



# Recent evolution of the potato virus Y (PVY) populations in Swiss seed potato production

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# What is the issue?

Potato seed lots of PVY tolerant cultivars seems to be more frequently rejected during the certification process.

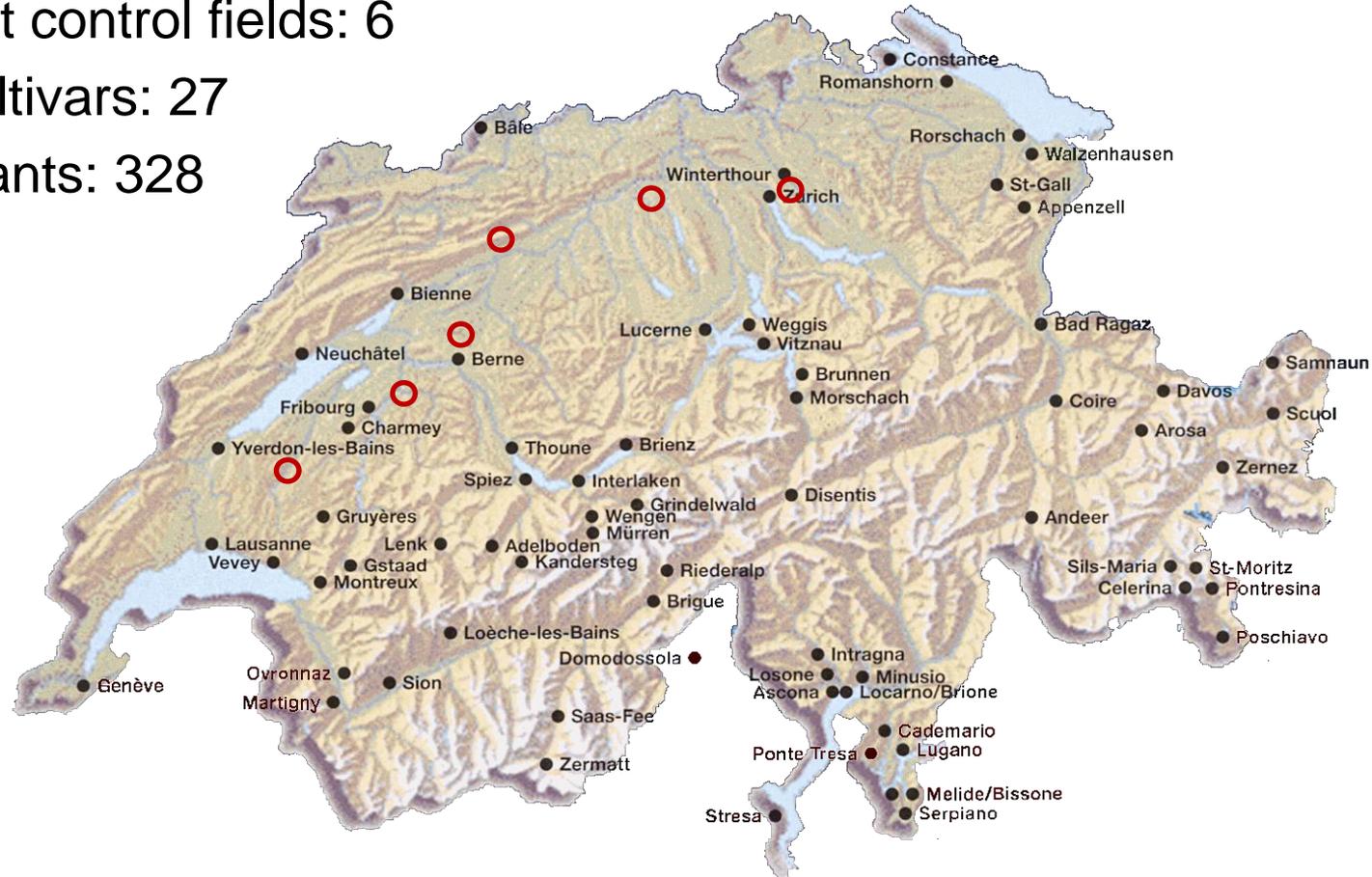
- Is the Swiss PVY population changing?
- Do we have an arrival of more aggressive PVY strains?

To try to answer those questions, it was decided to manage a new PVY strains survey in 2012



# Plant material and in-field observations

1. Post-harvest control fields: 6
2. Sampled cultivars: 27
3. Sampled plants: 328





## In-field observations

Symptom type:

- Crinkle
- Mosaic
- Necrotic lesions
- Stipple-streak

Symptoms intensity:

- Severe
- Medium
- Mild



A : Crinkle



B : Mosaic



C : Necrotic lesions



D : Stipple-streak

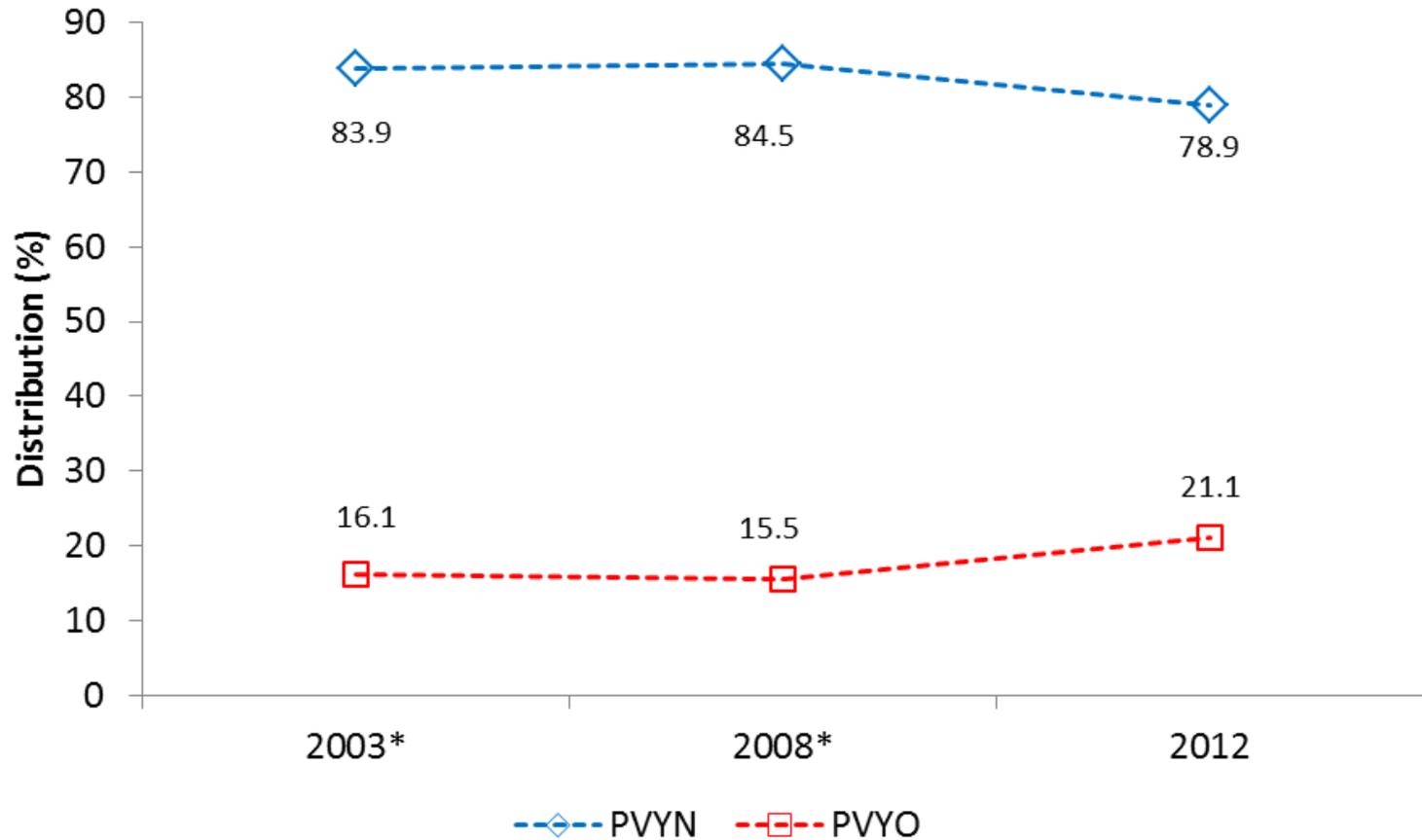


# Samples analysis

1. DAS-ELISA on all samples (Gugerli & Fries, 1983)
  - PVY<sup>N</sup> serotype
  - PVY<sup>O</sup> serotype
  
2. One step triplex RT-PCR on 113 samples (Rigotti and Gugerli, 2007)
  - PVY<sup>N/NTN</sup> genotype
  - Recombinant PVY<sup>NTN</sup> genotype
  - PVY<sup>O</sup> genotype
  - PVY<sup>N-WI</sup> genotype



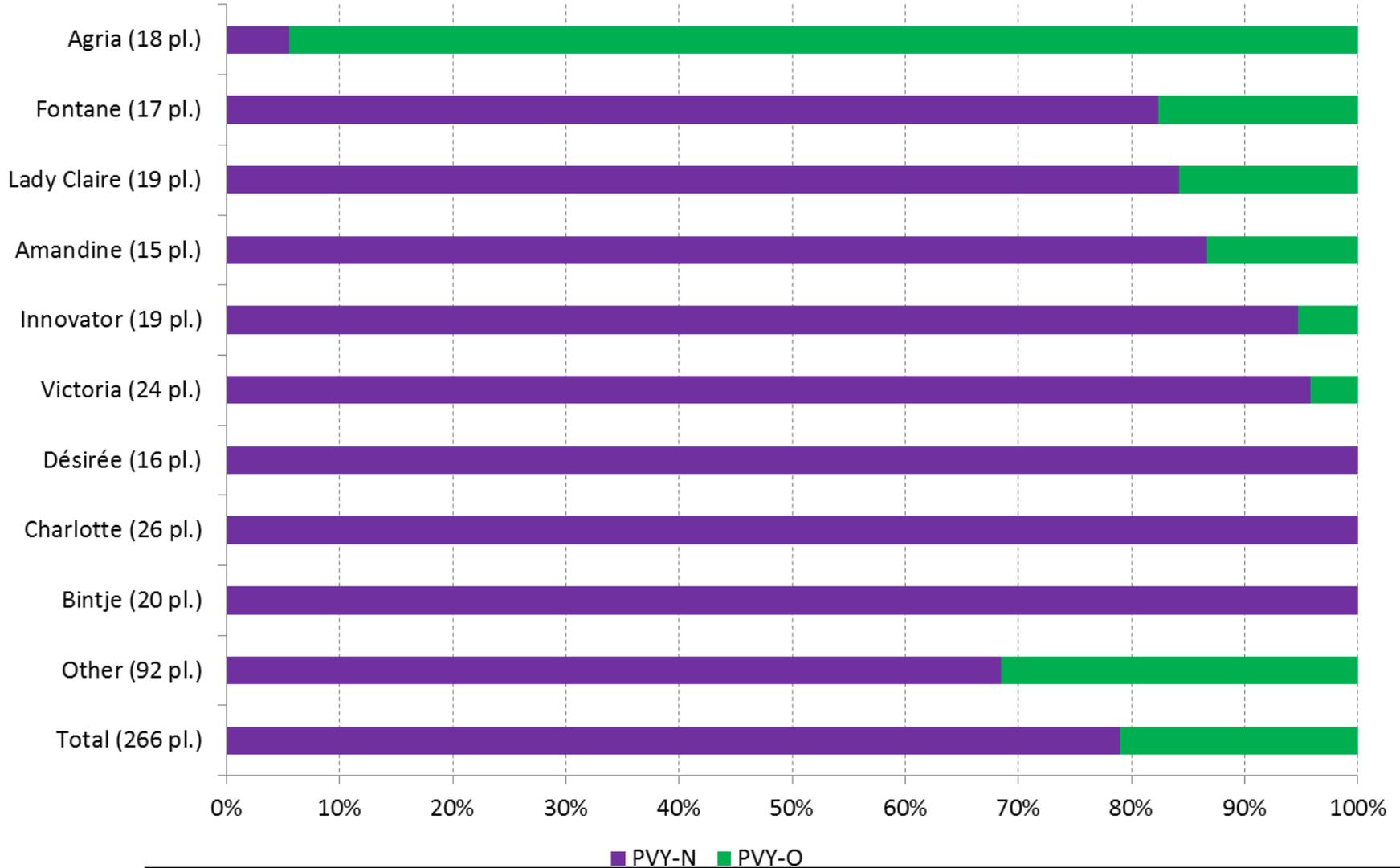
# Evolution of strains: DAS-ELISA



\* Data from Rigotti et al. (2011)

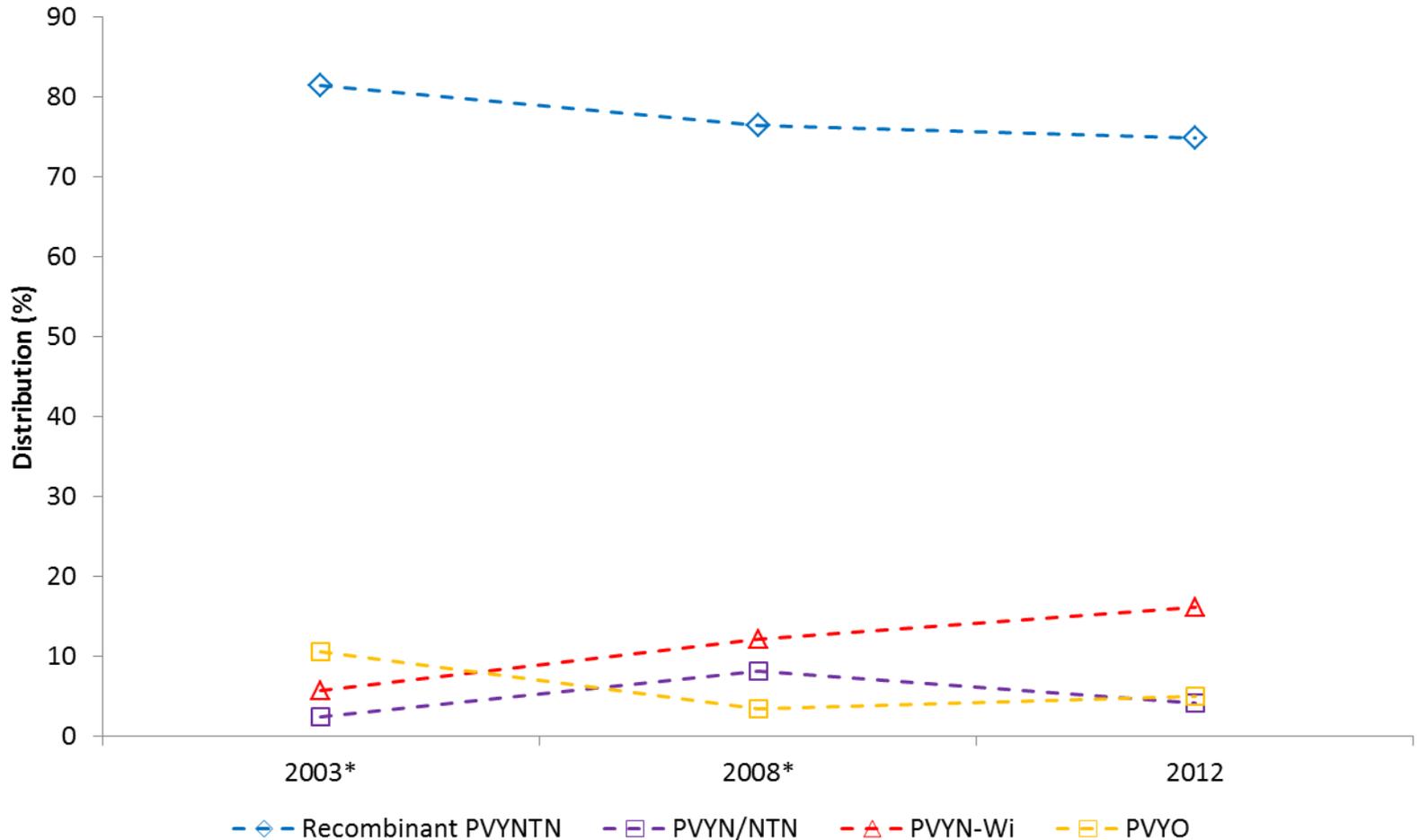


# Occurrence of serotypes in cultivars





# Evolution of strains: RT-PCR

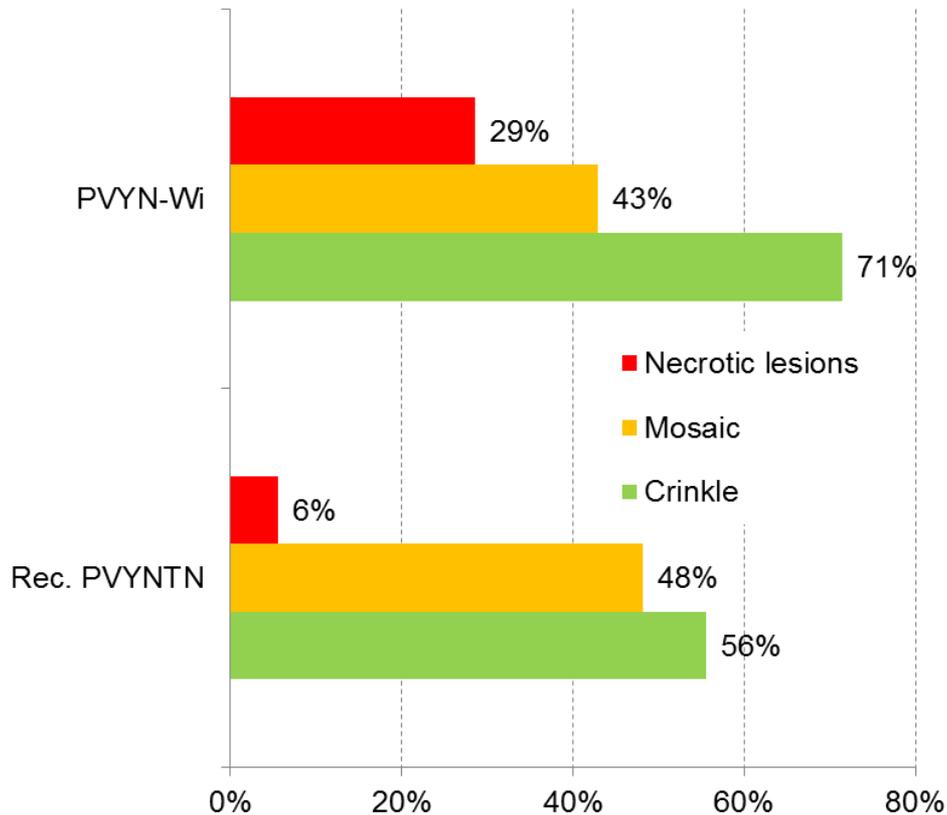


\* Data from Rigotti et al. (2011)

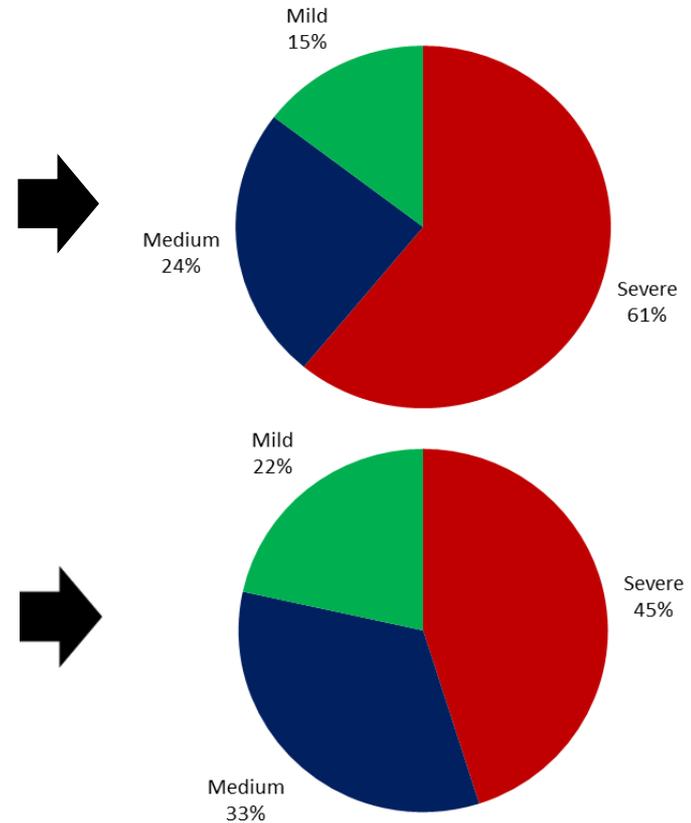


# Symptoms expression

## Type

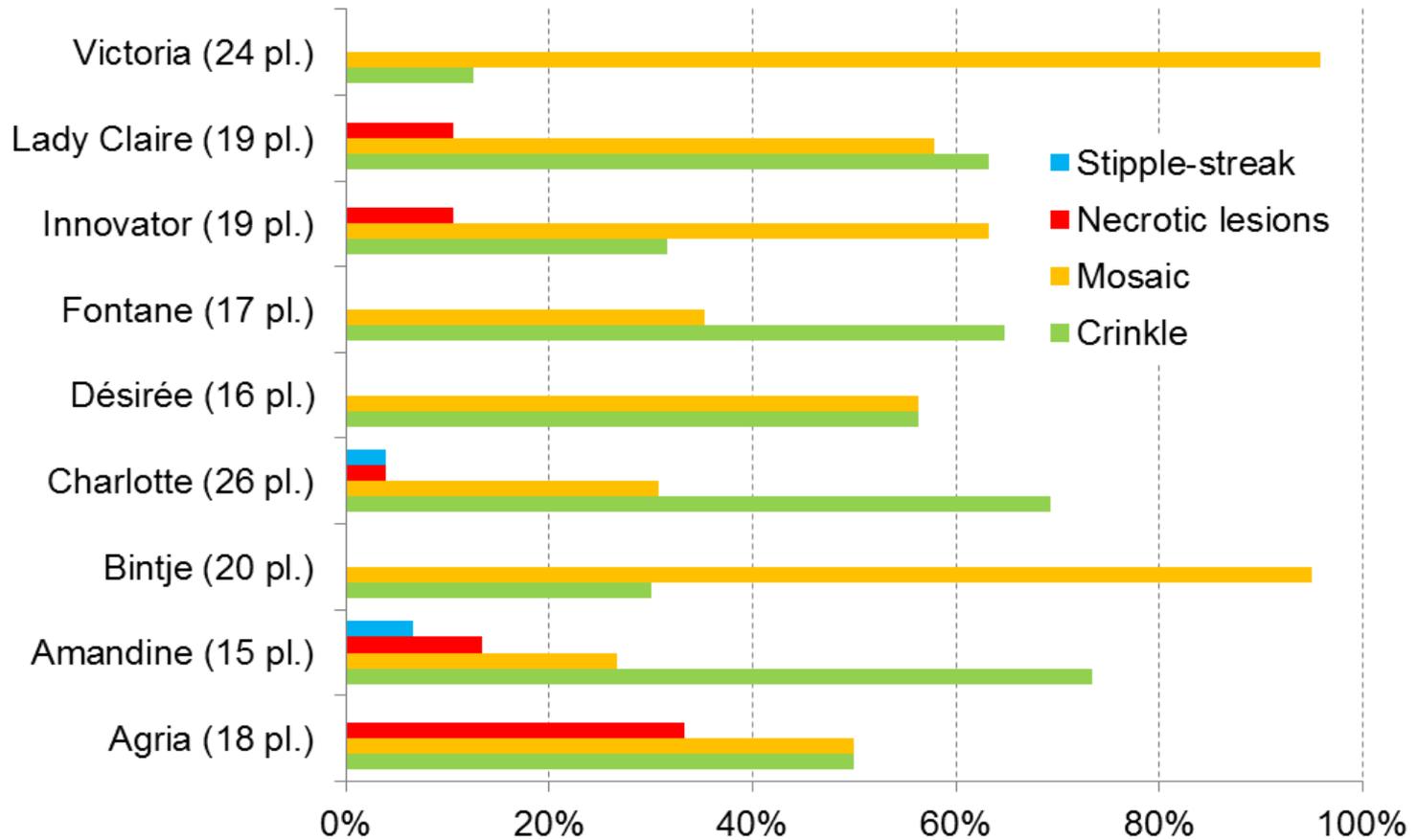


## Severity



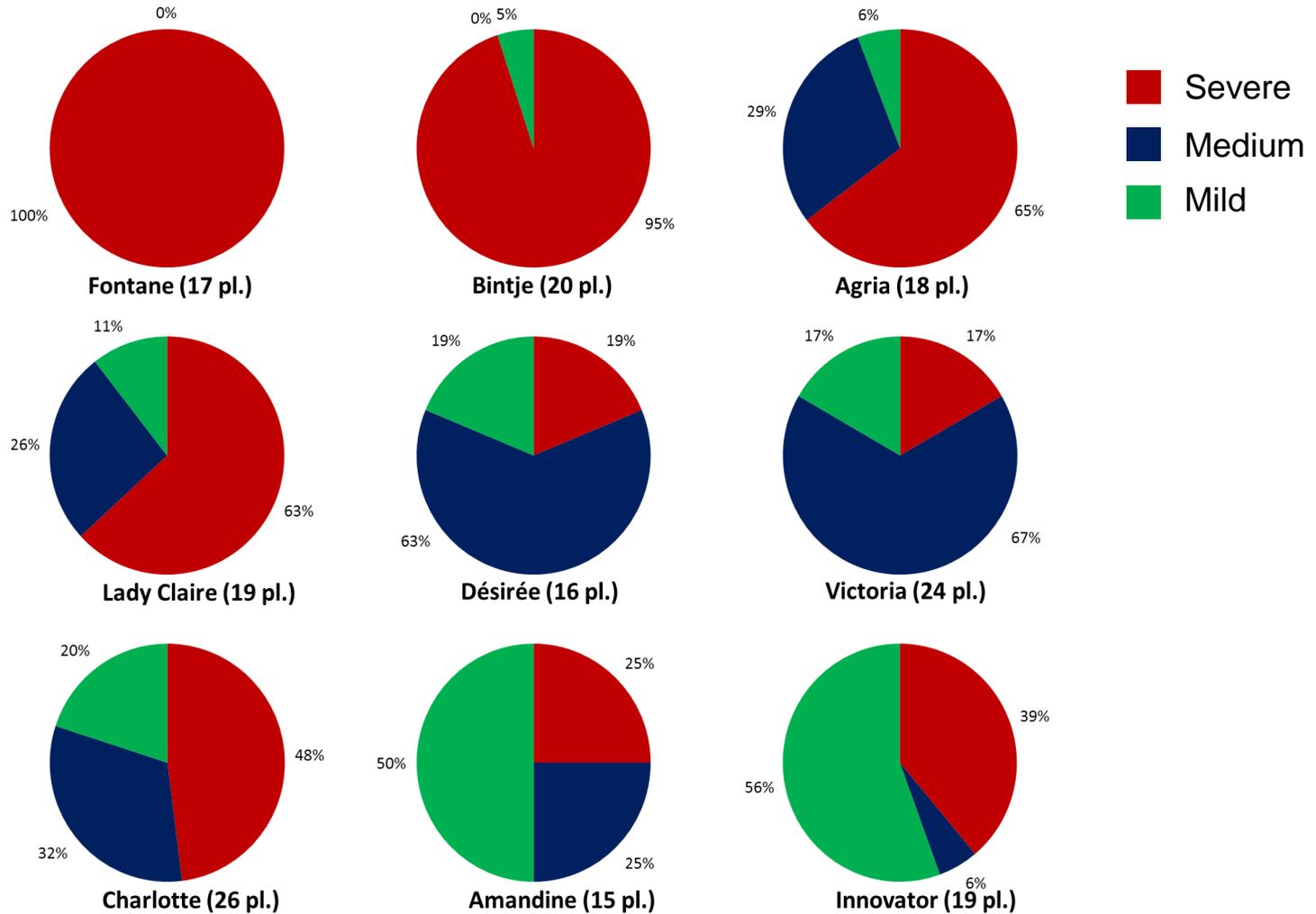


# Type of symptoms on cultivars



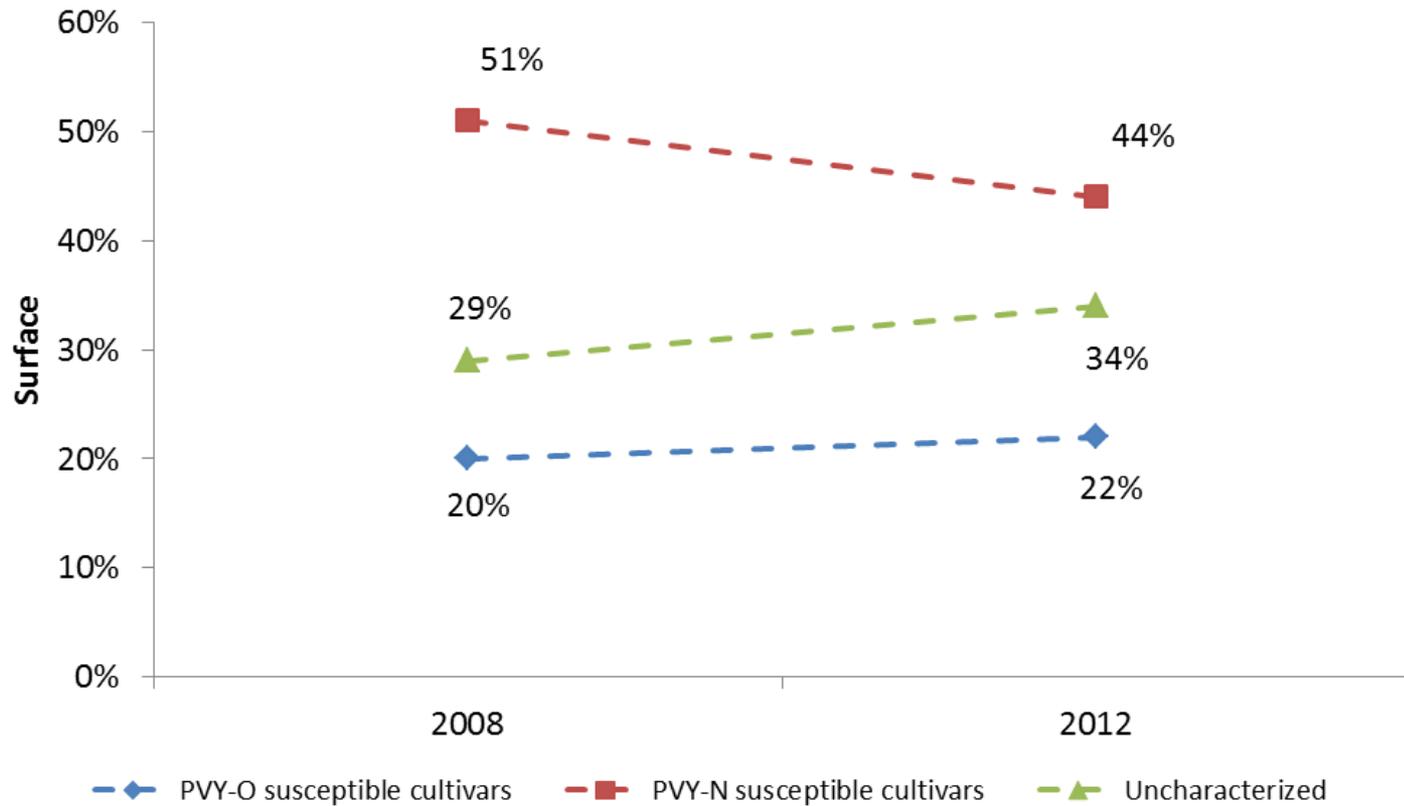


# Severity of symptoms on cultivars





# Surfaces per cultivar susceptibility





# Conclusions

1. Prevalence of PVY<sup>N-WI</sup> strains is slowly increasing in Switzerland
2. Cultivar's have different susceptibility to PVY strains
3. The production of rec. PVY<sup>NTN</sup> susceptible cultivars is decreasing
4. Severity and type of symptoms vary among cultivars



# What is so special in Switzerland?

- Switzerland is importing a lot of seed potatoes and consequently foreign PVY isolates
  - Switzerland is producing a lot of cv. Agria (22% of the surface in 2012)
  - Cv. Agria is especially susceptible to PVY<sup>N-WI</sup>
- ➔ PVY<sup>N-WI</sup> prevalence is increasing in Switzerland



# Acknowledgments

Many thanks to...

- Henri Gilliand: head of Swiss seed potato certification
- Werner Wild: head of seed certification laboratory
- Justine Brodard: technician in the virology laboratory



# What is so special in Switzerland?



Tu eat raclette cheese with PVY<sup>N-WI</sup> infected Agria tubers!

## Thank you for your attention!