Conditioned aversion to vines for grazing sheep in vineyards

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1. Introduction

Vineyard system in Spain:

- Vineyards in Spain included $1 \times 10^6$ ha (MAGRAMA, 2011)
- Herbicides and machines to control ground cover
- Increase of the organic production (MAGRAMA, 2011)
- ALTERNATIVE organic crops → Use of grazing

![Image of vineyard system in Spain]

![Graph showing increase in organic area (x1000 ha) from 2000 to 2010]
Problem → vines are very palatable for sheep

Solution → CONDITIONED FOOD AVersion?
2. Objectives

- Create a conditioned averted sheep group (AV) to grape leaves and sprouts.
- Evaluate the AV effects and persistency in a simulated vineyard.
- Describe the AV sheep effects in a commercial vineyard.
3. Material & Methods

2 breeds
2 groups by breed

6 × C
(Water blank)

6 × AV
(225 mg LiCl/kg BW)

Lacaune

(54.7 ± 1.3 kg BW)

Manchega

(43.5 ± 0.9 kg BW)

Exp. 1 Aversion induction to grape leaves and persistence evaluation under simulated grazing conditions

Exp. 2 Persistence validation in a commercial vineyard
Exp. 1 Aversion induction (d 0 to 3; bam)

- 1 LiCl dose
- 3 validation days

C: Water blank
AV: 225 mg LiCl/kg BW

Exp. 1 Aversion persistence (d 5 to 375; simulated vineyard)

- Rye-grass prairie (11 × 9 m)
- 11 test days
- 2.0 (kg); 30 min/group
Exp. 2 Persistence commercial vineyard (d 401 to 411)

- Descriptive study with spontaneous weed cover.
- Rotationally graze, according to available grass.
- 3 h/d during 10 d.
- 11 ewes in a surface of 560 m².
4. Results

Exp. 1 Aversion induction (d 0 to 3; in the barn)
Exp. 1 Aversion persistence (d 5 to 375; simulated vineyard)

Results

Green vine intake (kg/group)

Days after dosing

May 2011

October 2011

May 2012

Lc-C

Mn-C

Lc-AV

Mn-AV
**Exp. 1 Simulated vineyard animal behavior**

<table>
<thead>
<tr>
<th>Control ewes</th>
<th>Aversion ewes</th>
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- Control ewes avidly ate the grape leaves (1.6 ± 0.1 kg/group)
- On the contrary, AV ewes fully rejected the leaves and sprouts
AV ewes reduced 70% grass cover between vine lines.

The ewes started to bite leaves and sprouts when grass was scarce.

No significant damage in the vine was appreciated.
5. Conclusions

- Conditioned aversion to green vines was effectively induced in adult ewes by a single oral dose of LiCl (225 mg/kg BW).
- Aversion to green vines persisted for 1 yr in the ewes, but the use of a reinforced LiCl dose after this time is recommended in practice.
- Aversion conducted under experimental settings was successfully transferred to commercial vineyard conditions.
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