

Title Flowboard for postharvest gas mixtures applications to fruits and vegetables without waste of gas

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Abstract

Controlled-atmosphere storage of fruits and vegetables can be defined as the storage under standardized gas composition at different proportions from those of the atmospheric air. Flowboard is a device used to study controlled-atmosphere storage. This system allows pure gases kept in high pressure cylinders to be mixed and injected at specified flow and composition in containers where vegetables are stored. Based on the flowboard designed by Calbo (1989) for open systems, a continuous flow system was assembled with higher economy of gases. The main parts of this system are: butane gas regulator mounted on LPG cylinders (differential valves) and adapted for pressure regulation, jars for gases humidification and copper capillary tubes for flow control and production of specified mixtures. The adaptations carried out allowed the application of gases without wastes. Basically, the water column barostate was replaced by differential valves, which eliminated gas waste. The laminar gas flow leaving each tube is proportional to the difference between the feed and output pressures of the capillary tube. As the output pressure is practically the same as the atmospheric pressure, the pressure differential is the same as the output pressure in the differential valves (60 cm water column). Such pressure adjustment is achieved using this pressure differential as a reference for the differential valve for each gas. The reference pressure is provided by a set of springs fit to the valves, which yields controlled atmospheric compositions for each gas mixer to be used in different technical applications without waste of pure gases to the open atmosphere. Acknowledgements: FAPES