the proper determination of benefits and costs, and especially the share of costs that should be borne by non-farm sectors.

The experience of land reform in Egypt is relevant in this regard. The consolidation process involved an interesting modification of family-farm operating system with some functions and decisions collectivized or performed by government technicians. The land reform's beneficiaries were required to join the cooperatives.

¹P. M. Raup, "Fragmentation, Consolidation and Rural Development," in Land Policy for the Developing Nations, Land Tenure Center, University of Wisconsin, 1972.

These cooperatives perform a number of the usual functions such as purchasing and distributing production inputs as well as serving as a collecting point through which all farm produce is marketed. Government technicians have played a major role in administering and managing these cooperatives, although more of the functions are now being turned over to the farmers themselves, making the cooperatives more autonomous and independent of government. The interesting feature of the consolidation technique is the "Block Land Use" system, which these cooperatives have developed. The entire area served by one cooperative is divided into three Blocks approximately of equal size and managed under a three-year rotation system. The individual land holder, whether owner-operator or tenant, must comply with this rotation scheme. In any particular year the land in a block is planted in the same crop or crop sequence. This provision is especially important for the efficient use of irrigation water, mechanization of certain tillage and crop spraying operations. Since each farmer needs crops every year, whereas in any given year his entire holding might be planted in cotton or legumes clover, individual farmers exchange use of lands among the blocks in order to obtain the needed products not grown on their own land in that particular year. Thus, the Block System circumvents the physical problems of using fragmented farm units by combining them into tracts of efficient management size,

i.e., economies of scale. Under this system, farmers retain private ownership of their farms and the produce they grow, but certain functions and decisions are socialized.¹

Consideration needs to be given to the interaction between the tenure structure, the previous economic organization in the agricultural sector and technological change. Successful new technologies such as the Green Revolution have brought with them problems of uneven distribution of benefits, uncertain effects on employment and rural unrest. Changing technology interacts with the tenure system in two major ways: (1) the institutional arrangement may need to change to accommodate the requirements of new technology and (2) owner-operators or managers of state farms (those with discretion to make the decisions about how to modernize) will by their action determine the employment and income-earning opportunities in rural areas and the path of agricultural development--labor versus capital--intensive.

Each new technology has specific economies of size. High yielding seed varieties and fertilizers are divisible inputs adapted to farms of any size, while tube wells or irrigation pumps and farm machinery, tractors, require minimum sizes for economic use. Thus some technologies

¹K. B. Platt, "Land Reform in the United Arab Republic," Agency for International Development Spring Review of Land Reform 8:1-68.

are available to almost all existing farms, while others can only be used on collective and state farms or will require new institutional arrangements or farm consolidation. For example, in the case of tube wells, new institutional arrangements can provide a market for water or for joint cooperative or public ownership of irrigation pumps. The extent to which different kinds of farms can utilize new technology also depends on how credit, marketing and processing are organized.

"Land-saving or yield increasing technologies, high yielding seed varieties, fertilizer and pesticides and improved agricultural practices, can usually be applied equally well and efficiently on small family farms. They are neutral with respect to economies of scale. Tube wells or pumps for irrigation, however, are economical only on farms of over 30 acres or with the consolidation of farm units. Mechanization, tractors call for farms of over 45 acres or the consolidation of farm units."¹

As some have argued, the small family farm system of owner operators results in an excess of capital equipment on small holdings, i.e., much duplication and under utilization of machinery and equipment. The Japanese experience shows that mechanization can be adapted to fit small farms if research is specifically directed to that end. Also the

¹Kanel, p. 92.

reorganization of the agricultural sector on cooperative principles or public rental stations, may be able to assure efficiency in the use of capital equipment. Thus, a modified version of the family farm system that retains private property can attain all the economic advantages of the collective or state farm, economics of scale, in the use of modern technology.

The Impact of Economic Organization
on Employment and Productivity

In many countries family-farm units with private property, owner-operators, have been retained or created in the process of land reform implementation. This category of economic organization in the agricultural sector is the most labor-absorptive system. Family farms organized along conventional lines are favored in Japan and Taiwan. Modified forms of the family-farm system where certain decisions and functions are socialized, are accepted in Egypt with its "Block Land Use" system and with the Geziru Project in the Sudan. The latter can be considered an intermediate form between private property on the one hand and group farming on the other.¹

The greater tenure security and the incentive that the family farm system provides leads to the intensification of cultivation practices. Also, under appropriate conditions,

¹Dorner, p. 53.

the provision of the necessary structures, multiple cropping pattern may become more widespread. This can greatly increase the demand for labor and it may at times lead to seasonal labor shortages. Systems of communally owned land in which parcels are allocated to individual families for their private use, cultivation may also be highly labor-intensive. This is characteristic of the Mexican ejidos. While the family-farm system absorbs population increases up to the limits of capacity in the course of economic development, and permits the use of modern technology, it does not necessarily act as a barrier to out-migration when employment opportunities appear outside the agricultural sector.

In those countries where part or most of the agricultural land has been socialized, the situation with respect to labor absorption is quite mixed. It depends on the relative emphasis placed on the private, peasant sector and the varying rates of manpower transfer from agriculture to industry. In general, the various cooperatives, collectives and/or state-farms systems occupy a position between the family farm system and the pre-reform large estate system. The possibilities for offering labor absorption in the agricultural sector of the socialist economies are illustrated in the economic organization in the agricultural sector of Yugoslavia, Rumania and Poland. All these

countries implemented comprehensive land reform programs during the decade following the Second World War.

In Yugoslavia, most of the land remains in private ownership; about 86 percent of the cultivated land is in privately owned peasant farms. A ten hectares ceiling was imposed in 1953, while the remainder is incorporated in worker-managed enterprises called "social estates." In 1969, there were slightly more than 200 social estates and over 2.5 million individual holdings. The "social estates" held 14 percent of the cultivated land, had 72 percent of all tractors in use in Yugoslavia's farms and employed 3 percent of the agricultural labor force. The family holdings held 86 percent of the cultivated land, had 28 percent of the tractors and employed 97 percent of the agricultural labor force.¹ This dualistic policy is deliberate. That is, the tax structure encourages more mechanization and labor efficiency on the "social estates" and promotes production intensification--sometimes for different commodities than those most commonly found on the social estates--and increased employment and labor absorption on the small family farms.²

In 1969, Rumania had slightly over 20 percent of its arable land in state farms, 75 percent in agricultural

¹Federal Institute for Statistics, Statistical Pocket Book of Yugoslavia, 1970.

²Dorner, p. 106.

producer cooperatives (collectives) and less than 5 percent in privately held individual farms.¹ The private farms, located in the hilly and mountainous regions of the country employed approximately 10 percent of the total agricultural labor force. Rumania also maintains a deliberate dual policy in its two major subsectors of agriculture. The state farms have slightly over six hectares of arable land per worker. By contrast the agricultural producer cooperatives have less than 1.5 hectares of arable land per worker. That is, man per land ratio is over four times greater on the collectives.²

Individual family farms also predominate in Poland. This small farm subsector includes 85 percent of the arable land, employs 92 percent of the economically active agricultural population and produces 88 percent of the gross agricultural output. The state farms have slightly over 13 percent of the land, and the remaining land is operated by the relatively small sector of producer cooperatives employing about 4 percent of the agricultural work force and produces 11 percent of the total output. The man per land ratio on the small farms is about four times greater than on the state farms.³

¹Ibid., p. 107.

²Central Statistical Board, Statistical Pocket Book of the Socialist Republic of Rumania, 1970.

³W. Lipski, "Agriculture in Poland," Interpress Publishers, 1969.

As these data indicate, the state farms in Rumania and Poland and the social estates in Yugoslavia are much less labor absorptive than the agricultural producer cooperatives on the family farms with private property. Obviously, this is the result of a deliberate design of public policy. Or, it may result from the tendency of operator to prefer owner-operatorship.

The dual policy with regard to employment in the agricultural sector is not a socialist principle and is not confined in practice to socialist countries. For example, even after a widespread land reform program, Mexico has followed a dual policy toward the agricultural sector. Much more of a capital--capital intensive approach, but less of manpower is utilized by the larger private farms than by the small farms or the ejidos.¹ In contrast, Japan and Taiwan are more successful in implementing a relatively uniform policy based on small units with labor-intensive agriculture. These two countries, through intensive land use practices, including double and triple cropping pattern, were able to employ thier growing population in the agricultural sector until the industrial sector was large enough to absorb more of the rural labor force.²

¹ F. Douring. "Land Reform in Mexico," Agency for International Development Spring Review of Land Reform, 7 (1970): 1-61.

² Dorner, p. 108.

On the other hand, while it is true that labor productivity is consistently higher on larger farms, collectives and state farms, this is primarily the result of capital-intensification, mechanization, and labor-saving techniques. However, under conditions of abundant rural labor and continuous rapid population growth, productivity per unit of land will be the most relevant measure for policy purposes for the long run. As Dorner comments,

Actually a single factor productivity measure such as land or labor is not wholly adequate, what is needed is a measure of efficiency or productivity based on output per unit of total inputs with inputs valued at their social opportunity cost. . . . Unfortunately, data are not available for the latter condition.¹

However, in a number of recent studies, comparing farm size and output per unit of land, support the hypothesis that output per unit of land is inversely related to farm size. Figure 5.1, from Dorner and Kanel (1971), present graphically the results of these studies, most of which measure output in terms of gross value per unit of land. Value of output per unit of land above variable cost would be a better measure since it would minimize the distortions due to possible differences in amounts of capital used by farms of different size. However, in those cases in which this concept was applied, the results are consistent with the gross-value concept. In fact, using gross-value

¹ Ibid., p. 119.

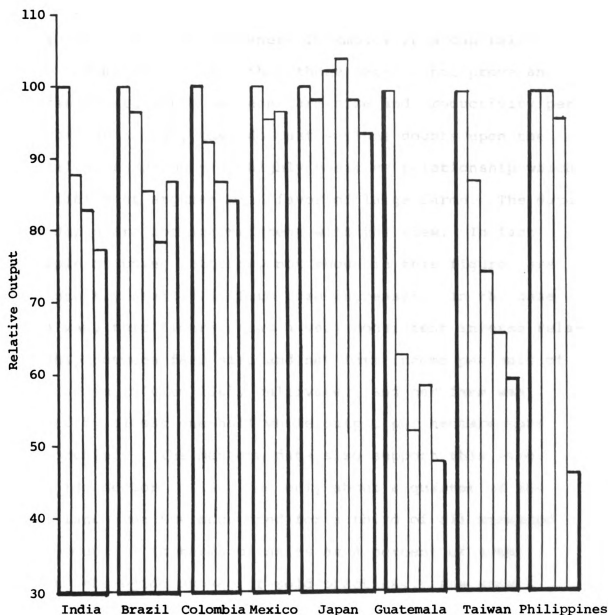


Figure 5.1. Output per hectare for farm size groups. For each country, bar at left represents output per hectare for smallest farm size group; bars to the right represent successively larger farms with their output per hectare expressed as a percent of that of the smallest size group.

Source: P. Dorner and D. Kanel, "The Economic Case for Land Reform: Employment, Income Distribution and Productivity," Land Reform: Land Settlement and Cooperatives, FAO, ESR, 1971.

probably understates the small farms' margin over large farms since small farms generally employ less capital.¹

Some may contend that these data do not prove an inverse relationship between farm size and productivity per unit of land. But, they do cast serious doubts upon the general presumption of a highly positive relationship which underlies most arguments in favor of large farms. The data from Japan are not inconsistent with the view. In fact multiple cropping patterns, not shown in this figure, are consistently smaller as farm size increases. In the case of Taiwan, this figure shows a very consistent inverse relationship between farm size and net farm income per unit of land. From 1940 to 1965, cultivated land per farm was reduced by almost one-half while output per hectare more than doubled.² The Mexican data also support this view. The ejido sector in 1960 had only about a quarter of the total land area but accounted for a third of all marketed farm product. In terms of sales as a percent of total output, the ejido subsector sold practically the same

¹P. Dorner and D. Kanel, "The Economic Case for Land Reform: Employment, Income Distribution and Productivity," Land Reform: Land Settlement and Cooperatives, FAO, ESR Mono., 1971.

²R. P. Christensen, "Taiwan's Agricultural Development: Its Relevance for Developing Countries Today," Foreign Agricultural Economic Report, No. 39, U.S. Department of Agriculture, 1968.

proportion (65.2 percent) as did the large farm sector (67.7 percent).¹

Interestingly enough, the evidence available on post-reform experiences in Mexico, Japan, Taiwan, Egypt, and Yugoslavia, shows that although in some cases there were an initial drop, average productivity per unit of land increased rather substantially after these reform programs. Furthermore, all these cases experienced a reduction in the average size of farms. While the data and arguments are not presented as an argument for small family farm holding per se, it is instructive to look closely at the small family farm system, since they exist on a large scale in Iraq.

Post-Reform Economic Organization in the Agricultural Sector in Iraq

Joint Agricultural Cooperative

The discussion in Chapter III indicated that the first Land Reform Law of 1958, which followed the Egyptian Agrarian Reform Law of 1952 in its main provisions was aimed at establishing a family-farm system with private property holdings and the organization of cooperatives. By 1974, there were 1,361 agricultural cooperative societies with

¹F. Dovring, "Land Reform and Productivity, The Mexican Case," Land Tenure Center, University of Wisconsin, Paper No. 65, pp. 1-22.

250,000 members at the local level in the agrarian reform areas. Out of the 15 million donums annually cultivated, in 1974, the cooperative subsector cultivated 6.3 million donums or 44.3 percent, while the private subsector, outside the agrarian reform areas, cultivated 8.9 million or 54.2 percent and the public sector cultivated 0.5 million donums or 1.5 percent. It thus appears that the family-farm system has been effective in providing employment and income-earning opportunities in the agricultural sector.

The Ministry of Agrarian Reform, in an effort to overcome the physical problems of fragmented farm units, established the joint cooperatives. The joint cooperatives are a modified form of the family farm system in which some functions and decisions are socialized or carried out by government technicians. This task was undertaken gradually. It was started in 1967-68, when the first joint cooperative was established and it included nine local cooperatives. These joint cooperatives render various services to local cooperatives, which they were unable to undertake individually, such as the provision of agricultural machinery, irrigation pumps, and marketing services. In addition, the joint cooperatives form a cooperative union at the province level, while these unions form the General Union of Agricultural Cooperative at the national level. Table 5.1 shows the development of joint cooperatives in the country.

Table 5.1. Iraq's progress of joint agricultural cooperatives

Year	Agricultural Cooperatives	Number of Local Agricultural Cooperatives as Members	Area in Which the Agricultural Cooperatives Worked
1967-68	1	9	89,010
1968-69	7	48	422,160
1969-70	23	176	1,742,071
1970-71	31	221	2,161,793
1971-72	105	607	6,096,424

Source: Ministry of Planning, Central Statistical Organization, Annual Abstract of Statistics, 1972.

The Collective Farms

Since the July 17, 1968 Revolution, the role of the public sector has expanded considerably. The national authority has tended to support the public sector by expanding its base and extending the scope of its activities. The second Agrarian Reform Law of 1970 has pushed the principle of collective distribution and cultivation, i.e., the establishment of collective farm system.

The decision to establish collective farms is based on two considerations. First, an economic objective to retain the efficiency and productivity of large-scale production or economies of scale. It is hoped that this system would not only overcome the physical problems of fragmented farm units, but also would help the programming of the agricultural sector by following an annual production plan and certain crop rotations. Second, political and ideological considerations--the collective farms, under the direction of the public sector, would be the first step toward the social transformation of the agricultural sector.

The Ministry concentrated on establishing collective farms in certain areas for the introduction of modern technology and introduction of suitable crop rotations in an effort to control production, program agriculture and maintain soil fertility. Without agricultural grouping

and the organization of collective farms it was not felt that these objectives could be attained. In this respect, the Ministry adopted the following measures: (1) Emphasis on cultivating the collectively distributed land or collectively tenanted land according to a unified crop rotation suitable for the area. Rules prohibited the actual distribution of land to farmers. Farmers will cultivate various crops allocated seasonally. (2) Grouping of similar cultivated crops in particular areas to facilitate the acceptance of determined crop rotations and to make consolidation of land holdings easier. (3) Establishment of three collective farms in 1969. Table 5.2 shows the progress of these categories of the economic organization in the agricultural sector.

Table 5.2. Iraq's progress of collective farms

Year	Number of State Farms	Members	Area in Which the State Farm Work
1969-70	6	680	30,720
1970-71	25	1,919	93,120
1971-72	21	2,492	107,540
1972-73	35	3,838	2,422,571

Source: Ministry of Agrarian Reform, Annual Report, 1974.

While the process of collectivization continues, there are three types of collective farms according to the degree of collectivization:

1. A modified form of the joint cooperatives in which plowing, seeding, and river and canal dredging are normally carried out collectively. After the seeding process, the land is divided among the collective members, each with his family for management during the crop year. The farmer, collective member, usually gets the produce of the plot allotted to him.

2. Farmers are divided into production teams and groups. Each group works a plot adjacent to the other plots of specified crops within the crop rotation. Normally, plowing, feeding, and river and canal dredging are done collectively. After seeding, the land is divided among various groups according to the number of their members. The produce of each plot is divided among the number of the group.

3. Farmers work collectively and cultivate the land according to a crop rotation. The farmers are divided into teams or groups for carrying out various agricultural practices. The produce is divided among the members on the basis of the number of working days. Incentives are granted to the efficient and productive members.

In all cases, costs and farm reserves are deducted from the produce, which is marketed cooperatively after allocating a certain quantity for distribution among the members. Regulations for the collective farms have been approved by the "Higher Agricultural Council," and the Ministry has formulated the By-Law for these collectives, elaborating the working methods, means for dividing the produce, incentives and the obligations and rights of the members.

Produce is distributed on these collectives in the following manner: The basic principle of distribution is the quantity and quality of the member's exerted labor in the economy of the farms. The following is deducted from the gross collective income.

- a. Production cost, including the depreciation of fixed capital.
- b. Taxes and duties due to the state.

The net profit is divided as follows:

- a. Not less than 10 percent is allocated to the reserve fund.
- b. Not less than 5 percent is allocated for establishing social security funds, and cultural, health and social services.
- c. Not more than 5 percent is allocated for the incentives payments to the farm's members, officials and laborers.

- d. Not less than 5 percent is allocated as interest on additional shares, provided that the amount paid should not exceed 6 percent of the value of the shares.
- e. The remainder is paid to the farmers according to their work inputs, after deducting any advances or credit they have received.¹

Until the produce is divided, members are given cash or in-kind advances once each month that will be repaid at the end of the season. The farms distribute to their members an in-kind share of the grains and crops sufficient for their living. A quantity of forage crops is distributed for the member's livestock, according to available means. Provisions also permit distribution of produce to help other members and the reservation of seed for planting purposes. In addition, collective farms allocate an area not exceeding 2 to 4 donums to each member, including a house and appertenances for his use, to be cultivated with vegetables and pastures. Though certain livestock projects have recently established and belong to the collectives; the private livestock ownership of the members has not been affected. The allocation of these small areas of lands to the collective members is to satisfy their need for vegetables and for breeding their

¹Al-Nowfel, p. 14.

livestock, in addition to utilizing their secondary and partial labor force. This procedure strengthens collective farming, especially in the initial stage.¹

From the previous discussion, it is clear that group farming with some form of cooperative, collective management, is to be followed by a movement toward socialization of agriculture, with the establishment of state farms and collectives accompanied by a concerted effort of industrialization. Although voluntary in principle, a strong educational campaign is undertaken by the government and supported by various policy incentives to encourage farmers to join the collective farms. Individuals could choose not to join the collectives and are given the choice of access to an equivalent amount of land elsewhere. There are even today a scattering of individually operated farms around the collectivized reform areas. However, many local cooperatives joined in the collectivization process. Refusal meant possible constraints on the availability of public services. Farm policy incentives--credit, marketing, technical assistance and input supply--are used to encourage operators to join the group farming.

During their short period of operation, the collective farms have realized considerable success. For example, a production plan was formulated for each collective farm

¹ Ibid., p. 15.

based on the use of available measures such as land, irrigation, machinery and manpower; and compatible with the conditions of the district. In addition, plans were formulated for the diversification of agricultural production, through a crop rotation, with emphasis on the production of cash crops and raw materials which are in great demand for the local industries.

Furthermore, agricultural productivity, yield/donum, on these collectives has more than doubled above the national average level. For example, the productivity of wheat, yield per donum, in the Baladruze Collective farm in 1970 was 466 kg, while the average productivity in the country that year was 142 kg. Also farm incomes on these collective farms have increased as a result of the overall agricultural production increase and cooperative marketing. Members of Al-Talayh Collective farm received an income of ID 340 each in 1970. In the 1971 winter season, members received an income of ID 175, despite adverse climatic conditions. That is in addition to the high returns from their privately owned livestock and land.

There has also been considerable improvement in the cultural, health and social conditions of the collectives' members. Many collectives have constructed modern villages for the farmers, and provided schools, dispensaries, water supplies and electrical power. For example, in 1971, a brick-built modern village was constructed on the Al-Talayh

collective farm with 50 houses plus a school, office building, living quarters for officials, livestock stables and other structures. Overall, these collectives have strengthened the cooperation and political awareness of the farmers and increased their participation in managing their collectives.

State Farms and Agricultural Projects

State farms exist in almost all countries, either for the production of certain specialized commodities or for experimental breeding and other scientific purposes. State farms differ from collectives in that they are state enterprises operated by state appointed managers. Labor on state farms is hired in much the same manner as a factory hires its work force. The management of state farms seems less complicated and provides greater opportunities for successful operation by an efficient manager.¹ Collective farms are generally managed by a number of committees. The chairman of the top-level managerial committee of a collective is subject to more demands and must include a greater number of frequently conflicting objectives in the plans of operation for such an enterprise.

¹ O. Schiller, "The Communist Experience in Dealing with the Agrarian Question: Their Significance for Developing Countries," in Agrarian Policies and Problems in Communist and Non-Communist Countries, University of Washington Press, 1971.

The most prominent examples of state farms remain in the Soviet Union and the countries of Eastern Europe. In Rumania, the state farms were created mainly from large private estates confiscated by the state. The state farm system assures the state some measure of direct control over a certain production base and quantity of agricultural produce and serves as a model for the agricultural collectives. State farms can also help improve the general level of farming in their region by demonstrating the effectiveness of modern farming practices and providing improved seeds and breeding stocks to other farms in the region. They are state-managed enterprises operating with hired labor with a variety of incentives built into the operating procedures. For example, on one large Rumanian state farm specializing in hog production (producing 150,000 market hogs per year) profits in recent years averaged about 25 percent of the total revenue. Thirty percent of this is retained by the state farm for internal investment purposes. The remainder is paid to the state, but part is returned to the enterprise for incentive payments to its workers after all quantity, quality and cost of production goals have been met.¹

In Iraq, the first state farm, Bakrajo farm was established in 1933; then another one. Abu-Ghraib farm was established in 1937. They were primarily for experimental breeding and other scientific purposes. After the enactment

¹Dormer, p. 62.

of the first land reform of 1958, more emphasis was placed on encouraging the establishment of this category of the economic organization. In 1960 the Ministry of Agriculture established the Latytia State Farm. Also in the early 1960's, in accordance with technical and economic agreement between Iraq and the Soviet Union, the latter provided the technical assistance for establishing five state farms for the production of cotton, rice, sugarbeets, etc. By 1970, there were thirteen state farms throughout the country.

In the early 1960's, the main objectives for establishing the state farms were: (1) the production of agricultural commodities for the local consumption and (2) the production of raw materials for the local industries. In the late 1960's, these objectives were modified to emphasize the production of the new and improved seed varieties of wheat, barley, rice, and cotton to be distributed to cooperative members.

A recent study conducted by the Ministry of Planning on three state farms in various districts, showed evidence of poor economic performance in terms of efficiency and productivity.¹ The Sowerah State Farm established in 1960 with a total area of 151,000 donums, for example, had actually cultivated under 25,000 donums, or 10.5 percent of the farm's area in any year. This resulted from the

¹T. Al-Bauder and A. Naji, State Farm in Iraq, Ministry of Planning, July 1971.

accumulation of salt, lack of a drainage system, and a shortage of water supply. Theoretically this farm should benefit from the economies of scale in the production process. The study indicated that the productivity yield per donum of the main crops, wheat, barley and cotton, on this far, was barely above the average national level. In addition, most of these state farms had incurred heavy losses or negative returns on their investment. Table 5.3 shows the investment, return and the deficit per donum of the main crops on the Sowerah State Farm. Furthermore, the production cost per donum of these crops were twice as much as the production costs at the national level. Table 5.4 shows the production cost per donum, for the main crops on this farm in comparison with the rest of the country. The high production costs on these state farms is mainly due to the cost of labor and administration that represented about 60 percent of the total cost. The farm hires more labor than it needs. Depreciation and maintenance costs also represented more than 35 percent of the costs. These examples are in sharp contrast to the commercial principles under which this enterprise operates.

The poor economic performance of the state farms can be attributed, among other things, to the following: First, while the management of state farms seems less complicated and therefore provides a greater opportunity for success for an efficient manager than that of the collective farms, the

Table 5.3. Iraq's production cost and return per donum, ID, for the main crops on Sowerah State Farm, 1965-1968

Year	Wheat			Barley			Cotton		
	(1) Production Cost	(2) Return	Deficit (1) Minus (2)	(1) Production Cost	(2) Return	Deficit (1) Minus (2)	(1) Production Cost	(2) Return	Deficit (1) Minus (2)
1965	10.201	10.306	0.105	8.573	7.019	-1.554	29.019	23.913	-5.106
1966	12.781	6.727	-6.054	11.266	5.857	-5.409	36.963	19.489	-17.474
1967	12.720	9.989	-2.741	10.930	8.591	-2.339	44.881	28.831	-16.000
1968	12.601	7.579	-5.022	--	6.212	--	35.289	21.224	-14.065

Source: Iraq, Ministry of Planning, "State Farms in Iraq," 1971.

Table 5.4 Iraq's production cost per donum on the Sowerah State Farm in comparison with the rest of the country

Year	Wheat		Barley		Cotton	
	Sowerah State Farm	Iraq	Sowerah State Farm	Iraq	Sowerah State Farm	Iraq
1965	10.201	5.470	8.573	4.685	29.019	16.865
1966	12.781	5.735	11.266	4.988	36.963	17.812
1967	12.829	6.242	10.930	5.334	44.831	19.218
1968	12.601	6.547	--	5.596	35.289	20.000

Source: Iraq, Ministry of Planning, "State Farms in Iraq," 1971.

management of state farms has been hampered by bureaucratic rules and old financial regulations provided in the 1960's. In addition, there is no relationship between the wages of officials and laborers and the performance of the farm. If the state farm should operate on a commercial basis, more incentives built into the operation process should be provided to officials and laborers. Second, the inefficiency of the utilization of the resources available on these farms-- such as land and water resources, labor force, and capital. For example, the Sowerah State Farm, following the fallow system, had about 370 farm machines and equipment. Among the equipment (149 tractors of different sizes, 45 combines and 18 cars) only 30 to 45 percent of the 149 tractors were in operating condition; the rest were idle. At the same time, the study revealed that the farm needs only 40 tractors.

The Ministry of Agrarian Reform manages another category of these economic organizations, i.e., the Agricultural Projects. These projects are located in the irrigated areas, where each project is irrigated by a canal. Therefore, the project may be called an agricultural basin. Some of these projects were established before the enactment of the first agrarian reform of 1958, others were established during the 1960's and early 1970's. At the present time, there are 19 agricultural projects covering more than three million donums. Farmers on these projects are the beneficiaries of the agrarian reform programs. However, most of the projects that were established in the early 1960's became submarginal--unsuitable for cultivation because of improper land use, increase of salinity and lack of supporting structures.

Since the early 1970's, the Ministry has initiated certain institutions and adopted various measures for successful economic performance of these projects and the state farms. For example, within the framework of the National Development Plan, 1970-1974, the Government Central Sector allocated ID 24.1 million, investment expenditures, for the agricultural projects and state farms. Furthermore, the Ministry established a special department for managing these agricultural projects, where efficient technical and administrative staffs have been appointed to every project. On each project there are agricultural technicians specialized

in the fields of crops, horticulture, animal husbandry, and cooperative officer and supervisor, in addition to mechanical, irrigation, and civil engineers and a number of mechanics and drivers. Also, the cooperative movement is introduced to each of these projects as an integrated part of the agrarian structure.

The Ministry established a state farm on every project to serve as demonstration models that would encourage the diversification of agricultural production on these projects. The economic success of the state farm on these projects provided a breakthrough in terms of efficiency and productivity. For example, wheat productivity, yield per donum, on the April 7th project was more than 620 kg, while the average productivity of wheat on farms outside the project, outside the agrarian reform area, was 150 kg. The Shatrah State Farm, in 1971, realized a net profit of ID 28,000, while previously it incurred negative returns on its investments. This is in addition to the various cultural, social, and health services that have been provided for the cooperative members on these projects.

Policy Implication

Agricultural development in the sense of adoption of new technology and increasing production and productivity can probably occur in agricultural sector characterized by different economic organizational systems, family farm, cooperative-collective and state farms. Changing the ownership and size distribution shifts the power to make decision about modernization and changes the nature of government assistance programs to agricultural sector. Some of the main policy issues that have to be examined within the strategy of overall economic development may be listed as follows:

1. The dimensions in the organization of the farm firm, whether family-farm, group farming--cooperatives or collectives, or state farms, are (a) number of workers per farm, (b) acres or donums per worker as a function of substitution between capital and labor (mechanization), (c) acres per worker as a function of intensity of land use, and (d) yield-increasing capital and technology per acre.¹

2. In later stages of economic development increased use of labor-saving capital is very likely (mechanization). This is equivalent to an increase in the capacity of each worker to cultivate more land, and thus an increase in acres per worker can be expected to occur

¹ Kanel, p. 89.

throughout the whole range of farm sizes. But on the family farms an increase in acres per worker will require an increase in acres per farm, while on the larger than family farms (collectives or state farms) increase in acres per worker will often be accomplished by decreasing the number of workers per farm. However, this depends on employment opportunities outside the agricultural sector. The resulting increase in acres per farm on family farms is not a sign of the disappearance of family farms. By itself this relation would result in the same ratio of acres to workers on all sizes of farms at the same point in time.¹

3. Furthermore, small family farms are likely to be farmed more intensively with less acres per worker than larger farms (state farms) in the same economy. This is due to the fact that the larger farms (state farms) operating on commercial basis, hire only as many workers as they can economically employ (VMP equals wages), while family labor on small farms will be used as long as it adds to family income (with lower or zero marginal product). Also, in an agriculture which has not been subject to much technological change, prior to land reform in Iraq, both large and small farms are likely to use the same technology (same capital per worker) while differing in intensity of land use. In cases where technological change is recent and rapid, large farms,

¹Ibid., p. 90.

the experience of state farms in Iraq are likely to differ from small farms in both respects: (1) greater substitution of capital for labor, capital intensive approach and (2) lesser intensity of land use, that is, the gap between family farm and state farm in terms of acres per worker is widened.

4. Output per acre is likely to be larger on smaller family farms due to the application of more labor per acre (more intensive land use). However, under conditions of rapid technological change, large farms, state farms, are likely to use more yield-increasing inputs (such as fertilizer and pesticides) and this may give them a larger output per acre than on smaller farms. However, the advantages of large farms may disappear with the modification of family-farm system into group farming--cooperatives and collective--and the development of government and cooperative organization in processing, marketing, credit and extension.

From the foregoing discussion, it is clear that the post-reform economic organizations in the agricultural sector have followed the family farm, group farming--cooperative--collectives and state farm system. The economic advantages of larger farms, especially state farms, on economies of scale in terms of efficiency and productivity, could be retained through a modified form of the family farm system, the joint cooperatives in Iraq or the Block land use system system in Egypt, where certain decision and functions are

socialized or collectivized. Furthermore, the family-farm system is not only the most labor-absorptive in comparison to the collectives or state farms, but also highly productive in terms of output per unit of land. However, there is no reason to assume that nations would choose a post-reform reorganization of the agricultural sector based on private property or family farm system.

Under the conditions existing in Iraq, as well as in the less industrial countries, the major reform program will often lead to mixed systems of family-farm with private property, group farming--cooperatives--collectives, and state farms. The main point to be emphasized is that development of the agricultural sector requires reorganization of this sector in such a way as to (1) provide incentives for increasing investments and productivity, (2) use a combination of production factors such as land, labor and capital consistent with the cost and availability of these factors at a given time and at the social opportunity cost, and (3) assure an equitable distribution of increased output.¹

While post-reform dualism may be more viable, the critical variables associated with the possible success or failure of such a dualistic post-reform structure are: (1) the size and the rate of growth of the industrial sector, (2) the proportion of the population in the agricultural

¹ Dormer, p. 124.

sector and (3) the growth rate of total population.¹ For example, in the East European countries, discussed earlier, all these variables appear favorable, i.e., substantial expansion and growth of the industrial sector, slightly under 40 percent of the population in the agricultural sector and a relatively low (1.0 to 1.5 percent annual) population growth rate. In Iraq, these conditions are much less favorable despite a rapidly expanding industrial sector, with a highly capital intensive industrialization process. The major difference is the much more rapid rate of population growth which is currently averaging 3.2 percent. A modified form of the family-farm system or group farming with labor-intensive agricultural development, at least in the short run, may be more favorable for the local conditions in Iraq.

Furthermore, one of the objectives of the agrarian reform program must be the increased agricultural employment opportunities that can be created within a reorganized tenure structure. To get at the crux of the matter, the specification of such a reorganization of the agricultural sector should be decided within the overall economic development strategy of the country. As Dorner pointed out, "in

¹J. R. Schaub, "Agricultural Performance in the Developing Countries," in Economic Progress of Agriculture in Developing Nations, 1950-1968, U.S. Department of Agriculture, FAO, Report No. 59, 1970.

actual practice, people must deal with the agricultural sector as it is and as it might reasonably be modified, not as it could be if there was a 'clean state' from which to begin."¹

¹Dorner, p. 108.

CHAPTER VI

SUMMARY AND CONCLUSION

For about two decades the government of Iraq has assumed responsibility for developing the country's resources toward rapid attainment of its economic potential. The declared overall objective of the development policies both before and after the 1958 Revolution has stressed stimulation through development expenditures of the nonoil sector, especially the agricultural and industrial sectors, of the national economy. Although there consistently has been a consensus regarding this objective, sharp differences have arisen regarding the means of achievement.

In pursuing its development policy, the government in the early 1950's assigned the agricultural sector a high priority ranking on the scale of economic development. The reasoning underlying this conclusion was based mainly on the well-known principle of comparative advantage. This argument had some influence on the government outlook at the time, but somehow the government failed to understand that factor supplies could be substantially altered in the long run as a result of deliberate and direct intervention in the economy, planning for economic development, and could

thus lead to an altered cost structure and different pattern of comparative advantage.

The agricultural development policies emphasized the "horizontal expansion" or bringing new land into cultivation rather than "vertical expansion" or intensification of Iraq's agriculture and the reform of its defective agrarian structure. Widespread and often uncritical acceptance was given to the assumption that the position of the small farmers, tenants, and share croppers, would automatically and invariably improve with the gradual monetization of the agricultural economy through economic development. There is every reason to believe that along with the gradual monetization of the agricultural sector, i.e., the introduction of the new technology, machinery, and irrigation pumps, by the landlords, the gap between the rural rich and the rural poor had widened. This was mainly due to the defective agrarian structure.

The government drew up two development programs during the 1951-1959 period. Both were heavily loaded with irrigation and flood control projects, many of which were large and could not show quick results. To a large extent these were engineer's lists of projects rather than economic programs. These projects were too often conceived in isolation from social and institutional changes that should have accompanied them. They often ignored necessary secondary

technical issues such as drainage, desalination, and irrigation networks. The poor resulting performance of the agricultural sector in terms of production and productivity of both land and labor and the land use pattern--fallow system--was the result of the political and economic institutions that dominated this sector.

One aspect of the political and economic institutions that affected the performance of the agricultural sector is the land tenure system. Agricultural land, the fundamental and basic resources of the national economy had been controlled to an overwhelming extent by a limited number of owners and a semi-feudalistic pattern of ownership. Prior to the Revolution of 1958, agricultural landowners constituted about 0.5 percent of total population; 2.8 percent of these landowners held 70 percent of the agricultural land title deeds, and 97.2 percent held 30 percent of the agricultural land title deeds. In other words, as the total rural population who directly depend on agriculture (including landowners and lessees) stood at 3.2 million in 1957; the number of landless peasants was 2.9 million prior to 1958.

When the new authorities took over in 1958, they were fully conscious of the criticisms leveled at the policy of the previous government. The main policy targets of the new government appear to have been (1) development of the

agricultural sector, (2) expansion of the manufacturing sector, and (3) promotion of the social welfare of the poorer portion of the population.

Three development plans were drawn up and followed during the 1959-1969 period. Allocation of investment expenditures to the various sectors of the economy reflected a change in development policy, with the industrial sector receiving a higher priority in the scale of economic development than the agricultural sector. This shift in priorities took place at a time when it was imperative that the agricultural sector receive top priority, especially at the time when a major step is being undertaken by the government, the Agrarian Reform Law No. 30 of 1958, that would have a profound impact on the agricultural sector.

The Agrarian Reform of 1958 had the main objectives of providing for more equitable land distribution, controlling agricultural rental rates, and establishing minimum wages for agricultural workers.

The agrarian reform program was implemented in three phases: (1) expropriation, (2) temporary administration and management of expropriated land by the Ministry of Agrarian Reform, in those cases which the lands were leased to beneficiaries, until the necessary contracted requisition for the productive use and management of the land was completed, and (3) the redistribution of

expropriated land to the beneficiaries, and the organization of agricultural cooperatives and provision of supporting institutional services for the cooperative members.

This study is concerned with the evaluation of agrarian reform programs, with specific attention to the period of implementation of the structural program, organization and administrative structure, and the effects of both macro and micro economic point of view. This study has shown (1) the relationship between agrarian reform programs and specific development consequences, i.e., increasing production and productivity, income earning opportunities, and employment creation; (2) the past performances of the agrarian structure, especially the productive structure and the structure of supporting services, and the assessment of its future prospects and to point out major problems and policies that it may have to face in the realization of these projects; and (3) the post-reform economic organization, i.e., family farm system, collective farms and the state farm and their impacts on the agrarian reform objectives, especially increasing productivity and employment creation in the agricultural sector.

The implementation of the agrarian reform program in terms of land expropriation as of September 1968 was 12.5 million donums, i.e., 5.6 million donums or 44 percent were expropriated and 6.9 million donums or 56 percent were

under temporary administration by the Ministry of Agrarian Reform, but subject to legal and technical process for final expropriation. The expropriated lands were redistributed by December 1968 as follows: the total area redistributed to the landless peasants, in the form of small family farm systems was 3.1 million donums and the number of beneficiaries was 57,117 farm families. The average area of redistributed unit per family was 40 donums. Also, 6.2 million donums were rented to 186,868 farm families, but awaiting redistribution. Altogether, 9.5 million donums were redistributed and rented to 237,402 farm families. In addition, the Ministry included in its program the reclamation and redistribution of 3.3 million donums divided into 11 agricultural projects. Hence, after 10 years of operation, only 25.5 percent of the total land that was eligible for redistribution had actually been redistributed while 74.5 percent was still being acquired by the Ministry of Agrarian Reform.

By 1970, the total area of expropriated land had increased to more than 8.3 million donums. The number of farm families recorded as operating land under temporary contract was 236,203. The number of farm families who had secured provisional title to redistributed lands was 75,816. Altogether there were 312,019 farm families who were new owners or tenants under temporary contract awaiting

redistribution. The area included in the agrarian reform programs, expropriated, reclaimed, and redistributed, represented 75 percent of the agricultural land in Iraq. Thus, the level of management and production practices used on this large area naturally had far-reaching effects on the production of crops and livestock, income distribution, and the nation's employment patterns.

The analysis indicated the following impacts of the agrarian reform program on the performance of the agricultural sector.

The Impact on Increasing Agricultural Production and Productivity

After 1958, crop production declined and remained low for a period of two to three years. This was partly due to the long-drought in the north and partly to the disruption brought about by the agrarian reform programs. A long-run period (1958-1970) provides a better basis for evaluation of the impact of the reform program on agricultural production and productivity.

Using the 1957-1959 average, as a base period equals 100, crop production increased from 100 the base year to 142 in 1970, i.e., an increase of 42 percent over this period or an annual average increase of 3.5 percent. Total agricultural production increased from 100 during the base year to 141 in 1970, i.e., an increase of 41 percent over this

period, or an annual average of 3.4 percent. Food production increased from 100 in the base year to 141 in 1970, i.e., an increase of 41 percent over this period or an annual average of 3.4 percent.

Furthermore, the total value of agricultural production, at factor cost and constant prices of 1966, increased from ID 148.7 million in 1962, after the initial decline in crop production in short run, to ID 194.8 million in 1969; and the value added in the agricultural sector, at constant prices of 1966, increased from ID 148.2 million in 1962 to ID 186.87 million in 1969, with an annual average of 5.1 percent. Therefore, in contrast to the short run, agricultural and food production not only recovered but has steadily increased above the pre-reform level.

The increase in agricultural production and food production, however, has not kept pace with the increase in demand for food that has come with increase in population growth and per capita disposable income. Excesses of demand above supplies of agricultural and food commodities led to higher prices, a reduction in exports and an increase in the imports of agricultural and food commodities. Also, while the Gross Domestic Product, GDP, at factor cost and constant prices of 1966, increased from ID 695.27 million in 1962 to ID 980.14 million in 1969 with an annual average of 4.1 percent, the contribution of the agricultural sector to

GDP declined from 21.3 percent in 1962 to 19.1 percent in 1969. This relative decline in the importance of the agricultural sector could be attributed to the conditions associated with the implementation of the agrarian reform and the higher growth rate of other sectors, especially the manufacturing and the services sector.

The analysis indicates that the impact of the reform program on increasing agricultural productivity, yield per donum, has been moderately good with some crops such as rice, cotton, and tobacco. In comparison to other countries, Iraq is, by and large, a country of rather low agricultural productivity.

The Impact on Income Distribution; Income-Earning Opportunities

The connection between agrarian reform and income distribution is difficult to verify. While evidence on pre-reform and post-reform income distribution and expenditure pattern is extremely difficult to obtain, income distribution will be inferred from statistics showing the redistribution of land ownership.

The analysis shows that the Agrarian Reform of 1958 provided income-earning opportunities to 312,019 farm families who became owner-operators, either with provisional titles or under temporary contract. This number amounted to about 50 percent of the landless farm families on the basis

of the Agricultural Census of 1957-58. Furthermore, the 50 percent reduction in the value of the redistributed land, which resulted from the 1964 amendment of the law, and the nominal rents paid by the tenants under temporary contracts, are highly significant in transferring incomes from the land owning class to the landless farm families. Consequently, the average annual farm family income, at constant prices, increased from ID 145.9, pre-reform level, to ID 205.3, post-reform level; i.e., an increase of ID 59.4 or 40.7 percent.

While no attempt has been made to reconstruct expenditure patterns or change in the demand structure of the agrarian reform beneficiaries, a considerable amount of the increased income is spent on a variety of consumer goods. Part of the increased income is reinvested to increase agricultural production and productivity. The investments are in the form of fertilizer and pesticides, irrigation pumps and farm machinery. Most of the fertilizer and pesticides distributed by the public sector, for example, are used by cooperative members. In 1968, 144 cooperatives owned 394 irrigation pumps or tube wells. Also, the number of tractors increased from 2,400 in 1958 to 10,400 in 1970, including 623 tractors for the public sector. The number of combines increased from 1,000 in 1958 to 2,280 in 1970, including 633 combines for the public sector. Thus, the

new expenditure patterns or the change in the demand structure, not only appears to be based on economically rational criteria, but also the change in the demand structure of the reform beneficiaries seems to be in line with the consequent objective of income distribution.

The Impact on Employment Creation

The analysis indicated that Iraq has had, through its agrarian reform programs, an opportunity for reconstructing the agricultural sector for providing employment and income-earning opportunities in the agricultural sector. The impact of the reform program on employment can be evaluated in terms of the absolute and relative structure of the labor force.

Prior to the reform program, 1957-58, the total number of the employed labor force was 1,663.1 thousand. The relative structure of the labor force, distribution to the main economic sector, was 971.8 thousand or 58 percent of the total employed in the agricultural sector, 4.7 thousand or 0.01 percent in the mining and quarrying sector, 84.6 thousand or 6.8 percent in the manufacturing sector and 289 thousand or 22.0 percent in the service sector. As these statistics indicate the agricultural sector was the most important sector in providing employment opportunities.

In the post-reform period, 1969-70, the total number of employed labor force increased to 2,546.2 thousand, i.e.,

an increase of 883.1 thousand over one decade or an annual average rate of 5.2 percent. The relative structure of the labor force is 1,449.8 thousand or 54 percent in the agricultural sector, 15.5 thousand or 0.58 percent in the mining and quarrying sector, 148 thousand or 5.5 percent in the manufacturing sector and 565 thousand or 21.24 percent in the service sector. The agricultural sector is still the main sector for providing employment opportunities but it now provides a smaller proportion of the total jobs. In other words, the total labor force employed in the agricultural sector increased, in absolute numbers, from 971.8 thousand, pre-reform level, to 1,449.8 thousand, post-reform level; i.e., an increase of 478 thousand or 49.2 percent over more than 10 years, or an annual average income of 4.9 percent.

While there is a definite limit to the employment creation possibilities in the agricultural sector, major efforts are required to create employment opportunities in the non-farm sector. Thus, resolutions of the unemployment and under-employment problems rest ultimately with a dynamic industrial and manufacturing sector, especially industries for consumer goods, industries for agricultural requirements, and agricultural processing industries.

This study has shown that, despite the accomplishment of the Agrarian Reform of 1958, in terms of creating

more employment and income-earning opportunities in the agricultural sector, it cannot be pronounced as a complete economic success. That is, it did not bring about a substantial increase in agricultural production and productivity and/or the creation of dynamic agricultural sector with significant contribution to GDP, at least, in the short run.

This can be attributed to two main reasons: First, the shift in development policies and priorities, especially after the enactment of the reform program, which resulted in a lack of the necessary productive structure and the structure of supporting services. For example, during the 1960's, fertilizer use in Iraq was insignificant and little use was made of weed killers and pesticides. By 1968, i.e., ten years after the enactment of the reform program, farm machinery and equipment for both the public and private sectors supplied 10 percent of Iraq's need. As for the structure of supporting services, one decade after the enactment of the agrarian reform program, there were 499 cooperatives with a total of some 60,000 members. While special emphasis was given to agricultural cooperatives, so that they became linkages between the state and the farmers for the provision of necessary services, credit-provision and marketing facilities, the number of these cooperatives was inadequate to handle the country's need

and their performance was limited and inadequate. Second, the technical and administrative problems developed with the implementation of the reform program, especially with the fragmentation of redistributed units, lack of trained personnel and poor performance of public institutions providing supporting structures. Thus, if the agrarian reform program is to contribute significantly to the specific development consequences, it is clearly necessary that it be undertaken in conjunction with a variety of supporting structures, productive structure and the structure of supporting services.

The analysis concluded that the Agrarian Reform Law No. 30 of 1958 was a transitional piece of legislation. The primary aim of the law--elimination of feudalism was attained. But the subsequent aims of the law, the transformation of a large number of landless peasants into productive agricultural land owners, increasing agricultural production and productivity, and a subsequent increase in the relative importance of the agricultural sector were barely realized because of the obvious implementation shortcomings. Yet, if achievement falls short of expectation, it is because the development process requires knowledge and competence that cannot be acquired except through systematic experience over a period of time which can hardly be abridged. Furthermore, attainment of Iraq's

great economic potential and achievement of the overall objectives outlined earlier requires (1) agricultural development, (2) expanding the manufacturing sector, and (3) raising the efficiency of manpower and reducing unemployment.

Consequently, what is needed above all is a decision to elevate the agricultural sector to a position of top priority during the coming decade. This would entail comprehensive planning, far-reaching change in institutions, devotion of more human resources to the agricultural sector than has been the case in the past and substantially greater financial resources than seemed to have been contemplated in the past for this purpose.

After the July 17, 1968 Revolution, the national authorities initiated rigorous measures to achieve a comprehensive and integrated agrarian structure. These measures were designed to establish the productive structure, the structure of supporting services and to create an efficient administrative structure for implementing the agrarian reform program. One of these measures was the enactment of the new Agrarian Reform Law No. 116 of 1970.

The two main provisions of the new agrarian reform law were the following. (1) The establishment of the Higher Agricultural Council, which was the first serious attempt to establish an efficient administrative structure that could

avoid conflict and overlapping jurisdiction between various Ministries and Departments that had responsibilities concerning the agricultural sector. (2) To retain the advantages of the large scale production, economies of scale, and to avoid the physical and technical problems of fragmentation, the new agrarian reform program followed the principle of collective distribution. The new agrarian program emphasized the establishment of new economic organizations in the agricultural sector, i.e., the family farms, a group farming system (cooperative-collective) and a state-farm system. Hence most of the drawbacks associated with the implementation of the first reform program were corrected through the promulgation and implementation of the new agrarian program.

The Higher Agricultural Council followed a time table for quick and efficient implementation of the new program. While the total requisitioned area under the first program between 1958 and 1970 was 4.2 million donums, under the new program 3.1 million donums were requisitioned by 1972. The area expropriated in two years equalled 80 percent of the total requisitioned area during the previous 12 year period. The process of redistribution also worked faster under the new program than under the first program. By 1972 a total of 5.5 million donums were redistributed to 130,883 landless farm families.

This study has shown that the first reform program provided employment and income earning opportunities to 312,019 farm families; the new reform program provided employment and income-earning opportunities to an additional 165,000 farm families by 1974. Altogether the total number of beneficiaries, new owners, and tenants under temporary contract, totaled 477,019 farm families under the first and the new agrarian reform program. This number equals about 75 percent of the total 685,000 landless families according to the 1957-58 Agricultural Census. Furthermore, the new agrarian reform program abrogated the compensation principle to the landlords, and at the same time the redistribution of land was carried out without the repayment principle. Thus, this measure is significant in transferring incomes from the land-owning class to the landless farm families.

In conjunction with the enactment of the new reform program, the use of modern technology, fertilizer and pesticides, and farm machinery has substantially increased. To meet the effective demand for the use of modern technology and to create more employment opportunities in the rural area, Iraq has expanded its industries for agricultural inputs. Given the raw material basis for a complex industry, especially in the field of petrochemical and other related industries, Iraq constructed a 'fertilizer plant' with a

production capacity of 190 thousand metric tons of nitrogenous fertilizer. Another fertilizer plant, under construction, will produce two million metric tons of different kinds of fertilizer and pesticides. Iraq is not content to be self-sufficient in the production of yield increasing inputs, but also wants to produce these inputs for export. Also, the farm machinery plant constructed in the rural area is producing tractors, combines, and irrigation pumps, to achieve adequate levels of mechanization and to encourage the introduction of modern agricultural practices.

Cooperatives have expanded their activities, as an integral part of the structure of supporting services, by providing credits, marketing facilities, and other social and cultural activities in the rural areas. There are 1,360 multipurpose agricultural cooperatives at the local level with 250,000 members utilizing 16 million donums, 151 agricultural cooperatives at the regional level, and the Cooperative Union at the national level. Furthermore, the cooperative movement has expanded its activities outside the agrarian reform area; the number of cooperatives in the private subsector is expanding. There are 71 agricultural cooperatives with 3,581 members--landowners and tenants--utilizing 0.5 million donums. Thus, the cooperative network has established itself as a linkage between the public

sector and public institutions and farmers in the introduction of modern technology and the provisions of the complementary services in rural areas.

This study has shown the impact of post-reform economic organization in the agricultural sector, i.e., family farm system, group farming system (cooperative-collective) and the state-farm system on increasing productivity and the employment opportunities in the agricultural sector. The data and economic consideration are not presented as an argument for the family farm system per se. It is instructive to look closely at the family farm system, since it exists on a large scale in Iraq while post-reform dualism may be more viable, the critical variables associated with possible success or failure of such a dualistic post-reform structure are (1) the size and the rate of growth of the industrial sector, (2) the proportion of the population in the agricultural sector, and (3) the growth rate of total population.

The review and analysis concluded that the new Agrarian Reform Program of 1970 envisaged a concept for agrarian program both in terms of comprehensiveness and essence, i.e., it has provided a strong basis for comprehensive and integrated agrarian structure. The new program removed obstacles and paved the way for the Agricultural Revolution in Iraq. Hence, within this context, the new

agrarian structure would ensure balanced economic development which is in conformity with Iraq's declared overall objectives of development policy for the last two decades.

BIBLIOGRAPHY

BIBLIOGRAPHY

- Abdel-Sayed, B. M. "The Potential Use of Fertilizer for the Intensification and Development of Agriculture in U.A.R." Ph.D. dissertation, Michigan State University, 1969.
- Allison, F. E. "Nitrogen and Soil Fertility." USDA Yearbook, 1957.
- Al-Najar, Isam. Introduction and Breeding of New Varieties with High Yield Potential Improvement of Rice Production in Iraq. FAO, International Rice Commission, Working Party, Twelfth Seminar, September 9-14, 1968.
- Al-Nasrawi, A. Financing Economic Development in Iraq. New York: Frederick A. Praeger, 1967.
- Al-Nowfel, Sami Jawad, and Mustatu Hamdoon. New Attitudes in Agrarian Reform and Agricultural Cooperation in Iraq. Ministry of Agrarian Reform, Baghdad, April 1970.
- Barlow, Raleigh. Land Resources Economics. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972.
- Bauli, Faud. "The Relationships of Man to the Land in Iraq." Rural Sociology 31 (1966).
- Buringh, P. Soil and Soil Condition in Iraq. Baghdad: Ministry of Agriculture, 1960.
- Central Statistical Board. Statistical Pocket Book of the Socialist Republic of Rumania, 1970.
- Christensen, R. P. "Taiwan's Agricultural Development: Its Relevance for Developing Countries Today." Foreign Agricultural Economic Report, No. 39. U.S. Department of Agriculture, 1968.
- _____. "Population Growth and Agricultural Development." Agricultural Economic Research 18 (1966).

Clawson, M., H. Landsberg and L. Alexander. The Agricultural Potential of the Middle East. New York: American Elsevier Publishing Company, Inc., 1971.

Dorner, P. "Needed Redirection in Economic Analysis for Agricultural Development Policy." American Journal of Agricultural Economics 53 (1971).

_____. Land Reform and Economic Development. Penguin Books, 1972.

_____, and D. Kanel. "The Economic Case for Land Reform: Employment, Income Distribution and Productivity." Land Reform: Land Settlement and Cooperatives. FAO, ESR, Mono., 1971.

Dovering, F. "The Share of Agriculture in a Growing Population." Agriculture in Economic Development. Edited by C. R. Gicher and L. W. Witt. New York: McGraw-Hill, Inc., 1964.

_____. "Land Reform in Mexico." Agency for International Development Spring Review of Land Reform 7 (1970).

_____. "Land Reform and Productivity, the Mexican Case." Land Tenure Center. University of Wisconsin, Paper no. 65.

El Hudithy and El Dujaili. "Problem of Implementation of Agrarian Reform in Iraq." Land Policy in the Near East. Edited by N. R. El Chonemy. Rome: United Nations, FAO, 1967.

Ennis, W. B. "Pesticides Inputs for Agricultural Production." The World Food Problem. A Report of the President's Science Advisory Committee, The White House (Washington, D.C.: Government Printing Office, September 1967.

Federal Institute for Statistics. Statistical Pocket Book of Yugoslavia, 1970.

Giles, G. W. "The World Food Problem." A Report of the President's Science Advisory Committee, The White House (Washington, D.C.: Government Printing Office, September 1967.

Hapgood, David. "Policies for Promoting Agricultural Development." Center for International Studies, Massachusetts Institute of Technology, 1965.

- Hasan, M. S. Studies in the Iraqi Economy. Beirut, 1966.
- Hassan, M. A. Land Reclamation and Settlement in Iraq. Baghdad: Baghdad Printing Press, 1955.
- Hassanien, A. S. Report to the Government of Iraq, on Land Reform. United Nations, FAO, Rome, 1970.
- International Bank for Reconstruction and Development. The Economic Development of Iraq. (Baltimore: John Hopkins Press, 1952).
- Iraq, Ministry of Planning. Evaluation of Economic Growth in Iraq, 1950-1970. Baghdad, 1972.
- _____. Ministry of Planning. Statistical Pocket Book, 1960-1970. Baghdad, 1972.
- _____. Country Report. FAO Mediterranean Development Project. FAO, Rome, 1959.
- _____, Republic of. Provisional Economic Plan. Baghdad, 1954.
- _____, Republic of. Detailed Economic Plan, 1961-1964, Law No. 70 for 1961.
- _____, Republic of. The Five-Year Economic Plan, 1965-1969, Law No. 87 of 1965. Published in the Official Gazette, 86 No. 1185, 1965.
- Kanel, D. "Organization of Agriculture and Cooperative Farming." Land Policy for Developing Nations. Land Tenure Center, University of Wisconsin, June 1972.
- Kelley, T. W., and D. G. Irwin. "Farm Size and Specialization." Size Structure and Future of Farms. Edited by A. Gordon Ball and Earl O. Heady. Ames: The Iowa State University Press, 1972.
- Krishna, Raj. "Agricultural Price Policy and Economic Development." Agricultural Development and Economic Growth. Edited by H. M. Southworth and Johnston. New York: Cornell University Press.
- Ladejinsky, W. "Ironies of India's Green Revolution." Foreign Affairs 38 (1970).
- Lipski, W. Agriculture in Poland. Interpress Publisher, 1969.

Lord Satter. The Development of Iraq, A Plan for Action. Iraq Development Board, 1955.

Malras, Judah. Population and Societies. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1973.

McColly, H. F., and J. W. Martin. Introduction to Agricultural Engineering. New York: McGraw-Hill Book Company, Inc., 1955.

Mellor, J. W. "Review of Agriculture and Economic Development: Symposium on Japan's Experience." The Economic Review. Edited by K. Ohkawa, B. F. Johnston and H. Haneda. Vol. 21, No. 2 (1970).

Midoro, T. "Marketing of Agricultural Product in Japan." Paper presented at the Agricultural Forestry and Fisheries Conference, Tokyo, Japan.

Mosher, Arthur T. Getting Agriculture Moving. New York: Frederick A. Praeger, 1966.

Platt, K. B. "Land Reform in the United Arab Republic." Agency for International Development, Spring Review of Land Reform, 1970.

Pothecary, B. P. "The Small Tractor in Developing Countries." World Crops 21 (July-August 1969).

Power, W. L. "Soil and Land Use Capabilities in Iraq." Geographical Review 44 (1954).

Poyck, A. P. G. Farm Studies in Iraq. Wugeningen, Netherlands: N. V. HoVeenman, 1962.

Raup, P. M. "Fragmentation, Consolidation and Rural Development." Land Policy for Developing Nations. Land Tenure Center, University of Wisconsin, 1972.

Saied, K. "Agricultural Mechanization in Iraq." Ph.D. dissertation, Michigan State University, 1971.

Schaub, J. R. "Agricultural Performance in Developing Countries." Economic Progress of Agriculture in Developing Nations, 1950-68. U.S. Department of Agriculture, FAO, Report No. 59, 1970.

Schiller, O. "The Communist Experience in Dealing with the Agrarian Question: Their Significance for Developing Countries." Agrarian Policies and Problems in Communist and Non-Communist Countries. University of Washington Press, 1971.

Schultz, T. W. Increasing World Food Supplies. The Economic Requirement. National Academy of Science. Vol. 66 (August 1966).

_____. Crisis in World Agriculture. Ann Arbor: University of Michigan Press, 1964.

_____. Transforming Traditional Agriculture. New Haven: Yale University Press, 1964.

Sears, D. "The Meaning of Development." International Development Review 11 (1969).

Sherlitz, L. P. "The Role of Farm Mechanization in Developing Countries." Foreign Agriculture 6, No. 48 (November 25, 1968) (U.S. Department of Agriculture).

Simmons, J. L. "Agricultural Development in Iraq: Planning and Management Failure." Middle East Journal 120 (Spring 1965).

Soussa, Ahmad. The Flood of Baghdad History. Baghdad: Aladib Press, 1965.

Stevens, R. D. "Role of Growth in Food Requirement During Economic Development." Journal of Farm Economics 47, No. 5 (1965).

_____. Institutional Change and Agricultural Development. Department of Agricultural Economics, Michigan State University, 1967.

Stout, B. A., C. Kline, D. A. G. Green, and Roy L. Donahue. Agricultural Mechanization in Equatorial Africa. East Lansing: Michigan State University, Report No. 6, 1969.

Treakle, H. C. The Agricultural Economy of Iraq. U.S. Department of Agriculture, ERS, Foreign, August 1965.

_____. "Land Reform in Iraq." Agency for International Development, Spring Review of Land Reform 2 (1970).

United Nations. Industrial Development in the Arab Countries. ID/CONF. 1/R.B.P. 16, New York, 1967.

_____. Production Year Book. Vol. 21, FAO, 1967.

_____. Progress in Land Reform. Fifth Report, 1970.

Voelkner, H. E. "Land Reform in Japan." Agency for International Development, Spring Review of Land Reform 3 (1970).

Warriner, D. Land Reform and Economic Development in the Middle East. London: Oxford University Press, 1950.

_____. Land Reform in Principle and Practice. Oxford: Clarendon Press, 1969.

