

Abstract:

Elevated CO₂ can inhibit ethylene effects. The mechanism of this inhibition is not exactly known. It was investigated whether competition with ethylene at the receptor binding-site is involved. The receptor binding-site was blocked by 1-methylcyclopropene (1-MCP). In this case CO₂ can not have an effect via ethylene perception. The influence of 10 kPa CO₂ was studied at 1-MCP treated tomato on the vine (cv. 'Tradiro') during storage. The ethylene production rate of tomato on the vine at 20 °C was inhibited by 1-MCP and by CO₂. After 1-MCP pre-treatment, CO₂ still inhibited ethylene production. It can be concluded that the effect of CO₂ on ethylene action is not (always) directed via inhibition of ethylene binding at the receptor site. It was also investigated whether CO₂ can inhibit fruit abscission. After 5 days of storage, the required force to remove fruits from the vine was measured. The fruit removal force of control and of CO₂ treated fruit decreased. However, treatment with 1-MCP prevented this decrease.