

Abstract:

Experiments for the determination of respiration rates of mango “Nam Dok Mai” were carried out in a closed system at various temperatures. Changes of the O₂ and CO₂ concentrations in the closed system were recorded with time. It was found that Michaelis-Menten equation with uncompetitive inhibition kinetic fitted best with the experimental results. The temperature dependence of the constants of the respiration rate equation followed an Arrhenius relationship. Experiments for the determination of permeability of Linear Low Density Polyethylene (LLDPE) were carried out at 13°C for the film thickness of 25 μm. LLDPE film was used in modified atmosphere packaging (MAP) experiments. MAP experiments were carried out at 13°C and 90% RH with various thickness of LLDPE film. A mathematical model that could describe the dynamic of O₂ and CO₂ concentrations inside the package of MAP of mango was formulated. The results of the model agreed well with the experimental results with the values of correlation coefficient (R²) greater than 0.90. The model could be used for the selection of the packaging film appropriate for the MAP of mango “Nam Dok Mai”