

### **Abstract**

The effect of oxygen (low and superatmospheric ( $> 20$  kPa) concentrations), carbon dioxide and temperature on the respiration rate of 'Elsanta' strawberries, was evaluated. The strawberries were stored in glass jars at three temperatures ( $2^{\circ}\text{C}$ ,  $7^{\circ}\text{C}$  and  $14^{\circ}\text{C}$ ). The jars were flushed with humidified gas mixtures. Two carbon dioxide levels (0 and 20 kPa) were combined with 8 levels of oxygen (0, 2, 5, 20, 50, 60, 80 and 100 kPa). Temperature, carbon dioxide and low oxygen concentrations significantly influenced the respiration rate. The respiration rates at superatmospheric oxygen concentrations ( $> 20$  kPa) were not significantly different from those at 20 kPa  $\text{O}_2$ . A model based on Michaelis-Menten kinetics to describe the respiration rates was constructed, which permits lower respiration rates at lower oxygen concentrations. The influence of temperature was described using an Arrhenius equation, and carbon dioxide was considered as a non-competitive inhibitor of the respiration.