FAVORABILITY OF AGRARIAN LAND OF LIPOVA HILLS FOR THE MAIN GROWN CROPS AND FRUIT TREES

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Abstract. *The aim of the research undertaken finds its origin in the current scientific and practical preoccupations more and more assiduous to identify and develop an integrated management of agroecosystems, efficient from an agronomic point of view, with reduced energetic and financial efforts, ecological and conservative for soil and environment. This paper presents a few aspects regarding the edaphic layer structure and its quality, as well as some restrictive features of land quality, features that define their vocation for certain utilities and different favorabilities for certain plants and fruit trees. The geographical area known as the Lipovei Hills, Lipovei Piedmont or Lipova Plateau is positionally located in the western part of the country. As a geographical unit of transition between the orogeny of the Western Carpathians. They are an integral part of the Western Hills, which are well-individualized geomorphological units by the structure of deposits, their location on the periphery and altitude. The situation of the land of recent developments and its current state consists of all areas represented by land areas and those covered by water, regardless of destination, the title on which they are held or the public or private domain to which they belong. Referring to the area taken into account, the issue addressed refers to an area of 309,186 ha of which 181,890 ha are agricultural land (58.83%) and 110,695 ha (35.80%) land with forest vegetation, located in western Romania, which from an administrative point of view, they belong to a number of 25 ATUs from Timiş (17) and Arad counties (9).*

Key words: *natural, functional,fruit trees,soil*

INTRODUCTION

The situation of the land of recent developments and its current state consists of all areas represented by land areas and those covered by water, regardless of destination, the title on which they are held or the public or private domain to which they belong.

Favorability is the extent to which a land lot fulfills the life requirements of a plant, in normal climate conditions and within the rational usage of ecological offer. Knowing the natural environment of the ecological potential of land for various purposes is socially and economically important, land as part of the agrarian environment being able to favor a certain usage of it, throughout specific characteristics, studied and defined in time.

Quality status - Land suitability for the main categories of agricultural use.

The quality of the land (soil), according to the romanian school of pedology, represents the totality of essential properties and particularities (defined from a topographical, geological, geomorphological, pedological, agrochemical, etc. point of view)

MATERIALS AND METHODS

The problem approached here refers to a total of 309186 ha out of which 181890 ha are agricultural lots, situated in the western part of Romania and belong to Timis county (17 UAT) and Arad county (9 UAT).

From the presented data it results that the agricultural land fund with an area of 181,890 ha is represented by areas occupied by arable land 10,246 ha (56.34%), pastures 52,538 ha (28.88), hayfields 19,068 ha (10.48%) and plantations vineyards 7,816 ha (4.30%).

Table 1

The agrarian land situation

Nr crt	Town/ Village	Arable	Pastures	Hayfields	Vineyards	Orchards	Total agrarian	Forests	Water	Others	General total
1	Balinţ*	3601	1160	103	0	71	4935	242	93	290	5560
2	Bara*	2193	2350	708	0	444	5695	823	336	213	7067
3	Bethausen*	4764	2066	318	0	107	7255	1265	139	368	9027
4	Bogda*	2005	1384	770	1	138	4298	3416	24	130	7868
5	Brestovăţ*	2595	2754	1365	0	31	6745	3384	28	158	10315
6	Făget*	4780	3547	920	1	68	9316	4828	84	859	15087
7	Ghizela**	3199	1389	819	0	29	5436	3056	95	620	9207
8	Giarmata**	4860	834	121	173	305	6293	16	87	754	7150
9	Margina*	1821	1844	1223	0	62	4950	7931	63	341	13285
10	Maşloc (Fibiş)**	9090	1390	917	24	319	11740	1042	44	774	13600
11	Mănăştur*	1830	1038	180	0	52	3100	878	40	168	4186
12	Ohaba Lungă*	2208	1948	737	4	53	4950	5256	21	252	10479
13	Pişchia**	6676	1293	586	272	466	9293	1963	188	917	12361
14	Recaş*	12121	4736	968	1680	230	19735	1810	403	1040	22988
15	Remetea Mare**	7257	1221	199	0	14	8961	875	241	734	10541
16	Secaş**	1752	2492	593	0	117	4954	607	20	186	5767
17	Topolovăţu M*	6772	1688	212	28	228	8928	342	237	481	9988
	Total TM	77524	33134	10739	2183	2734	126314	37734	2143	8285	174476
1	Bata*	2204	902	415	0	1	3522	4006	125	381	8034
2	Birchiş*	2599	1651	1127	0	0	5377	4385	108	358	10228
3	Bîrzava*	2232	2591	2332	0	50	7205	17646	326	466	25643
4	Conop - /Chelmac/	2405	2497	404	0	81	5387	13025	222	353	18987
5	Lipova*	3023	1498	142	5	1917	6585	5299	296	1220	13400
6	Săvârşin*	2045	3167	2293	0	40	7545	12528	321	410	20804
7	Şiştarovăţ*	1129	3446	793	0	72	5440	6395	12	446	12293
8	Ususău-Dorgoş*	2504	2197	602	0	139	5442	7712	77	312	13543
9	Zăbrani*	6803	1455	221	0	594	9073	1965	184	556	11778
	Total AR	24944	19404	8329	5	2894	55576	77961	1671	4502	134710
	Dealurile Lipovei	**102468**	**52538**	**19068**	**2188**	**5628**	**181890**	**110695**	**3814**	**12787**	**309186**
	%	33,14	16,99	6,17	0,71	1,82	58,83	35,80	1,23	4,14	100
	%	56,34	28,88	10,48	1,21	3,09	100	-	-	-	-

The research on the eco- pedological conditions has been done according to the METHODOLOGY OF ELABORATING PEDOLOGY STUDIES, Bucharest, 1987, completed with elements from the Romanian System of Soil Taxonomy (SRTS-2003/2012), as well as the legislation normative M.A.A.P.223/2002, MADR 278/2011 and information gathered in over 65 years in OSPA Timisoara and Arad archives.

RESULTS AND DISCUSSIONS

Lipova Hills are presented the physical-geographical conditions of soil formation and evolution, based on judiciously chosen data, referring to the relief conditions, geology and lithology of surface materials, hydrography and hydrology, climatic conditions, rainfall regime, wind and vegetation regime.

In the Lipova Hills presents the natural conditions and zonal features of the ecological potential

In close correlation with the variety of geomorphological, geolithological and hydrological factors, but also of various anthropic interventions, soils have been formed, related or totally different from each other

There are 8 classes and 12 types, separated in 158 sub- types and land units which are distinctive through their characteristics (Appendix I) and their favorability for certain cultivation or fruit trees (Appendix III).

The basic principle of the methodology of land worthiness in our country is the one according to which each unit of homogeneous ecological territory within a territorial administrative unit is defined using the 23 indicators from the usual pedologic mapping, elaborated after 1987 by OSPA. It gives marks for quality within a range from 1 to 100.

Using the 23 worthiness indicators: climate indicators (indicator 3C- average annual temperatures, indicator 4C – average annual rainfall), indicators of hydro-physical, physical, chemical and morphological characteristics and the volume of soil layer (indicator 14 -gleizare, indicator 15 – stagnogleizare, indicator 16 or 17 – salinity and alkalinity, indicator 61 - CaCo3 content, indicator 63 – soil reaction in Ap or the first 20 cm, indicator 44 – total porosity within the restrictive horizon, indicator 133 – the used edaphic volume), indicators regarding hydrography, hydrology and territory drainage (indicator 40 – floodability, indicator 181 – excessive stagnant humidity, indicator 39 – pedo- freatic water depth), indicators of anthropic interventions (indicator 29 – pollution, indicator 271 – land improvements), as well as the interactions between these natural values and those anthropica

Based on this information and on other legislative norms, the agrarian lands of the researched territory have been grouped (every other 20 points) in V favorability classes:

- very favorable (81-100 points)
- favorable 1 (61-80 points)
- favorable 2 (41-60 points)
- less favorable (21-40 points)
- unfavorable (1-20 points).

In this paper, the favorability of agrarian lands for a total of 181,980 ha has been found as different for each species (fruit trees and technical plants) as shown in the table below.

Table 2

The favorability of agrarian lands

	Species	Class I (81-100 pct)		Class a-II-a (61-80 pct.)		Class a-III-a (41-60 pct.)		Class a-IV-a (21-40 pct.)		Class a-V-a (0-20pct.)	
1	Apple tree		ha-%		ha-%		ha-%		ha-%		ha-%
2	Pear tree	55	0,30	33686	18,52	62893	34,58	55414	30,47	29377	16,13
3	Plum tree	6545	3,60	43871	24,12	48900	26,88	48019	26,40	34555	19,00
4	Cherry/sour cherry tree	14481	7,96	50175	27,59	63690	35,02	39675	21,81	13869	7,62
5	Apricot tree	3735	2,05	35451	19,49	58673	32,26	63092	34,69	20939	11,51
6	Peach tree	3735	2,05	36041	19,81	51759	28,46	55002	30,24	35353	19,44
7	Wheat	4685	2,58	27240	14,98	56954	31,31	48474	26,65	44537	24,49
8	Barley	3607	1,98	36205	19,90	77328	42,51	47088	25,89	17662	9,71
9	Corn	3500	1,92	28955	15,92	70498	38,76	59511	32,72	19426	10,68
10	Sunflower	2810	1,54	41845	23,01	62907	34,59	45876	25,22	28452	15,64
11	Potato	550	0,30	31445	17,29	61747	33,95	51676	28,41	36472	20,05
12	Sugar beet	0	0,00	2810	1,54	61105	33,59	58471	32,15	59504	32,71
13	Soy	2260	1,24	29285	16,10	50344	27,68	54070	29,73	45931	25,25
14	Beans/ peas	550	0,30	27835	15,30	63174	34,73	54359	29,89	35972	19,78
15	Trefoil	550	030	31905	17,54	68094	37,44	5607	30,83	25266	13,89
16	Shamrock	550	0,30	24640	13,55	63403	34,86	51750	28,45	41547	22,84
17	Species	550	0,30	18635	10,25	79621	43,77	72455	39,83	10629	5,84

CONCLUSIONS

From the analysis of the presented data it results that the way in which the lands are used and the share of the use categories depends to a large extent on the natural conditions (relief, soil climate, vegetation) on the degree of socio-economic development, but also on the administrative decisions.

Knowing the favorability degree of the mentioned factors in the case of a tree species, is an important stage in determining the eco- pedologic potential for traditional tree species or for recent ones.

There are 2 important components of the soil in fulfilling its mission: an intricate one, given by reactivity,supplied nutrients, saltiness, atmospheric factors (light, heat, rainfall) and a relative and subjective component which relates to the favorability for various plants species.

The fruit trees species are strongly influenced by the environment for long periods of time, with annual cycles and various physiological processes, growth and development stages.

Because of these considerations, the environment influence is more and more intense, along with the tree aging, unlike the annual plants or those with short life cycle, where the vegetation factors involvement determine reduced morphological modifications. Thus, the territorial placement according to species requirements for climate and soil has become a priority within the system of durable agriculture.

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