

Abstract:

The shelf-life duration of the astringent 'Triumph' persimmon is inversely proportionate to the length of the storage period, even if the fruit is stored in a controlled atmosphere (CA), the limiting factor being fruit softening. Persimmon fruit softening is considered to be controlled predominantly by ethylene at very low levels. When stored at -1°C in an ethylene-free atmosphere, very little softening occurs, but at 20°C firm fruit may soften within 1-2 days after cold storage. Therefore, the anti-ethylene agent 1-MCP was applied at different doses for 24 hours at 20°C , to fruit that had been stored in either air or CA, to examine the possibility of extending its shelf-life. The fruit was treated in both the absence and presence of 80% CO_2 , applied to remove astringency. Fruit softening at 20°C following treatment was monitored with the 'Firmalon' firmness tester and by finger pressure. Ethylene evolution by the fruit was measured daily. The rates of ethylene evolution and fruit softening declined with the increase in 1-MCP from 0 to 600 ppb. A 10-fold higher dose had no further effect under the experimental conditions. This response was enhanced in an 80% CO_2 atmosphere in comparison with treatment in air. The commercial shelf-life of the fruit was doubled following exposure to 1-MCP, the effect becoming stronger as the season advanced and the rate of softening of untreated fruit accelerated. The response of the CA-stored fruit was therefore the most marked. No adverse effects of the treatment were noticed, but there was also no observed effect on the development of the black spot disease, caused by *Alternaria alternata*, which now became the storage-limiting factor.