

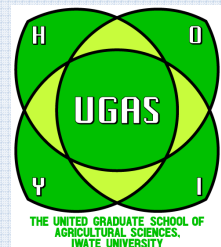
Research Internship at Chiang Mai University, Thailand

(3-16 August 2013)

Thanidchaya Puthmee

Science of Bioproduction

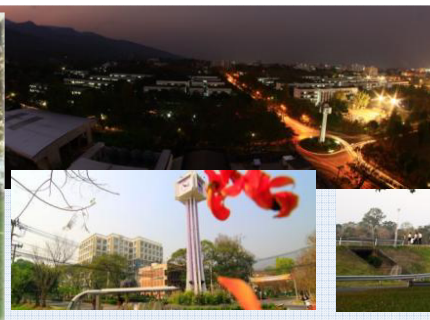
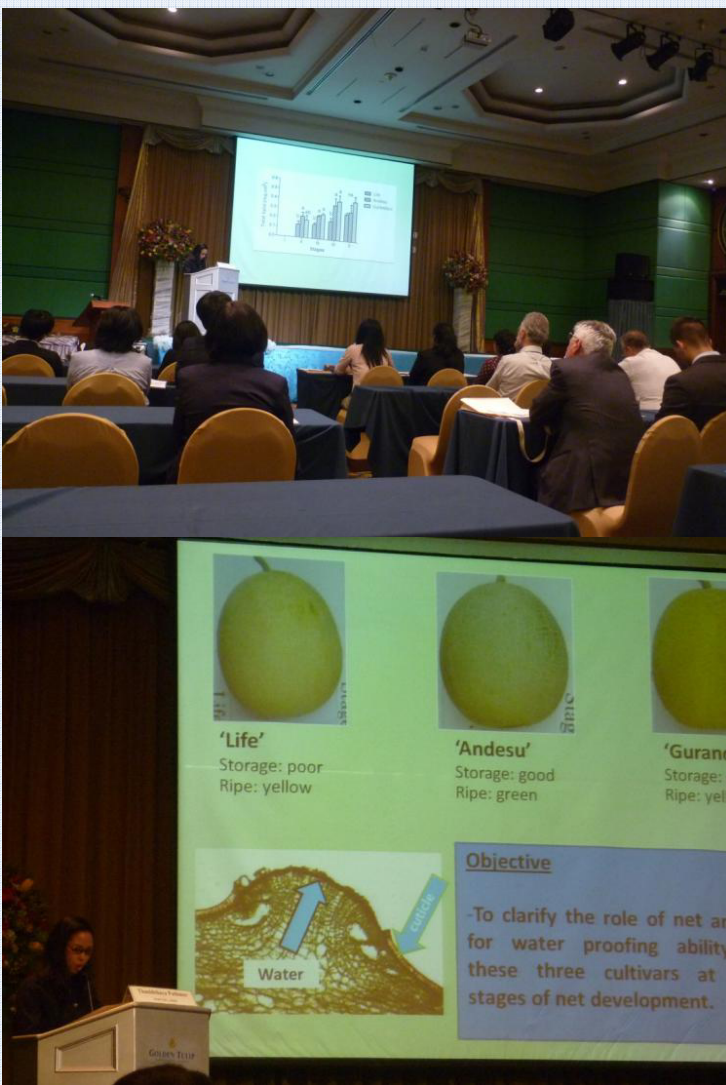
**The United Graduate School of Agricultural Sciences,
IWATE UNIVERSITY**



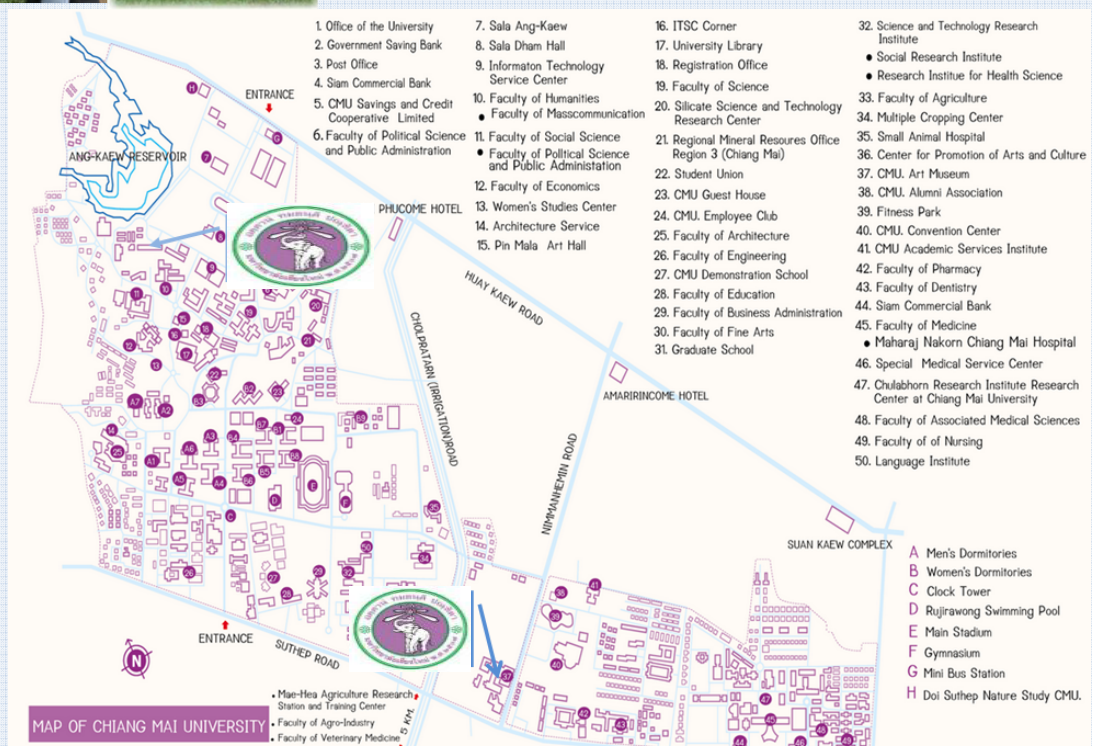
Internship activities

1. Research presentation in the International Symposium on Quality Management of Fruit and Vegetables for Human Health (FVHH2013).
2. Experiment and discussion on "Changes in peroxidase activity of 'Nam Dok Mai' mango skin as influenced by chilling injury during storage" at Science and Technology Research Institute, Chiang Mai University, Thailand

Research presentation in the International Symposium on Quality Management of Fruit and Vegetables for Human Health (FVHH2013)



20 faculty and 1 college



Chilling injury and peroxidase activity change on peel of 'Nam Dok Mai' mango during storage



- ❖ During exportation mango fruit was stored at low temperature to maintain the quality but mango fruit is highly sensitivity to chilling injury (CI) when storage temperature below 13°C (Nair and Singh, 2003).
- ❖ Young mango is always use for export but it is more susceptible to CI than ripening fruit (Zhao et al., 2008).
- ❖ The most common symptom of CI appears on the peel as surface pitting and skin browning.
- ❖ CI symptoms is maybe response to chilling temperature caused by oxidative stress, many free radicals are induced (Hariyadi and Parkin, 1991).
- ❖ Peroxidase is catalyses the oxidation of substance and is a plant resistance enzyme which is often increase when plant tissue stress such as low temperature storage.
- ❖ Therefore, in this study the visual CI symptoms and peroxidase activity of mango peel was investigated during storage.



Method

Mango fruit (*Manifera Indica* Linn cv 'Nam Dok Mai See Thong') were harvest at young mature stage (yellow skin)

1. Control which is immediately measured after harvest.
2. Storage at low temperature (5°C) for 30 days and then measured
3. Storage at low temperature (5°C) for 30 days and then transferred to 25°C for 7 days.

Seven fruits per each treatment were measured CI index and peroxidase activity after storage.

CI index on mangoes skin and peroxidase activity of mango peel



Results

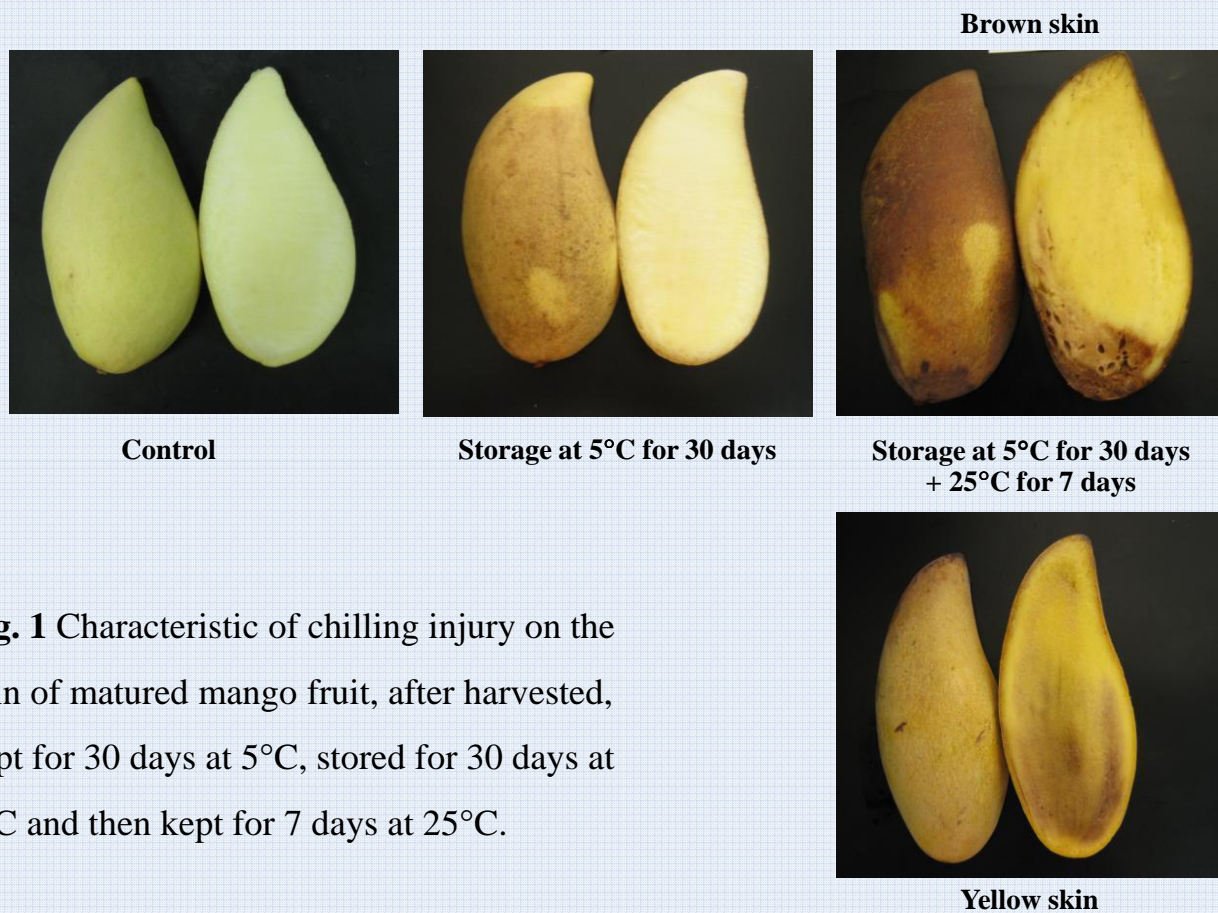
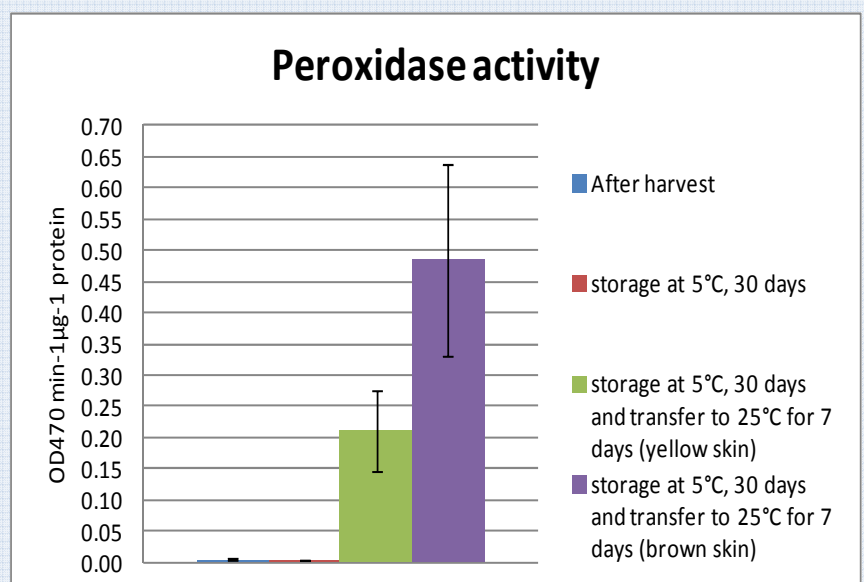


Fig. 1 Characteristic of chilling injury on the skin of matured mango fruit, after harvested, kept for 30 days at 5°C, stored for 30 days at 5°C and then kept for 7 days at 25°C.

Table 1 Chilling injury index (CI index) of mango fruit in control, kept for 30 days at 5°C, stored for 30 days at 5°C and then kept for 7 days at 25°C.

Treatment	CI index
Trt1 Control	0.00
Trt2 Storage at 5°C for 30 days	0.63
Trt3 Storage at 5°C for 30 days + 25°C for 7 days	1.47

Fig. 2 Peroxidase activity of matured mango fruit peel after harvested, kept for 30 days at 5°C, stored for 30 days at 5°C and then kept for 7 days at 25°C.



Conclusion

As a conclusion, our result indicated that chilling injury symptoms of mango fruit after transferred to 25°C for 7 days was more serious than the fruits stored at low temperature. A high activity of peroxidase was found in transferred fruits especially peel dark browning.



All members



ACKNOWLEDGEMENT

