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## 1-METHYLCYCLOPROPENE (1-MCP) FOR DELAYING RIPENING OF TURNING BLACK HASS AVOCADOS, UNDER NAYARIT (MEXICO) CONDITIONS

J. A. Osuna-Garcia<sup>1</sup> y J. A. Beltran<sup>2</sup>

<sup>1</sup> INIFAP-C.E. Santiago Ixcuintla Nayarit. Apdo. Postal # 100. Santiago Ixcuintla, Nayarit. C.P. 63300. MÉXICO. E-mail: [josunaga@tepic.megared.net.mx](mailto:josunaga@tepic.megared.net.mx)

<sup>2</sup> AgroFresh Inc.. 727 Norristown Road. Spring House, PA 19477-0904. USA. E-mail: [tbeltran@agrofresh.com](mailto:tbeltran@agrofresh.com)

1-MCP has been shown to be very effective for protecting a large number of fruits, vegetables and ornamental plants against the adverse effects of ethylene, including accelerated ripening and senescence. In avocados, there have been a number of studies reporting good activity of 1-MCP for delaying the ripening of fruit treated at physiological maturity (approximately 21% dry matter). However, there is not much known about the performance of 1-MCP for slowing down the ripening process of avocados treated at a more advanced maturity (turning black) stage. It would be very valuable to just have two to three additional days. The objective of this study was to determine the efficacy of 1-MCP for delaying the ripening process of turning black Hass avocados, during the Nayarit 2002 growing season. A set of recently harvested fruit at physiological maturity (near 25.6% dry matter) was promptly treated with 1-MCP at 200 ppb (12 h at  $22 \pm 2$  °C and  $60 \pm 10\%$  R.H.), while other separated sets of untreated avocados were kept under similar conditions. At the conclusion of this 1-MCP exposure, all the treated and untreated fruit were transferred to a cold storage ( $6 \pm 0.5$  °C and  $90 \pm 5$  % R.H.) during eight days. Immediately at the end of the cold storage, three sets of non-treated avocados were then exposed to 300, 600 or 1200 ppb 1-MCP (12 h at  $22 \pm 2$  °C and  $60 \pm 10\%$  R.H.). All the previously treated avocados (before and after cold storage), as well as the remaining sets of untreated fruit were then placed under shelf-life conditions ( $22 \pm 2$  °C and  $60 \pm 10\%$  R.H.). A third series of 1-MCP treatments (300, 600 y 1200 ppb / 12 h at  $22 \pm 2$  °C and  $60 \pm 10\%$  R.H.) was then performed on previously non-treated avocados, when they started to turn from green to black. Finally, there were two treatments including two sequential applications of 1-MCP (200 ppb) on separated sets of fruit.

Under the conditions of this study, 1-MCP (200 ppb) was most effective when applied to recently harvested fruit, or when used in sequential applications at the beginning and conclusion of the cold storage. These treatments delayed the ripening process by three to four additional days when compared to the untreated fruit. A single 1-MCP application at the end of the cold storage required 600 ppb to provide the same results to those obtained with the fruit treated with 200 ppb soon after harvest. Finally, when treated at the turning black stage, 1-MCP at 300, 600 or 1200 ppb did not show a good activity to delay the ripening of avocados.