

USING OLIVE LEAVES BY-PRODUCTS IN GRAZED ORCHARDS

The benefits of olive leaves for feeding sheep



THE WHAT AND WHY

Valorization of residues for high quality sheep nutrition

Olive leaves are fibrous with a low digestibility, especially in crude protein, and they promote very poor rumen fermentation. However, if adequately supplemented, they may be successfully used in animal diets mostly fresh when the nutritive value of olive tree leaves is greater. When olive leaves are rich in oil, ruminal protozoa decrease, and this could increase the efficiency of microbial protein synthesis in the rumen. Furthermore, for lactating animals, olive tree leaves result in an improvement in

milk fat quality due to the high linolenic acid content, compared to diets based on conventional forages. Feeding olive tree leaves to ewes also has a positive effect on the fatty acid profile of cheese and therefore improves its human nutrition quality. Olive orchard grazing can offer a lot of benefits: sheep reduce costs by controlling grass and suckers growing and increasing nitrogen recycling, while the olive leaves provide high quality feed in winter when the availability of grass is reduced.



Sheep in a traditional olive orchard in Orvieto, Italy.
Claudia Consalvo



Sheep feeding on olive tree pruning residues.
Claudia Consalvo

HOW IS THE CHALLENGE ADDRESSED

A virtuous cycle made of synergies

The by-product "olive leaves" refers to a mixture of branch and leaves from both the pruning of olive trees as well as the harvesting and cleaning of olives prior to oil extraction. The production of olive leaves from pruning has been estimated to be 25 kg per olive tree.

There are different ways to include olive leaves in animal diets, varying from feeding it fresh, ensiled, dried or as a component of concentrate pellets and multi-nutrient feed blocks.

In a silvopastoral system with sheep and olive groves, it is sufficient to leave pruned residues on the ground and, after the branches have been cleaned by sheep, place them in windrows for chopping. All these operations must be done during the winter. In the spring, despite the abundance of pasture, the sheep will continue to feed on olive leaves, contributing to the control of the suckers. In autumn, when it is the time of oil extraction, it is possible to keep the olive leaves to provide cheap energy and fibre to the animal.



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HIGHLIGHTS

- Olive orchard grazing reduce treatment costs and chemical inputs.
- Sheep benefit from a good source of grass and so reduce cutting costs of weeds and olive shoots. In periods with food shortages, the olive leaves can supplement their diet reducing concentrate needs.
- In lactating sheep, feeding with olive leaves leads to an improvement in the quality of milk fat compared to diets based on conventional forages.



Traditional cheese production made by a farmer that manages a silvopastoral system with sheep in an olive orchard.
Gaetano Alfano

protect against fungal (Peacock spot) and bacterial (olive knot) infections. The copper content in olive leaves varies depending on the number of chemical treatments applied and the weather (wind, rain, etc.).

- Given that the production of olive leaves by-products is seasonal their use in animal feeding over the whole year should require adequate preservation and storage. Drying

FURTHER INFORMATION

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ADVANTAGES AND DISADVANTAGES

An important feeding resource for ruminants

Olive orchard grazing can offer financial and environmental benefits. Sheep can successfully graze in orchards which have been pruned to a minimal height of 1.6 m, without noticeable losses in olive yields. On the other hand, keeping the olive orchard at that height can reduce the humidity rate in the lower part of the crown of the olive trees, avoiding Peacock spot and cercosporiosis, fungal diseases responsible for severe defoliation. It means that the farmer can reduce orchard treatment costs and chemical inputs into the environment. Harvesting is not hampered by the height of the plants as in the past because now the harvesting tools overcome this problem excellently. Therefore, in this way, the farmer can benefit from a good source of grass while, as a consequence, reducing cutting costs of weeds and olive shoots, while in the period with food shortages, the olive leaves can supplement the diet of the sheep. In lactating sheep, feeding with olive leaves leads to an improvement in the quality of milk fat compared to diets based on conventional forages. Since extra-virgin olive oil and cheese production are very common in the Mediterranean area, it is very important to consider olive leaves as a feed and not just as waste or compostable matter.

However, the valorisation of olive leaves by-products can present challenges, and the following points need consideration:

- Feeding olive leaves to ruminants could have a potential toxic effect due to treatments. It should be noted that they represent by-products obtained from crops subjected to chemical treatments such as copper, which is applied to

may preserve olive leaves but excess drying could decrease intake and nutritive value.

- Although ruminants consume olive leaves without problems of adaptation, olive leaves are fibrous with a low digestibility and crude protein, and they promote very poor rumen fermentation. The olive leaf product refers to a mixture of leaves and branches, and the higher the percentage of the wooden part consumed, the slower the digestibility.

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