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# Visual assessment of soil structure quality in an agroextractivist system in Southeastern Amazonia

Laura Fernanda Simões da Silva (1), Raquel Stuchi Boschi (1), Matheus Ortega Gomes (2), and Miguel Cooper (1)

(1) Escola Superior de Agricultura “Luiz de Queiroz” - ESALQ-Universidade de São PauloBrazil (laurafsimoes@yahoo.com), (2) Universidade Federal de São Carlos/ UFscar

Soil structure is considered a key factor in the functioning of soil, affecting its ability to support plant and animal life, and moderate environmental quality. Numerous methods are available to evaluate soil structure based on physical, chemical and biological indicators. Among the physical indicators, the attributes most commonly used are soil bulk density, porosity, soil resistance to penetration, tensile strength of aggregates, soil water infiltration, and available water. However, these methods are expensive and generally time costly for sampling and laboratorial procedures. Recently, evaluations using qualitative and semi-quantitative indicators of soil structure quality have gained importance. Among these methods, the method known as Visual Evaluation of Soil Structure (VESS) (Ball et al., 2007; Guimarães et al., 2011) can supply this necessity in temperate and tropical regions. The study area is located in the Piranheira Praialta Agroextrativist Settlement Project in the county of Nova Ipixuna, Pará, Brazil. Two toposequences were chosen, one under native forest and the other under pasture. Pits were opened in different landscape positions (upslope, midslope and downslope) for soil morphological, micromorphological and physical characterization. The use of the soil visual evaluation method (SVE) consisted in collecting an undisturbed soil sample of approximately 25 cm in length, 20 cm in width and 10 cm in depth. 12 soil samples were taken for each land use. The samples were manually fragmented, respecting the fracture planes between the aggregates. The SVE was done comparing the fragmented sample with a visual chart and scores were given to the soil structure. The categories that define the soil structure quality (Qe) vary from 1 to 5. Lower scores mean better soil structure. The final score calculation was done using the classification key of Ball et al. (2007) adapted by Guimarães (2011). A change in soil structure was observed between forest and pasture. The presence of layers of different depths, and size and shape of aggregates resulted in a lower Qe in the forest soils (Qe= 2,04 $\pm$0,4 ), followed by the pasture (Qe= 3,09 $\pm$ 1,3 ). These results indicate certain degradation in the soil structure in the pasture. The variability of the soil structure in the forest samples was lower. The pasture samples presented a worse soil structure when compared to the forest, although their Qe values can be considered good.