



tia

TASMANIAN
INSTITUTE OF
AGRICULTURE

utas.edu.au/tia



Perennial Horticulture Fact Sheet

Key Points

- ASE is a suitable tool for precision management of crop load without additional chemical thinning.
- ASE management is not weather dependent and precisely spaces fruit for optimum light distribution.
- ASE managed trees set more multiple fruit and achieved a higher percentage fruit set than conventional trees.
- ASE managed Gala and Fuji trees produced up to 30% higher fruit yield in a typical flowering season.

Chemical free crop load management

There is strong interest in finding alternatives to thinning apples with chemicals. Fickle spring weather can make chemical thinning of apples tricky with often unpredictable results. Environmental concern about some thinning chemicals is also prompting a rethink around their use.

Artificial Spur Extinction (ASE) is a crop load management method showing promise as an alternative to chemical thinning. This study expands on initial work that demonstrated ASE as a feasible crop load management option. It investigates its effectiveness with the cultivars Fuji and Gala and compatibility with chemical thinning.



What is Artificial Spur Extinction?

Artificial Spur Extinction (ASE) is a crop load management method that uses bud thinning techniques to precisely define where and how much fruit is set on each limb of the tree. The aim of ASE is to promote the vigour and performance of floral spurs, stimulate spur strength and improve fruit quality and regularity of production.

Research questions

1. Is ASE effective on cultivars with an extreme biennial bearing tendency, such as 'Fuji'?
2. How do ASE managed trees respond to chemical thinners?
3. Can ASE technology be successfully merged with chemical thinning to optimise yields and fruit quality?
4. How does ASE technology compare directly with best practice chemical thinning programs in terms of yield, pack-outs, and cost:benefit?



Flowering and fruit set

In spring, ASE managed trees are already significantly thinned, carrying around half the number of flower buds of conventional trees. With less competition more resources are directed to fruit buds that go on to produce fruit rather than thinnings on the ground.

ASE trees set more multiple fruit

ASE managed trees carried a greater proportion of buds that set multiple fruit set. This effect was even more marked in the 2016/17 season where the flowering period was extended over 6 weeks.

ASE trees set more fruit

ASE managed trees achieved a higher percentage of buds setting fruit than conventional trees, despite having fewer total flower buds.

About the trial

Year 1: 2015/16, an unusual season with flowering compressed to a very short time (5 days).

Year 2: 2016/17, a more conventional season with flowering occurring over 6 weeks.

ASE treatment

Floral buds thinned to 6 buds cm⁻² limb cross sectional area (LCSA) in late August.

Chemical thinning treatment

A full program using bloom thinners Ethrel® (ethephon) and NAA and post bloom thinner Maxcel® (BA).

ASE increases fruit yield

Seasonal conditions and variety influenced the effectiveness of the different crop load management strategies. ASE managed trees produced the highest yields in Year 2 for both Gala and Fuji, (Figure 1).

In the highly compressed flowering season of Year 1, Gala yields were similar irrespective of management. However, Fuji responded strongly to ASE with a 30% higher yield than for conventional or chemically thinned trees.

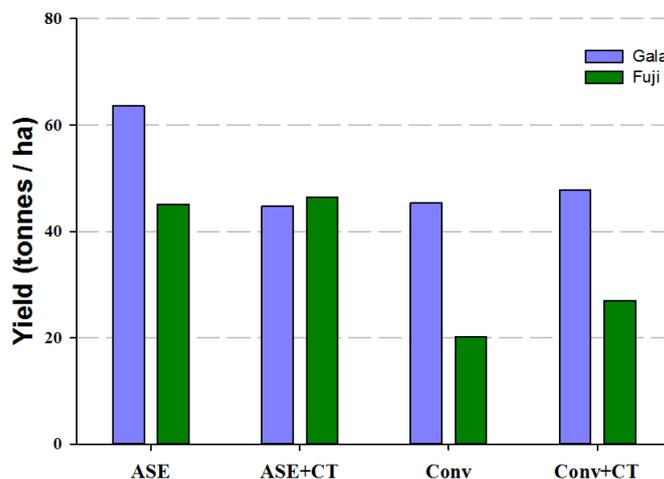


Figure 1. Yield of 'Gala' and 'Fuji' under different crop load management regimes in 2016-17. ASE = Artificial Spur Extinction, CT = chemical thinning

Dr Sally Bound

Senior Research Fellow

Tasmanian Institute of Agriculture

sally.bound@utas.edu.au | 03 6226 2958

DISCLAIMER

While the Tasmanian Institute of Agriculture (TIA) takes reasonable steps to ensure that the information on its fact sheets is correct, it provides no warranty or guarantee that information is accurate, complete or up-to-date.

TIA will not be liable for any loss, damage, cost or expense incurred or arising by reason of any person using or relying on the information contained in this publication. No person should act on the basis of the contents of this publication without first obtaining specific, independent, professional advice.

TIA and contributors to this Fact Sheet may identify products by proprietary or trade names to help readers identify particular types of products. We do not endorse or recommend the products of any manufacturer referred to. Other products may perform as well or better than the products of the manufacturer referred to.