Technical sheet 1

VinBiodiv

Transnational project to preserve
and develop biodiversity in Upper Rhine vineyards

Eco-pasture in viticulture

Vineyards, especially in France, are increasingly being grazed by sheep again. This is because livestock farmers are looking for additional land and winegrowers are looking for alternative ways to maintain their plots. Historically, grazing was widely used in vineyards for weed control and fertilisation. The use of herbicides and fertilisers has gradually replaced grazing. As environmental and health considerations gain importance again, winegrowers and shepherds are finding each other again.

Advantages for the winegrowers

- Keeping the vegetation short between the grape harvest and the budding of the vine
- Soil fertilisation
- Less use of machinery
- Later mechanical weed control
- Total area weed control, including understock
- Reduced soil compaction
- Facilitates cultivation of difficult to access or steep plots of land
- Enables material savings
- Reduces greenhouse gas production
- Added tourism and landscape value
- Positive effect on fire control

Advantages for the Cattle farmers

- Availability of high quality winter grass
- Varied forage
- Protection of further pastures
- Reduced need for supplementary feeding
- Reduced parasite infestation, as the vineyards were previously grazed little or not at all

Implementation

When ?

Sheep can graze in the vines after the end of the harvest until budbreak the following year and then from the end of flowering until the grapes are ripe. To reduce sweet grasses, sheep should be brought into the plot when the grass is tall:

	January Dormance	Shoots	June Flowering	Maturity	Vintage	December Dormance
Grazing	🐑	✕	🐑	✕		🐑
Leafing out		✕	🐑	✕		✕

During heavy rainfall, grazing should be avoided if possible, as this can lead to damage to the vegetation cover and soil compaction. It is recommended to designate alternative areas (fallow land, meadows, ...). Dry, stony and permeable soils are less susceptible than clayey soils.

Where ?

- Not all plots are suitable for grazing. For example, young vineyards or plots with many newly planted vines are less suitable, as damage can occur here.
- Plots near residential areas (dogs), busy roads or plots with insufficient or unsuitable shade should be avoided. Furthermore, sheep are susceptible to claw infections, which can be favoured by stones and moisture.
- Additional grazing areas as a supplement are important to maintain an optimal cover of the area (Agreil & Greff, 2008). The additional areas can be temporary pastures, wooded runs, etc.

How ?

The flock can be herded or fenced by a shepherd.

- The flock can be herded or fenced by a shepherd.
- Herding makes sense if the plots are small or if there is too much or too little grass, which increases the risk of damage to the vines.
- Fencing can extend the grazing period and the sheep will also eat less favoured plant species over time.
- Mobile nets run the risk of being damaged by wild boars.

Recommended size and composition of the flock

A minimum flock size of 20 sheep creates a „herd behaviour“ with a leader. Calm breeds and the avoidance of young animals reduce damage. Ouessant sheep, which often sit down, and Shropshire and Southdown sheep are often selected for their small body size.

Grazing time

Depending on the spacing of the vine rows, a different grazing time is recommended: If the row spacing is 2 metres, 70 sheep can graze an area of 1 hectare in two five-day sequences; if the spacing is only 1 metre, the same area is grazed in two two-day sequences.

Health advice

- Sheared sheep (fewer parasites) rub less against vines and infrastructure, minimising damage. Sheep between 90 and 120 cm in height are most suitable for defoliation.
- Watch out for plants or fruits that are poisonous to sheep (acorns, yew, St. John‘s wort, rhododendron, blue-rue, larkspur, Iceland poppy, purple foxglove, goat‘s rue, ragwort, blue lupine) (The list can be found here https://teara.govt.nz/en/diseases-of-sheep-cattle-and-deer/page-3).
- Sheep are susceptible to claw inflammation caused, for example, by claw injuries (stones) and moisture, or the ingestion of copper.

When fencing, the following should be observed for good grazing pressure:

- Include turnaround fencing so that the sheep can easily change rows.
- Do not create enclosures that are too large
- Do not choose sections with too many different types of vegetation.
- For defoliation: if possible, do not fence in different grape varieties together.
- Distribute water points well
- Since jerky movements of the sheep can cause damage to the vines, herding dogs are not recommended.

Interaction between vineyard work and organic grazing

After a chemical treatment of the vines, there must be a break until grazing to reduce the risk of poisoning. The effect of most plant protection products is still unknown. Copper accumulates in the liver and can be suddenly released during stress and lead to the death of the animal. Treatment with molybdenum (some of which may already be present in the green cover) over a long period of time can inhibit the uptake of copper. The use of herbicides should be avoided.#

Organic fertiliser should be applied in spring and not in autumn (Malzac, 2016), so that it can decompose before grazing.

Tillage: Whether carried out over the entire area or only in every second row, tillage reduces available pasture and delays the timing of grazing (Malzac, 2016). Tillage encourages ruderal species that are not eaten by sheep. Burdocks and some grass seeds can become lodged in the wool and affect wool use. Ploughing the soil is recommended only after grazing.

Linkage and irrigation: The optimum height of the highest fence is usually 60 cm. Irrigation hoses should be placed at least 60 cm above the ground and sprinklers 40 cm above the ground to minimise damage (CA du Gard, 2017).

Pasture grass is the cheapest fodder, but some conditions have to be taken into account.
The amount of grass available depends on its height and density. Measuring the height of the grass gives information about the amount of dry matter available on the pasture. For each cm of height, 100 kg of dry matter per hectare is assumed. Thus, a height of 10 cm corresponds to one tonne of dry matter per hectare.
Grazing at the right time increases quality. It is important that the vineyards are sufficiently grassed and that the animals are allowed to graze when the grass is at a good height of at least 7 cm and at most 20 cm. If the grass is higher, some of it will not be eaten.
A requirement per ewe of 2 kg dry matter per day can be assumed.

The right sowing

To achieve a good grass quality with a mixture of perennial and annual species, it is worthwhile to choose permanent grass. Species with high nitrogen fixation can be chosen in the intermediate rows. This in turn makes the sheep produce more fertiliser through droppings.

Why should overgrazing be avoided?

- It worsens the ground cover and prevents good regrowth of grasses;
- The flock becomes tired, no longer eats the cover and is tempted to eat the vines;
- It contributes to compaction and erosion risk;
- It increases the risk of parasite infestation in the sheep if they scrape too much of the vegetation cover (CA du Gard, 2017).

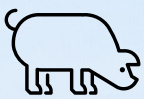
Defoliation

The flock needs to be closely monitored when defoliating, as a few hours can make the difference between a desirable defoliation and too much.

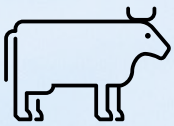
Sheep tend to prefer vines with broad leaves, but this depends on the breed. In Alsace, Riesling seems to be spared by the Shropshires.

Other types of eco-pasture

Sheep are most commonly used, but there are other animals that can serve the vineyards well. Here are some examples from field trials.



Pigs can eliminate certain rhizome plants such as couch grass by superficial soil cultivation. 5 to 6 pigs per hectare, dams with their young is recommended for this purpose.



Manure from **cows** is of interest for fertilisation and soil life. Breed selection is important.

Chickens or other feathered animals: feed on slugs. The risk of damage to the vines is low (except after ripening).

Rules for extensive grazing

In the eyes of the CAP (Common Agricultural Policy), a plot can only be used by one farmer. These can only be declared once. If sheep graze land that is not declared in the GLR, it is obligatory to indicate this in his declaration. The municipalities and localities where the flock is located must be indicated under the heading relating to sheep aid. A controller must be able to identify the location of the flock. The shepherd is therefore requested to know the holding at the time of declaration (April/May).
An application must be made to erect a fence on an area owned by the municipality.
As a result of damage to the fences, the herds may break out and cause some damage to neighbouring plots. In this case, the livestock keeper may be covered by liability insurance (CA du Gard, 2017).

Relationship between the winegrower and the livestock farmer

Most often, a verbal agreement is reached, but a grazing contract can also be drawn up, setting out a series of rules designed to guarantee the livestock farmer a certain area and grazing time, as well as respect for the vine grower's work. There are no rules for the price of this agreement.

Economic aspects

For the farmer: Grazing the vineyards can account for up to a quarter of the required fodder and provides a more varied fodder supply. This leads to a reduction in direct feed costs. For one month of grazing, the farmer estimates a saving of 22500 kg of hay, i.e. between 2250 and 2700 euros. For more details see this link (french vesion):

http://www.agriliens.fr/index.php/les-fiches-experiences/view/58-paturer-pour-moins-desherber/

However, herding the herd results in additional costs.

For the winegrower: savings in working time and fuel (1 to 2 passes less). For conventionally working winegrowers: It reduces the costs for plant protection. Social advantages: Cooperation between different farmers. This project also makes it possible to convey a very positive image of winegrowers and livestock farmers to consumers.

Winery Charles Muller and sons

„In 2021, the pressure from downy mildew was unprecedented.
downy mildew in Alsace was unprecedented and we applied significantly more copper than usual (2.9 kg Cu/ha), so I did not dare to use the sheep this year. Normally the sheep are used in the vineyards for defoliation and grazing as soon as the trellises are holding well (end of June), until the very beginning of the ripening period when the grapes become palatable for the sheep. The farmer keeps 150 sheep per hectare in an enclosure that he moves every three days. The aim is to let the animals graze briefly on small sub-areas to achieve a balanced grazing pressure. They defoliate on both sides of the rows, the advantage is that the animals eat the invasive plants (delphinium and amaranth) and save us time for defoliation and mowing".

Nathan Muller, Traenheim

The partners

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