SOIL STRUCTURE QUALITY AND THE PARTICIPATIVE QUALITY INDEX FOR THE NO-TILL SYSTEM (IQP)

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Due to the great difficulty in measuring the suitability and quality of the No-Till System (NTS), the Brazilian Federation of No-Till System and Irrigation (FEBRAPDP), In partnership with Itaipu Binacional and Itaipu Technological Pole, proposed a participatory methodology, the Participative Quality Index for the No-Till System (IQP). The IQP is composed of indicators that aim to evaluate the farm system management and to predict potential impacts. The project is based on a cycle of continuous improvement, proposing in a participatory way the self-evaluation of the farmer in relation to a conservationist and productive base. The soil structure is the main component of the soil capable of affecting it´s fertility, and it is directly affected by the soil management. A new methodology for rapid assessment of soil surface structure (Soil Structure Rapid Diagnosis – DRES) was proposed by Londrina State University (UEL), FEBRAPDP, Embrapa Soils, Embrapa Soybean, Embrapa Wheat and Embrapa Western Agriculture, with the support of Itaipu Binacional. The sample, taken as a monolith from 0 to 0.25 m, is separated into layers (when visually differentiated) and identified as to size of clods, signs of compaction and presence of roots. From the note attributed per layer, the sample note is calculated by means of a weighted average, allowing the qualification of the structure. The note varies between 6 and 1, being the highest reflex score of good structural quality, in which the structure resembles that of native, uncultivated soil. However, the lowest score reflecting poor structural quality and the need for diagnosis and adequacy of the management performed in the area. The criteria adopted for the determination of the quality of the structure are: size and shape of the aggregates, presence or not of compaction features or other modality of soil degradation, shape and orientation of cracks, roughness of rupture faces, rupture resistance, distribution and aspect of the root system and evidence of biological activity. IQP and DRES arise from the need to monitor agricultural areas and the sustainability of production systems. These methodologies, as applied tools, converge and facilitate the monitoring of the effects resulting from the soil management, allowing the identification of the need to adapt the systems.

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