

**Improving smallholder farmer incomes through strategic market development
in mango supply chains in southern Vietnam**

**Annual Workshop
December 2020**

**Activity 2.3
Management of Sapburn study**

- incorporating outcomes of A1.6

Tram Anh San and team
SIAEP

Van Phong Nguyen and team
SOFRI

Peter Johnson
Griffith University

Implementing Agency



SIAEP



Funding Agency



Aim & objective

Activity 2.3

- ▶ Mango productivity and quality improvements in fresh supply chains

Focus

- ▶ Identify and demonstrate opportunities for improving productivity and quality in fresh supply chains

Research questions

- ▶ What on-farm, post-harvest and marketing innovations are likely to generate the most significant impacts to reduce losses, increase productivity and quality outputs that will improve returns directly related to smallholder incomes?
- ▶ What innovations have the most cost-effective and positive impacts on productivity, losses, quality and harvest timing, leading to improved price and farmer income?
- ▶ What processes will strengthen markets linkages and agribusiness partnerships and enhance innovation adoption along the chain?
- ▶ What tools will support sharing of innovations with wider mango farming communities?
- ▶ What are the roles and responsibilities of the key local partners to ensure the innovation successes are mainstreamed within the communities in southern Vietnam?

Background – Monitoring quality A1.6

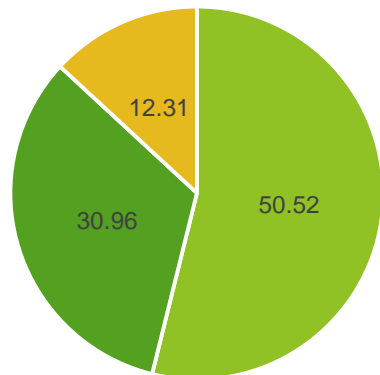


Postharvest losses observed at 3 CCPs in southern Vietnam

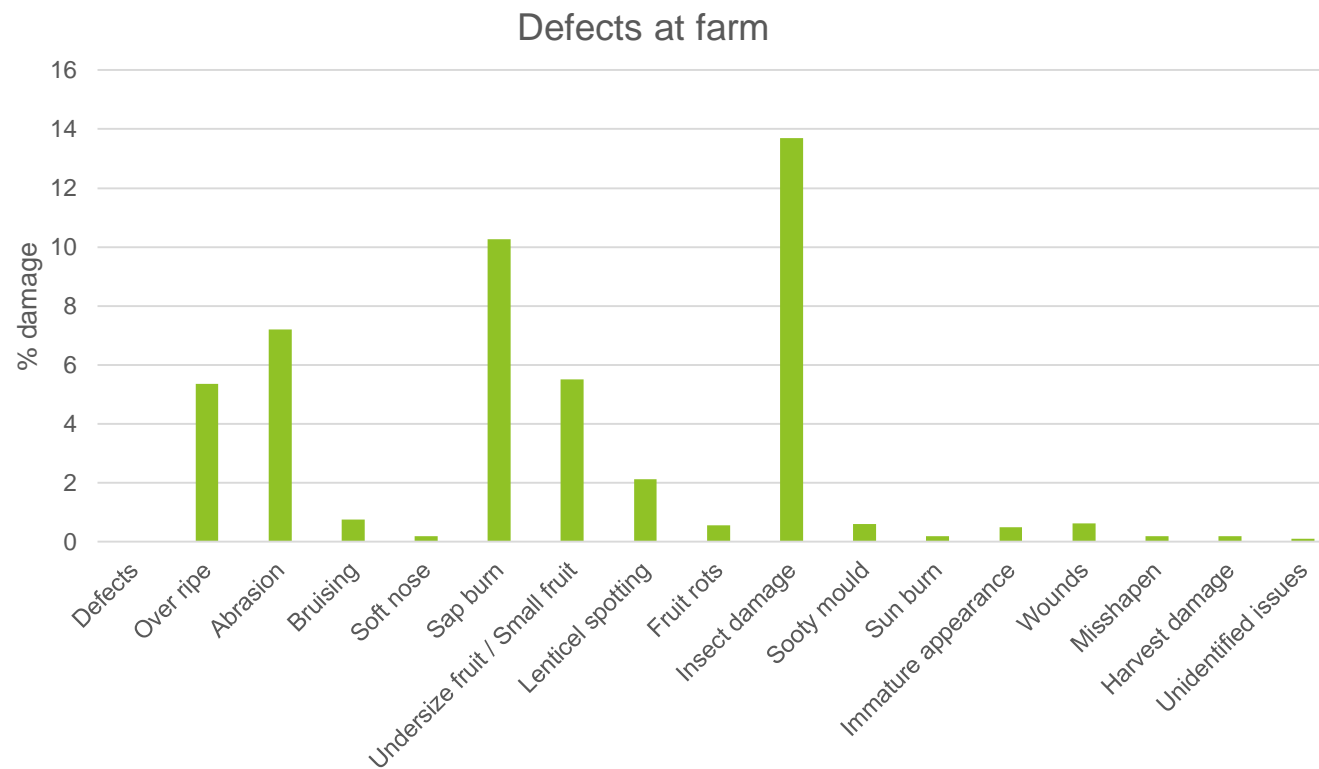
Harvest	Packhouse	Market
Cat Chu & Cat Hoa Loc	Cat Chu & Cat Hoa Loc	Cat Hoa Loc
<ul style="list-style-type: none">• abrasion• overripe• small fruit• sap burn• insect damage	<ul style="list-style-type: none">• overripe• sap burn	<ul style="list-style-type: none">• lack of refrigeration• small volumes – regular supply• fruit sold unripe – causing limitation (i.e. impulse shopper would not purchase)• dehydration & immature fruit common place• disease challenges – with held fruit• wastage – approx. 5–10%• supermarkets purchasing – grade 2 fruit

Results from Activity 1.6 Study – Mango Quality

Cat Chu variety
Bagged /white bag

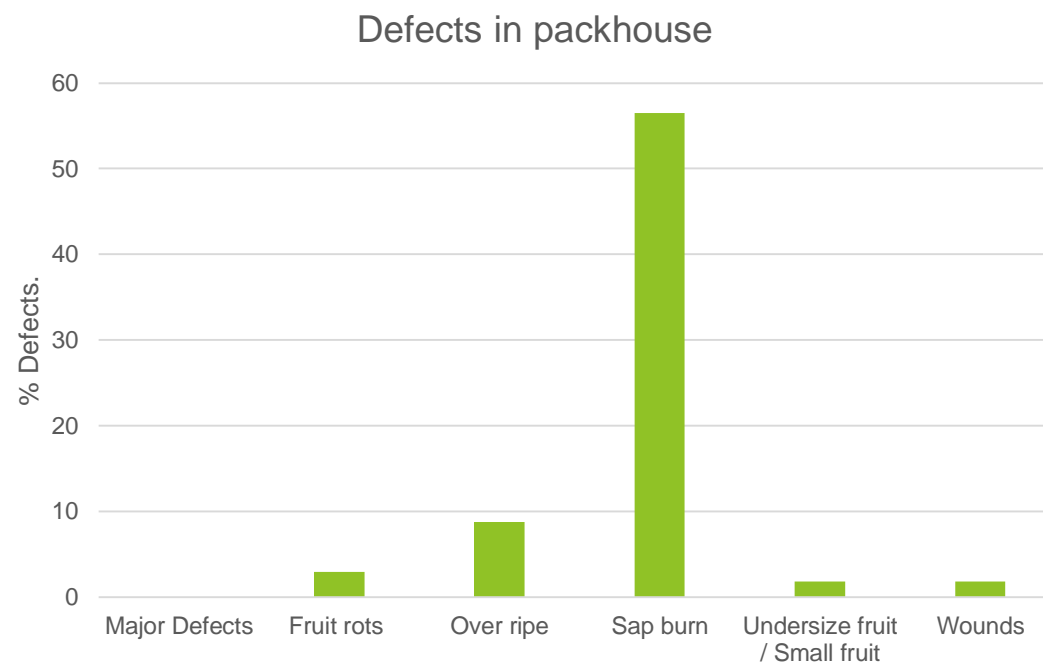
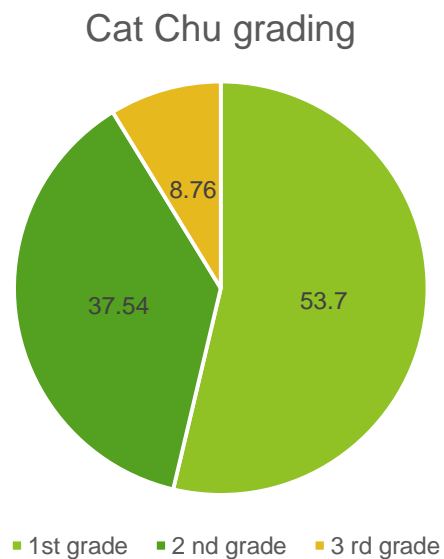


■ 1st grade ■ 2nd grade ■ 3rd



Background

Results from Activity 1.6 Study – Mango Quality



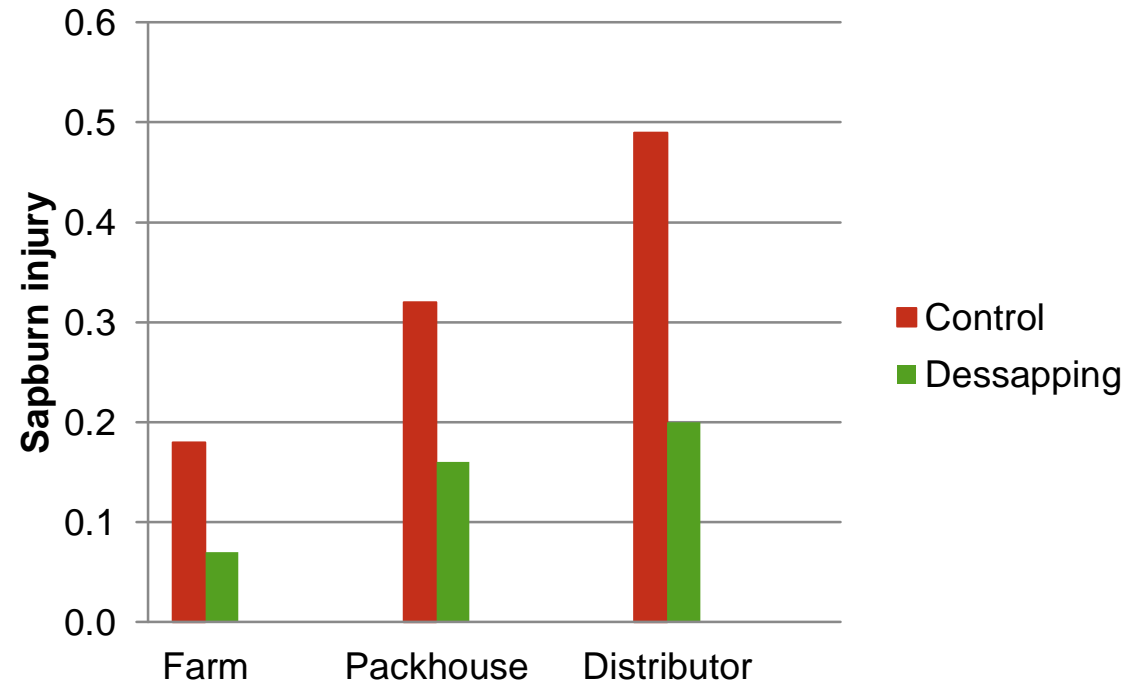
Sap burn develops further down the chain to become the dominant quality issue

- ▶ Identify trial farms to supply mango from packhouse collaborators
- ▶ Document current farm harvesting systems
- ▶ Adapt system to accommodate current on-farm situation, test on farm sites
- ▶ Evaluate the impact on quality
- ▶ Analyse efficiency and practicality of the system
- ▶ Incorporate system into chain monitoring

The severity of sap burn damage and other defects on each fruit are rated according to the following scale:

- 0 = nil; 1 = < 3% (1 cm²) of skin surface affected
- 2 = ~ 3% (1 – 3 cm²)
- 3 = ~ 10% (3 – 12 cm²)
- 4 = 10% – 25% (12 - 25 cm²)
- 5 = > 25% of skin surface affected

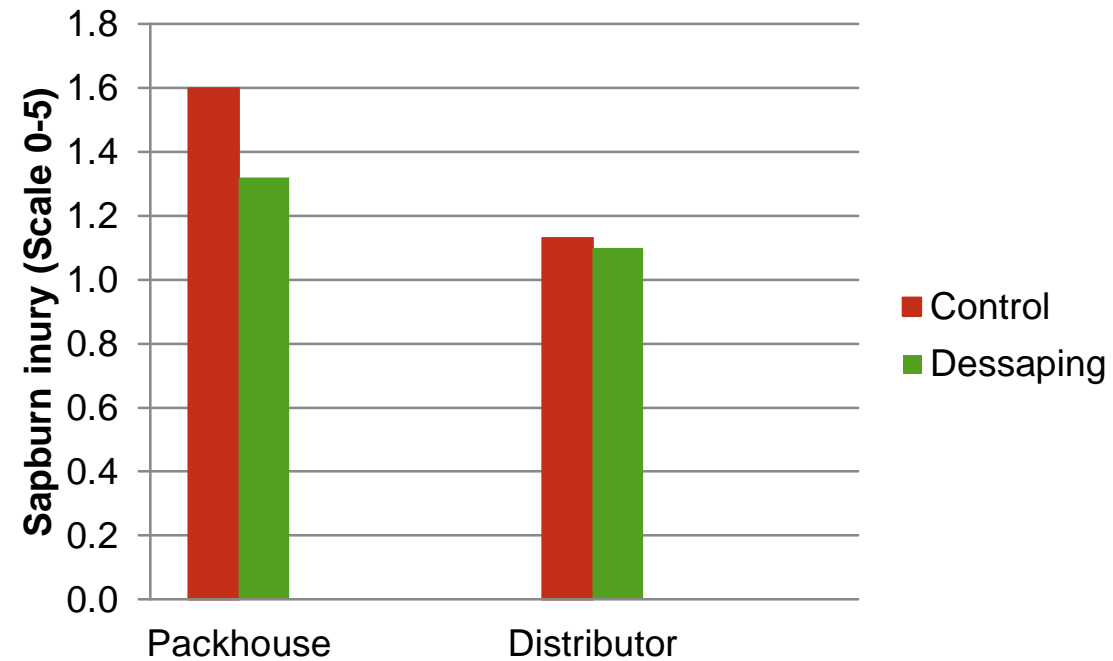
Fruit treated on farm then measured at farm, packhouse & wholesaler points



- Sap burn injury increased throughout the chain from farm to wholesaler market
- De-sapped fruit had less sap burn damage as compared to non-treated fruit at day 0

Results

Control and treated fruit on farm delivered to packhouse & wholesaler points, then measured in laboratory 7 days post storage



- Severity of sap burn damage increased throughout the storage time (day 7) compared to day 0



Control fruit from the farm at day 0



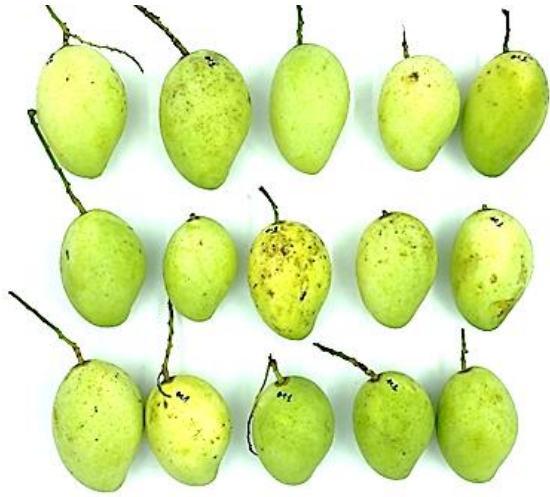
De-sapping fruit from the farm at day 0



Control fruit from the pack house at day 0



De-sapping fruit from the packhouse at day 0



Control fruit from pack house at day 3



De-sapping fruit from packhouse at day 3



Control fruit from wholesaler market at day 3



De-sapping fruit from wholesaler market at day 3



Control fruit from pack house at day 5



De-sapping fruit from packhouse at day 5



Control fruit from wholesaler market at day 5



De-sapping fruit from wholesaler market at day 5

Outputs & outcomes

Outputs

- ▶ Sap burn - leading cause of quality loss within the chain
- ▶ Preliminary results encouraging - almost 2/3rds reduction in sap damage at distributor level
- ▶ Live results were higher than those under controlled lab conditions suggesting further cross contamination in the chain is may happening coming from untreated fruit.

Outcomes

- ▶ Fruit quality improvements – will increase purchasing interest from modern retail chains
- ▶ Higher engagement by retailers will drive price premiums for quality fruit produced by farmers