



Evaluation of the use of spontaneous cover for erosion mitigation in a Rioja Alavesa vineyard

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Introduction

More than 40% of the Rioja Alavesa vineyard is installed on plots with a slope of over 10%. The distribution of rainfall is changing with climate change and the number of torrential rain events is increasing. On the other hand, most of the vineyard is managed by tillage and all this makes the risk of erosion worrying. The use of green roofs is a useful tool to mitigate this problem.

Objective

Evaluate the influence of conventional tillage and spontaneous vegetation cover on soil erosion in vineyards.

Material and methods



Rioja Alavesa (DO Ca Rioja)
Maisulan winery
Bilar/Elvillar (Araba/Álava)
Organic production
Vineyard planted in 2004 with Graciano variety
Slope 10-20 %
Average T 12,6°C (7,9°C average minimum T and 18°C average maximum T)
Accumulated anual precipitation around 500 mm
Soil (pH 8.7; organic matter 0.8 %; carbonates 43%; loamy texture)



Gerlach boxes (1.2 m²)
Sampling every 15 days or accumulated precipitation higher than 10 mm
Soil solids measured
Randomized block design with three replications
36 vines/experimental plot

Treatments:
Spontaneous cover: Mowed once in a year
Conventional tillage: 3-5 rotavator or chisel passes/year

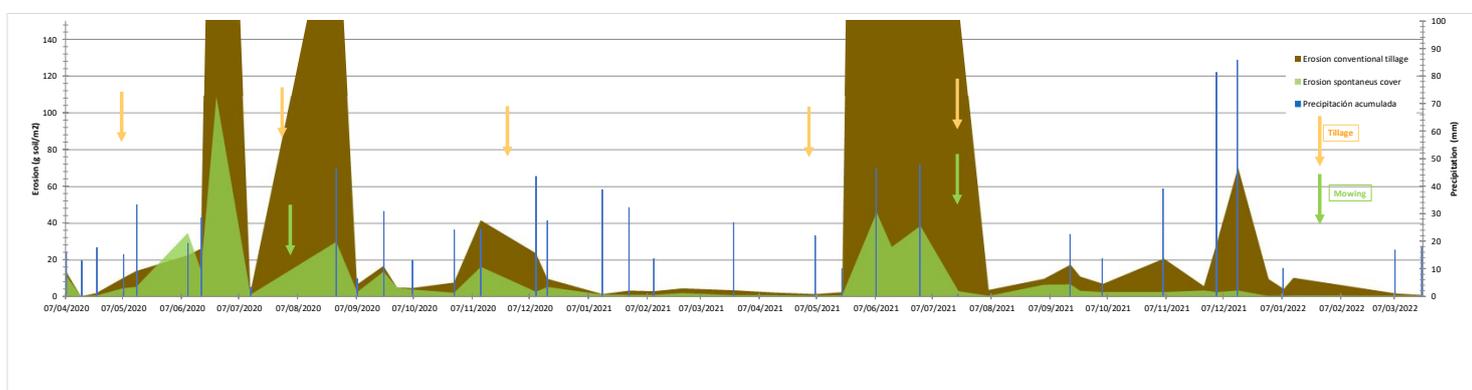


Slope (%)	Surface	
	ha	%
<3	1915	14
3-5	1761	13
5-10	4052	30
10-20	4314	32
20-30	1107	8
30-50	202	1
>50	1	0

Source: Abra: (Asociación de bodegas de Rioja Alavesa)

Source: Visor Geoeskadi

Results



Around half of the sampling moments showed significantly higher soil losses in the tillage treatment.

Period	Soil losses (t ha ⁻¹ year ⁻¹)	
	Spontaneous cover	Conventional tillage
1/04/2020 - 31/03/2021	2.69 (0.23)	9.29 (1.06)
1/04/2021 - 31/03/2022	1.49 (0.13)	26.49 (3.11)
Average	2,1	17,9

Conclusions

The first erosion measurements carried out in a Rioja Alavesa vineyard show that spontaneous plant cover can significantly reduce losses due to erosion compared to tillage.

It is essential to have real data beyond models (USLE, etc.) to make wine growers aware of the sustainability problem that erosion represents.

Terclim 2022

July 3 - 8, 2022

Bordeaux, France

