Minimum O_2 levels to maintain 'Palmer' mango aerobic metabolism under controlled atmosphere storage

Caio M. Fukui [1,2 *]; Luana F. dos Santos [1]; Tassiane A. de Souza [1,3]; Bruna P. de C. Pires[1]; Jasciane S. Alves [1,4]; Daniel A. Neuwald [5,6]; Sergio T. de Freitas [1]; Mikaele de S. Santos [1,4]

[1]Brazilian Agricultural Research Corporation, Embrapa, 56302-970, Petrolina, PE, Brazil; [2]Federal University of Santa Maria, 97105-900, Santa Maria, RS, Brazil; [3]State University of Bahia, 48900-000, Juazeiro, BA, Brazil; [4] Federal University of Vale do São Francisco, 56300-000, Petrolina, PE, Brazil; [5]Lake of Constance Research Centre for Fruit Cultivation (KOB), 88213, Ravensburg, Germany, [6]Department Production Systems of Horticultural Crops, University of Hohenheim, 70593 Stuttgart, Germany. *Corresponding author. E-mail address: mizuto.fukui@gmail.com

Brazil is among the largest mango exporters in the world. Several technologies have been commercially applied to maintain mango postharvest quality during fruit transportation to distant markets. One technology is controlled atmosphere (CA), where low O_2 pressures (pO_2) is applied to marine containers aiming to reduce aerobic respiration and extend fruit postharvest life. The objective of this study was to determine the minimum pO_2 to maintain 'Palmer' mango aerobic respiration under CA conditions. After harvest, 'Palmer' mangoes were weekly sealed in 20 L polyethylene chambers at 9.0°C (±0.5°C) with relative humidity of 92% (±2%) for seven weeks. O_2 and ethanol levels were assessed every hour inside the sealed chambers to determine the moment of ethanol production by the fruit, which represents the transition from aerobic to anaerobic respiration, which was used to determine the minimum O_2 levels required to maximally inhibit fruit aerobic respiration. In four chambers each with a total of 26 fruit was evaluated weekly in the study. The experiment was carried out with 'Palmer' mangoes produced in two growing seasons. Mangos produced in winter and summer required different pO_2 to maximally inhibit fruit aerobic respiration, which ranged from 0.30 to 4.70 kPa and 1.44 to 11.15 kPa, respectively.

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