

PERSONAL SUBSIDIARY PLOTS OF DAMSINSKY RURAL DISTRICT OF AKMOLA
REGION: ANALYSIS OF AGRICULTURAL PRODUCTION

АҚМОЛА ОБЛЫСЫ ДАМСА АУЫЛДЫҚ ОКРУГІНІҢ ЖЕКЕ ҚОСАЛҚЫ
ШАРУАШЫЛЫҚТАРЫ: АУЫЛ ШАРУАШЫЛЫҒЫ ӨНДІРІСІН ТАЛДАУ

ЛИЧНЫЕ ПОДСОБНЫЕ ХОЗЯЙСТВА ДАМСИНСКОГО СЕЛЬСКОГО ОКРУГА
АКМОЛИНСКОЙ ОБЛАСТИ: АНАЛИЗ СЕЛЬСКОХОЗЯЙСТВЕННОГО ПРОИЗВОДСТВА

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Abstract. *The goal* is to show the importance and consider the current state of agricultural production in personal subsidiary plots of the Damsinsky rural district of Akmola region. *Methods* – system-structural and system-functional approaches to the study of agricultural production in the households of the district, which requires the use of various methods of scientific analysis: comparative, statistical, mathematical and economic, etc. *Results* – the authors studied and assessed the structure of the natural and physical capital of this rural region. Also, for a complete assessment of the current state of the main performance indicators, an analysis of the income structure of these farms for the current year is given. The authors determined the degree of uniformity (not uniformity) of the distribution of agricultural land and livestock. *Conclusions* – the study showed that the majority of private subsidiary farms in the Damsinsky rural district of the Akmola region are either engaged in agricultural production to a small extent or produce agricultural products only for their own consumption and belong to the category of "non-marketable" household plots. The low level of development of their marketability is determined by such factors as high cost of fodder, lack of independent fodder harvesting, lack of pasture lands around settlements and the high level of their degradation today.

Аңдатпа. *Мақсаты* – Ақмола облысы Дамса ауылдық округінің жеке қосалқы шаруашылықтарындағы ауыл шаруашылығы өндірісінің маңыздылығын көрсету және қазіргі жай-күйін қарастыру. *Әдістері* - бұл округтің үй шаруашылықтарындағы ауылшаруашылық өндірісін зерттеудің жүйелік-құрылымдық және жүйелік-функционалды тәсілдері, бұл ғылыми

Аннотация. *Цель* – показать важность и рассмотреть современное состояние сельскохозяйственного производства в личных подсобных хозяйствах Дамсинского сельского округа Акмолинской области. *Методы* – системно-структурный и системно-функциональный подходы к изучению агропроизводства в домохозяйствах округа, что требует применения разнообразных методов научного анализа: сравнительного, статистического, математико-экономического и других. *Результаты* – авторами изучена и дана оценка структуре естественно-природного и физического капитала этого сельского региона. Также для полной оценки современного состояния основных показателей деятельности дан анализ структуры доходов этих хозяйств за текущий год. Авторами определена степень равномерности (не равномерности) распределения сельскохозяйственных угодий и поголовья животных. *Выводы* – исследование показало, личные подсобные хозяйства Дамсинского сельского округа Акмолинской области в большинстве своем или занимаются аграрным производством в малой степени или производят сельскохозяйственную продукцию только для собственного потребления и относятся к категории «нетоварных» ЛПХ. Низкий уровень развития их товарности определяется такими факторами, как высокая стоимость кормов, отсутствие самостоятельной заготовки кормов, нехватка пастбищных угодий вокруг населенных пунктов и высокий уровень их деградации на сегодняшний день.

Түйінді сөздер: жеке қосалқы шаруашылықтар, ауылдық округ, аграрлық өндіріс, физикалық капитал, ауыл шаруашылығы алқаптары, өсімдік шаруашылығының, мал шаруашылығының өнімдері, жер телімі, жем-шөп, өткізу нарығы, халықтың табысы.

Ключевые слова: личные подсобные хозяйства, сельский округ, аграрное производство, физический капитал, сельскохозяйственные угодья, продукция растениеводства, животноводства, земельный надел, корма, рынок сбыта, доходы населения.

agricultural production of personal subsidiary farms become so relevant.

As a result, the main purpose of this study is to assess the current factors that have a significant impact on agricultural production of personal subsidiary farms in the Northern region, in particular, based on the example of Damsa rural district. Therefore, in order to achieve this goal, the following tasks were performed:

- assessment of the structure of natural and physical capital of Damsa rural district was done;
- income structure of personal subsidiary farms of the above-mentioned rural district was analyzed;

- the degree of uniformity (unevenness) of distribution of agricultural land among personal subsidiary plots of the analyzed district was determined;

- analysis of the distribution of uniformity (non-uniformity) of the animal population number among the population of the Damsa district (per 1 person) was done.

Material and methods of research. The study was carried out in the framework of the project AP09259525 "Methodology of analysis and optimization of socio-economic model of rural district (based on the materials of Northern Kazakhstan)". The object of the study included personal subsidiary farms of the Damsa rural district of Akmola region. The study covered 888 personal subsidiary farms of the rural district, which amounted to 59%.

The theoretical and methodological basis of the study includes the following: system-functional and system-structural approaches to the study of agricultural production in personal subsidiary farms in Damsa district, which leads to the need to use different methods of scientific analysis such as: statistical, comparative, mathematical and economic, graphic method was used to visually reflect the main results of the study etc. [3,4].

In addition, for this purpose, in order to solve the set problems, the authors assessed the structure of natural and physical capital of Damsa rural district, calculated the Gini coefficient, which makes it possible to see the uniformity or uneven distribution of resources to the public.

Results and their discussion. Damsa rural district is located in the central part of Shortandy district of Akmola region in the north of Kazakhstan. The climate of the region is sharply continental, the average temperature is 16-18 degrees, while in some years, there may be frosts and the air temperature can reach - 43.8 degrees. The average amount of precipitation per year is about 365 mm. The vegetation period lasts up to 140 days.

To date, the population of Damsa district is 4970 people, which includes 2405 able-bodied people, which is 48.4% of the population of the rural district.

To conduct a complete analysis of agricultural production of private subsidiary farms in Damsa rural district of Akmola region, it is necessary first of all to consider the structure of natural and physical capital of this district, the data of which are presented in table.

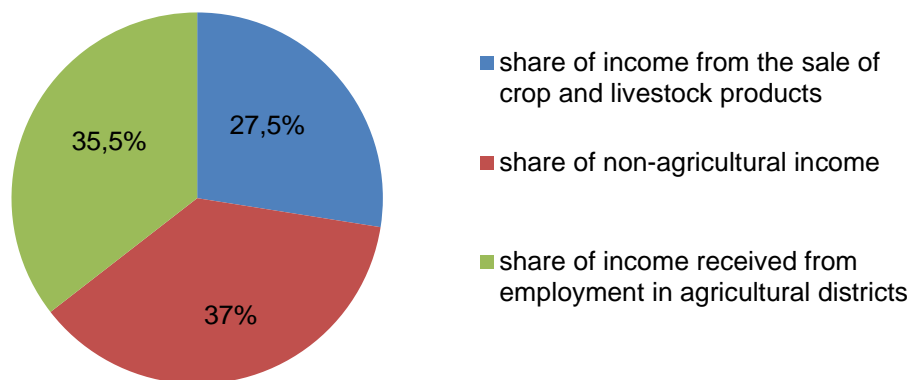
Table - Structure of natural and physical capital of Damsa rural district, June 1, 2021

Name	Indicator
Agricultural land, hectare	5 7011,7
Of these:	
arable land, hectare	52 500
haymaking, hectare	655
pastures, hectare	3 856,7
cattle population number, heads	568
horse population number, heads	151
small ruminants population number (sheep, goats), heads	1 095
Note - compiled on the database of Damsa rural district akimat, Akmola region	

According to table, the population of Damsa rural district mainly prefers small ruminants: goats and sheep - 1095 heads, which, unlike cattle, do not need significant care and it is easier to manage. It should also be noted that over the past few years in this rural region there has been a decrease in the share of personal subsidiary farms that are actively engaged in agricultural production. So, today the share of income from the sale of agricultural products, namely crop and livestock products, in the total income of the population of the rural district has one of the low shares - 27.5%, the data that can be seen in figure. A significant share of the rural population income is the income of population which they receive from employment in agricultural enterprises of the rural district, such as: Baraev RI, Sagim Bidai LLP, PF Moldashev etc.

However, at the same time, to some extent, there is a direct dependence between agricultural production volume in personal subsidiary farms and the land area that is located in the households of the rural district [5]. Today, the average size of the land plots of the residents of this rural district is 3.6 acres. Such a low figure can be explained by the fact that most of the population of the Damsa district prefers to live in apartment buildings in the Damsa village and Nauchny village, where there are no household plots.

For more complete and effective analysis of the provision of the rural population with land resources, it is also necessary to determine the degree of uniformity (non-uniformity) of the distribution of agricultural land among personal subsidiary farms of Damsa district [6].



Note: compiled on the database of Damsa rural district akimat, Akmola region.

Figure - Income structure of personal subsidiary farms in Damsa rural district, June 1, 2021

In order to determine the degree of uniformity (non-uniformity) of distribution of land areas between personal subsidiary farms, the authors calculated the Gini coefficient. Usually, its value varies within the range from 0 to 1, and it should be taken into account that in a uniform distribution of the resource, the Gini coefficient approaches zero. The higher the value of this coefficient, the more uneven is the distribution of land resources in society. This coefficient was calculated using Brown's formula:

$$G = |1 - \sum_{k=2}^n (X_k - X_{k-1})(Y_k + Y_{k-1})|,$$

where G - is the Gini coefficient, X_k - is the cumulative share of the population (the population that was previously ranked by the increase in the amount of land resources), Y_k - is the share of the resource that X_k receives in aggregate, n - is the population number.

Thus, as a result of the calculations, the Gini coefficient for Damsa rural district is 0.34, while it should be noted that economists believe that the Gini coefficient should not exceed 0.4. Since if this coefficient is higher than 0.4, then a situation arises when there is significant inequality, which leads to a slowdown in the growth rate of agricultural production in the personal subsidiary farms of the population.

The same method was also used to analyze the uniformity (non-uniformity) of the distribution of livestock population among the rural population of the district (per 1 person). Since, in general, productive animals of various types are bred in personal subsidiary farms, all the livestock was previously transferred to conditional heads. After calculations, it was found that the Gini coefficient is 0.47, which indicates the existence of personal subsidiary farms of the population in rural dis-

trict. That is, this coefficient is likely to continue the growth, since, today, the villagers have a tendency to reduce the livestock population number, and in the future, a small number of individual households or agricultural enterprises will specialize in animal husbandry [7, 8].

Thus, in the course of the study, it was revealed that 10% of the poorest rural population of Damsa district have 39 conditional heads of livestock and 3.4 hectares of land, and 10% of the wealthy population have 50 conditional heads of livestock and 4.6 hectares of land. Such insignificant difference in land areas and livestock population number between the poor and wealthy rural population of this district indicates that the wealthy population has other sources of income, that are not related to livestock production and crop production, and this is the income from the work as hired workers in agricultural enterprises (lk. figure).

So, mainly Damsa rural district, is presented in the form of non-commodity personal subsidiary farms, in which agricultural products are produced only for own consumption, and in rare cases the farmers sell them only when there is a surplus [9,10].

Also, in the course of the study, it was revealed that the following factors contribute to the low development of marketability in personal subsidiary farms of the rural district:

- * rather high cost of feed;
- * there is practically no opportunity to independently prepare forage, since the area under hayfields is only 1% of the total area of farmland in Damsa rural district;
- * lack of pastures for grazing, as, according to the statistics of the local government of Damsa district, the area under pastures amounts to 7% of the area of agricultural land in the district;

* territorial proximity to the city of Nur-Sultan, which is 60 km, and allows the rural population, first of all, to receive non-agricultural income by working for hire in the capital. It is economically more profitable than working on own plot or breeding animals;

* lack of available markets for produced agricultural products;

* quite high costs that are associated with the sale of agricultural products.

Conclusions.

1. Personal subsidiary farms occupy an important place in the development of agriculture, and have a significant impact on the livelihood of the rural population and also play an important role in the sustainable development of rural areas.

2. In the course of the study, on the example of personal subsidiary farms in Damsa rural district, it was revealed that today there is a decrease and a low share of personal subsidiary farms which produce agricultural products.

3. The decrease and low share of personal subsidiary farms producing agricultural products was a result, first of all, of the uneven distribution of resources among the population of the rural district, and the following factors should also be taken into account: high fodder prices, there is practically no possibility of independent fodder procurement, insignificant number of pastures for grazing, proximity to Nur-Sultan, which allows the villagers to receive non-agricultural income by working for hire in the capital, insufficient number of necessary markets for produced products, high sales costs of agricultural products.

4. Due to the influence of the above reasons, most personal subsidiary farms of Damsa rural district of Akmola region, either are not engaged in agricultural production or produce agricultural products only for own consumption and belong to the category of "non-commodity" personal subsidiary farms.

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References

[1] Осипенко, А. Е. Анализ экономической эффективности личных подсобных хозяйств в условиях Рубцовского района Ал-

тайского края/ А. Е. Осипенко// Молодой ученый. - 2016. - № 1 (105). -С. 276-279.

[2] Воитлева, З.А. Развитие многоукладности в сельском хозяйстве: региональный аспект/ З.А.Воитлева// Вестник МГТУ. Труды Мурманского государственного технического университета.- 2019.- Т. 22.- № 3.- С. 421-431.

[3] Vorobyova V.V., Bugay Y.A. Personal Subsidiary Farms in the Food Supply System of the Altai Krai// 2020 International Scientific and Practical Forum on Natural Resources, the Environment, and Sustainability, NRES 2020, Japan, Tokyo, 670(1), 2020. –P. 65-78.

[4] Kuhar, V. Analysis of the effectiveness of state support to farms in region of Russia. The case of sverdlovsk region/V. Kuhar, E. Kot, O.Loretts, (...), A.Ruchkin, N.Yurchenko// Journal of Environmental Management and Tourism. – 2020. - 11(3). –P. 676-681.

[5] Shinet, G.G. Role and development of personal husbandries in solving employment issues in the region/ G.G.Shinet, G.A.Zhadigerova,A.Y.Yesbolova, R.K.Andarova, E.E.Zhussipova// Bulletin of Karaganda University. Economy Series. - 2020. - V. 100. - № 4. - P. 131-141.

[6] Umbetaliev, N.A. Development of small business in AIC/ N.A. Umbetaliev// Problems of AgriMarket. - 2018. - № 2. - P. 74-81.

[7] Kaliyev, G.A. Organizational-economic directions of the effective use of supply chain strategy in rural territories of Kazakhstan/ G.A.Kaliyev, A.I. Sabirova, G.U. Akimbekova, L.A. Glushan, A.N. Zhildikbaeva// International Journal of Supply Chain Management. – 2019. - 8(2). - P. 868-873

[8] Kalykova, B. Rural territories of Kazakhstan: realities, problems and solutions/ B.Kalykova // Problems of AgriMarket. - 2020. - № 3. - C. 209-215.

[9] Prokhorova, V.V. Prospects of the agro-industrial complex development: Economic diversification, business development, mono-industry town strengthening and expansion/ V.V. Prokhorova, E.N. Klochko, O.N. Kolomyts, A.V. Gladilin// International Review of Management and Marketing.- 2016. - 6(6), P. 159-164.

[10] Kaldiyarov, D.A. Socio-economic aspects of rural development/ D.A.Kaldiyarov, A.D.Kaldiyarov, O.V.Lemechshenko// Problems of AgriMarket. -2019. - № 2. - P. 167-171.

References

[1] Osipenko, A.E. (2016). Analiz ekonomicheskoi effektivnosti lichnykh podsobnykh khoziaistv v usloviakh Rubtsovskogo raiona Altaiskogo krai. [Analysis of the economic efficiency of personal subsidiary farms in the conditions of the Rubtsovsky district of the Altai Territory]. *Molodoi uchenyi-Young Scientist*, 1 (105), 276-279 [in Russian].

[2] Voitleva, Z.A. (2019). Razvitie mnogoukladnosti v selskom khoziaistve: regionalnyi aspect [Development of multiculturalism in agriculture: regional aspect]. *Vestnik MGTU. Trudy Murmanskogo gosudarstvennogo tekhnicheskogo universiteta. - Bulletin of the Moscow State Technical University. Proceedings of the Murmansk State Technical University*, V. 22(3), 421-431[in Russian].

[3] Vorobyova, V.V., Bugay, Y.A. (2020). Personal Subsidiary Farms in the Food Supply System of the Altai Krai. *2020 International Scientific and Practical Forum on Natural Resources, the Environment, and Sustainability, NRES 2020, Japan, Tokio*, 670(1).- 65-78.

[4] Kuhar, V. Kot, E., Loretts, O. (2020). Analysis of the effectiveness of state support to farms in region of Russia. The case of Sverdlovsk region. *Journal of Environmental Management and Tourism*, 11(3).- 676-681.

[5] Shinet, G.G. Zhadigerova, G.A. Yesbo-lova, A.Y., Andarova, R.K. & Zhussipova, E.E. (2020). Role and development of personal husbandries in solving employment issues in the region. *Bulletin of Karaganda University. Economy Series*, V. 100 (4) , 131-141.

[6] Umbetaliev, N.A. (2018). Development of small business in AIC. *Problemy agrorynka-Problems of AgriMarket*, 2, 74-81.

[7] Kaliyev, G.A. Sabirova, A.I., Akimbe-kova, G.U., Glushan, L.A. & Zhildikbaeva, A.N. (2019). Organizational-economic directions of the effective use of supply chain strategy in rural territories of Kazakhstan. *International Journal of Supply Chain Management*, 8(2), 868-873

[8] Kalykova, B. (2020). Rural territories of Kazakhstan: realities, problems and solutions. *Problemy agrorynka-Problems of AgriMarket*, 3, 209-215.

[9] Prokhorova, V.V., Klochko, E.N., Kolo-myts, O.N. & Gladilin, A.V. (2016). Prospects of the agro-industrial complex development: Economic diversification, business development, mono-industry town strengthening and expansion. *International Review of Management and Marketing*, 6(6), 159-164.

[10] Kaldiyarov, D.A., Lemechshenko, O.V. (2019). Socio-economic aspects of rural development. *Problemy agrorynka-Problems of AgriMarket*, 2, 167-171.

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