Grower Summary

TF 197

Determining the cost benefit of a range of thinning strategies for apple

Final 2012

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Before using all pesticides check the approval status and conditions of use.

Read the label before use: use pesticides safely.

Further information

If you would like a copy of the full report, please email the HDC office (hdc@hdc.ahdb.org.uk), quoting your HDC number, alternatively contact the HDC at the address below.

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Project Number:	TF 197
Project Title:	Determining the cost benefit of a range of thinning strategies for apple
Project Leader:	Gary Saunders,
Contractor:	East Malling Research
Industry Representative:	Giles Cannon, GSR Fruits Ltd
Report:	Final report, September 2012
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Previous report/(s):	-
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End Date:	30 September 2012 (originally due 31 January 2012)
Project Cost:	£19,326

Headline

Exilis offers a viable alternative to hand thinning apples, but in this one year trial, did not result in increased returns compared to an un-thinned control.

Background and expected deliverables

Effective fruit thinning and increasing fruit size through the use of chemicals or mechanical methods, whilst reducing or removing the cost of hand-thinning, is seen as a high priority by UK top-fruit growers. In addition, the HDC Tree Fruit Panel considers this to be a high priority for research funding.

Apple trees often set excessive numbers of fruit in relation to tree size, resulting in the production of large numbers of small fruit. 'Thinning' or removing a proportion of the fruit enables the remaining apples to reach a larger size and these are easier and cheaper to pick. This enables growers to produce fruit in the desired size range for market requirements. In addition to increasing fruit size, thinning can also be used to increase fruit quality, for instance by removing damaged fruit from the tree. It can also prevent over cropping, which can lead to biennial bearing in some varieties.

There have been recent developments and changes in chemical and mechanical fruit thinning techniques. If effective, these proposed techniques could reduce or remove the cost of the hand thinning operation. This project investigated these alternative thinning techniques for the variety Gala and determined the cost benefit of each.

The treatments included in the investigation were:

1. Untreated
2. Hand thinning at 12-15 mm according to agronomists' recommendations
3. Exilis applied at 8-12 mm fruit size at 7.5 l/ha in a water volume of 500 l/ha, when temperature is forecast to be above 15^{o}C for the two days following application
4. Ammonium thiosulphate (ATS) applied at open flower at a rate of 2% applied in 500 l/ha
5. ATS applied at open flower at a rate of 2% applied as 500 l/ha + Exilis applied at 8-12 mm fruit size at 7.5 l/ha in a water volume of 500 l/ha, when temperature is forecast to

be above 15°C for the two days following application

6. Cerone (0.75 l/ha in a water volume of 500 l/ha) applied at petal fall
7. Cerone (0.75 l/ha in a water volume of 500 l/ha) applied at petal fall + Exilis applied at 8-12 mm fruit size at 7.5 l/ha in a water volume of 500 l/ha, when temperature is forecast to be above 15°C for the two days following application
8. Mechanical blossom thinning using the Fruit-tec Darwin thinner

Summary of the project and main conclusions

In this one year project, Exilis, when applied according to the manufacturer's recommendations, was shown to be a viable alternative method to hand thinning. The other methods evaluated were not effective at reducing crop load, but reports from commercial growers suggest that ATS and the Darwin mechanical blossom thinner are also potential candidates to replace hand thinning.

The use of Exilis in treatments 3, 5 and 7 resulted in a significant reduction in crop load, leading to an increase in fruit size. Greater returns were achieved for fruit in the larger size classes. However the reduction in fruit number outweighed this increase in return per apple, resulting in an overall reduction in income per tree. None of the treatments resulted in a break-even point where reduction in fruit number was offset by extra income from larger fruit.

Careful consideration therefore needs to be made by growers when deciding on the level of thinning required, taking into account the difference in return between the different size classes of fruit.

Return bloom was not affected by treatment, but it should be noted that winter pruning would have resulted in the removal of some of the fruiting wood.

Financial benefits

In this one year project on Gala apple, the treatment which provided the greatest degree of thinning (ATS & Exilis), provided the lowest return per tree (£12.33). In contrast the un-thinned treatment returned £18.68 per tree. Any conclusions should be treated with caution,

as these figures related to costs and income by size class specific to one farm (East Malling Research) and in one year(2011).

Action points for growers

- If thinning is required to increase crop size, Exilis can be used as an alternative to hand thinning.