

Selective grazing and aversion to olive and grape leaves achieved in goats and sheep

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Universitat Autònoma de Barcelona: Selective grazing and aversion to olive and grape leaves achieved in goats and sheep. Credit: Universitat Autònoma de Barcelona (UAB)

Researchers from the Research Group on Ruminants led by Elena Albanell, lecturer in Animal and Food Science at Universitat Autònoma de Barcelona, have successfully achieved to prevent sheep and goats from chewing on the young leaves of olive trees and grapevines when grazing. By using the natural mechanism of conditioned taste aversion, researchers redirected the food preferences of ruminants, making them more willing to eliminate undesirable plants from these types of

pastures, and thereby reducing the use of pesticides and farming equipment.

The cultivation of [woody plants](#) ([olive trees](#), [grapevines](#), [fruit trees](#), etc.) take up 27% of the cultivated land in Spain (MARM, 2010). This cultivation system permits plants to grow around the trees or vines, but in order to prevent these plants from becoming a problem for the cultivations, they must be controlled with herbicides and/or farming equipment. In the long term, these practices can cause environmental problems due to the residues they leave behind or to the compactation of soil produced by farming equipment. A more environmentally sustainable and respectful system would be to control these undesired plants with the grazing of sheep and goats. This system would reduce the use of [herbicides](#) and [fertilisers](#), given that the droppings of these animals provide many nutrients for the soil and thus could be used as an agricultural resource, as well as favour a better integration between the agricultural and farming sectors.

The negative side to grazing in these pastures are the damages caused by the animals, since sheep and goats are also free to eat leaves and soft shoots and thus affect the amount and quality of the crops. That is why a perfect solution would be the ability to guarantee farmers that these animals pose no threat to their lands and crops while grazing. This was the objective of researchers at the UAB Faculty of Veterinary Medicine when they proposed the use of conditioned taste aversion in the aim of redirecting the food preferences of these [ruminants](#).

A pilot plan prepared by the UAB Service for Experimental Farm and Fields revealed that sheep and goats can be trained not to eat olive leaves - a food these small ruminants particularly like. This is especially true with goats, since their "browsing" nature leads them to eat shrubs and trees. Conditioned taste aversion (CTA) is a natural defensive mechanism animals develop when learning which foods are healthy and

which are potentially toxic. To achieve this aversion, researchers fed olive leaves and soft shoots to individual animals which had never tasted this food before, and later administered lithium chloride. Lithium chloride is used in humans to treat mental conditions and in animals with the aim of modifying their eating habits.

It simulates the mechanism action of toxic components found in plants, provoking vomits and generating a sensation of indigestion which the animal associates with the new food it has eaten.

The results obtained are very encouraging. With one dosis of lithium chloride, the sheep and goats rejected the olive leaves from the first day and their behaviour differed greatly from the animals in the control group. The aversion lasted over four months. Following this line of research and thanks to the concession of a research project under the "National R&D&I Plan" (AGL2010—22178-C02-01), the project is effectively achieving its goals under commercial conditions, with both animals acquiring aversion for olive leaves and sheep learning to dislike grapevines.

More information: Manuelian C.L., Albanell E., Salama A.A.K., Caja G., "Conditioned aversion to olive tree leaves (*Olea europaea* L.) in goats and sheep" 2010, *Applied Animal Behaviour Science*, 128.

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