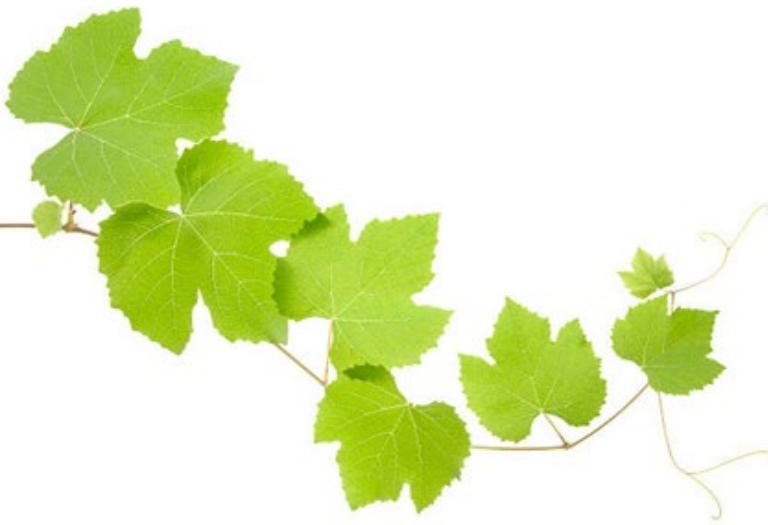


Forschungsergebnisse SK / Výsledky výskumu slovenských partnerov



**Ing. Katarína Ďurčanská, PhD.
Ing. Jaroslava Kaňuchová Pátková, PhD.**



ZVÄZ VINOHRADNÍKOV
A VINÁROV SLOVENSKA

CLIMVINO Abschlussveranstaltung, Weinbauschule Eisenstadt, 07.06.2022



Research activities

1. Monitoring of vine diseases and pests
2. Microbiological monitoring
3. Innovative technologies – UAV
4. Pesticide residues analysis



Monitoring of vine diseases and pests



- **Grapevine fanleaf virus – GFLV**
(roncet)
- **Grapevine leafroll associated viruses – GLRaVs** (zvinutka)
- **Arabis mosaic virus** (mozaika arábky viniča)



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- **Flavescence doree**
- **Xylella fastidiosa**
- **Botrytis cinerea**
- **Brettanomyces bruxellensis**

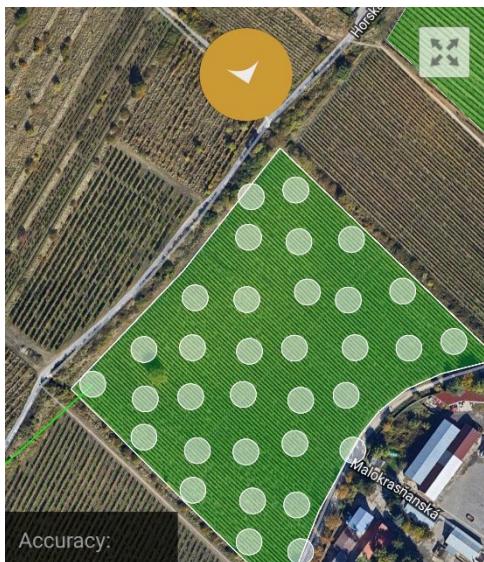








Monitoring of vine diseases and pests

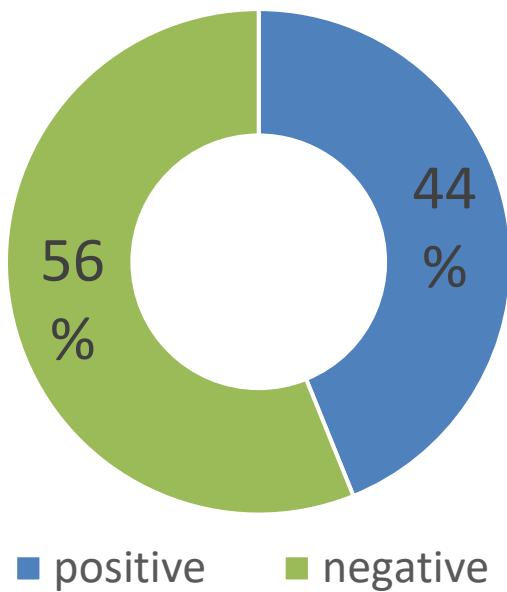


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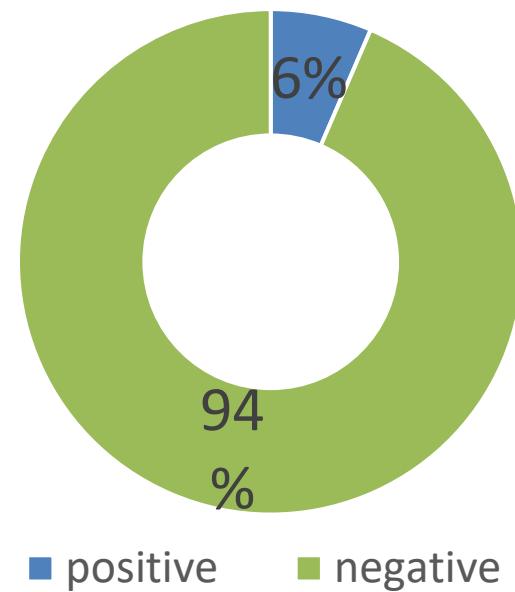
ELISA - detection of grapevine viruses are provided in the convenient double antibody sandwich procedure (DAS-ELISA)



RESULTS - Monitoring of vine diseases and pests



GLRaV-1



GLRaV-3



Monitoring of vine diseases and pests



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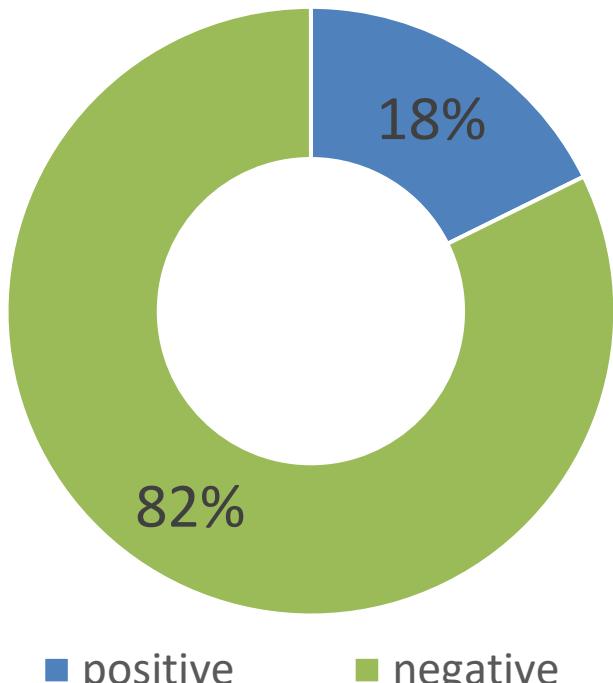


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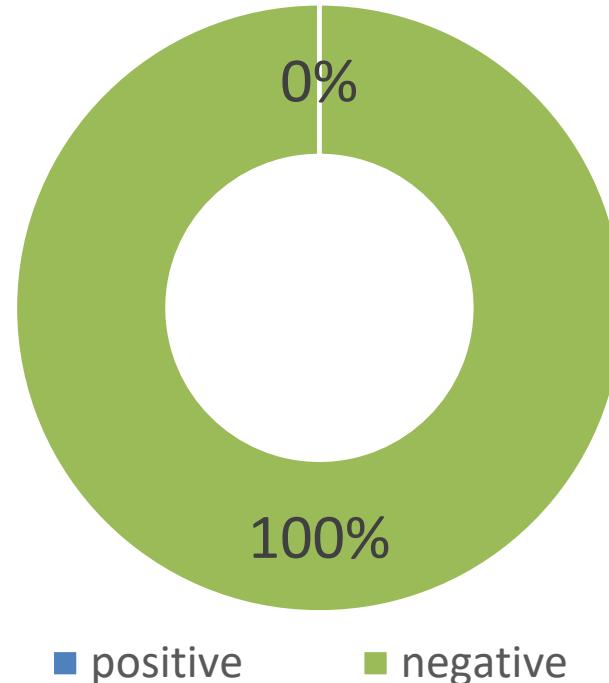
- **Biomolecular** diagnostic instrument + specific kits
- **LAMP method** (Loop-mediated isothermal amplification)
- Real Time amplifier and fluorescence reader which, through a user-friendly Android interface
- The system allows automatic interpretation of results, real-time display and online availability



RESULTS - Monitoring of vine diseases and pests



***Flavescence* doree**

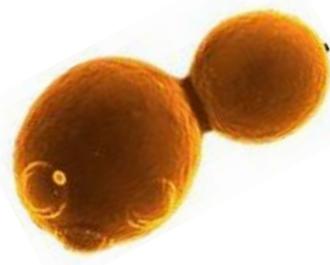


***Xylella* fastidiosa**



Microbiological monitoring

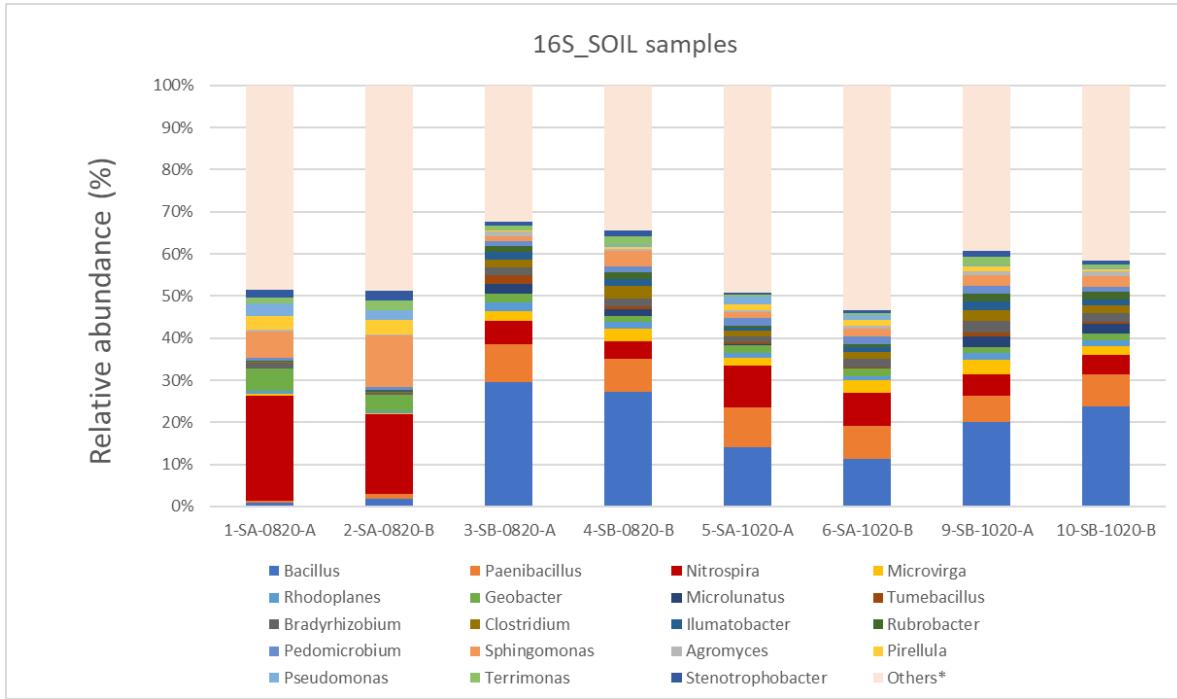
- Complex characterisation of vineyard's microbiome – bacteria, yeasts, fungi
- Modern methodology – real time sequenation DNA/RNA



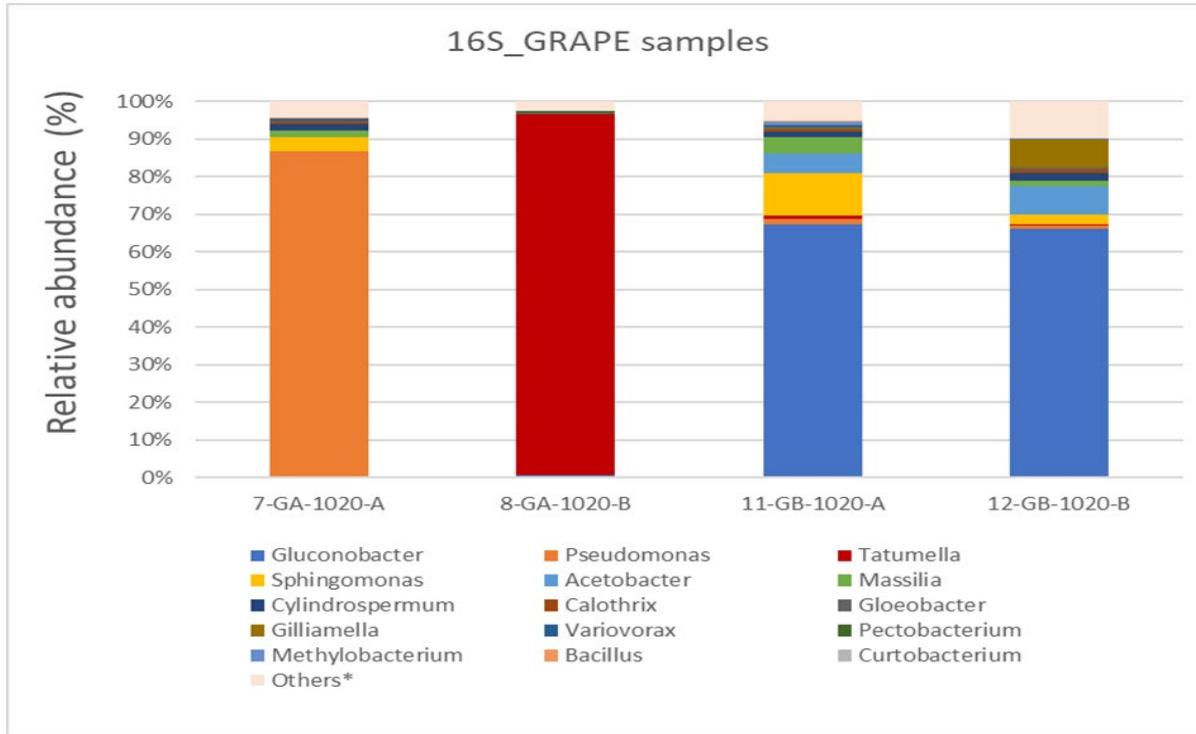
MinION



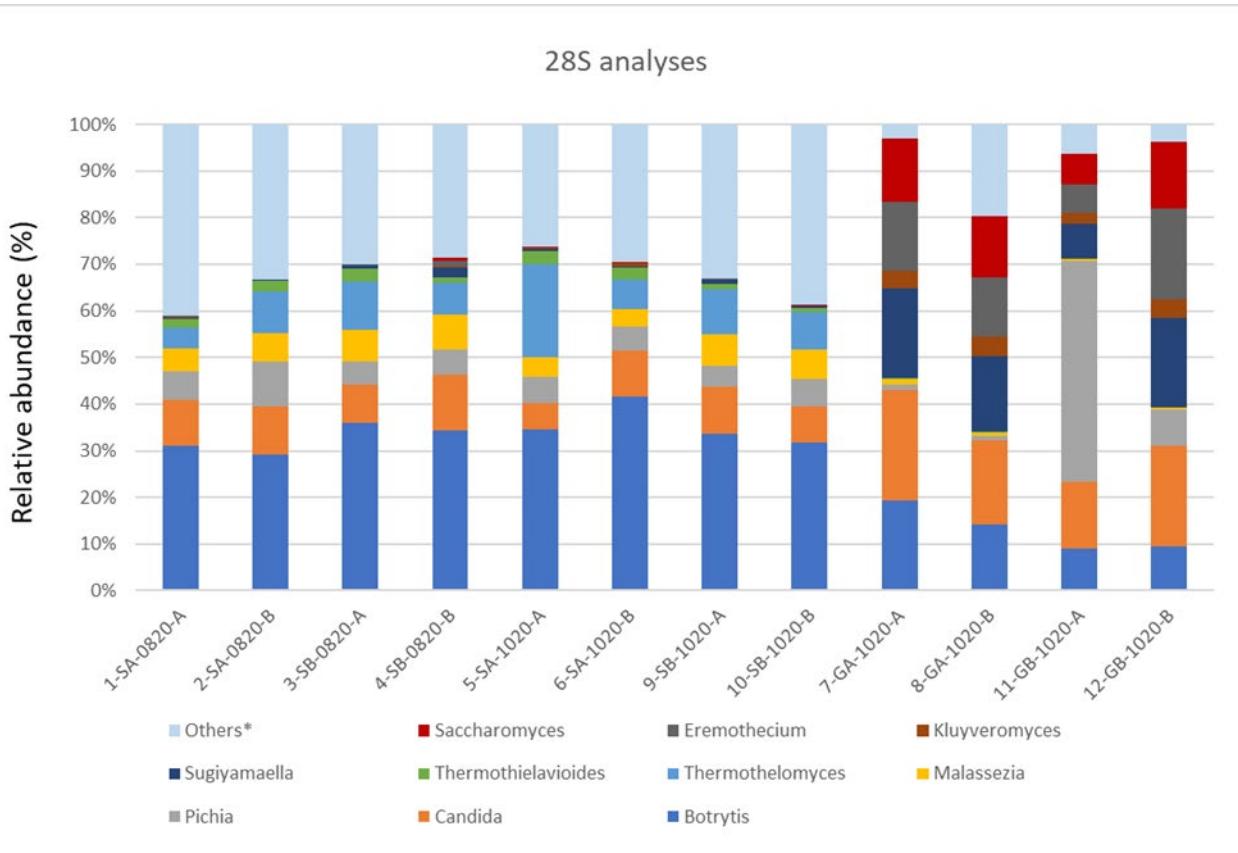
RESULTS - Microbiological monitoring



RESULTS - Microbiological monitoring



RESULTS - Microbiological monitoring

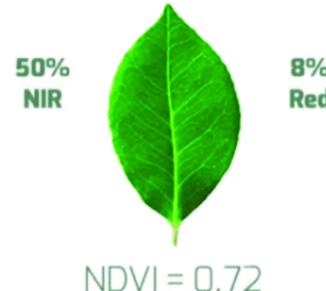


Innovative technologies – UAV

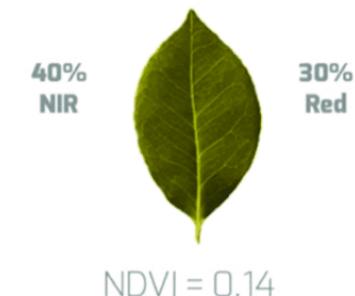
- multispectral data from UAV (drones)
- sensitive analytical software
- recognizing potential damage in crops, like –water stress, biomass, nitrogen or chlorophyll content and many other helpfull pieces of information



Reflectance of
healthy vegetation



Reflectance of
stressed vegetation

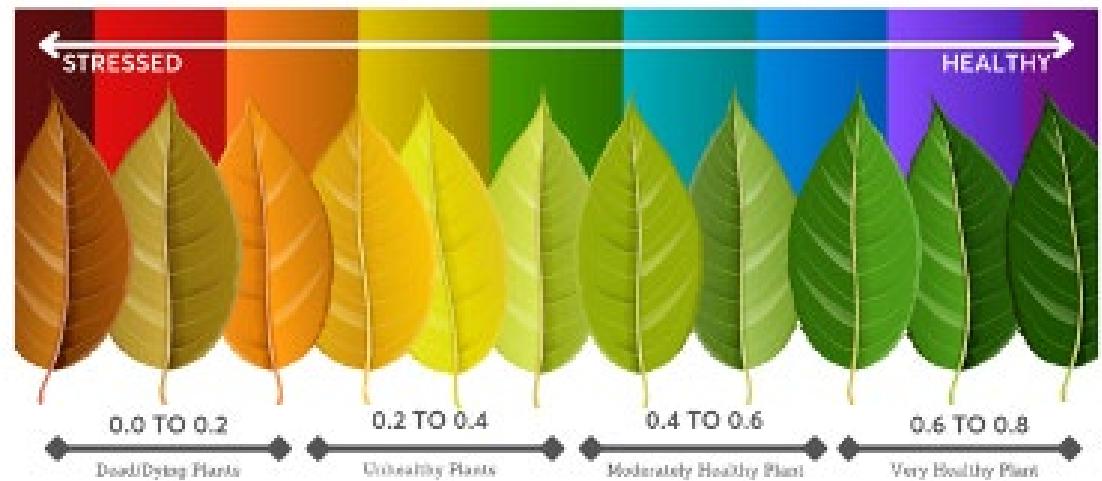


$$\text{NDVI} = \frac{\text{NIR} - \text{RED}}{\text{NIR} + \text{RED}}$$

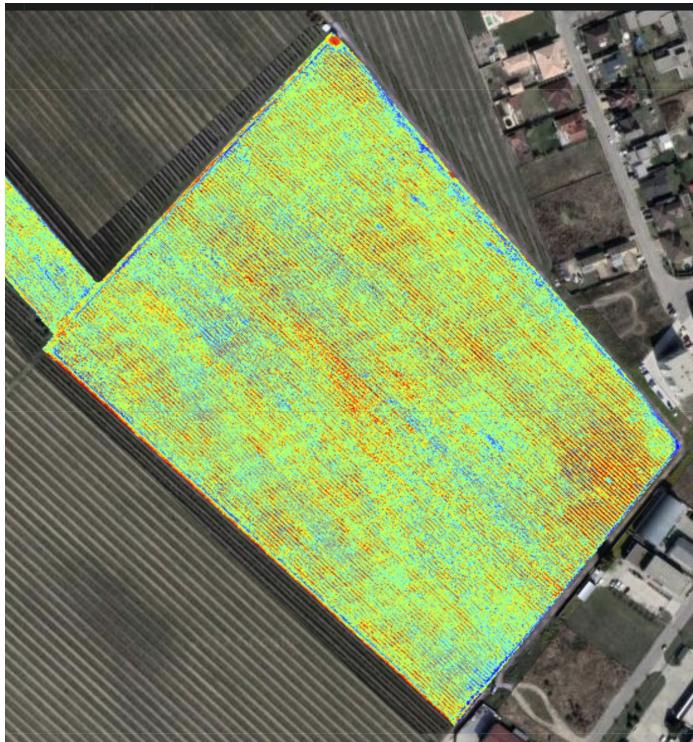
Innovative technologies – UAV

Vegetation index:

- NDVI is a general vegetation index detecting the vitality and the health of crops
- GNDVI is used for detection of water and nitrogen content in crops
- GRVI is used to monitor of biomass content in plants
- NDRE is sensitive to chlorophyll content in crops, is used at the beginning and at the end of growing season



Innovative technologies – UAV



12 August



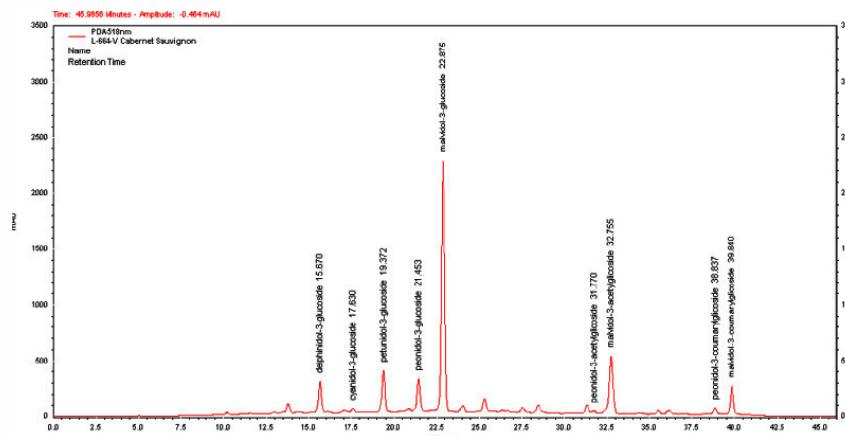
02 October



Pesticide residues analysis



- comparison of the content of pesticides` residues
- samples: grapes
- combination of different analytical methods (LC/MS/MS, GC/MS/QQQ)



RESULTS

1. Monitoring of vine diseases and pests 
2. Microbiological monitoring 
3. Innovative technologies – UAV 
4. Pesticide residues analysis 



E-BOOK



Thank you for attention!

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CLIMVINO Abschlussveranstaltung, Weinbauschule Eisenstadt, 07.06.2022

