

New Project

TF 207

Determination of the optimum pruning time
for fruit wall orchard systems for Gala apple

Project Number:	TF 207
Project Title:	Determination of the optimum pruning time for fruit wall orchard systems for Gala apple
Project Leader:	C T Biddlecombe
Contractor:	Farm Advisory Services Ltd.
Industry Representative:	Mark Holden Adrian Scripps Ltd
Start Date:	1 st March 2012
End Date:	31 st March 2017
Project Cost (Total Project Cost):	£38,826 (£42,855)

SUBJECT TO CONTRACT

Project Summary:

As growers consider adopting the fruit wall growing system for apples and planting new orchards specifically for it, they face a challenge in deciding when the correct pruning time is. The original work conducted in France, indicates later pruning times than more recent trials carried out in Belgium. This project will determine the optimum time for orchards grown in the UK which is likely to require a different optimum timing again.

The fruit wall system could offer significant benefits to growers by reducing labour costs and allowing increased mechanisation, but only if yield and fruit quality are not compromised will these benefits result in increased returns. As some of the pruning timings are when fruitlets are developing there is a potential risk to fruit size and quality, especially sugar content which is a key quality component.

The trial will determine these effects so that growers can make informed choices depending on their objectives of maximising growth control and yield or fruit quality characteristics if

there is a conflict. The trial will be conducted on a commercial farm in a Gala orchard established in winter 2010 at a planting distance of 60cm, suitable for the fruit wall system.

Aims & Objectives:

(i) Project aim:

To determine the optimum time to prune fruit wall orchards using Gala as a reference variety

(ii) Project objectives:

A) To record growth stages of Gala trees and impose five pruning times by growth stage on a newly established orchard of Gala planted for the fruit wall system.

B) To measure the results of each pruning time over 5 cropping years by recording yield and grade out.

C) To record tree growth at the end of each growing season.

D) To assess the influence on fruit maturity from each treatment by measuring starch, sugar and fruit firmness at harvest.

E) To determine the effect of the treatments on the nutritional status of the trees by analysing a sample of leaves and fruits each year.

F) To communicate the results of the trial via grower meetings, HDC News articles and open day(s) at the trial site.

Benefits to industry

- a. Modern intensive orchard systems are simpler and easier to prune than lower density traditional orchards but it can still take between 25 and 40 man hours to prune one hectare. Rates of mechanical pruning are between 1.5 and 2.5 hours per ha depending on the planting distance. Some hand pruning may be needed even where mechanical pruning is used but net savings of around £3,000 per ha over a 15 year orchard life are envisaged (net of machinery cost).
- b. If all hand pruning work including winter structural pruning could be eliminated, with no loss of fruit size or quality, further savings could be made.
- c. Anecdotal evidence from experimental plots in Northern Europe suggests that annual yields from fruit wall plantings can be around 20 tonnes per ha greater than orchards of a similar density managed conventionally. The value to the grower of this increase would be approximately £21,000 net of all post harvest costs over 15 years. However there is a real possibility that fruit size and quality and even harvest date could be affected by the tree management techniques employed in the system. It is vitally important therefore that growers are aware of these effects before they embark on

adopting the system on a large scale.

- d. For growers to implement the system they would have to rent or buy specialist pruning equipment. Current costs for this type of equipment are in the region of £14,000, but the machine also has the capability of being used for other operations on the farm e.g. hedge and windbreak cutting.
- e. There will be a need for good technology and knowledge transfer and possibly further development work as the interaction between the fruit wall growing system and other orchard management operations, such as use of growth regulators for fruit setting and thinning, could well be different due to the effects of late pruning on leaf metabolism at a critical time of year during the early fruit development phase. As the leaf to fruit ratio is altered in the fruit wall, more attention to crop nutrition and leaf health will be necessary.

Disclaimer

AHDB, operating through its HDC division seeks to ensure that the information contained within this document is accurate at the time of printing. No warranty is given in respect thereof and, to the maximum extent permitted by law the Agriculture and Horticulture Development Board accepts no liability for loss, damage or injury howsoever caused (including that caused by negligence) or suffered directly or indirectly in relation to information and opinions contained in or omitted from this document.

No part of this publication may be reproduced in any material form (including by photocopy or storage in any medium by electronic means) or any copy or adaptation stored, published or distributed (by physical, electronic or other means) without the prior permission in writing of the Agriculture and Horticulture Development Board, other than by reproduction in an unmodified form for the sole purpose of use as an information resource when the Agriculture and Horticulture Development Board or HDC is clearly acknowledged as the source, or in accordance with the provisions of the Copyright, Designs and Patents Act 1988. All rights reserved.

AHDB (logo) is a registered trademark of the Agriculture and Horticulture Development Board. HDC is a registered trademark of the Agriculture and Horticulture Development Board, for use by its HDC division. All other trademarks, logos and brand names contained in this publication are the trademarks of their respective holders. No rights are granted without the prior written permission of the relevant owners.

Further information

Email the HDC office (hdc@hdc.ahdb.org.uk), quoting your HDC number, alternatively contact the HDC at the address below:

HDC
AHDB
Stoneleigh Park
Kenilworth
Warwickshire
CV8 2TL

Tel – 0247 669 2051

HDC is a division of the Agriculture and Horticulture Development Board.