



OPTimal strategies to retAIN and re-use water and nutrients in small agricultural catchments across different soil-climatic regions in Europe

# Green cover inter-row soil management in vineyards

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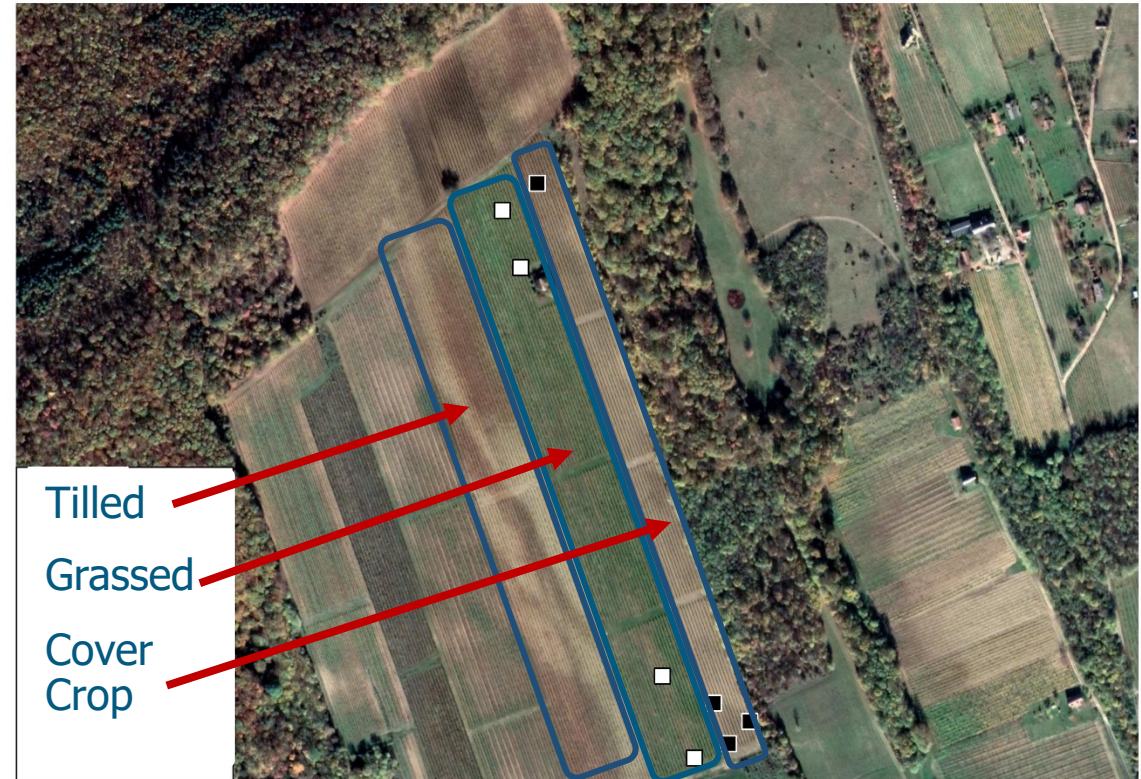
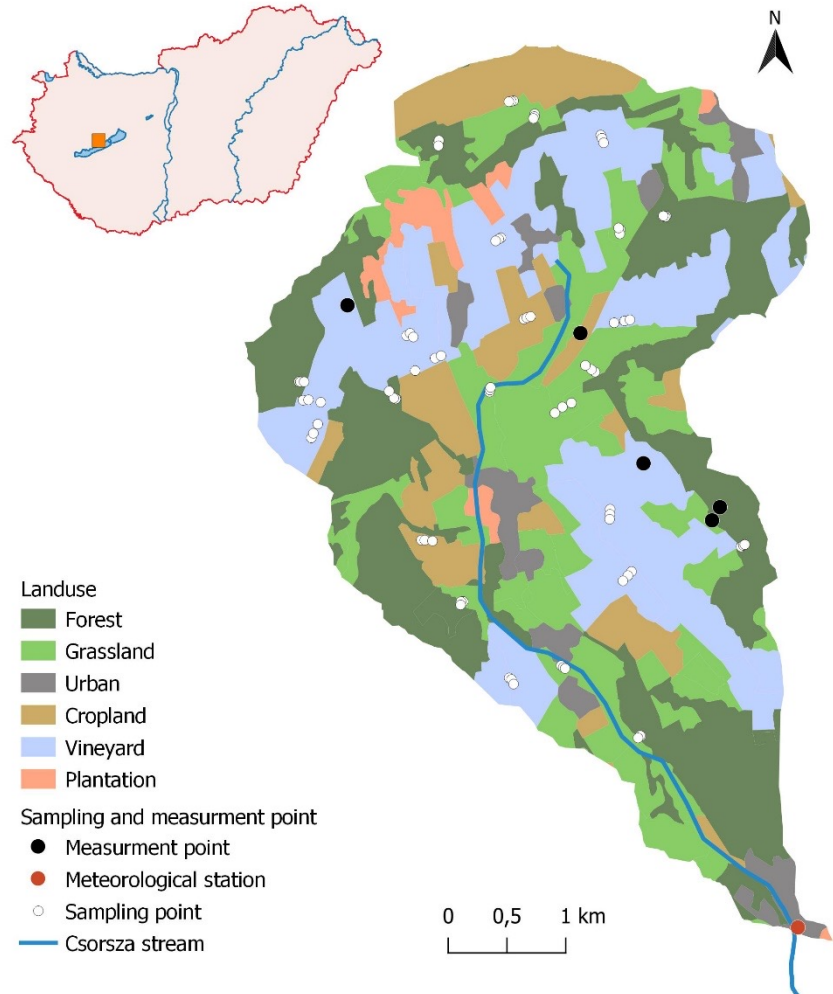
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# Csorsza catchment, Hungary – Pannonia region



Climate: Continental

Annual precipitation: 350-650 mm (is moderately rain deficient )

Average annual temperature: 10.8 °C (2016–2022)

8% slope inclination; 560 m length; 1.8, 3.5; 3.4 ha areas

# Natural/Small Water Retention measures (NSWRM)

Tillage (as control to compare NSWRMs to)

Green covers:

Grass inter-row

Cover crops (red clover, rye mix)



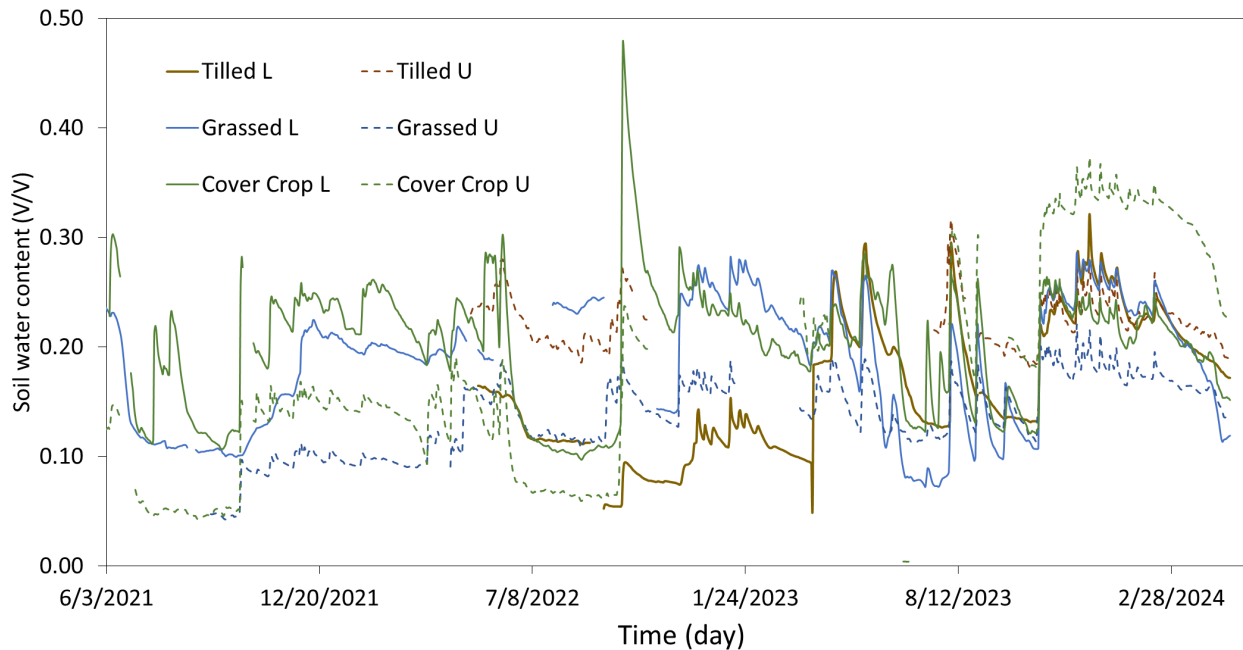
# Benefits of green cover inter-rows

Cover crops inter-row managed grapevine soil had the highest SWC, while grassed inter-rows had the lowest

Lower nutrients can be applied – legumes as cover crops

Lower soil erosion and runoff

After initial cost, perennial growth



# Challenges with green cover inter-rows

Machinery is needed to plant the seeds

Initial cost of seed mix

Additional labor and resources

SWC – competition for water (and in cases nutrients)

Cover crops can harbor pests and diseases that may affect grapevine

Fresh grapevine plantation – excessive competition can affect grapevine growth

Climatic conditions: prolonged drought – lower SWC/infiltration

# Conclusions

The implementation of small-scale natural/small water retention measures (NSWRM) is recommended to enhance SWC, reduce runoff and erosion, and improve ecosystem services.

To ensure the effectiveness of the implemented measures, comprehensive assessments of the impacts of NSWRM on SWC and other hydrological processes are necessary.

Continuous monitoring and adaptation may be necessary to maintain the effectiveness of cover crops over time.

**Thank you  
for your  
attention!**



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