



Cohesion and Angle of Internal Friction as Indicators of Structural Change in Two Soils Under Eucalyptus Cultivation in the São Paulo State.

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INTRODUCTION/OBJECTIVE

The aim of this study was to estimate the shear strength parameters by apparent cohesion (c) and angle of internal friction (f) from Coulomb criterion for to evaluate soil structural changes promoted by management, in the two soils of clayey texture (Ultisol and Oxisol) cultivated with eucalyptus..

MATERIAL AND METHODS

The research was realized in productions units in the Suzano Group, located in Itararé County, São Paulo State, Brazil. The shear strength tests were conducted in situ at superficial layer (0.05 - 0.10 m) with shear strength equipment. The soil management impact was evaluated at two field positions: plant line (PL) and traffic line (TL). The volumetric soil water content during shear strength tests were 0.26 and 0.33% in the Oxisol and Ultisol, respectively

RESULTS

The Coulom equations to Utisol were: PL: $t = 22.5 + 0.1517 sn$ ($R^2 = 0.99$) and TL: $t = 28.5 + 0.175 sn$ ($R^2 = 0.99$). For the same soil, the apparent cohesion values were 22.5 and 28.5 and the angle of internal friction values were 9° and 10°, to PL and TL, respectively. The Coulom equations to Oxisol were: PL: $t = 14 + 0.158 sn$ ($R^2 = 0.97$) and TL: $t = 19.5 + 0.239 sn$ ($R^2 = 0.97$). For this soil, the apparent cohesion values were 14 and 19.5 and the angle of internal friction values were 9° and 13°, to PL and TL, respectively. .

CONCLUSION

Both soils had low apparent cohesion and angle of internal friction values due high volumetric soil water content. Although the high volumetric soil water content, the dynamic parameters found to Oxisol was bigger than that parameters found to Utisol, independently field position. The shear strength parameters had little variation between field positions, because the eucalyptus cultivation had seven years per cycle, promoting soil structure recuperation.