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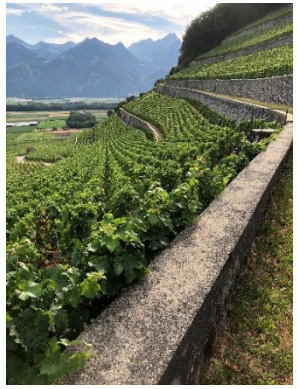
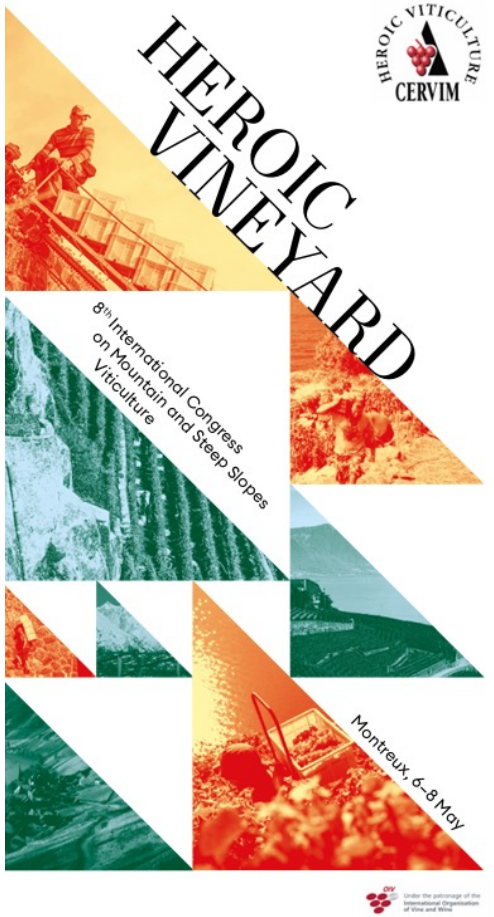
Challenges of heroic viticulture in Switzerland





Olivier Viret

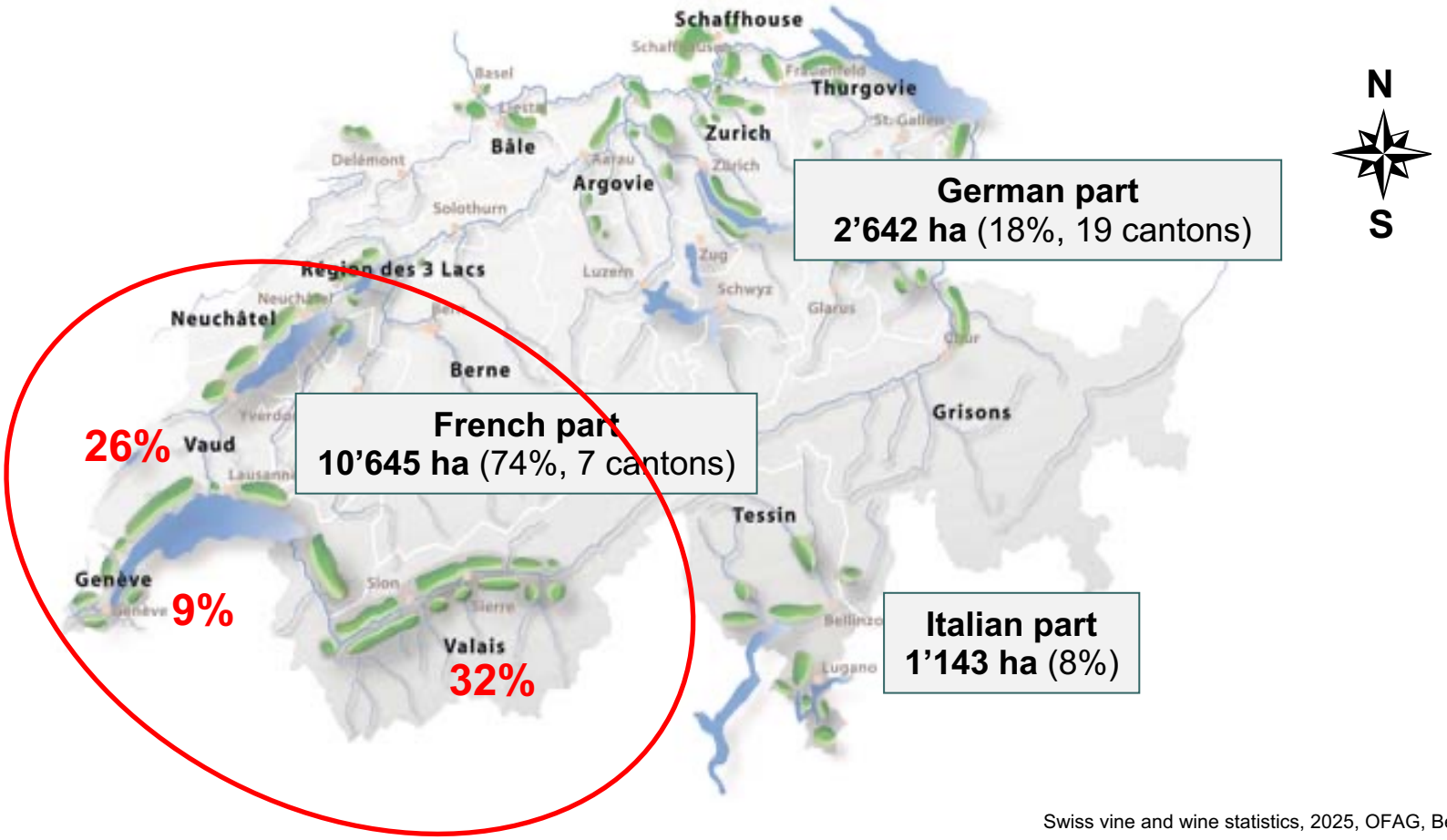
6 May 2026

Department of Agriculture, Sustainability and Climate, and Digital Affairs (DADN)
Competence Centre for viticulture, horticulture and plant protection

Viticulture in Switzerland

2025: 14’430 ha (more and less stable, downward trend)

- 0.35% of Switzerland area
- 1.4% of the usable agricultural area
- **Estimated turnover: > 900 million SFr**



Swiss vine and wine statistics, 2025, OFAG, Berne

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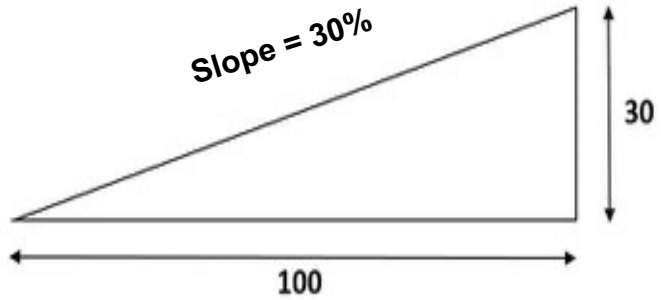
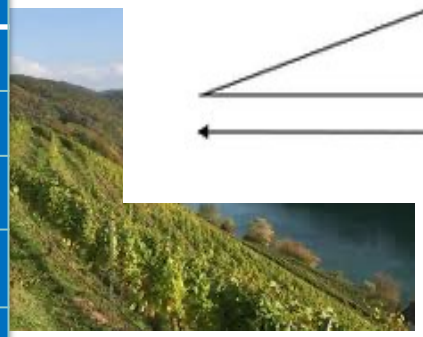
Heroic Swiss vineyards

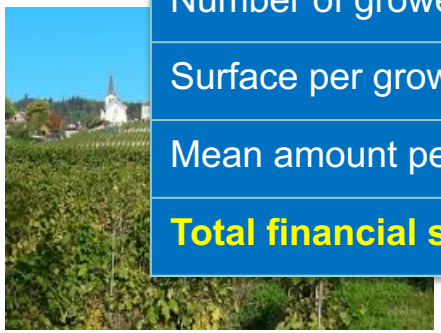
About 40% of the Swiss growing area belong to heroic viticulture
(26% after data of the agency for financial supports):

- slopes >30%
- terraces

Financial supports 2024	Data
Slopes 30-50%	1'697 ha
Slopes >50%	473 ha
Terraces	1'553 ha
Total	**3'722 ha (26%)**
Number of growers	2099
Surface per grower	1.77 ha
Mean amount per grower	5'587 SFr.
Total financial support	**11.7 million SFs**






Terraces and retaining walls

Lavaux (717 ha): ~ 450 km walls, 10’000 terraces, >90% of the area over 30% slopes

Terraces and retaining walls

Chablais (570 ha): ~ 370 km walls, >90% of the area over 30% slopes

Terraces and retaining walls

Valais (4’577 ha): ~ 3’000 km walls, >90% of the area >30% slopes

Challenges and opportunities for heroic viticulture in the heart of the Alps

- Alpine climatic conditions, complex production structures, high pressure of fungal diseases and pests…
- Open markets (since 1996) – competitiveness (yearly import quota of 170 million L)
- Production costs among the highest in the world
- Increased environmental awareness among the population (e.g. radical popular initiatives to ban plant protection products)
- Climate change...

Producing what competitors do not produce

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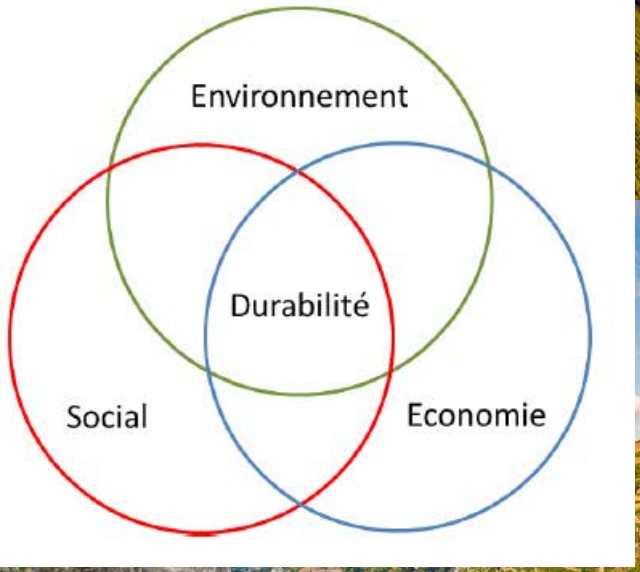
Sustainability of heroic viticulture



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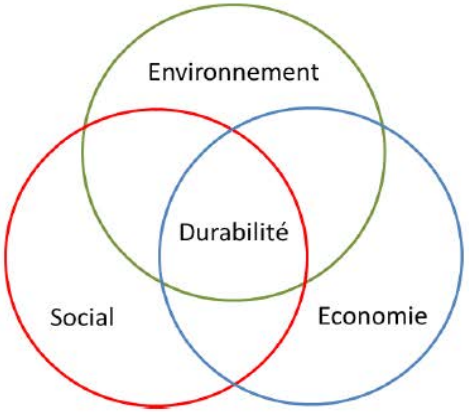
The three pillars of sustainability

Economy - Environment - Social



Resolutions of the OIV (CST 1-2004)

- Producing healthy, high-quality grapes
- Ensuring soil fertility and environmental quality in the long term
- Encouraging biological and biotechnological control methods
- Promoting ecologically and economically sustainable viticulture

Sustainable viticulture in Switzerland

IOBC-WPRS
OILB-SROP

1970 Concept of **integrated or sustainable production**

1977 Declaration of Ovronnaz (Valais, Switzerland) against indiscriminate use of chemicals

1993 Creation of VITISWISS
National organisation for Integrated Production
- Basic requirements
- Additional requirements for the Vinatura Certificate

2014 Integrated and sustainable viticulture

2026 **Sustainable Swiss Wine**

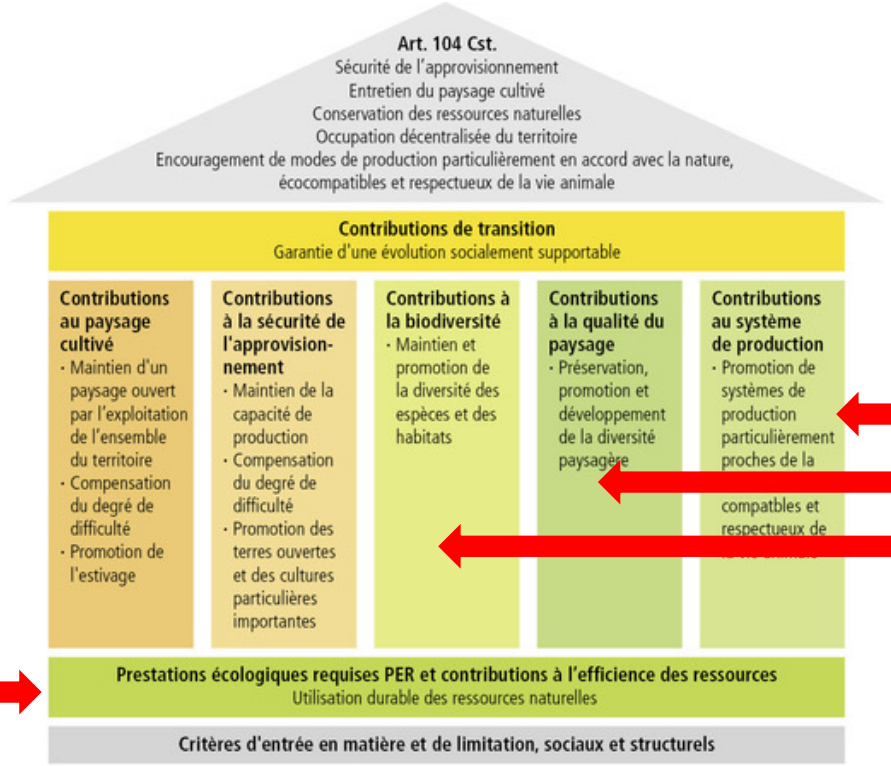
The Evolution of Plant Protection Methods (IOBC 1977, modified)

1. **Blind chemical control** (Lutte chimique aveugle)	General, schematic and routine applications of the most potent pesticides; Advice from industry
2. **Chemical control based on advice** (Lutte chimique conseillée)	Application of usually broad spectrum pesticides after consultation with an official advisory service
3. **Specific control** (Lutte dirigée) *Transitory phase*	Introduction of the concept of the "economic threshold levels"; Application of pesticides with no negative side-effects; Protection of beneficial organisms
4. **Integrated plant protection*** (Protection intégrée) *Dynamic phase*	Like specific control, in addition Integration of biological and biotechnical methods and methods of good agricultural practice; Chemical control strongly regulated
5. **Integrated agricultural production*** (Production agricole intégrée) *Open dynamic phase, further development possible in the whole world*	Like integrated plant protection, in addition Observance, integration and exploitation of all positive factors in the agro-ecosystem according to ecological principles

Sustainable viticulture

Since 2013, financial support for sustainability in the Swiss Federal Constitution – financial support from the State Government

Required ecological services (PER)



Economical sustainability

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Swiss wine market - market shares

Wine consumption in Switzerland: ~ 30 L / inhabitant / year (worldwide 4th place)
2025 : 211 million L, of which 79.2 million L Swiss wines

Market parts of Swiss wines:

~ 35 - 38%

2023: 38.6% (+1.6%)
2024: 35% (-3.6%)
2025: 37.5% (+7.1%)

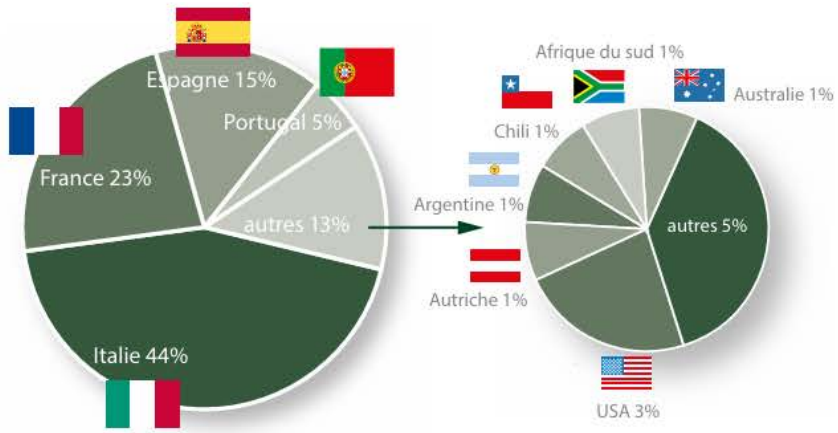


Figure 3-1: Importation par pays (total)

Swiss vine and wine statistics, 2025, OFAG, Berne

Production structures

~ 25’000 winegrowers

~ 2’500 cellars

20%	< 1 ha
54%	1 to 15 ha
7%	>50 ha

~ 10’000 part time winegrowers

Valais: 4’577 ha (2025), 1/3 of the CH vineyard area
~ 18’000 vineyard owners or growers

- >70’000 vine plots
- Average area per plot: 600-700 m^2
- Average vine area per winegrower: ~ 2500 m^2
- Winemakers: ~ 400

Production structures - Vaud

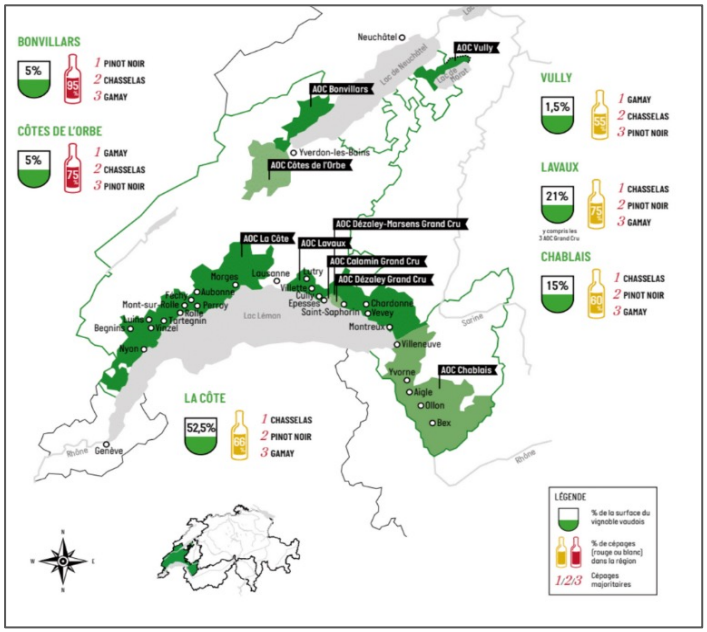
2025 (3’747 ha)

Vineyard

- 1’244 growers
- 13’400 vine plots
- 19’336 cultivar specific plots

Winemaking:

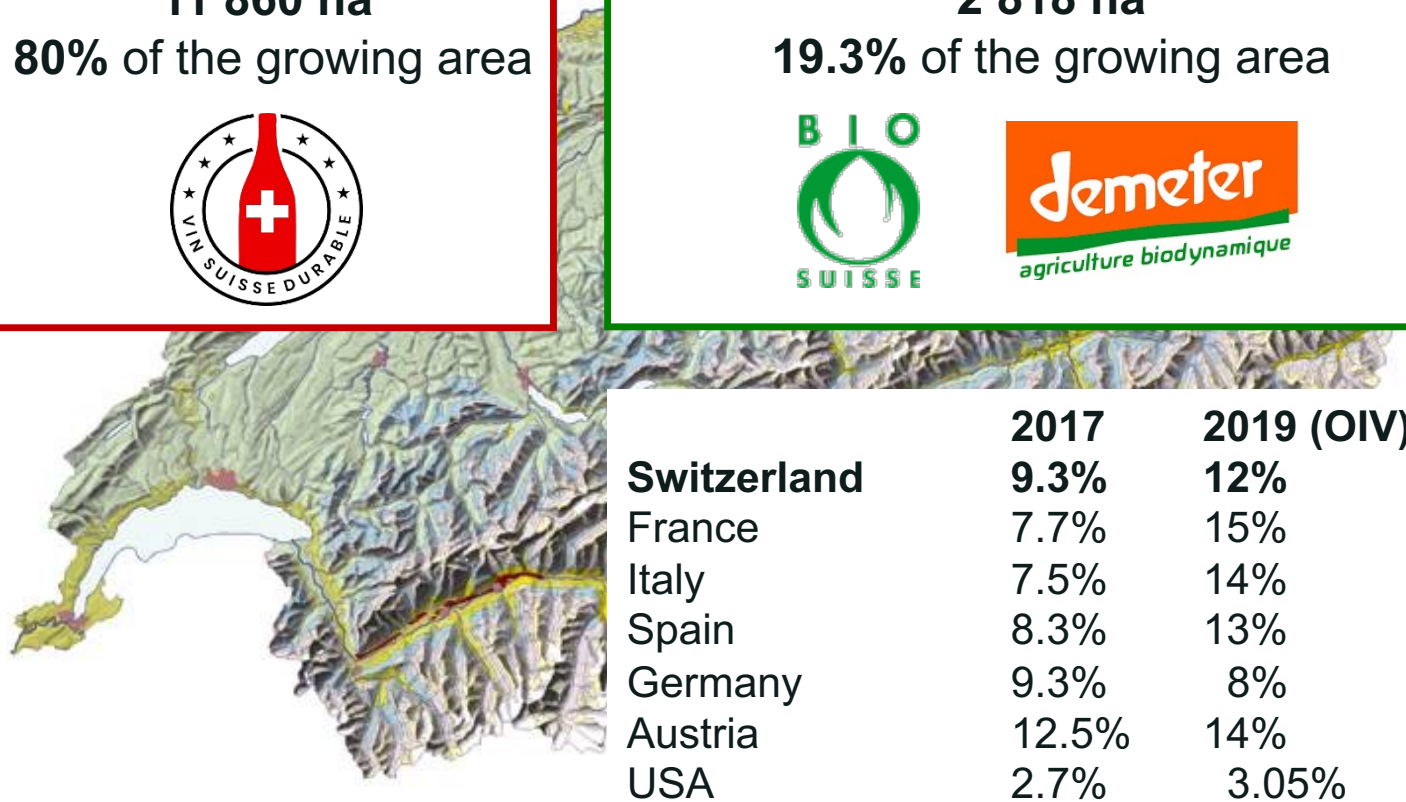
- 1 holding
- 9 cooperatives (15’000 - 3.6 million L)
- 433 winemaking structures



Production ways

Integrated production
11’860 ha
80% of the growing area

Organic and biodynamic production
2’818 ha
19.3% of the growing area



	2017	2019 (OIV)	2024
Switzerland	**9.3%**	**12%**	**19.3%**
France	7.7%	15%	21.5%
Italy	7.5%	14%	21.3%
Spain	8.3%	13%	16.1%
Germany	9.3%	8%	14%
Austria	12.5%	14%	24%
USA	2.7%	3.05%	?
Portugal	n.d	2%	?
South Africa	0.9%	0.95%	3.3%

Competition and production costs

Data 2023

Growing system	hours / ha	SFr. / ha
Non-mechanized "goblet"	1150	**>65’000.-**
High density cultivation with little mechanization	>900	**>45’000.-**
Terraces with little mechanization	>800	**40’000.-**
Terraces, tractor	745	**38’000.-**
Spur- or cane-pruned, highly mechanized	440	**32’000.-**
California, Australia, Chile, Argentina, South Africa…	**100-200**	**5000 - 10’000**

Source: Frais de production en viticulture, résultats technico-économiques 2023, Agridea

Competition and production costs

Competition and production costs

Swiss Biodiversity of grape

2025: 14’430 ha (>300 grape varieties, 90 varieties >1ha)

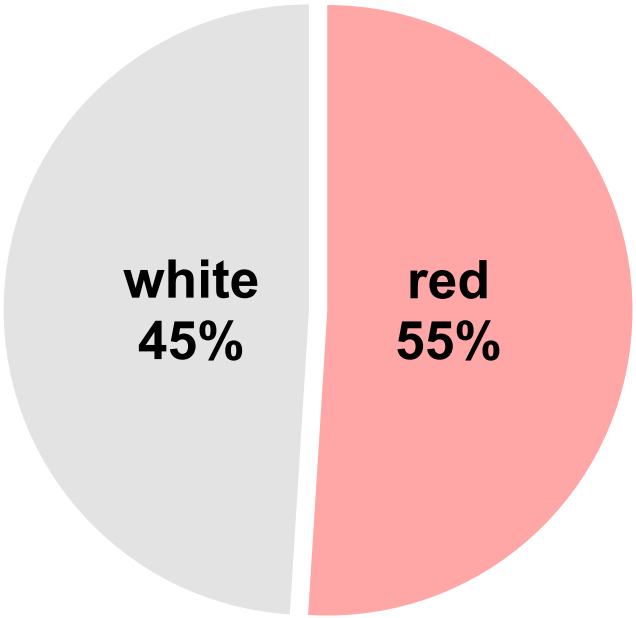
609 ha resistant varieties

Chasselas (Gutedel) 3415 ha
Müller-Thurgau 410 ha
Sylvaner (Johannisberg)
Chardonnay
Marsanne (Ermitage)
Pinot gris
Pinot blanc
Sauvignon blanc
Savagnin blanc
(=Païen, Heida)
Rèze
Humagne blanc
Petite Arvine
Amigne
Charmont
Doral
Divona (Gamaret x Bronner) 17 ha

Pinot noir 3594 ha
Gamay 1020 ha
Merlot 1190 ha
Cabernet franc
Cabernet Sauvignon
Syrah
Bondola
Humagne rouge
Cornalin
Gamaret 419 ha
Garanoir 219 ha
Diolinoir 124 ha
Carminoir (Pinot noir x Cab. Sauv.)
Galotta (Ancellotta x Gamay)
Mara
Divico (Gamaret x Bronner) 108 ha
Merello (Merlot x Gamaret)
Gamarello (Merlot x Gamaret)
Cabernello (Cabernet franc x Gamaret)
Cornarello (Humagne rouge x Gamaret)
Nerolo (Nebbiolo x Gamaret)

Source: année viticole 2024, OFAG, Berne

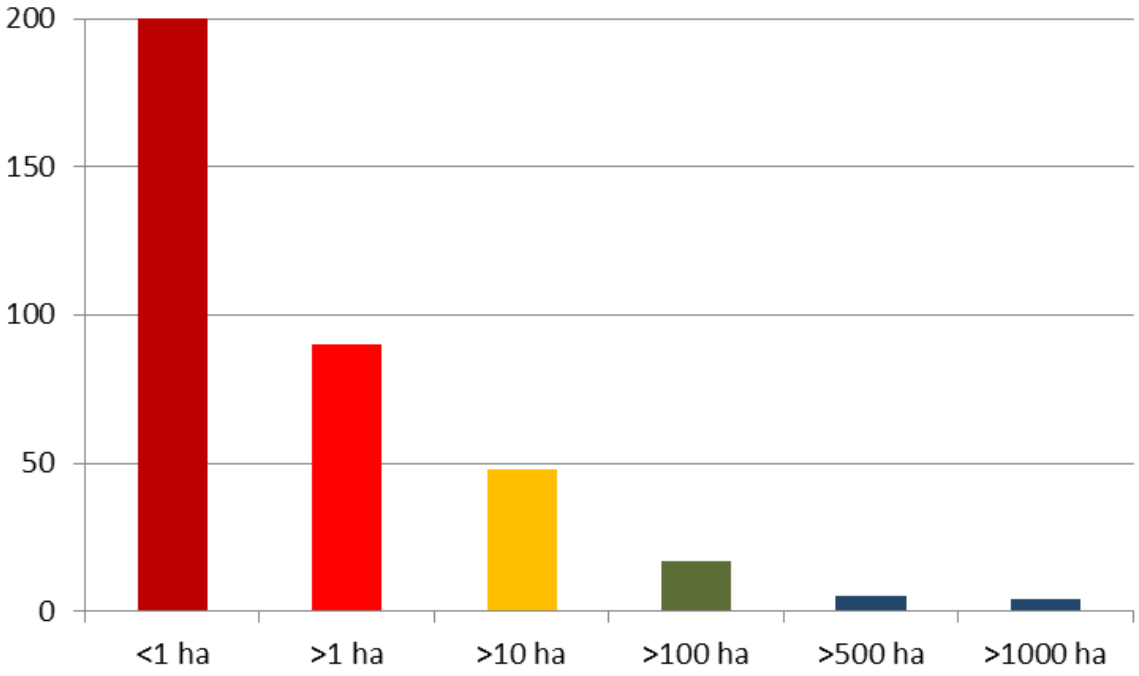
Biodiversity of grape varieties



Source: année viticole 2025, OFAG, Berne

Biodiversity of grape varieties

<1 ha : 300 varieties
>1 ha: >90 varieties
>10 ha: 48 varieties
>100 ha: 17 varieties
>500 ha: 4 varieties (Pinot noir, Chasselas, Gamay, Merlot)
>1000 ha: 4 varieties **(Pinot noir, Chasselas, Gamay, Merlot) planted >70% of the Swiss vine-growing area**



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Sustainable diseases and pest management

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Control of mites

Tetranychus urticae

Panonychus ulmi

Time	Acaricides
1950 - 1975	16 active ingredients
2025	1 active ingredient
Reduction	- 94%

Absence of acaricides

Control of grape berry moths

Mating disruption

Lobesia botrana

Mating disruption
Synthetic pheromones

Eupoecilia ambiguella

85% of the vine-growing area

Insecticides

Time	Grape berry moths
1874 - 1995	53 active ingredients
2025	3 active ingredients
Reduction	**- 95%**

Herbicides

Challenge for organic viticulture = absence of any form of herbicide

Weed and invasive plants management: mechanical, thermal, weeding, mowing, etc.

Invasive plants*:*
e.g *Conyza canadensis*

Herbicides

Time	Herbicides
1983	28 active ingredients
2025	6 active ingredients of which 3 specific graminicides
Reduction	**- 78 %**

Fungal diseases

Plasmopara viticola

Pseudopezicula tracheiphila

Vitis vinifera
Highly sensitive

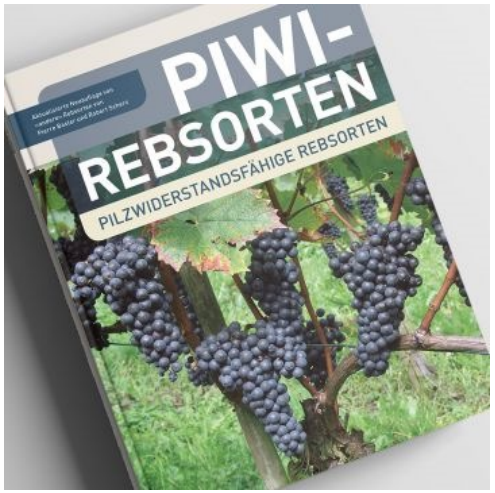
Phomopsis viticola

Guignardia bidwellii

Botrytis cinerea

Resistant varieties *(PIWI)*

Germany



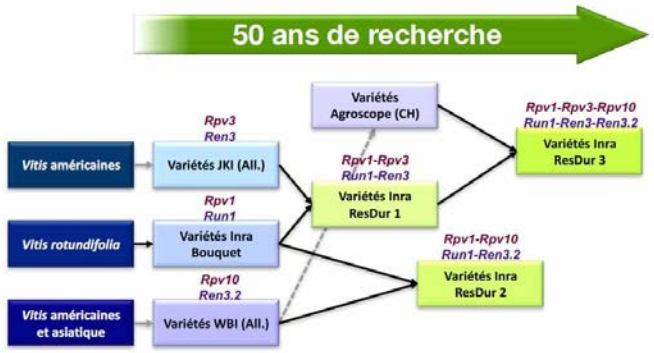
Italy *(VCR, Rauscedo)*

***QTL**: Rpv1-Rpv3; Run1-Ren3*

Switzerland (Agroscope)

***QTL**: Rpv10, RPV 3.3, Ren3, Ren9*
Rgb1

France (INRAe - ENTAV)
Breeding program RESDUR



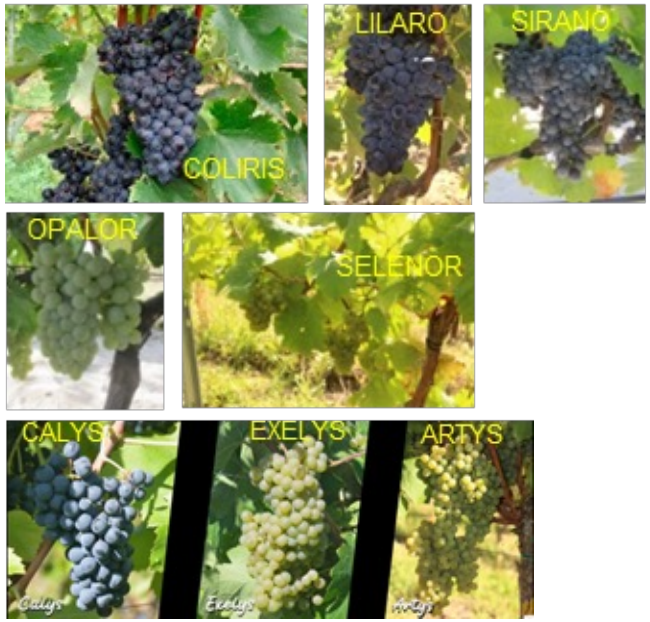
Resistant varieties - France

INRAe-ENTAV 2018

RESDUR 1 (2018)

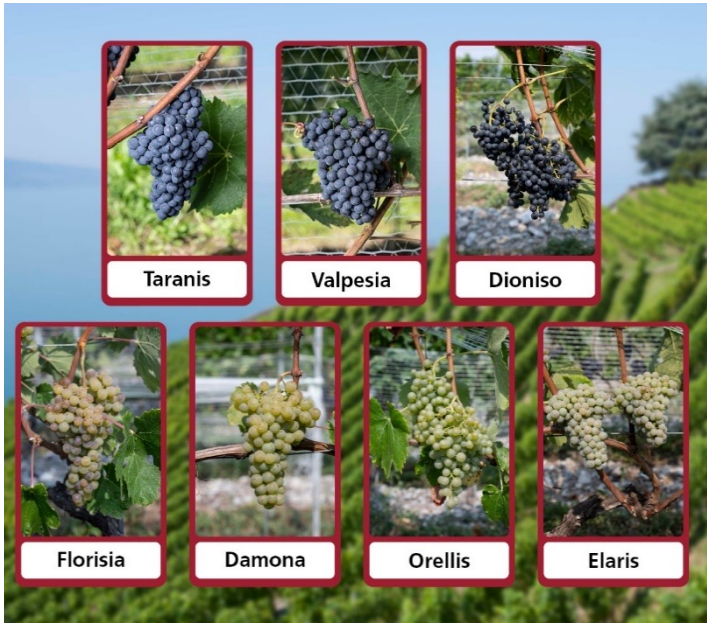
***QTL**: Rpv1, Rpv3; Run1, Ren3*

RESDUR 2 (2023)



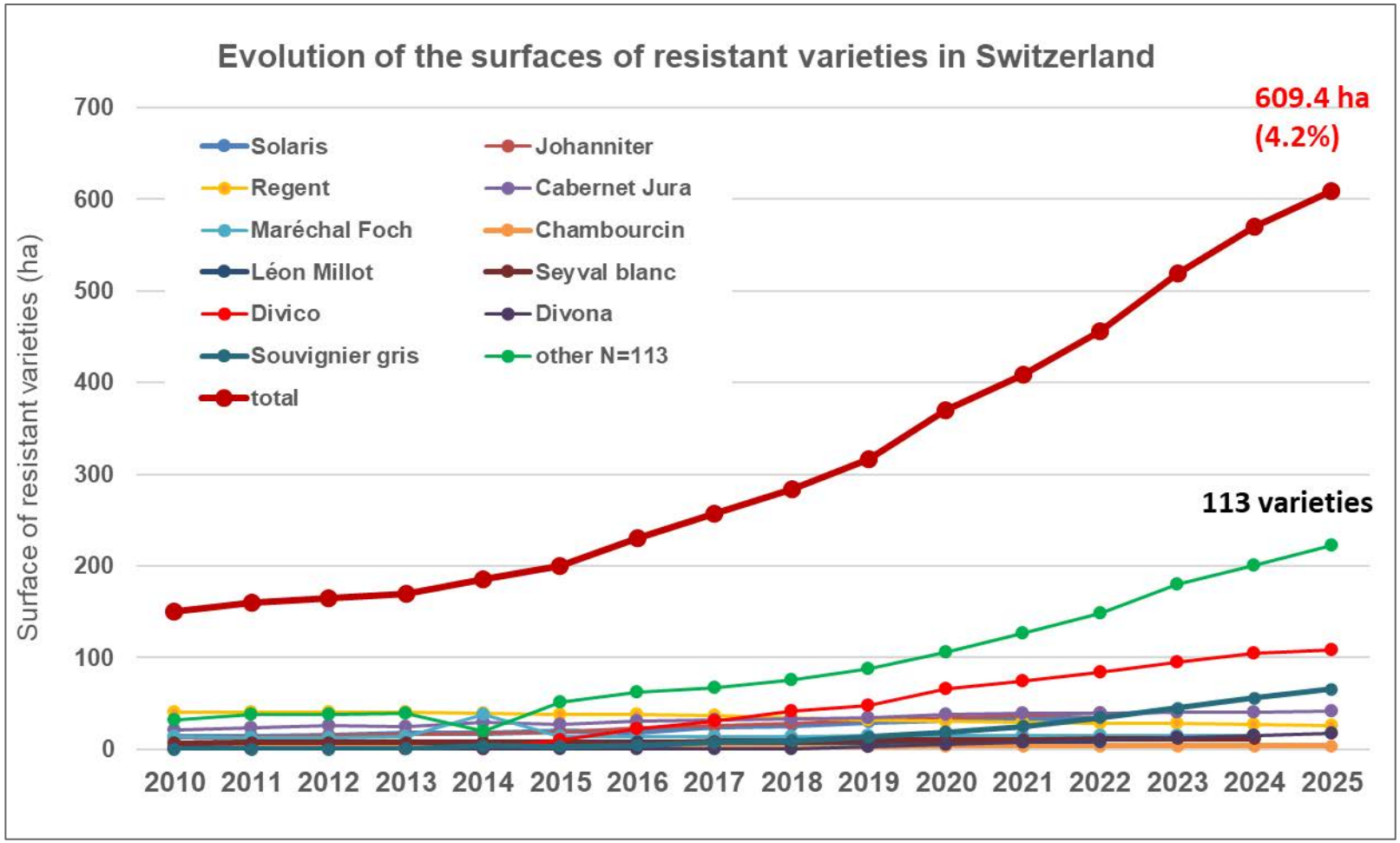
***QTL**: Rpv1, Rpv3.3, Rpv 10; Run1, Ren3, REN 9 partly Rgb 1, Rgb 3*

RESDUR 3 (2025) INRA – Agroscope (CH)



***QTL**: Rpv1, Rpv 3.1, Rpv3.3, RPV 10; Run1, Ren3, REN 9 partly Rgb 1, Rgb 3*

Evolution of the surfaces of resistant varieties in Switzerland (2010-2025)



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Conclusions

- The main challenge for heroic viticulture: its economic sustainability – depending on financial supports by the State
- Winegrowers and consumers should be proud of local products
- Wine: a cultural asset, an identity, a source of pleasure and sociability
- Recognition of the ecosystemic values of heroic mountain viticulture
- Evolution towards non-alcoholic attractive beverages based on grapes
- **The market evolves fast with demands that regulated perennial crops cannot follow with the same dynamics**

The future of sustainable heroic viticulture in Switzerland

➡ MARKETING, EONOTOURISM, UNIQUE PRODUCTS ALSO WITHOUT ALCOOL, LANDSCAPE, ALTERNATIVE CROPS IN DIFFICULT SITES

➡ MANAGEMENT OF FUNGAL DISEASES, NEW PESTS AND DISORDERS, WEED CONTROL

➡ VARIETIES BETWEEN TRADITION AND INNOVATION REDUCING PRODUCTION COSTS AND ADAPTED TO CLIMATE CHANGE

A new compendium of fungi in grapevine by
Olivier Viret and Katia Gindro (Swiss researchers and experts in viticulture pathology)

Free open access book or hard copy https://link.springer.com/book/9783031686627

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Thanks for your attention

Enjoy Swiss wines

Lavaux and “Fête des vignerons”
UNESCO World Heritage