

# Low input innovations by winegrowers

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# Introduction

- Vineyard systems have to be more and more sustainable to reduce environmental impact and increase social acceptance
- Literature show that
  - #1 Innovations are a lever to increase sustainability (FSD symposia)
  - #2 Farmers innovate without extension or scientific services (Salembier et al. 2016)

#### Aim of the study

#### Enhancing innovations from winegrowers, in France and Germany









# **Material**

- Sample selection was done by contacting village association and then by winegrowers networks because these sort of winegrowers are few in number (Salembier *et al.* 2016)
- Winegrower sample selection : 24 French + 16 German
- With 3 references: 2 French+1 German
- Winegrowers interviewed with a questionnaire









- The questionnaire was exhaustive in describing farm practices, how and why the practices are applied on the plots, and innovations of winegrowers
- Interview analysis for result: text analysis
  - Innovation: original practice or creative process, at the same time technically, economically, environmentally and socially acceptable (Petit *et al.* IA, 2016)







### **Result**: winegrower innovations

	Innovation				Reduction use			
	Name	Туре	Change on operation	Herbicide	Fungicide	Fertilizer	Fuel	Occurrence
PI	IWI variety + low input practices	Technical	Planted variety					13
K	ress rubber stars	Technical	_ Row weeding					9
	Rollhacke (hoeing stars)	Technical	Inter-row weeding					18
	Inter-row direct seedling	Technical	<ul> <li>Inter-row sowing</li> </ul>					10
Inte	er-row plant cover	Technical						32
Со	llective spreading of organic amendment	Organisational	Fertilization					3
	No trimming: "rolling up"	Technical	Vine triming					10
	Rolofaca	Technical	Inter-row weeding					12
An	imals in vineyard	Technical and organitional	Inter-row weeding and fertilization					1
		Forschung und Anwi Hand in Hand für einen nachhaltigen Weinb					6	

Agricultural systems by design 6<sup>th</sup> International Symposium for Farming Systems Design



### PIWI variety + low input practices

- Innovation: a variety resistant to diseases, and a low input management route
- Winegrowers invented the combination of practices that go with the new resistant variety
- drastic reduction of pesticides : no fungicide, thanks to the genetic resistance, but also no insecticide, and no acaricide.
- Adopted by 13 German winegrowers





### Kress ruber stars

- This technical innovation avoids herbicide and tillage under rows and reduce risk of cutting vines. The tool is made of rubber, a flexible material that folds when it meets the vines
- A group of French and German winegrowers has joined with a tool manufacturer to design a tool to weed under the rows while respecting the vines and saving energy
- Adopted by 7 French and 2 German winegrowers





### Rollhacke (hoeing stars)

- This technical innovation avoids herbicide use under rows and reduces fuel use by combination with a second tool to weed inter-rows
- Winegrowers have to combine 2 tools on the tractor to save energy and working time
- Adopted by 10 French and 8 German winegrowers.





- Innovation: save working time and pressure in farm organization to produce compost
- Winegrowers have to precisely know and control their organic fertilizer without increasing working time
- Adopted by 3 French winegrowers





### Sheep and chicken in vineyard

- Eating insects to reduce insecticide use (chicken), herb for weeding management (sheep), fertilization with manure (both)
- Winegrower drastically reduce energy and pesticide use
- One occurrence in Germany





Source : Charentes, France





Winegrowers innovate to reduce the environmental impacts of their production systems

- > The innovations presented can be disseminated to other vineyards
- There are shared innovations across the Franco-German border, despite the differences in the structure of the wine sectors

#### Perspectives

- > The quantitative analysis of the interviews will be enhanced.
- The sustainability of the vine management routes including the innovations will be analyzed according to Merot & Wery, 2017 indicators.







# i Gracias ! Thank you!



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