

GENE EXPRESSION PROFILES IN ARABICA COFFEE SEEDS SUBMITTED TO DIFFERENT POST-HARVEST PROCESSING, DRYING AND STORAGE

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The low seed longevity of arabica coffee has consequences as to use seeds soon after harvest, and the germplasm conservation has to be made “in situ”. Several factors affect the quality of seeds, including post-harvest processing. In this study, we evaluated the influence of coffee seed processing and the drying methods on genes expression linked to the DNA transcription and protection of this molecule. We selected the AP2, a transcription factor usually involved in response to abiotic stress; the methylase DNA which acts turning off genes; and the telomerase gene that protects the DNA molecule and which is involved with ageing of cells. After harvesting, seeds were kept in the coffee fruits (natural seeds treatment) or seeds were processed by fermentation in water or by mechanical removing of mucilage. Seeds were dried in a mechanical dryer or in the shade until 35% and 12 % moisture content and, after that, they were stored during 12 months. The AP2 gene expression was down-regulated in the mechanical drying treatment for seeds with 35% and 12 % moisture content and stored for 12 month. On the other hand, AP2 were up-regulated in natural seeds treatment when they were dried in the shade and remained up-regulated from beginning to end storage. We could observe a marked down-regulation in the DNA methylase expression when seeds were dried in a mechanical dryer from 35 % to 12% moisture content. This was not observed for dried seeds in the shade. For natural seeds treatment dried in the shade until 12 % moisture content, there was a down-regulation in the telomerase gene expression. However, at this moisture content, the telomerase gene was expressed in the fermented seeds and in the seeds with mechanical removing of mucilage. This last behavior was observed for seeds mechanically dried. In our preliminary study, the expression profiles of the genes studied were more influenced by the drying process than to the types of seed processing and time of storage.