

### Abstract:

The effects of postharvest treatment with a novel antagonist of ethylene, 1-methylcyclopropene (1-MCP), have been compared with storage under different atmospheric conditions and with the postharvest treatment applying the antioxidant diphenylamine (DPA) on scald susceptible apple fruits. Apples cv. 'Granny Smith' harvested at Laimburg (South Tyrol, Italy) at early, optimal and late harvest dates were treated with 1  $\mu$ l l<sup>-1</sup> 1-MCP at room temperature for 12 hours and then stored under normal air condition, in controlled atmosphere and in ultra low oxygen atmosphere (ULO) for a period of 4 and 6 months. Initial low oxygen stress (ILOS) at 0,4% O<sub>2</sub> for 2 weeks after harvest was also applied, followed by ULO storage. 1-MCP reduced completely the incidence of superficial scald under all long-term storage conditions, even after 6 months of storage in normal air. The total absence of superficial scald was also observed on apples stored with ILOS followed by ULO and on fruits treated with DPA, but not on DPA-untreated apples under ULO conditions. The incidence of core flush ? the major internal disease ? decreased with lower O<sub>2</sub> contents of different storage atmospheres, but a considerable reduction was achieved by a treatment with 1-MCP or DPA. A physiological disease, limited to the surface of the fruits, resembling the symptoms caused by inadequate O<sub>2</sub>/CO<sub>2</sub> equilibrium during storage in controlled atmosphere, was observed on 1-MCP treated fruits stored in controlled atmospheres. Fruits treated with 1-MCP maintained a higher inner quality in terms of firmness and acidity after storage but also after the following 7 and even after 14 days of shelf life at 20 °C, compared to untreated fruits. The content of total soluble solids was not influenced by 1-MCP.