Edible Coatings in Post Harvest of Oranges (Citrus sinensis)

Silvestre Armani, Joao Pedro (School: Colegio Gabriela Mistral)

Brazil is the biggest orange producer in the world and the state of Paraná is the third biggest producer in Brazil. Because this fruit has low shelf life, agrochemicals are widely used to conserve the oranges. These substances cause countless issues, such as contamination of water sources, fauna and flora, along with several diseases, such as cancer. Therefore, we have decided to test natural products that may be used as a protection mechanism for the fruits. This study aimed to assess the protective potential of different natural coatings as chitosan (extracted from the shrimp's cephalothorax, which is incorrectly discarded and pollutes the environment) and bee wax on agro ecological oranges. The following treatments were carried out: control (no application), distilled water, chitosan 0.5%, bee wax 4% solution, chitosan 0.5% solution + bee wax 4% solution and bee wax. Six treatments with 5 replications each were assembled, using 5 fruits per repetition, with a total of 150 oranges. The analysis was carried out every 10 days and the assessed parameters were: soluble solids (SS), acidity, appearance and fresh mass. The obtained data was submitted to a variance analysis and the mean numbers were compared with the Tukey test ($p<0,05\%$). The temperature of the environment and the relative humidity were measured daily. The tests showed that even after 50 days of exposure to treatments, when associated with the bee wax, chitosan may be used as a protective membrane for the fruit. Statistical data showed that the best appearance happened when these two elements were associated. Therefore, they can substitute the use of agrochemicals and avoid the discard of shrimp's cephalothorax.

Awards Won:
Third Award of $1,000