

The Compilation Characteristics of "Atlas of Agriculture of Fujian Province"

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Abstract

The Atlas of the Agriculture of Fujian Province is the first large-scale and comprehensive atlas, published by Fujian, on the agricultural sciences. It is composed of 4 groups of maps: prefatorial maps, the natural and ecological environments of agriculture, the economic environment of agriculture, and the structure and distribution of agriculture. There are 150 maps altogether, which constitute 43 semi-size unfoldable leafs. The atlas is published in the form of loose leaf of quartos size, case bound with part in butterfly binding.

The atlas covers a wide range of subjects with macro-agriculture as the centre. It records all important information and achievements of or about agriculture, including the new and rising township enterprises. Through thorough analysis, extract and induction of the numerous and scattered information from all aspects of agriculture, a sequential information is displayed in images by means of maps, forming a systematic and organic body. It gives an all-round and systematic explanation of the distribution law of the agriculture and the ecological environments in Fujian with a stress on the features of the province: hilly, coastal, overseas-Chinese, special and sub-tropical.

The information in the atlas is full and accurate, and is of practical significance. It answers the practical needs for agricultural development. Owing to its close link to the realities of Fujian agriculture, it provides the authorities with a fundamental basis when planning agricultural structure, working out development strategies and making decisions about foreign capital introducing etc.. It has a very high value in practice.

The atlas takes an overall consideration of the population, resources, environments, socialist market economy and the long-term goals of constant development of agriculture. Multiple information is fully used in the compilation and new techniques of remote sensing and CAD are also utilized in part of the compilation. The work lays a solid foundation for the provincial information system of the agricultural resources and environments.

Fujian, located at the southeastern coast of China, facing Taiwan across the sea and neighbouring Hongkong and Southeast Asia, is a wellknown hometown of overseas Chinese. It is one of the provinces that take the lead in carrying out special policies. Within the boundaries of the province, there are rolling hills and mountains, so it is called "a kingdom of mountains in southeast China". Another topographic feature of the province is that it has long and indented sea coast with a number of fine natural harbours and vast waters. Situated at the south subtropical and central subtropical marine-time monsoon climate, which is warm and moist, the province provides suitable surroundings for the growth and reproduction of various living things. So it is rich in mountainous and sea resources. The agricultural production is characterized by distinct diversity, complexity and regular regional distribution.

In order to make full use of the advantages in agricultural resources and speed up the agricultural development, since the launch of open-door and reform, the province has done much work in investigation, with the participation of large numbers of agro-technical personnel. They have carried out investigations and surveys on the agricultural resources and division, surveys on forests, soils, soil erosion and shallow water sea coast. The findings of these surveys have been used in working out a province-wide and comprehensive development project and have been put into implementation. They have contributed to the good start of agricultural development in Fujian.

However, the findings of a single survey have many limitations in application and are rather dispersed. And with the lapse of many of them need to be updated and replenished, else they may fail to play a proper role in the strategic decision making. In order to meet the needs of reforms and economic development under the new situation, in recent years we have made a consistent study on how to make the most of agricultural scientific research results and achieve comprehensive effects. Through years of practice in compiling maps and charts, we have come to the realization that modern maps as a spatial carrier of various informations have an important function in storing and distributing information, particularly in the expression, storage and distribution of spatial graphic information. For the study of the relationship between specific positions of objective things and their surroundings, as well as for the expression of various dynamic changes along with the time, maps have special superiorities that can not be substituted by the means of words, i.e., they can clearly and vividly

show the location, quality, quantity and spatial distribution law of objects and their dynamic changes along with time. For this reason, an idea was conceived in our minds: gathering the newest findings of agricultural surveys and information about the present condition and plans of agricultural production, which are dispersed in different departments, making a systematic analysis of them, and then displaying them on an atlas with aid of various symbols, colours, quantities and locations. Such an atlas will provide people with a handy means to conduct comprehensive studies that involve multi-disciplines at multilevels. It will serve as a scientific basis for all departments concerned in making strategic analysis, plan and decision. It will also lay a foundation for the establishment of Fujian agricultural geographic information system and the realization of dynamic inspection on agricultural production. For this purpose, we have devised and compiled Atlas of Agriculture of Fujian (hereafter referred to as the atlas). It is a result of over two years' endeavour made by the compiling committee jointly. The atlas has successfully passed an appraisal on July 18, 1994 on an examination meeting organized by Fujian Sci-tech Committee and participated by experts from the fields of agriculture, earth science and cartography etc.. The atlas has following characteristics:

1. It Is the First Large-scale and Comprehensive Atlas on the Agricultural Sciences of Fujian

The atlas is composed of 4 parts of maps: prefatorial group, the natural and ecological environments of agriculture, the economic environments of agriculture and the agricultural structure and distribution. All together, there are 150 maps on various special topics as well as large numbers of diagrams which show the development and changes of Fujian agriculture, coloured pictures of landscapes and enlarged pictures. It contains rich contents and information; and gives a systematic and overall presentation of the natural and ecological environments of the macro-agriculture, the features of economic development, regional distribution law, achievements in the agriculture since the open-door and reform drive and the latest agricultural surveys findings. As it will be used as a scientific basis for leaders and policy-making departments at various levels at management, the atlas should have high standard of accuracy, systematicness and practicality.

After repeated experiments, we have chosen quarto and five scales for the atlas, with 1:1 mil as the main scale and 1:2 mil, 1:2.5 mil, 1:3

mil and 1:4 mil as the supplements. As the topography of Fujian is very complex, hills alternating with river valleys and basins that shape like strings of beads, even in 1:1 mil maps a number of picture spots of agricultural units are already very tiny and scattered. If the scale of vegetation maps, soil maps and forest resources maps, which are very important basic maps in an agricultural atlas, are further reduced to 1:2 mil., a large number of small spot will disappear and consequently a large number of agricultural data will be lost. Therefore, spots in the scale of 1:1 mil. must be retained. The size of maps in 1:1 mil. within the boundaries of the province is 507X683mm, just fit in the size of quarto folio. The use of 1:1 mil. scale is beneficial for mutual reference with the special subject maps in the scale of 1:1 mil. which are unifiedly compiled by the state. For the comparatively simple charts such as the economic statistics chart, weather chart and etc., different scales of 1:2 mil., 1:2.5 mil., 1:3 mil. and 1:4 mil. are used. Then they are classified and made up to form a system.

2. Comprehensive Topics Centering on the Macro-Agriculture Are Selected for the Atlas.

Agricultural production, particularly macro-agriculture, is one of the most wide spread economic activities on earth. It is an industry that involves many sectors at different levels. The process of agriculture production is a complicated and comprehensive production course in which natural reproduction alternates with economic reproduction. As it has direct and/or indirect links with natural and ecological environments of agriculture, social economic environment, human activities, resources and markets, it is a huge system engineering with large quantity of information. The material involved are enormous in size and diversified in fields. How to have a systematic and orderly presentation of them in the form of atlas is always an important problem for us to study.

First, in consideration of the features of Fujian: mountainous coastal, subtropical climate, being special zone, having a great number of overseas Chinese and neighbouring Hongkong, Macao and southeast Asia, all of which have great influences on the development of Fujian agriculture, we make them the focal points at the prefatorial maps. By using the maps of administrative area and the topography, an overall situation of the mountains and sea area and regional characteristics of Fujian are demonstrated; The population maps is supplemented with an illustration of "Distribution of Key Counties(regions) of Overseas Chinese" and "Plan of Urban Development and Layout" which show the

distribution and marketing trends, with an emphasis on the counties (regions) of overseas Chinese and the plan of the provincial urban development and distribution. "Fujian Transportation Map" is selected, added with the air lines of the airports of Fuzhou, Xiamen and Wuyishan and the plan of new railways, so that the new look of transportation in Fujian is well demonstrated. Selected are also "Maps of Agricultural Structure" which represent the general structure of the macro-agriculture and the distribution of the macro-agriculture at the municipal and county levels, "Maps of Export-oriented Agriculture" to show features of the export-oriented agriculture in the special zone; "Map of the Comprehensive Agricultural Division of Fujian" to show the agriculture which is in line with local conditions, the findings of latest surveys of agricultural division and the regional distribution law of the macro-agriculture. An illustration of "Division and Distribution for the Plantation of Tropical Plants" is also supplemented. The whole group of the maps covers the main regional characteristics of the whole province and serves as an introduction to the atlas.

Second, in the light of the law of agricultural production, the other maps are divided into three groups: the natural and ecological environment of agriculture, the economic environment of agriculture and the structure and distribution of agriculture. In the group of the natural and ecological environment, following maps are included: climate, water, soil vegetation, video maps, forest resources, nature reserves and rare animals and plants, water and soil conservation, land utilization, rural resources of energy, geothermal resources and its development. All of these maps on various subjects reflect the information of ecological environment and resources, which are crucial in agricultural reproduction. In the climate map, not only the basic characteristics of the southern and central subtropical oceanic monsoon climates are demonstrated, the distribution law of disastrous weathers such as the May cold, Autumn cold, droughts, Typhoon and hails are also demonstrated, which provide a scientific basis for disaster preventing and fighting. The map of types of earth focuses on red earth and shows the features of distribution of major fertility of soils. These maps demonstrate the situation of soil erosion and achievements of control in addition to the representation of the rich forest resources; represent the nature reserves and the distribution of rare animals and plants; represent features of utilization of land and cultivated land as well as the amount of land and cultivated land occupied by each

county(city or region); represent rural resources of energy with an emphasis on small hydropower stations in rural areas. And a focus is given to the development and utilization of geothermal energy and hot springs which are distinguished features of Fujian. The whole group of maps give a systematic and comprehensive presentation of the characteristics of the natural ecological environment of Fujian agriculture.

The group of agricultural economic environment focuses on the economic environment of the agricultural investment, which is one of the important aspects of agricultural economic reproduction. Included in the group are: a map of economic statistics, which shows the productivity of land and cultivated land with the output value per mu (about 0.16 ac); a chart of the average income of peasants and the consumptive construction; the standard of mechanization of agriculture; the present situation and plans of irrigation works; the power net works; distribution of the research institutes, universities and polytechnic schools of agriculture; and the projects of agricultural comprehensive development which have been listed in national plans.

The group of agricultural structure and distribution shows the structure and geographical distribution law of all fields of macro-agriculture; the structure of cereal production demonstrates the sown areas of each cereal and the changes of outputs; the industrial crops include the distribution map of peanut, rapeseed, sugarcane, flue-cured tobacco, tea, edible fungi, asparagus, fruits and herbs; outputs of forestry and timber, quantity of grown-up mao bamboo and the yield and distribution of pine resin and bamboo shoots; products and yields of major poultry and bee honey; structure and yields of aquatic production, per capita consumption, fresh water resources and cultivation, marine fishing and sea water aquiculture; and the development and utilization of shallow-water beach. A stress is given to the developments of the township and rural enterprises in Fujian, and the magnificent plan of constructing five large-scale disaster preventing and fighting projects.

All maps are systematically sort out and induced according to related topics of macro-agriculture in the above four groups of maps forming an internally linked comprehensive system which contains large quantity of information and a comprehensive atlas of agricultural sciences.

3. The Data in the Atlas Is Full, Accurate, Reliable and Practical.

Data are the essence of an atlas. The accuracy of data used determines how scientific and practical the atlas is. In the whole

course of compilation, we have always stressed that the data collect should be full, reliable, and practical and should include the most up-to-date findings and results of scientific researches. Most of the maps about the natural and ecological environment of agriculture have made use of the latest findings of surveys. Their classification and grading meet with the unified standards of respective disciplines. For example, the map of forest resources is a result of the use of pictures and data from TM satellite after decoding, which is the first trial in Fujian. One more example, on compiling the map of the development and utilization of geothermal resources, a feature of Fujian, we have not only used bottom colours and symbols to express the division and utilization of hot springs, but also red spots to indicate the distribution points of hot springs in the province. The map is so detailed that it covers the data of villages, and supplemented with a chart of the value of underground thermal currents in Fujian, which is the latest result of hot spring research in the province. In the parts of agricultural economics and agricultural structure and distribution, statistics of 1993 have been used without exception. For a small number of charts that lack new data, we do not make do with the old ones available. It is our attitude that rather going without than having data inaccurate. So we use other methods to deal with them according to the practical situation. For example, The Charts of the Present Situation of Land Utilization of Fujian, which include a chart of land utilization, a chart of farm land utilization and four charts of typical land utilization making use of decoded TM satellite pictures, are compiled by integrating charts of economic statistics with charts of typical natural resource distribution, achieving anticipated effects.

For the convenience of foreign users, the English name of each map is given. The atlas is published in the form of loose leaf with case bound, convenient for the use of professionals in various fields and for the replacement of some maps to keep the atlas up to date.

4. The Atlas Takes An Overall consideration of Population, Resources and Environments.

Through the four groups of maps the atlas gives an overall and systematic presentation of the distribution laws of agricultural resources and environmental characteristics of the whole province, paying particular attention to their close relations with population. Standardized and stable indexes, such as per capita productivity and per capita consumption etc., are selected and widely used in various maps about agricultural resources. In the prefatorial part, a map of

population is meticulously drawn. It shows the population statistics of 1,062 towns and the land area, the population density and the distribution of the urban population; it depicts boundaries of towns; and it is supported with the distribution and plan of towns and other multiple information such as gross population and natural growth rate, so that the population, resources and environments in the atlas are clear at a glance. Included in the atlas are also "the map of export-oriented agricultural economics", "map of township enterprises" and "five large-scale projects of disaster preventing and fighting" and etc., all of which manifest the market economy with Chinese features and the magnificent goals of continued agricultural development.

In the compiling of the atlas, we mainly use conventional drawing methods, but the techniques of remote sensing and CAD are also used wherever possible, such as in the drawing of the maps of forests, vegetation and land utilization, remote sensing pictures and data are used for reference. In compiling the groups of maps of agricultural economy and the structure and distribution of agriculture, we use computers to sort, arrange and queue the large amount of agricultural economic statistics to speed up compilation and ensure the quality of the atlas.

Through the compilation of the Atlas of Agriculture of Fujian, we have accumulated a large amount of information and created a favourable condition for the setting up of an agricultural geography information system of Fujian so that the atlas will give full play in the agricultural planning, consulting and decision-making of the whole province.

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* The macro-agriculture means agriculture, aquaculture, livestock husbandry and forestry etc.