

# FAVORABILITY OF SOILS FROM BARA-GHIZELA AREA FOR THE MAIN CULTIVATED SPECIES

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**Abstract:** The purpose of these researches and studies carried out in the reference area, consists in obtaining the widest possible fund of knowledge, regarding the characteristics of the natural environment and its macrozonal and microzonal particularities, which will substantiate, both ethnically and scientifically, all the elements that define the structure of the edaphic cover and its favorability, regarding the main cultivated species, in order to develop sustainable management systems of soil and land resources. The researched area refers to a total area of 27601 ha, of which 21376 ha (77.45%) are agricultural lands (10931 ha, respectively 39.61% being arable land) and 4729 ha (17.13%), land with forest vegetation in the Bara-Ghizela area. This is characterized through varied geological and physical-geographical conditions, which conditioned the formation of an edaphic cover, represented by several types of soil such as: Regosols, Alluviosols, Phaeosols, Eutricambosols, Preluvosols, Luvosols, Vertosols, Pelosols, Stagnosols, Gleiosols and Anthrosols.

## Introduction

The wide diversity of cultivated species and varieties offers a major potential for adaptation to diverse climatic conditions at regional/local level or from one agricultural year to another in relation to the main physical, chemical and hydrophysical characteristics of the various types of soil.

Representing a well-defined condition with a high variability in space, but relatively stable in time, the pedological factors, through their major components, have an essential role in the characterization of certain areas on the land surface. Thus, between the properties of the soil and the main cultivated or spontaneous species, establishing relationships of a varied and complex reciprocity.

Many of the studies and researches in the field, carried out at the national level, highlighted that, between the agricultural technologies for growing plants, the quality of the environment, the degree of economic development and the quality of life, a series of interesting complex relationships of interdependence are created

## Material and method

The problem addressed refers to an area of 27601 ha (table 1) of which 21376 ha (77.45%) are agricultural land (10931 ha, respectively 39.61% being arable land) and 4729 ha (17.13%) lands with forest vegetation, which from an administrative point of view belong to a number of 4 territorial administrative units (UAT) from Timiș county, respectively: Balint, Bara, Ghizela and Secaș.

The research on the ecopedological conditions was carried out in accordance with the Methodology for the Development of Pedological Studies (vol I, II, III - ICPA Bucharest in 1987), completed with specific elements from the Romanian Soil Taxonomy System (SRTS-2012), as well as other documents regulations, updated by MAAP Order 223/2002, respectively MADR Order 278/2011. A series of processed/adapted data from the work, Gugu-Crișu Negru Peak", authors: D. Țărău coll., 2019, were also used, data that were supplemented with elements recently collected from the field.

## Results and discussions

In close correlation with the variety of geomorphological factors that determine the existence of diversified relief units, the geolithological ones, which led to a great diversity of parent materials, climatic or hydrological ones, as well as various anthropic interventions (starting with those from the pre-Roman period and until now), within the researched space, the current edaphic cover presents a great diversity of soils and soil associations. According to the Romanian Soil Taxonomy System (SRTS-2012), 11 soil types were identified: Regools, Alluviosols, Phaeozols, Eutricambosols, Preluvosols, Luvosols, Vertosols, Pelosols, Stagnosols, Gleiosols and Antrosols.

Based on the pedological information processed according to the Methodology for Elaboration of Pedological Studies (ICPA București 1987) and other normative acts updated by Order MADR 278/2011, the agricultural lands of the researched space can be grouped (from 20 to 20 points) into V classes of suitability (quality) depending on their vocation for arable use.

Pretability represents the suitability of a land for a certain use. Favorability represents the extent to which a land satisfies the life requirements of a crop plant, under normal climatic conditions and within the framework of the rational use of the ecological offer.

The main types and associations of soils in the Bara-Ghizela area

No	UAT	Ha	Soil type, subtype											
			2014	RS	AS	FZ	EC	EL	LV	VS	PE	SG	GS	AT
1	Balint	4935	-	1105	-	-	1012	622	617	-	-	10	355	1214
2	Bara	5695	247	-	-	549	2116	2429	103	3	106	7	135	-
3	Ghizela	5740	197	88	-	1551	2078	1047	51	159	461	108	-	-
4	Secas	5006	-	12	26	337	1545	1249	412	-	20	389	1016	-
	Total	21376	444	1205	26	2437	6751	5347	1183	162	587	514	1506	1214
			2.08	5.64	0.12	11.40	31.58	25.01	5.53	0.76	2.75	2.40	7.05	5.68

Suitability classes (quality) for the ARABLE use category (ha)

ATU	Ha	Class I	Class II	Class III	Class IV	Class V	Average grade
Balint	4935	184	783	2227	1100	641	43
Bara	5695	--	77	1518	3103	997	30
Ghizela	5740	--	444	1450	2209	1637	32
Secas	5006	--	200	901	3104	801	26
Total	21376	184	1504	6096	9516	4076	
		0,86	7,04	28,52	44,52	19,06	

Land suitability classes for WHEAT (ha)

ATU	Ha	Class I	Class II	Class III	Class IV	Class V	Average grade
Balint	4935	345	1135	1727	1333	395	53
Bara	5695	--	342	2335	2620	398	40
Ghizela	5740	--	1033	2353	1952	402	43
Secas	5006	--	501	2503	1652	350	37
Total	21376	345	3011	8918	7557	1545	
		1.61	14.09	41.72	35.35	7.23	

Land suitability classes for MAIZE (ha)

ATU	Ha	Class I	Class II	Class III	Class IV	Class V	Average grade
Balint	4935	839	790	1332	1431	543	49
Bara	5695	--	285	911	3303	1196	32
Ghizela	5740	--	402	2009	2238	1091	38
Secas	5006	--	150	1252	2553	1051	29
Total	21376	839	1627	5504	9525	3881	
		3.92	7.61	25.75	44.56	18,18	

Land suitability classes for SUNFLOWER (ha)

ATU	Ha	Class I	Class II	Class III	Class IV	Class V	Average grade
Balint	4935	99	1382	1579	1283	592	45
Bara	5695	--	285	854	3132	1424	31
Ghizela	5740	--	402	2124	2009	1205	36
Secas	5006	--	150	1152	2252	1452	28
Total	21376	99	2219	5709	8676	4673	
		0.46	10.38	26.71	40.59	21.86	

Land favorability classes for APPLE (ha)

ATU	Ha	Class I	Class II	Class III	Class IV	Class V	Average grade
Balint	4935	197	987	1579	1628	544	46
Bara	5695	--	342	740	3303	1310	32
Ghizela	5740	--	517	1607	2296	1320	34
Secas	5006	--	50	1452	3004	500	31
Total	21376	197	1896	5378	10231	3674	
		0.92	8.87	25.15	47.87	17,19	

Land favorability classes for PAIR (ha)

ATU	Ha	Class I	Class II	Class III	Class IV	Class V	Average grade
Balint	4935	642	691	2073	1332	197	50
Bara	5695	--	285	797	3303	1310	31
Ghizela	5740	--	689	1951	1722	1378	37
Secas	5006	--	100	1101	2653	1152	28
Total	21376	642	1765	5922	9010	4037	
		3.00	8.26	27.70	42.15	18.89	

Land favorability classes for PLUM TREE (ha)

ATU	Ha	Class I	Class II	Class III	Class IV	Class V	Average grade
Balint	4935	1184	1382	938	1283	148	58
Bara	5695	--	513	2563	1993	626	41
Ghizela	5740	115	631	2353	1665	976	39
Secas	5006	--	1051	2103	1552	300	41
Total	21376	1299	3577	7957	6493	2050	
		6.08	16.73	37.22	30,38	9.59	

## Conclusions

Knowing the natural conditions and especially the ecological potential of the land for the main categories of use and cultivated species, is of particular importance in carrying out qualitative assessment and establishment works of their favorability.

The goal, being that of offering specialists and all those involved in agriculture, a global picture of the phenomena that take place within some elementary units of the pedological landscape, from which the general strategy can result to establish the best use.

The determination of the production capacity of the lands can constitute for national and local entities an effective tool for choosing work procedures, which favor an efficient use of land resources within the researched space, in accordance with the specific pedoclimatic conditions.

The primary processing and sale of agri-food products can be an ecological and efficient solution for the future, both in the medium term and in the longer term.

