



Agriculture & Horticulture
DEVELOPMENT BOARD



New Project

TF 206

Comparison of different planting
material for Fruit Wall orchard
systems for apple

Project Number:	TF 206
Project Title:	Comparison of different planting material for Fruit Wall orchard systems for apple
Project Leader:	C.T. Biddlecombe
Contractor:	Farm Advisory Services Team Ltd (FAST)
Industry Representative:	Mark Holden, Adrian Scripps Ltd
Start Date:	01 December 2012
End Date:	31 March 2019
Project Cost (total project cost):	£36,630 (£37,680)

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 which tree type to select. Conventionally produced trees have a form and structure ideally suited to wider spacings, where a branch framework is necessary, but they can be adapted to be managed in a Fruit Wall planting. However, other tree types may be more suitable, either because they are cheaper and can be planted more intensively at the same cost per hectare, or because they have been specifically grown in the nursery to form a narrow, tall tree potentially giving higher early yields. 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. The five distinctly different tree types will be compared in a Fruit wall orchard managed to Integrated Crop Management standards.

Aims & Objectives:

- (i) **Project aim:**
To compare the performance (yield and grade out) of different nursery tree types when planted in an intensive orchard managed using the Fruit Wall system
- (ii) **Project objectives:**
A) To select five different tree types with potential for use in the Fruit Wall system.
B) To measure the performance of each tree type under the same Fruit Wall management technique over five cropping years by recording yield and grade out.

- C) To measure the tree volume by recording height and spread each year.
- D) To provide growers with guidance on the attributes including cost of establishment, of the different tree types, so that they can make informed decisions when establishing new orchards.
- E) 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) The cost of establishing an intensive orchard is currently between £22k and £28k per hectare. There is a need to ensure that the payback period is as short as possible, and one of the major influences on this is the type of tree that is planted and its cropping potential in the early years.
- b) The differences in cost of the various tree types available is quite small (typically around £0.50 per tree or £1500 per ha), but a reduction in yield of 5% in each of the first four cropping years can reduce net returns by around £3,000 per ha. Some tree types have the potential to fill their space, vertically and horizontally, much more quickly, leading to increases in early yields, whilst others require more inputs in terms of pruning and thinning in order to achieve successful establishment.
- c) Although new intensive orchard systems are simpler and easier to prune than lower density traditional orchards it can still take between 25 and 40 man hours to prune a 1 hectare orchard. Rates of mechanical pruning are between 1.5 and 2.5 hours per ha depending on planting distance. Some hand pruning will 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).
- d) 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.
- e) 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.
- f) 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.

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