

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

**Annual Workshop
December 2020**

**Activity 2.4
Mango freezing – partial trial study**

Kim Oanh Tran
SIAEP

Richard Beyer
Griffith University

Implementing Agency



SIAEP



Funding Agency



Australian Government
Australian Centre for
International Agricultural Research

Aim & objective

Activity 2.4

- ▶ Mango productivity and quality improvements in processed supply chains

Focus

- ▶ Fruit productivity and quality improvement through on-farm innovations

Research questions

- ▶ What processing 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 is the potential to increase farmer incomes from further developing access to processed fruit chains in the domestic market?
- ▶ 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?

A comparative study of the freezing process for mangoes:

1. whole peeled
2. peeled, halved fruit with stone removed

For statistical purposes the procedure was replicated using mangoes from provinces in southern Vietnam

- ▶ Mangoes were subjected to freezing
- ▶ Core temperature reached -18°C as per standard Codex requirement
- ▶ Mangoes were thawed & assessed
- ▶ Analysis undertaken using JMP 9.02
- ▶ 10 evaluators, 7-point hedonic scale
- ▶ Evaluators - SIAEP & Long Yuen company staff



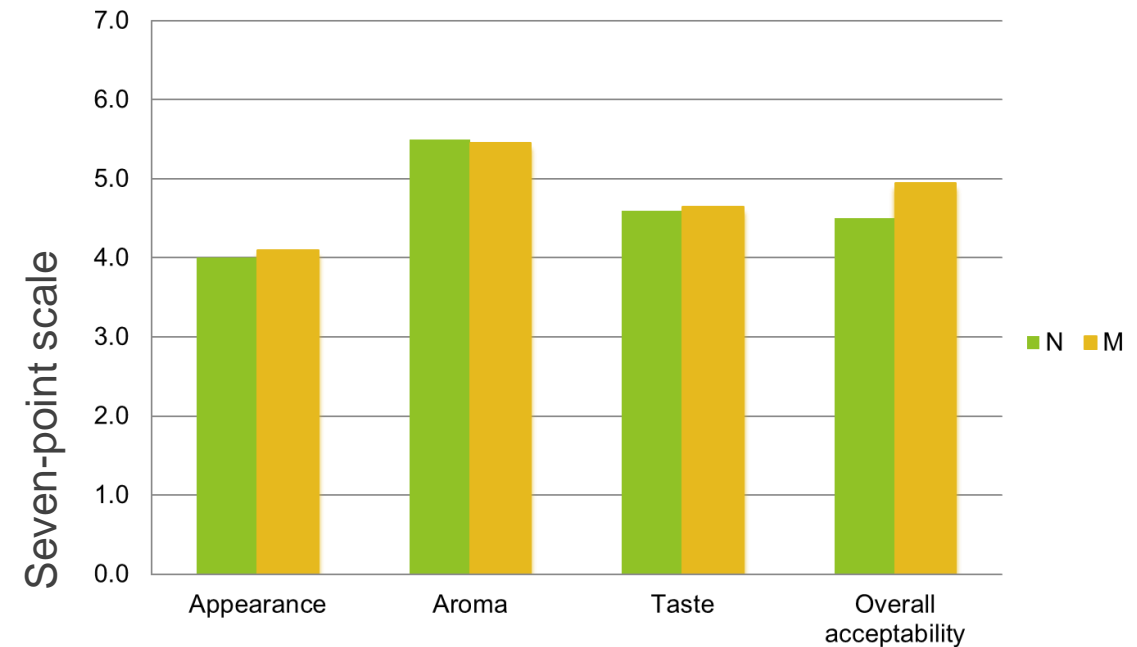
Frozen whole peeled mangoes



Frozen flesh-cut mangoes

- ▶ Significant differences were observed between responses from company & SIAEP evaluators
- ▶ Significant differences were noted between samples selected by the company & the trader
- ▶ No significant difference was evident between the treatments

Comparison of the sensory scores between the two frozen treatments



Notes:

N = peeled

M = peeled & deseeded

Outcomes & output

Outcomes

Freezing is an acceptable technique for partial processing of mangoes at the height of a season

This type of technique extends the use of fresh mangoes:

- ▶ maximising return for effort (RFE) for farmers
- ▶ optimising the overall value of a crop
- ▶ reducing equipment idling time – reducing fixed costs for the processor

Output

The foundation work has been completed

Next stage for further in-depth study to deliver a recommended code of practice for use throughout the industry can be delivered in 2021 as per the project requirements.