

**SELECTIVE DISSEMINATION OF INFORMATION  
AS OF October 2018**

**BANANA**

**Bautista, O.K., Absulio, W.L., & Lumdang, E.G. (2018). Ripen Saba Banana with Kamias. MARID Agribusiness Digest, 29 (6), 62-64.**

Description

To address the uneven ripening problem of Saba, Filipino farmers and small traders resort to the use of calcium carbide, locally known as carburo. Calcium carbide is used in most countries of Southeast Asia to ripen fruits. When Calcium carbide is not available, growers use leaves of kakawate or madre de kakaw, scientifically called *Gliricida sepium* to hasten the start of ripening of their harvested fruits. Leaves of acacia or rain tree, scientifically called *Samanea saman* has also been used in some parts of the country but to much lesser extent. Recently, researchers from Postharvest Horticulture Training and Research Center (PHTRC) of the College of Agriculture and Food Science, University of the Philippines Los Baños reported for the first time that *Averrhoa bilimbi* fruits, locally called kamias or kalamyas in Filipino, release high amount of natural ethylene that could be used for ripening Saba bananas.

**Keywords: /Banana/ /Saba banana/ /Ripening/Averrhoa bilimbi/**

**Pongprasert, N., Srilaong, V. and Kaewsukseang, S. (2018). 1-MCP micro-bubbles delaying postharvest ripening of 'Khai' banana. Acta Hort. 1213, 245-250  
DOI: 10.17660/ActaHortic.2018.1213.34**

Abstract

The effect of 1-MCP micro-bubbles (1-MCP-MBs) on the ripening process of KluaiKhai banana was investigated. The system of 1-MCP designed for use as aqueous micro-bubbles (MBs) solutions was constructed. Banana fruits were dipped with 100, 300 and 500 ppb of aqueous 1-MCP micro-bubbles (1-MCP-MBs), then stored at 25°C for 10 days. 1-MCP-MBs was effective to delay postharvest ripening of banana fruit. The effectiveness of 1-MCP-MBs to delay the ripening was increased with a higher concentration of 1-MCP. 1-MCP-MBs maintained a higher level of Hue value which was correlated with a higher level of total chlorophyll content of 1-MCP-MBs treated banana fruit. 1-MCP-MBs also reduced the respiration rate and ethylene production compared to the control. 1-MCP-MBs delayed the yellowing and maintained firmness of Khai banana fruits during storage. 1-MCP-MBs also maintained higher total phenolic compounds but tended to reduce antioxidant capacity. These results indicated that 1-MCP-MBs can be used as an alternative method for delaying the postharvest ripening of Khai banana fruits.

**Keywords: /banana/ /1-MCP microbubble/ /ripening/**

## **BITTER GOURD**

**Valida, A., Rivera, F.R., Salabao, A., Benitez, M., Sudaria, E., Acedo, A. and Ekman, J. (2018). Bitter gourd (*Momordica charantia*) quality grading at two storage temperatures. *Acta Hortic.* 1213, 293-296  
DOI: 10.17660/ActaHortic.2018.1213.42**

### **Abstract**

This study characterized the fruit quality attributes of commercially mature bitter gourd (*Momordica charantia* L. Galaxy F1) from harvest to end of shelf life during storage at 7-10 and 21-25°C to develop quality grading standards for research, education and industry use. Quality at harvest was mainly determined by shape, size, uniformity of green surface color, and absence of defects that included yellowing (overmaturity) and preharvest damage due to insect pests, diseases and mechanical injury. During postharvest storage, loss in quality was due to yellowing, water loss that resulted in turgidity loss measured as weight loss and degree of shrivelling and softening, and/or soft rot. These quality changes occurred more rapidly at 21-25°C resulting in much shorter shelf life than at 7-10°C. Overall, the quality attributes were characterized using a scale for visual quality which was evaluated by a consumer panel. The results provide valuable information for establishing a system of grade standardization and classification along the production-marketing continuum.

**Keywords: /quality standards/ /grade classification/ /temperature effects/**

## **BLUME**

**Anuar, M., Lee, Y.L. and Ding, P. (2018). Postharvest quality of *Lepisanthes alata* (Blume) Leenh. fruit harvested at three maturity stages. *Acta Hortic.* 1213, 523-526  
DOI: 10.17660/ActaHortic.2018.1213.78**

### **Abstract**

*Lepisanthes alata* or locally known as *ceri* Terengganu is one of tropical exotic fruits and native to Malaysia. The discovery of this fruit is relatively new thus there is lack of reports available on the physicochemical characteristics of the fruit. A study was conducted to investigate fruit quality harvested at three maturity stages, i.e. green, half green-red and red. Changes in peel colour were observed where values of L\* (lightness) and h° (hue) decreased significantly whereas C\* (chroma) increased significantly as ripening progressed. Fruit firmness decreased significantly from 79.33 to 28.76 N as fruit ripened from green to red. Soluble solids concentration (SSC) of

fruits increased from 11.28 to 13.61% while titratable acidity decreased as fruit matured and ripened. As the pH of ceri Terengganu fruit increased, the ascorbic acid content decreased significantly upon maturation and red stage contained the lowest ascorbic acid content at 5.36 mg 100 g<sup>-1</sup>. In conclusion, red stage ceri Terengganu fruit is palatable with soft texture and soluble solids concentration.

**Keywords:** /soluble solids concentration/ /titratable acidity/ /pH/ /ascorbic acid content/

## **CABBAGE**

**Benitez, M. and Benitez, J.K.M. (2018). Potential postharvest botanical extract on bacterial soft rot of cabbage (*Brassica oleracea* var. *capitata* L.). *Acta Hort.* 1213, 619-624**

**DOI: 10.17660/ActaHortic.2018.1213.94**

### **Abstract**

Bacterial soft rot is the most serious postharvest problem of cabbages. This study was conducted to determine the antimicrobial effect of selected botanical extracts on bacterial soft rot of cabbage and to identify promising botanical treatments against cabbage soft rot. Two known medicinal plant species were evaluated, namely; Chinese malunggay (*Sauropus androgynous*) and alkaline herb (*Gynura procumbens*) used at 1:1 dilution were tested, with water, alum and lime paste as control treatments. After treatment, the cabbages were inoculated with crude bacterial soft rot inoculums. The cabbages were then incubated under humidified chambers and evaluated for soft rot infection. Bacterial soft rot infection was remarkably inhibited by 1:1 leaf extract of Alkaline herb (*Gynura procumbens*); decreased to less than 5% and had comparable antibacterial effect to that of alum and lime paste. Chinese malunggay at 1:1 dilution (extract:water) were ineffective in controlling bacterial soft rot than in alkaline herb. The magnitude of soft rot infection of cabbage treated with Chinese malunggay at 1:1 dilution (extract:water) was still remarkably much reduced than that of the water control which had all the cabbages being lost after 11 days of ambient storage. Alkaline herb (*Gynura procumbens*) extract treatment was able to save cabbages for sale or consumption and can be tested in larger scale and establish commercial viability and solid recommendation for the industry.

**Keywords:** /*Brassica oleracea* var. *capitata* L./ /*Sauropus androgynous*/ /*Gynura procumbens* postharvest/ /botanical extract/ /bacterial soft rot/

**Valida, A., Rivera, F.R., Salabao, A., Benitez, M., Sudaria, E., Acedo, A. and Ekman, J. (2018). Cabbage (*Brassica oleraceae* var. *capitata*) quality grading at two storage temperatures. *Acta Hort.* 1213, 129-134**

**DOI: 10.17660/ActaHortic.2018.1213.17**

#### Abstract

Common cabbage (*Brassica oleraceae* var. *capitata*) is the leading leafy vegetable in the Philippines. Quality grading is vital to establish a system of grade standardization and classification that can be used as research, education and industry standards. This study evaluated the quality attributes of head cabbage at commercial mature stage and their changes during storage at 7-10 and 21-25°C. Quality at harvest was mainly determined by head solidity, size, weight, and absence of defects that included yellowing of outer leaves, insect damage particularly by the Diamond back moth, bacterial soft rot, immaturity (puffy heads) and mechanical injury. During postharvest storage, loss in quality was due to yellowing and wilting of outer leaves and bacterial soft rot that usually started at the cut butt end, which necessitated trimming of affected parts. Trimming loss and weight loss increased with storage at a faster rate at 21-25°C resulting in much shorter shelf life than at 7-10°C. Yellowing and wilting of outer leaves limited the shelf at both storage temperatures; additionally at 21-25°C, bacterial soft rot contributed to quality deterioration.

**Keywords: /quality standards/ /grade classification/ /temperature effects/**

#### **CITRUS FRUITS**

**Vilanova, L., López-Pérez, M., Ballester, A.-R., Teixidó, N., Usall, J., Lara, I., ... González-Candelas, L. (2018). Differential contribution of the two major polygalacturonases from *Penicillium digitatum* to virulence towards citrus fruit. *International Journal of Food Microbiology*, 282, 16–23.  
<https://doi.org/10.1016/j.ijfoodmicro.2018.05.031>**

#### Abstract

The fungus *Penicillium digitatum* is the causal agent of the citrus green mould, the major postharvest diseases of citrus fruit. Lesions on the surface of infected fruits first appear as soft areas around the inoculation site, due to maceration of fruit. The macerating activity has been associated with pectinases secreted by the fungus during infection. In order to evaluate the contribution to virulence and macerating activity of the two major polygalacturonases (PGs) secreted by *P. digitatum*, we have obtained and characterized mutants lacking either *pg1* or *pg2*, the genes encoding PG1 and PG2, respectively. Disease incidence of deletants in either gene was not different from that of the parental strain or ectopic transformants. However, disease progressed more slowly in deletants, especially in those lacking the *pg2* gene. The lesions originated by the  $\Delta pg2$  deletants were not as soft and the pH was not as acid as those originated by either the wild type strain or the ectopic transformants. Total PG activity in the macerated tissue was also lower in fruits infected with the  $\Delta pg2$  deletants. Interestingly, the

macerated tissue of oranges infected with  $\Delta$ pg2 deletants showed around 50% reduction in galacturonic acid content with respect to lesions caused by any other strain.

**Keywords:** /Postharvest pathology/ /Green mould/ /Galacturonic acid/ / pH/ /orange fruits/

## COFFEE

**Hameed A, Hussain SA, Ijaz MU, Ullah S, Pasha I, Suleria HAR. (2018). Farm to Consumer: Factors Affecting the Organoleptic Characteristics of Coffee. II: Postharvest Processing Factors. *Comprehensive Reviews in Food Science and Food Safety*. 17 (5):1184-1237. doi:10.1111/1541-4337.12365.**

### Abstract

The production and consumption of coffee are increasing despite the roadblocks to its agriculture and global trade. The unique, refreshing, and stimulating final cupping quality of coffee is the only reason for this rising production and consumption. Coffee quality is a multifaceted trait and is inevitably influenced by the way it is successively processed after harvesting. Reportedly, 60% of the quality attributes of coffee are governed by postharvest processing. The current review elaborates and establishes for the first time the relationship between different methods of postharvest processing of coffee and its varying organoleptic and sensory quality attributes. In view of the proven significance of each processing step, this review has been subdivided into three sections, secondary processing, primary processing, and postprocessing variables. Secondary processing addresses the immediate processing steps on the farm after harvest and storage before roasting. The primary processing section adheres specifically to roasting, grinding and brewing/extraction, topics which have been technically addressed more than any others in the literature and by industry. The postprocessing attribute section deals generally with interaction of the consumer with products of different visual appearance. Finally, there are still some bottlenecks which need to be addressed, not only to completely understand the relationship of varying postharvest processing methods with varying in-cup quality attributes, but also to devise the next generation of coffee processing technologies.

**Keywords:** /International trade/ /Coffee/

## DRAGON FRUIT

**Ngoc, N.K., Phong Nguyen, N.V., An, P.T.M., Woolf, A.B. and Fullerton, R.A. (2018). Effect of storage temperatures on postharvest diseases of dragon fruit (*Hylocereus undatus* Haw.) in the Mekong Delta Region, Vietnam. *Acta Hort.* 1213, 453-460  
DOI: 10.17660/ActaHortic.2018.1213.67**

## Abstract

This study was conducted to determine the effects of different storage temperatures and storage durations on postharvest diseases of dragon fruit grown in the Mekong delta region. Dragon fruit of uniform maturity and without defects were collected from two growers in Long An and Tien Giang provinces and stored at 0, 5 and 10°C for 21 and 26 days followed by storage at 20°C for 3 days to simulate shelf life in the market. Other fruit were harvested and held at 20°C for 7 and 12 days as a non-stored control. The proportion of fruit with rots and changes in bract appearance were recorded and analyzed. The results indicated that fruit stored at 0 and 10°C (for both 21-26 days), and the control fruit held at 20°C for 7 and 12 days sustained the most damage. The most common disorders were rots and wilting and colour change (yellowing) of the bracts. Fruits stored for 21 and 26 days at 6°C remained fresh in appearance and had significantly fewer rots. The pathogenicity of fungi isolated from the rots was confirmed by re-inoculation of healthy fruit and the pathogens identified by conventional and molecular methods. The main fungi associated with spoiled fruit were: *Alternaria alternata*, *Aspergillus* sp., *Bipolaris cactivora*, *Cladosporium* sp., *Colletotrichum gloeosporioides*, *Colletotrichum truncatum*, *Fusarium andiyazi*, *Fusarium dimerum*, *Fusarium equiseti*, *Geotrichum candidum*, *Mucor* sp., *Neoscytalidium dimidiatum*, *Phomopsis longicola*, and *Rhizopus stolonifer*.

**Keywords:** /pathogenic fungi/ /postharvest rots/ /quality/ /storage/ /temperature/

## EGGPLANT

**Valida, A., Rivera, F.R., Salabao, A., Benitez, M., Sudaria, E., Acedo, A. and Ekman, J. (2018). Eggplant (*Solanum melongena*) quality grading at two storage temperatures. *Acta Hort.* 1213, 297-302  
DOI: 10.17660/ActaHortic.2018.1213.43**

## Abstract

This study evaluated the fruit quality attributes of commercially mature eggplant (*Solanum melongena* Morena F1) from harvest to end of shelf life during storage at 7-10°C and 21-25°C to develop grading scale for research, education and industry use. Quality at harvest was mainly determined by shape, size, shiny fresh appearance, and absence of defects that included yellowing (overmaturity) and preharvest damage due to insect pests, diseases and mechanical injury. During postharvest storage, loss in quality was due to shriveling (water loss) and *Phomopsis* rot at 21-25°C resulting in much shorter shelf life than at 7-10°C in which the fruit deteriorated in quality due mainly to shriveling. Overall, the quality attributes were characterized using a scale for visual quality which was evaluated by a consumer panel. The results provide valuable information for establishing a system of grade standardization and classification along the value chain.

**Keywords:** /quality standards/ /grade classification/ /temperature effects/

## **FLOWERS**

**Fukai, S., Yasukouchi, M. and Kawasaki-Narumi, T. (2018). Postharvest quality management of cut marguerite flowers. *Acta Hortic.* 1213, 67-74  
DOI: 10.17660/ActaHortic.2018.1213.8**

### **Abstract**

Postharvest quality management of cut flowers is very important for successful development of floriculture. The value of cut flowers is determined by the flower longevity. The factors affecting flower longevity of marguerite (*Argyranthemum frutescens* (L.) Schulz-Bip.) were investigated. Sucrose in a vase solution was effective to increase the number of flowering inflorescences and enhance the size of inflorescence. Leaf wilting during transportation is a serious problem in cut marguerite flowers. Dry-transportation decreased the number of flowering inflorescences in cut marguerite flowers. Water absorption was increased when the cut flowers were pre-treated with a surfactant, but decrease of fresh weight during transportation was also high. ABA pretreatment did not prevent fresh weight loss during transportation and enhance the senescence of cut flowers. When gel was attached to cut the end of the cut flowers, no fresh weight loss occurred during transportation and the cut flowers showed longer flower longevity. Water supply during transportation is important to produce higher postharvest performance of cut marguerite flowers.

**Keywords:** /*Argyranthemum frutescens*/ /cut flowers/ /flower longevity/ /transportation/ /wilting/

## **FOOD WASTE**

**Jaeger, S. R., Machín, L., Aschemann-Witzel, J., Antúnez, L., Harker, F. R., & Ares, G. (2018). Buy, eat or discard? A case study with apples to explore fruit quality perception and food waste. *Food Quality and Preference*, 69, 10–20.  
<https://doi.org/10.1016/j.foodqual.2018.05.004>**

### **Abstract**

Consumer decisions to buy, eat or discard apples with quality defect were investigated. Eye tracking methodology was used to determine visual attention to apples with and without defects. The percentage of consumers selecting apples with defects was equal or lower than 15%. Visual attention was greater for optimal quality apples. Changes in quality expectations may be needed to effectively reduce waste behaviours by consumers. Consumers' perceptions

of the quality of fresh produce at the point of purchase and point of consumption play an important role in decisions about what to buy, eat and discard. Apple images were used to assess the extent that defects (bruising, splitting, and crushing) attracted consumers' visual attention as measured using eye tracking and related to choices to buy and to eat the apples. For an internal defect (internal browning and cavities) that is usually only evident after biting into the apples, images were used to determine whether consumers would discard a portion or all of the apple and to assess their perceived quality and sensory expectations using a RATA question. Eye-tracking demonstrated that damage to the exterior of apples and internal browning rapidly attracted consumers' visual attention. Choice of apples with external defects at both point-of-purchase and point-of-consumption was low and ranging from 0% to 7% and 3.4 to 15.1%, respectively. Consumer decisions to discard apples with internal browning was nuanced in that (1) small amounts of browning did not lead to disposal, (2) when the relative area of browning reached 8.2% then 50% of consumers would throw away a portion of each apple, and (3) when browning was more severe (34.6% relative area) then 50% of the consumers indicated that they would throw away the whole apple. The presence of internal browning lowered consumers' perceived quality and sensory expectations, as evidenced by the increase in RATA ratings of negative terms (e.g., disgusting, rotten, bruised, mealy) and the lowered RATA ratings for the terms natural and healthy. From a perspective of reducing food waste, the results stress that strategies are needed to increase value perception of defective fruits to increase likely purchase and consumption.

**Keywords:** /Eye-tracking/ /BruisingInternal browning/ /Apple/ /Food waste/ /Quality/

## FRESH PRODUCE

**Huang, R., de Vries, D., & Chen, H. (2018). Strategies to enhance fresh produce decontamination using combined treatments of ultraviolet, washing and disinfectants. *International Journal of Food Microbiology*, 283, 37–44. <https://doi.org/10.1016/j.ijfoodmicro.2018.06.014>**

### Abstract

This study investigated the effect of a water-assisted ultraviolet system (WUV; samples were treated by UV while being immersed in agitated water) on the inactivation of *Salmonella* on baby spinach, iceberg lettuce, blueberry, grape tomato, and baby-cut carrot. The *Salmonella* inactivation effect of the WUV system was tested in two scales, and three disinfectants, chlorine, peroxyacetic acid (PAA) and hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), were tested in combination with the system to see whether the *Salmonella* inactivation effect could be enhanced. The fresh produce samples were dip-inoculated with a *Salmonella* cocktail to final concentrations of 4.6–7.6 log CFU/g. To simulate the washing process in the industry, fresh produce extracts and/or silicon dioxide were added in the wash water to adjust chemical oxygen demand to ~2000 mg/L and turbidity to >60 NTU. In general, the decontamination efficacy of WUV

treatments followed this order: Tomato > Carrot > Lettuce ≈ Blueberry > Spinach. In the small-scale study, WUV alone was able to achieve 0.9, 2.6, >3.6, 1.7, and 2.0 log CFU/g reductions of Salmonella on fresh produce for spinach, lettuce, tomato, blueberry, and carrot, respectively. For all fresh produce items, WUV combined with PAA could achieve significantly ( $P < 0.05$ ) higher Salmonella reduction on fresh produce than chlorine wash and PAA wash. The WUV treatments combined with chlorine or PAA were able to keep residual Salmonella in wash water below the detection limit (2 CFU/mL) for almost all the replicates. Similar Salmonella reductions on fresh produce and in wash water were found in the large-scale study. Considering the decontamination efficacy on fresh produce, the ability to disinfect the wash water, and the cost, we recommend chlorine wash for baby spinach, WUV alone for grape tomato and WUV combined with PAA for iceberg lettuce, blueberry and baby-cut carrot.

**Keywords:** /Ultraviolet/ /Fresh produce/ /Chlorine/ /Peroxyacetic acid/

## **GUAPPLE**

**Ortizano, J., Benitez, M., Valida, A. and Acedo Jr., A. (2018). Postharvest quality of guapple (*Psidium guajava* L.) as influenced by hot water treatment and modified atmosphere packaging. *Acta Hort.* 1213, 153-160  
DOI: 10.17660/ActaHortic.2018.1213.20**

### **Abstract**

Guapple (*Psidium guajava* L.) is one of the top 20 fruits in the Philippines with high nutritional value. The study was conducted to determine the effects of hot water treatment on postharvest quality of guava held in MAP at ambient or low temperatures and identify the most promising treatment that will maintain guava quality. Fruits were dipped at different hot water temperatures: (T1 water, ambient (control), T2 44°C, T3 48°C, T4 52°C). Two harvested fruits were packed in 0.002 mm thick low density polyethylene (PE) bag or 0.05 mm thick polypropylene (PP) bag and in styrofoam plate with cling wrap and stored at ambient and refrigerated condition; unpacked fruit served as control. Ambient storage was done by keeping the fruits under ordinary room conditions while refrigerated storage was done using a chiller with temperature maintained at 7-10°C. MAP (styrofoam with thin plastic film, PE and PP) significantly delayed the shriveling and reduced weight loss of guapple fruit throughout the storage duration. Refrigerated guava fruits had significantly decreased fruit softening compared to fruits at ambient condition. There were no significant effects on softening of guava fruits in HWD-treated fruits under MAP treatments. MAP-stored guava fruits were significantly reduced softening than the fruits in open-stored fruits. HWD treatments had comparable results among all treatments. The rate of chilling injury was found significant between MAP and HWD under refrigerated storage. Chilling injury of open-stored guava fruits was significantly higher than the fruits in MAP stored fruits. Visual quality rating of MAP-stored guava fruits was significantly higher when stored at refrigerated condition than at ambient condition. Results further revealed that application of Hot Water Dip at 48°C of guapple fruits was effectively maintained the visual

quality during storage. The results of this study provide valuable information on hot water dip, which can enhance the fruit quality of guapple fruit.

**Keywords: /guapple/ /postharvest quality/ /hot water treatment/ /modified atmosphere packaging/**

## **LITCHI**

**Mandal, D. and Mitra, S. (2018). Cracking of lychee fruits: responsible factors and control. Acta Hortic. 1211, 35-44**

**DOI: 10.17660/ActaHortic.2018.1211.6**

### **Abstract**

Lychee, a juicy, attractive and excellent fruit of Sapindaceae family, is preferred by consumers for its extraordinary taste and aroma. India, the second largest producer of the crop, has got an important position in the export of lychee as it possesses attractive colour, good size and excellent taste. However, fruit cracking is the most serious problem of quality lychee production in major lychee growing belts of India, viz. Bihar, West Bengal, Jharkhand, Assam, Tripura, etc. During seven years (2007-2013), systematic research on lychee fruit cracking at the Horticulture Research Station, BCKV, West Bengal, revealed that occurrence and extent of fruit cracking differed among the lychee cultivars and it was found that relatively early cultivars with more tubercle density and thin pericarp were more prone to cracking than late cultivars or with less tubercle density. High temperature during rapid growth period coupled with low relative humidity was the potential reason behind this disorder. It was observed that internal pressure of developing fruits had positive correlation with cracking whereas aril or peel calcium had no coinciding relationship with it. Fruits located at west and north side or at inner canopy had minimal cracking problem. Application of irrigation at 40% pan coefficient through sprinkler irrigation had significant effect to overcome the cracking problem of fruit. Drip irrigation and mulching with fallen lychee leaves was also found effective to tackle the disorder. Use of agro-shade net (50% light transmission) and foliar application of Boron at 0.5% had potential influence to control this disorder. Besides, delayed harvesting by the application of gibberellic acid (50 mg L<sup>-1</sup>) at 21 days after fruit set also reduced the problem.

**Keywords: /lychee/ /fruit cracking/ /agro-shade net/ /irrigation/ /canopy/**

**Pongener, A., Purbey, S.K., Puja, K. and Nath, V. (2018). Salicylic acid maintains membrane stability and reduces pericarp browning in litchi. Acta Hortic. 1211, 45-52**

**DOI: 10.17660/ActaHortic.2018.1211.7**

### **Abstract**

Rapid pericarp browning generates unmarketable litchi fruit leading to huge postharvest losses to growers and traders. Salicylic acid (SA) at three different concentrations (0.4, 0.8, and 1.2 mM) was tested as a postharvest dip treatment to ascertain the effect on fruit quality and storage behaviour of litchi. Freshly harvested litchi fruit 'Shahi' were dipped in the solutions, maintained at 10°C for 30 min, and thereafter surface dried before packing in perforated and unsealed polythene bags. They were then stored under refrigerated conditions (6±1°C and 80-90% RH). SA-treated (1.2 mM) fruit maintained significantly higher membrane stability index (78.44) compared to control (67.64) over 22 days of storage. SA treatment also resulted in maintenance of higher anthocyanin content compared to control during storage. Untreated fruit had hardly 12.5% marketable fruits (~50% browning) after 18 days. The corresponding figure in case of SA-treated (1.2 mM) fruit was 68%, thereby indicating that SA treatment helps in reduction of pericarp browning in litchi. Also, the incidence of decay was only 6.25% in fruit treated with 1.2 mM SA, a significant reduction in decay from control (43.75%) after 18 days of storage. No significant differences due to SA treatment were recorded with respect to changes in fruit quality parameters such as soluble solids concentrate and titratable acidity. Our results suggest that salicylic acid at 1.2 mM can be integrated as a part of hydro-cooling of litchi fruit to reduce pericarp browning and fruit decay.

**Keywords:** /Litchi chinensis/ /salicylic acid/ /postharvest/ /pericarp browning/ /decay/

**Purbey, S.K., Pongener, A., Kumar, V. and Nath, V. (2018). Effect of time of harvest and packaging on quality and shelf life of litchi fruit. Acta Hort. 1211, 65-70  
DOI: 10.17660/ActaHortic.2018.1211.9**

Abstract

Generally in India, postharvest operations such as sorting, grading and packaging of harvested litchi fruit are done at the orchard itself due to non-availability of pack-house at farm and nearby places. Considering the available facilities vis-à-vis prevailing harsh weather conditions during harvesting period and rapid changes in physiology of litchi fruits, a study was carried out during 2013-2014 and 2014-2015 with the objective to assess the effect of harvesting time and improved packaging technique on shelf life of litchi fruit. Mature fruits were harvested early in the morning starting from 4 to 12 am and grouped in three lots (up to 6, 9 and 12 am). Fruit quality parameters, viz., fruit weight, pericarp properties, anthocyanin content, respiration rate, TSS and acidity were analyzed. The fruits were packed in 2-kg ventilated CFB boxes using two types of perforated polymer lining material and kept at ambient condition (32±2°C and 49±2% RH) for one week. It was evident that the fruit lot harvested late in sunny day (10 am onwards) and packed traditionally (without polymer lining) showed rapid loss of pericarp moisture accompanied by visually perceivable pericarp browning within three days under ambient storage condition. Fruit harvested early in the morning (6 AM), kept in perforated mono-polymer bag and packed in 2-kg CFB boxes recorded least physiological loss in weight (6.8%), browning index,

respiration rate (116.2 mL CO<sub>2</sub>kg<sup>-1</sup> h<sup>-1</sup>) and maximum anthocyanin content 28.36 mg 100 g<sup>-1</sup> peel) as well as marketable fruits (74%) after 5 days of storage at ambient condition. Fruit harvested in sunny hours (10 am onwards) and kept in perforated polymer bags and packed in CFB box resulted in 62% marketable fruits, after 5 days of storage. Thus based on the studies, it can be advised to harvest litchi fruits early in the morning and pack them in CFB boxes with perforated mono-polymer lining.

**Keywords:** /litchi fruit/ /harvesting/ /mono-polymer packaging/ /shelf life/

**Sahay, S., Mishra, P.K., Shrivastava, P., Singh, R.K., Singh, M.P., Rashmi, K. and Kumar, V. (2018). Role of chemicals in postharvest management of litchi. Acta Hort. 1211, 93-100**

**DOI: 10.17660/ActaHortic.2018.1211.13**

#### Abstract

Litchi (*Litchi chinensis* Sonn.) is an important subtropical fruit of high commercial value. However, after harvesting of fruits rapid pericarp browning and degradation during storage reduce the market value. Generally, 20-30% postharvest loss of litchi is assumed and it may increase up to 50% also before utilization, especially due to infection of the several microorganisms. Several research works have been done in India and abroad to understand the effect of different chemicals on postharvest life of litchi. In this aspect, researchers from different parts of the world reported that just a few chemicals such as chlorine dioxide (ClO<sub>2</sub>), sulphur dioxide (SO<sub>2</sub>), hydrogen chloride (HCl), chitosan and polyamines (PUT, SPM and SPD) have a potential role to improve the shelf life of litchi by minimising the microbial activities during storage. Especially ClO<sub>2</sub> is one of the disinfectants which is more effective in inhibiting postharvest diseases, i.e., *Colletotrichum* spp., by damaging the growth of cell membrane of the fungi resulting in improved quality litchi fruits. Hence, it is widely used by various export industries throughout the world. SO<sub>2</sub> fumigation is also extensively used to manage some fungi such as *Penicillium* spp. and *Colletotrichum* spp. However, while working with SO<sub>2</sub>, it was observed that the treated litchi fruits have some residual effect and therefore the European Union (EU) allows the maximum limit of sulphur residue concentration as low as 10 mg L<sup>-1</sup> in the edible portion of fruits. HCl dip treatment is also found beneficial to recover attractive red colour of litchi. Reports of different researchers indicated that the application of polyamines (PUT, SPM and SPD) and chitosan coating on stored litchi fruits delayed changes in substance of anthocyanin, flavonoid and total phenolics contents, ethylene synthesis, browning, polyphenolase activity, peroxide level, electrolyte cell leakage, reduced weight loss, enhanced storability of litchi fruit but chitosan partially inhibited polyphenol oxidase (PPO) activity of longan fruit to prevent the peel from discoloration. Finally, the use of above chemicals proficiently enhanced storage life of litchi fruits by reducing postharvest disease incidences.

**Keywords:** /litchi/ /browning/ /postharvest management/ /ClO<sub>2</sub>/ /SO<sub>2</sub>/ /PAs/ /chitosan/

**Karuna, K., Adarsh, A., Singh, H.K. and Mankar, A. (2018). Edible coating on litchi (*Litchi chinensis* Sonn.) for improvement of fruit quality and shelf life: a review. *Acta Hort.* 1211, 145-152**

**DOI: 10.17660/ActaHortic.2018.1211.20**

#### Abstract

Litchi (*Litchi chinensis* Sonn.) is one of the most important fruit crops of Sapindaceae family. As far as export of agricultural products is concerned, by virtue of its delicious taste, excellent flavour, attractive appearance and high nutritional value, it has gained popularity in many parts of the world. Litchi peels changes so quickly to brown colour within 1-2 days of harvesting. Post-harvest browning in litchi fruit is mainly associated with degradation of anthocyanin due to aerobic oxidation. However, to stay in global market, which is turning more and more competitive day by day, it is of paramount importance to maintain high standard in the qualities of fruits produced and providing longer shelf life. Many polyamines and SO<sub>2</sub> fumigation reduces browning but leaves undesirable residue in fruit that are health hazardous and even neurotoxicity of chemicals has been reported. Keeping the seriousness in the problem and to avoid glut in the market, the present review explores the advances in technology to manage pericarp browning and to maintain overall fruit quality. Edible coating is widely applicable in fresh fruit, vegetable or their fresh-cut materials which are quite safe, environment friendly and economically acceptable. Many types of edible coatings such as polysaccharide-based coatings, cellulose and its derivatives, protein-based coatings are available to overcome losses of economic value, reduces the respiration rate as well as the physiological loss of fruit weight.

**Keywords: /litchi/ /pericarp browning/ /edible coating/ /shelf-life/**

**Rani, R., Ray, P.K., Barman, K. and Singh, R.R. (2018). Effect of precooling and low temperature storage on postharvest life of litchi fruits. *Acta Hort.* 1211, 227-234**

**DOI: 10.17660/ActaHortic.2018.1211.33**

#### Abstract

In the present study, litchi fruits ('Shahi') were fumigated with sulphur at 60 g 100 kg<sup>-1</sup> of fruits in a sealed chamber for 1 h. Sulphited litchi fruits were then precooled at a temperature of 4 and 10°C for 2 and 4 h and then stored at two temperature regimes of 0±1°C and 4±1°C with 90±5% RH. In case of control, sulphited fruits without precooling were stored in the similar environment. Results indicated that precooling followed by storage of litchi fruits at low temperature is highly effective in minimizing weight loss and decay of fruits up to 41 days of storage. Among the treatments, sulphited fruits, precooled at 4°C for 4 h and stored at 0±1°C, had the minimum weight loss (1.72%) and decay (5.64%) after 41 days of storage. The increase in storage temperature (4±1°C) did not bring any noticeable change in the weight loss and decay of fruits

up to 41 days. It was found that sulphited precooled fruits stored at low temperature regimes exhibited almost negligible spoilage up to 17 days, while after 21 days of storage, very little incidence of spoilage was recorded. On the contrary, sulphited control fruits stored at low temperature without precooling, shriveled and showed decay symptoms from 9th day of storage. Fruits precooled at 10°C for 2 h and stored at 0±1°C maintained the highest total soluble solids content (17.62 °Brix) after 41 days of storage. However, the minimum TSS (15.90 °Brix) was recorded in control fruits. Conclusively, litchi fruits precooled at 4°C for 4 h and stored at 0±1°C temperature was the most effective way for preserving the quality (colour, flavor, taste, appearance, market value) and acceptability (81.30%) of fruit up to 41 days at low temperature, compared to control (4.50%).

**Keywords:** /litchi/ /precooling/ /sulphur dioxide/ /storage/

## LONGAN

**Liang, Shuai, Dongmei, Han and Zhenxian, Wu (2018). Advances in postharvest sulfur handling technology on longan fruit. Acta Hort. 1211, 221-226  
DOI: 10.17660/ActaHortic.2018.1211.32**

### Abstract

Longan (*Dimocarpus longan* Lour.) belong to the family Sapindaceae, is harvested in high temperature and humid summer, resulting in rapid senescence. Therefore, it is important to optimize postharvest handling to extend storage life or maintain quality of the fruit. Treating longan fruit with sulfur has been the most effective postharvest handling technique, and is widely used in practice. Common sulfur treatment methods include sulfur fumigation, soaking and slow-release. Many studies have shown that proper content of sulfur treatments can maintain pericarp color by inhibiting browning, reducing respiratory intensity, inhibiting polyphenol oxidase activity, reducing free-radical damage, killing pathogens on the surface of the fruits and improving fruit quality to some extent. However, use of excess dosage of sulfur treatments would be harmful. Therefore, recent research is trying to find alternatives to sulfur treatment, but it still needs extensive investigation.

**Keywords:** /longan/ /sulfur treatment/ /sulfur dioxide/ /residue/

## LONGKONG

**Lichanporn, I. (2018). Effect of ethylene and temperature on physiological and biochemical changes during fruit drop of longkong postharvest. Acta Hort. 1213, 411-416  
DOI: 10.17660/ActaHortic.2018.1213.60**

## Abstract

Longkong (*Aglaia dookoo* Griff.) is a popular tropical fruit that currently experiences around 99.37% domestic consumer demand. The main problem in terms of export is that longkong fruit drops from its bunch after harvesting. Therefore the objective of this research is to study the development of fruit drop in longkong bunches being harvested and stored at room temperature. Weight loss, fruit drop and polygalacturonase (PG) activity increased rapidly during storage time; while firmness, respiration rate and ethylene of longkong fruit bunches decreased after storage at room temperature. Activity of the enzymes pectinesterase (PE), cellulase (Cx) and peroxidase (POD) of longkong fruit slightly increased up to six days and then decreased until the end of storage. The effect of ethylene (at the concentration of 0, 200 and 400 ppm) on physiological and biochemical changes during fruit drop of longkong postharvest was evaluated. Dipping longkong in 200 and 400 ppm ethephon rapidly increased fruit abscission and respiration rate. The untreated fruit showed increased ethylene production and activity of enzymes PG, PE and Cx, and weight loss was delayed longer than longkong dipped in 200 and 400 ppm ethephon. Firmness and POD were not significantly different between the fruit treated with ethephon and those untreated. Effects of temperature (at 13 and 25°C) on physiological and biochemical change during fruit drop of harvested longkong bunches was also evaluated. The results indicate that storage at 13°C delayed the weight loss, fruit drop, firmness, respiration rate, ethylene production and activity of enzymes pectinesterase (PE), cellulase (Cx) and peroxidase (POD).

**Keywords:** /longkong/ /fruit drop/ /ethylene/ /temperature/

## MELON

**Zainal, B. and Ding, P. (2018). Physico-chemical qualities response of hydro-cooled rockmelon (*Cucumis melo* L. *reticulatus* 'Glamour') after differential postharvest storage durations. *Acta Hort.* 1213, 193-200  
DOI: 10.17660/ActaHortic.2018.1213.25**

## Abstract

Field heat can cause rapid deterioration in horticultural products so therefore it is desirable to remove this heat as quick as possible after harvesting. Hydro-cooling is one of the many methods to remove field heat in order to extend storage life. The aim of this study was to evaluate the effect of hydro-cooling on physico-chemical attributes such as weight loss, color, firmness, soluble solids concentration, titratable acidity, pH and ascorbic acid of rockmelon fruit in order to explain their quality response during storage. In this study, the rockmelon fruits harvested at commercial maturity were subjected to hydro-cooling with 0, 1/2 and 15/16 cooling time before 3-week storage at 13°C. Results indicated that quality attributes, such as weight

loss, peel firmness, soluble solids concentration, pH, titratable acidity and ascorbic acid were not affected by hydro-cooling in the extended 3-week storage. In particular, 0 and 15/16 cooling time rockmelon fruit showed considerably lower pulp firmness in comparison to 1/2 cooling time hydro-cooled fruit as storage progressed. The present study showed that rockmelon fruit hydro-cooled at 1/2 cooling time was more effective in preserving higher chroma intensity of pulp color and force value of pulp firmness during storage.

**Keywords:** /rockmelon/ /physico-chemical/ /hydro-cooling/ /field heat/

## ORCHIDS

**Le, Si Ngoc, Nguyen, N.V Phong and Nguyen, Thuy Trang (2018). The effects of the treatment concentration and time of 1-methylcyclopropene (1-MCP) to the postharvest cut Dendrobium 'Sonia' orchid. Acta Hortic. 1213, 587-598**

**DOI: 10.17660/ActaHortic.2018.1213.89**

### Abstract

The plant growth regulator 1-methylcyclopropene (1-MCP) is capable of inhibiting the formation of endogenous ethylene and reducing its effects on cut flowers. This study evaluated 1-MCP concentration range and time treatment on the vase life and postharvest quality of cut Dendrobium Sonia orchid. Cut D. Sonia orchid was treated at 1-MCP concentration of 0.1, 0.2, 0.3 and 0.4  $\mu\text{L L}^{-1}$  and duration exposure of 0, 2, 4, 6 and 8 h. Cut D. Sonia orchid in treatments was stored at 25°C, RH 80±5%. Cut D. Sonia orchid with no 1-MCP treatment was used as the control. Results indicated that the treatment with 1-MCP (0.2  $\mu\text{L L}^{-1}$ , 6 h) produced the best outcome. The cut D. Sonia orchid in this treatment reached a vase life of 32 days (12 days more than the control), the flowers were fresh, not wilted, and there was no abscission. In contrast, for the control orchid there was over 50% flower abscission, wilted flowers and blackened stubs. The abscission rate for the treated orchid after 30 days storage was about 38% as compared to the control (85%). Ethylene production and respiration rate in this treatment against storage times were reduced as compared to other treatments and the control. The maximum value of ethylene (3.25  $\text{nL g}^{-1} \text{h}^{-1}$ ) was recorded at the second day of storage; however, for respiration rate, the maximum value (5.20  $\text{mg CO}_2 \text{g}^{-1} \text{h}^{-1}$ ) was at the first day of storage. At 30 days of storage, anthocyanin and chlorophyll concentrations in this treatment were reduced 33 and 32% as compared to the control (52 and 42%). The intensity of ethylene production in 1-MCP treatment was 3.25  $\text{nL g}^{-1} \text{h}^{-1}$  and 5.20  $\text{mg CO}_2 \text{g}^{-1} \text{h}^{-1}$  as compared to the control (4.5  $\text{nL g}^{-1} \text{h}^{-1}$  and 7.75  $\text{mg CO}_2 \text{g}^{-1} \text{h}^{-1}$ ).

**Keywords:** /1-MCP/ /cut Dendrobium 'Sonia' orchid/ /ethylene/ /postharvest storage/

## PERSIMMON

**Nissen, R.J. and Redpath, S. (2018). Environmental and postharvest factors affecting the quality and storage of persimmon (*Diospyros kaki*) cultivars 'Fuyu' and 'Jiro' in Australia. *Acta Hortic.* 1213, 49-58  
DOI: 10.17660/ActaHortic.2018.1213.6**

Abstract

Survey trials of persimmon fruit (*Diospyros kaki*) and the following storage trials from Queensland, New South Wales, Victoria and South Australia were conducted at Maroochy Research Station in south-east Queensland. The purpose of these trials was to determine the extent of the soft fruit disorder problem and variances in fruit quality and storability for the cultivars Fuyu and Jiro in Australia. The postharvest disorder of persimmon in Australia is characterised by the rapid and extensive softening of the fruit soon after harvest. This disorder causes the fruit to be incapable of being stored and transported, rendering the fruit unmarketable. Fruit go directly from the mature phase to the senescent phase, missing the natural ripening phase. Stratified random sampling and correlation and regression analysis was used for the survey trials to determine environmental factors affecting the quality and fully randomised trials designed used for fruit quality and storability trials. Further research trials were also conducted on selected preharvest management and postharvest practices using fully randomised designs to help mitigate this disorder, improve fruit quality and storability. Results show that 1-MCP increased shelf life by 2-3 weeks after storage and combined with modified atmosphere bags reduced the incidence of chilling injury during storage. Results also indicate that the preharvest and postharvest management practices and the environment in which fruit are produced have a significant effect on this soft fruit disorder, fruit quality and the storability of persimmon.

**Keywords: /persimmon/ /fruit quality/ /soft fruit disorder/ /storage trials/ /1-MCP/ /shelf life/ /postharvest/ /preharvest/ /environmental conditions/**

## **POSTHARVEST DEHYDRATION**

**Modesti, M., Petriccione, M., Forniti, R., Zampella, L., Scortichini, M., & Mencarelli, F. (2018). Methyl jasmonate and ozone affect the antioxidant system and the quality of wine grape during postharvest partial dehydration. *Food Research International*, 112, 369–377. <https://doi.org/10.1016/j.foodres.2018.06.061>**

Abstract

Postharvest partial dehydration is a technique used in the production of important dry and sweet wines in Italy. An accurate management of the dehydration environmental parameters allows for the modulation of berry metabolism and the maintenance/improvement of the enochemical

quality of grapes. As it is known that water loss induces oxidative processes in berries, our hypothesis was that methyl jasmonate (MeJA) and ozone (O<sub>3</sub>), as postharvest treatments before partial dehydration, might be beneficial for grape berry quality. Grape bunches were postharvest treated with 10 or 100 µM MeJA at 20 °C or with ozone gas at 10 °C, in 70% relative humidity (RH) and air flow, for 12 h; the control bunches were untreated and kept at 20 °C for 12 h. Subsequently, partial dehydration was performed at 10 °C until a 30% weight loss (w.l.) was reached. MeJA hastened grape berry water loss. Polyphenol and flavonoid contents at the end of the partial dehydration were lower in the MeJA-treated berries than in the control and ozone samples. Superoxide dismutase (SOD), catalase (CAT), ascorbate peroxidase (APX), and guaiacol peroxidase (GPX) activity rates increased in the treated samples. In contrast, lipoxygenase (LOX) and polyphenoloxidase (PPO) had lower activities in the MeJA-treated samples than in the controls. It would seem that MeJA accelerates grape water loss but at the same time activates the antioxidant system. Ozone does not accelerate grape water loss but induces the antioxidant system and increases polyphenol content.

**Keywords: /Grape/ /Postharvest/ /Dehydration/ /Methyl jasmonate/ /Ozone/ /Antioxidant enzymes/**

## **POSTHARVEST PROFESSION**

**Simonne, E., Simonne, A.H., Brecht, J.K. and Harder, A. (2018). Beyond the science: professional competencies for the business of research, teaching and extension/outreach in postharvest today. Acta Hort. 1213, 433-440  
DOI: 10.17660/ActaHortic.2018.1213.64**

### **Abstract**

The successful management of a research, teaching and/or extension/outreach program in postharvest today requires skills beyond the fundamental scientific and technical skills taught traditionally in Graduate School. Administrators and funders are no longer satisfied with the number of publications and students graduated as metrics of academic success. Impact factors, students placement, and clients adoption of research results are now the norm. Research, teaching and extension/outreach activities are becoming integrated, which benefits the total program. Besides publishing and teaching, faculty members at major universities are also responsible for grant writing and overall program finances management, hiring and mentoring students and staff, accommodating the needs of different generations in the workplace, and maintaining the certification and safety of laboratories. Success in all these areas ultimately determines the scientific success of a program. Using the example of postharvest programs at the University of Florida, this paper (1) outlines traditional academic programs, the business model applied to academia, and measures of success at academic institutions, (2) describes the legal environment in universities, and (3) presents the scientific and core competencies for todays PIs.

**Keywords: /professional development/ /business plan/ /skills/**

## **PUMMELO**

**Bayogan, E.V. and Secretaria, L.B. (2018). Some postharvest characteristics of chitosan-treated pummelo [*Citrus maxima* (Burm. Ex Rumph) Merr 'Magallanes'] fruit. *Acta Hortic.* 1213, 145-152  
DOI: 10.17660/ActaHortic.2018.1213.19**

### **Abstract**

Magallanes pummelo fruit were treated with various chitosan concentrations (0, 0.5, 1.0, 1.5, 2.0%) along with a commercial wax and stored at ambient conditions (26.6-29.0°C and 73.5-88.3% RH). At 9 and 12 weeks after treatment (WAT), waxed fruit showed the least weight loss while this did not vary between the control and the chitosan-treated fruit. Control fruit had higher L\* and hue values relative to the chitosan-coated lots. Waxing or coating with chitosan did not affect the L\* value, chroma, degree of granulation, juice content up to 9 WAT, and decay of pummelo fruit. Hue increased with time. Lower percentage of granulation was observed in control, 1.5 and 2.0% chitosan-coated fruit. Fruit wax seemed to promote granulation relative to untreated fruit. Treated fruit showed higher pH and TSS:TA while control fruit had higher TA and TSS. Fruit treated with chitosan and wax showed better appearance due to its reduced color changes (delay in the change of color from green to yellow), lesser shriveling and better visual quality at the later part of storage.

**Keywords: /fruit wax/ /low molecular weight chitosan/ /granulation/ /pH/ /TSS/**

## **TOMATO**

**Valdivia-Nájar, C. G., Martín-Belloso, O., & Soliva-Fortuny, R. (2018). Kinetics of the changes in the antioxidant potential of fresh-cut tomatoes as affected by pulsed light treatments and storage time. *Journal of Food Engineering*, 237, 146–153.  
<https://doi.org/10.1016/j.jfoodeng.2018.05.029>**

### **Abstract**

The effects of pulsed light (PL) on the antioxidant capacity (AC) and bioactive compounds content of fresh-cut tomatoes (*Lycopersicon esculentum* Mill., cv. Daniela) were studied. Tomato slices were subjected to fluences of 4, 6 and 8 J cm<sup>-2</sup> and stored over 18 days. Modified first-order and Gompertzian functions were used to explain the changes in the studied parameters as affected by PL-fluence and storage time. PL processing led to an increase in the

contents of lycopene (up to 26.1% higher) and phenolic compounds (up to 4.3% higher) in comparison with untreated tomato slices, while vitamin C was notoriously depleted ( $p < 0.05$ ). Those patterns were properly fitted by linear equations ( $R^2 \geq 0.95$ ), while changes in the bioactive compounds contents through storage were well described by Gompertzian functions ( $R^2_{adj} \geq 0.94$  and  $A_f \geq 0.99$ ). AC of tomato slices significantly decreased as a consequence of PL-processing ( $p < 0.05$ ) and subsequent storage ( $p < 0.05$ ). The influence of PL on the initial AC of tomato slices was expressed by a linear model ( $R^2 \geq 0.95$ ) while changes through storage were appropriately fitted by a first-order equation ( $R^2_{adj} \geq 0.95$  and  $A_f \geq 0.99$ ). The higher the fluence applied, the greater the change in the AC and bioactive compounds contents of tomato slices over storage. The high correlation coefficients and the estimated kinetic constants seem to suggest that changes in the AC of PL-treated tomato slices over storage were mostly determined by vitamin C concentrations ( $r = 0.93-0.97$ ) rather than by other antioxidant contents ( $r = -0.59 - -0.76$ ). The efficacy of pulsed light (PL) to reduce microbial loads on fresh-cut vegetables is widely known. However, information about the impact of PL treatments on the physicochemical and nutritional aspects of those commodities is scarce. The results obtained in this work may contribute to identify optimal PL-treatment conditions to achieve healthy and fresh-like cut tomatoes. In general, tomato slices exposed to the highest PL-fluence ( $8 \text{ J cm}^{-2}$ ) exhibited significant increases in lycopene and total phenolic contents, thus minimizing losses in the antioxidant capacity of fresh-cut tomatoes through 18 days of chill storage.

**Keywords: /Pulsed light/ /Fresh-cut tomatoes/ /Antioxidant capacity/ /Phenolic compounds/ /Lycopene/ /Vitamin C/**

**Mandal, D., Laldingliana, W.F., Hazarika, T.K. and Nautiyal, B.P. (2018). Salicylic acid delayed postharvest ripening and enhanced shelf life of tomato fruits at ambient storage. *Acta Hort.* 1213, 115-122  
DOI: 10.17660/ActaHortic.2018.1213.15**

Abstract

The physico-chemical characteristics and shelf life of tomato (Samrudhi) fruits treated with gibberellic acid (250, 500 and 1000 mg L<sup>-1</sup>) and salicylic acid (0.2, 0.4 and 0.6 mM L<sup>-1</sup>) were studied. Salicylic acid at 0.4 mM L<sup>-1</sup> showed a significant delay in the change of weight loss, titrable acidity, total soluble solids, decaying percentage, sugar accumulation, chlorophyll degradation, carotenoids and lycopene accumulation in tomato fruits than that of control. Moreover, fruits under this treatment showed higher amount (16.21 mg 100 g<sup>-1</sup>) of ascorbic acid retention even after 14 days of storage in ambient condition. Decay of fruit was least (5%) under this treatment which caused maximum shelf life (22 days). Furthermore, gibberellic acid at 1000 mg L<sup>-1</sup> also significantly influenced the shelf life (21 days) of fruits. However, it could be concluded that postharvest treatment with salicylic acid at 0.4 mM L<sup>-1</sup> has the potential to control decaying incidence, prolong storage life and preserve valuable attributes of postharvest tomato, presumably because of its effect on delaying of ripening and senescence process.

**Keywords: /salicylic acid/ /lycopene/ /ascorbic acid/ /ripening/ /shelf life/**