Rating assessment of the potential use of rural areas

M Korsun

1 Federal Research Center of Agrarian Economy and Social Development of Rural Areas – All-Russian Research Institute of Agricultural Economics, 35, building 2 Khoroshevskoe highway, Moscow 123007 Russia

E-mail: makorsun@yandex.ru

Abstract. A rating of the regions of Russia on the use of the potential of rural areas is presented in the paper. The method is based on aggregation of indicators reflecting the results of agricultural production and the provision of resources per 1 hectare and 1 person. According to the rating score, there are regions that rationally use their potential in agricultural production (Bryansk, Belgorod regions, and the Republic of Tatarstan) and regions that poorly use the development potential of rural areas. The group of outsiders included both regions located in regions climatically unfit for large-scale agricultural production, and regions inefficiently using human (Ivanovo region) or land resources (Orenburg region). Irrational use of resources in rural areas is also due to the predominant development of small forms of management, characterized by a low level of mechanization of labor processes, low land.

1. Introduction
The potential of rural areas is largely predetermined by the social and natural resource components, reflecting the level of development of the productive forces of the territory, its ability to produce agricultural products, perform work and provide services. The main factors of agricultural production are land, labor, and capital. Therefore, an assessment of the use of capacity needs to be made in the light of these three resources.

The purpose of the study is to identify the regions that best use their potential, focusing on human and land resources in the production of agricultural products.

In accordance with the theory of economic analysis, the rating can be based on the use of matrix models, with which you can get a single integral indicator. The construction of the integral index can be carried out by the methods: sums; geometric average; coefficients, sum of places, distances, etc. [1]

Note that rating scores are often used to assess the socio-economic development of regions. For example, the LLC “Rating Agency “RIA Rating” regularly conducts assessments of the socio-economic situation of the regions of the Russian Federation, the economic condition of companies, banks, industries, countries, and publishes them on its website [2]. However, for rural areas, the ratings were not conducted by this agency.

In relation to agriculture, ratings were used to assess the investment attractiveness of regions [3] or socio-economic status [4]. Our approach is distinguished by the choice of indicators that allow assessing the potential of rural areas as a whole without dividing farm categories, comparing land use and the rural population in the region as a whole, and not only in large agricultural organizations, allows us to identify regions with the presence of human or land untapped development potential.
2. Research Methodology
The following indicators were chosen as indicators for evaluation: investments in fixed capital of the agro-industrial complex (excluding forestry); production of agricultural products in farms of all categories in actual prices (OKVED), the availability of tractors (including tractors, on which earth moving, land-reclamation and other machines are mounted) at the end of the year; cattle in farms of all categories (at the end of the year). To calculate the relative indicators, we used indicators of the number of the permanent rural population in the region and the total land area used by enterprises, organizations and citizens engaged in agricultural production (at the beginning of the year) [5]. The choice of these indicators is due to the fact that agricultural products are produced by all categories of farms and, according to statistics, mainly in small forms of rural management.

The method of rating construction is based on aggregation of indicators reflecting the result of agricultural production and the availability of resources in an agricultural region: labor (number of permanent rural population), land (area of land used in agricultural production, capital (investments), material and technical base (availability of tractors), livestock of cattle. Two groups of relative indicators were formed per 1 ha and per 1 person.

The rating was built by ranking the subjects of the Russian Federation in descending order by the value of the integral rating score. The integral rating of a constituent entity of the Russian Federation was defined as the geometric average rating points of groups of relative indicators. The rating score of the subject of the Russian Federation for each group of indicators was determined as the arithmetic average of the rating points of all indicators included in the group.

3. Results and Discussion
The study was conducted in three stages. At the first stage, relative indicators were calculated for 1 ha of land used by agricultural organizations and citizens in the region for agricultural production. The presence of tractors per 1 hectare characterizes the availability of agricultural production equipment; investment per 1 hectare is the provision of agricultural production with capital; the presence of livestock per 1 hectare is the density of the livestock; the production of agricultural products per 1 hectare characterizes the land productivity. The leader in the use of land potential is the Kabardino-Balkarian Republic, which is distinguished by low land supply among other regions; the outsider is the Chukotka Autonomous Region, which due to climatic conditions cannot use its land potential.

At the second stage, the calculations were carried out taking into account the human potential - per 1 person living in rural areas. The presence of tractors per 1 person characterizes the technical equipment of the workers, the investment per 1 employee is equipped with capital, the production of agricultural products per 1 employee is labor productivity. The leader in the use of human potential is the Bryansk region. Then an integral rating point was determined for the subjects of the Russian Federation in terms of the development potential of rural areas. The results of the calculations are presented in Figures 1 and 2.

Figure 1. Regions with a high level of rural potential development.
The group of outsiders included both territories located in regions climatically unfit for large-scale agricultural production, as well as regions inefficiently using human (Ivanovo region) or land resources (Orenburg region). Irrational use of resources in rural areas is also due to the predominant development of small forms of management, characterized by a low level of mechanization of labor processes, small land, the use of mainly family labor.

4. Conclusions
The proposed methodology for rating the potential of rural areas makes it possible to assess the capabilities of the subjects in the development of agricultural production and the development of appropriate agrarian policy measures.

References
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[4] Semenova E I and Domrachev A S 2014 Assessment of social and economic efficiency in agriculture Economics of Agriculture of Russia 12 pp 63-68
[5] Agro-industrial complex of Russia in 2016 (Moscow, Russia) p 720

Figure 2. Regions with low levels of rural potential development.