

Comparison of Different Degraded Grassland Soils in the Qinghai-Tibet Plateau

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The Qinghai-Tibetan Plateau, the largest geomorphological unit on the Eurasian continent, is an important part of the global terrestrial ecosystem. In recent years, the degraded grassland area has reached about $4.251 \times 10^7 \text{ hm}^2$, accounting for 33% of the available area.

Objective of this study are (1) To identify morphological characteristics and physicochemical properties of soils in alpine degraded grassland (2) To investigate the change of soil micromorphology under different degradation grassland.

Therefore, we chosen 3 site from the Hequ horse farm in the eastern Qinghai-Tibet plateau, there are lightly degraded grassland(HQ1-L), moderately degraded grassland(HQ2-M) and heavily degraded grassland(HQ3-H). HQ1-L in the winter pasture, HQ2-M close to the nest, surrounded by more serious desertification, HQ3-H plots selected in the cow enclosure, the surface vegetation was destroyed. Soil samples from each horizon were systematically collected for physicochemical analysis and 100 cm³ core samples were taken from 0-5cm surface soils for the micromorphology analysis.

Vegetation coverage decreased with grassland degradation. The characteristics of the OA layer are root mat, because the dominant species of *Kobresia* belongs to the *Cyperaceae* genus, this is easy to form the root mat. In the HQ3-H degraded grassland, a large number of vegetation degradation, secondary vegetation instead of dominant species, the OA horizon was disappeared.

In conclusion, the exchangeable cations, CEC, total nitrogen (TN) and organic carbon (OC) were decreased with grassland degradation degrees; however, the pH value is exactly the opposite. While, from the micromorphology of soil thin section, with the soil degradation, the porosity obviously decreases while the degree of soil microstructure is also reduced, resulted in mineral ions and free water supply to plant growth are also restricted. Also the activity of soil animals was decreased with grassland degradation.

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