

Impact of plant cover on soil erosion, and barriers to cover crop use in Spanish orchards



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Presentation outline



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Background

- 9% of Spain experienced severe water erosion in 2016¹
- Hillside orchards are particularly at risk.
- Traditionally farmers remove plants growing between crop trees.
- However, cover crops provide benefits and methods are changing.



1. EUROSTAT 2021

Rainfall simulation

Methods

Choosing the plants

- Native to Spain
- Previously used as cover crops
- Plant trait analysis
 - Above and below ground traits
 - Started with 10 species



Brachypodium distachyon



Silene vulgaris



Medicago sativa

Parameters measured

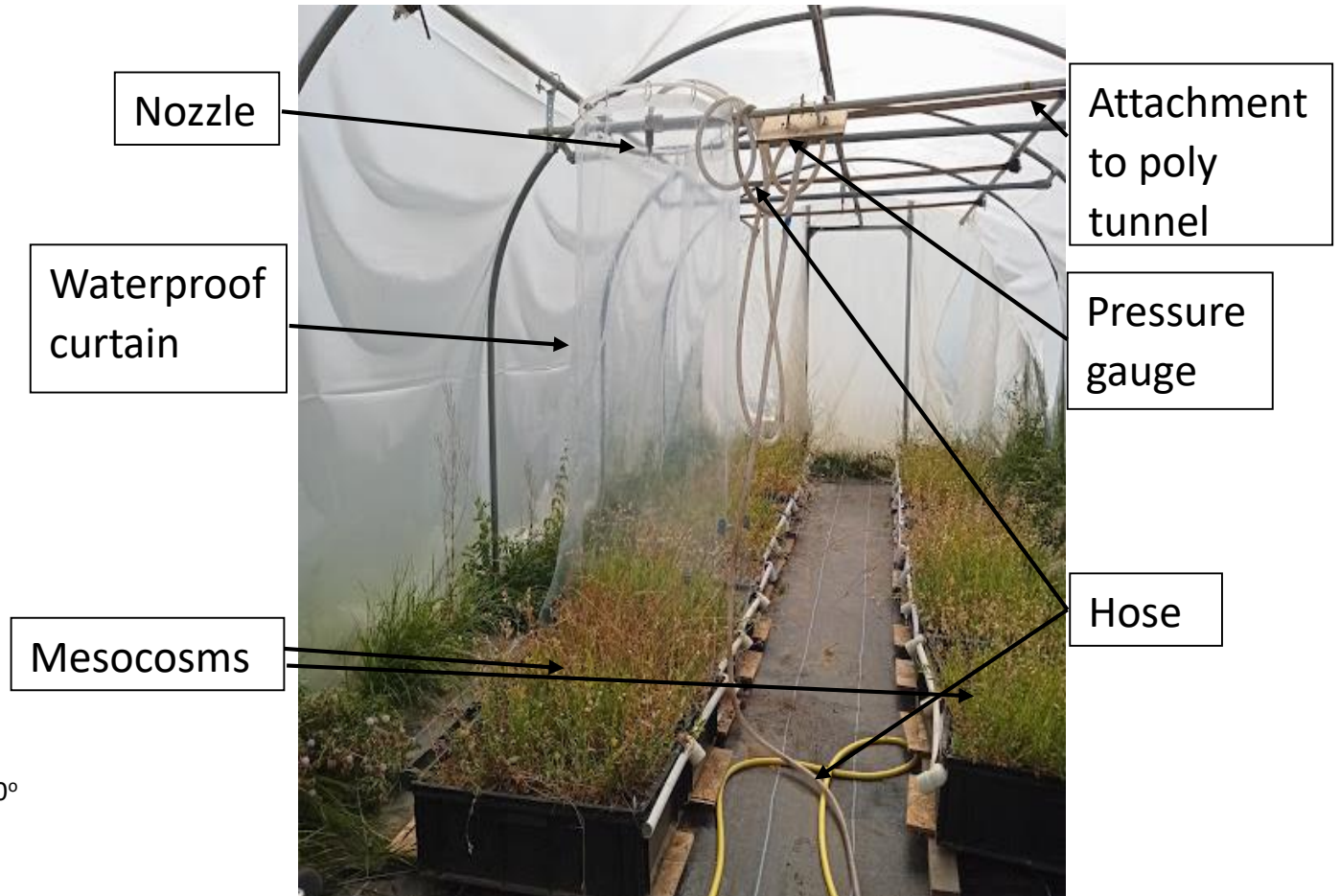
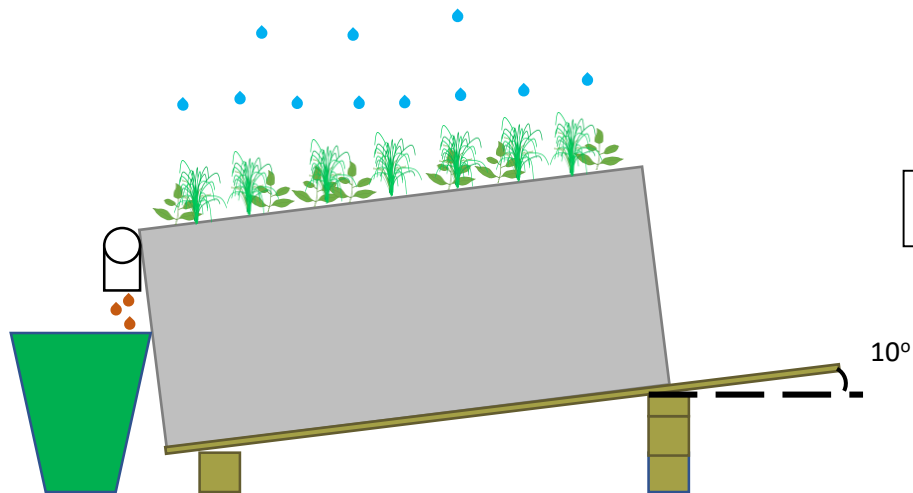
- Soil cover
- Above ground biomass
- Below ground biomass
- Mean root diameter
- Runoff
- Soil loss

Methods cont.

Rainfall intensity: 1600 ml min^{-1}

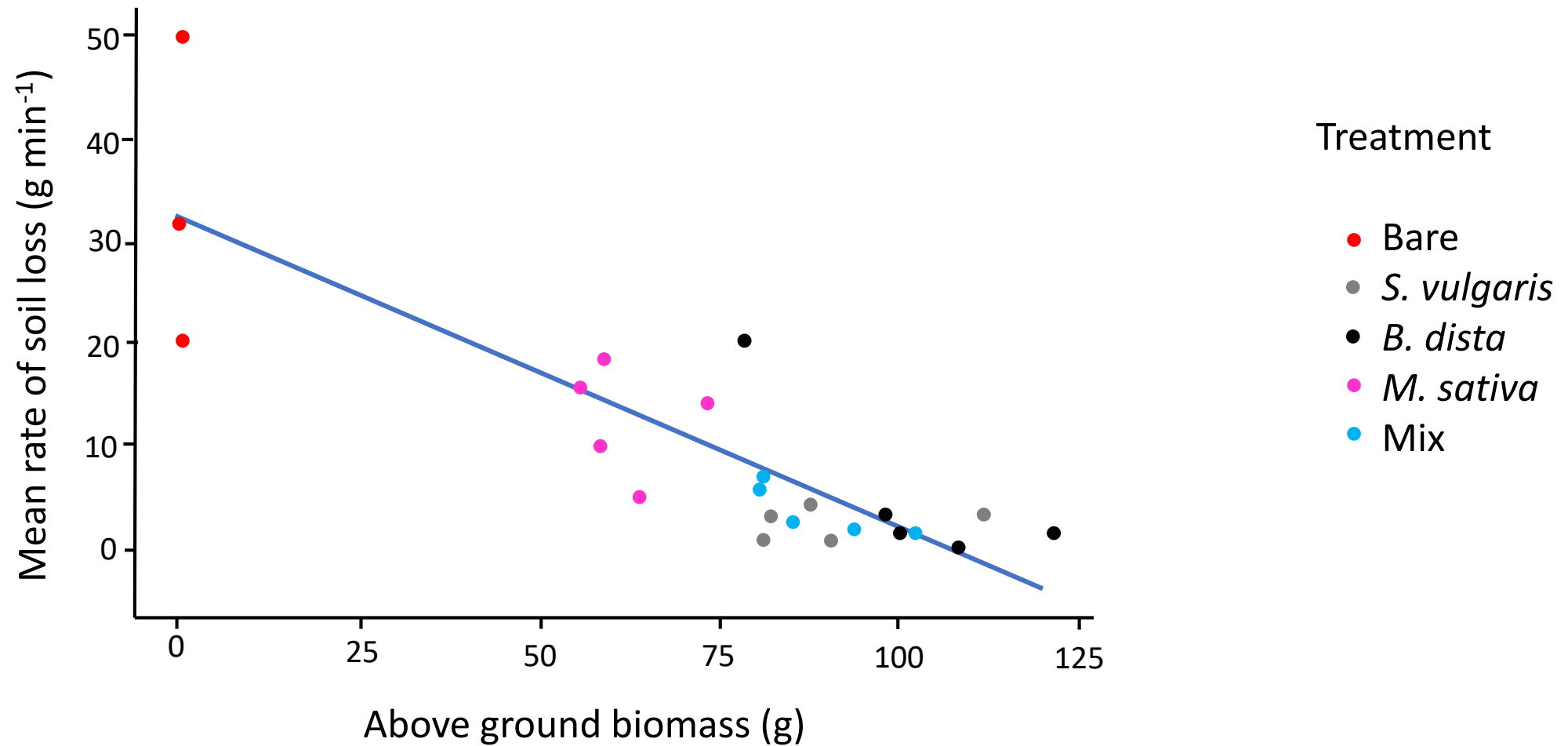
Christiansen's uniformity coefficient: 72.3

Pressure: 0.5 bar



Results

The mean rate of sediment detachment for each replicate is shown below.



Questionnaire

Methods

- 27 respondents
- Soil erosion
- Management
- Recommendations



The map was obtained from
<http://getdrawings.com/images/spain-map-drawing-2.jpg>
on 06/12/21.

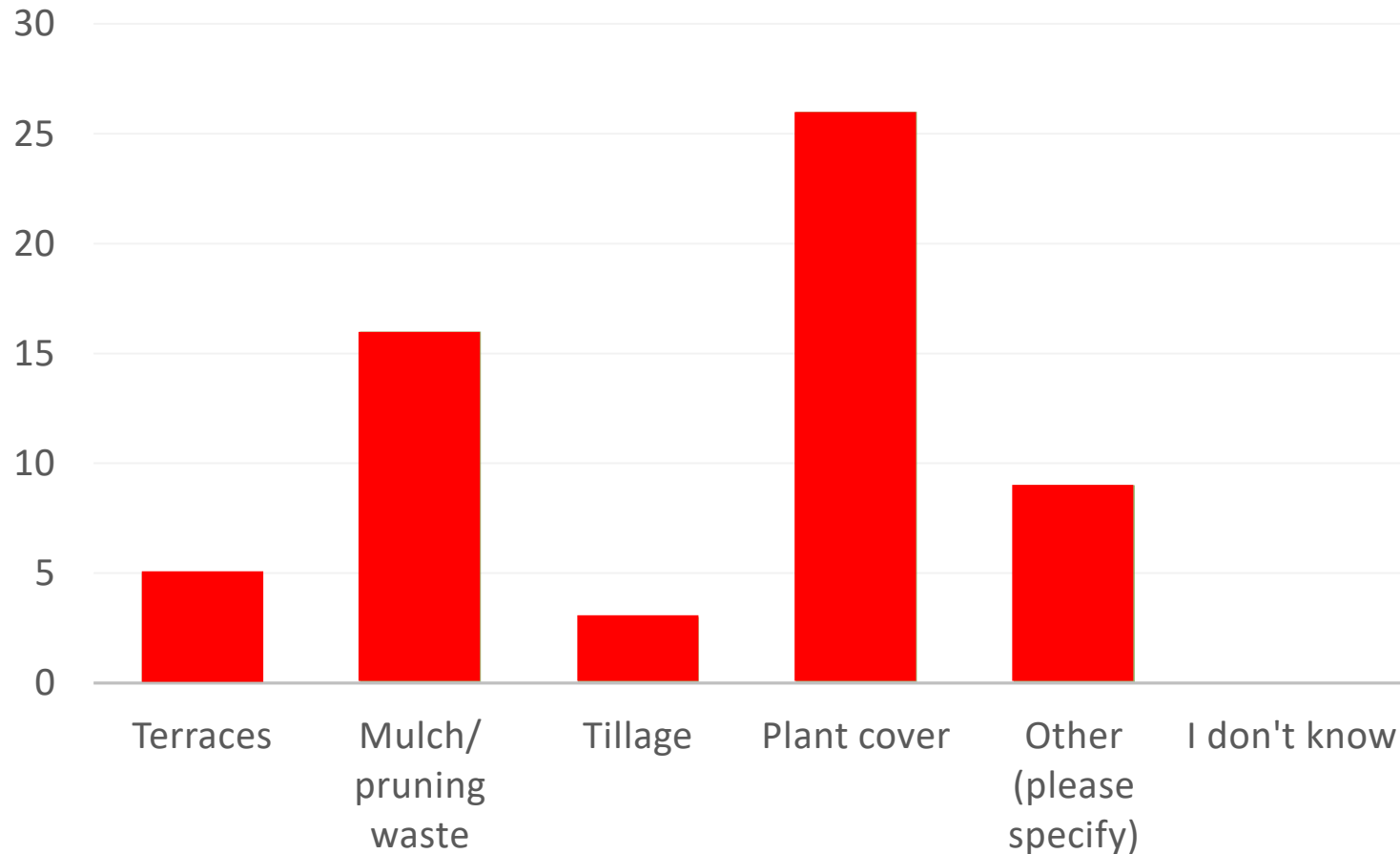
Results



¿Cómo controla la erosión del suelo?
Marque todas las que correspondan.



How do you control soil erosion?
Tick all that apply.



Other:

- Use of sheep
- Windbreak with pines
- Drains and dams
- Geotextile
- Ploughing along contour lines

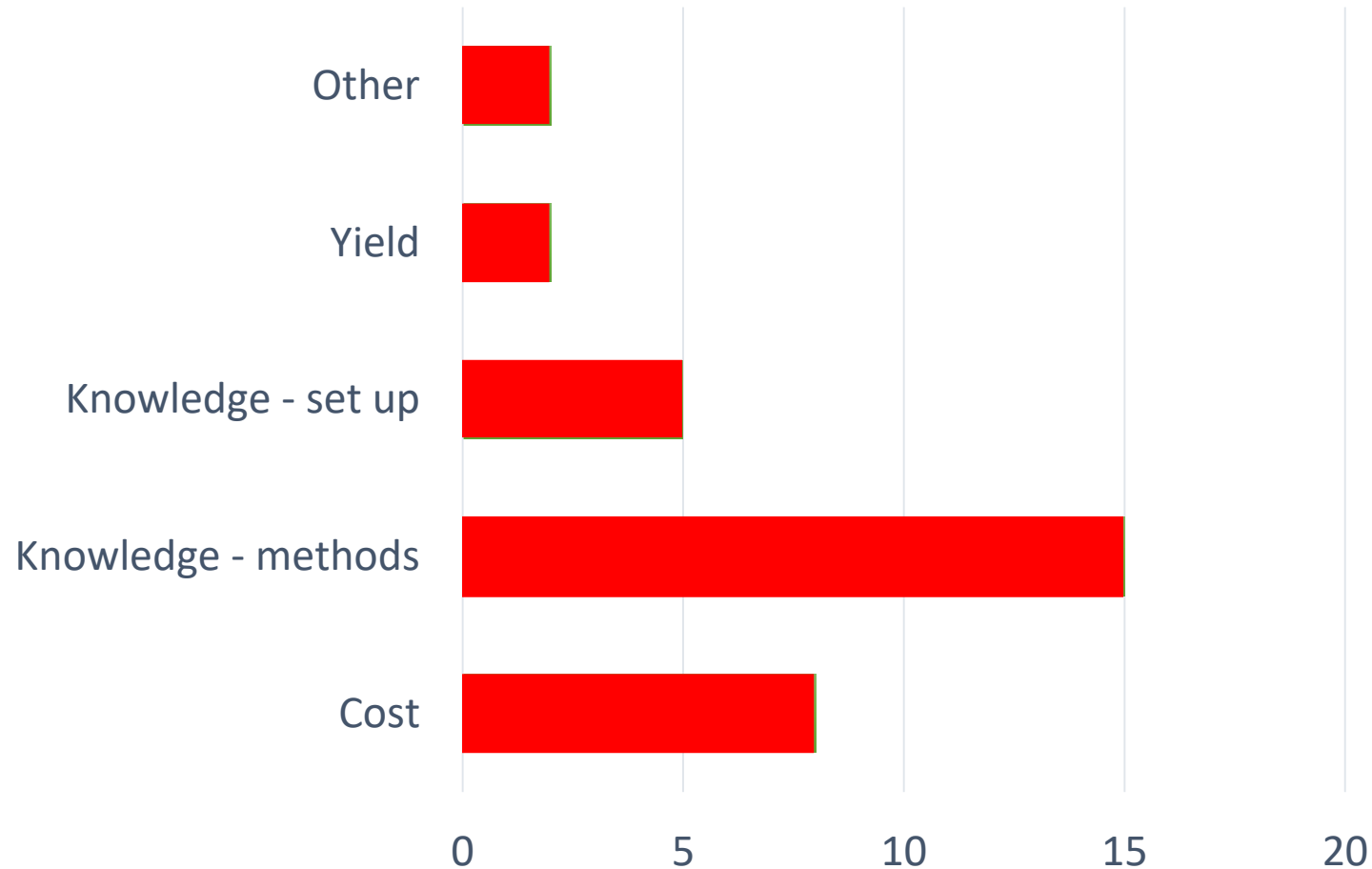
Results cont.



¿Cuáles son las barreras para implementar métodos de control de la erosión?
Marque todas las que correspondan.



What are the barriers to implementing erosion control methods? Please tick
all that apply.



Other:

- Use of herbicides
- Mind set

Summary

Rainfall simulation

- The significantly higher sediment loss from bare plots indicates that the use of cover crops reduces erosion.

Questionnaire

- 85% of farmers surveyed believe that cover crops reduce erosion but 46.88% think lack of knowledge about erosion control methods is a barrier.

Take home

- **An increase in knowledge transfer and subsidies needed to help farmers use effective cover crops.**



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