

Title Use of microperforated films and oxygen scavengers to maintain storage stability of fresh strawberries

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Abstract

The effectiveness of 2 biaxially oriented polypropylene (BOPP) and 4 biaxially oriented polypropylene microperforated films (MP) of different transmission rates (7 and 9 holes) with and without oxygen scavengers, on storage stability of fresh strawberries were studied. Gas concentration in trays, pH, total soluble solids, surface color (L^* and a^*), electrical conductivity, sensory acceptance, texture profile and FT-NIR analyses were measured during storage at 4 °C. The microperforations and oxygen scavenger significantly affected the maintenance of an optimum gas composition within the package for increasing strawberry storage life and quality. The BOPP group had the greatest total soluble solids reduction from 9.72% to 7.25% and also highest pH changes (3.55–3.81) while MP groups showed the lowest pH change (3.55–3.72) at the end of storage. The MP fruit were firmer than the BOPP fruit, and L^* and a^* values were also better maintained. At the end of storage, the highest firmness values were obtained in the MP package with 616.35 gf for the 9-hole and 607.28 gf for the 7-hole films, whereas BOPP and BOPP + scavenger values were 421 gf and 448 gf, respectively. FT-NIR can be used for monitoring quality of strawberry nondestructively.