

Recent developments in VCU-testing in France

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GEVES

17th EU-VCU EXPERTS' GROUP MEETING
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Expertise & Performance

Evolution of VCUS activity

Recent developments in VCU-testing in France :

- Winter hardiness
- New species : chickpea
- Development of tests for resistance/tolerance to virus yellows in sugar beet
- Testing the SBR tolerance in sugar beet



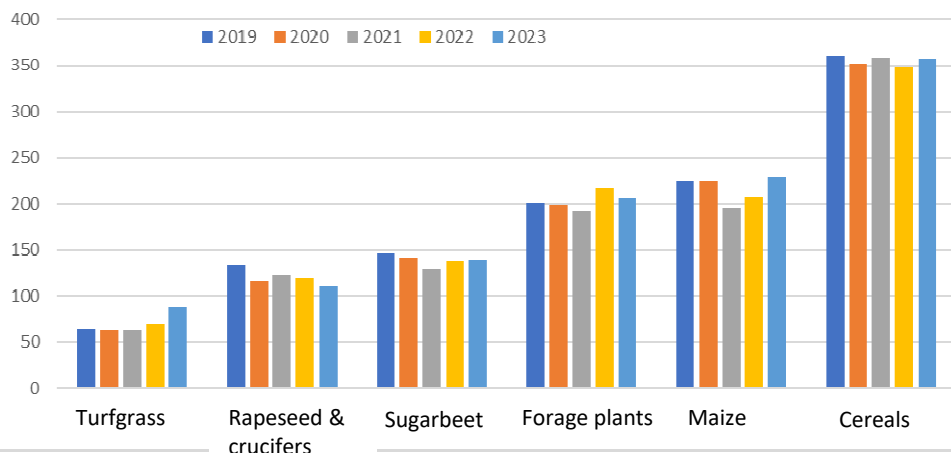
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Evolution of VCUS activity

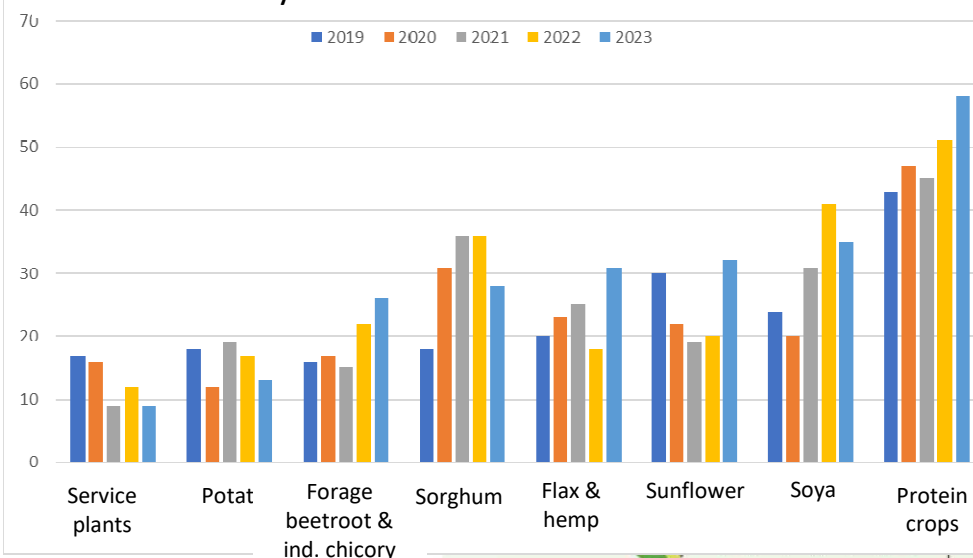
Number of VCUS studies per year over the last 5 years

« Major » crops



Number of VCUS studies per year over the last 5 years

« minor » crops



- ~1300 VCUS studies/year
 - 1362 studies in 2023
- > 60 species
- **Major crops**
 - A broad overall stability
 - Maize : a decline compared to 10 years ago (x studies)
- **Minor crops**
 - Good dynamics in flax and protein crops
 - Sunflower : still low (due to the end of the study of herbicide tolerant varieties)
 - Slight decrease in soya and sorghum / 2022
 - A greater diversity of species (service plants, protein crops...)

Winter hardiness

- Chaux Des Près :

- The coldest place in France
- A research site to study winter hardiness since 1949
- Plants' maximum resistance to frost
- Used to assess VCU winter hardiness for winter wheat, winter barley, winter triticale and winter pea

average winter since 2000 :
25 days <-10°C including
4 days <-20°C Min T° -23°C



- INRAE will stop this site in June 2025

- What to do next ?

CTPS experts meetings to :

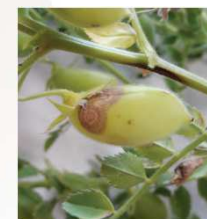
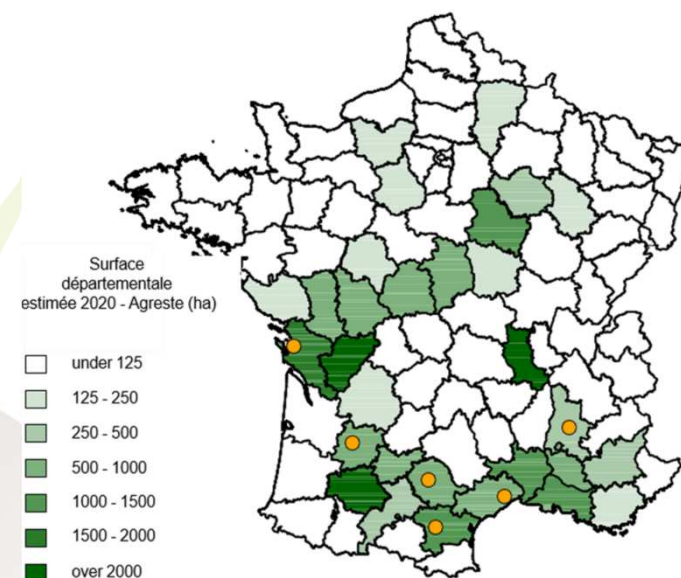
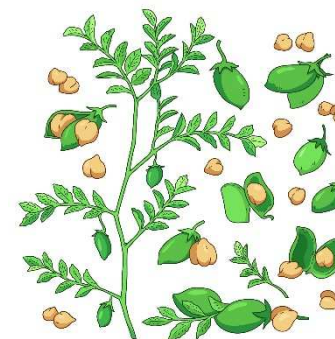
- Think about necessary information about variety and cold: in the future, how to deal with the sudden onset of cold weather ?
- Explore the possibility of carrying out tests under controlled conditions
- If interest in INRAE's experimental system is confirmed, exploration of the various options for taking it over.





New specie : chickpea

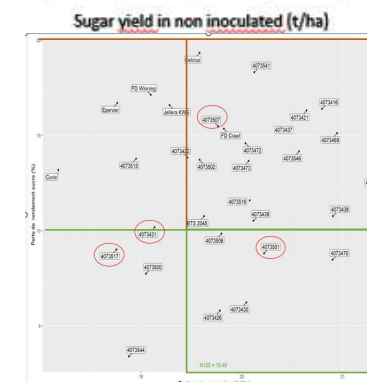
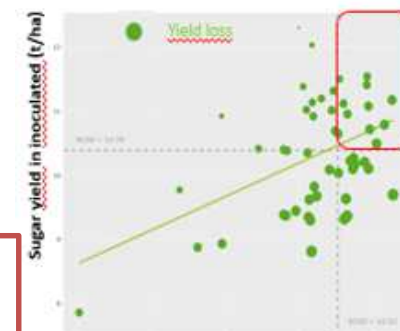
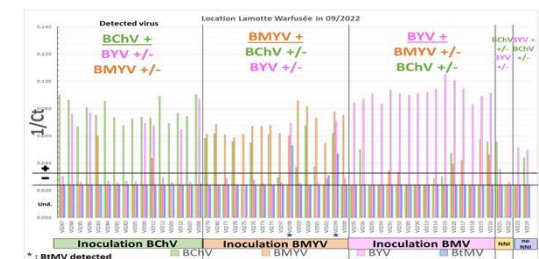
- First request in 2023 / 2nd year of VCU study in progress
- Implementation of VCU protocol :
 - different control varieties according to type DESI or KABULI
 - Characteristics :
 - flowering, earliness of maturity, height at maturity lodging, yield, thousand grain weight,
 - grain size (only for KABULI type)
 - protein content (only for DESI type)
- Multi-local trial network :
 - registration and post-registration common network
 - multi-partner network : GEVES, Terres Inovia, breeders, professional organizations
 - 6 trial sites based mainly in the south of France (severe seed availability constraints).
- Implementation of different decision rules for both types of chickpea : DESI and KABULI
- Major disease : Ascochytiopsis (*Ascochyta rabiei*). Search for a test under controlled conditions (AsCoLuP research project).



Development of tests for resistance/tolerance to virus yellows in sugar beet



- Since 2022, assessing varietal resistance/tolerance to 3 Virus Yellows, transmitted by aphids
- Inoculation separately of viruleferous aphids for 3 virus, in 1/3 VCU trials.
 - Beet Yellows Virus (BYV),
 - Beet Chlorosis Virus (BChV),
 - Beet Mild Yellowing Virus (BMV)
- Control of virus inoculated in field by RT-qPCR multiplex
- Measurement of visual scorings
- Main criteria of decision:



- ❖ High sugar yield performance in both inoculated & non inoculated conditions & % loss yield
- ❖ In development : rules to define a tolerant cultivar, based on the yied loss between inoculated and non inoculated trials
- ✓ definition of a fixed threshold for the yield loss between Inoculated/ non inoculated cv?
- ✓ comparison with the yield loss of control varieties?

Syndrome des Basses Richesses (SBR)/ Sugarbeet

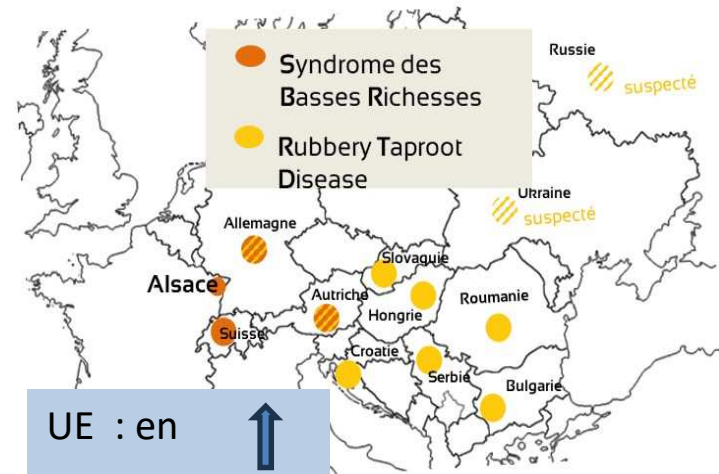
- **Sugarbeet: Request for testing the SBR tolerance to the French catalogue in 2024**

- **SBR in resurgence in France in 2023**

- **Protocol under discussion**

- **Experiences of other EOs?**

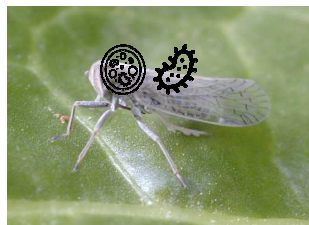
- Same strains in France, Germany & Switzerland?
- Natural contamination or inoculated?
- Molecular method to detect the SBR ? ...



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White sugar yield up to 50% lower

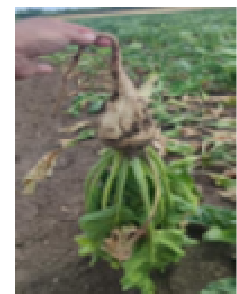
Vector : leafhopper



mainly **SBR**
Proteobacteria
Candidatus
Arsenophonus phytopathogenicus



RTD: Rubbery Tapped Disease
Phytoplasme / stolbur
Candidatus Phytoplasma solani



- **Participative research?**

GOAL: CONFIRM THE PREDOMINANT VECTOR AND MONITOR THE SPREAD AND DIVERSITY OF THE PATHOGENS CAUSING SBR/RTD.



*** Thank you for your attention ***



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