

# VITIFIT 2021 – Selected results of field trials on copper reduction in organic viticulture

18.11.2021

Yvette Wohlfahrt, Lara Pschorn & Randolph Kauer

Gefördert durch:



Bundesministerium  
für Ernährung  
und Landwirtschaft

aufgrund eines Beschlusses  
des Deutschen Bundestages

[www.hs-geisenheim.de](http://www.hs-geisenheim.de)

**BÖLN**

Bundesprogramm Ökologischer Landbau  
und andere Formen nachhaltiger  
Landwirtschaft

# Project aims & fields of research

## Topic A

Development and improvement of plant protection strategies against downy mildew in organic viticulture

## Topic B

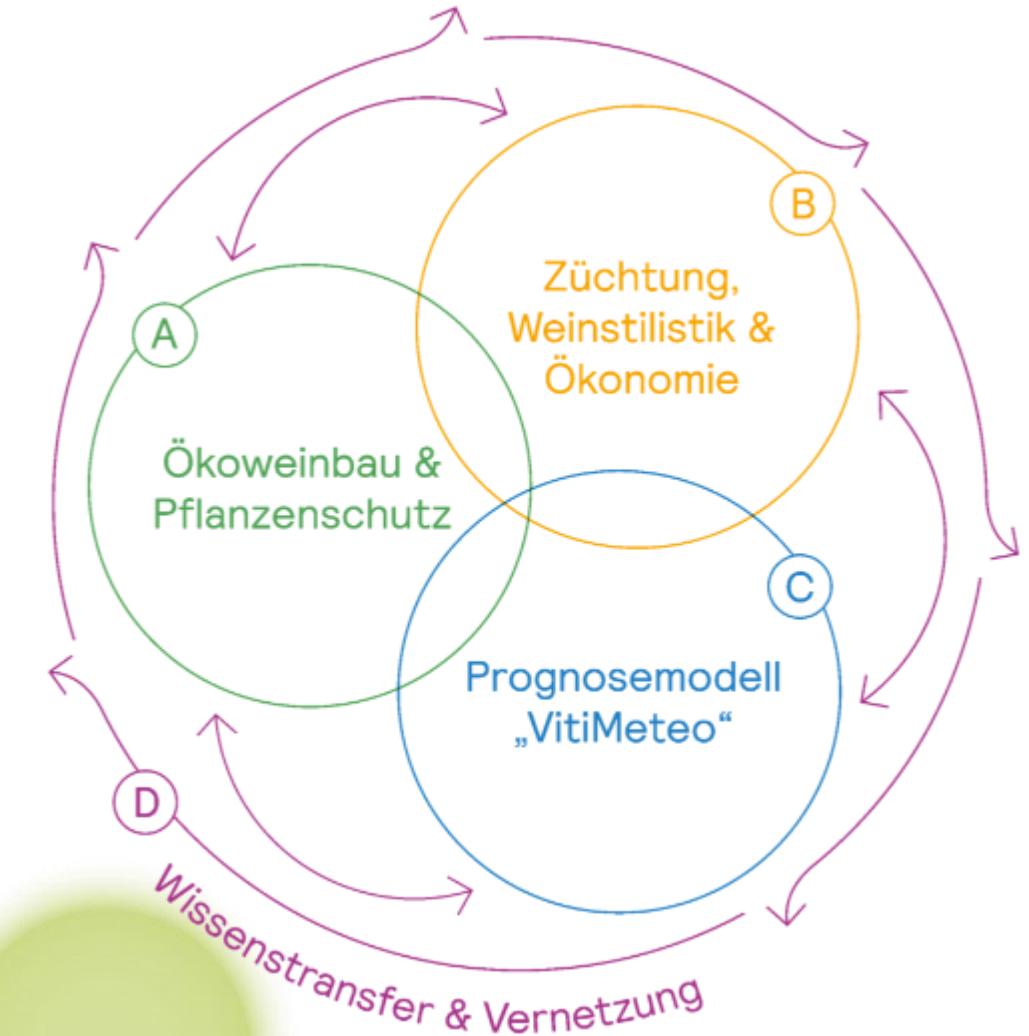
Breeding, winestyles, market acceptance and economic feasibility studies of new grape varieties

## Topic C

Adaptation of the forecast model „VitiMeteo grapevine peronospora“ to new grape varieties and organic viticulture

## Topic D

Knowledge transfer, networking and communication between science and practice

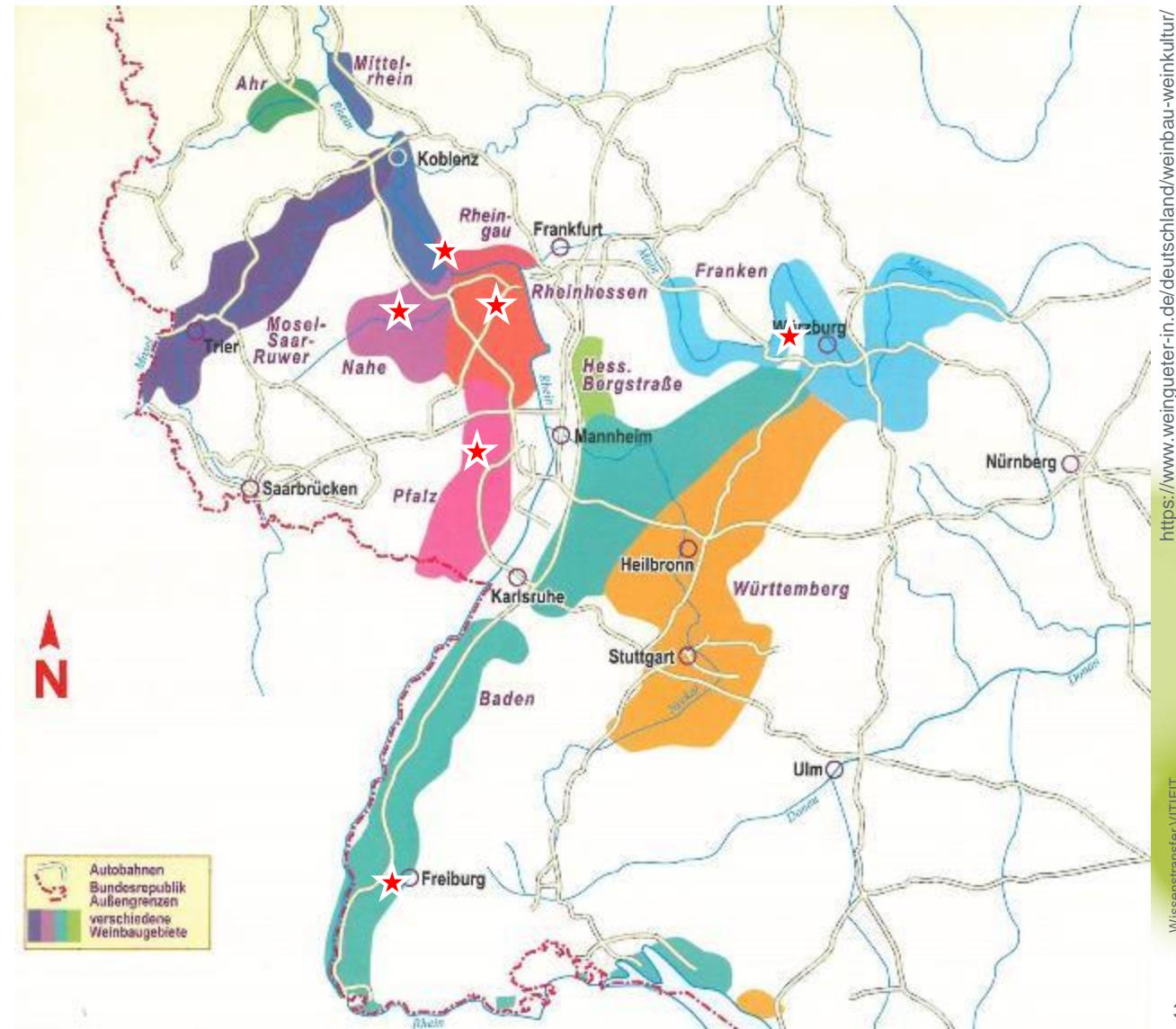


# Development of copper reduction strategies on traditional varieties

**6 winegrowing regions**

- Rheingau 
- Palatinate 
- Rheinhessen, Nahe 
- Franconia 
- Baden 

**5 sites**



# Development of copper reduction strategies on traditional varieties

## Vineyard management practice

EG No. 834/2007 and  
No. 889/2008

ECOVIN standards

Rotation of cover crop

Herbicide-free under  
vine management

Soil management

Moderate defoliation  
after flowering



# Development of copper reduction strategies on traditional varieties

VG	Treatments			RheinlandPfalz DIENSTLEISTUNGZENTRUM LANDLICHER RAUM RHEINPFALZ		RheinlandPfalz DIENSTLEISTUNGZENTRUM LANDLICHER RAUM RHEINHESSEN-NAHE- HUNSrück		LVC		WBI STAATLICHES WEINBAUINSTITUT FREIBURG
1	<b>Control (no Cu)</b>	X		X		X		X		X
	Netzschwefel / Vitisan & Wetcit									
2	<b>Bio-Standard (max. 3 kg Cu/ha/a)</b>	X		X		X		X		X
	Netzschwefel / Vitisan & Wetcit									
3 / 5	<b>Bio-Standard reduced (max. 2 Cu kg/ha/a) (3) + DEF (5)</b>	X		X		X		X		X
	Netzschwefel / Vitisan & Wetcit									
4 / 6	<b>Bio-Standard reduced (max. 2 kg Cu/ha/a) + KP (4) + DEF (6)</b>	X				X		X		X
	Netzschwefel / Vitisan & Wetcit									
7	<b>Bio-Standard reduced (max. 2 kg Cu/ha/a) + UVC</b>	X								
	Netzschwefel / Vitisan & Wetcit									
8	<b>Bio-Standard reduced (max. 2 kg Cu/ha/a) - CuCaps</b>	X				X				
	Netzschwefel / Vitisan & Wetcit									
9	<b>Bio-Standard reduced (max. 2 kg Cu/ha/a) - soil cover</b>			X						
	Netzschwefel / Vitisan & Wetcit									
10	<b>Bio-Standard reduced (max. 2 kg Cu/ha/a) - Kumar</b>							X		
	Netzschwefel / Vitisan & Wetcit									
11	<b>Bio-Standard reduced (max. 2 kg Cu/ha/a) - FytoSafe</b>							X		X
	Netzschwefel / Vitisan & Wetcit									

DEF = Defoliation prior flowering, KP = Potassium phosphonate, UVC = Ultraviolet radiation (254 nm), Cu = Copper

# Trial at HGU Geisenheim - 2021

## Experimental site

Vineyard size: 5600 m<sup>2</sup>

Variety: Riesling, rootstock: 5C

Year of planting: 2008

Training system: VSP

eight treatments (four replications each)

Application gear: Tunnel sprayer (LIPCO), Backpack sprayer (SOLO PORT 423)

Inoculation with *P. viticola*: 25.05.2021

Disease assessment: 22.06.2021 (BBCH 65)



Climate data	Vegetation period (1. April – 31. October)		
	Ø temp. (°C)	Σ precipitation (mm)	Σ sunhours (h)
1991-2020	15,7	323	1343
2021	15,0	309	1351

# Plant protection strategies - applications 2021

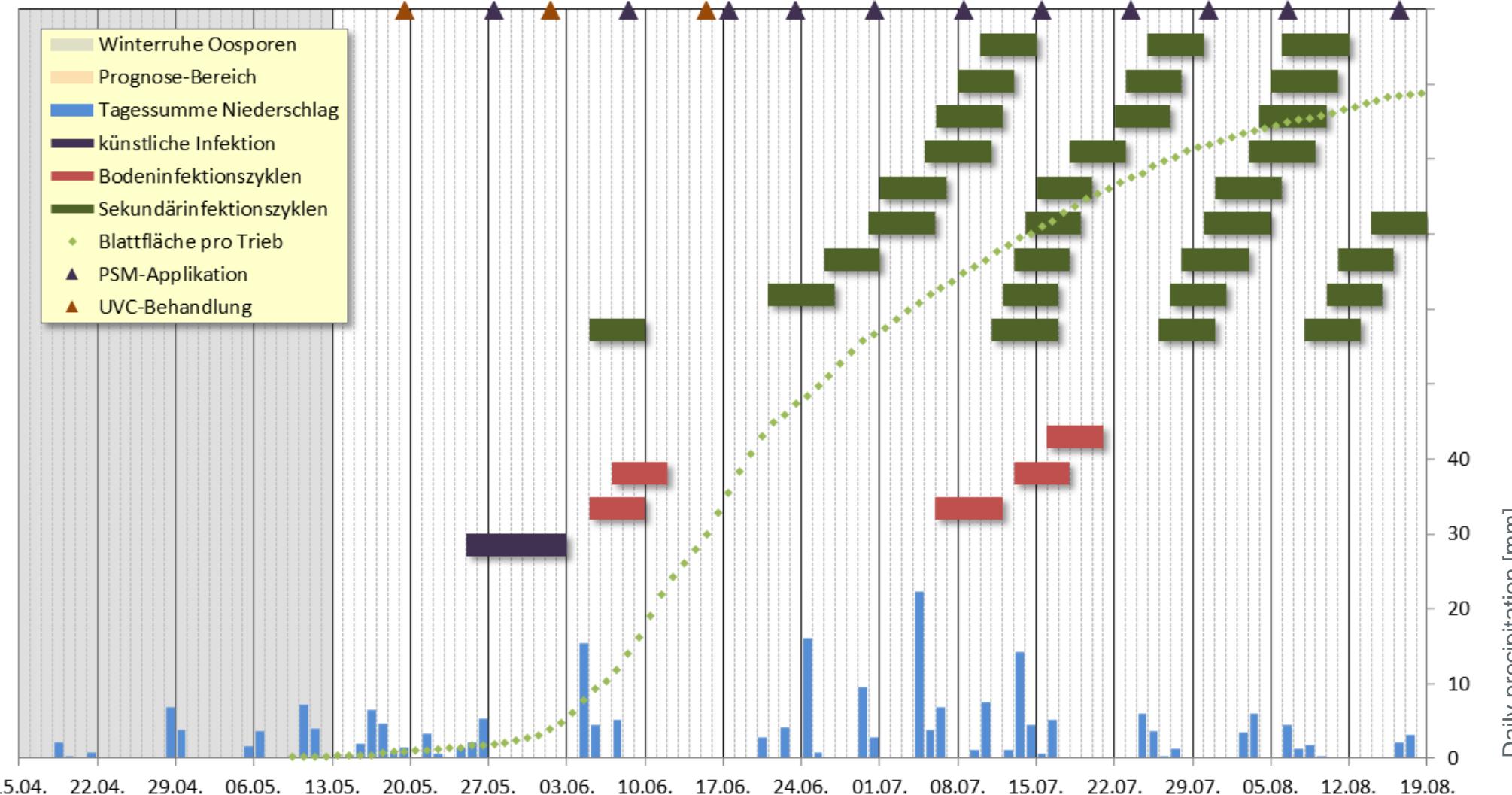
VG	Treatment	1. UVC	1. PSM	2. UVC	2. PSM	3. UVC	3.PSM	4.PSM	5. PSM	6. PSM	7. PSM	8. PSM	9. PSM	10. PSM	11. PSM	Total Cu (g)
		19.05.	25.05.	01.06.	08.06.	15.06.	17.06.	23.06.	30.06.	08.07.	15.07.	23.07.	30.07.	06.08.	16.08.	
	BBCH	13	15	16	55	57	61	65	73		77	79				
1	<b>Control (no Cu)</b>															<b>Analog Bio-Standard</b>
	Netzschwefel - Stulln		x		x		x	x	x	x	x		x	x	x	
	Vitisan & Wetcit										x	x	x	x	x	
	Kupfer*												x	x	x	900
2	<b>Bio-Standard (max. 3 kg/ha/a Cu)</b>															
	Netzschwefel - Stulln		x		x		x	x	x	x	x	x				
	Vitisan & Wetcit										x	x	x	x	x	
	Kupfer*		x		x		x	x	x	x	x	x	x	x	x	3800
3 / 5	<b>Bio-Standard reduced (max. 2 kg/ha/a) (3) + ENT (5)</b>															
	Netzschwefel - Stulln		x		x		x	x	x	x	x	x				
	Vitisan & Wetcit										x	x	x	x	x	
	Kupfer*		x		x		x	x	x	x	x	x	x	x	x	2530
4 / 6	<b>Bio-Standard reduced (max. 2 kg/ha/a) + KP (4) + DEF (6)</b>															
	Netzschwefel - Stulln		x		x		x	x	x	x	x	x				
	Vitisan & Wetcit										x	x	x	x	x	
	Kupfer*		x		x		x	x	x	x	x	x	x	x	x	2530
	KP - Veriphos		x		x		x	x								
7	<b>Bio-Standard reduced (max. 2 kg/ha/a) + UVC</b>														<b>Analog Bio-Standard</b>	
	UVC-Behandlung	x		x		x										
	Netzschwefel - Stulln						x	x	x	x	x	x				
	Vitisan & Wetcit										x	x	x	x	x	
	Kupfer*						x	x	x	x	x	x	x	x	x	2630
8	<b>Bio-Standard reduced (max. 2 kg/ha/a) - CuCaps</b>															
	Netzschwefel - Stulln		x		x		x	x	x	x	x	x				
	Vitisan & Wetcit										x	x	x	x	x	
	Kupfer		x		x		x	x	x	x	x	x	x	x	x	2530

# Infection cycles *Plasmopara viticola* 2021

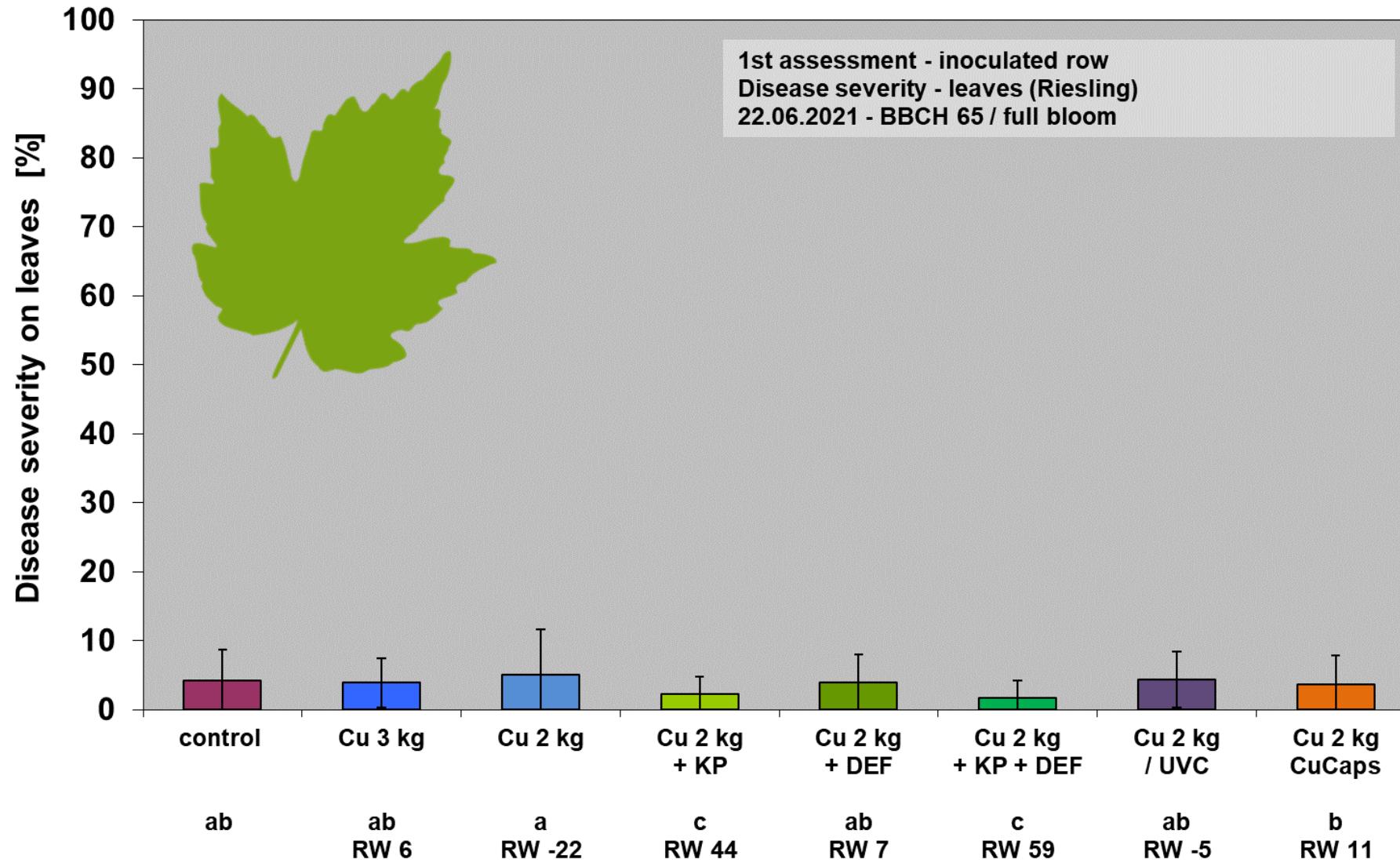
Inoculation, primary/secondary infections

VITIFIT 2021

Hochschule Geisenheim University

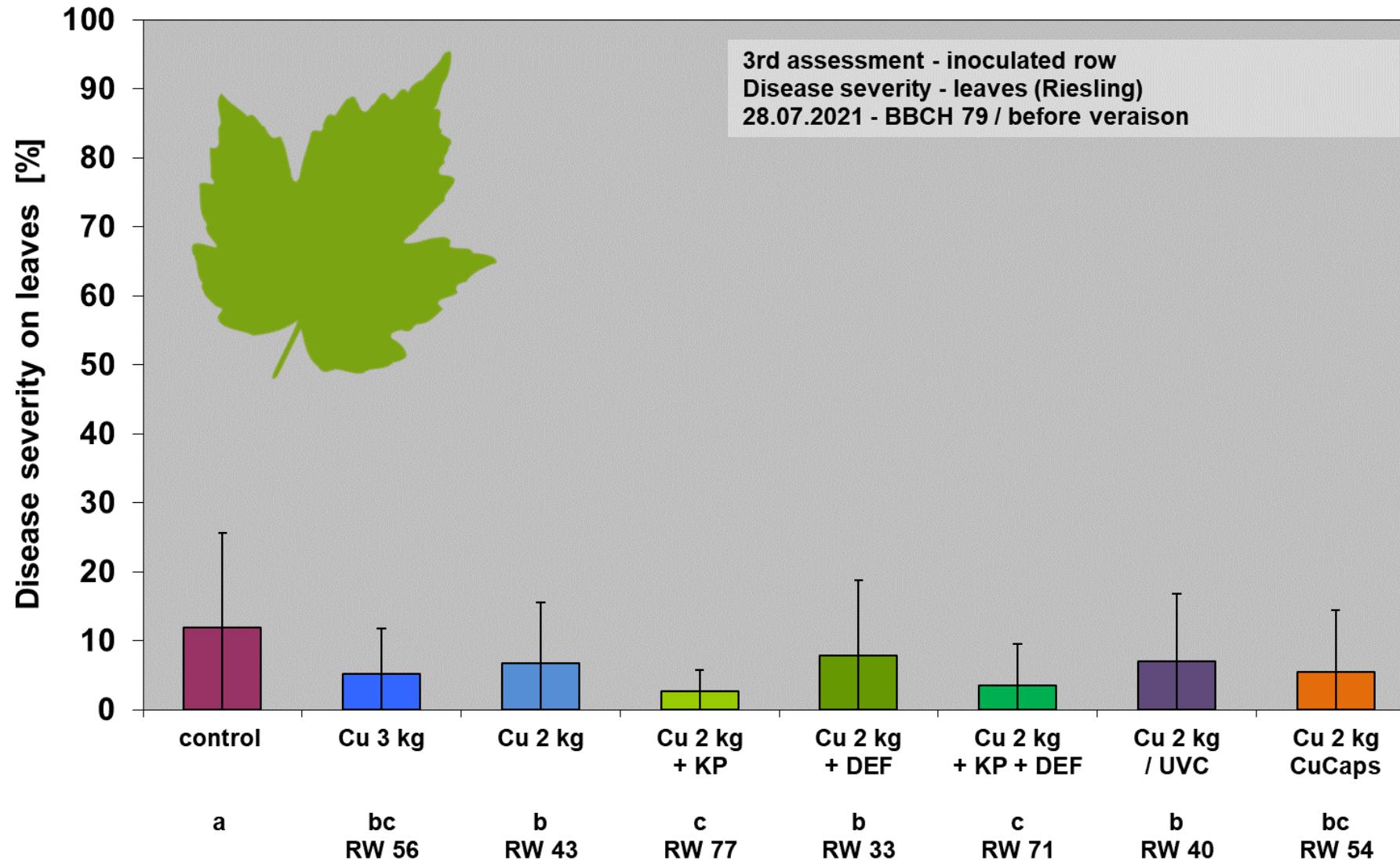


# Results 2021 HGU Geisenheim

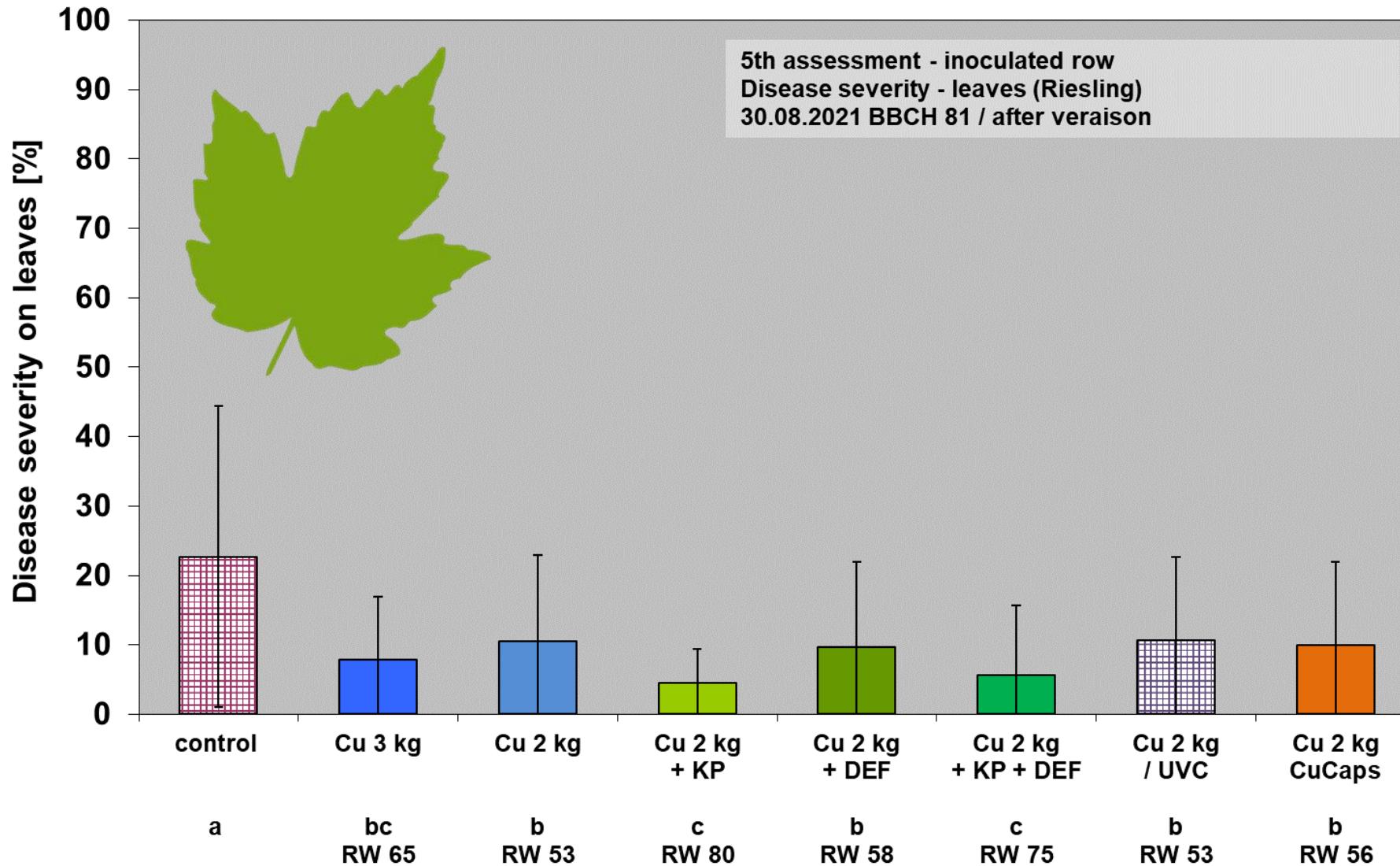


RW = efficacy - related to control

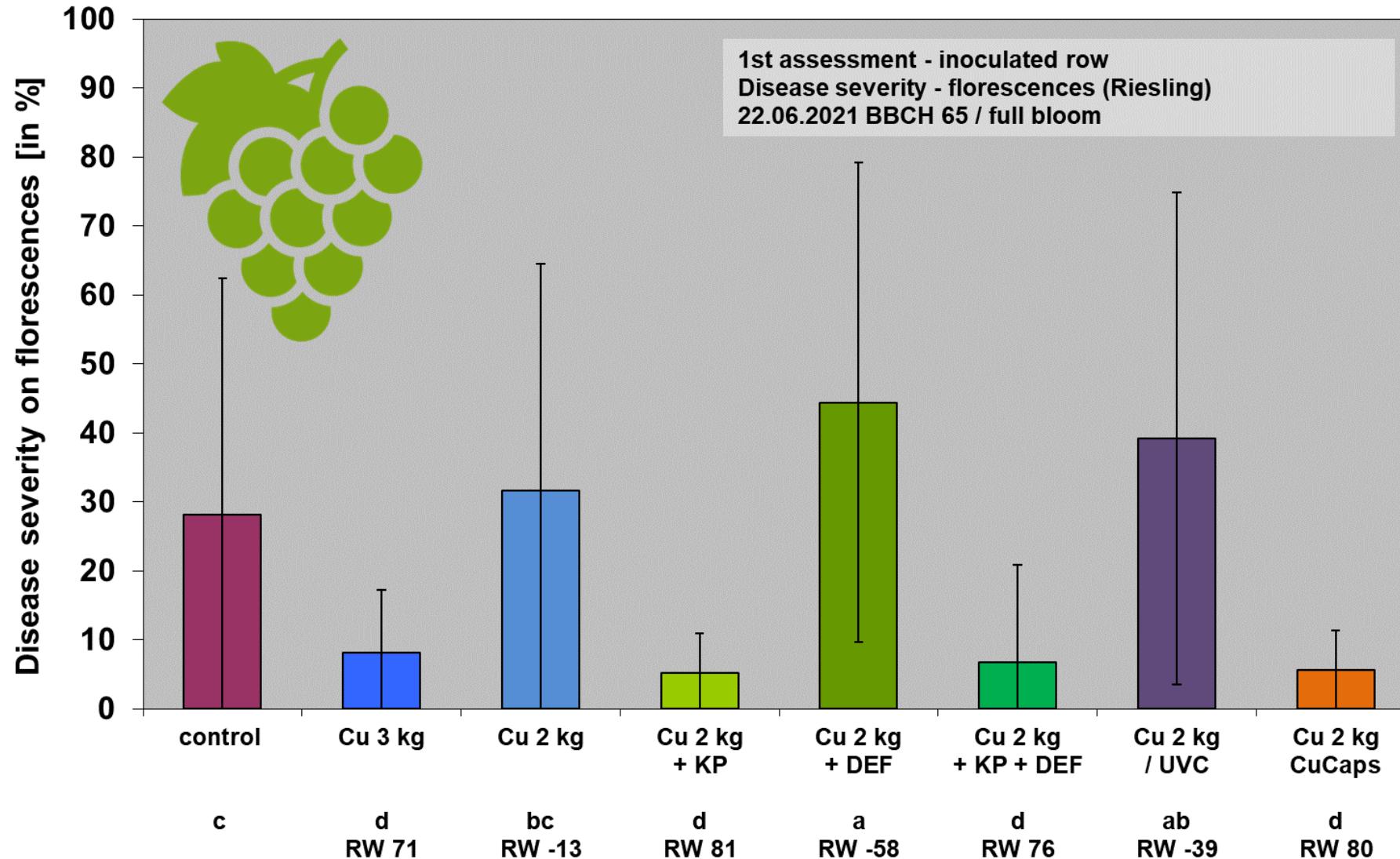
# Results 2021 HGU Geisenheim



# Results 2021 HGU Geisenheim

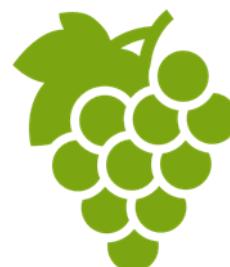


# Results 2021 HGU Geisenheim



# Conclusion

- Year 2021: Optimal infection conditions for *P. viticola*; extremely high infection pressure
- No difference between non-inoculated and inoculated rows
- Copper reduction on **leaves**:
  - Best biological efficacy is with a combination of **copper + KP**
  - **CuCaps** treatment is significantly better than untreated control
  - UVC treatments could not be evaluated in the extreme year 2021
- Copper reduction on **bunches**:
  - Clear-cut dose-relation response at 3 kg and 2 kg amount of copper
  - Best biological efficacy is with a combination of **copper + KP** and **CuCaps**
  - **No effect of additional defoliation** during treatment with copper + KP
  - UVC effect on bunches was not expected because three UVC applications took place before bloom
- Duration of VITIFIT project: two more seasons for field trials (2022 and 2023)



# Thank you for your attention!

[yvette.wohlfahrt@hs-gm.de](mailto:yvette.wohlfahrt@hs-gm.de)

# Project partners

## Universities and Research Institutes



## Organic associations



## Practical partners



## Organic wineries

- Weingut Galler
- Weingut Kronenhof
- Weingut Rummel
- Weingut Zähringer
- Weingut Zehnthof

# Contact

## Project coordination

Hochschule Geisenheim University

Prof. Dr. Beate Berkelmann-Löhnertz

[Beate.Berkelmann-Loehnertz@hs-gm.de](mailto:Beate.Berkelmann-Loehnertz@hs-gm.de)

Prof. Dr. Randolph Kauer

[Randolf.Kauer@hs-gm.de](mailto:Randolf.Kauer@hs-gm.de)

## Knowledge transfer VITIFIT

Dienstleistungszentrum Ländlicher Raum  
Rheinpfalz

Dr. Charlotte Hardt

[Charlotte.Hardt@dlr.rlp.de](mailto:Charlotte.Hardt@dlr.rlp.de)

# Project funding

The project is funded by the Federal Ministry of Food and Agriculture (BMEL) within the framework of Federal Organic Farming Programme and other forms of sustainable agriculture (BÖLN) with a total amount of 6,3 million Euro. Duration of the project is five years (June 2019 to May 2024).

Gefördert durch:



aufgrund eines Beschlusses  
des Deutschen Bundestages

## BÖLN

Bundesprogramm Ökologischer Landbau  
und andere Formen nachhaltiger  
Landwirtschaft