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Increasing The Efficiency of Land Resources Use for an Agricultural Enterprise.

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ABSTRACT

The relevance of the topic presented in the paper is conditioned by the fact that the rational use of land provides a steady increase in the production output of one and the same area. The character of land use is caused by many natural, historical, technical and economic factors. The aim of this paper is to analyze the composition and effectiveness of the use of land resources of an enterprise with a view to finding reserves for increasing the efficiency of their use. The object of the study is an agricultural enterprise. The paper examines issues related to the current state of land resources, discloses objectives and methodology of the analysis of the land resources use efficiency of an enterprise, analyzes the efficiency of land use by an agricultural enterprise, and provides ways to improve the land resources of the enterprise under study.

Keywords: efficiency, economics, land resources management, agriculture

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INTRODUCTION

Improving the efficiency of lands can only be achieved through intensive method – the extensive way is impossible because of the land plots limitedness. Wherein the improvement of agricultural works technology, amortization and complex mechanization of the main production processes, the use of chemicals, land reclamation, elite seed-farming, etc. are of critical importance.

The economic assessment of land is carried out in two directions: the overall economic assessment on the efficiency of certain crops cultivation.

Selection of research methods

The method of economic land assessment is based on the mass data for at least the last five years about the actual crop yields and material costs for their production. The estimates are calculated according to the agricultural industrial groups of soils, separately for irrigated, drained and non-reclaimed lands at relatively aligned structure of production.

Production efficiency is a complex economic category (Nosov et al., 2014, Nosov et al., 2015) . It reflects the operation of objective economic laws and shows one of the most important aspects of social production – effectiveness (Yalyalieva, 2014). It shows the final beneficial effect from the production costs and the returns from total investments (Larionova et al., 2015). An important element of the land use characteristics is the analysis of intensity and efficiency of land resource usage.

Data and analysis

Analysis of land resources use intensity is presented in Table 1. Table 1 reflects the significant changes that occurred during the analyzed period, while these changes negatively characterize the activity of the enterprise. Therefore, the proportion of crops in arable lands increased, and the hayfields and non-agricultural lands share declined.

Table 1: The intensity of land resources use in the agricultural enterprise for the period from 2013 to 2015

Indicators	Years			Change (+; -)
	2013	2014	2015	
The proportion of lands within the total land area, %	96.36	98.21	97.46	1.10
The proportion of arable lands in the area of agricultural lands, %	76.54	84.37	80.95	4.42
The proportion of crops in arable lands area, %	100	100	100	0.00
The proportion of hayfields in the area of agricultural lands, %	14.18	6.99	8.33	-5.85
The proportion of non-agricultural lands within the total land area, %	3.84	1.73	2.47	-1.37

The agricultural lands account for 97.46% of the total farmland area.

The plowing ratio (the proportion of arable lands) shows the size of agricultural areas occupied by arable lands. The intensity of arable land use is demonstrated by the arable land utilization coefficient (proportion of planting). During the analyzed period, it did not exceed 100% (thus, there was no re-planting). Therefore, it is possible to assume the presence of pure vapors in the farm. In addition, the proportion of planting for the analyzed period did not change. Table 2 presents an analysis of the efficiency of land resource use in the agricultural enterprise for the period from 2013 to 2015.

Table 2 shows that, in general, the yield of grain crops decreased by half. The same can be said about the yield of annual and perennial grasses.

In general, it can be concluded about the reduction of efficiency indicators for land use.

Table 2: The efficiency of land resources uses in the ZAO PZ "Semyonovskiy" enterprise for the period from 2013 to 2015

Types of crops	2013			2014			2015		
	Area, ha	Productivity, dt/ha	Gross output, dt	Area, ha	Productivity, dt/ha	Gross output, dt	Area, ha	Productivity, dt/ha	Gross output, dt
1. Grains and legumes	2,510	26.28	65,958	5,062	21.52	108,925	3,057	13.71	41,899
- winter crops	1,010	27.36	27,634	2,062	21.69	44,724	694	20.43	14,176
- spring crops	1,350	25.24	34,069	3,000	24.57	73,703	2,363	11.73	27,723
- legumes	150	28.37	4,255	0	-	-	0	-	-
2. Feeding root crops and melons	0	-	-	0	-	-	0	-	-
3. Perennial grasses	2,013	106.66	214,712	3,417	100.75	344,275	3,417	57.62	196,877
4. Annual grasses	1,215	125.74	152,776	2,201	64.00	140,855	3,540	44.62	157,957
5. Maize and silage for green fodder	0	-	-	300	66.63	19,988	160	72.05	11,528
Total	5,738	-	-	10,980	-	-	10,174	-	-

It is also possible to judge on the reduction of land use efficiency by the cost indicators. For 3 years, the gross output value increased by 4,436 thousand rubles (10,174-5,738) or by 77.31% ($10,174 * 100\% / 5,738 - 100\%$) as compared to the reference period. Together with the yield reduction, we can talk about the inefficient use of land areas. It is necessary to pay attention to this fact and to carry out measures for improving the productivity.

The trend for perennial and annual grasses productivity is similar, while maize for silage and green forage are the only crops that increased significantly throughout the reference period. This indicates that the enterprise must pay attention to the cultivation of those crops that have the highest yields, and to develop and implement activities related to the productivity increase in those crops that demonstrate a decline in yields.

The dynamics of cereals and perennial grasses is the same: in 2014, the volumes increase and in 2015 decrease. The dynamics of annual grasses is opposite: first, the volumes decrease, and then grow.

It is necessary to identify the cause of these changes.

Currently, it can be noted in the condition of the ZAO PZ "Semyonovskiy" enterprise that at a sufficiently stable intensity of land resources use, the efficiency of their use increases due to the increased crop yields.

The values of factorial indicators determining the efficiency of agricultural land usage are presented in Table 3.

Thus, it is safe to assume that the reduction in gross and salable product outputs for the period under review contributed to a greater degree of reduction of the production costs per fertilizers in 2015 as compared to 2013.

Table 3: Values of factorial indicators that influence the efficiency of crop production in the ZAO PZ "Semyonovskiy" enterprise for the period from 2013 to 2015.

Factors	2013	2014	2015
Production costs per 1 ha of agricultural lands, thousand rubles:			
- seeds and planting material	17.44	21.93	18.75
- fertilizers	16.51	2.32	1.49
- works and services			
- miscellaneous expenses	35.22	52.04	30.83
Production costs for the maintenance of plant and equipment per 1 ha of agricultural lands, thousand rubles	97.90	106.00	319.00
Capital-area ratio	15.25	18.24	23.98

CONCLUSION

It can be assumed that the changes towards reducing the number of sold products are due to the distribution and use of the farm's gross product, an increase in its losses, and the on-farm needs expenditures.

In terms of solving the problem of land use improvement, increasing the value of such factors as the cost of works and services per 1 ha of agricultural land proved to be inefficient. This factor does not affect the output volume (i.e. it does not cause an increase in growth or reduction of production and at the same time causes a reduction in the payback of production costs). For efficient use of the production costs for works and services, the need to perform this work should be examined, eliminating from the list those costs, which are not determined by the production needs. A thorough monitoring of the work and services management provided by third parties to the farm contributes to the rational use and maximum savings of material costs and resources.

The efficiency of plant growing at this farm can be increased through the increase in production costs for fertilizers and growth of their consumption per 1 ha of agricultural lands. The consistent intensification is the main way to improve the economic efficiency of land use at the enterprise under study at the present stage. The correct crop rotation is vitally important within the system of these measures. The challenge is to determine the saturation level of the leading culture, the best predecessors, intercropping, sanitary functions (soil and crops purification from weeds, pests and diseases), and optimal efficiency. It is necessary to ensure a positive balance of soil organic matter, improve its sanitary condition, and improve soil fertility.

REFERENCES

- [1] Larionova N. I., Napolskikh D. L., Yalyalieva T. V., Shebashev V.r E.. Governmental control of the formation efficiency of educational clusters at the regional level. *American Journal of Applied Sciences* 11 (9): 1594-1597, 2014 doi:10.3844/ajassp.2014.1594.1597 Published Online 11 (9) 2014 (<http://www.thescipub.com/ajas.toc>)
- [2] Nosov V.V, Kotar., O.K., Kosheleva M.M., Alajkina L.N., Novikova N.A. (2014) Assessing effectiveness of insurance premium subsidy in agricultural insurance. *Ecology, Environment and Conservation*. Vol. 20. no. 4. pp. 1857–1863.
- [3] Nosov, V.V, Kozin M.N., Gladun T.N. (2015) Optimization of the farm production structure taking into account weather, economic and environmental conditions. *Ecology, Environment and Conservation*. 2015. Vol. 21. no. S. pp. 103–110.
- [4] Yalyalieva T. V. Economic state control effective land management. *Actual Problems of Economics* , 2014, № 9 pp301-306.