

## **Ph D ABSTRACT**

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February 2011.

**Title: Quantitative and semi-quantitative indicators of soil structure.**

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**ABSTRACT.** The soil, which is the base of many ecosystems, is a fragile and difficult to renew resource. The maintenance of soil quality depends on the diagnosis of soil degradation. Soil physical degradation is a highlighted theme in the world, because of the losses caused to the agriculture. To understand and to improve soil use and management systems contributes to mitigates of soil physics degradation. Soil physical degradation monitoring can be conducted through soil physical quality indicators. In this work we studied in the first chapter the quantification of tensile strength of soil aggregates and its correlation with organic carbon content of an Oxisol under crop livestock system. Tensile strength, friability and soil organic content showed effects on soil physical quality under crop livestock system, and indicated the more adequate animal stocking rate. In chapter 2 we studied a method to visually evaluate soil structural quality. This way, evaluations to promote improvements to this method, to make the method less subjective, were done. As a result a revised chart for visual evaluation of soil structure was produced. Finally, in chapter 3, we validated this method for visual evaluation of soil structure with other indicators of soil physical quality. The visual method demonstrated similar results to those of tensile strength, soil bulk density, soil resistance to penetration and air permeability and indicated the different qualities of soil at the different treatments studied.

**Key words:** soil quality, soil structure, visual evaluation

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