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## **COLD TEMPERATURE AND 1-METHYLCYCLOPROPENE (1-MCP) FOR EXTENDING TEMPORARY STORAGE AND SHELF-LIFE OF HASS AVOCADOS, UNDER NAYARIT (MEXICO) CONDITIONS**

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Mexico is the world largest avocado producer with nearly 800,000 tons (near 34% of global production) harvested from 93,000 ha annually. Most of this avocado production is commercialized in the national market while only 9% is exported. The fruit for the national market is for the most part handled under room conditions, while the exports always use low temperatures. Fruit held under refrigeration can normally be stored three to four weeks without a significant loss in quality. However, chilling injury and advanced ripening can still take place due to the low temperatures and ethylene accumulation. Both of these adverse effects can be reduced by using 1-MCP, which blocks the action of ethylene in harvested fruits and vegetables, thereby, limiting some of its adverse effects such as accelerated ripening and senescence. The objective of this study was to determine the combined effect of cold temperature and 1-MCP to extend the postharvest life and quality of Hass avocados produced under Nayarit conditions, during the 2002 growing season. High quality first grade (171 to 210 g) avocados were exposed to 1-MCP at 200 ppb (12 h at  $22 \pm 2$  °C and  $60 \pm 10\%$  R.H.) one day after being harvested at physiological maturity (near 27% dry matter). A set of untreated fruit was kept under similar conditions to those of the avocados being treated, using a complete randomized design with five replications. At the conclusion of the 1-MCP exposure, all the treated and untreated fruits were held at low temperature ( $6 \pm 0.5$  °C and  $90 \pm 5\%$  R.H.) for up to 35 days, that were followed by a shelf-life period ( $22 \pm 2$  °C and  $60 \pm 10\%$  R.H.). Color development, pulp softening, percent of ripened fruits and external general appearance were evaluated at 5-day intervals, starting after 15 day of cold storage. There were significant differences in all the evaluated parameters, with 1-MCP delaying the avocado ripening by four additional days in the case of fruit stored under refrigeration for up to 25 days, and approximately 2 more days when compared to the untreated fruit stored longer than 25 days. The 1-MCP treated fruit, when stored up to 25 days, and then transferred to market simulated conditions reached the ready-to-eat firmness (5-10 Nw) after eight days of shelf-life, while the untreated only needed 2-4 days of shelf-life. That is, 1-MCP extended the shelf-life by 4 to 6 additional days. The 1-MCP treated avocados also had a much better general external appearance that lasted for a longer period than the untreated fruit.