Title Production of ethylene absorber for extending the post-harvest life of Gros michel banana

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Abstract

This work was aimed at investigating the process of production of ethylene absorber using marl and potassium permanganate ($KMnO_4$). The 2:1 (w/w) ratio of marl: water was an appropriate ratio for ethylene absorber production since it resulted in the highest viscosity. Marl solution was then mixed with 1%, 3%, 5% and 7% (w/w) of $KMnO_4$ solution. The mixtures were subsequently dried at 150, 175, and 200°C using a vacuum dryer or a hot air oven. The drying time of the mixtures decreased as the drying temperature increased. The drying time of samples in the hot air oven was shorter than the drying time in the vacuum dryer. The ethylene absorber with 3%$KMnO_4$ solution had an absorption rate close to that of the two commercial ethylene absorbers. Ethylene absorber samples dried using the vacuum dryer had faster absorption rates than those dried using the hot air oven. The ethylene absorber was packed in three types of packaging materials i.e. proof, thin mulberry and glassine papers. The ethylene absorber packed in proof paper allowed the highest absorption rate compared to the thin mulberry and glassine papers. The ethylene absorber was then placed in perforated oriented polypropylene (OPP) pouch. The absorption rates of produced ethylene absorber were compared to those of the two commercial ethylene absorbers. It was found that the produced ethylene absorber achieved the highest absorption rate. The ethylene absorber produced was used to maintain the quality and the storage life of 'Gros Michel' bananas compared to the two commercial ethylene absorbers. The storage life of bananas stored with the produced ethylene absorber was 15 days while bananas stored with the commercial ethylene absorbers were 18 days.