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Issues of Effective Agricultural Land Utilization and Land Tenure Organization in Conditions of Lori Marz

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ABSTRACT

Based on the contemporary requirements for the development of effective ways for agricultural land utilization, a comprehensive analysis of land utilization planning and cadastral land evaluation was carried out by the example of Lori region. Results of the analysis of cadastral land evaluation and actual land use indices have disclosed the uncultivated land areas and their consecutive economic damage size caused to the community per agricultural land types. Based on the analysis, the coefficient values for identifying the conventional areas of the community land types have been derived which can make the evaluation process of land utilization measurable and comparable.

Introduction

One of the most important prerequisites for developing efficient methods of agricultural land use is the process of its proper planning and accurate cadastral evaluation (Yezekyan, 2002). Solving the problem from this standpoint leads first to the adjustment of cadastral evaluation indices and organization of their efficient use. Cadastral land evaluation implies obtaining objective and high-quality information on the land allocation, its qualitative properties, economic indices, and their further application in the current and future agricultural activities (Yezekyan, 2002, 2003). The cadastral evaluation indices serve as a background to organize land tax, land rent, as well as optimal land use systems, and to resolve problems related to relevant allocation of agricultural crops and many other issues (Yezekyan, 2003). In order to clarify and solve the abovementioned issues the Lori Marz Land Fund and Land Use System have been taken as the research objects upon the example of the land cadastral surveys on the evaluation indices of the farms involved in the administrative area of Odzun enlarged community (Official website of Lori regional administration, Cadastral evaluation of Armenian SSR lands, 1984).

Materials and methods

One of the strategic development goals of the Lori marz (region) is the development of intensive agriculture, a key component of which is the expansion of irrigated land areas and land tenure organization through their effective utilization. The irrigated land area in the administrative territory of Lori marz makes 9553.8 hectares, out of which 2000 hectares belong to residential and 7553.8 hectares to agricultural land types. 70 % of the irrigated land area is owned by citizens and 8.4 % is community-owned. The arable lands are dominant in

the structure of agricultural lands making 7193.6 hectares or 95.2 %, perennial plantations make 237.8 hectares or 3.1 %, and the grasslands occupy 122.4 hectares or 1.7 %. The arable lands in the whole region make up to 42037.4 hectares, out of which 9553.8 hectares or 22.7 % are considered irrigated, 67.4 % of the arable lands are considered to be the citizens' ownership, while 31.7 % are community-owned; the rest land areas are owned by state and foreign organizations. 42.2 % of the community-owned lands are rented out, the other 57.8 % are not put in use or rented out (Yezekyan,2003).

The structure of the region's land types which are currently out of agricultural use is introduced in figure.

The same situation is observed regarding the effective agricultural land use in Odzun community. About 50 % of 461.43 hectares of community land is not used; out of 198.73 hectares of the community-owned grasslands 178.02 hectares or 90 % are not put in use or rented out. 1898 hectares of pastures or 43 % of community-owned pastures have been left out of use.

The qualitative evaluation indices of the lands in Odzun community have served as bases for the study of land-cadastral indices, the total results of which are summed up in table 1 (Yezekyan, 2002,2003, Cadastral evaluation of Armenian SSR lands. 1984).

Based on the land cadastral evaluation indices and the research results on the actual land use, it has become clear, that there are multiple reasons for the agricultural lands to be left out of use, which have to be analyzed and synthesized for their further eradication. The lack of legislative bases and criteria for the classification of unused agricultural lands is an urgent problem to be solved.

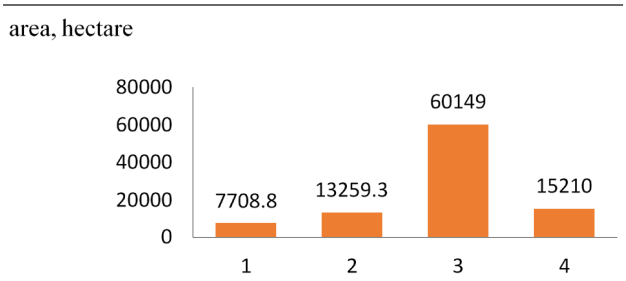

Figure. Structure of the land types out of agricultural use in Lori marz: *1-arable lands, 2-grasslands, 3-pastures, 4-other land types*.

Table 1. Summary results of the qualitative evaluation of the agricultural land types in Odzun community*

		Land evaluation group	Numbers of land contours					Area, ha	Average grade of bonitation
Arable land			Lower Debed-Aghstev						
		IV	22.19	44-47	12. 18	20	37-43	197.5	33
		III	1-2	5. 6	13. 21	16-17	31-36	298.1	48
		II	3-4	7-11	14-15			302.4	74
		I	23-30					297.4	81
		Total arable land						1095.4	61
		Upper Debed-Aghstev							
		V	90	81-89				42.6	20
		IV	78 51 74-76	67 62-63 69	56-61 72-73 48-50	70-71 53-55 66	64-65 52	288.5	29
		III	68	79-80	77			24.5	46
		Total arable land						355.6	31
Total arable land								1451.0	54
Evaluation zone			Forest-Meadow						
Natural Pasture	pasture	IV	99 98	100 91	96 101	95	93	460.0 1138.0	27 43
		Total pasture						1598.0	39
	Grassland	IV	94	92				177	37
		III	97					173	53
		Total grassland						350.0	45

**Land cadaster evaluation by "Haypethoghshin" Institute,1985.*

Table 2. The general evaluation indices of arable lands for the zones of Lower Debed-Aghstev, Upper Debed-Aghstev at Lori marz, Odzun community*

Number of contour according to the evaluation map	Area, ha	Code of the grading zone	Code of the land type and its sub-type	Score of the land type and its sub-type	Final score of the land type and its sub-type /5*20/	The main land properties					Average score according to the land properties (6+7+8+9+10+11)/6	Correction coefficient						Depth of the ground waters	Climate factor	Final grading score after the correction coefficients (12*13*14*16*17*18*19)
						Strength of the humus horizon	Humus content	Mechanical composition	Water-Proof aggregates	PH-in the water extract		Rockiness rate	Erosion rate	Sloping degree	Salinization and alkalization degree	Cementation degree	Humidity degree			
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*
1-2	7.3	11	2	66	66	60	70	70	50	80	66	0.8	0.8	0.9	1	1	1	1	1	42
3-4	65.1	11	2	66	66	80	70	70	70	80	73	1	1	0.9	1	1	1	1	1	73
5	30.0	11	2	66	66	60	70	70	70	80	69	0.8	0.8	0.9	1	1	1	1	1	44
6	39.7	11	2	66	66	60	70	70	70	80	69	0.8	0.8	0.9	1	1	1	1	1	44
7-11	200.4	11	3	75	75	80	70	70	70	80	74	1	1	0.9	1	1	1	1	1	74
12	9.0	11	2	66	66	60	80	70	70	80	71	0.8	0.5	0.9	1	1	1	1	1	28
13	26.9	11	2	66	66	60	80	70	70	80	71	0.8	0.8	0.9	1	1	1	1	1	45
14-15	36.9	11	4	74	74	80	70	70	70	100	77	1	1	0.9	1	1	1	1	1	77
16-17	33.5	11	4	74	74	60	70	70	70	100	74	0.8	0.8	0.9	1	1	1	1	1	47
18	32.4	11	4	74	74	60	70	70	100	100	79	0.8	0.6	0.9	1	1	1	1	1	38
19	14.8	11	4	74	74	60	70	70	100	100	79	0.6	0.5	0.8	1	1	1	1	1	24

** Land cadaster evaluation by "Haypethoghshin" Institute, 1985.*

Results and discussions

The results of research carried out by the example of the enlarged Odzun community in Lori region show that the unused state of agricultural land types is very often related to the lack of material and technical resources, low profitability of agricultural activities, incompliance of agro-technical rules, insufficient capacity of the irrigation network and limited water resources (Yezekyan, 2002, 2003). Rural farms organize the land use not from the perspective of growing the most efficient crops in the given soils, but they do it randomly cultivating the least costly and low price crops. Hardly ever any pre-sowing activities such as soil loosening, fertilization, surface reclamation of natural rangelands or orchard treatment are implemented. The established sowing norms are roughly violated in the arable lands, as a result of which at least 40 % - 50 % of arable lands get deprived of the corresponding crops, perennial plantations are characterized by sparsity, grasslands are not timely mowed per plant development phases and the remote pastures appear in a totally abandoned state.

As a result of land use mismanagement, the soils are subjected to degradation causing soil erosion, fertility decline and desertification. There is no regional and community monitoring activities on land protection and control so as to disclose the uncultivated and unused land areas.

In order to estimate the economic damage of agricultural lands left unused due to various reasons in the rural communities, we estimated the value of cadastral net income in 3092.5 hectares of unused land areas in conditions of Odzun enlarged community according to land evaluation groups and land types. The results are summarized in tables 3,4,5 and 6.

Table 3. Loss of cadastral income from uncultivated irrigated lands*

Land type	Irrigated		Area, ha	Total, AMD
	Class	Cadastral net income, AMD		
Arable land	2	64291	176.3	11334503
	3	51425	36.8	1892440
	4	38579	5.8	219900,3
	5	19280	11.6	223648
Total	-	-	230.5	13670492

Table 4. Loss of cadastral income from uncultivated arid lands*

Land type	Arid		Area, ha	Total, AMD
	Class	Cadastral net income, AMD		
Arable land	2	-	-	-
	3	36001	64.6	2325665
	4	25713	74.9	1925904
	5	9009	84.5	761260.5
Total	-	22378	224	5012829

Table 5. Loss of cadastral income from the unused grasslands*

Land type	Arid		Area, ha	Total, AMD
	Class	Income, AMD		
Grassland	2	6429	160	1028640
	3	-	-	
	4	190	190	36100
	5	-	-	
Total	-		350	1064740

Table 6. Loss of cadastral income from the unused pastures*

Land type	Arid		Area, ha	Total, AMD
	Class	Cadastral net income, AMD		
Pasture	2	6429	110	707190
	3	4501	419	1885919
	4	3213	1759	5651667
Total	-	-	2288	8244776

** Composed by the authors*

Thus, due to failure of land cultivation, the annual economic damage to the community makes 27992837 AMD, which is 9051 AMD per 1 hectare. Based on the land qualitative evaluation indices, we can identify the concept of conventional area in the land tenure sector which reflects the ratio of efficient area and the physical surface of the land type. The estimations are summed up in tables 7,8 and 9.

Table 7. Estimation of the conventional area in the arable lands*

Physical surface, ha	Bonitation grade	Cadastral comparative area, ha	Conventional area per unit of physical surface, ha
197.5	33	65.175	
298.1	48	143.088	
302.4	74	223.776	
297.4	81	240.894	
1095.4		672.933	0.614326274

Table 8. Estimation of the conventional area in the grasslands*

Physical surface, ha	Bonitation grade	Grading surface	100 grade	Cadastral comparative area, ha	Conventional area, ha
177	37	6549	100	65.49	0.37
173	53	9169	101	90.78	0.52
350	90	15718	201	156.27	0.45

** Composed by the authors*

Table 9. Estimation of the conventional area in the pastures*

Physical surface, ha	Bonitation grade	Grading surface	100 grade	Cadastral comparative area, ha	Conventional area, ha
460	27	12420	100	124.2	0.27
1138	43	48934	100	489.34	0.43
1598					0.35

** Composed by the authors*

Conclusion

Based on the result analyses of the land use surveys conducted for the development of effective ways of agricultural lands utilization, the uncultivated land areas and their consecutive economic damage size caused to the community per agricultural land types has been revealed. It has been disclosed that it makes 13670492 AMD for irrigated arable lands, 5012829 AMD for arid arable lands, 1064740 AMD for grasslands, 8244776 AMD for pastures and the total economic damage makes 27992837 AMD with 9051 AMD per hectare. Based on the analysis, the coefficient values for identifying the conventional areas of the community land types have been derived which make 0.61 for the arable lands, 0.45 and 0.35 for the grasslands and pastures respectively.

Based on the aforementioned conclusions it is recommended to take the coefficients identified for the determination of conventional areas of the agricultural land types as a background when planning the agricultural development indicators in conditions of Lori region. The recommended methodology can be also applied for the increase of land use efficiency in the other regions of Armenia.

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