THE AGRICULTURAL MARKETING SYSTEM IN TAIF, SAUDI ARABIA

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MOHAMMED H. AL-FIAR
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THE AGRICULTURAL MARKETING SYSTEM IN TAIF, SAUDI ARABIA

By

Mohammed H. Al-Fiar

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CHAPTER I

INTRODUCTION

The purpose of this study is to describe the geographical aspects of the agricultural marketing system of Saudi Arabia. The system is taken to include several stages, from the individual farm, the basic unit of production, through the numerous stages prior to delivery to the consumer. For the purpose of organizing this study, the marketing system is viewed as a spatial system, or a network consisting of nodes connected by linkages. This study examines the location of the market and its relationship with the surrounding areas. The role of distance and the importance of transportation are also examined.

In Saudi Arabia, agricultural development has begun only recently, during the post-war period when oil royalities became available for this purpose. As a result, agricultural production has been increasing at a significant rate. But this product is still distributed according to the traditional marketing system.

This system is not efficient for handling the increased production and therefore serves to retard full development in the agricultural sector. The characteristic problems of the traditional system are: the uneven distribution of products in relation to their markets in the urban centers, increase in demand without corresponding increase in

supply, and price fluctuations. Agricultural Marketing in Saudi Arabia is also handicapped by the lack of suitable storage and refrigeration facilities, the absence of grading and standardization, poor communications, and high transportation costs. These difficulties have serious implications for the small farmer, who is unable to accumulate sufficient capital to improve his general situation.

The specific objectives of this study are:

1. To describe the structure and organization of the traditional marketing system.
2. To evaluate the marketing system by examining its individual components in a systematic manner.
3. To make specific recommendations for improving the marketing system.
4. To contribute to the literature on agricultural development in Saudi Arabia.

This study is organized around several hypotheses. The main hypothesis is that marketing is a significant factor in agricultural development, and that the spatial aspects of marketing are crucial variables in evaluating a marketing system. Under this hypothesis two sub-hypotheses are important:

1. Agricultural development in Saudi Arabia is retarded by the existing marketing system.
2. By improving the marketing system, supply will accord more closely with demand, prices will exhibit greater stability and both producer and consumer will benefit.

Geography and Development

The general context of this study is economic development, especially agricultural development. "Development is given its broadest definition to refer to the more optimal utilization of a country's and/or

people's physical and human resources through concerted and often planned action. It thus implies definite social change and subsumes the discernible shifts that occur in the economic, political, and cultural life of a community."[1] According to Chapman "Geography has made virtually no theoretical contribution to the study of development although, paradoxically, it has accumulated considerable empirical evidence upon which such contribution might be based."[2] Geographers are capable of providing information, counsel, and future planning. They are obligated to participate in their community's development and make their knowledge useful to society.[3] Also, according to Chapman, the example from land-use studies illustrates a more general point. In one sense, geographers are in a strong position to make a real contribution to the theory of development because of the amount of data they have collected in many countries.[4]

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[1]Murray Chapman, "Geography and the Study of Development," The Journal of Developing Areas, Vol. 3 (1969), p. 319.

[2]Ibid., p. 320.

[3]Hartshorne has explained the geographer's role in society in his Perspective on the Nature of Geography. He says, geographers may hope to provide counsel as well as information pertinent to planning for the future. Certainly, as Bowman observed, they should be able to draw conclusions limiting the range of possible results; they may be able to provide greater assurance of continuance of trends than the mere fact that the trend exists. In numerous cases also geographers may have sufficient knowledge of the relationships involved to permit somewhat more positive predictions; the geographer as a responsible member of society has an obligation to make his knowledge useful to society. Richard Hartshorne, Prespective on the Nature of Geography, (Chicago: Rand McNally and Company, 1969), pp. 165-166.

[4]Chapman, op. cit., p. 320.

In terms of development, the countries of the world can be divided into two categories: developed and developing nations. A developed economy is one in which the human and natural resources of an area are being used at a relatively high level of efficiency at a given time.[1] There are a number of criteria to determine level of economic development. The percentage of an area's labor force in agriculture, the consumption of electrical energy per inhabitant, and per capital income are the main criteria employed to determine and distinguish between the two levels.[2] The lower the percentage of labor force in primary activities, the higher the consumption of electric-energy per inhabitant and the higher the income per capita, the more a nation is approaching the level of a developed economy.

In the economically advanced countries, tertiary economic activities involve a high proportion of the labor force and contribute a large share to the national economy. Belshaw states that the fundamental characteristic of developed society is a complex and dynamic economy; modern economies are characterized by a high degree of division of labor.[3]

In the developing countries, the situation is the reverse. Most of the labor force is involved in primary activities which contribute a small share to the national economy. According to Nash, "what makes these economies different from a modern, dynamic economy with a built-in

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[1]Richard S. Thoman, et. al, The Geography of Economic Activity, McGraw-Hill, 2nd edition, (1968), p. 30.

[2]Thoman, et. al., Ibid., p. 31

[3]Cyril S. Belshaw, Traditional Exchange and Modern Markets, (Englewood Cliffs: Prentice-Hall, 1965), p. 11.

drive toward economic and technological development is thus apparent. The people and societies do not lack economic rationality, the matching of means and ends for best outputs, they do not hedge economic activity with a host of traditional barriers; they do not despise wealth and hard work; and the economies exhibit the free market where each man follows his own economic interest. What is lacking is the social organization of an entity like the firm, an autonomous, corporate group dedicated to and organized for economic activity."[1]

Development is a movement taken by man to improve his situation and change it from a primitive to an advanced, modern level of living. Development takes place in all aspects of human activity. It occurs in the primary, secondary, and tertiary economic sectors. Development in the agricultural sector, a primary activity, is crucial in the development programs in a given country. In the developed countries, the agricultural sector is advanced and contributes a significant share in the national economy. This is due to advanced technology and modern machinery. On the other hand, traditional agricultural practices still exist in the developing countries and is influenced by many social, cultural and natural factors. This underdevelopment in the agricultural sector is due to the low level of living and education, as well as rudimentary technology. Traditional agriculture has been defined as "that sector of a poor, underdeveloped country which has attained a particular long-run equilibrium with respect to the allocation of factors

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[1]Manning Nash, Primitive and Peasant Economic Systems, (San Francisco: Chandler Publishing Company, 1966), p. 71.

of production at the disposal at farmers and with respect to investment to increase the stocks of such factors."[1]

Agricultural Marketing

Agricultural geography seeks to describe and explain areal differentiation in agriculture. The geographer is concerned with economic conditions, the nature of products, exchange relationships, and changing landscape and land use.[2] An important problem area within the geography of agricultural is the marketing of agricultural products.

Applebaum has argued that the study of marketing has been neglected by geographers, in spite of the large section of the working population engaged in marketing functions, the large section of the urban landscape devoted to structures of wholesale and retail trade, and the complex channels of distribution leading from producing to consuming areas. A need in economic geography for marketing geography was evident, not only to strengthen other aspects of economic geography, but also to help the geographer in the marketing field contribute significantly to solutions of problems in the actual business of marketing.[3]

Walter W. Rastow has recently noted that the marketing system may play a critical role in the balanced growth of rural and urban sectors in a developing country.[4] "In fact the cities have received more than

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[1]Clifton R. Wharton, Jr., Subsistance Agriculture & Economic Development (Chicago: Aldine Publishing Company, 1970), p. 363.

[2]Howard F. Gregor, Geography of Agriculture: Themes in Research, (Englewood Cliffs, N.J.: Prentice-Hall, 1970).

[3]Brian J. L. Berry, Geography of Marketing Centers and Retail Distribution, (Englewood Cliffs, N.J.: Prentice-Hall, 1967), p. 125.

[4]According to Kelly Max Harrison, Agricultural Market Coordination in the Economic Development of Puerto Rico, Thesis for the Ph.D., Michigan State University, Dept. of Agricultural Economics, 1966, p. 2.

their share of government investment in most of the developing countries."[1]

Friedrich viewed the goal of economic geography as one of describing and explaing the "geographic distribution of economic facts as spatial phenomena on the earth surface" in terms of historical development, present situation, and quantity and quality. Hettner emphasized the study of variations in the "economic character" of regions as the principal goal of economic geography.[2] When we talk about agricultural marketing system, we talk about assembling, distributing, and linkage functions. Therefore, the spatial tradition in modern geography is the guidelight of this study.[3]

Many geographers and other social scientists have studied marketing activities from different points of view.[4] Johann Heinrich Von Thunen was the first to develop a scientific theory for the location of agricultural activities. His concern with agricultural locations was a practical one; he was interested in managing his own estate near the City of Rastock in Mecklenburg. His theory tries to account for the types of agriculture located at various distances from a single urban market.[5] Wrigley states that the foundation of periodic markets is ancient in the Central Andean Countries, for here arose an early

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[1]Norton Ginsburg, "From Colonialism to National Development: Geographical Perspective on Patterns and Policies," Annals of the American Association of Geographers, Vol. 63 (March, 1973), p. 14.

[2]Cited in Gregor, op. cit., p. 3.

[3]William D. Pattison, "Four Traditions of Geography," Journal of Geography, Vol. 63 (1964) 211-216.

[4]Raymond E. Murphy, "Marketing Geography Comes of Age," Economic Geography, Vol. 37, (1961), Editorial.

[5]John W. Alexander, Economic Geography, (Englewood Cliffs, N.J.: Prentice Hall, 1963), pp. 613-614.

civilization with problems of internal distribution.[1] In his review of the literature on markets in East Anglia, Dickinson shows the difference between marketing procedures in the ninteenth century and those of the twentieth century. He says that "the market place, the central feature of the typical English market town, where formerly all of the business was transacted, is now tenanted weekly by small retailers, selling from hired stalls, while the livestock is sold in specially constructed yards, and grain, provender, general produce and so forth, are sold in the Corn Exchange buildings."[2] Also for developed agricultural areas, Smith has given evidence for organized and developed systems of marketing.[3] "The modern marketing concept serves very naturally to describe an important facet of all organizational activity. All organizations must develop appropriate products to serve their sundry consuming groups and must use modern tools of communication to reach their consuming publics."[4]

In his discussion of farmers' markets in the U.S., Pyle states that "exchange may be either vertical or horizontal. Vertical exchange includes both the concentration of local products for movement toward other consuming centers (bulking) and the distribution of outside goods to local customers (breaking bulk). Horizontal exchange in its simplest

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[1]G. M. Wrigley, "Fairs of the Central Andes," The Geographical Review, Vol. 7, (February, 1919), p. 71

[2]Robert E. Dickinson, "Markets and Market Areas of East Anglia," Economic Geography, Vol. 10, (1934), pp. 176-177.

[3]Derek L. Smith, "Market Gardening at Adelaide's Urban Fringe," Economic Geography, Vol. 42, (January, 1966), p. 19-36.

[4]Philip Kotler and Sidney J. Levy, "Broadening the Concept of Marketing," Journal of Marketing, Vol. 33, No. 1, (January, 1969), p. 15.

form takes place between producers and consumers and may arise from either environmental or cultural differences. In the ideal situation, market exchange is equally and mutually beneficial to producers and consumers."[1]

Berry has reviewed marketing from a theoretical point of view, stressing the utlity of central place theory for both the study of size and spacing of cities and the organization of market areas within cities.[2] Berry's study is particularly useful for the study of marketing systems in developed economies.

In the developing countries, numerous contributions to the study of marketing can be cited in the literature of several of the social sciences as well as geography. Some significant contributions are those of Belshaw,[3] Nash,[4] and Harner.[5] A major contribution for Africa is Bahannan and Dalton's work on markets in Africa.[6]

Marketing in the developing countries has not received much attention by geographers; there is a scarcity of literature on marketing

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[1]Jane Pyle, "Farmers' markets in the United States: Functional Anachronisms," The Geographical Review, Vol. 61 (1971), p. 170.

[2]Berry, op. cit.

[3]Belshaw, Traditional Exchange and Modern Markets, op. cit.

[4]Nash, Primitive and Peasant Economic Systems, op. cit.

[5]John Truman Harner, Agricultural Marketing, (New York: John Wiley and Sons, 1925.

[6]Paul Bohannan and George Dalton, Markets in Africa, (Evanston: Northwestern University Press, 1962).

from the geographical point of view. One example is Mikesell's study of the role of periodic, tribal markets in Morocco, in which he describes the four main functions of a market: (1) distribution of local products; (2) exchange of rural surplus for urban goods; (3) circulation of articles such as pottery and millstones from special places, (exchange within regions); and (4) dissemination of foreign imports. Morocco's expanding network of roads has caused some changes in these periodic markets. This illustrates an important principle of economic geography, that improvement of communications encourages centralization of trading facilities. Mikesell notes that markets of this type are scattered over an area extending from Morocco to the Philipines.[1] In another study of traditional markets, Good states that "Marketing in a developing economy has two strikes against it: it is either ignored, attention shifting to production, finance, and other activities presumed to contribute more toward development, or it is attacked as a parasitic function, not only contributing nothing to the economic system but draining its vitality as well."[2] Rozental is equally emphatic in saying that "unorganized markets in most of the less developed countries act as brakes on economic growth in a number of important respects."[3]

Most studies about marketing in developing countries focus on rural and periodic markets where a variety of goods--agricultural production and handicrafts--are exchanged. But the urban case differs in

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[1]Marvin W. Mikesell, "The Role of Tribal Markets in Morocco," The Geographical Review, Vol. 48, (1958), pp. 503-511.

[2]Charles M. Good, Rural Markets and Trade in East Africa, (Chicago: University of Chicago, Dept. of Geography, Research Paper No. 128 (1970) p. v.

[3]Alek A. Rozental, "Unorganized Financial Markets and Developmental Strategy," The Journal of Developing Areas, Vol. 1, (1967), p. 457.

significant ways from the rural. The type of marketing of agricultural production being investigated in this study of Taif, Saudi Arabia, differs in many ways from the types discussed above for Morocco and East Africa. The market in Taif is a daily market for agricultural products only. It is held in the center of the city and has its own particular features (discussed in Chapter IV.) On the other hand, the Taif market is similar to those described above in terms of certain functions, such as the use of auctions.

The organization of Koforidua market, Ghana, which has its center in the town is similar, spatially and economically, to that of Taif,[1] as are the markets of Taiwan.[2] Also, there exist similarities between markets in Taif and those in developed countries, such as those in East Anglia.

The Marketing System in Saudi Arabia

In the national economy of Saudi Arabia, a developing country, the agricultural sector is an important element in the structure of that economy. While only 6 per cent of the gross domestic product (GDP) originates from agriculture, fully 46 per cent of the total labor force is employed in agricultural activities.[3] Agriculture plays an important role in the social structure of the Kingdom. However, agriculture is experiencing a number of difficulties due to a variety of physical and

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[1] Bohannan & Dalton, Ibid., p.

[2] Ronald G. Knapp, "Marketing and Social Patterns in Rural Taiwan," Annals of Association of American Geographers, Vol. 61, (1971), p. 131.

[3] In the United States agriculture accounts for only 5 per cent of employment. The Europa Yearbook 1971. A World Survey, Vol. 2 (England, Europa Publications.

social factors. The marketing system in particular, is one major problem area in terms of agricultural development. Before discussing this topic, however, a brief discussion of the use of the idea of "system" in this study is necessary.

Hall and Fagan have defined a system as "a set of objects together with relationships between the objects and between their attributes."[1] For this study, the system is a set of stages connected by linkages." A marketing system is comprised of a number of separate sub-systems, each concerned with only one of the marketing activities performed. The primary purpose of each sub-system is the measurement and evaluation of current performance and, if a marketing activity is not being performed as economically as possible, the evaluation of proposed alternative courses of action to determine which will lead to more economical performance."[2] According to a report prepared for the Saudi Arabian governmtn, "of all of the different ways in which the term 'market' is defined, the one of interest for the understanding of the economic analysis of the Saudi Arabian situation is that which defines a market on a geographical space basis as an area within which the forces of supply and demand interact to establish a single price. A market is also defined from a composition and functional standpoint as a group of buyers and sellers with facilities for trading with each other. This

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[1]Quoted in Richard J. Chorley, "Geomorphology and General Systems Theory," In Introduction to Geography: Selected Readings, ed. by Fred E. Dohrs and Lawrence M. Sommers (New York: Crowell Company, 1967), p. 286.

[2]Stanley F. Stasch, "Systems Analysis for Controlling and Improving Marketing Performance," Jounral of Marketing, Vol. 33, No. 2 (1969), p. 13.

group of buyers and sellers may be all gathered together in one place or geographically dispersed. The most important factor in the definition of a market is the quality of communication amoung the people in it. Stated in more meaningful terms for Saudi Arabia, a major expansion of the market information system is the key requirement for improvement of Saudi Arabian Marketing."[1] Agricultural marketing is the sum of processes and services starting from the landholding and farm operation until the product is sold to the consumer. The distribution of agricultural products is one major factor in the marketing system. Belshaw says that "market places are sites, with social, economic, cultural, political, and other referents, where buyers and sellers meet for the purpose of exchange."[2]

Methodology

The Taif agricultural region has been chosen as the study area for this thesis; its agricultural characteristics and problems are representative of the whole country. Taif is one of the important agricultural producing areas in Saudi Arabia. In addition, the marketing of the grape crop, which serves as a specific example in this study, is an important part of the Taif market. The study area is described more fully in Chapter IV.

During the summer of 1972, field work for this study was carried out in Saudi Arabia. Because most fo the government departments are

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[1]Saudi Arabia, Ministry of Agriculture and Water, A Program for the Improved Marketing of Agricultural Commodities in Saudi Arabia, prepared by Stanford Research Institute, (January, 1971), p. 15.

[2]Belsahw, Traditional Exchange and Modern Markets, op. cit., p. 8.

located in Riyadh, half of the field work period was spent in that city, collecting data and information from different offices. The major problem facing researchers in Saudi Arabia is the lack of reliable statistical data and references other than general documents. These documents comprise reports done by official committees from the various government departments and by foreign consulting firms. Also, these documents are not supported by statistical data and tend to give general, rather than specific, recommendations toward solving the marketing problem. One useful study of the marketing situation is that done by the Stanford Research Institute.[1] Also, the statistical yearbooks of the Ministry of Finance and National Economy, and The Development Plan of the Central Organization of Planning, are useful.

In Taif, the study area, the agricultural unit, the municipality and the surrounding agricultural areas including wadis,[2] suburbs, and villages have been visited to obtain information for the region and to observe agricultural activities, as well as the product delivery processes. Interviews were carried out to obtain information on individual farms as well as aspects of the marketing process, such as the transport cost, and the farmer-auctioneer relationship in the actual market place. Oral interviews were more suitable than written ones to obtain more detailed and accurate answers from the farmers and the auctioneers. The daily morning market was visited frequently for observation purposes. Because of the lack of specific quantitative data, this study is based largely on personal observation of marketing activities in the study area.

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[1](SRI), op. cit.

[2]Wadi is an arabian name for a dry course of water.

Most of the data is descriptive. No systematic study of the supply and demand situation has been conducted. Therefore, personal familiarity and observations of the Taif region are the main sources of data for this study. In addition, the small number of official and consulting firm reports available are used whenever applicable.

While numerous studies in a variety of disciplines have focused on the social, cultural, and locational aspects of periodic and daily markets in developing areas, in Saudi Arabia there have been no substantial studies of this kind, except for the above-mentioned official reports and studies. Furthermore, none of these studies has approached the problem from a geographic point of view. Even though a descriptive study, this study is an important contribution as a case study.[1]

This thesis is organized into five chapters. The second chapter describes the geographical background of Saudi Arabia. The physical form of Saudi Arabia is important for this study in terms of water resources, soil, and relief. The third chapter discusses the agricultural geography of the country. The main chapter is the fourth chapter, "The Marketing Distribution System." In this chapter, marketing is discussed as a spatial system encompassing a chain of functions, processes, and linkages. The concluding Chapter contains a summary and recommendations which may contribute to solving the marketing problem in the agricultural sector of the Saudi Arabian economy.

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[1]According to Dohrs and Sommers, "Description has been and still is of vital importance to the geographer. Even though his tools and methods have become more rigorous, the job of rendering into understandable language the results of his observations and research still reamins." Fred Dohrs and Lawrence M. Sommers, Introduction to Geography: Selected Readings, (New York: Crowell Company, 1969), p. 139. See also, William Applebaum, "Teaching Marketing Geography by the Case Method," Economic Geography, Vol. 37, (1961), p. 51.

CHAPTER II

SAUDI ARABIA: PHYSICAL GEOGRAPHY

Introduction

Saudi Arabia is a large country in Southwest Asia, occupying about four-fifths of the Arabian peninsula (Figure 1). The total area comprises about 830,000 square miles, more than three times the size of Texas or about one-third the size of the United States. Accurate population figures are not available but the population is estimated at seven million.

In terms of its physical geography, Saudi Arabia rests upon a complex foundation of pre-cambrian age, made up predominantly of granites and schists. Prior to the crustal faulting which formed the basin of the Red Sea, the Arabian peninsula was connected to the African continental block. After separation from Africa during the tertiary period, the peninsula assumed the form of a giant plateau tilted eastward from the Red Sea towards the Arabian Gulf. Exposed in the western highlands and mountains, the basement complex known as the Arabian shield ranges in elevation from 3,760 meters in the Yemen mountains to somewhat less than 1,900 meters near the Jordanian border in the northwest (Figure 2).[1]

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[1]James E. Pasteur, Soil and Land Classification in Saudi Arabia, A report for the Ministry of Agriculture and Water, (Riyadh: The Ministry of Agriculture, 1971), p. 2.

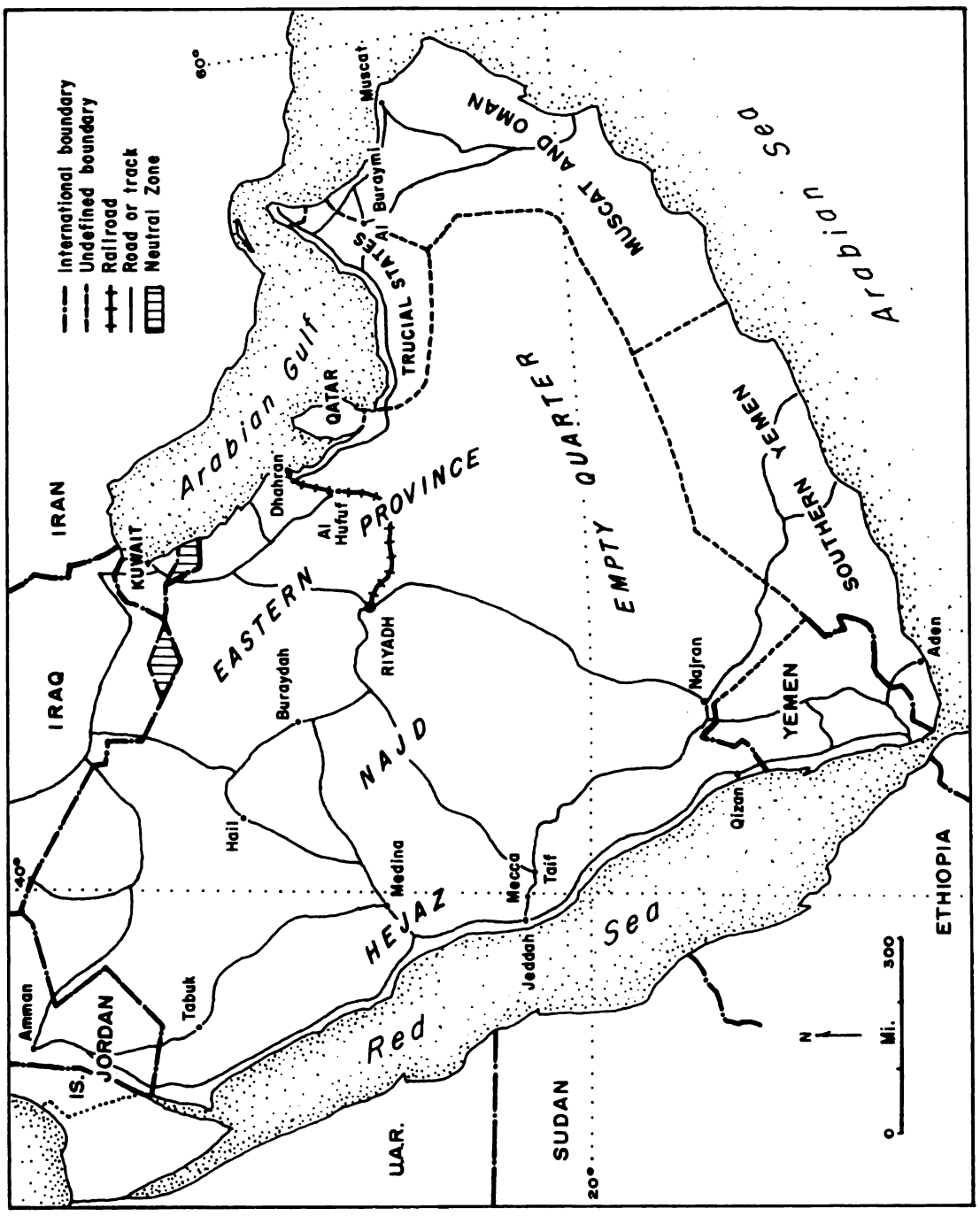

Figure 1. Political Map of Saudi Arabia Showing the Provinces and Principal Transportation Routes

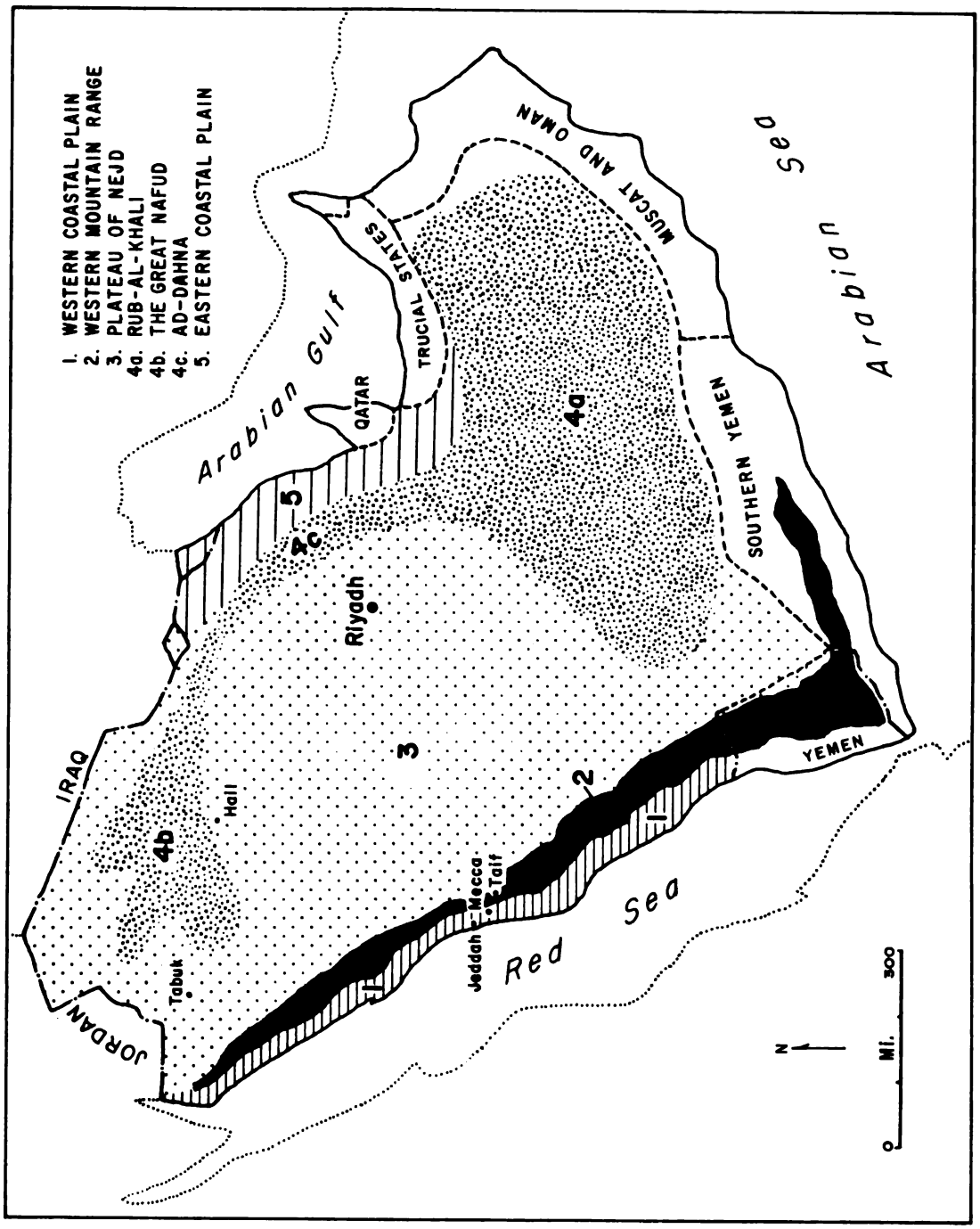

Figure 2. The Physical Divisions of Saudi Arabia

To the east and north of the Arabian shield are sedimentary formations: sandstones, limestones, shales, and alluvium which contain groundwater reservoirs and aquifers. To the south is the vast sand desert, al-Rub' al-Khali (The Empty Quarter), and al-Nafud in the north and al-Dahna to the east. The sedimentary layers increase in thickness from west to east, and contain the vast petroleum deposits which derive from organic matter deposited in the Tethys Sea. In the western part of the shield are many volcanic formations and lava beds. Much of the surface of Saudi Arabia is cut by wadis (dry-water courses) which contain some alluvium. Sebkhahs, or dry-salt flats, are numerous also.

Saudi Arabia is bordered on the west by the Red Sea with a cost line more than 1,100 miles in length extending from the Gulf of Aqaba in the north to the Yemen border (Figure 1). To the east, the coastline on the Arabian Gulf extends 300 miles from Kuwait north to Qatar. The northern border is shared with Jordan, Iraq, and Kuwait, and the southern with Yemen, the South Yemen Republic, and Oman. Much of the southern border has not been demarcated.

Saudi Arabia can be divided into five physical regions: (1) the western coastal plain, (2) the western range of mountains (al-Sarah), (3) the plateau of Nejd, (4) the deserts, and (5) the eastern coastal plain (Figure 2).

The Physical Divisions of Saudi Arabia

1. The Western Coastal Plain--This region is a narrow coastal plain that varies from ten to forty miles in width along the Red Sea. The divisions of the coastal plain which are characterized by extensive

marshlands and lava fields, are called tihāmas. Jeddah, the largest city in Saudi Arabia, is located along this coast. The sandy, saline soil of this plain is not suitable for agriculture except in the southern part where the plain is wider and the soil is more fertile. In the northern part of the plain agricultural activities emphasize palm trees and other crops which are able to withstand the poor, saline soils and the humid climate. In this plain is found one of Saudi Arabia's most densely populated areas, especially to the south of Jeddah.

2. The Western Range of Mountains (al-Sarāh)--This range of high mountains is characterized by a steep western edge. The eastern slopes of the range are more gentle. The highest mountains are in Astr where peaks rise to over 9,000 feet. They decline to 8,000 feet to the west of Mecca, and descend to 3,000 feet at Medīna. The range extends to the north at the same general elevation.[1]

This range of high mountains is broken by large valleys which contain flowing rivers after rainfall. These valleys extend westward from the mountains across the coastal plain and empty into the Red Sea. The flood waters wash most of the silt onto the coastal plains. As a result, the land of these plains becomes more fertile. The eastern slopes of the mountain are more gentle. This side of the mountains has less rainfall because it is in a rain-shadow. Also, many valleys are extended eastward from the mountains and empty into the desert.

3. Plateau of Nejd--This plateau extends from the western mountains eastward to the desert of Ad-Dahna and northward to the Iraqi

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[1]Saudi Arabia, Ministry of Finance, Central Dept. of Statistics, Statistical Yearbook, 4th issue (Damman: Al-Mutawa Press, 1968), p. 8.

and Jordanian borders. The plateau borders the Ruli'al-Khālī desert on the south. It is the largest of Saudi Arabia's physical regions and contains numerous oases. These oases are centers of agricultural activity and population. Cities, such as Riyādh, the capital, madīna, and al-Hufūf grew up around such oases. The plateau's elevation is between 4,000 and 6,000 feet. It declines toward the east where its height drops to 2,000 feet at the eastern edge.

4.The Deserts--There are three major deserts in Saudi Arabia.

(a) Al-Rub-āl-Khālī (The Empty Quarter)--This region of desert, measuring 750 by 400 miles, is the largest continuous body of sand in the world. In total area, this region exceeds the area of France. Only within the last 36 years have outsiders crossed the "empty quarter." Recently ARAMCO (Arabian American Oil Company) exploration parties have covered the whole area in search of oil. The sands of the empty quarter are of a rather complicated type. Dunes often climb on top of each other to form mountains attaining heights of up to 1,000 feet.[1] The region is inhabited only by nomads and its importance is increasing with the discovery of oil.

(b) The Great Nafūd--This, the second largest desert in the country, is in the northern part of the Nejd plateau and merges with the Jordanian-Syrian Desert. The Nafūd, unlike al-Rub-āl-Khālī, is more favorable for grazing and pastoral activities especially after rainfall and during the winter. It covers some 22,000 square miles of rolling sand dunes.

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[1] R. B. Winder, "Arabia is World's Largest Peninsula," in Emergent Nations, Vol. 2, No. 2 (New York: Pub. Dr. Hosni Khalifa, 1966), p. 18.

(c) Ad-Dahna--The smallest of the three deserts is in the eastern part of the plateau of Nejd, and connects the Rub-āl-Khālī in the south with the Great Nafūd in the north. It separates the plateau from the eastern coastal plain. It is a narrow belt, of red sand, fifteen to twenty miles wide, that extends for 800 miles. This desert is characterized by relatively gentle relief. It is a favorite place for Bedouin tribes in winter and spring, because it is as good or even better for nomadic grazing.

5. The Eastern Coastal Plain--This is the richest area in the whole country because of its oil reserves, the backbone of the economic life of Saudi Arabia. In addition, this region is characterized by its abundance of water, sufficient for more than two million palm trees and other agricultural crops.[1] Oil plus water and dates mean wealth, not only in this region, but in all of Saudi Arabia. This region became quite densely populated especially after the discovery of oil and the establishment of Aramco and other oil companies. Dammam, Dhehran, Al-Hufūl, and Ras-Tannura are important cities in this region on the Gulf.

Climate

Saudi Arabia is under the influence of the subtropical high pressure belt. Rainfall is very scanty; the average annual rainfall throughout the country is a mere four inches. The only exception is the southwestern region which is affected by the Monsoon during the summer

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[1]Charles H.V. Ebert, "Water Resources and Land Use in the Qatif Oasis of Saudi Arabia," Geographical Review, Vol. 55, (1965), 496-509.

causing intense precipitation and increasing the average of rainfall in Asīr to twelve inches. Over most of the nation, the sandy rainfall usually occurs during the spring and winter. In most regions, the rainfall is insufficient for agriculture.

The summer is very hot and dry, especially in the interior where the temperature reaches a maximum of 120°F and averages 112°F. In the southern part of the country temperatures are lower, averaging about 77°F. The diurnal temperature range is considerable (20 to 30°F). The winter is cool and dry with occasional temperatures near freezing in the interior of the country. Snowfall is not unusual in the southern mountains. The coastal strips are under the influence of the adjoining seas; the relative humidity is usually higher in the summer than in the interior areas. Heat and humidity are two factors which make life extremely uncomfortable in the coastal regions of Saudi Arabia. The steady, dry northwesterly wind (Al-Shamāl) affects the eastern province during the whole of spring and the early part of the summer. Sand or dust storms occur in the east and are caused by eastward moving low pressure systems meeting a cold front over the north and northeast of the county

Water Resources

Water resources in Saudi Arabia vary greatly from place to place in quantity, quality, and depth. Some locations, such as in the eastern province, suffer from an abundance of water and even flooding on occasion, while many other areas, especially the western province and the southern interior region, lack water completely or have only modest quantities. The geological structure of the peninsula plays an important role in water availability; four categories can be identified.

1. Confined Aquifers. Ground water is stored in certain water bearing strata under pressure. Whenever a bore hole encounters water producing zones, water rises in the bore hole up to a certain elevation depending on the existing pressure. If this pressure is high enough, the water flows to the surface. The depth of these aquifers shows great variation, between 75 and 2500 meters depending upon the location and the dip of the aquifer.[1] This source of water is reliable for agriculture because of quantity and quality. In regions such as al-Qasīm and al-Kharj, there is potential for agricultural expansion.

2. Free Flowing Aquifers. Underground water in this category of aquifer is not under pressure. Included are the majority of wells in the country on which most of the agricultural activities depend. In most cases, the depth of wells of this kind does not exceed fifty meters; water is brought up by gas motor driven pumps.

3. Springs. Springs in Saudi Arabia have been the most important source of water throughout the history of the country. The largest cities in Saudi Arabia depend on springs for drinking water. The location of Mecca, Jeddah, Taif and many villages and towns and valleys is determined by the location of springs. In the eastern province alone, there are more than 140 springs, small and large. Many springs are found in the western and southern provinces. They depend on rainfall and are relatively reliable compared with free flowing wells but not equal to the water quantities of confined aquifers.

4. Streams. Streams are particularly important in the southern and western parts of the kingdom where, after the rainy season, they

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[1]Saudi Arabia, Ministry of Finance and National Economy, Central Dept. of Statistics, Statistical Yearbook, 6th issue (Dammam: Al-Mutawa Press, 1970), p. 9.

flow intermittently to irrigate large areas. Sometimes they also cause damage. In regions such as that of Taif, and Riyadh, stream water has been controlled through the construction of dams so that water is stored for later use to supplement springs and other underground water.

Moore and Humaidan point out the importance of ground water in the future development of Saudi Arabia. In terms of the demand for water, the higher the cost of water to the user, the less water will be used in the production process. For example, given the same agro-climatic conditions, a farmer who must drill a deep well and pump from great depths will include in his cropping pattern only those crops with low consumptive use per area of land where the net return to water is equal or exceeds the cost of water. On the other hand, a farmer who needs only to drill a shallow well with low pump lifts or even has access to artesian flow, will tend to follow a cropping pattern with high water consuming crops, such as; alfalfa and rice. If the cost of water exceeds the imputed net return, the farmer will go out of business and search for employment elsewhere.[1]

Soil

Saudi Arabia is a desert country. Sandy areas form the majority of the nation's lands. These types of soils are suitable for agriculture only if sufficiently watered, but water scarcity prevents utilizing most of these lands. Also, rolling sand dunes are not suitable for normal agriculture and irrigation methods.

In some areas, in the eastern province in particular, these sandy regions have another problem, namely salinity. This is caused by

[1]C. V. Moore and S. H. Humaiden, The Need for an Integrated National Water Plan for Saudi Arabia, Report, Central Planning Organization, (Riyadh: 1972), pp. 2-3.

leaching of the soils and from the deposit of salts. High temperatures and the poor irrigation methods are responsible also. The saline soil (Sabkhaha) is good for salt-resistent crops and some natural vegetation.

There are many scattered areas of good fertile soil. These lands are the numerous oases in the plateau of Nejd and the wādīs in the Asīr and Al-Hijāz regions which include the Taif area. After run-off, surplus material consisting mainly of sand and silt is deposited on the banks of the wādīs to form fertile alluvial soil.

Gravelly sandy soil is found in Nejd and in the eastern province and it is not good for agriculture. Loam soils are found in Nejd highlands. These soils are good for cultufation. Although clayey and basically not cultivalbe, they are highly productive when mixed with sand. Fertilizers are necessary to help the soil give good yields.

Generally speaking, "the inherent fertility of the Saudi Arabia soils is low. Organic matter and nitrogen are largely absent; phosphorus is very low; potassium however, is generally available in quantities sufficient for growing most crops."[1]

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[1]Pasteur, E. J., op. cit., p. 20.

CHAPTER III

AGRICULTURE IN SAUDI ARABIA

Introduction

In Saudi Arabia, agricultural activity is predominantly occupied with the production of food. No crop other than animal feed is produced in any significant quantity for nonfood usage. Agriculture in Saudi Arabia is limited both by the physical environment and also by a number of social problems. Before the discovery of oil in Saudi Arabia, agriculture was the main source of national income, but after the development of the petroleum industry it became far less important in terms of gross national product (GNP). Oil has had a double impact on agriculture. The entire budget for agriculture projects and development is supported by oil revenue. A second, and possibly negative impact is that the country has come to depend on oil income for most development projects.

The contribution of agriculture to the gross domestic product increased from SR 866 million in 1962-63 to SR 974 million in 1968-69.[1] A level of about SR 1,000 million is expected to be reached in 1969-70. Since other sectors of the economy have grown at a more rapid rate, the proportion of the GDP contributed by agriculture, has decreased

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[1] One dollar equals 4.5 Saudi Riyals.

from 10.1 percent in 1962-63 to 6.1 percent in 1968-69, and was expected to be about 6 percent in 1969-70.[1]

Recent surveys by the Ministry of Agriculture indicate that there are 188,000 agricultural holdings in the country with a total area of about 765,000 hectares, only 396,000 hectares of which are cultivated. Most of the holdings, however, are less than 2 hectares in size. Most farmers practice a subsistence type of agriculture with commercial production limited to relatively few crops, such as cereals, alfalfa, vegetables, and fruit.[2] Agriculture is important in the economy of Saudi Arabia, to a degree far greater than its 6 per cent contribution to the GDP, especially because 60% of the population depend on agriculture (see Figure 4). Forty-six per cent of the actual labor force was estimated to be employed in the agricultural sector in 1966; this sector includes forestry, fishing, livestock production and crop husbandry.

Therefore, it is evident that success in agricultural development is essential to real improvements in the way the majority of people live. Significant improvements in agriculture would also benefit other sections of the population by:

1. A decrease in prices of agricultural products.
2. Provision of fresh fruits and vegetables.
3. Provision of more varied diet.

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[1]Saudi Arabia, Central Planning Organization, Development Plan 1390 A. H., (Dammam: Al-Mutawa Press, 1970), p. 249.

[2]Saudi Arabia, Ministry of Commerce and Industry, Agri-Industry Opportunities in Saudi Arabia, (Riyadh: Arthur D. Little, 1969), p. 9.

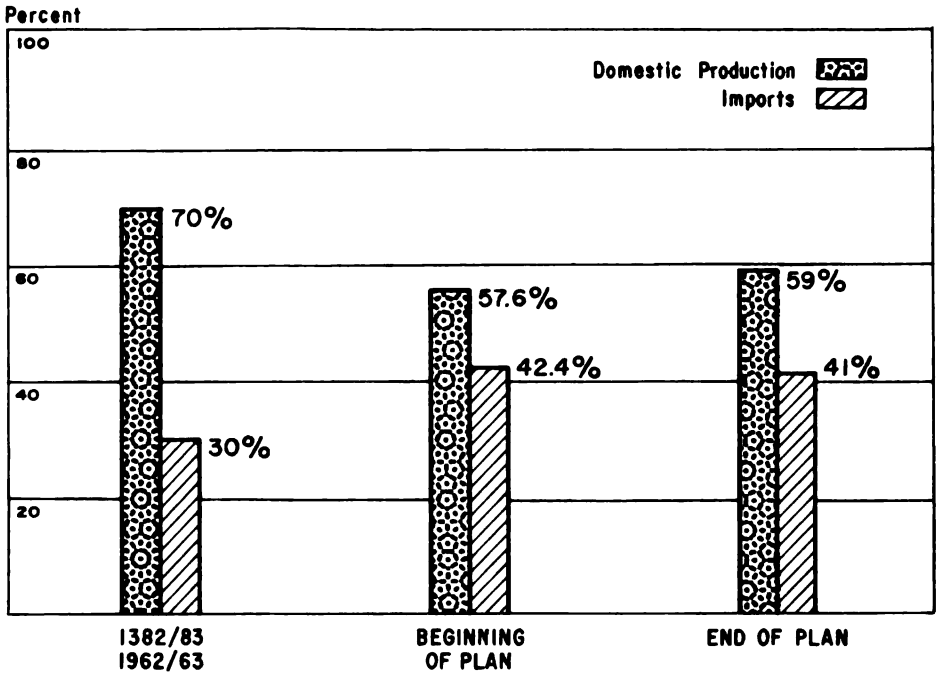

Figure 3. Agricultural Domestic Production and Imports

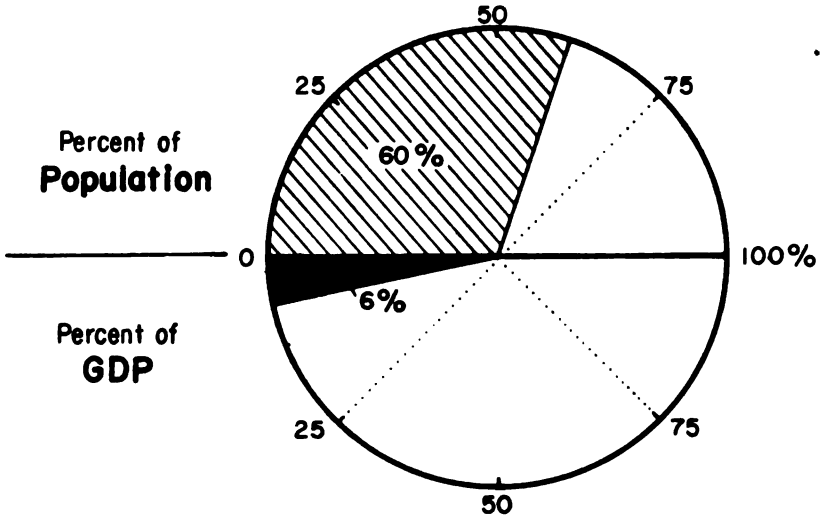

Figure 4. Percentage of Population in Agriculture and the Agricultural Share of the GDP.

Source:The Kingdom of Saudi Arabia, Central Planning Organization, Development Plan 1380 A.H., Damman: Al-Mutawa Press Co., 1970.

4. Reduction of foreign exchange drain
5. Expansion of the base for agro-industry development.[1]

Although agricultural production has increased during recent years, the demand for this production increases at a more rapid rate due to the growth of population and the migration of rural residents to the cities. The number of workers in agriculture has been declining as farm workers have found more renumerative work in urban areas. The proportion of the labor force in agriculture is expected to continue to delicne as additional agricultural labor moves into other sectors. The agricultural sector can probably continue to supply additional labor to other sectors without loss of productivity in agriculture.[2]

The government has begun numerous projects to develop the agricultural sector and to lessen as much as possible some of the agricultural problems. These projects include irrigation, drainage, dams, sand control, desalination of sea water, an agricultural bank, resettlement of rural population, reclamation of new agricultural lands, and distribution of fallow lands. However, agriculture is and will continue for the foreseeable future to be the most important source of employment in Saudi Arabia.

Agricultural Production

A variety of crops make up agricultural production in Saudi Arabia. These crops include the following fruits: grapes, pomegranates,

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[1]Development Plan, op. cit., P. 33.

[2]Ibid., p. 249.

peaches, apples, figs, apricots, oranges, tangerines, limes, bananas, pears, dates, quavas and almonds; many vegetables including tomatoes, squash, pumpkins, melons, cucumbers, peppers, onions, cauliflower, peas, spinach, beets, lettuce, carrots, and akra; and five grains, namely wheat, barley, maize, millets, and rice. However, none of these are plentiful enough for the country's needs, with the exception of dates the leading agricultural crop in terms of weight and value.

There are about seven million date palms in all of Saudi Arabia, and forty five percent of the total value of agricultural production comes from dates. Dates are the first domestic food commodity in Saudi Arabia. Current production is estimated at 184,000 tons. It is projected that by 1980, annual date production will reach 249,000 tons. Currently, there is surplus of about 33,000 tons of dates; this surplus is exported at very low prices or is fed to animals. By 1980, the surplus is expected to increase to 52,000 tons.[1]

The second major crop is wheat. It has been estimated that wheat production now covers about 106,000 acres (42,400 hectates), yielding approximately 37,000 metric tons a year. On the terraced mountain slopes in Asīr where it is the major food crop, wheat yeilds are approximately 900 pounds per acre year, (i.e. 1010 Kg/ha). Yields are even higher in the irrigated areas of Nejd.[2] Recent estimates by the Ministry of Agriculture show the average yield of wheat for the whole country to be

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[1]Saudi Arabia, Industrial Studies and Development Center, Industrial Opportunity Study, (Riyadh: 1971), p. 8.

[2]Norman C. Walpole, Area handbook for Saudi Arabia, (Washington, D.C.: U.S. Government Printing Office, 1971), p. 228.

2880 kilograms per hectare in 1962-63. This is a very high average compared even with yields in the most advanced countries of Europe and North America.[1] According to the recent five-year plan, wheat production is expected to reach 231,000 metric tons per year in the last year of the plan (1974-75) compared to the current production figure of 135,000 tons.[2]

Another important cereal is barley. The highest yields of barley are obtained in the Quasim region (Figure 5), with an average of 2100 kilograms per hectare according to the survey in 1961. Barley production will increase by the last year of plan to 56,000 tons compared to 37,000 tons in 1969-70. Barley production thus will increase by an estimated 9 per cent per year. Rice production is a recent development in Saudi Arabia. It may achieve an annual increase of 20 per cent, during the plan period, but its estimated growth in production starts from a small base (3,000 tons of estimated production in 1969-70, the first year of the plan period, increasing to 7,000 tons at the end of the plan.) Other cereals, such as maize and millets, are expected to see comparable increases.[3]

In terms of fruits, with the exception of dates, there are about 3.4 million fruit trees distributed as follows: pomegranates 30%, citrus fruits 25%, grapes 15%, other fruits 30%. The average annual production in 1960/63 was estimated at 86,000 tons on the basis of

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[1]George S. Medawar, Agricultural Production in Saudi Arabia, (Beirut: Economic Research Institute, American University of Beirut, 1964), p. 27.

[2]Development Plan, op. cit., p. 255.

[3]Ibid., p. 255.

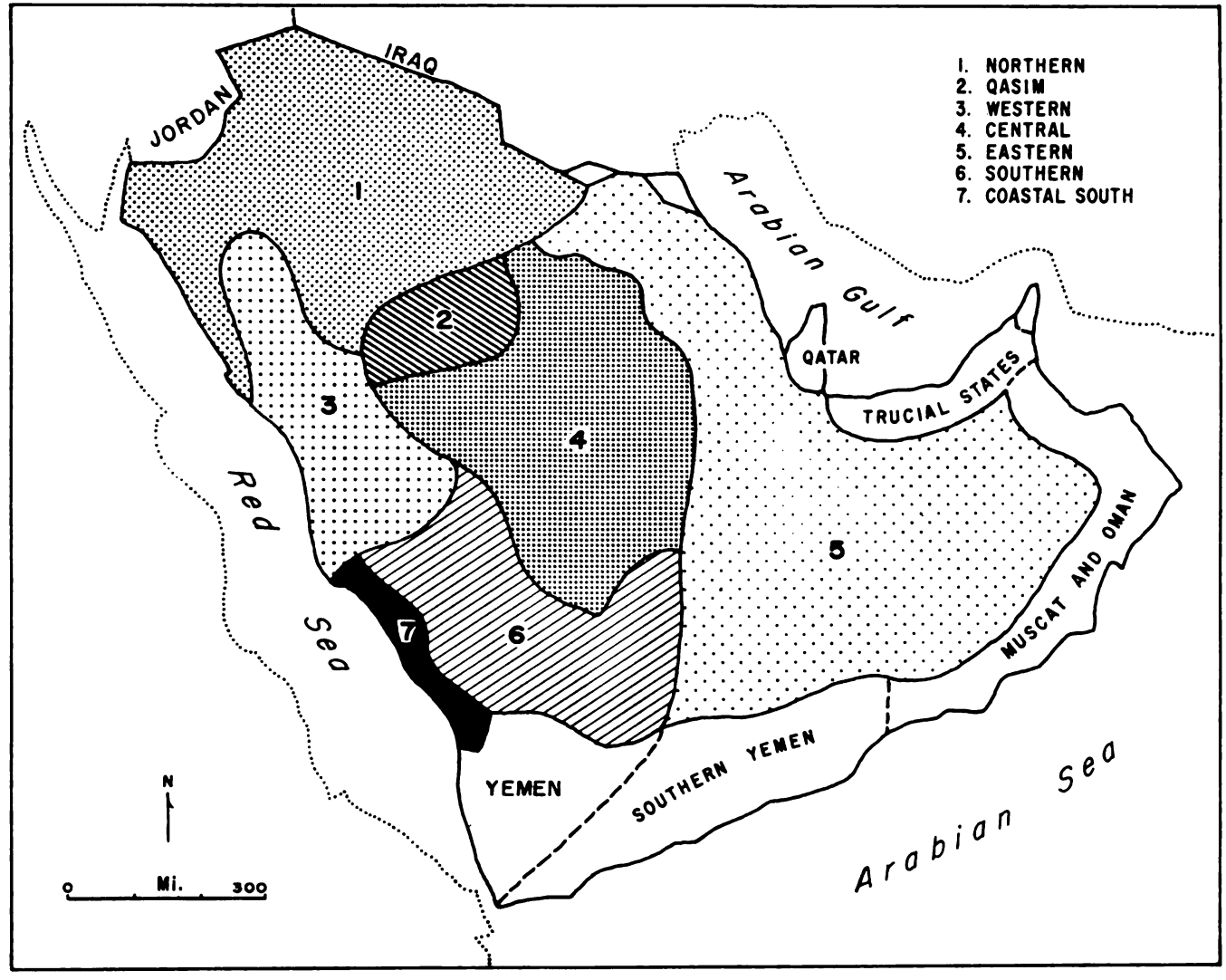

Figure 5. Agricultural Regions of Saudi Arabia

Source: Saudi Arabia, Ministry of Agriculture and Water, A Program for the Improved Marketing of Agricultural Commodities In Saudi Arabia, Stanford Research Institute, Menlo Park, California.

average yields per bearing tree of each particular fruit tree[1] (Table 1). Nonetheless, fruit production is insufficient to meet local demand.

A great variety of vegetable crops are grown under very different physical and economic circumstances. Vegetables are grown for both subsistence and for market. Saudi Arabia hopes to be self-sufficient in vegetable production by 1975.[2] Following are yields, in kilograms per hectare, of major groups of crops (Table 2).

TABLE 2.--Yields of Major Groups of Crops

Groups of Crops	Kgms/ha
Field crops (excl. Alfalfa	2233
Vegetables	10428
Fruits	7478
Dates	11560

Source: E. Asfour, Saudi Arabia Long-term Projections of Supply of and Demand for Agricultural Products, (Beirut: Economic Research Institute American University of Beirut, 1965)

Potential for increasing agricultural output has three dimensions, area, yield, and value. There is much arable land which can be used for agriculture, especially if the distribution of fallow lands laws are approved and are effective. Efforts by the Ministry of Agriculture to advise the Saudi farmer to adopt new techniques and methods of operating his land should have a positive effect on yields. The increase in wheat production during the last few years is an example of the success of such efforts.

[1]E. Y. Asfour, Saudi Arabia Long-Term Projections of Supply of and Demand for Agricultural Products, (Beirut: Economic Research Institute, American University of Beirut, 1965), p. 77.

[2]Elizabeth Collard, "Unveiling the Empty Quarter," The Times, London Times Newspapers Ltd., Tuesday, May 9, 1967.

TABLE 1.--Estimate of Annual Agricultural Production in Saudi Arabia During 1960-63

Crop	Output (tons)	Value (SR 000's)*	Percent of Total value
Wheat	129201	59482	9.8
Barley	48245	18349	3.0
Rice	4211	1516	0.3
Sorghum	15528	5124	0.8
Millet	34818	9053	1.5
Alfalfa (clover)	2011551	169157	27.9
Others	4232	1270	0.2
Total Field Crops	2247786	263951	43.2
Onions	22260	8904	1.5
Watermelons	171455	76806	12.6
Tomatoes	43487	35313	5.8
Eggplant	6402	3457	0.6
Squash	9684	5229	0.9
Okra	6798	3671	0.6
Pumpkins	32514	13005	2.1
Green Beans	2070	828	0.1
Dry beans	1716	686	0.1
Melons	32635	13054	2.2
Cucumbers	2010	1085	0.2
Snake Cucumbers	1854	1001	0.2
Other vegetables	12600	5040	0.8
Total Vegetables	345485	168079	27.7
Dates	257606	92738	15.3
Fruits	86000	82560	13.6
Total	2932645	607328	100.0

Source: Afour: Long-Term Projections, op. cit.

*SR - Saudi Riyal

"Total gross national product in Saudi Arabia is expected to increase from its present level of 16,700 million riyals to 26200 million riyals in 1974/75. The structure of the economy, in terms of the contribution of various sectors to the GNP would, however, be maintained in large part. The share of agriculture as a percentage of GNP is expected to decline slightly during the plan period (1970-1975) from about 6.8 to about 5.4 percent. The planned rate of growth of the agricultural sector, 5 percent a year, is well below the annual growth rate of 9 to 11 percent achieved in the past, and in view of the ongoing investment projects in irrigation, may prove to be underestimated."[1]

The accompanying tables show the estimated changes in yield, area, and output between 1970 and 1975 for most of the agricultural crops (Tables 3 and 4). Major agricultural projects of many sorts have already changed the living patterns and raised the living standards of hundreds of thousands of Saudi Arabians throughout the kingdom. Improvement is expected to continue into the next decade.

Land Use

The total land mass of Saudi Arabia is estimated to be approximately 221,730,000 hectares. The pattern of land use is roughly estimated as follows: 230,000 hectares are under cultivation, 90,000,000 hectares are in pasture land, 1,500,000 hectares in forests, and 130,000,000 hectares in wasteland. An areal survey in 1960 showed the cultivated area as

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[1]Food and Agriculture Organization of the United Nations, The State of Food and Agriculture, (Rome: F.A.O. 1970), p. 107.

TABLE 3.--Projections of Areas, Yields, and Output of Main Crops in Saudi Arabia During 1970.

CROP	1970 HIGH Areas 1000 ha	HIGH Yields Kgms/ ha	HIGH Output 1000 tons	1970 LOW Areas 1000 ha	LOW Yields Kgms/ ha	LOW Output 1000 tons
Wheat	109.3	1820	198.9	102.5	1751	179.6
Barley	35.4	2094	74.1	33.2	2014	66.9
Dukhun (sorghum)	18.5	1107	20.5	17.4	1022	17.8
Dura (millet)	42.5	1167	49.6	39.5	1007	39.8
Rice	3.2	2982	10.7	3.6	2868	10.3
Other cereals	2.5	975	2.4	2.1	902	1.9
Total cereals	211.4		356.2	198.4		316.3
Barsim (alfalfa)[a]	38.6	80200	3096.0	33.9	80200	2719.0
Onions	3.3	12549	41.4	2.9	12067	35.0
Watermelons & melons	22.6	17282	390.6	19.8	16622	329.1
Tomatoes	5.6	14920	83.6	5.0	13800	69.0
Pumpkins	8.3	7310	60.7	7.3	6759	49.3
Other vegetables	11.1	7310	81.1	9.7	6759	65.6
Total vegetables	50.9		657.4	44.7		548.0
Fruits	17.7	8424	149.1	15.5	7478	115.9
Dates	22.3	12214	272.4	22.3	11551	257.6
Cotton	2.0	541	1.0	2.0	500	1.0
Total all crops[a]	232.9		1436.1	316.8		1238.8

Source: E. Asfour, Saudi Arabia, Economic Research Institute, American University of Beirut, 1965, p. 68.

[a]Barsim is excluded from total output.

TABLE 4.--Projections of Areas, Yields, and Output of Main Crops in Saudi Arabia During 1975.

CROP	1975 HIGH Areas 1000 ha	HIGH Yields Kgms/ ha	HIGH Output 1000 tons	1975 LOW Areas 1000 ha	LOW Yields Kgms/ ha	LOW Output 1000 tons
Wheat	133.7	2110	282.1	118.7	1981	235.1
Barley	43.3	2427	105.1	38.4	2279	87.5
Dukhun (Sorghum)	22.7	1163	26.4	20.1	1022	20.5
Dura (millet)	51.5	1226	63.1	45.7	1007	46.0
Rice	5.4	3457	18.7	5.4	3245	17.5
Other cereals	0.8	1103	0.9	0.1	971	1.0
Total cereals	257.4		496.3	228.4		407.6
Barsim (alfalfa)[a]	55.5	80200	4451.0	45.1	80200	3617.0
Onions	4.8	14198	68.2	3.9	13323	52.0
Watermelons & Melons	32.4	20034	649.1	26.3	18807	494.6
Tomatoes	8.1	17296	140.1	6.6	15236	100.6
Pumpkins	12.0	8270	99.2	9.8	7281	71.4
Other vegetables	15.9	8270	131.5	12.9	7281	93.9
Total vegetables	73.2		1088.1	59.5		812.5
Fruits	25.4	9075	230.5	20.7	7478	154.8
Dates	22.3	12647	282.0	22.3	11551	257.6
Cotton	3.0	568	1.7	3.0	500	1.5
Total all crops[a]	436.8		2098.6	379.0		1634.0

Source: E. Asfour, Saudi Arabia, Economic Research Institute, American University of Beirut, 1965, p. 69.

[a]Barsim is excluded from total output.

covering 741,000 acres (296,400 hectares).[1] By comparing this figure of 296,400 hectares with the total of Saudi Arabia of 556.8 million acres (222,720,000 hectares), the cultivated proportion is very small; the ratio of cultivated land to popualtion is much higher.

The cultivated land in Saudi Arabia is devided into two kinds; irrigated lands and those under dry farming. Eighty percent of the cultivated area must be irrigated with water from wells, pits, and springs. The 20 percent of the cultivated area which is under dry farming includes areas in the highlands of Asīr and southern Hejaz, and the coastal plain along the Red Sea. The important agricultural concentrations on the coastal plain are found in the wadis (beds of seasonal rivers).[2] Many oases are scattered over the country. These oases are cultivated lands which are due to natural circumstances such as the quantity of underground water and the mild weather. In addition to the permanent agriculture in the numerous wadis, and oases, there is a small amount of semi-desertland cultivated by Bedouin following heavy showers. One member of a tribal group usually remains to care for the crops while the rest of the tribe wanders with the herds.[3] Yet, Saudi Arabian farmers still are not using the total cultivated areas to the greatest potential because of their limited agricultural knowledge and the severe climatic limitations, but a great change in farming is taking place, along with a gradual increase in cultivated land. Figures 6 and 7

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[1] Area Handbook for Saudi Arabia, op. cit., p. 215.

[2] Ibid., p. 215.

[3] Ibid., p. 215.

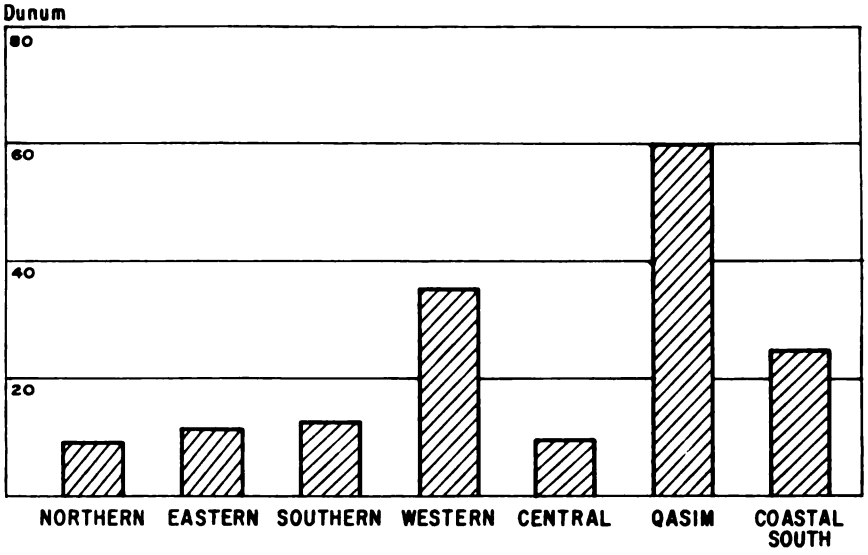

Figure 6. Average Cultivated Area of Holding by Region

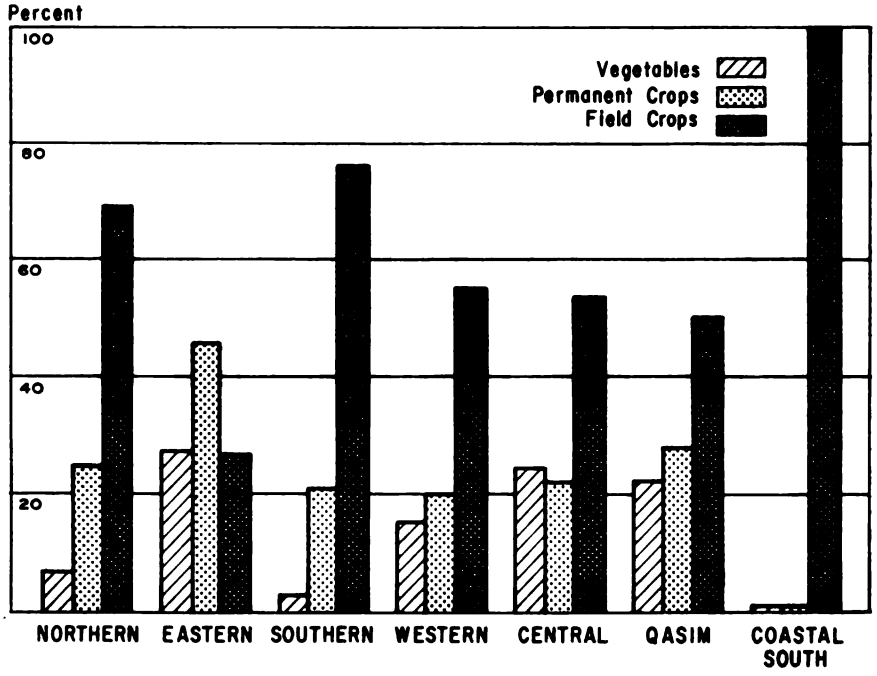

Figure 7. Percentages of Areas Cultivated by Regions and Kind of Crop

Source: Saudi Arabia, Ministry of Finance and National Economy, Central Department of Statistic, Statistical Yearbook, 1388 A.H. (1968)

show the average cultivated area of holding by region and the percentages of areas cultivated by regions and type of crop.

Table 5 shows the distribution of permanent crops, field crops, and vegetables by regions. It is clear from the table that the coastal southern region (Figure 5), is the most cultivated region in Saudi Arabia. In this region, summer crops occupy most of the total area, because of the summer monsoonal rainfall.

In Saudi Arabia, each landholding or farm is divided into small plots and each plot is devoted to a certain crop. "Two-thirds of the farm units are less than 10 dunums (1 hectare) in size while less than 5% of the farms are over 100 dunums (10 hectares). Even in the Qasīm area, where a number of the larger farms are located, only 10% of the units are over 6.25 dunums but half are 2.5 dunums or less."[1]

Problems of Agriculture in Saudi Arabia

Agriculture in Saudi Arabia is faced with many problems. The most important of these are: (1) irrigation technique problems and water scarcity, (2) land tenure, (3) a need for agricultural education, and (4) unadequacies in agricultural marketing and distribution.

Irrigation and Water Scarcity

Water supply is the most urgent problem in the Kingdom, one that influences its future to a great extent and poses a serious challenge for agricultural development. According to Asfour, future expansion in

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[1]Saudi Arabia, Ministry of Commerce and Industry, Public Cold Storage Facilities in Saudi Arabia, (Riuadh: Arthur D. Little, 1968), p. 43.

TABLE 5.--Land Use of holdings by Region (in dunums[a])

Region	Permanent Crops				Field Crops				Total Area
	Palm & Fruit Trees	Clover	Henna & Coffee	Total	Winter Crops	Summer Crops	Total	Veg.	
Northern Region	23201	4430	6	27637	69602	6327	75929	7774	111340
Eastern Region	-	14835	64	14899	-	8775	8775	8886	32560
Southern Internal	63472	39154	145	102771	266440	99587	366027	14113	482911
Western Region	47124	3177	326	50627	155596	10924	166520	40098	257245
Central Region	61236	74894	-	136130	256912	72334	329246	152308	617684
Quasīm Region	26485	78473	-	104958	172890	13397	186287	83003	374248
Coastal Southern	2021	1626	-	3647	34798	2595847	2630645	2831	2637123

Source: Statistical Yearbook, of Saudia Arabia, 4th issue, 1968, p. 207

(-) = Nil

[a]Dunum, 10 dunums = 1 hectare.

cropped area in Saudi Arabia is most likely to be restricted to the expansion if urrugated areasm wgucg civer about 80% of the total cropped area, rather than of rainfed lands. Both the low and unreliable level of yields of rainfed land and the increasing availability of capital required for irrigation development will tend to discourage expansion of rainfed cultivation.[1]

Table 6 shows the total irrigated area and the division of irrigated land by source of irrigation in Saudi Arabia. As long as wells, springs, streams, and rainfall are not sufficient as permanent sources of water, the discovery and increasing utilization of underground water resources are of crucial importance for Saudi Arabia. Hence, with the objective of preparing a long-range plan for the discovery and rational use of water resources and the development of agriculture, the Ministry of Agriculture has been conducting an extensive program of surveys to study and evaluate precisely the kingdom's agricultural and water resources.[2] A number of specific development projects have been initiated: the Al-Hassa project which is a combined irrigation-drainage project, the Qatīf project which emphasizes the construction of drainage channels to reduce the salinity of the land and give an additional 4,000 hectares of irrigated land, the Haradh project which is a nomadic settlement covering an area of about 40 kilometers by 1.5 kilometers in Wādī Sahba in the eastern province, and the Wādī Jizān project which is located in the key agricultural area of the southwestern part of the country. The

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[1]Asfour, op. cit., p. 65.

[2]Saudi Arabian Monetary Agency, Annual Report 1965, (Jeddah: Saudi Arabia, 1966), p. 11.

TABLE 6.--Irrigated Land by Source of Irrigation in Saudi Arabia "Dunums"

Region	Land Irrigated by Wells						Area Irrigated by Springs	Rainfed Area	Total Irrigated Area
	No. of Wells		Ordinary						
	Artesian	Ordinary	Artesian	With Engines	Without Engines	Total			
Northern	46	7385	2425	55129	26214	83768	4031	16883	104682
Eastern	...	...	...	...	...	...	...	...	...
Southern Internal	-	30877	-	145241	127488	272488	1147	108327	381962
Western	121	10918	3300	53758	40310	97368	18836	135894	252098
Qasīm	3985	958	...	...	...	309591	7870	2174	319635
Central	522	6787	54363	435151	9376	489890	5098	11140	515128
Coastal Southern	-	-	160	12562	199	12929	1263	2608100	2622284

Source: Saudi Arabia, Central Department of Statistics, Statistical Yearbook, 1968, 4th issue, p. 209.

(...) = Not available

(-) = Nil

latter project provides for the construction of a flood control dam at Malaki. According to a United Nations study, an area of approximately 45,000 hectares comprising sixty villages with a population of more than 50,000 persons will benefit from it.[1] In addition to these projects, there is a high probability of finding large bodies of underground water in Saudi Arabia. According to Aramco, vast aquifers--water bearing formations--underlie many sections of the country. The Wasia aquifer for example, lies under a large area of northeastern Saudi Arabia and contains more water than there is in the Arabian Gulf, some thirty trillion barrels which are believed to be suitable for household use.[2]

Land Tenure

The major problem of land tenure is land fragmentation due primarily to inheritance laws. Islamic law--the Shar'ia, is the Saudi government's constitution, and as a result property inheritance follows religious law. For example, when a land owner dies, his successors divide the property according to Islamic law. One holding of land, therefore, is divided into many sub-divisions and by a continuous procedure is further sub-divided, resulting in extreme land fragmentation. The land tenure system is characterized by small owner-operated farms with an average area of seven acres per holding. The limited amount of agriculture land and its possession in common by tribal societies has prevented the formation of a class of large land owners, in contrast to the experience of other Arab countries.[3] The

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[1]United Nations Studies on Selected Development Problems in Various Countries in the Middle East, (New York: United Nations, 1969), pp. 82-83.

[2]Arabian-American Oil Company, Aramco Handbook, (Dahran: 1968), p. 187.

[3]Nihad Ghadri, The Great Challenge, 1968, p. 124.

largest land owner is the government. As part of its agricultural development policy, the government has begun to distribute as much cultivable land as possible to individuals. Specific categories of land holding are: Mulk, or privately owned land, whether by an individual, family, or tribe, and Waqf, land held as religious endowments.

Several specific government policy decisions affect land tenure: (1) distribution of land, and (2) sedentarization of nomads. The fallow land distribution law restricts the appropriation of land to those able to exploit it with the stipulation that the acreage should not be under 5 hectares or over 10 hectares per person. It provides for an appropriation of a maximum of 400 hectares to companies capable of exploiting it.[1]

Agricultural Education

As a developing country, Saudi Arabia is characterized by high illiteracy rates among the population. The vast majority of Saudi farmers are illiterate. A primary requirement for development is a skilled, educated farmer who can use, for example, the limited quantity of water for growing economically as much production as possible and is familiar with modern fertilizing methods and methods of cultivation. "Although there are a few highly competent farmers with efficient operations, most farmers still use primitive methods of cultivation. There are many opportunities to vastly increase agricultural production simply by using modern farming technology and improved farming practices."[2]

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[1]Saudi Arabia, Ministry of Information, Land Distribution and Settlement, (Riyadh: Ministry of Information, 1971), p. 12.

[2]Saudi Arabia, Ministry of Commerce and Industry, Agri-Industry Opportunities in Saudi Arabia (Arthur D. Little, 1969) p. 14.

Lack of agricultural education doesn't exist only among the farmers in the fields in the rural areas, but it is also a problem in the administrative units, directorates, and the Ministry of Agriculture itself. According to a study of man power in the Ministry of Agriculture and Water, most of the technical farmers, (82.4%), have limited agricultural knowledge attained by working and practicing in the fields for a period of not less than four years. A study of the academic standing of these farmers reveals that about one third (33.2%) have no education at all and 46% have some education but do not hold the Elementary School Certificate, while 17% have the Elementary Certificate, and about 4% have the Intermediate Certificate.[1] Lack of agricultural education is a serious problem both in the field and in the administrative offices.

However, the new generation of farmers is more educated and capable of learning and accepting advice as a result of government efforts to increase the agricultural education rate. Agricultural training schools, first opened in 1960, operated until 1965 in all major agricultural regions of the country. Emphasis was placed on practical experience as a supplement to agricultural theory; courses were tailored to suit local conditions, with syllabuses jointly prepared by the Ministries of Education and Agriculture.[2] Furthermore, in 1965 a college of agriculture was opened as part of the Univeristy of Riyadh.

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[1] Saudi Arabia, Ministry of Agriculture and Water, Study of Manpower of the Ministry of Agriculture and Water, (Riyadh: Ministry of Agriculture and Water, 1970), p. 23.

[2] Area Handbook for Saudi Arabia, op. cit., pp. 97-98.

Agricultural Marketing and Distribution

The usefulness and the benefits to society of a product, be it industrial or agricultural, are related to the effectiveness of the marketing machinery being used. The complexity of modern life and higher standards of living have tended to increase the number and scope of man's desires. Such increased needs can only be satisfied if the producer is able to supply his goods to the consumer in good condition and at reasonable cost.

The market area is the geographical expression of the field within which the forces of supply and demand interact to establish a single price. A market is also defined from a morphological and functional standpoint as a group of buyers and sellers with facilities for trading with each other. This group of buyers and sellers may be gathered together in one place or geographically dispersed. Agricultural marketing is the sum of the distribution processes and services beginning with farm and extending to the point where the product is sold to the consumer.

During the last few years, agricultural production in Saudi Arabia had been increasing as a result to the development programs in this sector. But this progress is still retarded by the local marketing system. Poor distribution of produce, unbalanced supply and demand, and price fluctuations are the main problems of the current agricultural marketing situation in Saudi Arabia. Each one of these problems is discussed separately.

Demand: The outlook for agriculture in Saudi Arabia is good not only because of the potential for the expansion of production but also because of the growing domestic demand for agricultural products. The

population is continuing to grow, the level of income per worker is rising, and per capita food consumption and expenditures are increasing. Projections of demand, based on expected increases in population and per capita income, indicate that aggregate demand for food will increase by about 25 percent during the period of the five year agricultural plan, (1970/71-1974/75), or about 4½ percent per year.

For certain commodities, increased per capita income is reflected in nearly proportional increases in demand. For these commodities, meat and dairy products for example, demand may increase by as much as 6½ percent per year. This anticipated expansion of the domestic market for agricultural products provides a sound basis for encouraging expansion in agriculture.[1] But because of the limited opportunities or circumstances for agriculture," domestic crop production is insufficient to supply the needs of the population. Despite the government's efforts to increase crop production, many basic foodstuffs still have to be imported to supplement the domestic supply, especially for the larger towns."[2]

Supply: Agricultural production, discussed above in this chapter, (Figure 3), is in fact the agricultural supply which meets the local demand, or part of it. With the exception of dates, which are sufficient for the local demand and also for export, production of most crops is insufficient. Wheat production is growing but not rapidly enough for the local demand. Production of other cereals is still insufficient

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[1] Development Plan, op. cit., p. 250.

[2] Area Handbook for Saudi Arabia, op. cit., p. 227.

and growing at a lower rate than that of wheat. Vegetables are growing and expected to meet the local demand by the year 1975. According to Asfour, under half the total value of agricultural output consists of field crops, including alfalfa, while vegetables, dates and fruits represent 28, 15 and 14 percent respectively of the total value of output, (Table 1). A shift towards the cultivation of vegetables has contributed during recent years to a rise in the value of agricultural output and a change in the pattern of production at the expense of cereals.[1]

The demand and supply figures are not precise but estimated because there is no systematic information available on agricultural yields in Saudi Arabia. Until now Saudi Arabia imports most of her food and has not yet arrived at the stage of self-sufficiency.

Prices: The present traditional marketing of agricultural production appears also as problem from the point of view of the price structure. The absence of grading and standardizing in the marketing system in Saudi Arabia contributes to price fluctuations. Also, there are no price controls or other regulations.

"As agricultural production and marketing in Saudi Arabia develop from a subsistence and local-regional marketing structure into a situation of production surpluses available for marketing on an inter-regional, national, and international scale, the wider distances and the number of middlemen intervening between producers and consumers will create an even more serious producer-consumer communications problem. Producers

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[1]Asfour, Saudi Arabia Long-Term, op. cit., pp. 60-61.

will find it increasingly more difficult to keep in touch with consumers' demands and the changes continuously taking place in them."[1] Prices are the main mechanism which gives to the producer, consumer, retailer, and wholesaler an equal chance of making profits. At the beginning of the productive season the prices usually rise because the demand is more than the supply and by the middle of the season the prices go down because the supply is either greater or equal to demand. At the end of the season the prices go up again because of the decreasing supply. Thus, the producer may have only one chance during the season to obtain high prices.

"An efficient market price system will draw shipments of food from surplus food-producing areas to markets with unsatisfied demand. It will also control the distribution of goods seasonally and over longer periods, as well as geographically, and reflect consumer preferences for the form in which food is presented."[2]

The Distribution Factor: Not only are supply, demand and prices elements in the marketing system, but also distribution and redistribution networks. Every urban center in Saudi Arabia depends on the surrounding areas for food supply. This supply usually is not enough for the local demand, but it forms a large proportion of it. The agricultural production which supports these populated areas is distributed unevenly with respect to the market. The rural supply areas differ from each other in size, location, and type. Some of these producing areas are accessible

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[1] Stanford Research Institute, A Program for the Improved Marketing, by (SRI), op. cit., p. 14.

[2] Ibid., p. 14.

and some of them are far from the market. Distance and means of transportation are therefore important variables.

Distance and transportation differences are reflected in the price structure, both between producer and retailer and retailer and consumer. The specific nature of the marketing distribution system, and its components, is investigated in more detail in the following chapter.

CHAPTER IV

MARKETING DISTRIBUTION SYSTEM

In this chapter, the agricultural distribution system around Taif, Saudi Arabia, is analyzed. The first part of the chapter presents a description of the Taif region, the study area, followed by a more detailed discussion of the marketing organization. Each component of the system is discussed in detail in the second part of the chapter.

The Study Area

The Taif area is the study area for this research. This area has been chosen both because of the author's close familiarity with it and because agriculture and marketing in the Taif area are representative of activities throughout the Kingdom of Saudi Arabia (Figure 8). The economic organization of agricultural activities in Taif are similar to those in other agricultural areas of the country; by studying the marketing situation in this area, recommendations and generalizations might be applicable to the whole kingdom.

The Taif region is defined as the hinterland of Taif City, the largest urban center in the region. The city of Taif is located toward the northern part of its region. It extends from As-Sale Al-Kabīr (about thirty miles north of Taif City) following to the south crest of Al-Sarah Mountains. The region is bordered on the west by the high eastern slope

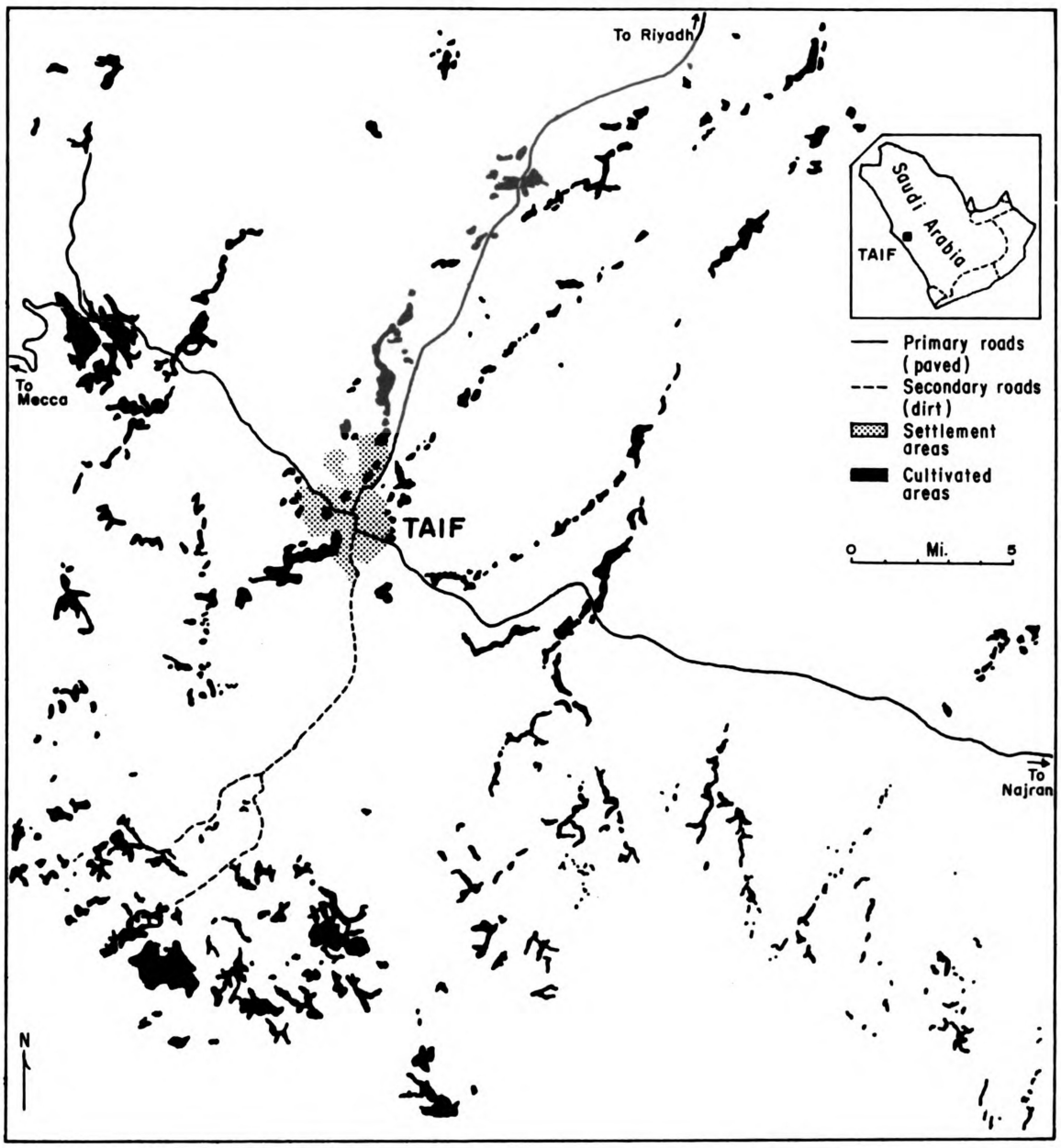

Figure 8. Taif Region

of the coastal mountains and extends eastward through the eastern gentle slope to a point where the numerous wādīs disappear into the desert. The region extends towards the south to the latitude of Beni Malik. The average east-west dimension of the area is thirty miles. The north-south dimension of the region is about one hundred miles. This agricultural region consists of numerous small and large wādīs with many scattered agricultural lands on sedimentary and loamy soils on the edges and sides of these valleys. These fertile soils have been created and accumulated by the floods and the flow of water after rainfall; and in most cases lack a mature profile because they consist of recent alluvium Although not lacking fertility, they benefit from either chemical or natural fertilizers. The character of agriculture in this region is summarized as follows:

1. The absence of large continuous tracts of agricultural land; in most of the region, agriculture is located on numerous terraces on the mountain slopes;
2. the region's population depends primarily on agriculture and some raising of cattle and sheep;
3. Most of the region is mountainous and it is hard for farmers to dig wells. Therefore, most of the region is devoted to dry farming.
4. The rainy season is in the winter so the region is known for its winter crops.
5. There are about 500 villages with more than 9,000 individual farms.
6. The rugged nature of the region is a barrier to building a modern transportation system.
7. Most of the food for Taif is produced in the immediate Taif region.
8. There is a variety of different fruits and vegetables present in the area; this production is supplemented by naturally occuring vegetation.

Taif and its sub-districts constitute by far the largest agricultural region in the west province of the country, comprising about 70 percent of the province's cultivated areas. Also, 60 percent of its plantations are rainfed. Over 90 percent of the cultivable lands in Taif is effectively under cultivation, compared with 89 percent in Jeddah and 40 percent in Medīna.[1]

The main market of this region is Taif City, (Figure 8), an important communication center linking the west, central and southwestern regions of the country; it is a crossroads center where routes connecting Mecca and Riyadh, Mecca and Bilad Ghamed, and Zahran and Najran intersect. The city covers an area of approximately 1,288 hectares and because it is located at an elevation of 5,100 feet, has a mild climate ranging between 25-35 degrees centigrade (77-95°F) in summer and averaging 18 degree (64.4°F) in the winter.[2] Its population is approximately 100,000.

Taif is the Kingdom's chief resort during the summer, where many inhabitants of the kingdom spend their vacations because of the mild weather and lush green beauty it provides.[3] Taif is known for the variety of its agricultural produce, due in part to the heterogeneous physical environment; mountains surround Taif on the South and west. The city of Taif is surrounded by many suburbs and villages in the numerous valleys which support Taif with agricultural and other produce. It is a very old

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[1]George S. Medawar, Agricultural Production in Saudi Arabia, (Beirut: Economic Research Institute, American University of Beirut, 1964), p. 12.

[2]Saudi Arabia, Ministry of Information, Land of Achievement, (Riyadh: Ministry of Information, 2nd Edition), pp. 14-16.

[3]A factor causing increased demand for agricultural products during the summer. While Taif is a typical of the rest of the country for this reason, the economic organization of marketing nonetheless is similar to that throughout the country.

city, the location of a famous and important market during the pre-Islamic period.[1] The region of Taif was also known as a fertile area, famous for its fruit groves and orchards, and especially for grapes, 1,400 years ago. Numerous factors, mild weather, abundant water from wells and springs, fertile soil and a central location between the north and the south are important in the location of Taif City. Most of the ancient cultivated lands and groves are gone because of urban encroachment; Taif is now dependent agriculturally on the wider surrounding area.

The organization of grape marketing has been chosen as the specific example of a marketing distribution system. Grapes are important for the producer as a crop producing high revenue. Farmers usually devote sizable plots in their farms for grape plantations. Grapes are important also for the consumers in Taif and elsewhere in the kingdom as a favorite fruit as well as a staple in the diet. Furthermore, grape marketing is representative of the marketing of other fruits and vegetables. The way in which farmers harvest the grape crop, prepare it for shipment, and transport it to the daily central market during the season follows the same procedures as for other agricultural products. In the central market of Taif distribution processes are similar for a wide variety of products. Consequently, the grape crop is a good example for the purpose of this study.

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[1]There was an important market called Sūq Uqādh during the pre-Islamic period. It was a place of exchanging information and agricultural, livestock, and animal produce, along with handicraft products. Also, it served cultural and social purposes where people met each other and became acquainted with one another. Speech and poetry competitions were held in front of judges and large audiences.

Marketing as a Spatial System

As in many other economic activities, the marketing system in Saudi Arabia consists of a chain of functions organized spatially, starting with the producer and ending up with the consumer who purchases the product. This system is beset with many problems. Many of these problems are intimately related to spatial distribution: distribution of labor, distribution of production, and distribution of costs and benefits. The chain contains several different stages which link with each other to form the complete marketing system, (Figures 9 and 10). Taif City is the central place for the system, to which agricultural production flows from different villages and areas of production. This flow of products is spatially governed by distance and means of transportation from varying distances, within the entire region, the products come to the central market in Taif City. From this central market, the products are re-distributed in turn to the consumers.

A number of specific components of the system can be identified. The individual landholding is the first part in the marketing structure. The size, location, and operation of the farm is of great importance in terms of marketing and the quality and quantity of the product. The way of farming and the use made of modern agricultural equipment is also important in terms of quality and quantity of products as well as costs and labor. In Saudi Arabia, most farmers are not educated enough to manage their farms efficiently. They do not have the necessary equipment to save costs or effort. In most cases, they still follow traditional farming methods which are economically inefficient.

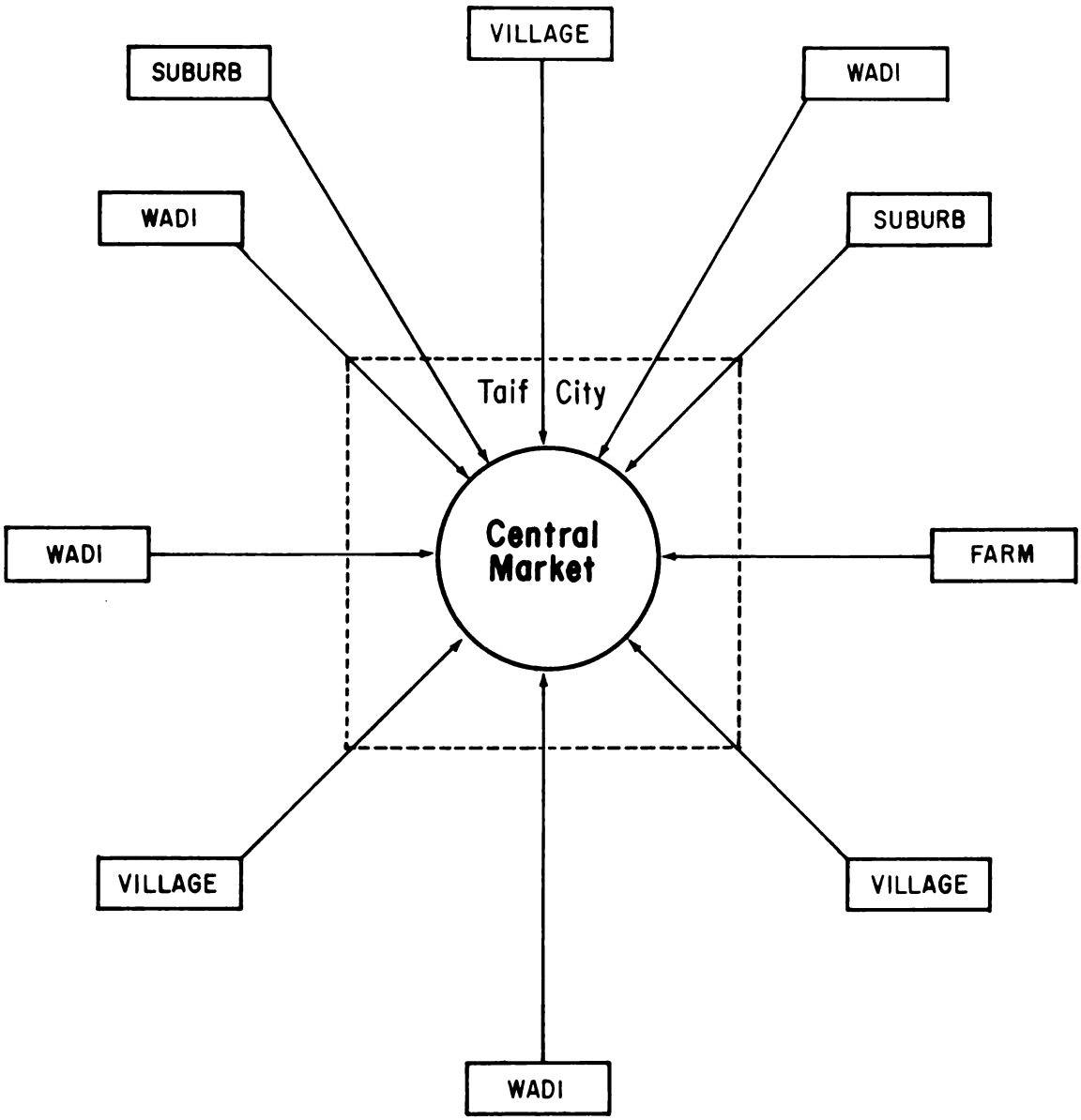

Figure 9. Flow of Agricultural Production from the Region to the Central Market in Taif City

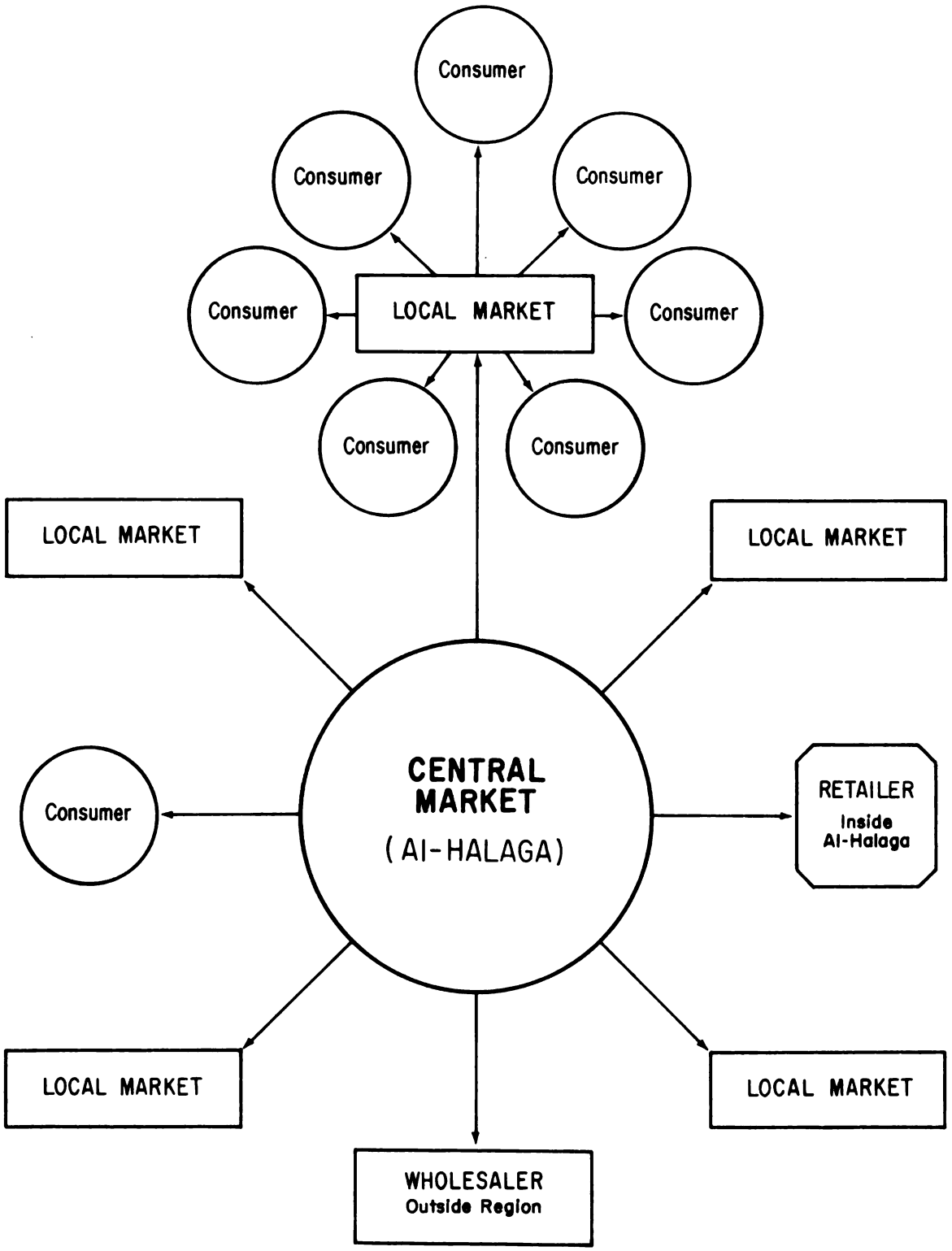

Figure 10. Distribution of Agricultural Production from the Central Market to Different Places Within and Outside the Region

Another component of the system is transportation. This is the linkage stage. The products have to be transported from the farms to the central market and then from the central market to numerous small local markets. The region's farms are different in distances and directions from the central market. The further the farm is from the market, the more the cost for transportation. The transportation system plays a very important role in the spatial distribution of agricultural products and therefore it is an important component in the marketing system.

The next component of the system is the central market in Taif City. This market is known by the name Al-Halaga. The products are transported directly to al-Halaga from the numerous agricultural areas in the region, and from there the products are redistributed in turn. The principal mechanism of redistribution is exchange between producer, wholesaler, and retailer governed by the auctioneer, who forms another component in the marketing system. The auctioneer is the dynamic element in the distribution process, for he is the link between others in the exchange process. All of the components metioned so far focus the products on the consumer who is the last stage in the marketing chain. The consumer is no less important than any other component in the system. His income and preferences ultimately determine the nature and extent of demand. In the next part of this chapter the several components are discussed in detail.

Components of the Marketing System

The several components of the marketing system are discussed separately. These components are the various stages and linkages of the

marketing system: landholding organization, farm operation, transportation, al-Halaga central market, the auctioneer, and the consumer. The chain of the system is investigated at each stage in the selected study area.

Landholding

The Taif agricultural region has about 506 agricultural villages with 9076 cultivated holdings and 290 livestock holdings for a total of 9366 holdings. The area of these holdings is 172,167 cultivated dunums and 15,708 noncultivated for a total of 187,875 dunums. Of this area, 182,673 dunums are owned and 5,202 dunums are rented, or 97.2 percent and 2.8 percent respectively. Table 7 shows the number of holdings by size in the Taif agricultural region. The land use of these holdings is distributed as illustrated in Table 8.

TABLE 7.--Number of Holdings by Size

Size Group (dunums)	No. of holdings	Size Group (dunums)	No. of Holdings
5	4749	55 - 60	28
5 - 10	1761	60 - 65	58
10 - 15	860	65 - 70	31
15 - 20	320	70 - 75	18
20 - 25	323	75 - 80	11
25 - 30	120	80 - 85	53
30 - 35	99	85 - 90	24
35 - 40	42	90 - 95	32
40 - 45	110	95 -100	20
45 - 50	58	100 - over	310
50 - 55	49	Total	9076

Source: Saudi Arabia, Central Department of Statistics, Statistical Yearbook, (Dammam: 3rd issue, 1967).

TABLE 8.--The Distribution of Cultivated Land by Type of Crop

Group of Crops		Area Occupied in dunums
A - Permanent Crops:	Palm and fruit trees	15,294
	Clove	1,147
	Total	16,441
B - Field Crops:	Winter Crops (i.e. Wheat & Barley	153,258
	Summer Crops (i.e. Millet & Sorghum)	1,523
	Total	154,781
C - Vegetables		4,789
	TOTAL	176,011

Source: Saudi Arabia, Statistical Yearbook, (Damman: Ministry of Finance, Central Dept. of Statistics, 1967).

TABLE 9.--Number of Households in Taif Region by Size

Number of Individuals Per household	No. of Households	Number of Indivisuals per household	No. of Households
1	160	9	568
2	604	10	456
3	828	11	241
4	1188	12	211
5	1277	13	125
6	1315	14	107
7	990	15 & over	358
8	883	Total =	9311

Source: Saudi Arabia, Central Department of Statistics, Statistical Yearbook, (Dammam: 3rd issue, 1967).

The number of households on these holdings in the Taif region is 9,311. The total population of these households is 61,824 of which 30,273 are males and 31,551 are females. The average household size is 6.6. The number of agricultural workers is 21,404 persons of whom

20,132 workers are members of owning families and 1,272 are members of renting families. The density of these households is shown in Table 9.[1]

A landholding is defined as a farming unit comprising one or more parcels of land, regardless of location, managed by one or more persons as a single enterprise.[2] A landholding is usually acquired by inheritance or purchase and is formed by its owner or by tenant farmers.

The farm is operated by the farmer or tenant and his family. In the case of large families, an abundant supply of labor is available. But in other cases, especially during the productive seasons of spring and summer, the farmer may need to hire one or more workers to help him. In most cases, the farmer, owner or tenant, works by himself on the farm with the help of his older sons or his brothers. The women of the household usually do not work outside of the house. In areas remote from the city, however, the women are able to help in the fields or take care of the herds. In these remote areas the local traditions do not constrain women from working with their men outside the house as they do in areas near the city.

Owners, of course, are responsible for the complete management of their properties; tenant farmers, however, are responsible to the owners depending upon the conditions of the rental contract. There are three different kinds of agreement under which a farmer may rent a farm from its owner. (1) al-Kabal, which is a simple rental agreement. The

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[1] All of these figures have been taken from: Statistical Yearbook: 1967 (Dammam: Kingdom of Saudi Arabia, Central Department of Statistics, 3rd Issue, pp. 137-146.

[2] Medawar, op. cit., p. 9.

owner gives the farm to the tenant with such equipment as: house, water pumps, and other structures such as irrigation pools and storage barns. The tenant pays a full-value deposit of the farm with its contents to the owner and receives the farm. He also pays the annual rent to the owner, which is either fixed for some years or changeable from year to year according to the water supply and the competition of other farmers.

The second type of agreement is called al-Mauzara'ah, which is share cropper agreement between owner and farmer. The farmer gets the farm by the same procedures as in al-Kabal and pays the full-value deposit for the farm equipment, the fruit trees and the farm structures, either to the owner or to the former farmer for what he had paid when he had taken the farm. The difference between this type of agreement and al-Kabal is that the farmer does not pay any annual rent, but shares the revenue and the products. He usually gets half of the fruit production and two thirds of the vegetables, clover, and grains. The remainder goes to the owner or owners. Most agreements are either al-Kabal or al-Mauzara'ah.

The third form is called al-Mu'amarah, which means "structure or "restoration." In this case the owner is either too poor or too disinterested to take care of his farm and prepare it to be productive. The purpose of this type of agreement, therefore, is to rebuild and establish the farm again. The owner gives the land or the farm to the farmer who rebuilds it and takes care of everything mentioned in the agreement such as drilling water wells, caring for irrigation equipment, building fences or wells around the farm and constructing the flood gates. The farmer does this without any payment from the owner. His benefit from this arrangement is either owning part of the farm, one-half

or one-third, or the right to use the farm for a certain number of years as written in the agreement. At the end of the agreed period the farmer gives back the farm to its original owner in good condition.

These are the three types of agreements with which the farms are operated and used by owners or tenants in the Taif region. This situation is almost the same everywhere in Saudi Arabia except for changes in the names of the agreements.

Farm Operation

The farm is the main source of production. This production requires considerable work and management. The farm operation is as important as the other stages in the marketing system. The method of farming and the farmer's experience influence the amount of production and the manner of marketing that product. The farmer has to be knowledgeable and skilled to manage his farm and not to misuse his natural resources.

A typical Saudi farmer is illiterate; his agricultural knowledge is inherited from his elders through imitation and tradition. The traditional way of agriculture still has a place in this region and in the rest of the agricultural regions of Saudi Arabia. Farmers still use hand tools such as pickaxes and sickles. The two animal single furrow plow is still used in some remote areas. But lately, many of these farmers have started to use modern tools and equipment for plowing or leveling the ground and fertilizing the soil. In many parts of the country, the Ministry of Agriculture has advised farmers, and has purchased tractors, cultivators, and threshers and rents them to the farmers at a low price to encourage their use. A variety of seeds

has been purchased by the Ministry from abroad and sold for reasonable prices. Gradually, the farmers have begun to use modern methods as much as possible in their fields. A few have already bought their own equipment and have been trained to use it. For example, seldom are animals still used for lifting well water for irrigation purposes. For plowing they are still used to a certain degree, especially in the remote regions in the mountains.

The spring, summer, and part of the fall are the most active seasons. In the summer, it is normally impossible for one person to do all the work on the farm. Therefore, farmers are very busy reaping and gathering the fruits and taking them to the market; usually they hire extra workers during the productive periods which require high labor need. Most of the cereal crops, however, are winter crops for which they work hard during the harvest. Because the use of machines for harvesting grain has not been experienced successfully in the Taif region, farmers perform this activity by hand and often with their neighbors help. Considerable time and labor is necessary before carrying crops to the Jarīn, the thrashing surface made of packed earth or cement, for drying and threshing. After threshing, farmers keep some of the grain for personal use, for seed. The remainder is sent to the market.

The daily round of activities falls into a routine. The first activity is the operation of the irrigation machinery. If the labor is available, one person usually takes care of the irrigation and another is engaged in tilling or plowing. In many cases, a single farmer takes care of many things or changes from job to job according to priority.

If there is a water shortage problem, the farmer devotes his efforts and his depleted water supply to irrigating fruit trees in order to keep them alive. To the farmer, the fruit trees are the most important and valuable agricultural resource. Among the fruit trees, the grape trees are the last to be abandoned in case of a water shortage.

Grapes are the most important product in this area in terms of farmer's income and the consumer's preference. Although grapes have this importance, unfortunately they are still grown and planted using traditional methods. Farmers usually prepare the land and cultivate it with clover and plant the grape nursery plants among the clover to have the land for two purposes, for the clover and because the immature grape trees are protected from animals or weather by the clover. This is especially important in the first two years. It takes two or three years for the grape tree to bear fruit. The trees creep upon trellises made by hand until an entire area is covered. These trellises are made usually by fixing in the ground a large number of wooden stakes. This is an impractical procedure and an expensive method of training vines because the stakes have to be replaced often. By growing grapes this way, farmers face considerable expense and the trees themselves become exposed to different kinds of diseases. The whole cultivated area becomes overgrown and inaccessible when the farmer tries to water the trees or gather the harvest from the interior parts of the orchard. Few of the farmers have adopted modern methods and the government has prohibited any further wood cutting or forest destruction. The new way of growing grapes is to have the whole orchard arranged as one canopy made of series of parallel pillars and connecting planks along which grapes creep and multiply.

This is very practical way and saves a lot of effort and money. After the first five years, the canopy of the grape orchard will be completely filled in. Every place within the orchard will be easily accessible and the crop-gathering process will be practical.

Grape planting follows a regular pattern. Farmers usually irrigate, prune, and trim the trees during the winter. When the grapes ripen in the summer, the farmer starts to pluck and gather them and carries the crop from the trees to a shaded collection area. There he and his workers or family work to free each cluster from extraneous matter. Afterwards, he packs the grapes directly in wooden packing cases, without wrapping or grading. As a result, a single box contains a mixture of different qualities of grapes. In addition, by the time the boxes arrive at the market, the condition of the grapes has deteriorated. The processes of gathering, cleaning, and packing keep the farmer and his helpers busy the whole day. During the night or late in the afternoon, depending on the distance from the market, farmers ship their product to the market. The delivery process is carried out either by the farmer himself in his own truck, or by specialists working under a seasonal contract.

Transportation

Transportation plays an important role in agricultural marketing. It serves as the linkage between and among the other components of the marketing system. Without a good transport system, agricultural produce cannot be marketed or distributed and consumed. Thus, it is a main component in the marketing structure.

Transportation is important in agriculture marketing "not only as an integral link in the marketing chain but also because of its implications for cost. Transport may be carried out by hand, pack animals or motor vehicles. In each case, the primary requirement is that the product stand up satisfactorily to the transport; secondly, that it is moved as efficiently as possible."[1] "The efficiency of transportation is measured by two factors: the service performed, and the cost of performing that service."[2] According to these factors, service and cost, the transportation system in Saudi Arabia is still insufficient in terms of facilities to carry the products, quality of service, terminal facilities, road conditions, and costs. Inadequate transport services are due to general underdevelopment. "Farm-to-market roads have often received less emphasis in developing countries than one might think should be the case considering the widespread need for agricultural development."[3] "The government of Saudi Arabia has recognized the importance of good road transport and communications for the country and is constructing networks of asphalt roads as well as telecommunications linking all major centers. However, transportation to many agricultural areas is still poor and expensive, and road transport availability and costs fluctuate widely with supply and demand."[4]

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[1]Food and Agriculture Organization of the United Nations, Marketing Fruit and Vegetables, (Rome: F.A.O., 1970), p. 38.

[2]Fred E. Clark and L. D. H. Weld, Marketing Agricultural Products in the United States, (New York: The Macmillan Company, 1932), p. 242.

[3]William R. Stanley, "Evaluating Construction Priorities of Farm-to-Market Roads in Developing Countries: A Case Study," Journal of Developing areas, Vol. 5 (1971), p. 373.

[4]Ministry of Commerce, Agri-Industry Opportunities, op. cit., p. 12.

In the Taif region, there are three main roads (Figure 8) starting from the city which serves the region. The most important of these runs from the city to the southern part of the region. Also, there are a series of minor agricultural roads, but they are usually damaged by rainfall and the flow of water. The physical form of the region is one important factor in terms of transportation problems. It is very hard for a heavily loaded truck to move from one mountainous district to another or from village to village collecting the product and bringing it safe and undamaged to the market. It will be very costly to construct additional paved roads in the region.

In terms of distance, agricultural products start to move from areas near the market in the early morning, but in the more distant areas, especially in the southern part of the region, farmers start loading their trucks in the early afternoon and begin driving to the market over the very dusty, rugged, unpaved roads in order to reach the main asphalt road. Then they continue driving to the market where they arrive during the night or early in the morning of the next day. The farthest distance to be covered is not more than about 150 miles, but because of the poor conditions of the roads, the journey is a difficult one.

The transportation contract between the farmer and the vehicle owner or driver is very precise. Shipment costs one Saudi Riyal for each box or case which weighs about 25 pounds. This price applies only to areas near the city. For far areas this charge may reach two or three Riyals according to the distance from Taif City. If the farmer is sending his product to another market, such as Mecca or Jeddah, the cost will be twice as much as to the Taif market. On the rare occasions when

sale prices fall below transport costs, the contract calls for dividing the income evenly between farmer and shipper after the auctioneer's profit and the service cost.

Pick-up trucks are the most commonly used means of transportation. There are no refrigerated trucks to protect the products from the summer heat. Therefore, in spite of transportation's importance in the marketing processes, it's condition still is very poor in Saudi Arabia and has to be improved. The length of time it takes to deliver products to the market, the high cost of transportation, and the rough road conditions, are factors which warrant attention in the transportation system in Saudi Arabia. "Agricultural production areas that do not have well developed transportation facilities to population areas will be particularly vulnerable to price fluctuation if farm production increases faster than local demand."[1]

Central Market (al-Halaga)

The distribution of all agricultural products is focused on the city of Taif, specifically at the central marketing area known as al-Halaga. Al-Halaga is the main center for the redistribution of products from the producer to the consumer. As such, it is the key component in the marketing system of the Taif region. Generally speaking, "the Saudi Arabian markets for domestically produced agricultural products are very localized or regional in nature. This marketing structure is directly related to the

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[1]A Program for the Improved Marketing, (SRI), op. cit., p. 20.

subsistence and small marketable volume production practices and to the transportation and communications difficulties in marketing outside of the local or regional areas."[1]

The central market is a specific location where specific functions are carried out. It is a flat open plaza in the center of Taif City, about 200 meters by 100 meters in size and surrounded by city streets. It is accessable for loaded trucks. Al-Halaga usually is crowded in the early morning by produce and farmers, workers for loading and unloading, wholesalers, retailers and some customers." The local municipality donates the land of al-Halaga, but neither supervision nor service is provided, nor are selling regulations imposed on the participants. In fact, very little organization or planning is involved in arranging the produce for sale."[2] Only in the last two years has the municipality started construction of a large building on the al-Halaga location to serve as a permanent facility.

To al-Halaga every farmer brings his variety of produce. All produce is placed on open display. The farmers arrange their products side by side on the ground in parallel lines, because the auctioneers usually start line by line and serve one farmer after the other. This means that every farmer puts his numerous containers next to each other no matter how many kinds of produce they contain. The auctioneer sells the varied produce of one producer before going onto the next farmer. Usually, products come from the farms within 24 hours from the time of

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[1] Ibid., p. 15

[2] Ministry of Commerce and Industry, Public Cold Storage, op. cit., p. 50.

harvest, because of their perishable nature. Therefore, products must be sold at any price. None can be kept if the price is low because there are no means of refrigeration or cold storage facilities.

After the products have been collected and gathered in al-Halaga during the night and the early morning and have been prepared to be sold, the auction starts, usually about 5:30-6:00 in the morning, and finishes by 9 o'clock before it gets too hot. When the auctioneers arrive, each one of them deals with his clientele of farmers. The auctioneers play an important role in the marketing system (discussed in more detail in the next section). They start selling the products to the wholesalers or the retailers and some times directly to consumers. These buyers participate in the auction and everyone gets the quantity he needs and carries it away to where his store is located in the City. Sometimes the consumer, when he needs a lot of fruit or vegetables for special purposes, obtains them from al-Halaga either from the farmer by bargaining before the arrival of the auctioneer or from the auctioneer by competing with other buyers during the auction. But most of the products go to the retailers, who make up two groups: one group buys varieties of fruits and vegetables and then stays in the al-Halaga area in small retail shops. Some of the retailers in this group have two-wheel push-carts on which they carry their produce and move from place to place in the more populated areas of the City. The other and more organized group of retailers have stores in the local markets[1] for fruit, vegetables, and meat in different quarters in the city. They usually go to al-Halaga in the

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[1]The local name for this market is "al-Manshiah."

early morning to buy fruits and vegetables, and once sold to the retailer, the fruits and vegetables are usually transported from the wholesale market al-Halaga to the retailer's stand by a two-wheeled push cart. The produce is then graded before being displayed. This is the first time during the marketing process that produce is graded.[1] From these local markets, the majority of people get their daily needs. But because there is no official regulation of prices for the agricultural products, the retailer, after doing some cleaning and grading, sells produce at a high price compared to his purchase price. Here is another disadvantage of the marketing system. The wholesalers take part in the auction and get some of the produce to take to their large stores with their shaded enclosures to prepare it to be sent to Mecca's or Jeddah's markets seeking higher prices.

Private cars, small trucks, push carts, and horse carts are the means of transportation for redistributing the products within the city limits. Eventually the product is distributed all over the city and is available for the consumer who can't travel the distance to al-Halaga.

The Auctioneer (dalāl)

Because of the importance of the institution of the auctioneer in the marketing system, a separate discussion focuses on this topic. The auctioneer is a very important element for both the seller and the buyer. He plays a flexible role in terms of his clients, as well as the retailers, wholesalers, and consumers. With the farmers he sells

[1] Public Cold Storage, op. cit., p. 50.

their products at the best price he can get. He supports them materially if they need help. Usually auctioneers serve their farmers tea, coffee, and some soft drinks during their office hours. Their role is a social one in addition to being an economic one. The auctioneer has some influence in solving some of the problems which happen amoung farmers or between tenants and owners. The auctioneer's flexibility with the retailers and wholesalers appears when he doesn't charge them the daily prices as soon as they buy the product. He usually accepts whatever they can pay and registers the rest on their records. Every transaction is recorded individually. So, he tries to keep and satisfy both the farmers and the retailers or the buyers in general. The auctioneer-client relationship is a very close one.

There are about 14 auctioneers in Taif who are licensed for the municipality. Officially, they charge 10% of the sale price for their services. The auctioneer, or dalal, becomes specialized in this function either after a period of practice as a helper or as a clerk with another auctioneer, or he might obtain the position by inheritance. He has to be very skilled and qualified. The trust relationship is most important between him and the farmers. Wealth is another necessary requirement, for having a large number of farmers to deal with requires capital.

He begins his daily activities by calling the customers who are a mixture of retailers, consumers, and wholesalers to bid on each lot. He sells it to the highest bidder. At the same time he registers the buyer's name and what he purchased along with the price of the purchase, and its original owner (the farmer). Likewise, he continues immediately

to the next farmer and does the same thing with his products. He had one or two clerks registering each transaction and collecting money from the buyers. If one of the competitors wants to give up taking the purchase after it has been sold to him, the auctioneer obliges him to take it and pay the price or he won't trust him and give him many chances to buy again the same day or during the succeeding days. The auctioneer does this to maintain the purchase price, otherwise produce may be sold at a lower price when the first buyer gives it up.

The auctioneer stays in al-Halaga until he sells all his clients' product. The farmer has two choices regarding his funds. He may keep his balance accumulated until the end of the season. The farmer may do that because he doesn't need money at that time, prefers to have his money all at once. If he owes the auctioneer some money or if he is a sharecropper or tenant, he doesn't receive his money day-by-day but keeps it on the dalāl's account until the end of the season because the money is not his alone. The farmer may choose, however, to receive their proceeds on the spot each day. The drivers also get their pay directly from the dalāl, and not from the farmers. As a part of the contract between the farmer and the shipper, the driver is responsible to wait for the auctioneer and to have him write a receipt or record for every farmer. Then he takes the records, or the money if requested, plus the empty boxes and cases back to every farm from which he brought the product.

Another function of the dalal is to help the farmer whenever he needs help. He will support him with a loan if the farmer has to

pay the rent of the farm or the deposit of a former farmer or when he needs to buy a water engine or a pick-up car. Even if the farmer has a big wedding for his son, the auctioneer won't hesitate to give him the needed money. The purpose behind this policy is to maintain a faithful clientele. Often a farmer pledges the next harvest to the dalal in payment of a loan.

The Consumer

The consumer is the last stage in the agricultural marketing system. He is exposed to price fluctuations as well as the producer. The population of Taif, numbering about 100,000, is the main market in this region. Income levels and standard of living are important variables in terms of the consumer as a market. Taif, as a summer resort of the Kingdom of Saudi Arabia, has the advantage of an increase in the number of consumers on a seasonal basis. The main offices of the government move to Taif during the summer along with many other people from nearby cities such as Mecca and Jeddah who come to Taif to escape the hot humid weather and to enjoy Taif's mild weather. Usually, these temporary consumers form a high proportion of the market in the summer.

The consumer usually has no direct relationship with the farmer, for his immediate relation is with retailers. The consumer pays high prices for a product which sold originally for a cheap price. Both the producer and the consumer suffer from low and high prices, respectively, because there are no rules as yet to govern the retailers' selling price and guarantee, at the same time, equal benefits to the farmer, the consumer, and the retailer.

The consumer makes his purchases of agricultural products in three ways: (1) directly from the farmer in al-Halaga before the auction starts, (2) from the retailers in al-Halaga, or (3) from the local agricultural markets located throughout the city. In some parts of the city, the consumer may have to travel a long distance to get his needs.

Marketing of grapes is related to the high summer demand in Taif. At the time of first harvest, prices are high, but later in the summer when the production of grapes peaks, demand is already starting to decline and prices fall. The farmer does not get sufficient profit from grapes to cover his expenses for supplies and labor. Consequently, he begins shipping to other markets such as Mecca, Jeddah, and occasionally to Riyadh.

The preceding completes the description of the traditional marketing system of agricultural production in Saudi Arabia. This description is based on one particular example, that of fruits and vegetables, and especially for grapes. Other markets exist in Taif for particular goods, such as grains and forage. The grains have their own separate market which is located in the center of the City of Taif. This market and the marketing procedures are similar to that of fruits and vegetables, but the market is active only a few times a year.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The agricultural sector in Saudi Arabia is very important for the majority of the population in terms of livelihood and labor involvement. Increases in production and improvement in agricultural techniques are the result of different governmental programs and policies designed to introduce new agricultural methods. Self-sufficiency in terms of foodstuffs is a specific goal of government policy. But attainment of this goal is still hindered by many problems. The scarcity of water has precluded anything more than marginal cultivation in many areas. Hydrological surveys suggest, however, that there are extensive underground water resources; the government's agricultural development plans are geared in large part to the tapping and utilization of these resources. The land tenure problem and agricultural education are also serious problems which require massive financial investment. In addition, these problems will both assume and effect social change. Furthermore, because of increased production and consumption, instability of prices and the inefficient distribution system of products, the marketing of agricultural production is also a serious problem. The geographical aspects of marketing comprise the main problem of this investigation. The study illustrates that the traditional system of agricultural

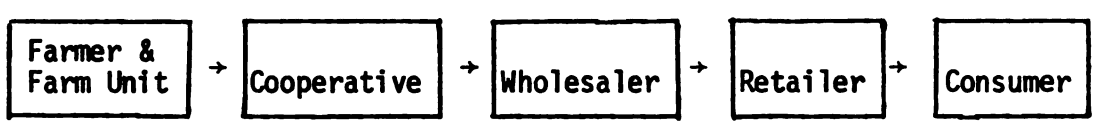
marketing is inefficient and needs to be improved. By viewing marketing as a spatial system, consisting of different institutions and processes linked in space, problems and possible solutions to them emerge.

The stages in the marketing process which are elements in the system are: (1) landholding, (2) farm management, (3) transportation, (4) the central market, (5) auctioneer, and (6) the consumer, all of which are related and depend on each other. The inefficiency of this system appears in the unstable prices, which differ from day to day because of the producer's obligation to sell his product, at whatever prices, within 24 hours from the time of harvest. The system's inefficiency is also due to poor and costly transportation and communications, and in the lack of standards for grading and quality control. These factors of the traditional system of marketing are responsible for the farmer's inability to accumulate capital and improve his situation. Little wonder at his lack of interest in doing so. Therefore, agricultural development in Saudi Arabia will be retarded if the present traditional marketing system is not improved. By providing the farmers and the other participants in the marketing process with sufficient marketing information, advice, capital, and guidance, they will eventually be forced, through competition, to develop a more efficient procedure for the distribution of agricultural products.

The scale of marketing is, in most cases, local or regional in organization. This is due to poor transportation and lack of storage facilities. Because of the increase in domestic production the scale of marketing should be expanded to incorporate a wider spatial network to alleviate regional discrepancies in supply and demand. In some cases

in Saudi Arabia, a surplus occurs in one region causing low prices for producers in that region while in other regions there may be a serious shortage. Furthermore, sometimes there are differences and fluctuations in supply, demand, and prices within the same region. This case applies to the Taif region. Because Taif City, the main market for the whole region, is located in the northern portion of the region, producers in the southern part of the region having difficulty reaching the market. This is especially true for perishable products. A surplus may exist in the remote areas of the region while the area of demand is in the more populated area of Taif City. The key point is the unequal distribution of production as related to demand, whether within a single region or among the several agricultural regions in the kingdom.

To improve the traditional system, greater flexibility should be introduced. The major recommendation is the introduction of the cooperative. The cooperative becomes one of five dimensions in a revised marketing system, organized according to the following illustration:



Each of these stages is subject to modification by way of improving the system; these stages are closely interrelated and comprise the complete marketing process. These five stages are organized systematically as in Figure 11 and each one of them involves special functions.

In order that this modified system be achieve, there are a number of related recommendations that should be implemented to guarantee the usefulness of the system. These recommendations are organized in the same order as the modified system and parallel its stages.

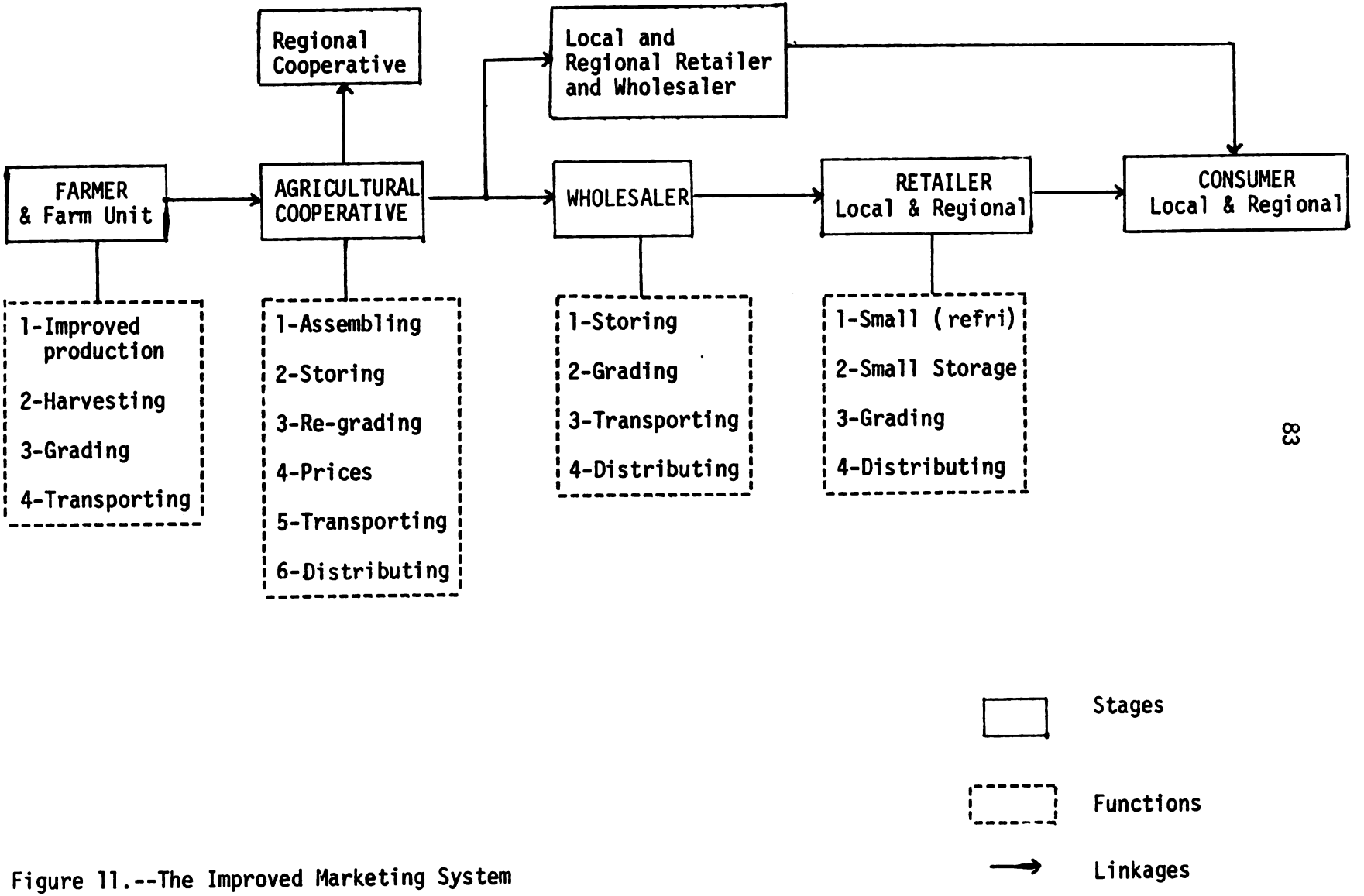


Figure 11.--The Improved Marketing System

Recommendations

The organization of this study has enabled each component of the marketing distribution system to be isolated for individual study. An alternative system of marketing has been suggested. The new system is predicated upon a number of changes. These changes are presented in the form of a number of specific recommendations.

The first is that high priority be placed on overcoming illiteracy among agricultural workers. Farmers in Saudi Arabia are not educated enough to manage their farms at a beneficial and an economical scale. In order to do their part in the improvement process they have to be trained and informed about new agricultural methods and the necessary equipment and machinery. The Ministry of Agriculture and its different units in the different regions should increase their efforts to encourage the farmer to keep up with new techniques. A free flow of market information is a basic necessity to the farmer in order to plan and take into consideration marketing factors. The farmer should be taught certain principles such as input substitution, farm budget, and diversification in order that he be less affected by price fluctuations for a given product.

The second, and a major recommendation of this study, is an expansion in the use of cooperatives in the marketing process. At present, the agricultural cooperatives services are limited. They only provide the farmer with seeds, insecticides, and some simple agricultural equipment. The cooperatives import these materials and sell them to the farmers at reasonable prices.

In Taif, for example, as well as in any agricultural region in Saudi Arabia, the agricultural cooperative should be enlarged to include the marketing process. The cooperative's role in the marketing system is represented as assembling the production, redistribution, storage, setting the prices with the cooperation of the marketing department in the Ministry of Agriculture, grading the production and providing transportation. Also, the cooperative has to support the farmer with up-dated market information concerning local or interregional demand.

Cooperatives would replace the combined function of the dalal and al-Halaga in the traditional system. Their formation should be supported by funds from the Ministry of Agriculture or from the agricultural bank. The place of al-Halaga should be given to the cooperative to build its storages facilities and other needed structures. This will guarantee at least one large storage structure in the central market for the whole region.

Farmers should be encouraged to be shareholders in the cooperative, as should the wholesalers. The wholesalers have to be incorpoated into the cooperative in order not to duplicate its function. It is recognized that, because of his important role at present in marketing, it will be difficult to replace the dalal, but a possible solution is to incorporate him into the new system by giving him an important role in the cooperative. In addition, the cooperative should be in contact with cooperatives in other urban centers to facilitate inter-regional trade.

The third recommendation concerns the retailers and the consumers. To participate in the development program, the retailers should conform to a set of price guidelines, and not take advantage of the consumers. The numicipality in each urban center should have some control on the retailer in terms of the quality of their stores and minimum equipment that they can use to run their business, not to mention maintaining health regulations. The retailer would obtain their purchases directly from the cooperatives.

Transportation is the subject of fourth recommendation. This factor appears as a link in each stage of the improved system. There are different distances between the numerous production areas within the single region and the urban center. These different distances must be taken into consideration when setting the prices and the transport costs. A network of improved roads should be achieved as soon as possible to cover the whole region and to link the remote areas with the consumption centers. In terms of transportation means, the cooperatives may have to have refrigerated trucks to bring the production from distant areas undamaged. These vehicles can also be used for inter-regional shipment. Therefore, to guarantee a full improvement for the agricultural marketing in particular and the agriculture development as a whole, constructing many agricultural roads and having communication facilities are recommended.

Finally, the government should continue to play an important role in regulating the marketing system in Saudi Arabia. For example, in the case of supply exceeding demand, the Ministry of Agriculture

and the Ministry of Trade and Industry should export the surplus or establish agri-industrial factories to absorb that surplus. These factories may involve canning vegetables, such as tomatoes, and fruits, such as grape juice, and the packing of dates. In terms of supply and demand, the statistical departments in the Ministry of the Agricultural units have to have as soon as possible some trained personnel to survey each agricultural region and determine exactly the economic dimensions for better planning for the future. Finally, the studies and research department in the Ministry of Agriculture has to act to keep up with current market information whether in Saudi Arabia or abroad.

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