

FACTORS AND CRITERIA DETERMINING THE ZONAL DISTRIBUTION OF AGRICULTURE

When determining the regularities of the geographical distribution of agriculture we must bear in mind various factors *directly affecting this distribution as well as the specialization of agricultural production*. Climatic and geographical conditions, labour resources, economic and technical base are some of these factors. There are also other factors which have *an indirect impact* on the agricultural geographic distribution and specialization and which therefore must be also taken into account. These are the capacity of food processing factories, consumption centres and big cities in particular, national and international division of labour, transportation, etc. The greater the number of factors covered by research, the more precise will be the definition of regularities determining the geographical distribution of agriculture, its specialization, structure and the like, which in a larger part of Bulgaria bear more or less distinct zonal characteristics.

1. Climatic and geographical zone-determining conditions

Willman Petty's idea that »toil is the father of wealth and soil its mother«¹ is very important for the study of the agricultural geography and explanation of its zonal character because climatic and geographical conditions together with a particular socio-economic system have a great bearing upon the location of agricultural centres, quantity and quality of average yield per 1 ha, productivity of labour, cost of production, etc. For this reason it is necessary to establish and make use of the zonal characteristics and complex physical geographical division of Bulgaria into zones of the geographical distribution of agriculture in order to carry out special measures that could meet the needs of agricultural production. This division should reflect the natural potential of respective territories, possibilities existing for a more rational utilization of natural resources and climatic and geographical conditions so that the agricultural output could be increased with the simultaneous reduction of its cost.

The division based on physical geography criteria, which is to determine the territories (zones or regions), characterized by similar or almost

¹ K. Marx: The Capital, vol. 1, p. 38, Sofia 1948.

identical productive and ecological conditions. must be carried out by a team composed of geophysicists, geoeconomists, agronomists, agroclimatologists etc. Zones or their subdivision must be differentiated on the basis of their natural potential, i. e. their productive and ecological conditions. The conditions under a particular economic system affect the distribution, specialization, structure and other essential elements of the geography of agriculture. This is further confirmed by K. Marx: »Labour productivity in agriculture is connected with climatic and geographical conditions and dependent on the productivity of the latter the same quantity of labour provides bigger or smaller quantity of products, bigger or smaller consumption value«.²

Therefore, the first criterion of the zonal distribution of agriculture is the one applied in the determination of geographical zones, *which are the prerequisite for the determination of agricultural zones.*

Climatic and geographical conditions in Bulgaria bear rather distinct zonal characteristics — there are long and narrow belts, spreading latitudinally in the majority of cases and determined by similar distribution of the relief, soil, vegetation, climate, rivers.

The productive and ecological conditions make possible the differentiation among the Danube valley, Predbalkan, Stara Planina, Zadbalkanic Hollow, Upper Thracian depression, the Rhodope Mountains, etc.

It was not by accident that I. F. Mukomelj³ in his very interesting study of agricultural zones of Ukraine paid every attention to the influence of natural zones on agriculture..

The use of *combined agricultural profiles* is very important if the zonation of agriculture is to be discovered.⁴

In the study of the agricultural zonation in the Pazardzhik-Plovdiv depression we have used these crosssection and longitudinal section profiles and thanks to them determined the zonal character of local agriculture.⁵

2. Population and manpower territorial distribution bears zonal characteristics

Population and available manpower exercise big influence on the geographical distribution of agriculture. *The extent of the arable land availability to the population* is very important because the quantity of labour needed for the cultivation of individual crops varies depending on biological and other characteristics of crops themselves and on the mechanization level. Therefore, the zones which offer scarce arable land and numerous manpower, provide favourable conditions for the cultivation of labour-intensive agricultural crops, such as tobacco, vegetables, fruit, berries etc. And vice versa, zones where large plots of arable land are available to the population, offer more favourable conditions for the production of those agricultural crops which are not labour-intensive.

² K. Marx and F. Engels: Collected Works, vol. 25, p. 383.

³ I. F. Mukomelj, »Silskogospodorski zoni«, Ukrainskoi RSR, Kiev 1961.

⁴ T. Jordanov, »The Application of Agricultural Profiles in Land Utilization Maps«, Land Utilization in Eastern Europe NIV of Studies in Geography.

⁵ T. Jordanov »Za zonalostta v geografskoto razprostranenie na seljskoe stopanstvo v Pazardzhishko-Plovdiskoto pole i ogradnite mu zemli«, Izvestiya na GI BAN, vol. IX, 1965.

3. Zonal distribution of agricultural technology

Application of modern technology in agriculture, such as artificial irrigation, fertilizers, mechanization etc, also affect the zonal character of agriculture. It is, therefore, necessary to study the territorial distribution of these technical factors. One of the most important among them is the territorial distribution of irrigation systems. For instance, in the Thracian depression the zonation of agriculture depends on the location of irrigation systems along the Maritza river which are very helpful to the production of vegetables, apples, rice, etc.

Other technological achievements also influence the zonation of agriculture, but can be changed in an easier and quicker manner. In every individual case it is necessary to establish the economic profitability of each of these scientific achievements.

4. Zonal characteristics of food-processing industry

Capacities of canning industry, dairy factories, wine plants and other food-processing factories which are located in different zones (lineary), in narrow belts, are an important factor providing stimulus for the agricultural production and affecting its zonal distribution. For instance, canning factories and wine plants of Pazardzhik, Zvornichevo, Kritchim, Plovdiv, Asenovgrad, Pervomay, Dimitrovgrad need vegetables, fruit and grapes for their own operation and thus contribute to the zonal character of the geographical distribution of their cultivation.

5. Zonal distribution of consumption centres

Zonal distribution of consumption centres also influences the zonal character of agriculture, but to a lesser extent than the industrial processing of agricultural produce. Our studies show that the canning industry of the Thracian depression processes 40—60 % of vegetables and fruits, wine plants use 45 % of grapes and dairy factories use 80 % of the total quantity of milk obtained on the territory of the depression. Towns, situated in this region, consume 6—10 % of vegetables, fruits and grapes and 65 % of milk produced in their depression and adjacent territories.

National and international division of labour do not affect to such a high degree the zonation of agriculture.

Five factors listed above determine relative productive and ecological and economic conditions needed for the development and geographical distribution of agriculture. This concludes the first stage of scientific research. The second stage of research should include the analysis for agriculture per farm, the analysis of structure, specialization, labour productivity, profitability of production, cost of production etc.

If the borders of agricultural zones as well as the borders of subzones and microzones are to be determined, than it is necessary to bear in mind some other elements, too. They are as follows:

1. *Relationship between the land cultivation and cattle-rearing.* This relationship determines if a certain area should specialize in land cultivation or cattle-rearing.

2. *General plant-growing structure.* It determines the plant-growing specialization of agriculture.

3. *Net plant-growing output structure* is an important factor and indicator of the economic efficiency of individual crops.

4. *Structure of lands under cultivation.* It should be used as a reverse indicator of net output structure. By comparing the structure of lands under cultivation and net output structure, it is possible to establish the efficiency of the land utilization, which is very important for the specialization of agricultural production.

5. *Yield per 1 ha of arable land.*

6. *Average yield of individual crops per 1 ha.*

7. *Cost of production of 100 kg of principal agricultural crops, meat, milk etc.*

8. *Net output per man/day.*

9. *Net profit per 1 ha.*

10. *Profitability rate of various productive sectors (plant-growing or cattle-rearing).*

Agricultural factories and farms may be categorized on the basis of abovementioned 10 statistical and economic indicators. In this way it is possible to determine narrow and long belts with higher or lower identity of productive and ecological as well as economic conditions, structure, specialization, labour productivity, cost of production etc. I have determined in this way the agricultural subzones of the Pazardzhik-Plovdiv depression.⁶

The third stage of studies aims at an analysis, explanation and critical approach to the existing geographical zones, subzones and microzones of agriculture. Here also belongs the identification of stable and rational, or perhaps irrational, elements which determine the division into zones, subzones and microzones; elements which are dying out, emerging anew, or the ones which are likely to come up in future and which can help to achieve a more rational utilization of natural conditions and resources, manpower resources, modern technology and the like. The study should also cover the determination of the structure of agriculture and the geographical distribution of individual crops or forms of cattle-rearing which are likely to give the biggest economic effect, larger volume and better yield with the lower cost of production (full or commodity), higher productivity of labour and soil.

Only if the study of agricultural zones, subzones and microzones is completed with such analysis and such proposals regarding the improvement of territorial organization of a farm, the significance of science as a beacon showing the way to the practice will be confirmed. Only then the science will be helping the production to develop faster and more efficiently and only then it will grow, covering also the economic geography, into a powerful productive force itself.

⁶ T. Jordanov, »Za zonalnostta v geografското razprostranenie na selskoto stopanstvo v Pazardzhishko-Plovdivskoto pole i ogradnite mu zemi«, Izvestiya na GI BAN, vol. IX, 1965.