



Apple orchards grazed in France

Increasing the profit from your orchard

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Apple grazed orchards in France Ref : N. Corroyer

Why graze orchards with sheep?

- Sheep can reduce the cost of grass mowing in orchards
- Sheep can promote nutrient retention and cycling within the orchard
- Sheep can eat fallen leaves (a refuge for apple scab spores) and fruits (a refuge for pests such as sawfly and-codling moth) which should result in reduced need for pesticide applications
- Sheep could reduce vole populations (which can damage trees)
- Grass can be used to maintain ewes or fatten lambs, which can increase farm income



Sheep grazing apple orchards in April 2015
Ref : N. Corroyer

How do you manage a grazing apple orchard?

- Selection of sheep breeds: preference should be given to lowland sheep breeds, such as Shropshire, with behavioural characteristics that minimise tree damage.
- It is important to regularly monitor grass height and sheep behaviour to minimise the sheep grazing the trees. The sheep should be removed immediately if there is evidence of significant tree damage.
- Fencing is needed to keep sheep in the orchard.
- When spraying with organic products, sheep can be moved to another part of the orchard during spraying.
- Sheep must be removed from the orchard before apple harvest to avoid possible contamination of the fruit by the faeces. Hence the sheep need access to another pasture plot in addition to the orchard.



Sheep grazing in July 2016

Advantages

Does grazing reduce apple scab infection?

Grazing in orchards could reduce apple scab infections, but the two year study in Normandie needs to be continued to determine the response.

Does grazing reduce vole populations?

Grazing in orchards appear to reduce the number of vole holes in the soil, but the long-term response still needs to be determined.



Impact of sheep on trees: attacked branches up to a height of 1 m Ref: N. Corroyer

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Sheep grazing in orchards need to be well organized and continuously monitored

Based on our experiments, it was found that:

Grass management

- Results from Normandie in 2016 indicate that a density of more than 4 ewes/ha is needed to maintain the low sward height required for apple harvest.
- A stocking rate of four ewes per hectare in 2016 reduced the need for mowing the grass sward below the apple trees from four cuts to two cuts.

Value of sheep

- In the case study, the focus was on the maintenance of ewes. In other systems, the orchard may be stocked with fattening lambs which may provide additional income.

Apple yields

- A lack of management, in 2016, led to sheep removing pieces of bark from 30% of the apple trees. There was no long-term damage to the trees in 2017 as a paste [badigeon in French] was applied to areas of damage.
- In 2016, grazing by sheep was estimated to cause a 5% reduction in the number of flowers and apple fruits.
- There was less scab inoculum in the grazed, rather than the ungrazed, orchard in 2016 after two years of grazing. In 2017 there was no scab in both the grazed and ungrazed plots which received the same sprays as indicated by the RimPro decision support software.
- No sawflies were observed in either plot in 2016, when Rebell® traps were used.
- There was a slight increase in the potassium and phosphorus content of apples leaves in the plot with sheep, possibly due to additional fertilization.
- The number of soil holes formed by voles was greater in the ungrazed than the grazed plots in 2017. There were half the number of vole holes in the ground in the plot with sheep, compared to ungrazed areas, in 2016.

Further information

Corroyer N, Upson M (2015). Research and Development protocol for Grazed Orchards in France. Available at: <http://www.agforward.eu/index.php/en/grazed-orchards-in-france.html>

CTPC (1993). Culture du Pommier à Cidre. Librairie Agricole de la Maison Rustique, 24pp.