

Development of postharvest handling of longan for exporting

Apai, W.*¹, Jaroensuk, S.¹, Likhitragulrung, S.¹, Sukhvibul, N.¹, Noppakoonwong, U.¹, Amaroek, S.², Rattanakam, S.², Nukphuk, K.², Paosantanpanid, C.², Hantavee, M.³, Jarinthorn, S.⁴

¹Office of Agricultural Research and Development Region 1, Muaeng, Chiang Mai, Thailand

²Agricultural Engineering Research Institute, Muaeng, Chiang Mai, Thailand

³Chiang Mai Agricultural Research and Development Center, Muaeng, Chiang Mai, Thailand

⁴Chiang Rai Horticultural Research Center, Muaeng, Chiang Rai, Thailand

*Corresponding author, Email: wittayaapai@hotmail.com

#Presenting author, Email: wittayaapai@hotmail.com

DOI: 10.14455/DOA.res.2014.156

Abstract

Longan is one of the important economic crops for export from Thailand but it has a short shelf life of 2-3 days. Fruit fumigated with sulfur dioxide (SO₂) could commercially extend shelf life during export for 30-40 days but it frequently produces residues over tolerance standards in imported countries, i.e. P.R. China. The Office of Agricultural Research and Development Region 1, Chiang Mai province conducted a study on postharvest management of longan in 2010-2013. Adoption of a SO₂ Good Fumigation Practice standard decreased residues and 65 SO₂ fumigation plants were certified. A SO₂ waste scrubber was developed using lime and increasing media thickness. In addition, the study on the research found some other techniques for decreasing SO₂ residue in fruit flesh for export, i.e. fruit wetting from rain should be dipped in HCl 1% containing sodium metabisulfite 5% for 5 minutes. The results found that SO₂ residue in fruit flesh was significantly less than the conventional method. The research on the alternatives to replace SO₂, i.e. edible coatings, cold and hot treatments, food preservatives, antioxidants, acid dips and gases used in the fruit were studied. The results found that dipping in HCl 6.4% for 5 minutes showed the highest efficacy and prolonged shelf life for 35 days at 2-5°C and 85-90% r.h. This treatment had low HCl residue in fruit flesh and thus safe for consumer. The exporter and consumer acceptances had 82 and 80%, respectively. Therefore, original dipping machine was developed in order to replace manual dipping. The capacity of this method was 10 baskets per 5 min/time and this could be greatly benefited for longan exporters on a commercial scale.

Keywords: sulfur dioxide (SO₂), hydrochloric acid (HCl), Good Fumigation Practice for SO₂ fumigation plant