

Title            Quality characteristics of 'Royal Gala' apple, stored under refrigeration and controlled atmosphere  
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### **Abstract**

An experiment was conducted to evaluate the effect of storage conditions under controlled atmosphere (CA) associated with refrigeration on the quality of 'Royal Gala' apple produced in commercial orchard in Vacaria, Rio Grande do Sul, Brazil. Harvesting was performed when the fruits reached the commercial maturation. After selection of fruits without damage, uniform in size and skin colour, the fruits were packed in plastic boxes and stored for 8 months in minichambers at 0.5 plus or minus 0.2 deg C and 96 plus or minus 2% relative humidity. Several atmosphere conditions were evaluated: 2 kPa O<sub>2</sub> and 3 kPa CO<sub>2</sub>; 1 kPa of O<sub>2</sub> and 1 kPa CO<sub>2</sub>; 1 kPa O<sub>2</sub> and 3 kPa CO<sub>2</sub>; and 1 kPa O<sub>2</sub> and 3 kPa CO<sub>2</sub> with ethylene absorption (ethylene concentration was maintained between 0.01 and 0.04 micro l/litre). Refrigeration was used as control (20.8 kPa O<sub>2</sub> and <0.2 kPa CO<sub>2</sub>) at similar temperature and relative humidity conditions. Fruit analyses (transverse and longitudinal diameters, mass, pulp firmness, titratable acidity, total soluble solids, total soluble sugars, reducing sugars and sucrose) were accomplished after harvest at 2-month intervals. The results showed a decrease in fruit diameter and mass during storage CA and refrigerated conditions. The use of CA maintained titratable acidity, total soluble solids, total soluble sugars and sucrose contents during fruit storage. The best CA storage condition for 'Royal Gala' apples was the atmosphere of 1 kPa O<sub>2</sub> and 3 kPa CO<sub>2</sub> with ethylene absorption.