

Title Effect of ripening temperatures on shelf life and quality of partially ripened 1-MCP-treated bananas

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Abstract

To understand whether 1-MCP will be commercially practical for bananas, it is important to determine how it affects the ripening process at different storage temperatures as research with 1-MCP has investigated the effect of 1-MCP in ripening of bananas at a single temperature. Thus, we examined the effect of ethylene and 1-MCP treatment on shelf life and fruit quality in bananas (cv. Williams) ripened in different temperature ranges. Fruit was treated with ethylene at $100 \mu\text{L L}^{-1}$ for two consecutive days and then were exposed to 1-MCP at 0 or 300 nL L^{-1} for 24 h at 22°C . Thereafter, bananas placed into temperature controlled rooms at 16, 19, 22 and 25°C with approximately 90% RH. 1-MCP was most effective at increasing shelf life and firmness when fruit were ripened at 16°C . 1-MCP application significantly declined fruit weight loss compared to the control at all storage temperatures, except 25°C . However, no similar trend was observed in total soluble solids of control and 1-MCP-treated fruit ripened at different temperatures. The results showed that response of fruit to 1-MCP treatment was dependent on storage temperature after ripening initiation by ethylene. These observations suggest that a combination of optimum ripening storage temperature and application of 1-MCP to partially ripened bananas will further extend in shelf life and also improve fruit quality.