ГЕНЕЗИС, ОХОРОНА
ТА ВІДНОВЛЕННЯ ҐРУНТІВ

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SOIL CAPABILITY TO THE A MEDITERRANEAN REGION

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ХАРАКТЕРИСТИКА ПОЧВ СРЕДИЗЕМНОМОРСКОГО РЕГИОНА

В данной статье изучается вопрос рациональности посадки леса на заповедной территории Андевало (Андалузия, Испания).

Ключевые слова: характеристика почв, физическое и химическое состояние почв, растительность.

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In the present paper the capability for forest use of the nature reserve soils from Andevalo area (Andalusia, Spain) is evaluated to contribute to conservation and rational use in natural area.
Keywords: soil capability, physical and chemical characterization of soils, vegetation.

Land evaluation parametric models are quantitative, specific and easy methods based on soil properties. Generally they have reduced subjective aspects, to consider interactions among factors, and use field data instead of use limitations *(Aguilar,* 1992*)*.

Software Evaluator (*Del Toro,* 1996) makes land evaluation based on selected chemical properties of soils and generate an evaluation index according to additive parametric model which stablish the relationships between five Mediterranean vegetation types (holm-oak wood, cork-oak wood, pinewood, gall-oak wood, and pasture). This system has been tested in others natural areas in Andalusia (Spain).

MATERIALS AND METHODS

This study has been carried out in the NW portion of the Huelva province, near natural protected areas such as Sierra Pelada, Rivera del Aserrador, and Sierra de Aracena y Picos de Aroche Natural Park.

The soil survey permit to collect 45 profiles and 10 drilling expeditious according three control sections: s1 (0–25 cm), s2 (25–50 cm) and s3 (50–75 cm).

For the analysis of data the computer science program Evaluator was used (*Del Toro*, 1996), which considers the selection of optimal forest atmospheres for each type of vegetation, its physical and chemical characterization, the selection of chemical parameters of reference, its ponderation according to the different sections from control, homogenization of these parameters, obtaining of the adaptability levels, definition of the evaluation index and definition of the classes of aptitude (optimal, very good, good, moderate and inadequate) for each one of the studied forest species.

In table 1 shows the significant variables for each vegetation appear according to the depth of the ground.

Significant variables according to the depth of the soils

Vegetation		Rock fr.	pHac	pHclk	$CO_3^=$	C	N	P	Ca	Mg	Na	K	Fe	Cu	Mn	Zn
Cork oak wood	1		*	*						*	*	*	*	*	*	*
	2	*	*	*					*	*	*	*		*		*
	3	*	*	*					*	*	*	*		*		*
Holm-oak wood	1	*	*	*	*			*	*	*	*	*			*	
	2	*	*	*	*	*	*	*	*	*		*	*			
	3	*	*	*	*	*			*	*	*	*	*		*	
Pasture	1	*	*	*	*	*				*		*	*	*	*	*
	2		*	*		*			*		*	*	*	*	*	*
	3	*	*	*					*		*	*	*	*	*	*
Pinewood	1	*	*	*	*		*		*		*	*	*	*		
	2	*	*	*	*		*			*	*	*	*		*	
	3	*	*	*	*	*			*	*	*	*	*		*	
Gall-oak wood	1	*	*	*	*	*	*	*	*		*				*	*
	2	*	*	*	*	*		*	*		*		*	*	*	*
	3		*	*	*				*		*	*	*	*	*	*

1= depth ≤ 25 cm   2= 25 depth ≤ 50 cm   3= depth > 50 cm

RESULTS AND DISCUSSION

The soil survey of the natural area has been classiffied in six different groups following the FAO (1998) criteria: Leptosols (lithic, eutric, dystric, humic, skeletic), Regosols (leptic), Luvisols (leptic), Cambisols (leptic), Calcisols (luvic) and Fluvisols (eutric). *Table 2* shows edaphic units percentage of Andevalo natural area.

Edaphic units percentage of Andevalo natural area

| Edaphic units	% area
Antrophic residue	0.17
Lithic Leptosols	1.99
Eutric Leptosols	3.01
Humic Leptosols and lithic	9.11
Skeletic Leptosols and lithic	5.17
Lithic humic and Leptosols skeletic	20.52
Dystric and lithic Leptosols	18.07
Dystric and lithic Leptosols and Leptic Regosols	23.21
Humic Leptosols, Lithic and Dystric and Leptic Regosols	2.91
Leptic Regosols	1.22
Luvic Calcisols	0.22
Leptic Luvisols	1.96
Leptic Luvisols and Leptic Regosols	5.90
Leptic Luvisols and Leptic cambisols	6.43
Leptic Luvisols and Eutric Fluvisol	0.10

After to apply parametric model "Evaluator", the different edaphic units was classified in of five aptitude classes for the different forest uses (Table 3).

Table 3

Results of forest soils evaluation applying the Evaluator software

Edaphic units	Holm-oak wood	Cork-oak wood	Pinewood	Gall-oak wood	Pasture
Lithic Leptosols	Inqt.	Inqt.	Inqt.	Inqt.	Inqt.
Eutric Leptosols	Inqt.	Inqt.	Inqt.	Inqt.	Inqt.
Humic and lithic Leptosols	Inqt.	Mod.	Inqt.	Inqt.	Mod.
Skeletic and lithic Leptosols	Inqt.	Mod.	Inqt.	Inqt.	Inqt.
Skeletic, lithic and humic Leptosols	Inqt.	Mod.	Inqt.	Inqt.	Inqt.
Dystric and lithic Leptosols	Inqt.	Inqt.	Inqt.	Inqt.	Inqt.
Dystric and lithic Leptosols and leptic Regosols	Inqt.	Inqt.	Inqt.	Inqt.	Inqt.
Humic lithic and dystric Leptosols, and leptic Regosols	Inqt.	Inqt.	Inqt.	Inqt.	Inqt.
Leptic Regosols	Inqt.	Inqt.	Mod.	Inqt.	Inqt.
Luvic Calcisols	Good	Inqt.	Good	Good	Good
Leptic Luvisols	Inqt.	Inqt.	Inqt.	Inqt.	Inqt.
Leptic Luvisols and Leptic Regosols	Inqt.	Good	Inqt.	Inqt.	Inqt.
Leptic Luvisols and Leptic Cambisols	Inqt.	Mod.	Inqt.	Inqt.	Inqt.
Leptic Luvisols and Eutric Fluvisol	Inqt.	Inqt.	Inqt.	Inqt.	Inqt.

Mod. = Moderate; Inqt.= Inadequate
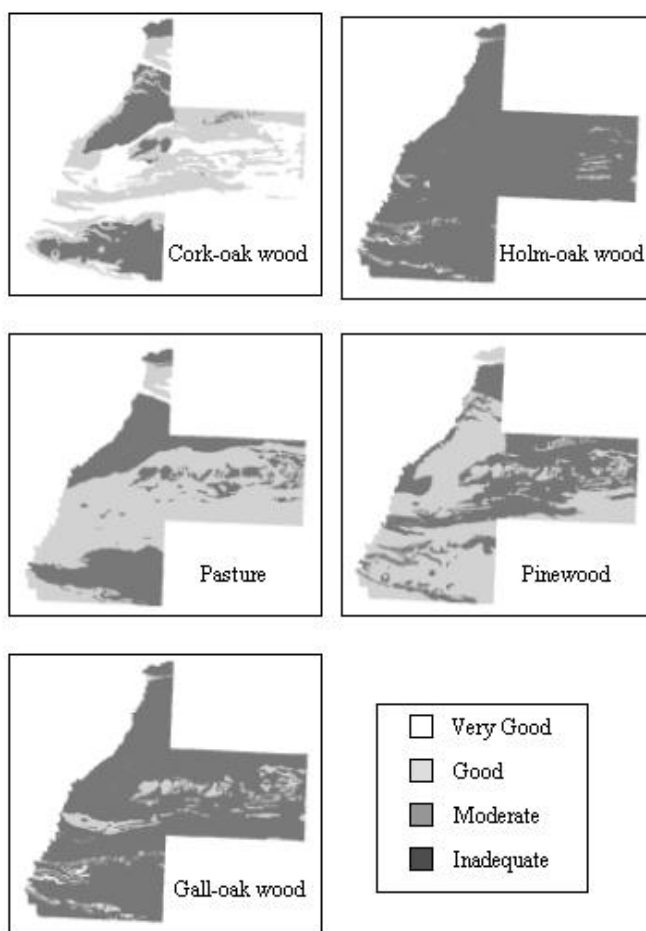
Figures 2,3,4 y 5. Forestry evaluation of Andevalo natural area

The study area shows, mainly, acid pH values, making clear that the best use option is Cork-oak wood, with a good capability in soils like Leptic Luvisols and Leptic Regosols and moderate capability in Leptosols (humic, lithic, skeletic) and Cambisols leptic. Luvic Calcisols could be a good alternative of use for all vegetation types except Cork-oak wood. Both Pinewood and Pasture present a moderate aptitude in Leptic Regosols and Leptosols (humic, lithic), respectively.

In figures 2, 3, 4, 5 and 6 appear the maps of soil evaluation based on suitability of the edaphic units.

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