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CHARACTERIZATION OF SOILS IN ARAD COUNTY

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Abstract: The purpose of this work is the collection, processing and accumulation of scientific data regarding environmental factors, geographical characteristics of the surface, soil resources, data regarding the nature and intensity of limiting factors, qualitative evaluation of lands. Arad county is located in the western part of the country and stretches from the heart of the Apuseni Mountains (to the east) to the subsidence and drainage plain formed by Crișul Alb and Mureș (to the west).

They are studied in relation to the environmental factors that condition their presence, along with them, forming homogeneous ecological territory units (UT or TEO) with specific suitability/favorability for different agricultural or forestry uses for different cultivated plants and with specific current breeding or cultural requirements and technologies.

• Introduction

Formed over a period of thousands of years at the interference of the four shells of our planet (lithosphere, hydrosphere, atmosphere and biosphere), soil is a strategic resource that, scientifically exploited, is renewable, being able to guarantee the food security of humanity and the physical-geographical space necessary for the development of human society. The soil constitutes a significant part of the national wealth and at the same time, the fundamental condition of our existence as an independent nation.

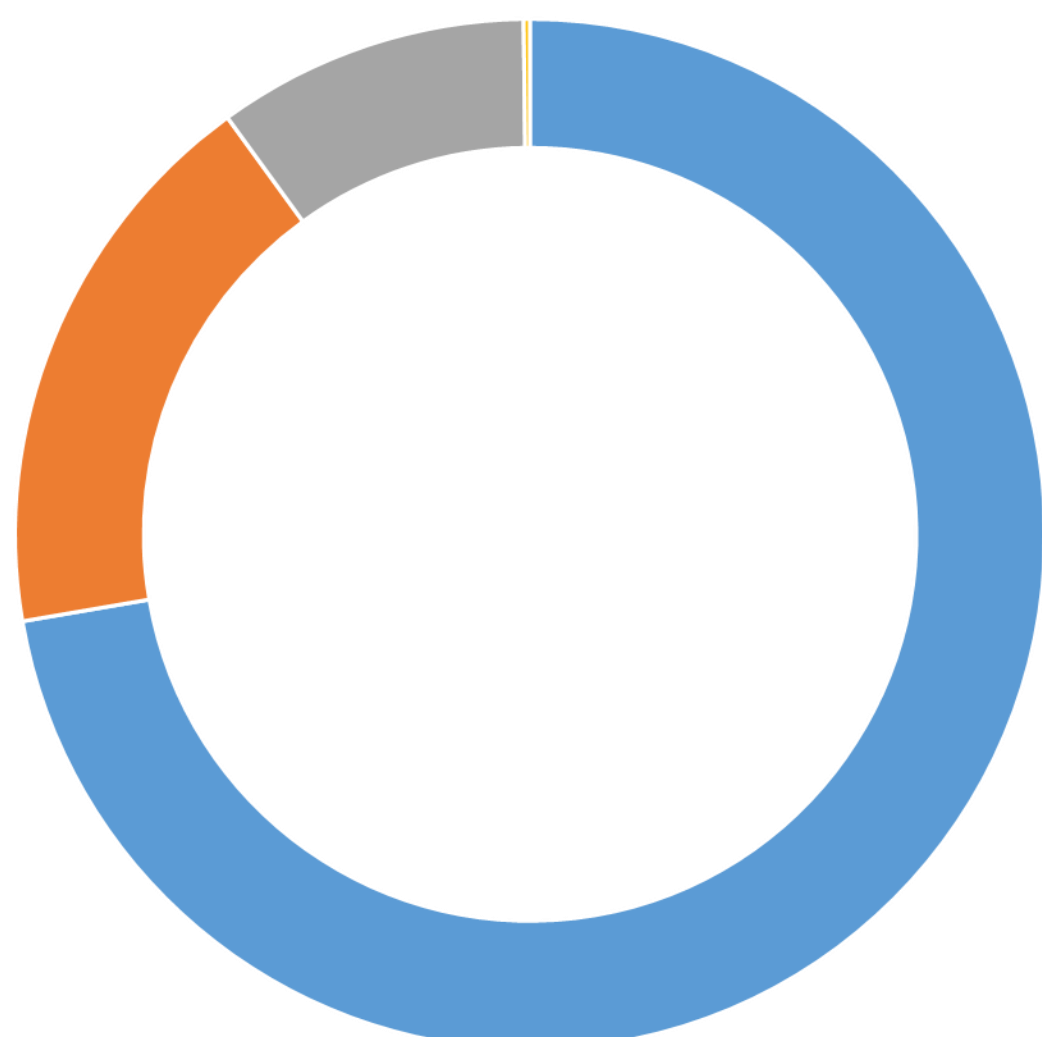
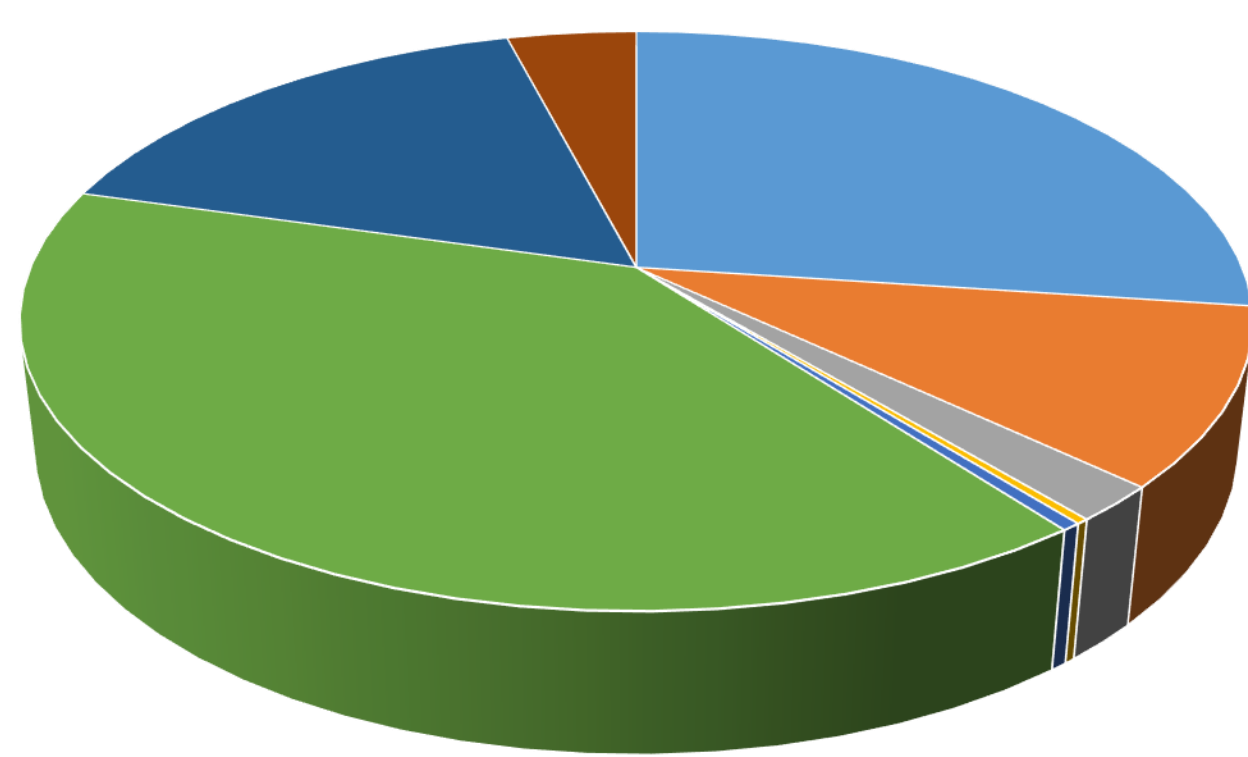
The land of the country is the most precious natural asset of the entire nation and of future generations, it is eternal and constitutes the material condition for the existence of any production.

• Material and method

From a geomorphological point of view, Arad County has a total area of 775409 ha, of which: arable land 349290 ha, pastures 127123 ha, hayland 25664 ha, vineyards 3603 ha, orchards 5578 ha, agricultural 511258 ha, forests 212037 ha, others 52114 ha.

Figure 1. Surface structure for the main use categories in Arad county

Figure 2. Distribution of use categories within the main landforms



The object of study is the soil areas in Arad County, identifying the types and subtypes of soils, the physical, chemical and morphological properties, respectively the determination of the quality classes for the categories of use: arable, pastures, meadows, vineyards, orchards.

Results and discussions

In close correlation with the variety of geomorphological factors that determine the existence of diversified relief units, of the geolithological ones, which have led to a great diversity of parental materials, or of the hydrological ones, as well as of various anthropic interventions within the researched area, the current edaphic envelope is represented by: lithosols (0.71%), regosols (0.07%), psamosols (0.01%), alluvial soils (12.03%), chernozems (23.22%), phaeozoms (4.65%), rendzine (0.01%), eutricambosols (18.58%), districambosols (0.13%), preluvosols (11.46%), luvisols (11.46%), pelosols (5.62%), vertosols (7.03%), gleisols (2.58%), tins (0.17%), solonch (2.36%), erodosols (2.05%), anthroposols (0.02%).

Figure 4. Graphic structure of soil types

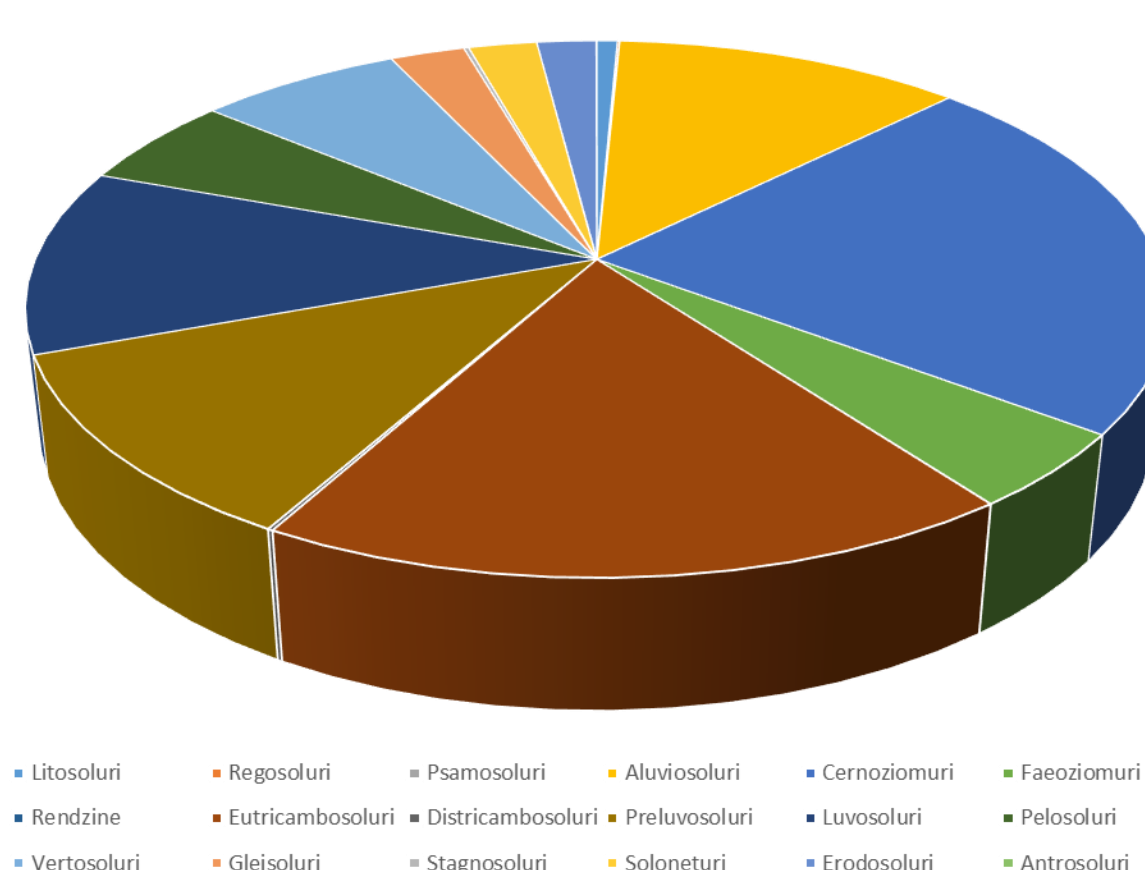
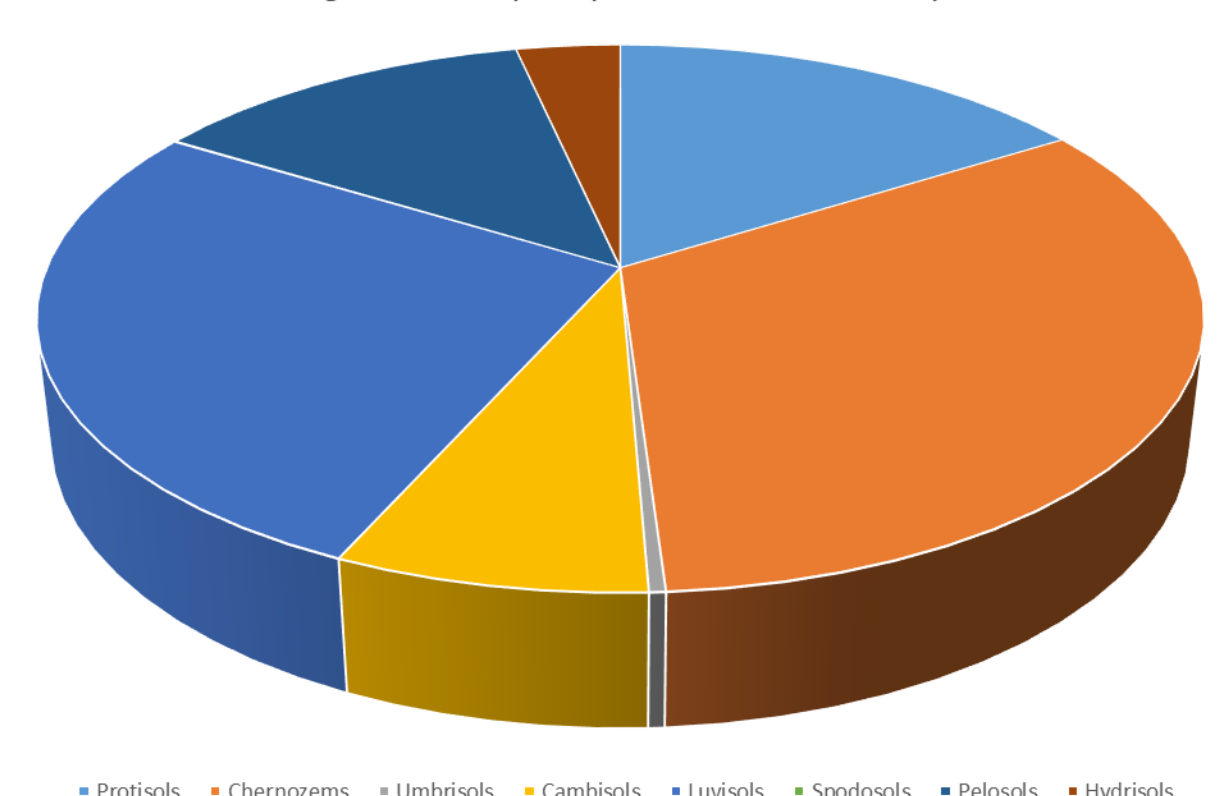


Figure 5. Soil quality classes in Arad county



The following researches, carried out on the occasion of agrochemistry maps, show an insignificant evolution of the areas occupied by soils with a strong acid reaction, in 2004 it increases slightly to 15439 ha (3.40%), then decreases to 14490 ha (3.03%) in 2007.

Limiting factors of the soils in Arad County are determined by natural conditions (climate, relief, bedrock), as well as by anthropogenic activities.

The insignificant reduction of the land areas occupied by soils with a strong acid reaction is due to the action of calcium amendment that in the last 10 years have been decreased.

Conclusions

As an open ecological system, the soil is linked to the environment through a continuous flow of matter and energy. In its long evolution, under the action of natural factors and later of the anthropic ones, the soil tends towards a state of equilibrium through tendencies of equalization of imports and exports of energy and substances, and its state of fertility and production capacity depends to a large extent on its agrophysical properties, but also on the agrochemical ones.