

Trial Shipment of Coffee from Santos (Brazil) to Livorno (Italy) Monitoring Relative Humidity, Temperature, Grain Moisture Content and Condensation in Non-ventilated Commercial Containers

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SUMMARY

Six containers (three commercial and three prototype) were monitored during a shipment from Brazil to Italy. The containers were stowed in three different places (hold, below deck and on deck) on the ship. Each prototype was located next to a conventional container. Temperatures, relative humidity, condensation and changes in moisture content, were monitored. The coffee container located below deck was less affected by variations (0.7%) in relation to the moisture content than those in the hold and deck, especially close to the upper layer of the cargo. Coffee located in the hold showed the highest variation in moisture content (3%) and in addition, the container showed visible condensation. Coffee transported on the deck had an intermediary moisture variation (2%) and there was no visible condensation. The coffee moisture content variation of the prototype containers was similar to that of the commercial ones, mainly in the upper layer of the cargo (2 to 3%). The moisture content gain in the upper layer of the cargo was 1 to 3% while the increase in water activity was small (0.70). This suggests that the diffusion of moisture occurs very slowly inside the cargo. In this situation there may be sufficient time and conditions for fungal growth. The regions of the container near the wall and ceiling are susceptible to condensation since they are close to the headspace with its high relative humidity. More details of the data collected during the trip will be presented.