

survey program, providing difficult access to decision makers. In order to organize and safeguard the spatial data produced at the Brazilian Agricultural Research Corporation (Embrapa), a spatial data infrastructure was developed (IDE-Embrapa) where thematic collections related to soil have been gathered and published in a web environment. The objective of this work is to present the initiative of organizing the spatial data of Embrapa related to soil information through the development of the IDE-Embrapa. In order to achieve this goal, the spatial data that were stored in a previous geoinformation infrastructure developed by Embrapa Soils were shifted to the IDE-Embrapa infrastructure. The implementation of the IDE-Embrapa was performed using open source software, based on the Open Geospatial Consortium standards. The IDE-Embrapa infrastructure uses GeoNode platform, which integrates a geospatial database (PostGis) with a map server (GeoServer) and a metadata catalog (PyCSW), and is controlled by a Content Management System in the Web environment. Currently, 100 information layers and 60 documents were catalogued in the IDE-Embrapa Soils ([geoinfo.cnps.embrapa.br](http://geoinfo.cnps.embrapa.br)). These data and metadata are already available for download. Maps represented by various territorial boundaries and scales were registered. The main maps of Embrapa Soils are already catalogued and are available to the user with their own color pattern (styling) for each type of thematic map, allowed by incorporation of a file with the styled layer descriptor (SLD) format to each map. Soil maps, for example, are presented with the colors established according to the Brazilian Soil Classification System, which facilitates users to visualize the spatial distribution of soils in a given region. Currently, the IDE-Embrapa infrastructure is making available the Brazilian soil information available to any external user. This work is under construction and we hope soon to have all maps prepared by Embrapa Soils catalogued and available, in order to safeguard data and metadata, for ready use of these by society.

**Keywords:** Geoinformation, Geoservices, Geodata

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#### (8245 - 598) Pedo-ecotone as a specific soil-geographic unit

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At the present stage of the development of geographic science, there has emerged a need to improve the conception of geographical ecotones as transitional bands between various natural systems. Within such territories, one type of landscape (soil) is changed by another, for example, the steppe – by the dry steppe (chernozems – by kastanozems). In the northwest of the Black Sea region, a distinct transitional stripe is the transition stripe from the middle to the dry Steppe, which at the same time is a peculiar transition from calcic chernozems to the gypsic kastanozems. At the present stage, the soils of this ecotone are affined to the gypsic kastanozems in the brownish color of the humus accumulative horizon, with clear signs of lessivage, very low sodic resistance, low buffer capacity and chemical signs of soil sodicity. A well-defined humus accumulative horizon, humus indexes, a broad ratio of carbon content in humic acids to the one in fulvic acids and indicators of the optical properties of humic acids characterize the soils of this ecotone as calcic chernozems. A characteristic feature of ecotones (and hence of pedo-ecotones) is the pronounced spatial streamlining of their internal structure. Accordingly, in the pattern of the soil cover of the researched area, three groups of soils, which form the local catenas, can be distinguished: the background soils of the plakors and narrow watersheds (sodic and residual-sodic calcic chernozems); the soils of the lower parts of the slopes and the soils of the reclined thalwegs of the hollows – are characterized by chernozem parameters; slightly xeromorphic and slightly eroded soils of the upper parts of the slopes – closer to gypsic kastanozems. It also confirms the transitional (ecotonal) status of the researched area. Thus, the transition stripe from the gypsic kastanozems to the calcic chernozems in the northwest of the Black Sea region should be defined as a medium-dry

steppe pedo-ecotone – a peculiar soil-geographic unit. Actually, the pedo-ecotone should be defined as a dynamic spatio-temporal soil-geographic system, which is formed in the contact zone of certain types (subtypes) of soils and is characterized by relatively high gradients of properties and parameters, internal inhomogeneity and functional interconnection of the structural elements, among which both the objects of adjacent pedo-ecotone-forming bodies and specific for the given pedo-ecotone formations are found.

**Keywords:** Pedo-ecotone; chernozems; kastanozems; steppe.

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#### (5260 - 2739) Relation of pedoenvironments with forms of nitrogen and phosphorus in semiarid soils.

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There are few studies related to the influence of the climatic gradient, mainly rainfall, on N and P dynamics in soils of the semiarid region of Brazil, being this information primordial for the planning of the soil management, since these nutrients are considered limiting for the production of biomass of the region. Eight sample areas were selected considering two climatic gradients (hot and semihumid, and hot and semiarid), which contained the three main orders of representative soils of the Brazilian semiarid region Planossolos, Luvisolos e Neossolos Regolíticos (Typic Albaqualf, Aridic Haplustalf and Typic Ustertent). In these places trenches were opened, horizons were identified and samples were collected for analysis in all present horizons. The values of the fraction of P (P-Al, P-Fe and P-Ca) and mineral N ( $\text{NH}_4^+$  and  $\text{NO}_3^-$ ) were evaluated. The highest levels of P fractions were found in the Luvisolos (Aridic Haplustalf) region of the hot and semiarid climate, with predominance of P-Al and P-Fe fractions, which may be related to the reduced  $\text{Ca}^{2+}$  contents in this soil and the soil pH, since P-Al and P-Fe are more frequent in more developed soils and acids, while the P-Ca predominates in alkaline soils. As for mineral N fractions ( $\text{NH}_4^+$  and  $\text{NO}_3^-$ ), the levels were considered low in all soils and horizons, only the Luvisolos (Aridic Haplustalf) of the hot and semiarid climate had higher levels of nitrate. It was possible to conclude that with increasing rainfall there was an increase in P and N fractions in all Planossolo (Typic Albaqualf) and Luvisolos (Aridic Haplustalf) profiles, however, the source material influenced more than rainfall.

**Keywords:** pedogenesis, fractionation of P,  $\text{NH}_4^+$  and  $\text{NO}_3^-$

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#### (3397 - 747) Soil fertility mapping: its transference to farmers by using GIS online tools

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The GIS helps to study the spatial variability of different characteristics on landscape and becomes an important tool for the adequate management under precision agriculture concept. The goal of this study was to use available *Online* tools in order to display the spatial variability of some soil chemical properties on field. In the project participated 235 farmers of CoopeTarrazú R.L. and CoopeLlanobonito R.L. cooperatives located at "Zona los Santos", Costa Rica and dedicated to coffee production. Cooperative Foment Institute (INFOCOOP) and University of Costa Rica (UCR) sponsored this study