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The role of peasant farms in the crop industry of the Altai region

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Abstract. The article discusses the contribution of peasant (farmer) farms to the crop industry of the Altai Region. The paper estimates a share of the production of grain crops and sunflower, as well as analyzes the differentiation of these indicators within the region and the zonal change of the main indicators of farm activity.

1. Introduction

The peasant (farmer) farms (PFs) are a fairly common form of agricultural organizations in the Altai Region. PFs received its development in the early 90s of the twentieth century. Then, as part of the Land Reform, the land began to move from a purely state to non-state forms of ownership; and individuals, groups, and legal entities became land owners massively; the formation of new types of farms occurred on the basis of collective and state farms. One of these types of farms were PFs.

The legal foundations were enshrined in the RSFSR Law of November 22, 1990 No. 348-1 “On Peasant (Farm) Farming” [1], which is no longer valid. Now their activities are regulated by the 2003 Federal Law with amendments and additions. According to this document, a PF is “an association of citizens related by kinship and (or) property, having common property and jointly carrying out production and other economic activities (production, processing, storage, transportation and sale of agricultural products), based on their personal involvement” [2]. The advantage of this type of agricultural producers over larger forms of management is associated with preferential taxation, state support in the form of subsidies and grants.

According to the results of the All-Russian Agricultural Census, more than 2,000 PFs were registered in the region, and during the intercensal period (from 2006 to 2016), their number decreased by more than 2 times. At the same time, a total area of agricultural land in them increased 1.5 times. Thus, over 10 years, an average area of agricultural land of one PF increased in more than 3 times and amounted to 956 hectares (in agricultural organizations, this figure is 4,178 hectares) [3].

A PF is a rather effective and mobile form of agricultural production in terms of responding to changes in weather and market conditions [4], [5]. In our region, PFs make a significant contribution to the production of agricultural products, especially in the crop industry, since the main part of farms specializes in this sector.

2. Materials and Methods

The main materials of the study were the data of the 2016 All-Russian Agricultural Census (Census), as well as official data of the Office of the Federal Statistics Service for the Altai Region and the Republic of Altai. Mathematical and statistical, comparative geographical and analytical methods were used in



the work. They allowed to get an idea of the development trends of PFs in the region, assess their real contribution to the production structure of the main types of agricultural products, reveal the internal differentiation of the Altai Region districts.

Analyzing the contribution of PFs to the general structure of agricultural land, the structure of arable land in the region, as well as to the production of main crop production (production of grain, fodder crops, and the main industrial crop, sunflower) was carried out. In addition, based on the average values for the period from 2008 to 2018, the share of PFs of the total production of grain crops, as well as sunflower, was calculated. Evaluation and analysis of the geographical differentiation of the main indicators of the natural-economic zones of the Altai Region was also conducted.

3. Results

Most K (F) X have a pronounced crop specialization (about 85% of farms are engaged in the cultivation of grain and leguminous, fodder, industrial crops, some farms are focused on the cultivation of vegetables and berries, gardening). Key indicators characterizing the contribution of K (F) X to the crop industry of the region are reflected in Table 1 (the distribution was made for the following main categories of crops: grains, as well as sunflower, as the main technical crop, this type of farms provides more than a third of total harvest). In the production of crop products in general (this also includes vegetable, fruit and berry crops), the share of K (F) X is about 25%.

Table 1. PFs in the structure of farms of all categories.

Indicators	The share of PFs, %
Area of agricultural land	32.8
Arable land	36.2
Grain production (gross yield)	38.1
Production of feed crops (gross yield)	28.3
Sunflower production (gross yield)	35.7

Intraregional differentiation in the production of main types of crops has some specifics. In the production of grain crops, a number of regions can be distinguished in which the share of K (F) X in the production of grain crops is more than 50% of the share of all types of farms: Klyuchevsky (77.6%), Uglovsky (72.6%), Volchihinsky (69.8%), Krutikhinsky (64.6%), Troitsky (63%), Kosikhinsky (61.7%), Eltsovsky (59.7%), Aleyskiy (58.7%), Krasnogorsky (57, 2%), Kulundinsky (53.8%), Ust-Pristansky (53.7%), Rebrikhinsky districts (51.2%). In some areas, the share of PFs the production of grain is insignificant (here the main grain producers are agricultural organizations), less than 10%: Zmeinogorsky (8.4%), Biysky (6.8%), Zalesovsky (6.4%), Zonal (1.7%), Soloneshensky (0.7%), Togulsky (0.2%). This distribution has individual characteristics and does not reveal the general relationship.

The total values of the PFs fraction in natural-economic zones reflect some features of the zonal distribution (Fig. 1). It can be noted that the West Kulundinskaya and East Kulundinskaya zones make the greatest contribution to the production of cereals, which is explained by more favorable climatic conditions for the cultivation of durum wheat. The Priobskaya zone is also highlighted by the indicators under consideration, this territory has a rather favorable combination of natural and climatic conditions for growing crops. In addition, the production here is a major consumer of products – the Barnaul urban agglomeration [5].

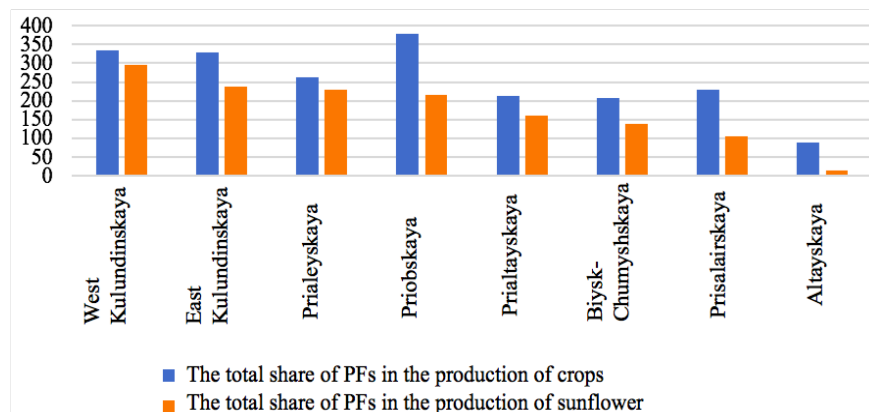


Figure 1. The contribution of PFs to the production of grain crops and sunflower in the natural-economic zones of the Altai region [6].

In the production of sunflower, the leaders are the PFs of the following districts: Klyuchevsky (76.5%), Uglovsky (75.6%), Ust-Pristansky (72.1%), Tyumen (63.9%), Shipunovsky (59.2 %), Rodinsky (56.0%), Bystroistoksky (53.4%), Aleysky (52.3%), Kosikhinsky (51.3%).

A zonal distribution reflects a direct relationship when moving from west to east (Fig. 1), this is due to favorable climatic conditions in the western part of the region. Sunflower requires a warm dry climate for normal growth; as for soil conditions, this crop has a high ability to adapt to the soil, and a rather late harvest period allows the crop to ripen until the first frost. Among the regions of the Siberian Federal District, the Altai region has the most favorable conditions for growing this crop, about 90% of sunflower crops are concentrated in the region [7]. In addition, sunflower is a highly demanded and highly profitable crop on the market, so even with low yields, farms can make a profit.

The change in such indicators characterizing the PFs of the region, as their number and size (an average area of the farm) also obeys a zonal dependence (when moving from west to east of the region) (Fig. 2). The rather high closeness of communication (0.9) of such indicators as the size of the farm and the gross yield of sunflower and grain indicates a fairly high efficiency in the use of sown areas.

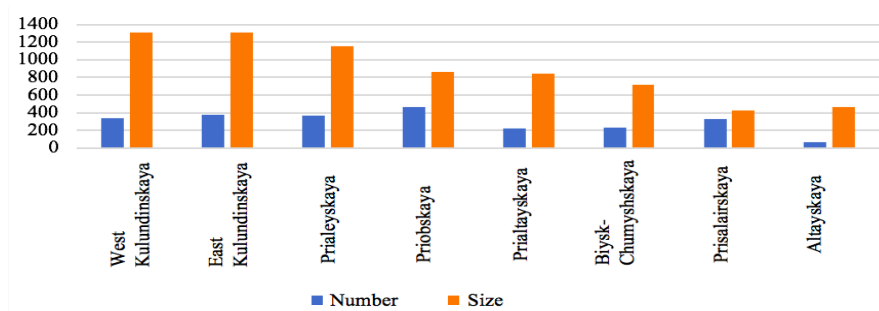


Figure 2. Changes in the number and average area of PFs in the natural-economic areas of the Altai region (compiled from [6]).

4. Discussion

The identified zonal change of the considered indicators may be associated with several aspects. On the one hand, the climatic conditions of the western part of the region favor the development of such sub-sectors of plant growing as the cultivation of grain crops and sunflower. On the other hand, the climatic factor has the following downside: the western regions of the region belong to the zone of risky farming due to the significant influence of climatic conditions on the yield of agricultural crops [8]. In combination with the difficult economic situation, many previously large farms cease to exist, numerous farms come to their land (either on loan or through the allocation of land owned by the farm). When moving to the east, natural-economic zones show a greater balance of economic specialization, which

consists in the following: a wider range of crop production, an increase in the share of livestock (based on more succulent feed), as well as the emergence of consumer-oriented sub-sectors (production of garden crops, etc.). A wide range of sub-sectors and a combination of several industries require a more comprehensive approach, the presence of highly qualified specialists, and this is a higher level of management and larger forms of agricultural organizations (LLC, CJSC, OJSC).

5. Conclusion

The analysis performed allows us to draw some conclusions characterizing the contribution of PFs to the development of crop production in the Altai region. PFs make a significant contribution to the production of the main crop products of the Altai region; in some areas of the region, this type of farms makes a significant contribution to the gross yield of main agricultural crops (up to 75%). This type of economy is a fairly effective form in the conditions of contemporary market conditions. They are a more flexible form of management and easily adapt to the needs of the market and under the influence of climatic conditions. During periods of extreme climatic events (droughts), they show maximum work efficiency (have higher yields than other types of farms). In addition, the high closeness of relations between the performance indicators of farms (the average area of the farm and the gross yield of grain and sunflower) show a rather high efficiency of PFs.

Because of their organizational characteristics and personal responsibility and interest, PFs sometimes have a higher motivation for high productivity than larger forms of farms. Moreover, the majority of PFs have a fairly narrow specialization and the survival rate of the economy depends on the work efficiency.

Quite a clear zonal dependence (on the natural-economic zones) was found in the production of the main types of crops (grain, sunflower), as well as the number and size of farms, which is explained by certain peculiarities of the climatic nature.

References

- [1] The Supreme Council 1990 *Law of the RSFSR "On Peasant (Farmer) Farming"* (November 22, 1990 No. 348-1) Available at: http://www.consultant.ru/document/cons_doc_LAW_11050/ (Accessed 27 06 2018)
- [2] Russian Federation 2003 *Federal Law "On Peasant (Farmer) Farming"* (June 11, 2003 No. 74-FZ) Available at: http://www.consultant.ru/document/cons_doc_LAW_42662/ (Accessed 27 06 2018)
- [3] Office of the Federal State Statistics Service for the Altai Region and the Altai Republic *The results of the 2016 All-Russian Agricultural Census by municipal areas and urban districts of the Altai Region* Available at: http://akstat.gks.ru/wps/wcm/connect/rosstat_ts/akstat/ru/census_and_researching/census/national_census_2016/score_2016/ (Accessed 02 04 2019)
- [4] Kundius V A, and Streltsov A E 2012 Development of peasant (farmer) farms: current state, level and trends *Ideas and Ideals* **1**(11), pp 67-72
- [5] Rygalov E V, and Rygalova N V 2018 Peasant (farmer) farms as the most effective form of agriculture in the Altai Region In *Current Trends in Spatial Development and Priorities of Social Geography* (vol 1) (pp. 389-395) (Barnaul, Russia: Publishing House of Altai State University)
- [6] *Official website of the Office of the Federal State Statistics Service for the Altai Region and the Altai Republic* 2019 Available at: <http://www.gks.ru/dbscripts/munst/munst01/DBInet.cgi#1> (Accessed 05 04 2019)
- [7] Puzikov A N, and Suvorova Yu N 2017 New sunflower varieties in Western Siberia *Vestnik of Omsk State Agrarian University* **2**(26) pp 27-34
- [8] Kharlamova N F, and Silantieva M M 2011 The dependence of the yield of grain crops in the Kulunda districts on climatic factors *Izvestiya of Altai State University* **3-2** pp 88-94