Key challenges of orchard grazing

Issues to consider before introducing sheep
www.agforward.eu

Why should you plan carefully?

The potential benefits from grazing apple orchards with sheep include a reduction in mowing costs and an additional source of grass for the sheep. The sheep can promote nutrient cycling and can benefit from the shelter in winter.

However, introducing sheep to an orchard is not suitable in all cases and sometimes it is the wrong thing to do. This leaflet describes some of the issues to consider before introducing sheep.

The low branches of bush apple trees are susceptible to grazing damage

Sheep grazing a bush apple orchard in Northern Ireland. *Ref: F. Ward*

What should be considered?

Four things to consider in the management of a grazed orchard system are:

i) market for the apples
ii) apple tree structure
iii) sheep breed
iv) manager

A successful grazed orchard system requires each of these components to be correct.

Market for the apples: because the quality requirements for dessert apples are typically higher than for cider apples, dessert apples often receive high levels of agrochemicals to control pests and diseases. Each time the apples are sprayed, it is necessary to restrict the movement of the sheep; hence grazing management can be more difficult with dessert, rather than cider, apple production.

Apple tree structure: apple growth can be managed to vary the height from the ground to the lowest leaves in the canopy. The traditional way of managing apples was to create "standard" trees so that there were no side branches on the lowest 2 m of the trunks. A "half-standard" tree has a trunk of 1-2 m high, and the branch-free trunks of a "bush"apple tree can be less than 1 m tall (Robertson et al. 2012).

Sheep breed: the behaviour of sheep breeds can vary substantially. Some lowland breeds are relatively sedentary whereas some upland breeds can behave like goats, readily getting up on their two hind legs to reach browse. Selecting the appropriate sheep breed and stocking rate can be important to minimise tree damage.

Manager: a successful grazed orchard system requires a manager or a management arrangement that pays attention to the health of the apple trees and the daily monitoring of the sheep and the availability of grass. Successful management of such complex integrated systems can be labour and knowledge intensive.

AGFORWARD Agroforestry for Europe

Produced by the AGFORWARD research project funded by the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement No 613520

Advantages

The grazing of apple orchards with sheep can be successful providing financial and environmental benefits. However, the introduction of the wrong sheep breed in low-canopy apple orchards can also cause long term economic damage. Hence careful planning is needed.

Sheep can damage the bark below a height of about 1.2 m

Jim McADAM
jim.mcadam@afbini.gov.uk
Agri Food and Biosciences Institute and Queens University of Belfast Newforge Lane, Belfast BT95PX N. Ireland
www.agforward.eu

November 2017

Grazing a bush apple orchard

A replicated experiment was established in Northern Ireland to determine the effect of sheep grazing on a "bush" orchard planted in 1998.

Apple trees: there were cider apple (Coet-de-linge) and dessert apple (Jonagold) plots each split into a grazing or mowing treatment. Before grazing, the lowest leaves in the canopy were 76cm above the ground.

Sheep: the sheep were a mix of breeds including Texel, Belclare, LLeyn and Highlander. These sheep breeds were not specifically selected to minimise tree damage.

The stocking rate was set at 3-5 sheep per 0.33-0.42 hectares (i.e. 7-15 sheep per hectare) for 50-57 grazing days from April to mid-June.

Effect on apple yield

Sheep grazing in the bush apple orchard increased the height of the lowest part of leaf canopy to 109 cm. There was a 24% reduction in the apple yield of the cider apple variety Coet-de-linge and a 43% reduction in the apple yield of the dessert variety Jonagold over 2015 and 2016. Whilst there was no damage from mechanical mowing, grazing caused damage to trees in the following ways:

- Sheep fleeces caught in the trees caused damage to small branches and twigs.
- Sheep ate all buds and leaves on the apple trees below a height of about 115 cm.
- Even with ample grass, large areas of bark from the tree trunks and lower limbs were removed by the sheep.

Experimental bush apple orchard plots in Northern Ireland before grazing

Further information

McAdam J, Ward F (2016). System report: Grazed Orchards in Northern Ireland. http://www.agforward.eu/index.php/en/grazed-orchards-in-northern-ireland-uk.html

Robertson H, Marshall D, Slingsby E, Newman G (2012). Economic, biodiversity, resource protection and social values of orchards: a study of six orchards by the Herefordshire Orchards Community Evaluation Project. Natural England Commissioned Reports, Number 090. http://publications.naturalengland.org.uk/publication/1289011