

## Ratio solid - air - water of coconut fiber in function to different particle sizes

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### INTRODUCTION

Coconut is one of the industry waste material of coconut water and coconut fruit, be it natural, grated or dehydrated. The industrial refining of coconut shells produces fibers with varying particles sizes.

### OBJECTIVE

The objective was to evaluate the relationship of solids – air – water of coconut fibers of different diameters.

### MATERIAL AND METHODS

This study was conducted in the laboratory in the Department of Soil Science of the FCA/Univ. Estadual Paulista, Botucatu, Sao Paulo - Brazil.

The experimental design was randomized blocks with seven treatments, three blocks and three replicates.

Treatments: Coconut fiber (CF) fibrous (particles of 25 to 55 mm); chips (15 to 25 mm), mixed (5 to 15 mm) and granulated (<5 mm).

Parameters evaluated: solid particles (SP), aeration space (AS), available water (AW), buffering water (BW), and the remaining water (RW).

The materials were placed into rings with a volume of 90,478 cm<sup>3</sup> and allowed to saturate for 24 hours, after this period, the rings were placed in the tension table under tensions 0,1; 0,6 and 1,0 kPa, remaining for 48 hours each tension and measuring the weight in each time interval. Upon reaching constant weight the rings were dried with forced air circulation at temperature of 65 °C.

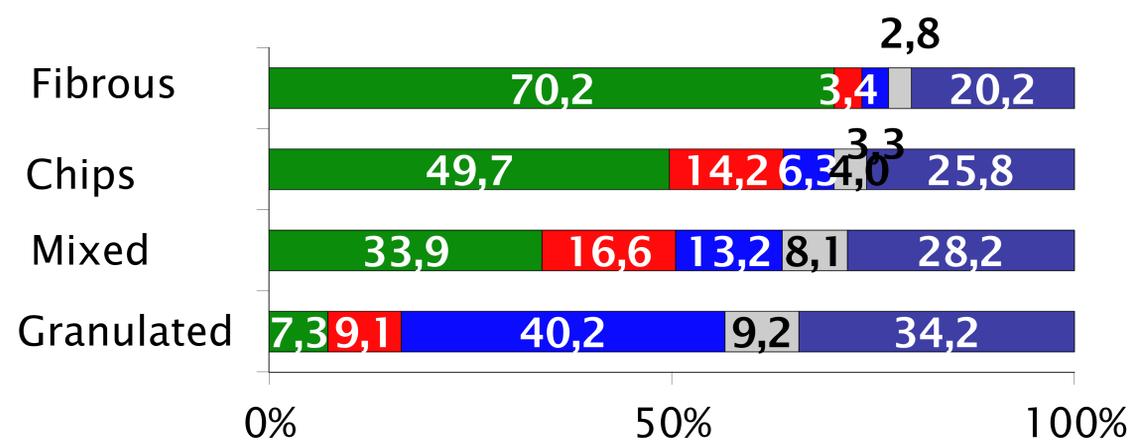
The results were statistically analyzed using the Tukey test.

### RESULTS



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■ Solid particles ■ Air space ■ Available water  
■ Buffering water ■ Remaining water



### CONCLUSIONS

There are significant differences reducing the size of the particles. There was a reduction in the volume of SP (70,2% fibrous, 49,7% chips, 33,9% mixed and 7,3% granulated) and an increase in the (3,4% fibrous, 14,2% chips, 16,6% mixed and 9,1% granulated), AW (3,3% fibrous, 6,3% chips, 13,2% mixed and 40,2% granulated), BW (2,8% fibrous, 4% chips, 8,1% mixed and 9,2% granulated) and RW (20,2% fibrous, 25,8% chips, 28,2% mixed and 34,2% granulated). Particles sizes of CF retains a certain amount of water, which results in the need different management.