Historical background of VitiMeteo

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Control of pests and diseases

- All pests and diseases have developmental cycles
- linked to meteorological and climatic parameters
- determining the epidemiology
- in relation with sensitivity and developmental stage of the host plant
Control of diseases and pests

Independently of the mode of production, active compounds are used in Integrated, Organic and Biodynamic production

For a precise use of plant protection products:
- Forecasting models
- Leaf area adapted dosage
- Choice of active ingredients
- Calibration of the sprayers
Success in disease control

Forecasting models

When?

Right time

Right dosage

Right deposit

What?

Leaf area adapted dosage

How much?

Sprayers calibration

How, where?
Disease forecasting – Downy mildew

From 1930 incubation calendar after Müller, using rain gauge and thermometer
Disease forecasting – Downy mildew

1949 in Italy (E. Baldacci)
Disease forecasting – Downy mildew

1949 in Italy (E. Baldacci), spraying strategy
Disease forecasting – Downy mildew

1951 in Switzerland (Gallay et al., Swiss federal research station, Lausanne)
Disease forecasting – Downy mildew

**Switzerland**
- 1978-86, first experiments for apple scab with leaf wetness scriber (Bazier B4) and Lufft thermo-hygrograph
- From 1988 first experiments with KMS-P for downy mildew

**France**
- From 1983 «Etat Potentiel Infectieux» (EPI-System)
- End 80\(^{th}\) Milvit including the EPI

**Germany**
- From 1985 in Württemberg electronic weather stations with radio communication
- 1985, Lufft thermo-hygrograph
- 1986 Biomat
- 1989 PRO-Modell /EXPERO Biomat
- End of the 80\(^{s}\) Lufft HP-100, Metos-weather station
Disease forecasting – Downy mildew

Germany
- Beginning 90s, >100 Biomat weather stations in Baden

Switzerland
- 1992, experiments in vine and apple with Lufft HP-100, transfer of data by cable on a computer
- 1995, 12 station working, data transfer daily via modem and fix phone net
Disease forecasting – Downy mildew

From 1998
- GSM-transfer of data (Global System for Mobil Communication) and high performance PC’s
- weather station independent from electrical power (solar panel) and from a fix phone line
Disease forecasting – VitiMeteo

2000 (Switzerland)
• Regional nets with 13 HP-100 in the German part and 5 in the French part
• Construction of a national net of weather stations for agriculture
• Two years validation of 7 weather stations and data loggers compared to reference data of MeteoSuisse (Cimel, Adcon, Lufit HP-100, Lufit Opus, Metos, Campbell, Ausvit)

2002
• Black-box of forecasting systems (discordance between generated forecast and true epidemics)
• Start of the „VitiMeteo – Plasmopara“ project

2003 (Switzerland)
• Development of the national microclimate measurement net (>100 units)
• Data available on Internet www.agrometeo.ch (F/D)
• Development of the software VitiMeteo-Plasmopara by Geosens
Disease forecasting – VitiMeteo

2004 Validation of VitiMeteo – Plasmopara with historical and actual data in Baden-Württemberg and Switzerland based on field experiments, including control strategies

2005 VitiMeteo - Plasmopara integrated in www.agrometeo.ch and www.vitimeteo.de including growth model of grapevine after H. Schulz

2008
• VitiMeteo – Insects for grape berry moths
• VitiMeteo - Plasmopara used on 42’000 ha Switzerland and Baden-Württemberg
Disease forecasting – VitiMeteo

2009
• VitiMeteo – Oidium after Oidiag (W. Kast, Weinsberg)

• Integration of true forecasted microclimatic data for the next 5 days

Use of VitiMeteo in Italy:
✓ Extension services South Tirol : ~ 5’000 ha
✓ Cantina Mezzacorona Trentino (~2’600 ha), Sicily (~600 ha)
✓ Istituto agrario San Michele a. Adige

2010
VitiMeteo – Insects for leafhoppers
Disease forecasting – VitiMeteo

2010-11

Use of VitiMeteo in Europe:
- Germany: Rheinland-Pfalz: >60’000 ha, Bayern: ~ 6’000 ha
- Austria: Krems (school for viticulture) and lower Austria
- Italy: Veneto: ~ 70’000 ha
- Luxembourg: ~ 1’200 ha
- Czech Republic
- Bordeaux (GDON-Libourne)
  Groupement de Défense contre les Organismes Nuisibles

VitiMeteo used on >150’000 ha vineyards in central Europe
Disease forecasting – VitiMeteo

2012

- Validation of VitiMeteo – Black rot algorithms after D. Molitor
VitiMeteo

✓ VitiMeteo is the result of a motivated consortium of scientists acting to develop applied solution for the growers and extension services in a non profit way

✓ VitiMeteo is an “open box”:
  • experts can change standard setup
  • multilingual outputs
  • considers inputs of users and current field experiments
  • regularly updated
  • compatible with data of all type of weather stations

✓ VitiMeteo allows precise spraying schedules

✓ VitiMeteo is a largely used tool in accordance with environmental, political and societal issues in plant protection to produce high quality grapes
Thanks for the fruitful cooperation
...and for your attention