Rational use of agricultural lands of the republic of Buryatia

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Abstract. The article discusses the state and rational use of agricultural lands of the republic of Buryatia. It is necessary to implement measures that will ensure the rational use of agricultural lands and preserve the agricultural priorities of sustainable development of the region, restore the productivity of agricultural lands and increase the production of competitive products. In the face of progressive negative processes on the land, disturbances in agrolandscapes caused by shortcomings in the land management system in recent years, one of the main directions for overcoming the land use crisis, improving ecological state of the land should include land management on an ecological-landscape basis with the main principle being the adaptation of production and its territorial structure to the features of the landscape.

1. Introduction

Historically, The Land Code of the Russian Federation, specifies agricultural lands as lands that are most important in the context of preserving their designation. The lands in this category include agricultural and non-agricultural lands Hence, there is a big challenge for their planning and organizing their rational use and protection.

A variety of soil and climatic conditions in the vast territory of the Republic of Buryatia (RB) determines the specificity of the organization of agricultural lands [1-5]. Today, the development of agribusiness in the Republic of Buryatia, and primarily cattle breeding, sheep breeding and horse breeding largely dependent on agricultural land and is one of the key to sustainable rural development.

The problem of improving the quality of agricultural land use is an important issue for the districts of the republic. It should be noted that the order and control of land related issues, as well as solving certain problems is impossible without the interaction of the executive authorities of the Republic of Buryatia with the federal territorial bodies [4].

2. Research results

In Russia planning and organization of the rational use of agricultural lands is regulated by federal and regional legislation.

Agricultural lands have the following structure: they make up 2145.4 thousand hectares or 77.7%, of which 6.2 thousand hectares are under perennial crops, 700.2 thousand hectares are arable lands, 1394.2 thousand hectares are for fodder production, 44.8 thousand hectares are laylands (table 1). As for their distribution by the rural districts of Buryatia, the largest percentage of agricultural lands is found in Mukhorshibirsky district - 50.9%, 45.2% in Dzhidinsky, 32.7% in Selenginsky, 32.0% in Kyakhtinsky - 32.0%, 30% in Ivolginsky; 24.8% in Tarbagataisky; 23.7% in Bichursky districts [1].
Also in the category of agricultural lands, there are unused lands. This applies to lands that are transferred to the jurisdiction of rural settlements, as well as located outside the settlements [1-2].

Table 1. The structure of land in the category of agricultural land (January 1, 2016).

| No | Name of land                  | Area, thousand, ha |
|----|-------------------------------|--------------------|
| 1  | Agricultural lands – total:   | 2145.4             |
|    | Arable lands                  | 700.2              |
|    | Laylands                      | 44.8               |
|    | Under perennial crops        | 6.2                |
|    | Under fodder crops            | 1394.2             |
| 2  | Forest                       | 137.4              |
| 3  | Shrubs and bushes            | 154.3              |
| 4  | Water bodies                 | 45.7               |
| 5  | Bogs                          | 72.3               |
| 6  | Roads:                       | 18.7               |
| 7  | Construction sites           | 12.8               |
| 8  | Disturbed lands              | 1.3                |
| 9  | Others                       | 170.6              |
| 10 | In the process of melioration| 1.8                |
|    | Sum-total                    | 2760.3             |

The area of non-agricultural lands in the structure of the category of agricultural lands amounted to 614.9 thousand ha or 22.3%. These are lands under buildings, structures, on-farm roads, protective tree and shrub plantings, enclosed ponds, as well as land plots intended for servicing agricultural production.

Most of the agricultural lands is in the category of agricultural land use and amount to 2145.4 thousand hectares, or 68.2%. In the area of lands of settlements agricultural use lands amounts to 49.9 thousand hectares, or 1.6%, in the category of lands of specially protected territories and objects agricultural use lands comprise 42.0 thousand hectares, or 1.3%, in the category of lands of the forest fund - 541.7 thousand hectares or 17.2%, and in the category of reserve lands - 366.8 thousand hectares (11.7%) [1].

All tasks of rational use of agricultural lands are complex and are managed through the following mechanisms: legal, environmental, economic and organizational - economic (figure 1).
The Today, each of these mechanisms has significant problems. Among legal issues we distinguish:

- The authorized body and the procedure for determining (establishing) the type of farmland are not legally defined, and there is no mechanism for their transformation;
- The statistical reporting does not display objective information on agricultural lands; in fact, data are presented as of the 1990s, with a slight adjustment of the areas transferred from one category to another;
- Non-use of agricultural land, consisting of unclaimed land shares, leads to lack of land payments to the budgets of all levels and the loss of a significant amount of agricultural products due to the complicated procedure for transferring unclaimed shares to municipal property (by a decision of the court);
- The boundaries of especially valuable lands are established by "outdated" materials;
- Establishing the value of agricultural land by cadastral value is not an accurate criterion for classifying land as a particularly valuable agricultural land;
- The complexity of the cadastral registration procedure for agricultural organizations. Without simplification of cadastral registration procedures and state subsidies land rights will not be formalized in the near future;
- Land shares are not converted to land property;
- Mandatory land management established by law is not universally implemented. There is no penalty for non-performance;
- Widespread uncivilized rent up to 1 year. A transition to a legal long-term lease with a minimum lease term of 3-5 years with the right to extend is needed;
- Inefficient state control over land use.

The main problem of the economic mechanism is the lack of an economic analysis of the use of agricultural land, taking into account their qualitative condition.

Environmental problems today are evident: land grassing, increased erosion processes, and decreased soil fertility.

Land non-use, outdated data on soil, geobotanical surveys, farm assessments, ineffective monitoring and the lack of a single agricultural land information system. All these problems can be regarded as organizational and economic.

To solve these problems, it is necessary to implement a number of measures to ensure the rational use of agricultural land and maintain the agricultural priorities of the region’s sustainable development, restore agricultural land productivity and increase the production of competitive products (figure 2):

- Firstly, it is necessary to implement the legislation of the Russian Federation on the use of agricultural lands;
- Secondly, it is necessary to complete the registration of property rights to land plots for agricultural use;
- Thirdly, to make the inventory of agricultural lands and put on the use;
- Protect agricultural land from degradation;
- Integrated sustainable, effective development of agricultural production is impossible without rational use and organization of territories, which includes the following:
  - Land inventory (every 5 years);
  - A special survey revealing a qualitative state (according to the instructive requirements, the materials of soil surveys should be updated every 15 years);
  - Drawing up a land management scheme of municipalities;
  - Inter-farm and on-farm design [6-10].
Figure 2. Activities for the rational use of agricultural land.

What is happening today? An inventory of agricultural land was last conducted in 1987. Since the 90s, surveys have not been carried out in the republic, the last large-scale soil survey of land was carried out in the Kizhinginsky district within the boundaries of the former state farms in 2000. Soil materials in the Okinsky district date back to 1967. Survey materials are outdated and do not reflect the current quality of land.

Land management schemes are not being implemented - which are the main pre-planning and pre-design document.

The adopted targeted land use programs reflect only selected areas of land management.

Projects of inter-farm land management are replaced by a description of the boundaries of land management objects and a map (plan) without cartographic mapping, and inter-farm land management projects were replaced with a business plan without taking into account the needs in agricultural land for the development of agricultural production. Hence, there is a shortage in agricultural products.

During the past 25 years, under the conditions of a crisis in land use caused by an ill-conceived reform of land relations, the systems of agriculture and land management developed for all collective farms and state farms of the republic were practically destroyed. Crop rotation was violated everywhere, the use of organic and mineral fertilizers was sharply reduced, the activities to protect the land from erosion and other negative impacts, land reclamation, cultivation equipment were stopped, a fairly effective grassland system in the livestock industry collapsed, and massive overgrowing by shrubs and small forests of agricultural land began.

3. Proposals for the rational use of agricultural land

- In the face of progressive negative processes on the land, disturbances in agro landscapes caused by shortcomings in the land management system in recent years, one of the main directions for overcoming the land use crisis, improving ecological state of the land should include land management on an ecological-landscape basis with the main principle being the adaptation of production and its territorial structure to the features of the landscape.

- Particular attention should be paid to the formation of land use at the expense of land shares, on-farm land management, the development of working projects on the drastic and superficial improvement of natural fodder land, the production of crop and technical work, the protection
of land from erosion processes, the creation of highly productive cultural pastures with planned large dairy and feeding complexes and other.

- It is necessary to focus on the formation of large agricultural enterprises in which the efficient use of modern high-tech and multifunctional machines and mechanisms is possible. The apology of small peasant farms leads to parcelization of land, to subsistence farming characteristic of feudal society (while we live in the 21st century). At the same time, one should not impose strictly defined forms of farming on land.
- It is necessary to revive the meadow pasture economy of the republic, to use the feed potential of the distant pastures.
- It is necessary to resume soil, geobotanical and other surveys which allow assessing the quality of land, conducting a correct cadastral valuation of land, and managing land resources.
- Due to the fact that the territory of municipalities is recognized as an object of land management, it is imperative to immediately begin conducting land management of the territories of these entities (starting with rural settlements). Municipal authorities should be responsible for the efficient organization of the use of natural resource potential (primarily land) of their territories.
- To restore the design institute (design enterprise) for the use of land resources (similar to the former gyprozem), to resume design work on land management. The current Information Technology Center of the Ministry of Property and Land Relations of the Republic of Buryatia can be introduced into its structure at the department level.
- To develop a republican program that would contain a system of measures for organizing the rational use and protection of land, measures for their implementation (taking into account the Baikal factor).

4. Conclusion
The way out of this situation is seen in the return to the land management system in its most important, basic function. It is land management as a system of diverse environmental, economic and social measures that in a complex solves the issues of rationalizing the use and protection of land on the basis of the most complete consideration of the landscape, assessment of land and resource potential of the territory, and its economic suitability. Ultimately, the high efficiency of production activities on land, effective land protection, and the reproduction of its useful qualities are ensured.

References

[1] Report on the availability and distribution of land of the Republic of Buryatia for 2015-2016 (Ulan-Ude: Federal Service for State Registration, the Cadastre, and Cartography in the Republic of Buryatia) 109
[2] Ilyin Yu M, Komendarova T M and Semiusova A S 2018 Reclaimed lands and their importance in the land fund system of the Republic of Buryatia. Land management, cadastre and land monitoring 5(160) 63-7
[3] Imeskenova E G, Komendarova T M and Vambueva T B 2015 The main classes of natural forage land in Buryatia. Bulletin of the Buryat State Agricultural Academy V.R. Filippova 4(41) 130-5
[4] Komendarova T M, Imeskenova E G and Abgaldaev Yu V 2015 The use of remote sensing methods for monitoring the soil and vegetation of the Kabansky district of the Republic of Buryatia. Bulletin of the Buryat State Agricultural Academy V.R. Filippova 3(40) 63-8
[5] Kutuzova A A 1996 Guidelines for conducting scientific research on hayfields and pastures (Moscow: VNII of feed) 152
[6] Mikhaylov A 2020 Lichens as indicators of atmospheric pollution in urban ecosystems. Israel Journal of Ecology & Evolution 10016 1-9
[7] Yumashev A, Ślusarczyk B, Kondrashev S and Mikhaylov A 2020 Global Indicators of Sustainable Development: Evaluation of the Influence of the Human Development Index on Consumption and Quality of Energy. *Energies* **13** 2768

[8] Terentyev S E et al 2020 *IOP Conf. Ser.: Mater. Sci. Eng.* **919** 022023

[9] Khayrzoda S, Morkovkin D, Gibadullin A, Elina O and Kolchina E 2020 Assessment of the innovative development of agriculture in Russia. *E3S Web of Conferences* **176** 05007

[10] Mikhaylov A, Moiseev N, Aleshin K and Burkhardt T 2020 Global climate change and greenhouse effect. *Entrepreneurship and Sustainability Issues* **7**(4) 2897-913