

Leah, Tamara

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ABANDONED LAND: A BARRIER FOR SUSTAINABLE DEVELOPMENT OF AGRICULTURE OF THE REPUBLIC OF MOLDOVA

LEAH TAMARA¹

Abstract. *According to the General Agricultural Census the agricultural area utilized in agriculture consist 1.941.400 ha. At the same time, abandoned agricultural area was 246.900 ha, of which 60.600 ha, or 24.5%, belonging firms and 186.300 ha, or 75.5% - individual persons. Neglected land is abandoned for several reasons. More and more lands are abandoned by people who go abroad. But those who remain in the country are not able to work, they are elderly, have no financial resources to support their own land. Abandonment of agricultural land is a problem for adjacent land owners. This contributes to long-term increase the vulnerability of soil and there is a source of spread the weeds and creating conditions of outbreaks of diseases and pests of agricultural plants. There are lands which it state is not determined from 1992-1994. It is not clear what level of degradation of these soils. In order to redress the situation is necessary to implement the measures on maintain and improve an efficient land management, at republican, regional and local level, based on land consolidation, land monitoring, implementation activities directed towards the land protection and sustainable development of agriculture in Moldova.*

Key words: *abandoned land, agriculture, soil degradation, sustainable development*

JEL Classification: Q01, Q15, Q24

INTRODUCTION

Soils of Moldova, characterized in the past with a high natural fertility, in the last decades, due intensification of degradation processes risk losing their fertility. Land affected by various degradation processes occupies more than 2 million hectares. The worst forms of degradation are water erosion, affected area - 40% of the agricultural land; dehumification, soil nutrient depletion and extensive secondary compaction that extended throughout the entire of arable land; salinization, alkalization, active landslides - 245 thousand ha [3].

In the agricultural holdings not respected the zonal crop rotations, including pedoprotective measures. The share of leguminous crops, ameliorating, biological nitrogen fixing, decreased 5-6 times. The volume of organic fertilizers incorporated in soil decreased by 20 times, the minerals fertilizers - 15 times. The balance of humus and nutrients in soils is negative. The average creditworthiness note of soils is 63 points. About 178 thousand ha of highly degraded or damaged soils have their creditworthiness note less than 20 points. The damage to the economy by soil degradation processes is about 3 billion MDL per year [4].

Another issue that appeared after land privatization is their abandonment and inactivity, which are gradually transformed into fallow area. The main causes of land abandonment are: lack of financial sources to farmers, high degree of soil degradation process, unprofitable processing land in economic terms, holders not whom to pass it on lease or they are gone abroad, holders old age or simply do not want to work it.

Moldova lost an agricultural production equivalent to one million tons of grain, due to the large number of uncultivated land [7, 9]. The widespread abandonment of agricultural land in Moldova offers new opportunities for ecological restoration and conservation of soil fertility, creating new programs and strategies on soil quality and food security for the population. The abandonment of arable land and perennial plantation require their study in an ecology system context, implementation of protection measures and application of a correct and sustainable management of land use.

¹ Dr. Assoc. prof. Tamara LEAH, Institute of Soil Science, Agrochemistry and Soil Protection "Nicolae Dimo", tamaraleah09@gmail.com

MATERIAL AND METHODS

Research regarding land use effects on abandoned soils, left as fallow for several reasons, and has been of great interest in connection with considerable increase in their surface in the Republic of Moldova. The qualitative research methods (the general modality, the strategic approach, the study of reality) were used for analysis the documents and data published by the Bureau of Statistics and Land Cadastre on study issues, computer assisted.

RESULTS AND DICUSSIONS

According to the situation of 01.01.2015 the land fund of the Republic of Moldova constitutes 3384.6 thousand ha. Agricultural land area is 2.500 ha (73.9% of the total area), including arable land - 1.816 thousand ha (53.7%), perennial plantations - 295.3 thousand ha (8.8%), meadows and pastures - 350.1 thousand ha (10.3%). Forest plantations consists 465.2 thousand ha (13.7%). In the Republic of Moldova, as in other countries, take place the reduction of arable land per capita. According to recent data this area is 0.407 ha [2]. The average of utilized agricultural area is 2.29 ha per capita [8].

Abandoned land is considered where: i) the owner does not accept responsibility (or, for various reasons, cannot take responsibility) of working farmland for more than three years; ii) does not transmit the field (rights and obligations upon him) to a third party to be worked in agricultural use; iii) does not assume responsibility for the negative impact on land, environment, including damage to neighboring land [1].

The uncultivated (abandoned) land means any area of arable land, pastures and meadows, agricultural permanent crops or other non-agricultural land from extravilan or intravilan, owners who do not sanitizes the land. Agricultural lands are abandoned for various reasons: age of the owner, lack of financial resources, migration of rural population, etc. Abandoned lands left as fallow are not included in the cadastral register. There are lands, that their status is not determined from 1992-1994 years. It is not clear what the degradation level of these soils is.

From the group of abandoned land take part the uncultivated arable soils (left as fallow), soils in vineyards that do not bear fruit, highly eroded soils, degraded pastures and hayfields. The used (cultivated) agricultural land consists 87% of the total land (arable, permanent crops, pastures and hay fields) and 13% - unused land (250 thousand ha). In the structure of agricultural land used the major share (73%) returns to arable, followed to pasture and hayfields (17%), permanent crops (orchards and vineyards) - 10% (Fig.1). The areas of fallow land in territorial aspect continue to grow from expansion of abandoned land (Fig.2).

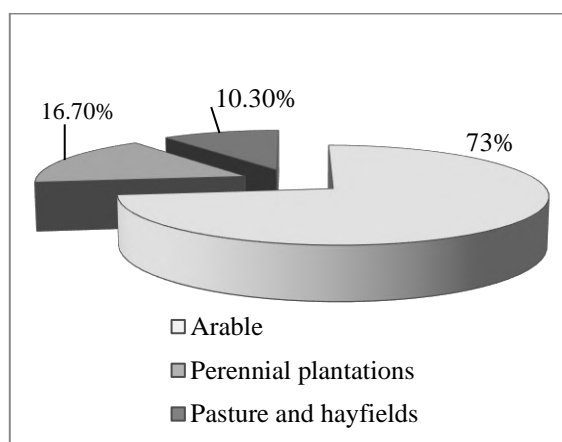


Figure 1. The structure of agriculture land

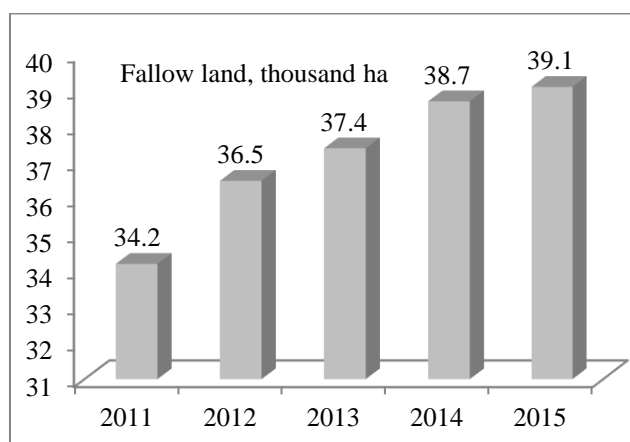


Figure 2. The area of fallows land

The statistics of General Agricultural Census performed in Moldova in 2011 showed that 2.25 million reviewed hectares of agricultural land, almost 250 thousand ha are uncultivated (abandoned), that consists 11% of the total utilized agricultural area or 20% of arable land. Most unused agricultural land (over 114 thousand ha) is located in the center of the country (Hincesti - 18 thousand ha, Calarasi - 12 thousand ha, Ialoveni - 12 thousand ha). The fewest unused agricultural land are in the north of Moldova (Dondușeni - 650 ha). Out of abandoned agricultural land (250 thousand ha), 60.6 thousand ha (24.5%) are owned of enterprises and 186.3 thousand ha (75.5%) - of individuals [8].

Considering the fact that in recent years there have been constant growths of uncultivated agricultural areas, which at the moment, according to information submitted by the district agricultural departments are up to 20% of the arable land (Table, Fig.3).

Table. The surface of uncultivated land in the Republic of Moldova (ha)

No.	District	Total of uncultivated agricultural land	Inclusive			
			Arable	Vineyards	Orchards	Other
1	Cahul	23145	17536	4410	1110	89
2	Rezina	4979	3353	24	1227	375
3	Ungheni	6345	5473	618	1254	-
4	Strășeni	3644	1408	689	1269	-
5	Taraclia	4101	997	2447	657	-
6	Soroca	4227,8	3026	76,8	1110	15
7	Briceni	766	576	-	190	-
8	Rișcani	1513,17	794,21	24,5	666,34	28,12
9	Drochia	2310	1745	26	539	-
10	Ialoveni	10319	5548	2825	2245	-
11	Ocița	1195	980,5	-	214,4	-
12	Cimișlia	9131	5601	2171	1359	-
13	Anenii Noi	11690	9261	1246	1134	49
14	Cantemir	4741,1	3452,6	511	777,5	-
15	Căușeni	8341	6677	776	888	-
16	Hîncești	15959	11788	2682	2244	343
17	Edineț	1620	162	-	1458	-
18	Glodeni	1246	713	50	483	-
19	mun. Chișinău	5222	4167	484	571	-
20	Sîngerei	3039	2165	288	575,45	10,58
21	Orhei	8009	2914	444	2585	2066
22	Basarabeasca	3041	1954	719	313	55
23	Șoldănești	1698	807	-	891	-
24	Leova	5938	4221	1163	547,5	6,27
25	Fălești	1066	858	16	192	-
26	Florești	3651,5	2135,5	-	1516	-
27	Dondușeni	1212	543	-	669	-
28	Călărași	7949	3803	2313	1833	-
29	Ștefan Vodă	5727,29	3107,33	1412,05	1199,91	8
30	mun. Bălți	283,5	119,5	-	164	-
31	Dubăsari	1734	1108	3	236	387
32	Criuleni	5137,67	3553,24	486,35	1063,75	34,33
33	Telenești	4144	3112	483	525	24
34	Nisporeni	5422	3020	1195	1208	-

35	UTA Găgăuzia	22261	17323	3833	1105	-
	TOTAL	200808,03	134001,88	31415,7	34019,85	3490,3

The results show an excessive fragmentation of agricultural land, which determines a decrease in agricultural productivity, disruption of crop rotation, soil degradation, and other negative effects. However, the average area of the land parcel in the country is 0.85 ha. The central part of the country is most fragmented, the representing minimum area of plots is 0.29 ha (Fig. 4).

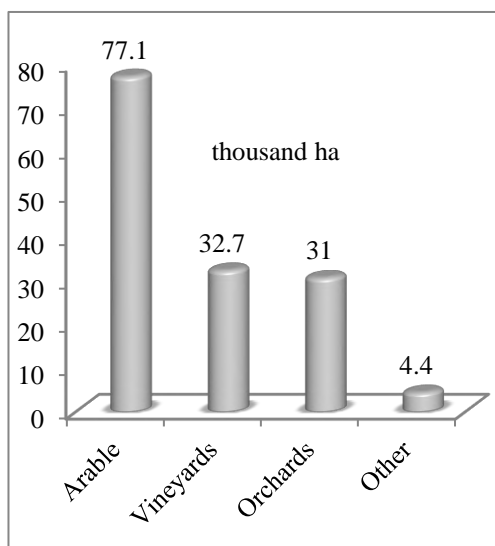


Figure 3. The surface of abandoned agricultural land in the territorial aspect

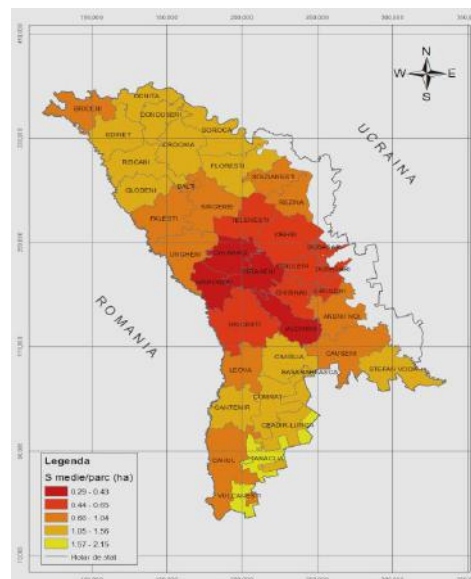


Figure 4. The average size of agricultural parcels on the districts of Moldova

Around 40% of agricultural lands in Moldova are *eroded soils*. From the one million affected hectares, 110 thousand hectares are impracticable. The largest areas of agricultural land of eroded soils are in the south zone, an area with high risk of desertification. In total, 114 thousand ha (from 2.3 million ha) of agricultural land are heavily eroded [3].

The largest areas of farmland with eroded soils are in Cahul district. Here, about 10 thousand ha are damaged and cannot be cultivated. In the same condition are the soils in Gagauzia. Other 8 thousand ha of land are infertile (Hincesti and Ungheni). In Singerei district over 6 thousand hectares of agricultural land are impracticable. Soils in the north zone of Moldova have a higher quality status. In Donduseni district are just over 800 ha of eroded land in Briceni - almost 800, and Ocnita - only 555 ha of soils have poor quality. In total, 114 thousand ha of the 2.3 million ha of agricultural land are heavily eroded [8].

In the near future, much of soils planted with *vine plantations* become abandoned land (or left uncultivated). Almost half of vine plantations in Moldova are ineffective. Only about 37 thousand hectares of vineyards from the total of 150 thousand hectares give good fruit. However, these data are not based on the recent assessment, because the authorities have not finance recourses for further study. Almost 60 thousand hectares of agricultural land in Moldova are planted with vines, which no longer bear fruit. Meanwhile, over 50 thousand hectares of vineyards have an average productivity, in short time; they will cease to bear fruit. Only a quarter of the vine plantations have a productivity of 4-5 tons per hectare. Furthermore, the effectiveness vine plantations of Moldova are among the lowest in the world. In 2010, the total production of grapes was 480 thousand tons, the lowest in 10 years. The average productivity per hectare of vineyards in Moldova is 6.4 tons per hectare [5].

Land inactivity is known and typical problem that prevent the efficient functioning of land markets; limited the investment in rural areas; creation and development of competitive rural areas.

Agricultural land inactivity brings prejudice to local public administration - the failure of any taxes and payments, to owners of adjacent land to the worked land - technology issues. However this phenomenon leads to increase the soil vulnerability on the long-term, soil degradation, providing high weeds and creating the pest outbreaks and diseases of plants, which reduces the space of crops, hampering agricultural works and increase production costs.

Agricultural land abandonment reduces soils and crops productivity. The non development of measures may lead to substantial reductions in agricultural production with consequences for food security of the population and the abandonment of cultivation agricultural land and lower economic activity in rural areas. Approval of certain measures referred to uncultivated land that will have positive impacts on economic activity in rural areas and food security of the population has become a necessity of emergency. Sanctioning of landowners who do not work and respect the land rights of landowners is justified. The project submitted for consideration are proposed new legal rules in the Land Code and Contravention Code, namely: "*The obligations of landowners*" and "*Uncultivated agricultural land*" and penalties for "*Abandonment of agricultural works on land and failure to minimum processing technology land actions, in aim to not affect neighboring lots*" [1].

To improve the situation on the quality state of soil cover, the Government of Moldova approved in 2003 the "*Complex Program of new lands exploitation and increasing the soil fertility*" for 2003-2010 years. The activities covered by this program due to lack of finance, have been met by volume of less than 5 percent. Given the current quality state of soil cover has decided to extend land reclamation activities in the "*Program for conservation and enhancement of soil fertility*" for 2012-2027 years [6]. Program aim: to achieve measures to stop the degradation and increase soil fertility through the modernization and expansion of land reclamation, implementation of modern technologies and environmentally friendly agricultural practices. Program objectives: to create the Geoinformational System of the soil quality state under pedological and agrochemical researches; to stop active forms of damage to the soil cover; to increase the soil fertility in the expected harvests.

The program is the basic document for planning and promotion the unique state policy on the protection, rational use and increase soil fertility by the central and local public administration. It is developed for the period of 15 years and establishes objectives, actions, expected results and performance indicators, the volume of work, amount and sources of funding. Achieving Program will ensure minimizing or stopping the main forms of degradation of soil cover and create prerequisites for increasing agricultural production 1.3-1.5 times. The measures provided by the program will have positive impact on the ecological situation in the Republic of Moldova.

CONCLUSIONS

Agricultural land used consists 87% of the total (arable land, permanent crops, pastures and hay fields) and 13% - unused land (250 thousand ha). In the structure of agricultural land used the major share (73%) returns to arable, followed to pasture and hayfields (17%), permanent crops (orchards and vineyards) - 10%. The country's agriculture dominates a large number of small farms. The average area of farm is about 2.5 ha, of which 2.2 ha is cultivated surface. Across the country there is an excessive level of land lots. The number of plots, which are divided the agricultural lands, is 2.7 million ha, or in average about 3 plots on the farm. The average size of parcel is 0.8 ha. The share of agricultural land with small units on the total land area is only 0.5%. The high degree of fragmentation of land creates great difficulty using modern agricultural techniques and advanced technologies in agriculture.

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