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PATTERNS OF SOIL FORMATION AND DISTRIBUTION IN ARID MOUNTAINS OF THE PAMIR (TNR 14, Bold, Uppercase, Centered)

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Abstract. Some new scientific concepts about the genesis of soils in arid mountains of dry subtropical zone of Pamir were established. It was revealed that the main soil-forming processes, under influence of which developed all the soils of the Pamir are humus accumulation, argilization and leaching under the leadership of the humus-accumulative process. It was showed the leading role of humidity and duration of the biologically active period in the formation of plant landscapes and soil types in all vertical zones as well as the important role of thermal regime in the soil formation of cold and very cold thermal zones that differ by fulvate composition of humus and reddish color profile. (TNR 11, Italic)

Key words: arid, distribution soil, mountains, Pamir, humus. (TNR 11, Italic, up to 5 words)

INTRODUCTION (TNR 12, BOLD, UPPERCASE, CENTERED)

General schemes of the distribution of soils and vegetation as dependent on the spreading of the sum of active temperatures and the degree of the climatic moistening (the Ivanov-Vysotskii humidity factor) in the Pamir Mountains are suggested. It is shown that the development of particular types of soils and vegetation communities in all vertical thermal belts, except for the cold belt, is mainly controlled by the humidity factor (Kann, 1965; Kuteminski and Leontieva, 1966).

MATERIALS AND METHODS (TNR 12, BOLD, UPPERCASE, CENTERED)

About 1000 soils' profiles were made across vertical topographical profiles on mountains' slopes of North and South exposition in the lower, middle and upper part of the main river basins of West Pamir. The analyses (more than 100000) were made according to the accredited classic methodology. Generalization and statistical processing of the high quantitative mass of analytical material let us receive the information about the compound and proprieties of West Pamir soils and draw out the main legitimates of their formation (Cherbari, 2001).

RESULTS AND DISCUSSIONS (TNR 12, BOLD, UPPERCASE, CENTERED)

The modified idea of Sokolov I.A. (1978) and Fridland V.M. (1979) about the possibility of soil classification using several components: ecological-geographic, regime and profile components of soil classification (Table 1).

Table 1. The components of classification

Ecological-geographic	Regime	Profile genesis
1. Mountain chain 2. Type of vegetation	Facies soils subtypes by sum of temperatures $>10^{\circ}$	1. Types of soils 2. Subtypes of soils

The system of hydrous rows (sectors of humidity) determines spectrum of subtypes of soils depending on humidity within the one thermal belt, but the system of thermal rows (vertical thermal belts), within the one hydrous row, determines spectrum of soils subtypes depending on thermal regime of territory.

Strengthening the anthropogenic and technological impact on the soil cover of the Western Pamir leads to disruption of the established biosphere equilibrium and negative consequences (Figure 1).

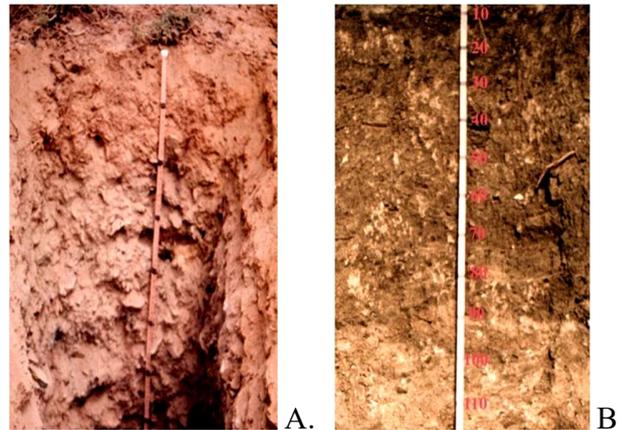


Figure 1. Reddish light brown cryodesertic or Cryo Regosol (A), Reddish dark brown steppe (B)

Soil protection in the region should be considered as a single system of measures aimed at the protection, qualitative improvement and rational use of its land resources.

CONCLUSIONS (TNR 12, BOLD, UPPERCASE, CENTERED)

The main physico-geographical peculiarity of the Western Pamir is not only the combination of high-altitude and aridity, but also in the fact that in the general aridity of climate all vertical thermal belts are distinguished - from the subtropical to the very cold, and within most belts there is a very wide the range of humidification levels ranges from extra arid (80-100 mm of precipitation per year, hidrotermic coefficient less than 0.1) to arid-humid (800-1500 mm of precipitation per year, hidrotermic coefficient - 1-3). Such a variety of hydrothermal regimes in a limited area is unique and does not occur in any mountain system of the World.

REFERENCES (TNR 12, BOLD, UPPERCASE, CENTERED)

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