

# ECOSYSTEM SERVICES AND VINEYARDS

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# Outline

- Background
- Research Questions
- Research Question I
- Research Question II: method
- Research Question II: findings
- Conclusion

# Why vineyards?



## The Climats, terroirs of Burgundy

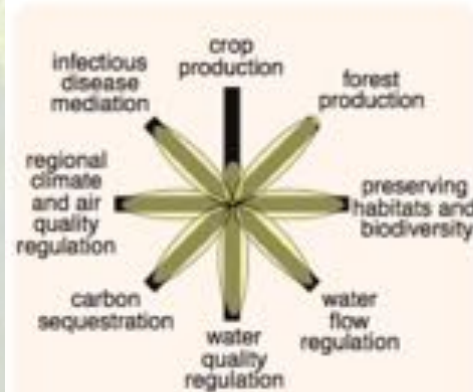
The climats are precisely delimited vineyard parcels on the slopes of the Côte de Nuits and the Côte de Beaune south of the city of Dijon. They differ from one another due to specific natural conditions (geology and exposure) as well as vine types and have been shaped by human cultivation. Over time they came to be recognized by the wine they produce. This cultural landscape consists of two parts. Firstly, the vineyards and associated production units including villages and the town of Beaune, which together represent the commercial dimension of the production system. The second part includes the historic centre of Dijon, which embodies the political regulatory impetus that gave birth to the climats system. The site is an outstanding example of grape cultivation and wine production developed since the High Middle Ages.

[English](#) [French](#) [Arabic](#) [Chinese](#) [Russian](#) [Spanish](#) [Japanese](#) [Dutch](#)

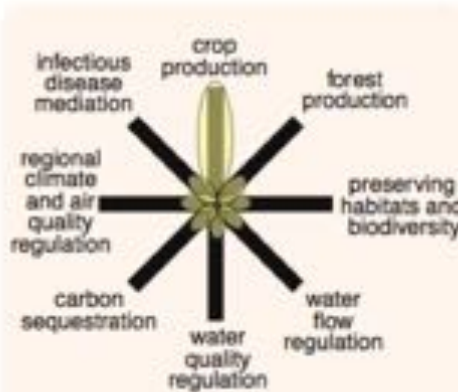


Mosaic of the Climats © Jean-Louis Bernuy

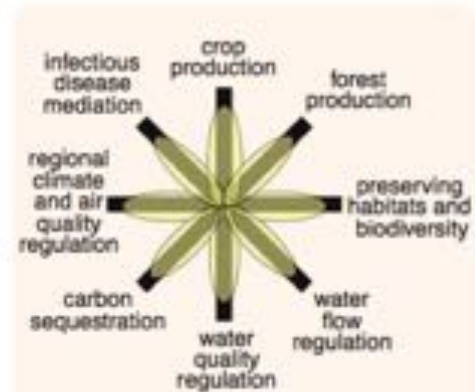
# Conceptual Framework



natural ecosystem



intensive cropland



cropland with restored ecosystem services

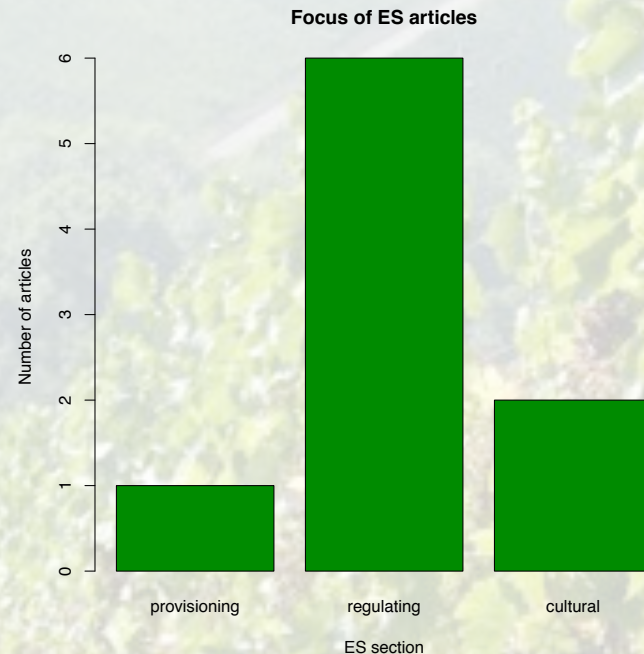
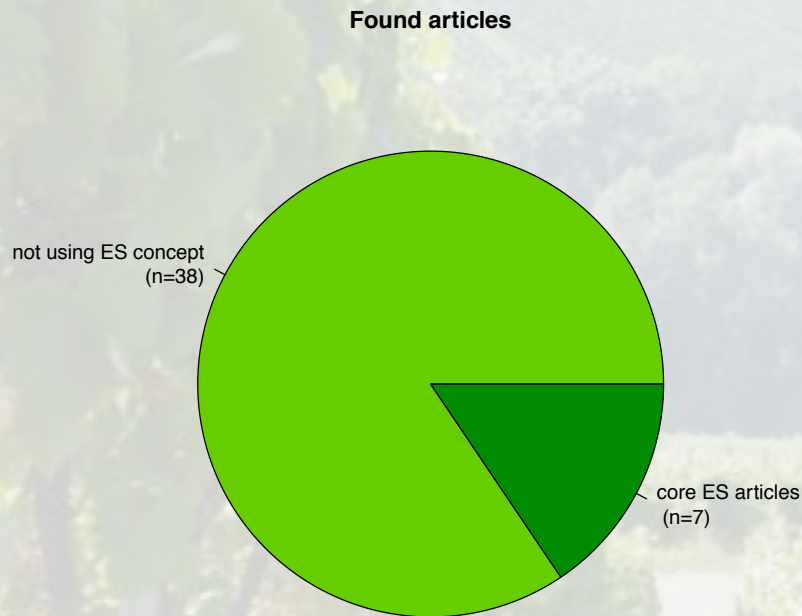
Foley et al., 2005

# Research Questions

- (1) How is the ecosystem services concept operationalized and applied in research on vineyards?
- (2) Which ecosystem services have been studied in vineyards?

# Ecosystem services & vineyards

- Method: Literature review with Scopus “ecosystem service\*” AND vineyard
- Result: 45 articles



# Method

42 CICES ES classes

*select existing ES*

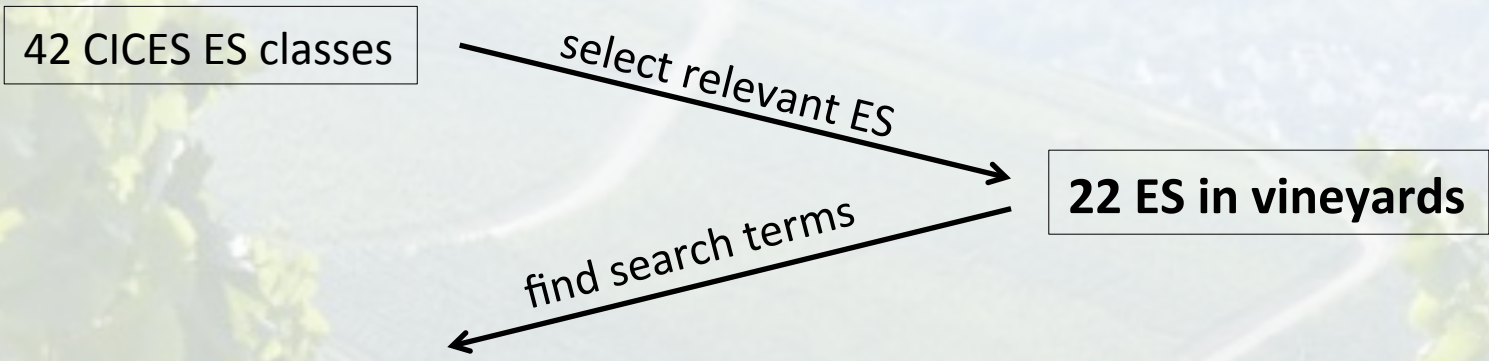
**22 ES in vineyards**

# Existing ES

Section	Class
Provisioning	Cultivated crops
	Fibres and other materials from plants, algae and animals for direct use or processing
	Materials from plants, algae and animals for agricultural use
Regulation and Maintenance	Filtration/ sequestration/ storage/ accumulation by ecosystems
	Mediation of smell/ noise/ visual impacts
	Mass stabilisation and control of erosion rates



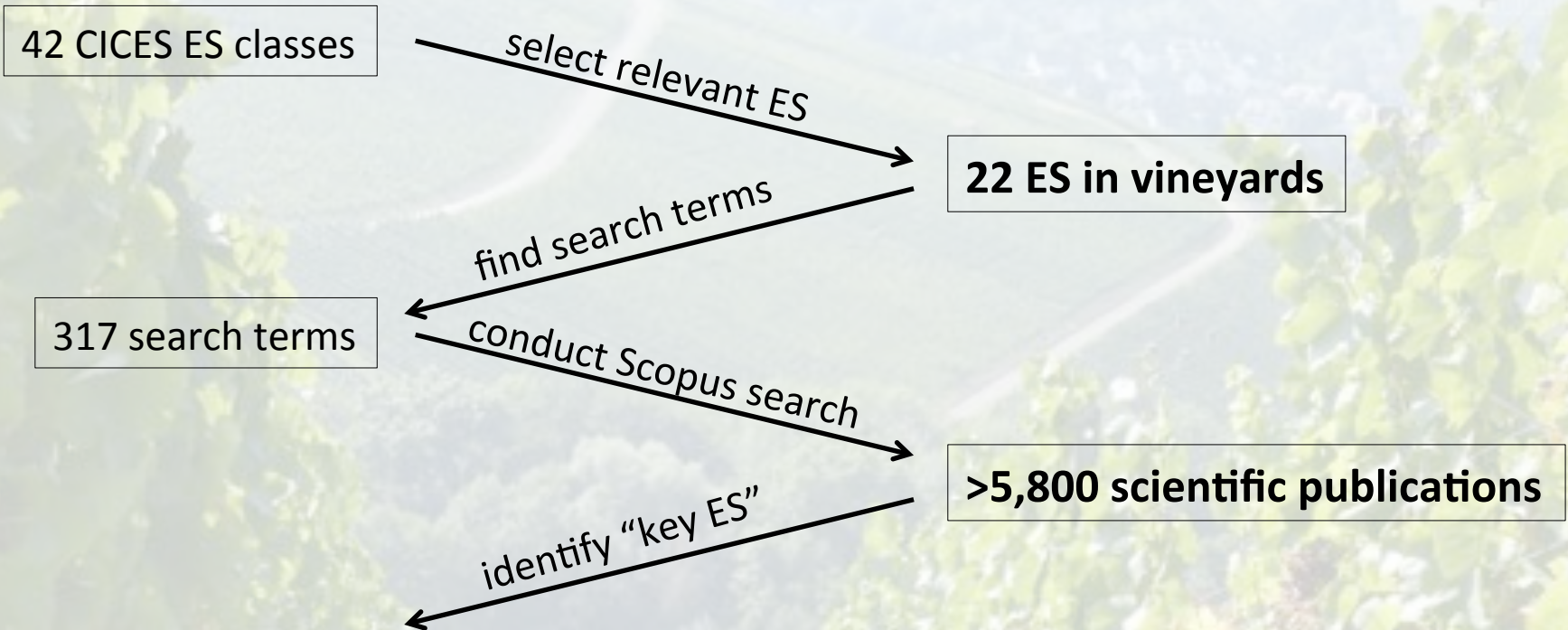
# Method



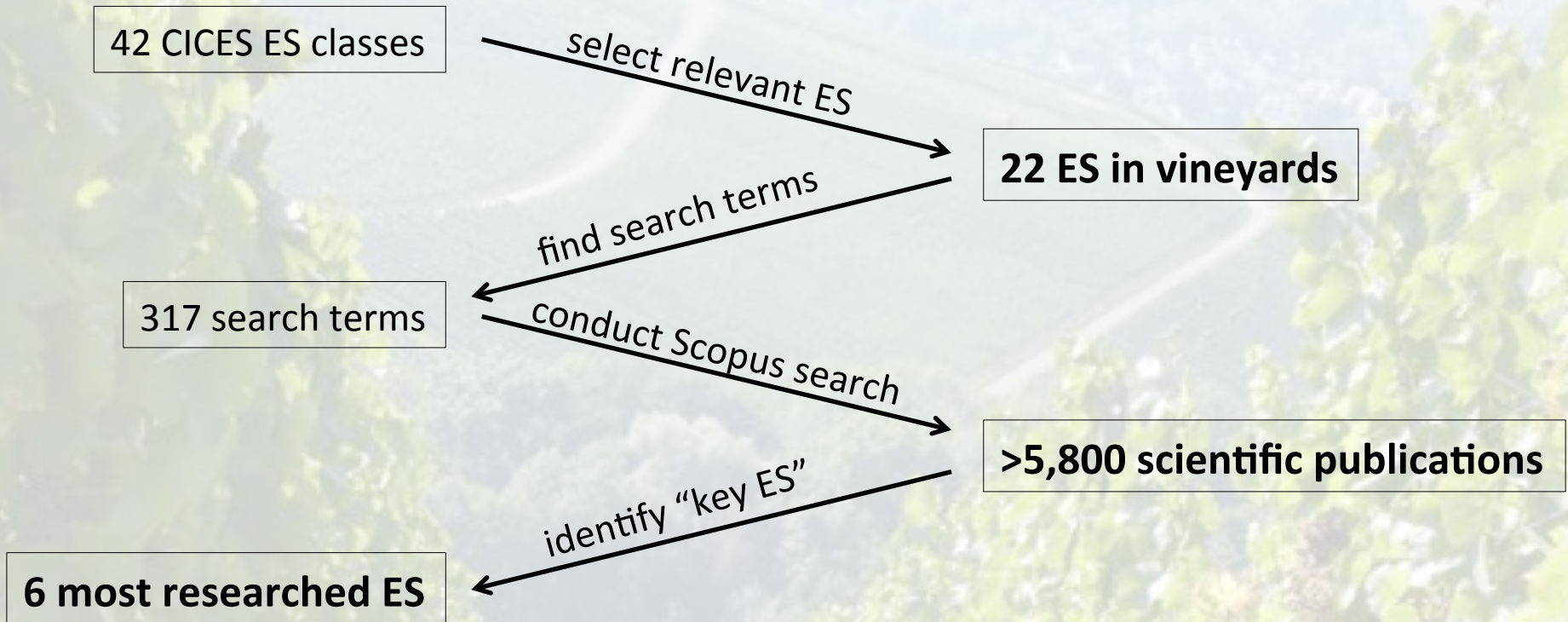
# Search terms

Section	Class	search terms used to identify papers in Scopus
Provisioning	Cultivated crops	yield*, grape leaves, grapevine leaves, crop*, table, grape*, crop load*, grape berr*, berry growth, grape maturity, yield component*, fruit composition, cultivated crop*, wine grape*
	Fibres and other materials from plants, algae and animals for direct use or processing	pruning, grape seed*, grape skin*, MegaPurple, color additive*, wood, Ravaz index
	Materials from plants, algae and animals for agricultural use	pomace
Regulation and Maintenance	Filtration/ sequestration/ storage/ accumulation by ecosystems	carbon storage, carbon sequestration, filtration, sequestration, storage, accumulation, GHG, greenhouse gas, N2O, nitrous oxide, sulfur, nitrogen deposition*, fertilizer*, spray, pesticide*, salinization, soil salinity, salt accumulation
	Mediation of smell/ noise/ visual impacts	zoning, spatial planning, smell impact, noise impact, visual impact, noise, smell, visual, planning, land use planning, highway, tractor noise, sulfur smell, harvest, crush smell, landscape, view, viewshed, preservation, sound cannon*, reflectors
	Mass stabilisation and control of erosion rates	soil conservation, soil loss*, cultivation practice*, mass stabilization, erosion, erosion rate, erosion model, alternate row cultivation, row cultivation,

# Method



# Method



# Six key ecosystem services

<b>CICES ES section</b>	<b>Vineyard ES</b>
Provisioning	Cultivated Crop
Regulation & Maintenance	Filtration/ sequestration/ storage/ accumulation by ecosystems
	Pest control
	Disease control
Cultural	Scientific
	Heritage, cultural

# Key words for six key ES

cultivated crop



disease control



heritage, culture



sequestration



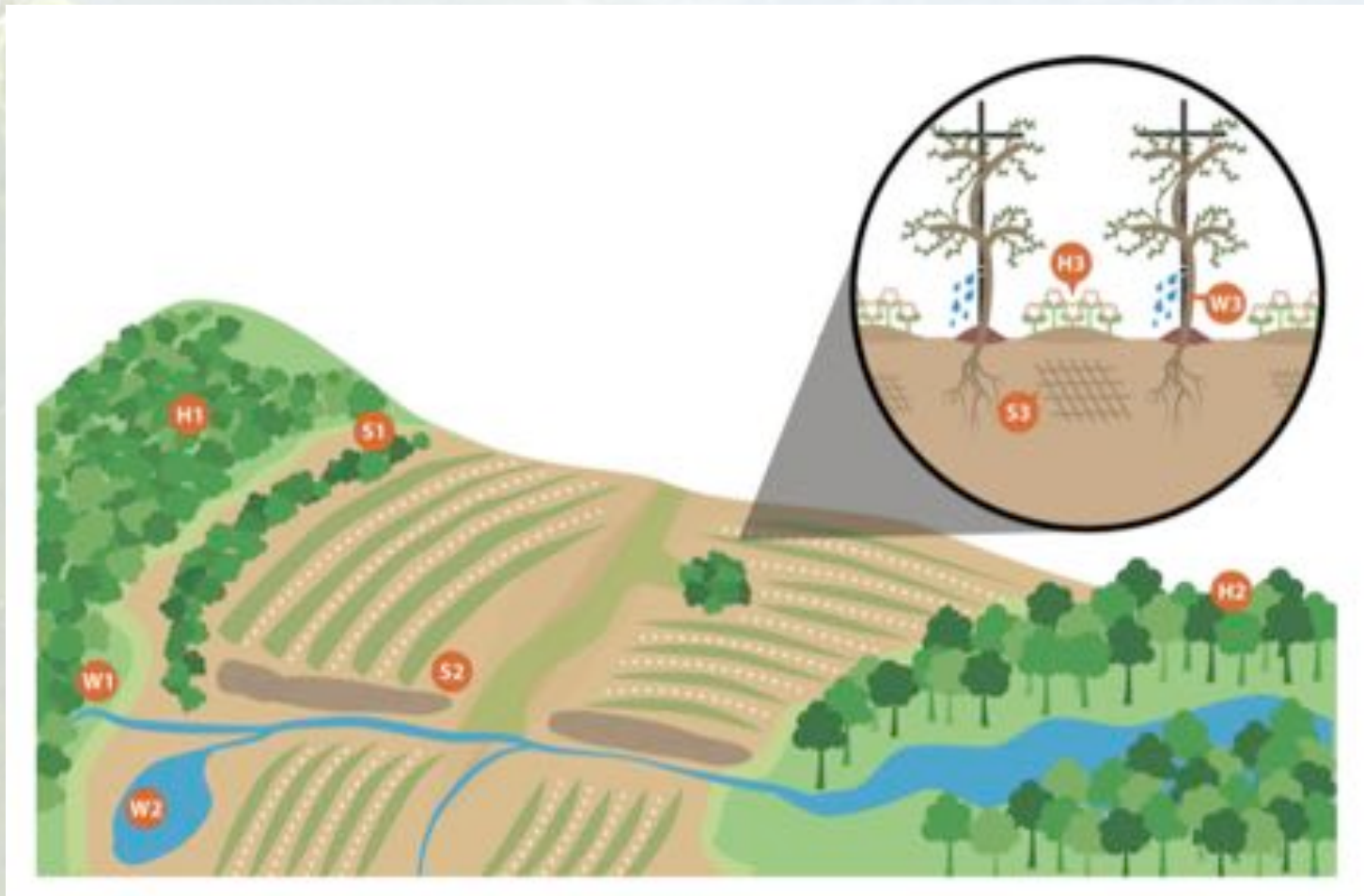
pest control



scientific

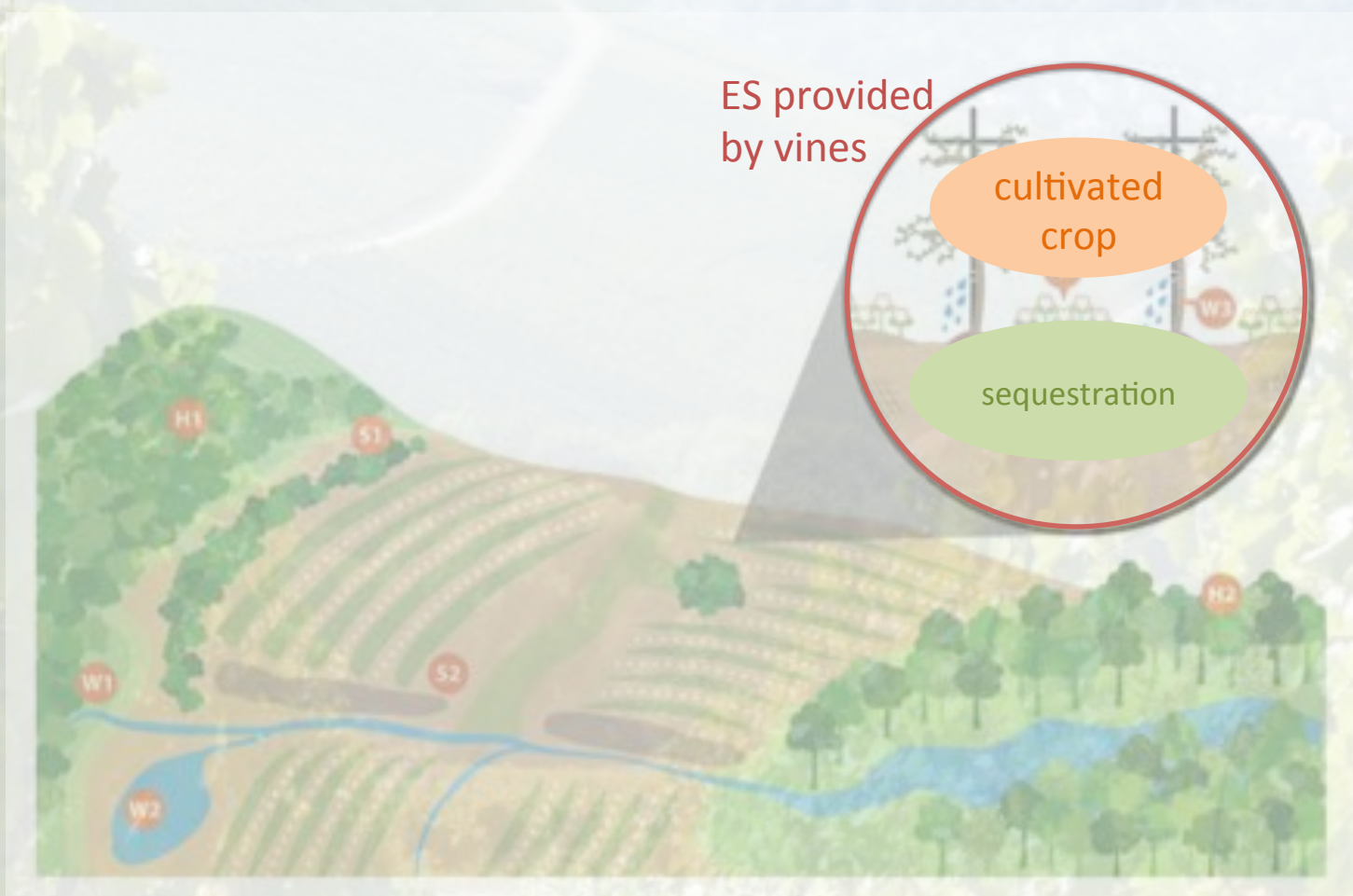


# Ecosystem services in the vineyard



Viers et al., 2013

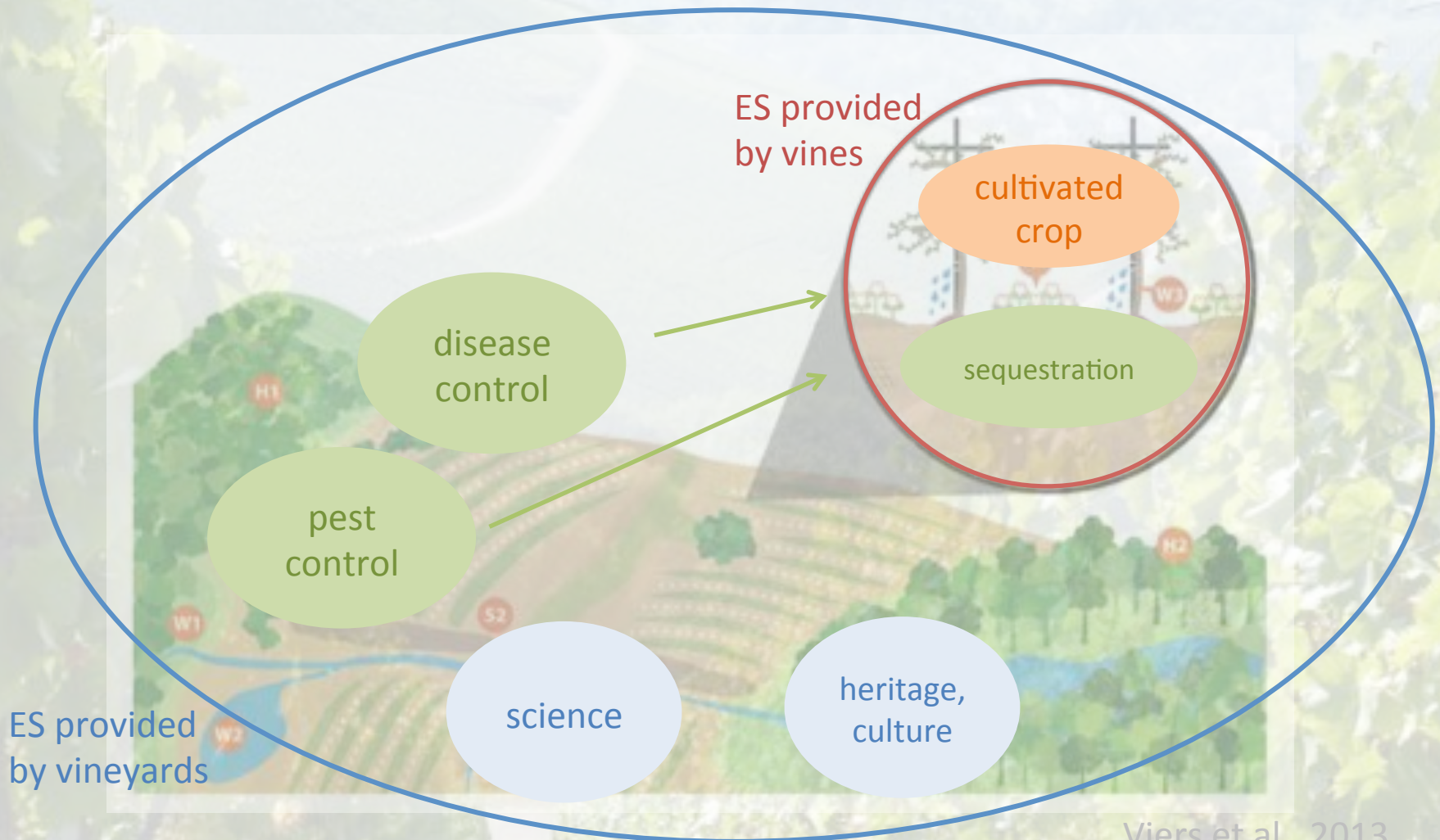
# Ecosystem services in the vineyard



Viers et al., 2013



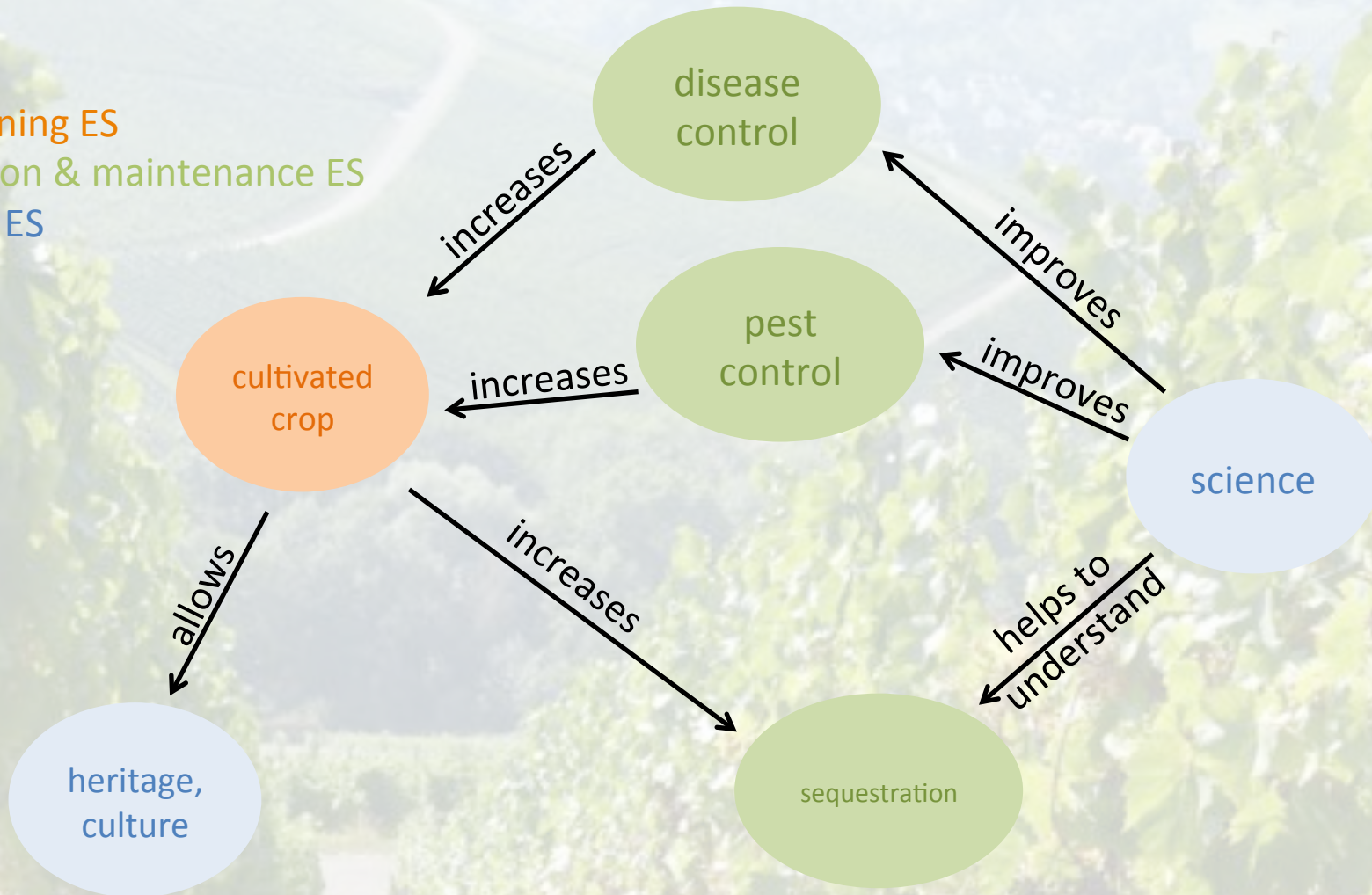
# Ecosystem services in the vineyard



Viers et al., 2013

# Connection of key ES

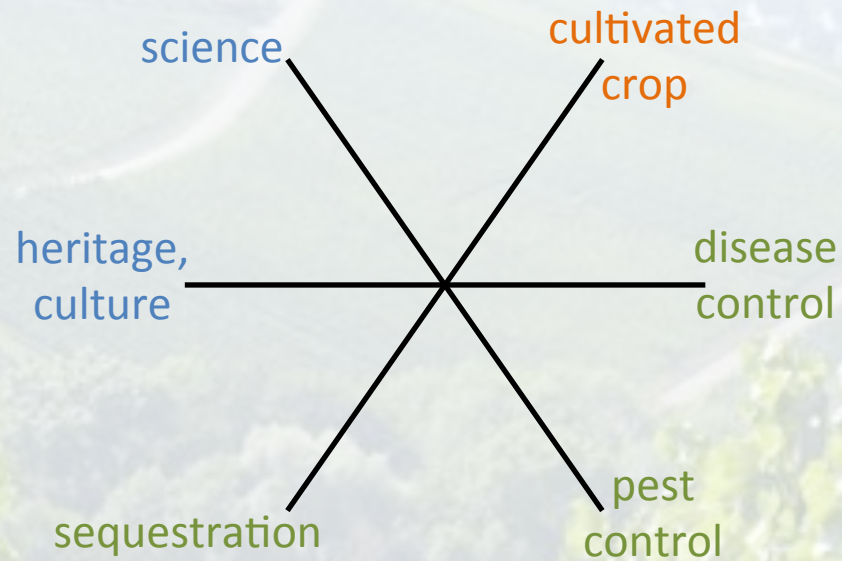
- Provisioning ES
- Regulation & maintenance ES
- Cultural ES



# Conclusion

- ES in vineyards are little studied
- Certain single ES well studied

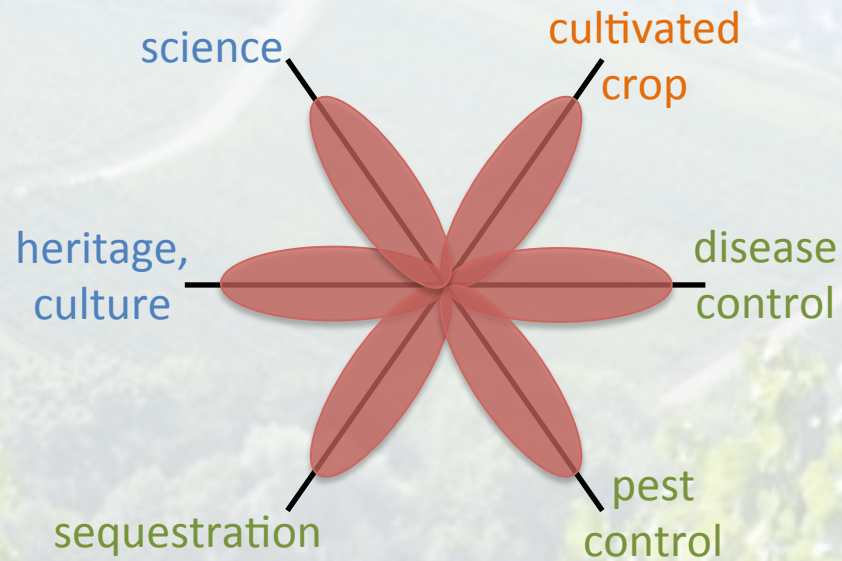
# Conclusion



# Conclusion

- ES little studied in viticulture
- Certain single ES well studied
- Relation of single ES mostly to improve grapes
- Connection between single ES should be more taken into consideration by managers and decision-makers

# Conclusion



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**THANK YOU FOR YOUR ATTENTION!**

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