عنوان مقاله:

Study of Physical and Chemical Soil Properties Variations Using Principal Component Analysis Method in the Forest, North of Iran

محل انتشار:

مجله علوم زیستی خاورمیانه, دوره 3, شماره 2 (سال: 1384)

تعداد صفحات اصل مقاله: 7

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خلاصه مقاله:

The field study was conducted in one district of Educational-Experimental forest at Tehran University (Kheirood-Kenar forest) in the North of Iran. Eighty-five soil profiles were dug in the site of study and several chemical and physical soil properties were considered. These factors included: soil pH, soil texture, bulk density, organic carbon, total nitrogen, extractable phosphorus and depth of soil. Principal Component Analysis (PCA), was used to identify the variations of soil properties. Results showed that there are significant relationships between some soil factors and two PCA axes. Content of clay in A۱ and A۲ horizons, bulk density, organic carbon and total nitrogen in A۱ horizon, and content of silt in A۲ horizon, correlated to the first PCA axis. Content of clay, pH, carbon percentage and silt content of B۱ Horizon, and soil depth, were the most important factors correlated to the second PCA axis. Soil profiles that consist high content of clay, with heavy soil texture, and soil profiles with high content of silt, occupied different areas in the forest. The content of total nitrogen and organic carbon also varied noticeably amongst the soil profiles. The variations of soil properties showed correlation with the distribution of trees and variations of altitude. REFERENCES Asly, A and Etter, H. (۱۹۶۹) Forest Management Plan for EducationalExperimental Forest of Tehran University. Tehran University, Tehran. pp. ۳- ۱۰. Salehi and Zahedi ۱۳۷ Brady, N. C and Weil, R. R. (۱۹۹۰) The nature and properties of soil (Tenth edition۰ macmilan publishing company, ۶۲۱ p. Cornelissen, J. H. C, (۱۹۹۶) An experimental comparison of leaf decomposition rates in a wide range of temperate plant species and types. J. Ecol., ۴, pp. ۵۷۳- ۵۸۲. Edwards, C. A., D. E. Reichk and A. Crossley, (۱۹۷۰) The role of soil invertebrates in turnover of organic matter and nutrients. Springer- Verlog, New York: pp. ۱۴۷- ۱۷۲. Finzi, A. C. , Breemen, N. V., Canham, C. D. (۱۹۹۸) canopy tree-soil intraction whitin temperature forests: speices effects on carbon and nitrogen, Ecological application, ۸, ۴۴۰- ۴۴۶ Fisher, R. F and Binkley, D, (۲۰۰۰) Ecology and Management of Forest Soils (Third edition), John Wiley & sons, INC, ۴۸۹ p. Gerrard, A. J, (۱۹۸۱) Soils and landforms. George Allen & Unwin Ltd, ۲۱۹ pp. Goldsmith, F. B. (۱۹۷۳) The vegetation of exposed sea cliffs at South Stack, Anglesey. I. The multivariate approach. J. Ecol., ۶۱, ۷۸۷- ۸۱۸. ... Goodall, D. W. (۱۹۵۴) Objective methods for the classification of vegetation. III. An essay in the use of factor analysis. Australian J

کلمات کلیدی:

chemical and physical soil properties, Multivariate analysis methods, Principal Component Analysis (PCA), Forest of North of Iran

لینک ثابت مقاله در پایگاه سیویلیکا: