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**LAND TENURE AND LAND USE IN  
ARID ZONES WITH IMPLICATIONS FOR  
MIDDLE EASTERN COUNTRIES  
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Agricultural development theory explores those relationships which, when called into play, will convert a static agricultural technology into one which will bring about rapid increases in productivity and output in the agricultural sector. Agricultural development, according to some models, "is nothing more than the use of more capital resources in substituting one form of capital for another or for land or labor, and increasing output."<sup>1</sup> A meaningful theory according to Hayami and Ruttan "must incorporate the economic behavior of public and private sector suppliers of knowledge and new inputs and the economic response of institutions to new economic opportunities as a component of the economic system rather than treat technical and institutional change as exogenous to the system."<sup>2</sup>

Accordingly, in this paper various land tenure and land use policies in arid zones are described to bring into focus those relationships that are necessary for agricultural development in such areas with particular reference to Middle Eastern countries. The impact of aridity<sup>3</sup> upon land tenure and land use and the size of land holdings and the importance of the role of government in the performance of arid agriculture are explored.

**Hypotheses :**

Three Hypotheses may be stated as plausible:

- (1) Land tenure in arid zones tends to be, largely, one of a group tenure type, whether it be governmental, communal or capitalistic.
- (2) Land use tends to be highly specialized and, therefore, the size of land holdings tends to be relatively large.
- (3) Given the nature of arid zones and the resultant uncertainties and risks undertaken therein by the agricultural firm, there is a need for government involvement as a necessary condition to the agricultural development of such farming areas.

**The Arid Zone:**

The arid zone is characterized by a sparse and variable rainfall, very high temperatures, strong winds, and sparse vegetation. The average annual precipitation in semi-arid lands ranges between 15 and 35 inches, often less than 25, and in arid lands

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from 5 to 15 inches. Precipitation in these areas is distinctly seasonal, and the dry season lasts from six to nine months, with some months being virtually rainless. This sparsity and variability of rainfall means that uncertainty looms very large for the farmer. His production decisions have to be oriented to a longer time span than is necessary in a more favorable environment. The lack of recognition of variability of rainfall and, therefore, acceptance of the dictates of the environment, has been especially disastrous in such places as the Middle Eastern countries, India and others.

Vegetation is sparse in arid zones due to the above mentioned attributes of rainfall, and it is very susceptible to overgrazing, which may lead to the dominance of less palatable grasses and to an increase in the liability of soil erosion. Beyond climatic conditions, deserts have thereby been created through man's misuse of resources in arid areas.<sup>4</sup>

#### **Land Tenure Situation:**

The key to the question as to whether there is a relationship between aridity and the formation of land tenure systems lies mostly in the history of arid land occupation and the ensuing experiences and results which have ultimately fashioned existing land tenure systems. The history of the occupation of arid lands in the United States provides one interesting example of the evolution of a land tenure system. Its present land tenure system owes its origin partly to the Anglo-Saxon concept of property rights and ownership in fee simple, and partly to trial and error in the efforts of settlers to accommodate themselves to the arid environment of the West.<sup>5</sup> Only a brief summary will be presented here.<sup>6</sup>

In the early days of the occupation of the West, lands were acquired in a haphazard manner rather than under a logical or orderly official control of settlement. As more settlers moved in, a system of land sales, bounties to soldiers, grants and free land to the homesteader was established. Failure to adapt to the Homestead Act of 1862, with its 160-acre limit, brought about agitation for further legislation to rectify the situation. In 1877, Congress passed the Desert Land Act, raising the acreage limit to 640 per homestead with the obligation to irrigate all acres. To irrigate such a large tract was difficult and, in 1890, the acreage to be irrigated was reduced to 320.

In 1894, the Carey Act was passed to cede some public lands to the states but with the provision of a 160-acre limitation for reclamation, cultivation and settlement by small farmers. In addition, state boards were authorized to administer the affairs of irrigated districts; but this led to controversy and failure was widespread. Demands were made upon the federal government to take direct charge of irrigation, and in 1920 the Reclamation Act was passed, empowering the Federal government to

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undertake the development of irrigation schemes to promote homestead settlement..

Following the Reclamation Act, a series of amendments to the Homestead Act raised the acreage limitation from 160 to 320 in 1909, with provisions for easy access to the feed-crop and water-source "base property" necessary to the use of public lands for grazing. And, in 1916, the Stockraising Homestead Act was passed to provide for 640-acre homesteads on lands suitable for stock raising.

The last significant act was the Taylor Grazing Act, passed in 1934. It provided for the administered grazing and other uses of federal lands. It is important to note that this act halted the further disposition of federal lands to private ownership.

The present land tenure system may be viewed in the form of three broad categories: (1) private, (2) federal, and (3) state. Forty-six per cent of the total land area of the West is held in private ownership, forty-eight per cent in federal ownership, and six per cent in state ownership.<sup>7</sup>

The above brief historical sketch and the present-day tenure system may prompt one to raise the question as to why the federal government owns so much land, especially when the economic philosophy of the United States emphasizes private ownership. The answer to this question must necessarily be stated in terms of the arid environment of the West. The history of the West and the Great Plains abounds with stories of failure to understand and adapt to the variable environment, and of the abuse to the land by overgrazing, burning of vegetation, and the hastening of erosion. Because of the special characteristics of these lands, they are overly susceptible to deterioration from certain uses. A primary reason, therefore, why much land remains in federal ownership is to serve the purpose of conservation.

In addition to large public ownership in land, it has been found necessary to establish a group tenure in the form of voluntary regulatory associations such as grazing associations, advisory boards, conservation districts, and water districts. The purpose of these organizations is to provide for stability of tenure, low costs, and opportunity to use federal, state, local, and private grazing lands under conditions favorable to members of these districts. Thus, grazing districts provide for effective control of land use, security of operation for the individual member, and settlement of differences among members.

A second example may be drawn from historical experience in Australia. The present land tenure system in Australia falls under two categories: private and public. The magnitude of private ownership is 10.4% of the total land area with the remaining 89.6% being in public ownership, 56.6% of which is leased to farmers and graziers. The present tenure system is an outcome of trial and error and economic ideology.<sup>8</sup>

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Briefly, after a period of haphazard progress . more or less lawful allocation of land to the early settlers, including widespread settlement of pastoral areas by squatters, there arose the need for more definitive legislation. An important system of grazing licenses was introduced in 1836 followed by Closer Settlement Acts which authorized the government to repurchase previously alienated lands for the purpose of cutting them up into blocks of more suitable size for more intensive cultivation and throwing them open to "Closer" settlement on easy terms and conditions. This was followed by The War Service Land Settlement Scheme under which farms or grazing properties have been made available to persons who served in the armed forces during World War I, and World War II, or the Korean War.

Classical economic doctrine influenced the thinking and actions of officials regarding land ownership in Australia. The writings of Ricardo, John Stuart Mill, and Henry George called for doing away with unearned rent and gave support to widespread continuity of public ownership of land. Fear of monopolies and the political power that might emanate from large private holdings provided a further reason for public ownership. A leasehold system of various durations has made it possible for effective public control over the use of land, in the interest of conservation policy and the need to stimulate a transfer of land to "higher" uses as development proceeds.

Voluntary cooperative organizations somewhat similar to those in the United States have also been formed in Australia for the purpose of protecting and advancing the economic welfare of farmers. Such organizations provide marketing facilities and outlets, influence prices to their advantage, air farmers' complaints and demands to the government, conduct research and provide advice to farmers.

The third relevant historical experience is that of Jordan as representative of the tenure system in much of the Middle East. The origins of the present land tenure system stem from the following: (1) The Ottoman Land Code of 1858, (2) Arab custom, and (3) the British Mandate. Land was divided, according to the Ottoman Code, into five categories: Mulk land, Miri land, Waqf land, Matruka and Mawat land.<sup>9</sup> It is noteworthy to mention that the code had no provision for leasehold tenancies between landlord and tenant. The main purpose of the code was the collection of revenue through taxes.

Arab tribes in their settlement of land, especially in areas where there is great instability of crop yields, poverty and social insecurity, developed a form of communal ownership known as the Musha' system, under which the right to own land is expressed as a share in the total and the land of the village is periodically redistributed among different owners in proportion to their share.

The main influence of the mandate government in Palestine and the government of Transjordan was in the area of determining and registering traditional rights.

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This had the impact of abolishing most of the Musha' systems. Both governments failed to regulate the relations between landlords and peasant cultivators and could not prevent the fragmentation of holdings under the remaining Musha' system compatible with Moslem inheritance laws.

The existing tenure situation includes private, state, Musha', and mixed forms of tenure; the extent of each is not known. The latest agricultural census taken in 1953-54 proved to be deficient in several aspects, or, at best, ambiguous. However, it has been estimated that 84% of the total land area is desert where communal types of tenure exist and the remaining 16% is considered cultivable land held under various tenures.

To summarize, from the historical experiences of these three arid areas, a common denominator is the continuing role of group types of tenure. Furthermore, scarcity of water and grass in the arid environment gives rise to a need for commonality in the use of land; government or group control or ownership becomes necessary to ward off possible conflicts among users and to regulate the manner in which land is to be used.

#### **Land Use and the Size of Land Holdings:**

Aridity dictates highly specialized land uses. This is evident in the western United States where 49% of the total land area is used for grazing and 32% is in forest and woodland. In Australia 94.4% is used for grazing. This is typical not only of these two countries; it is true of all arid areas including Middle Eastern countries.

This type of land use calls for large size holdings. Where there is irrigation the size of land holding need not be large. The average size of holdings in the Rocky Mountain States in 1959 was 1,779.4 acres;<sup>10</sup> and in Australia 6.1% of the holdings containing 5000 acres and over comprised 86.2% of total land held.<sup>11</sup> Because of population pressure on cultivable land in Jordan and other Middle Eastern countries, the size of holdings tended to be smaller. For example, 48% of total holdings in Jordan contained below 20-acre size farms.<sup>12</sup> As a result, it is to be expected that Middle Eastern agriculture can be made more viable by developing a greater degree of specialization in agriculture and by enlarging the size of the holding.

#### **The Role of Government:**

Government participation in advancing the economic welfare of the agricultural sectors in both the West and Australia has been remarkable. This involved making land available for various uses, regulation of the use of land, zoning of land, provid-

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ing water and constructing water works, giving special tax concessions, providing price supports, providing drought relief, extending agricultural advice and credit, and conducting research. This government involvement is especially important to successful arid agriculture.

Middle Eastern governments have not given top priority to agricultural development. This participation has been minimal in comparison with Australia and the United States. Some attempts at land reforms have been undertaken by various countries such as Syria, Iraq, Egypt, and Iran. However, the extent of success or failure of such land reforms is not clear and an evaluation at this point is outside the scope of this paper.

The extent of participation of Middle Eastern governments in agricultural development is restricted to completing registration of land titles for individuals, establishment of cooperative societies, and the construction of scattered projects such as the East Ghor Canal for irrigation in Jordan. Price support programs, control of use of land, extension service and education, research and other measures have largely been missing. Despite a decade of developmental efforts in Jordan, the total crop output was less in 1960 than in 1952, particularly in view of the 2.5 to 3.0 per cent annual population growth.<sup>13</sup> Also, the variability of rainfall from year to year causes these countries to spend valuable foreign exchange in drought years for the importation of food stuffs.

Clearly one role governments can play in minimizing the impact of the fluctuating environment is by developing water resources and water works for irrigation and conducting research and developing plants or cereals that are drought tolerant.

Another measure governments can and should undertake is the establishment of institutions that will provide credit, especially during drought years. A further need is to bring about technical changes in agriculture through effective education and extension service. Governments could enhance technical changes through demonstrations by showing better methods of farming, use of machinery and improved seeds and plants, and by emphasizing the results of fertilizing land. However, the need is largely bypassed by the existing educational system; the author observed in a recent visit to an agricultural school in Jordan that 99% of the graduates of this institution worked outside the agricultural sector.

A further serious deficiency in Middle Eastern agriculture is the lack of proper and modern marketing facilities. Aside from developing the necessary infrastructure in transportation, governments should divert more resources into attempts to improve agricultural marketing in order to insure higher farm prices and greater stability of income for the farmer. Modern marketing techniques call for better methods of picking and handling and packaging, standardization of products, use of refrigeration,

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finding new domestic and foreign markets, developing cottage industries connected with agricultural products, and establishing marketing boards.

Governments should seek to develop methods by which land use can be controlled, not only through regulations and control of nomadic and non-nomadic grazing and farming but also through economic incentives. Recognition and awareness of the aridity problem and the desire to increase productivity in agriculture should lead to formulation of tenure policies which foster agricultural economic progress through improved incentives for work and investment. The effectiveness of these tenure policies will depend, in the main, upon the quality of the legal framework of a country. The historical sketch presented suggests the desirability of a land lease system of tenure throughout much of the Middle East. "The essential condition is a legal framework under which a cultivator who assembles all or part of his land in the rental market is assured the requisite security of tenure, compensation rights for unexhausted improvements at the termination of his lease, and independence in managing his farm."<sup>14</sup>

The type of land use which should evolve under these land tenure arrangements is one characterized by a specialization and commercialization. This, according to Owen, "is particularly relevant in the Middle East with its wide range of climatic conditions and heavy dependence upon both the extreme forms of land use represented by irrigated agriculture and extensive pastoral activities. Not only do the countries in this region need to move in the direction of greater area specialization in land use, but commercial agriculture needs to displace subsistence farming to a greater extent in its more arid and remote areas than its higher rainfall and irrigated areas."<sup>15</sup>

Agricultural development, of course, cannot be achieved in a vacuum. The relative success of agriculture in Australia and the United States has been due to close interaction with the rest of the economy. That is, farmers have been seen as full economic citizens with contributions important to the health of other sectors of these economies as well as being dependent upon the latter for critical factors of production including various types of machinery and equipment, fertilizers and improved seeds and pesticides, related technical information and job opportunities. The rise of the various industries that process agricultural products in these countries helped to incorporate the agricultural sector as an essential part of the overall economy.

The implications for Middle Eastern agriculture are clear. It should receive top priority in the agenda for economic development in the region. In the process no consideration deserves greater emphasis than the fact that the differences in agricultural performance between the more developed countries and the less developed countries has been due not primarily to the large resource base of the former coun-

tries, but to the quality of the human agent; the source of growth in output, above all, has been technological changes embodied in a skilled farm labor force and inputs from the non-farm sector.<sup>16</sup> Accordingly, a conscious public policy aimed at investment in farm human capital will prove to be critical to agricultural development in the arid regions of the Middle East.

#### FOOTNOTES

1. Earl O. Heady, "Processes and Priorities in Agricultural Development," **Economics of Tropical Agriculture**. Edited by W. W. McPherson, (Gainesville: University of Florida Press, 1968), p. 61.
2. Yujiro Hayami and Vernon W. Ruttan, **Agricultural Development: An International Perspective** (Baltimore, Maryland: The Johns Hopkins Press, 1971), p. 3.
3. There is much controversy concerning the definition of the arid zone and its distribution. This controversy stems from the many variables connected with the arid zone: climate, soils, vegetation, human and animal distribution, and land use. It has been estimated that approximately half the countries in the world are affected to a greater or lesser degree by aridity. This estimate is based upon Peveril Meigs' study of "World Distribution of Arid and Semi-Arid Homoclines," in **Reviews of Research on Arid Zone Hydrology**, (Paris: UNESCO, 1953). For the purposes of this paper, the arid zone is defined in terms of land use and population. That is, we will be concerned with those areas where agriculture and pastoral activities can thrive and where people can live and derive a subsistence or above subsistence or above subsistence level income from such activities. Therefore, this definition will exclude those extremely arid areas such as the coastal areas of Chile, Death Valley Desert of California, a large portion of the Saharan Desert in North Africa, El Rub El Khali of the Arabian Peninsula, some parts of India and Central Asia, and parts of Central Australia.
4. Gilbert F. White, **Science and the Future of Arid Lands** (Paris: UNESCO, 1960), pp. 46-47.
5. West here is used to mean the eleven states of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Oregon, Washington, and Wyoming.
6. Benjamin H. Hibbard, **A History of the Public Land Policies** (New York: The MacMillan Co., 1924); Roy M. Robbins, **Our Landed Heritage** (Princeton, N.J.: Princeton University Press, 1942); V. Webster Johnson, and Raleigh Barlowe, **Land Problems and Policies** (New York: McGraw-Hill Book Company, Inc., 1954); and Marion Clawson and Burnell Held, **The Federal Lands: Their Use and Management** (Lincoln: University of Nebraska Press, 1957).
7. **Agricultural Census, 1959, Vol. II; Public Land Statistics, 1964**, and H. Thomas Frey, **State Owned Rural Land, 1962**, Statistical Bulletin No. 360, May 1965, U.S. Dept. of Agriculture/Economic Research Service.
8. Stephen H. Roberts, **History of Australian Land Settlement 1798-1920** (Melbourne: MacMillan, 1920); **Official Year Book of the Commonwealth of Australia**, No. 4, 1901-1910 (Canberra: Commonwealth Govt. Printer, 1911) pp. 235-333; Crauford D. W. Goodwin, **Economic Enquiry in Australia** (Durham N. C.: Duke University Press, 1966), pp. 60-133;

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Wyn F. Ower, "The Development of Agricultural Policy in Australia," unpublished Bachelor of Letters Thesis, Oxford University, 1953; A. G. L. Shaw, "History and Development of Australian Agriculture," in *Agriculture in the Australian Economy*, ed. D. B. Williams (Sidney: Sidney University Press, 1967), pp. 1-28.

9. Mulk land is that land which is held in absolute freehold ownership and is governed by the provisions of sacred law and not by those of civil statute law. Miri land is that land where absolute ownership belongs to the state, and the usufruct of land belongs to the individual. Miri land, however, is de facto private land and the government does not have control over its use. Waqf land is land which is dedicated for religious purpose. Matrurka is land reserved for some public purpose. And Mawaṭ is land which is considered dead, or unreclaimed land. For further detail see Doreen Warriner, "Land Tenure Problems in the Fertile Crescent in the Nineteenth and Twentieth Centuries," in *The Economic History of the Middle East, 1800-1914*, edited by Charles Issawi, Chicago: University of Chicago Press, 1966.
10. Agricultural Census, op cit.
11. Report on the 1960 World Census of Agriculture, Vol. I, Part A.
12. Agricultural Census, 1953, Table 2, Ministry of National Economy, The Hashemite Kingdom of Jordan.
13. Richard J. Ward, "Focus in Jordan Agriculture," *Land Economics*, Vol. XLII, No. 2, May 1966.
14. Wyn F. Owen, "Two Rural Sectors: Their Characteristics and Roles in the Development Process," in *Rural Politics and Social Change in the Middle East*, ed. by Richard Antoun and Iliya Harik, (Bloomington: Indiana University Press, 1972), p. 422.
15. Ibid., p. 424.
16. Everett E. Hagen, *The Economics of Development* (Homewood: Richard D. Irwin, Inc., 1968), p. 190.

# ملكية واستغلال الارض في المناطق الجافة

## د . غازى توفيق فرح

تهدف هذه الدراسة الى بحث طبيعة الاراضى واستغلالها تحت ظروف الجفاف والى بحث المشاكل الناجمة عن ذلك من أجل وضع مقاييس يمكن الاستناد اليها فى المحاولات التى تبذلها الدول النامية ذات الطقس الجاف فى تطويرها الاقتصادى الشامل . وتتضمن الدراسة كذلك عرضا مفصلا لانماط تملك الاراضى واستغلالها والطرق الزراعية المتبعة فى كل من غربى الولايات المتحدة ، استراليا ، والاردن . وبالإضافة الى ذلك ، تم تحليل أوجه التشابه والاختلاف فى هذه المناطق وأخرى ومن ثم تحديد السياسة العملية التى يمكن اتباعها .

والنتائج التى توصل اليها البحث هى :

- ١ — أن استغلال الاراضى تحت ظروف الجفاف يجب أن يكون بالضرورة استغلالا واسعا أى أنه يجب استغلال الاراضى إما فى الرعى أو زراعتها بنباتات تستطيع مقاومة الجفاف وذلك من أجل التقليل الى أدنى حد ممكن من اثر التغيرات الجوية .
- ٢ — أن الزراعة الواسعة تتطلب أن تكون المزارع كبيرة المساحة نسبيا اذا أريد لتلك المزارع أن تنجح بشكل اقتصادى .
- ٣ — أن ندرة الاعشاب والمياه تتسبب فى وجود منافسة شديدة وصراع وسوء استغلال للمصادر مما يحتم أن تكون ملكيتها عامة أو تحت السيطرة الجماعية .
- ٤ — أن التدخل الحكومى يعتبر ضروريا من أجل التقليل الى أدنى حد من الأخطار المحتملة فى أعمال المزارعين .