

Title Modelling the respiration rate of green mature mango under aerobic conditions
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Abstract

Accurate measurement of respiration rate is an important aspect in designing and operating systems such as controlled and modified atmosphere storage. Models based on regression analysis and enzyme kinetics were developed with the help of respiration data generated at temperatures 5, 10, 15, 20, 25 and 30 °C for green mature mango fruit using the closed system method. A model based on second-order polynomial regression, simultaneously incorporating the factors influencing respiration, such as temperature, O₂ consumption, CO₂ evolution and storage time, was proposed. All the developed models were tested for their validity at 12 °C. All showed good agreement with the experimentally estimated respiration rate, although models based on enzymatic kinetic with Arrhenius-type temperature dependence and three-parameter second-order polynomial regression were found to have a closer agreement than the other models studied.