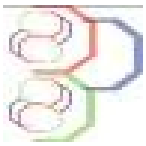

Journal of Applied Biosciences 83:7535– 7544

ISSN 1997–5902

Effect of Activebag® Modified Atmosphere Packaging on the Postharvest Characteristics of Mango Fruits, *Mangifera indica* L, Cultivar Tommy Atkins

Githiga, Ruth[1*], Ambuko, Jane[1], Margaret, Hutchnison[1] and Willis, Owino[2]
[1]University of Nairobi, Department of Plant Science and Crop Protection P.O Box 29053-00625, Nairobi
[2]Jomo Kenyatta University of Agriculture and Technology, Department of Food Science and Postharvest Technology P.O Box 62000-00100, Nairobi
*Corresponding author, Email: githigaruth@gmail.com

Original submitted in on 5th May 2014. Published online at www.m.elewa.org on 30th November 2014. http://dx.doi.org/10.4314/jab.v83i1.6

ABSTRACT
Objective: This was to evaluate the efficacy of MAP in maintaining the postharvest quality of mango fruits.
Methodology and results: The fruits were harvested from a commercial orchard, (Karurumo Orchards) located in Embu county of Eastern province. The fruits were harvested at advanced maturity during the pre-climacteric rise phase when most of the flesh had turned yellow. They were selected for uniformity in colour, size and shape and randomly separated into three equal batches of 50 fruits each. The first batch was packaged in Activebag®, second batch in ordinary (commercially used) polythene bags while the third batch was left unpackaged as control. Five fruits from each treatment were sampled every three days during the shelf life period and evaluated for various physiological and physicochemical parameters associated with mango ripening and quality including ethylene evolution, respiration rate, cumulative weight loss, firmness, hue angle, total soluble solids, total titratable acid, soluble sugars, ascorbic acid and beta-carotene. MAP whether in Activebag® or ordinary polythene was effective in maintaining the quality of mango fruits compared to the unpackaged controls. Slow ripening changes of Activebag® fruits was accompanied by a delayed respiratory climacteric and generally lower respiration rates compared to ordinary bag and unpackaged fruits. At the end of the observation period, Activebag® fruits were 16% firmer compared to unpackaged fruits. The initial average weight was 635g and modified atmosphere packaging had a remarkable effect on cumulative weight loss with fruits packaged in the ordinary polythene bag and Activebag® fruits losing only 7.4% of the initial weight compared to 12% in the case of unpackaged fruits (control). Higher levels of total soluble solids (˚brix) 5.5g/100g and total soluble sugars (6g/100g) observed at the beginning of storage (6 days after packaging) signalled advanced ripening of unpackaged fruits. However as the storage time progressed, the levels of each of the soluble sugars evaluated were higher in Activebag® fruits. Similarly, Activebag® fruits retained higher levels of titratable acidity (0.39%and ascorbic acid compared to ordinary bag fruits (0.36%).
Conclusion: Packaging mangoes in Activebag® after harvest at ripe stage was effective in delaying most of the ripening related changes in mango fruits thereby maintaining the quality and extending their shelf life. Although ordinary polythene packaging maintained quality of the fruits better than unpackaged fruits, the positive effects were negated by high incidences of rotting.

Key words: Mango, MAP, postharvest, quality, shelf life