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Estonian soil classification as a tool for recording information on soil cover and its matching with local site types, plant covers and humus forms classifications

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Estonian soil classification (ESC) has been used successfully during more than half of century in soil survey, teaching of soil science, generalization of soil databases, arrangement of soils sustainable management and others. The Estonian normally developed (postlithogenic) mineral soils (form 72.4% from total area) are characterized by mean of genetic-functional schema, where the pedo-ecological position of soils (ie. location among other soils) is given by means of three scalars: (i) 8 stage lithic-genetic scalar (from rendzina to podzols) separates soils each from other by parent material, lithic properties, calcareousness, character of soil processes and others, (ii) 6 stage moisture and aeration conditions scalar (from aridic or well aerated to permanently wet or reductic conditions), and (iii) 2−3 stage soil development scalar, which characterizes the intensity of soil forming processes (accumulation of humus, podzolization).
The organic soils pedo-ecological schema, which links with histic postlithogenic soils, is elaborated for characterizing of peatlands superficial mantle (form 23.7% from whole soil cover). The position each peat soil species among others on this organic (peat) soil matrix schema is determined by mean of 3 scalars: (i) peat thickness, (ii) type of paludification or peat forming peculiarities, and (iii) stage of peat decomposition or peat type.
On the matrix of abnormally developed (synlithogenic) soils (all together 3.9%) the soil species are positioned (i) by proceeding in actual time geological processes as erosion, fluvial processes (at vicinity of rivers, lakes or sea) or transforming by anthropogenic and technological processes, and (ii) by 7 stage moisture conditions (from aridic to subaqual) of soils.
The most important functions of soil cover are: (i) being a suitable environment for plant productivity; (ii) forming adequate conditions for decomposition, transformation and conversion of falling litter (characterized by humus cover type); (iii) being compartment for deposition of humus, individual organic compounds, plant nutrition elements, air and water, and (iv) forming (bio)chemically variegated active space for soil type specific edaphon.
For studying of ESC matching with others ecosystem compartments classifications the comparative analysis of corresponding classification schemas was done. It may be concluded that forest and natural grasslands site types as well the plant associations of forests and grasslands correlate (match) well with ESC and therefore these compartments may be adequately expressed on soil cover matrixes. Special interest merits humus cover (in many countries known as humus form), which is by the issue natural body between plant and soil or plant cover and soil cover. The humus cover, which lied on superficial part of soil cover, has been formed by functional interrelationships of plants and soils, reflects very well the local pedo-ecological conditions (both productivity and decomposition cycles) and, therefore, the humus cover types are good indicators for characterizing of local pedo-ecological conditions. The classification of humus covers (humus forms) should be bound with soil classifications.
It is important to develop a pedocentric approach in treating of fabric and functioning of natural and agro-ecosystems. Such, based on soil properties, ecosystem approach to management and protection natural resources is highly recommended at least in temperate climatic regions. The sound matching of soil and plant cover is of decisive importance for sustainable functioning of ecosystem and in attaining a good environmental status of the area.