Trials for controling pest and disease in custard apple by using exclusion netting

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Agency for Food and Fibre Sciences

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Know-how for Horticulture™

NETTING OF CUSTARD APPLE FOR CONTROL OF FRUITSPOTTING BUG AND OTHER INSECT AND VERTEBRATE PESTS

Report compiled by Roger Broadley

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The Australian Government (through Horticulture Australia Limited) and P. and P. Stacey jointly funded this project.

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Patti and Phil Stacey, Custard Apple Growers, Alstonville NSW 2477

This is the final report for a small project carried out in 2004-5.

Date of report: **January 2005**

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1.0 Media summary

The Australian custard apple industry is keen on finding alternatives to the use of insecticides for control of insect and vertebrate pests of custard apple. A separate project conducted with netting of low chill stonefruit had shown that birds, bats, Queensland fruit fly and a number of other pests in southeast Queensland could be controlled by netting stonefruit trees and physically excluding such pests. Chemical control was therefore not warranted, and there were several other advantages, such as better fruit quality and reduced water use in the netted blocks. No Queensland fruit fly has been trapped within the netted block.

This concept was transferred to custard apples at Alstonville in New South Wales. At the netted site it has been estimated that custard apple fruit losses from fruitspotting bug (*Amblypelta* sp.) had reached as high as 50% in bad seasons.

The project was funded solely to erect netting and associated infrastructure over an area to be planted to young custard apple trees. In addition, the structure was designed to incorporate a novel tree training system (Open V-trellis), with which it is hoped to improve the efficiency of growing custard apples, and to reduce labour involved in growing and harvesting custard apples.

The overall effectiveness of netting for custard apple pest control, and the advantages and disadvantages of the Open V-trellis system will be evaluated in a subsequent project. The netting project simply focuses on setting up a netted block for such future work.

2.0 Technical summary

A VC contribution project was set up at Alstonville in northern New South Wales with custard apple growers P and P Stacey, to net a block of custard apple. This has been completed and the infrastructure is in place. Photos of the block are attached in the body of the report.

The opportunity was taken to set the block up in such a way that a new tree training system (Open V-trellis) could be evaluated under netting, using two varieties. These varieties are Maroochy Gold and KJ Pinks. We believe the latter might be well suited to a new system for efficiently growing custard apple.

This project was funded purely to set up the netting infrastructure. A subsequent project will focus on evaluation the advantages and disadvantages of the netting block.

3.0 Technical reports

3.1 NETTING CUSTARD APPLE TO IMPROVE INSECT AND VERTEBRATE PEST CONROL, AND TO PROVIDE A SITE TO TEST A MORE EFFICIENT TREE PRODUCTION SYSTEM

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Summary

An insect and vertebrate pest exclusion block has been set up at Alstonville in northern New South Wales. The effectiveness of this netting in managing insect and vertebrate pests will be evaluated over the next few seasons, in another custard apple project.

Introduction

Possible benefits of total exclusion netting include the following:

- Keeps out all pests – fruitspotting bug, fruit fly, yellow peach moth, possums, rats, birds, wallabies.
- Increases humidity so possible increase in early fruit set, and perhaps earlier fruit.
- If dry, overhead misters are easily installed.
- Reduced light will possibly reduce vegetative growth (this has been shown in low chill stonefruit total exclusion netting trials).
- Added wind protection so reducing damage to trees and fruit.
- Possibly reduce cold and frost in winter.

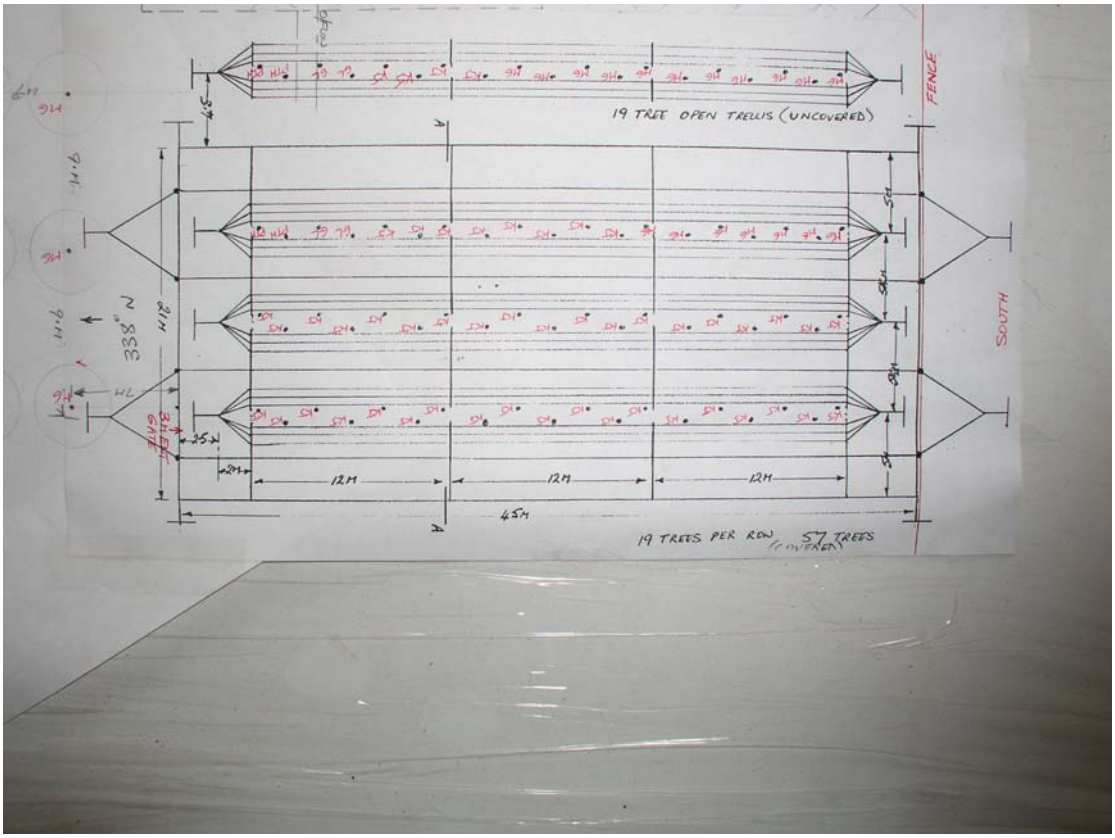
Possible problems with total exclusion netting include the following:

- Increased fungal diseases
- High maintenance on structure if not installed correctly.

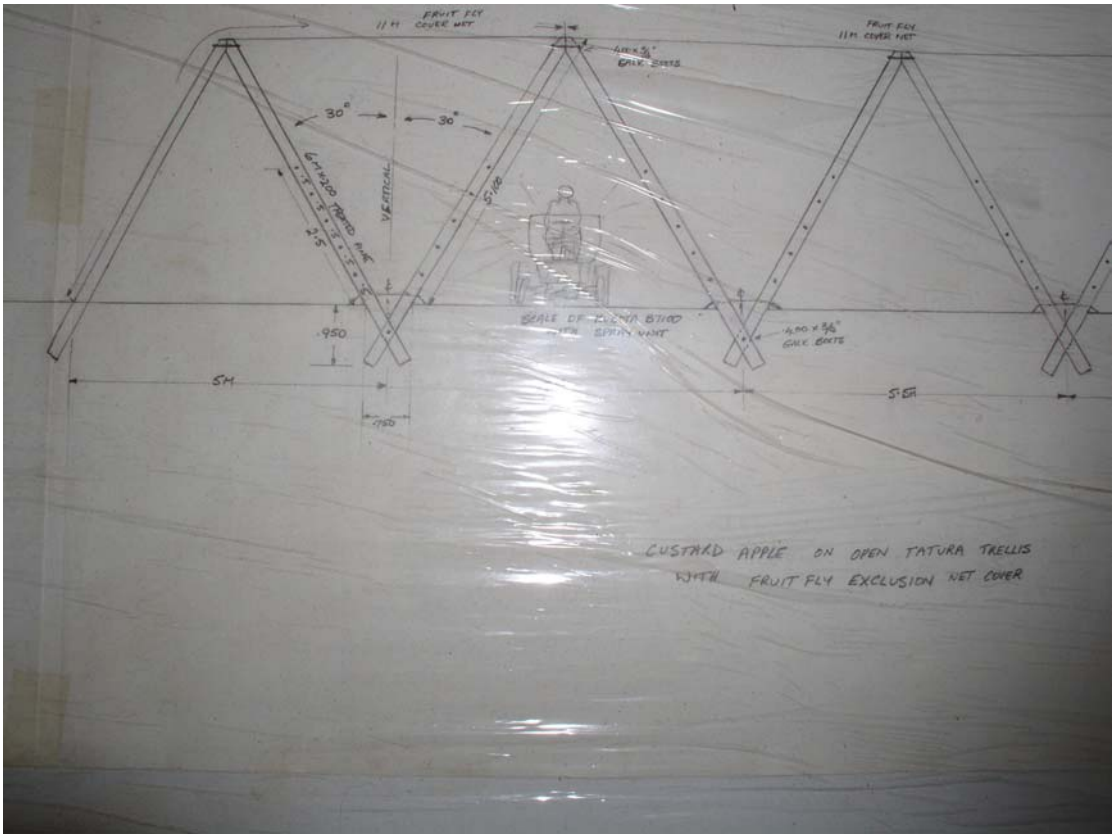
Two custard apple growers (Phil and Patti Stacey) decided that the option of netting a block of custard apple at Alstonville in northern NSW might be useful in control insect and vertebrate pests. They contributed a VC payment to Horticulture Australia to test the concept of growing custard apple under total exclusion netting.

Methods

Custard apple grower Phil Stacey designed a system for growing custard apple under netting, using a walk through V-trellis system. A plan for this netting and growing system is shown below. In addition to mini-sprinklers, misters have been introduced above plants, so that relative humidity can be controlled at a future time.



Layout of netted block.



View inside netting block from end.

Results

Photographs of the netting block in different stages of construction are shown below.

Netting used in setting up block

Block with some support poles in place. These were recycled from another orchard.

Block with all support poles in place

Gap between V-trellis allowing walk through access.

Discussion

The netting block is a first for growing custard apples. Netting has been set up, and young custard apple trees of the variety KJ Pinks and Maroochy Gold have been planted. A few pest problems only have been encountered – these have been caterpillars already present on trees or on grass under netting, and nigra scale, which was introduced on the young trees. None of these pests present significant control difficulties.

Conclusions

A block of custard apple has been set up under exclusion netting at Alstonville in northern New South Wales.

The next step is to monitor pests and disease incidence, and fruiting and growth of the young custard apple trees. This will be done through a separate custard apple project.

4.0 Technology transfer

Field days have been conducted to show custard apple growers the netting block, and an article will be published in the Custard Apple Newsletter in the near future

5.0 Recommendations

- That further work to determine the effectiveness of insect exclusion netting be conducted in a separate industry funded project.
- That the same project also measure growth and fruiting performance of the two varieties

6.0 Acknowledgments

We gratefully acknowledge the assistance of Patti and Phil Stacey. We thank also co-funders Australian Government through HAL, and growers P and P Stacey.