Ripening delay and reduction of free fatty acids of oil palm fruit in response to 1-methylcyclopropene

N. Nualwijit, L. Lerslerwong, W. Imsabai

Acta Horticulturae 1011: 343-349. 2013.

Abstract

The harvested oil-palm fruit bunches are transported quickly to processing, within 24 hours, due to a rapid increase in the free fatty acids (FFA). The FFA lower the quality of palm oil. As an inhibitor of ethylene action, 1-methylcyclopropene (1-MCP) is widely used and effectively delays the ripening of numerous climacteric fruits, helping to maintain quality. The goal of this study is to find out whether 1-MCP treatment can improve the quality of palm oil. We investigated fresh fruit bunches at harvest stage of 'Tenera' oil-palm. Fumigations with 1-MCP at concentrations of 0, 500 and 1000 nl L-1 were done in a closed plastic box for 18 hours. Each fruit bunch was evaluated for three sections: fruitlets at the bottom, middle and top. The ripening of palm fruit was delayed by 1-MCP, when evaluated by the fruit peel coloring that turns from black to reddish orange. The fumigations did not affect total fruit oil content. FFA in palm fruit increased rapidly and were the highest on day 1 after treatments. The percentage of FFA in 1-MCP treated fruits, however, was lower than in untreated control, especially in fruit at the bottom or top of a bunch. The 1-MCP applications also stopped further changes in FFA content in the following 2 to 4 days. In conclusion, 1-MCP application has the potential to maintain the level of FFA in palm fruit after harvest, and to allow longer times of transportation from the fields to the manufacturers.