Chapter 6

Conclusion

The effect of different maturities on the physical and biochemical changes of "Keaw Morakot" mango at ambient condition (26-31ºC, 60-70%RH) showed that the fruit at Maturity 2 had the highest firmness and vitamin C content. However, the Maturity 2 had the lowest of the water- soluble pectin (WSP) content and polygalacturonase (PG) activity. The reduction of ºH and chroma values of pulp, citric acid and malic acid contents of Maturity 2 was less than Maturity 1 and 3. The fruit at Maturity 3 had the highest total soluble solids (TSS), glucose, fructose, sucrose, β-carotene, respiration rate and ethylene production which were significantly different from the fruit at Maturity 1, which had the lowest dry matter and starch content. For pectin methylesterase (PME) activity, titrable acid (TA), chlorophylls and L*, ºH and chroma of peel, they did not significantly different. For sensory evaluation, the fruit at Maturity 2 had better texture, feeling and taste than the others. It was also found that the TSS, glucose, fructose, sucrose, pH and β-carotene increased while firmness, PG activity, WSP, TA, vitamin C and starch contents decreased during long-term storage.

The effect of different maturities on the physical and biochemical changes of "Keaw Morakot" mango at low temperature (13°C, 85-90% RH) and after storage for 21 days, the fruit were allowed to ripen at 25°C, 70-75% RH, showed that the Maturity 2 had the highest firmness, starch and vitamin C contents but the lowest of PG and PME activities, WSP content and color changes. The fruit at Maturity 3 had the highest respiration rate, ethylene production and pH but the lowest TA, either storage at 13 or 25°C. Storage at 25°C, the fruit at Maturity 2 had higher citric acid, malic acid, fructose, sucrose and β-carotene contents. For the Maturity 2, the peak of ethylene production was delayed for 1 day compared with the others. The fruit at Maturity 3 had the highest fructose, sucrose and β-carotene contents during storage at 13°C. For the sensory evaluation, it was found that the fruit at Maturity 2 had only the highest texture scores (4.33). The maturities did not affect color changes and chlorophylls of mango peel, TSS and glucose content. It was also found that the fruit stored at 13°C, the reduction of firmness, L*, ºH and chroma

values, starch, citric acid, malic acid and vitamin C contents or the increasing of glucose, fructose, sucrose, β-carotene, respiration rate, ethylene production and PG activity were lower than at 25°C. For the fruit stored at 25°C, the PME activity showed rapid decrease after 3 days of storage. The results indicated that the fruit at Maturity 2 had proper maturation to harvest for this mango variety.

The effect of concentrations and exposure times of 1-MCP treated on the physical and biochemical changes of "Keaw Morakot" mango at low temperature (13ºC, 85-90%RH) showed that the treatment with 1000 nl/l 1- MCP was more effective in delaying the softening and color change (L*, ºH and chroma) of mango pulp than 0 and 500 nl/l 1-MCP (more than about 12 and 9 days, respectively). 1-MCP at all concentrations did not affect color change and chlorophylls content of peel, but 1-MCP fumigation for 12 hours could delay the pulp color change, fruit softening and loss of TA, citric acid and vitamin C, and delayed the increasing of the β-carotene, TSS, fructose and sucrose than 6 hours fumigation period. However, 1000 nl/l 1-MCP tended to delay the reduction of the starch, dry matter, TA, citric acid and vitamin C, but it tended to delay the increasing of the β-carotene, TSS, fructose and sucrose contents when compared with 0 nl/l 1-MCP. The 1000 nl/l 1-MCP treated fruit also had the lowest respiration rate, ethylene production, PME activity and WSP content. The fruit treated with 1000 nl/l 1-MCP tended to have lower PG activity than 0 nl/l 1-MCP treated fruit. Using 1000 nl/l 1-MCP could delay respiration rate peak for 3 days, comparing with 0 and 500 nl/l. The 12 hours of exposure also decreased the ethylene production, PG and PME activites and WSP content, comparing with 6 hours. Therefore, application of 1000 nl/l 1-MCP for 12 hours of exposure showed the best result in delaying the ripening of mango fruit.