Characterization of the Moment of Endosperm Cell Damage During Coffee Drying

F.M. BORÉM, R. SAATH, E. ALVES, J.H. TAVEIRA

Engineering Department and Phytopatology Department - UFLA, Lavras, MG, Brazil
Department of Rural Engineering – UNESP/FCA, Botucatu, SP, Brazil

SUMMARY

The objective of this work was to analyze the effect of different methods of drying on the maintenance of the integrity and contraction of the cell walls and plasma membrane of natural and washed coffee. Both washed and natural coffees were submitted to three drying processes: Solar drying, 40 °C air-heated and 60 °C air-heated. During drying, coffee grains were randomly sampled and fragments of the endosperm were prepared for scanning electronic microscopy. For each sample images were generated and registered digitally. In the electromicrographs cells measurements were taken, evaluating changes in the plasma membrane as well as variations in the cellular area for different moisture content levels and periods of drying. The results allowed us to conclude that the variation in the cellular area of the coffee endosperm depends on the type of processing method and the drying conditions, albeit the phenomenon of cell contraction and expansion differed in intensity and moment of occurrence. Those changes can be related to the changes in plasma membrane integrity. The largest rate of variation of the cytoplasm was observed when the grains were dried at the temperature of 60 °C, in the intermediate phase, with moisture content between 30% and 20% (wb).