



History of Soil Survey and Evolution of the Brazilian Soil Classification System - SiBCS

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In Brazil soil surveys started around 1940 and the first map with soil information of São Paulo State was published in 1943. The Committee of Soils of the National Service for Agronomic Research was created in 1947 by the Agriculture Ministry and became an historical landmark for soil survey in Brazil. In 1953, the National Program of soil survey was approved and the first soil map and report of Rio de Janeiro State was released in 1958, followed by São Paulo State in 1960. This is also the origin of Embrapa Soil Research institution. Other milestones were the soil surveys published by the Agronomic Institute of Campinas (IAC) and the natural resources studies published within the RADAMBRASIL Project, initially planned for the Amazon region and later covering the whole country. Many soil studies followed and a comprehensive knowledge of tropical soils was achieved resulting in successful technologies for agriculture production, in lands considered by many as of “low fertility and acid soils with limited or no agricultural potential”. However, detailed soil surveys are still lacking; only 5% of the country soils are mapped in 1:25.000 scales, and 15-20% in 1:100.000. In the first soil survey reports of Rio de Janeiro (1958) and São Paulo (1960), soil classes were defined according to Baldwin, Kellog & Thorp (Yearbook of Agriculture for 1938), and Thorp & Smith (Soil Science, 67, 1949) publications. It was already clear that the existing classification systems were not adequate to represent the highly weathered tropical soils of the large old landscapes in the cerrado (savanna like) region, or the soils formed on recent hydromorphic conditions at the Amazon Basin and Pantanal region. A national classification system to embody the country’s large territory and environmental variation from tropical to subtropical and semiarid conditions, as well as the diversity of soil forming processes in old and new landscapes had to be developed. In 1964, the first attempt of a national soil classification was presented by Marcelo Camargo (Embrapa Soils) and Jacob Bennema (FAO adviser). When Soil Taxonomy was first published in 1975, a field workshop was held in Brazil, and the system was not accepted by the country scientists; one main reason was the usage of climate as a main attribute for suborders. In 1978, the first national soil field correlation meeting was held with the goal of developing the national system, giving origin to the Brazilian Soil Classification System (SiBCS). In 1980, a working group was created by Embrapa Soils and other institutes resulting in four approximations of the system. In 1999, the first edition of the SiBCS was released, followed by a second edition in 2006 and the third in 2013. The SiBCS is a hierarchic system, based on morphogenetic soil attributes, with six categorical levels: order, suborder, great group, subgroup, family, and series. It has 13 soil orders, and it is structured as a key down to subgroup level. Many soil attributes are based on concepts adopted by the Soil Taxonomy (United States) and by the World Reference Base for Soil Resources (WRB - FAO). The development of the SiBCS is supervised by a national executive committee, and information is available at <http://www.cnps.embrapa.br/sibcs> (in Portuguese).