

## **AGRICULTURAL AND RURAL GEOGRAPHY**

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### **Summary**

The evolution of agricultural geography and then rural geography is described. The main influences affecting farming and hence agricultural geography are considered under the headings of biophysical environment, agrarian structure and population, economic influences, sociopersonal factors, and government and company contexts. The principal content of rural geography is discussed in relation to population and employment, settlement and housing, transport and services, recreation and tourism, and development and conservation. It is concluded that fully integrated management of rural areas offers the best scope for contributing to the sustainability of life-support systems.

### **1. Introduction**

Agricultural and rural geography are concerned with the spatial characteristics of agriculture and of the environments and people of rural areas, including the nature and processes of change. Agricultural geography became established first and, as rural economies and societies diversified, rural geography developed to investigate the

totality of rural areas. In agricultural geography's focus on the spatial distribution of agriculture, particular attention is given to influences that affect the decisions made by farmers and the changes affecting them. These include the biophysical environment, agrarian structure, economic influences, sociopersonal factors, and the policies of governments and companies. While rural geographers may investigate any aspect of rural areas, the topics that receive most attention are population, employment, settlement, housing, transport, services, recreation, tourism, development, and conservation. Agriculture and rural areas are changing and their future welfare is fundamental to the sustainability of the earth's life-support systems.

## **2. Agricultural Change**

Change has been a feature of agriculture since its origin but the pace and nature of change have varied from time to time and from place to place. The magnitude of changes at particular times has led some writers to refer to these phases as revolutions. The initial development of agriculture is thus regarded as the first agricultural revolution. The second was marked by the improvements in farming and the change from subsistence to commercial agriculture from the seventeenth century onwards. The third agricultural revolution is represented by the modernization or industrialization of agriculture from the mid-twentieth century onwards.

This transformation has involved greater intensification through increased use of purchased inputs and application of modern mechanical, chemical, and biological technology, greater concentration of production on fewer farms, regions, and countries, and greater specialization of farms, regions, and countries. Agriculture has become more integrated into the broader economy as a result of backward linkages in the supply of its inputs, such as machinery and fertilizers, and forward linkages in the processing, distribution and consumption of its outputs.

While industrialization of agriculture has occurred mainly in the developed world, the introduction of high-yielding crop varieties and other technology in the green revolution has had some impact on farming in developing countries. With its emphasis on efficiency and increasing output, the modernization phase is referred to as productivist agriculture. In the closing decades of the twentieth century a certain shift began to occur with curtailment of production and attention being given to public concerns about the impacts of farming on the environment, the welfare of animals, and the quality of food. This may be referred to as a post-productivist transition but it involves also continuation of productivist agriculture.

The revolutions and more general changes in agriculture have affected different areas at different times. Thus spatial patterns of diffusion may be recognized as changes have spread from centers of origin. At any one point in time there are major spatial differences in the extent and nature of change, related to variations in environmental, historic, technological, economic, social, cultural, political, and other circumstances. While the most developed economies are in the post-productivist transition phase, parts of the less developed world have a largely subsistence agriculture. The different phases of agricultural change have varying impacts on environment, economy, and society and so there are major implications for the sustainability of life systems in different areas.

### **3. Changing Geographical Perspectives**

Variations over time in the extent and nature of agricultural and rural studies by geographers have been related in part to the changes in agriculture and in rural areas. They have reflected strongly also the sequence of different vogues in paradigm, ideology, and subject of interest within the discipline of geography as a whole and in cognate social sciences. Each perspective was only partial and, while different ones were favored at different times, this was generally not to the exclusion of all other viewpoints.

Before agricultural and rural geography became generally distinguishable as distinct branches of the discipline of geography, their subject matter was contained at first within general and regional geography and then within economic geography, in particular, and social geography once these emerged as separate subfields of geography. Because of the importance of agriculture in land use, economy, and society, this material constituted a significant part of geography. The emphasis had been on describing the nature of farming and rural settlement and their variations from place to place. When geographers began to try to explain spatial patterns, interpretations were influenced strongly by the view that the geography of human activity is determined by the physical environment. Environmental influence could be demonstrated much more easily with respect to agriculture than to manufacturing and service industries and this contributed to the strong emphasis on agriculture within economic and commercial geography. As part of the geographical interest in the differences between places, considerable attention came to be given to agricultural regions. The regions treated were often delimited in terms of their physical makeup on the basis that the type of farming reflects environmental influences. Without this limitation, many studies in agricultural geography continue to investigate farming within areal contexts of different scales.

The pace of change increased on entering the second half of the twentieth century and accelerated subsequently. Agricultural geography developed as a separate subdiscipline. In broadening the search for explanations of spatial patterns, the emphasis shifted from environmental influences to economic factors affecting farming. In looking for regularities rather than differences between places, consideration has been given to models as idealized representations of reality. Researchers increasingly adopted statistical methods of analysis. One significant application of these by agricultural geographers is in the classification of types of farming and the delimitation of agricultural regions together with investigation of the changes over time in these types and regions. Evolutionary studies in general, with recognition of the role of past conditions in influencing the present, became much more feasible when the emphasis had shifted from the more permanent effect of the physical environment.

In part as a reaction against a narrow economic deterministic approach and accepting that farmers are influenced by factors other than maximization of income, attention shifted more towards sociopersonal considerations. This behavioral approach brought an emphasis on the decision-making process of farmers and the multiplicity of influences that can affect it. Because farmers' freedom of choice is constrained by the policies and practices of governments and companies and in response to the increasing influence of these, there developed the political economy approach. In it the emphasis is on the

structures within which agriculture operates and on the interactions and power relations involved. As agriculture industrialized and became more integrated with input and output manufacturing and distribution, some agricultural geographers have extended their interest beyond farming to this broader agribusiness sector and to the food chain or food supply system from production through processing and distribution to the final stage of consumption.

As the role of farming in the rural economies and societies of developed countries lessened and as the volume of geographical research expanded, increasing attention was being given to non-agricultural aspects of rural areas. This led to the evolution of rural geography as a separate subdiscipline of geography. With agricultural geography already established and having a large subject content, rural geography in some institutions, courses, and books focuses specifically on features of rural areas other than farming, while in others it incorporates agriculture or aspects of agriculture. Topics that receive much attention in rural geography include population and social change, employment, transport and other service provision, recreation and tourism, deprivation, planning, and development. Increased emphasis is placed on the practical applications of study of such topics. Much attention is given to rural restructuring and its effects, resulting in particular from modernization and globalization. Recent areas of interest include cultural matters and consideration of particular sectors of rural society based on features such as age, gender, ethnicity, lifestyle, sexual orientation, and disability. There has been renewed interest in the interaction between people and nature. Change in rural geography has included incorporation of more qualitative research and a generally greater acceptance of a diversity of approaches to the subdiscipline.

While general trends in agricultural and rural geography have been outlined, the timing of these and the content and approaches that occur vary to some extent between countries and groups of countries and even within countries. This diversity renders generalization about the subdiscipline all the more difficult. On a broad basis, differences may be perceived to exist between the approaches in the English-language sphere, mainland Europe, and Asia, with the influence of the first being the most pervasive. One aspect of this is more search for theory and conceptualization but the body of appropriate theory in agricultural and rural geography is limited. A general distinction in the subdisciplines is that between the developing and developed worlds. In the latter, with farming still dominating rural areas, there is much greater emphasis on agriculture and a separate rural geography may be lacking. With this importance of farming and its major role in development issues, agricultural geography itself is sometimes subsumed within general or regional geography and within development studies.

#### **4. Agricultural Geography**

The content of agricultural geography is considered here within the context of the influences that affect the decisions made by farmers and hence the spatial distributions and trends in agriculture. The decision-making process in farming is an extremely complex one, influenced by a multiplicity of factors, which vary from place to place, so only the main ones can be considered here and they are grouped for convenience.

#### **4.1. Biophysical Environment**

Agriculture is based on land and on plant and animal growth and reproduction, with these being managed to varying extents by humans. Thus the biophysical environment or resource base sets the context within which the decisions made by farmers must be set. The principal influential environmental components are climate, terrain, soil, water supply, and pests. Variations in these help to explain many of the broad patterns in agricultural geography at global, continental, and national scales.

The environment sets some spatial limits to all agriculture, in that substantial tracts of the earth are too cold or too dry for any crops to grow and cultivation is not possible on expanses of bare rock and very steep slopes. Where farming is practiced, the environment affects the quantity and the quality of production. The fertility and other characteristics of the soil are fundamental in this respect. Crop yields may be related directly to rainfall and temperature but excessive levels of these may have a depressant effect. This may also impair the quality of output and increase the liability to disease. The agricultural techniques used may vary with the environment, those practiced in irrigation farming being quite different from those in dry farming, for instance. The difficulty with which farming tasks are performed and the costs involved are also affected by the environment, as in the working of slopes and the extra cultivation needed on difficult soils.

The varying environmental requirements of the different crops and livestock have a major influence on the geography of world agriculture. With reference to the climatic conditions for individual crops, for instance, there is a range from areas where the absolute values and their seasonal distributions are most favorable to ecological limits beyond which the crop cannot be grown economically or at all. Very evident as a result are the differences in the crops grown in tropical, temperate, and cold climatic regions. Where crops are grown or farming practiced near to ecological limits, sustainability may be in doubt because of potential changes in climatic, economic, or other circumstances. This may help to explain some of the agricultural collapses of history and a current example would be the impact of expanding deserts on the farming of surrounding areas. While farmers in warm climates may have a wide range of crop choice, in cold regions there may be few or no alternatives to which farmers can resort with changing market or other conditions, so that sustainability may be threatened.

The development of modern technology has enabled some of the limitations on agriculture imposed by the environment to be lessened or overcome. This may account in part for the diminished importance attached to the physical environment in agricultural geography in the second half of the twentieth century. Most of the modifications of or adaptations to the environment involve additional production costs, however, as in irrigation, land drainage, fertilizing of soils, growing of crops under glass or plastic, and breeding of appropriate crop and livestock types. Environmental modification practices may not be economic in many instances. For farmers in the developing world, the possibilities of using modern technology to counteract environmental restrictions are much more limited for capital availability and other reasons. There farming is often intimately adapted to the local environment and sustainability may depend on this. Even in the developed world, the environmental

influence may be seen in the effect weather conditions have on the harvest. Climate change will enforce future adaptation on agriculture in many places.

While the biophysical environment has a major influence on agriculture, farming may in turn have severely detrimental impacts on the environment. In the developing world, overgrazing by livestock or inappropriate practices, such as cultivating parallel to the slope, may contribute to soil erosion and land degradation. The environmental sustainability of agriculture may be threatened. Extension of agriculture is a major contributor to deforestation with its harmful consequences. The capacity for environmental damage is greatest, however, in modernized agriculture and this is receiving increasing attention. This relates especially to the pollution of water, land, and air resulting from the organic effluent from livestock production units and silage storage facilities and from the use of fertilizers, pesticides, and other agricultural chemicals. Wildlife and their habitats are damaged by this application of agrochemicals and by practices such as draining wetlands, reclaiming hill land and cutting hedges. Landscape and land effects include hedgerow and woodland removal, the erection of modern farm buildings, and damage to land by machinery. Modern agriculture has become heavily reliant on consumption of huge amounts of non-renewable energy sources, raising concerns about its energy efficiency. The combined impact of these various effects raises questions concerning the environmental sustainability of modernized agriculture in some places. Environmental, food quality and other concerns have led to substantial growth in organic farming.

#### **4.2. Agrarian Structure and Farm Population**

In addition to the environmental quality of the land farmers work, other fundamental features in agricultural geography are the form of land ownership and control, the size and arrangement of the farm units, and the social relations involved in farming. These vary over space and together comprise agrarian structure. It is the individual farm that is the basic organizational and decision-making unit of the agricultural landscape.

With respect to ownership and control, four main types of land tenure or occupancy may be recognized but with distinctions sometimes blurred. Generally favored socially and politically in many countries is owner-occupancy, whereby the people who manage the land own it. This facilitates personal interest in the welfare of the farm, it provides security of tenure, rent has not to be paid, and the land can be used as collateral security to obtain credit. While owner-occupancy is generally thought of as constituting family farming, it includes also corporate and institutional ownership. This applies to the plantation agriculture of the developing world and it has increased in many developed countries. Under the tenancy form of land tenure, those who work the land have to pay an owner or landlord for its use in money or part of the farm output or, less frequently, by their labor. The form of communal ownership most common in the developing world involves land ownership being vested in the tribal or other community group and it may then be allocated to individual families for working. The other form of communal ownership is communal farms, which have been a feature of the centrally planned economies in particular. As the transition to market economies occurred in many instances from the 1990s, this form of tenure declined, as did the fourth form, that of state ownership. State and corporate farms are dependent entirely on paid employees but

such workers may occur also on any of the other types of farm. Land reform is the process whereby tenure systems are changed to yield arrangements, which are intended to be more equitable and socially sustainable. Such reform of tenancy and communal systems has occurred in many developing countries and more is needed.

The values of output or profit would be the most meaningful measures of the size of farm businesses but the most universally available data relate to area of land. There are huge global differences in farm size, for instance those of large-farm parts of Australia and North America contrasting with tiny holdings in parts of East Asia and Africa. Major differences may occur within countries, much of the land in some Latin American countries being held by large farmers but there being a preponderance of smallholders, so that there are great inequalities. With economies of scale, the trend in the developed world has been towards farm enlargement but in parts of the developing world the size of holdings is diminishing further as farming populations continue to increase. The small farm that cannot provide an adequate income or food is a universal problem and a threat to rural sustainability.

While the number of farms in the developed world has been declining with amalgamation of holdings, employment in agriculture has been diminishing to a greater extent. This is in part because of higher rates of loss amongst waged farm laborers and relatives working on farms than in the numbers of farm owners. Mechanization has greatly reduced the labor needs in agriculture, while there is the attraction of higher incomes and more favorable working conditions in other activities. Another factor in the diminishing employment recorded in agriculture is the growth in part-time farming, because many farm owners supplement their incomes with off-farm work and are regarded as being engaged in other sectors of the economy. Among the farm population, gender relations have received inadequate recognition; women play important roles in all farming and food matters and especially in developing economies where they may do much of the agricultural work.

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