

Mango productivity and quality improvements in fresh supply chains

Title

Reducing heat related injuries by pre conditioning treatments to meet hot water phytosanitary protocols for mango cultivars NMBP-4069 and R2E2.

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Implementing Agency



SIAEP



Funding Agency



Australian Government
Australian Centre for
International Agricultural Research





- ▶ Heat treatment of mango fruit to meet phytosanitary requirements for fruit fly has become the industry standard.
- ▶ Hot water treatment (HWT) and Vapour heat treatments (VHT) are the protocols that have been established to allow Australian mangoes to access the key export markets.
- ▶ Whilst the industry has progressed with utilising the VHT options, virtually no uptake of HWT has occurred in spite of it being a much simpler, more efficient and cheaper option than VHT.
- ▶ Much of the reasoning can be attributed to previous studies which has indicating that HWT can lead to unacceptably high levels of scalding and other heat associated injuries with certain varieties.



Activity 2.3: Mango productivity and quality improvements in fresh supply chains

Focus

- ▶ Commercial applications of Hot water treatments to meet export protocols. Addressing the current impediments in the uptake of Hot water treatments by the developing and testing of precondition procedures..

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 processes will strengthen markets linkages and agribusiness partnerships and enhance innovation adoption along the chain?



Achievements

- ▶ Precondition fruit in ambient air temperatures, can eliminate any heat related damage associated with HWT.
- ▶ Offering a viable cheaper more practical solution to mango packhouses wanting to export mangoes.
- ▶ Water conditioning for 60 min. prior to HWT similarly reduced any heat related peel damage.
- ▶ This development offers an even greater improvement over air preconditioning - providing more accurate & quicker applications.



HWT damage with no preconditioning



Air preconditioning treatment



Hot Water precondition treatment

What worked well:

- ▶ Ambient air precondition worked well even with temperature fluctuations.
- ▶ Water preconditioning worked exceptionally well.
- ▶ Trial developed commercially practical solutions.

What could be changed or improved next time:

- ▶ Larger or multiple hot water baths would minimize the treatment replications and improve trial efficacy.



Pathway to completion

- ▶ Submission of paper for journal publication

Future Opportunities

- ▶ Information generated is an essential component for the commercial adoption by industry . Further publications of follow-up work within the industry network will facilitate uptake.
- ▶ The experimental work is directly applicable to partner countries and initially trialing on local varieties would be required, then upscaled upon