Abstract

The underlying principle behind storage techniques like controlled atmosphere storage and modified atmosphere packaging involves manipulation of respiration rate of the stored produce. However, since respiration rate is dependent on factors like storage temperature and composition of storage atmosphere, a mathematical approach to predict the respiration rate under given conditions would be an immense help in both design and process control of such storage systems. Experimental data were generated at temperatures 10, 15, 20, 25 and 30 °C for banana fruit using the closed system method. The generated data were used to develop two different models based on regression analysis and enzyme kinetics, respectively. Both models were tested for its validity at 12 °C. The models showed good agreement with the experimentally estimated respiration rate, though the model based on enzymatic kinetic with Arrhenius type temperature dependence was found to have a closer agreement than the other model studied.