

ABSTRACT

In recent years, the cultivation of persimmon in Spain has significantly increased, being 'Rojo Brillante' the main cultivar. The problems associated with having the cultivation centralized in a single cultivar make necessary to search for other early and late season cultivars, in order to extend the harvest period. In the case of stone fruits, their consumption has experienced an important reduction in the last years, mainly attributed to a decrease in fruit quality. Therefore, the availability of new cultivars adapted to the market demand is vital for the fruit sector.

The aim of this Thesis was to evaluate the behavior during cold storage of new peach, nectarine and apricot cultivars, as well as persimmon cultivars from different origin that can extend the varietal range in the Comunidad Valenciana. In the case of stone fruit, two peach cultivars, three nectarine cultivars, and nine apricot cultivars, proceeding from the different breeding programs of the Instituto Valenciano de Investigaciones Agrarias (IVIA), were selected. In persimmon, the study was conducted in twenty-one cultivars with good agronomic features coming from the germplasm bank of the IVIA. The stone fruit cultivars were stored at 1°C (95% RH) for a period of 1 to 4 weeks, followed by 3 days at 20°C, simulating shelf-life conditions. Persimmon fruits were stored 5 days at 20°C, simulating retail handling conditions, or during a variable period from 1 to 4 weeks at 1°C (95% RH), followed by 5 days at 20°C. At harvest and during storage the following parameters were evaluated: color, firmness, weight loss, soluble solids content, acidity, maturity index, respiration and ethylene production, volatile compounds production (acetaldehyde and ethanol), and sensory quality.

From the two peach cultivars studied, 'VIVAC0059-08' maintained an acceptable quality after 4 weeks of storage at 1°C; whereas, 'TVIA0101-01', with a high quality at harvest, was only adequate for direct consumption. Similarly, the nectarine and apricot cultivars evaluated, with high sensory quality at harvest, were not suitable for cold storage. In all cases, the limiting factor was fruit softening.

Considering that the limiting factor for persimmon commercialization is the loss of firmness, all the cultivars studied, except 'Tonewase', presented a good firmness after 5 days of storage at 20°C. All the pollination constant non astringent (PCNA) cultivars maintained a commercial firmness during a longer storage period (3-4 weeks) at 1°C than the rest of cultivars. On the other hand, 'Garidells' and 'Ferrán 12' (pollination constant astringent (PCA) cultivars), 'La Selva 14' (pollination variant non astringent (PVNA) cultivar), and 'Hiratanenashi' (pollination variant astringent (PVA) cultivar) showed a drastic loss of firmness during storage at 1°C, which may indicate a high susceptibility of these cultivars to low temperatures. From all the cultivars studied that proved to be suitable for cold storage stand out 'Aizumishirazu-B', 'Reus 6', and 'Tomatero' as early season cultivars, and 'Constantí' and 'Amankaki' as late season cultivars, compared with the mid season cultivar Rojo Brillante, which makes them interesting to extend the marketing season of persimmon. In all the PCA, PVNA and PVA cultivars, the treatment applied with high concentrations of CO₂ was effective removing the astringency of the fruits.