Challenges in ‘green’ powdery mildew control

Delphy, ISFC, Summer Event

5th of June 2025

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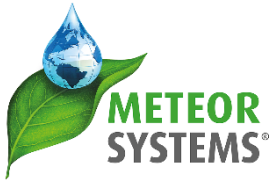
PPS Resilient Cultivation System 2024



Experimental design

- 2021 and 2022
- Table tops in Vredepeel (NL)
- Planting: beginning July
- Cultivar: Elsanta
- Randomized block design
- 4 repetitions

Decision Support System (DSS)

Aardbei info

Opgesteld: Donderdag 25 augustus 2022 om 05:30
Regio: Vredepeel Aardbeien

AgroVision AGRICULTURAL SOFTWARE

Infectiekans Botrytis en Meeldauw

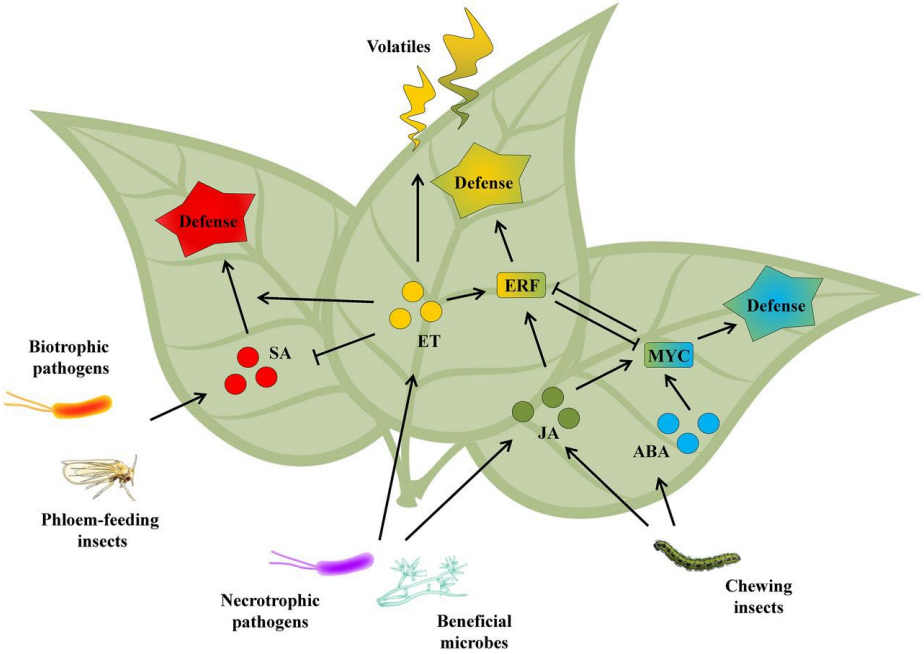
		Din 23 aug	Woe 24 aug	Don 25 aug	Vry 26 aug	Zat 27 aug
Temperatuur	°C	14 - 30	16 - 32	17 - 36	17 - 27	15 - 25
Neerslag	mm	0	0	0	0	0
Bladnatduur	uur	10	11	2	8	12
Botrytis infectiekans	%	7	9 !	4	7	10 !
Meeldauw infectiekans		○	○	○	●●●	●●

- DSS: available for open field (Agrovision)
  - On table tops no rain → suboptimal
- Predicts the weather and based on that gives warnings (forecast)

‘Green’ spraying scheme

- Preventative: Elicitors; substances or micro-organisms that activate plant defenses

- Curative: Salt that kills fungi due to osmotic potential



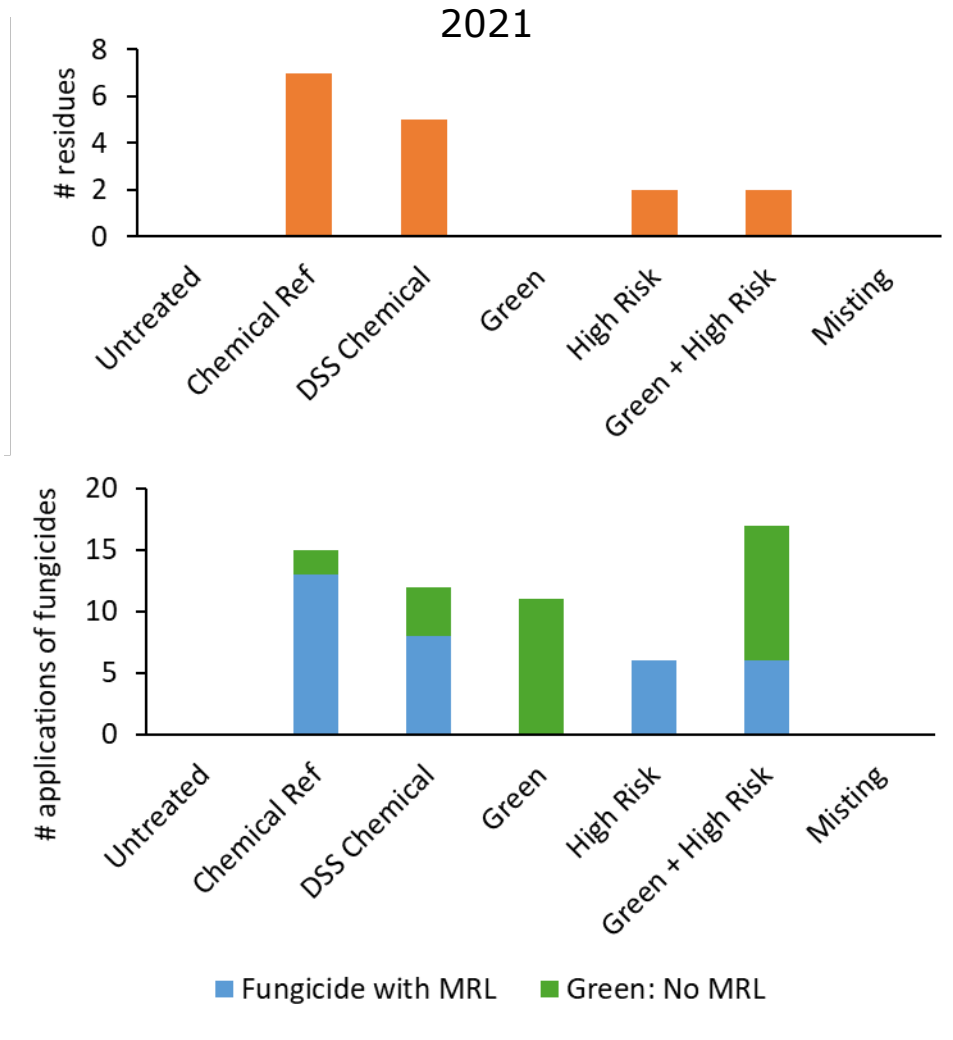
Misting

- Water can wash off the spores. Can it delay the epidemic?

- 4 times per day spraying

Spraying schemes

- Untreated control
- Chemical reference
- DSS Chemical
- Green
- DSS High Risk
- Green + DSS High Risk
- Misting



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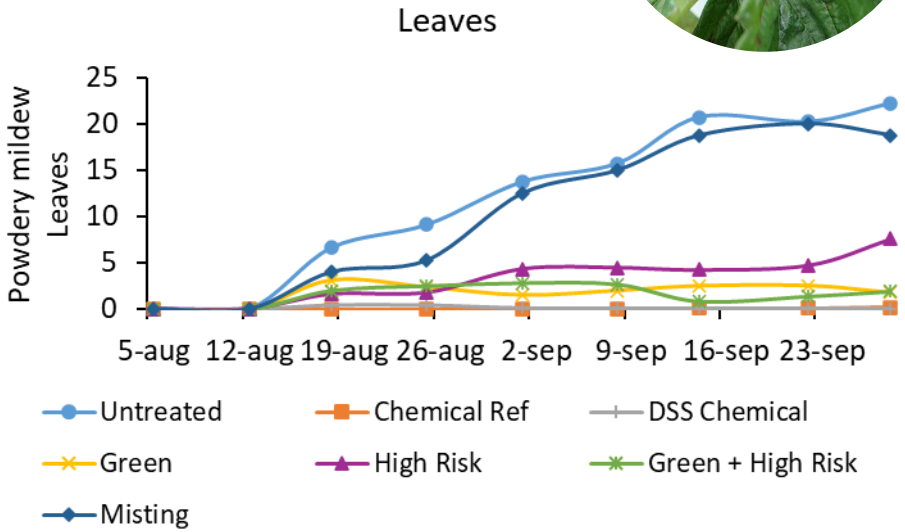
Powdery mildew on the leaves

2021

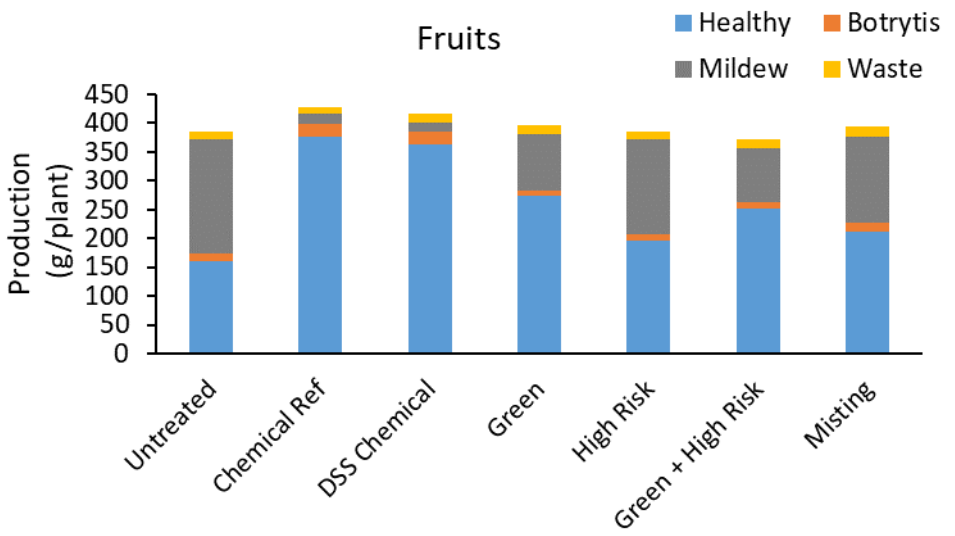
- No mildew: Chemical reference and DSS
- No difference between Green and Green + High Risk
- Only High Risk not enough
- Misting delays epidemic only first 2 weeks



Powdery mildew on the fruits

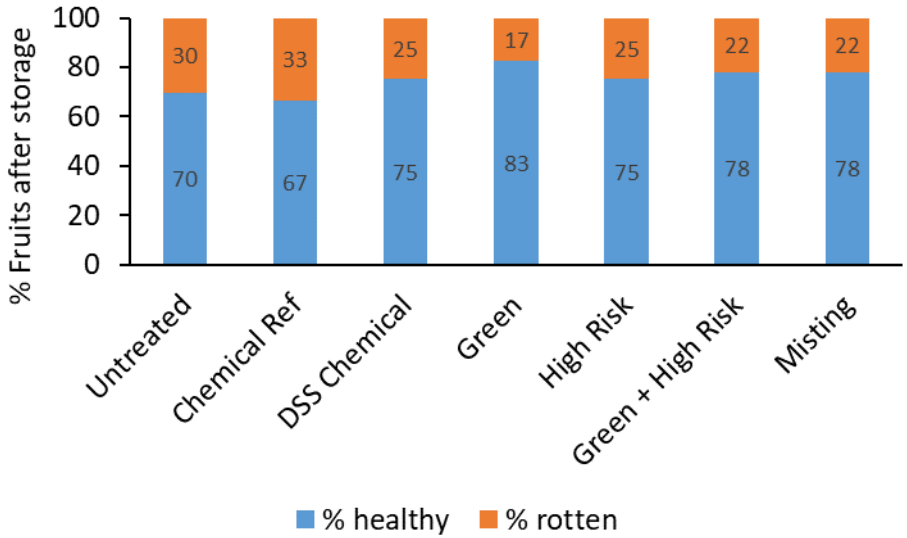
2021

- Waste by mildew acceptable only for Chemical reference and DSS
- Green scheme performs better than High Risk only
- Misting improve a little over untreated control



Shelf life

- Shelf life test
  - 2 days at 4 ^{o}C
  - 1 day at room temp
  - Only healthy fruits were used as input



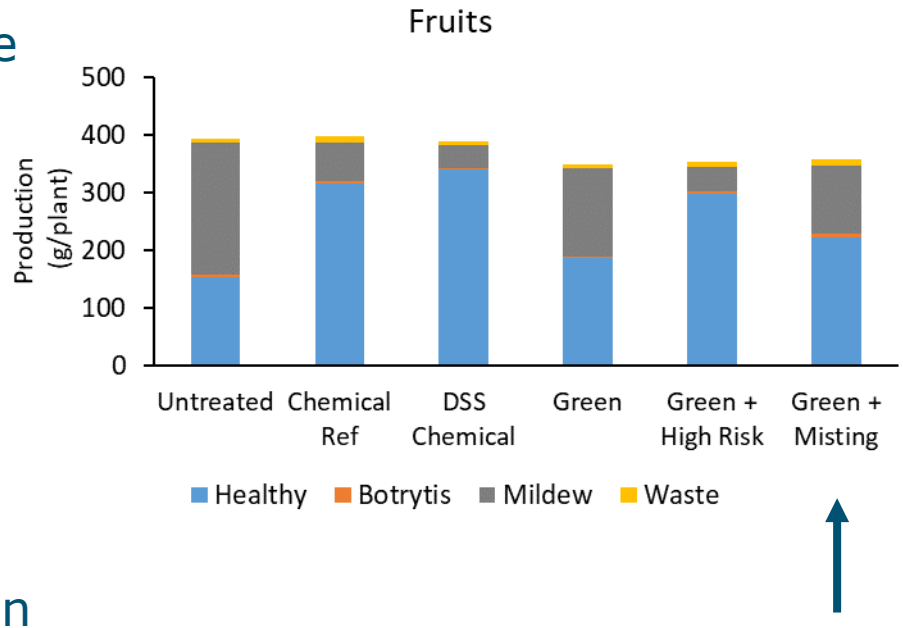
- Green performs better than rest

Results 2021 and 2022

- In 2022 higher disease pressure than in 2021
- Similar results in both years

- Green + High Risks performs better in 2022
- Additional treatment: Green + Misting → better than only green

2022



Conclusions

- Powdery mildew on the leaves can be control well with ‘green scheme’ meaning only products without MRL
- Powdery mildew on fruits and leaves controlled well with DSS → upto 40% less pesticides applied
- Misting alone does not bring anything, but performs well in combination with the ‘green scheme’

Possible solutions for fruits

- How to solve the challenge to prevent mildew on fruits without substances with MRL?
    - Cultivar choice
    - UV-C
    - Mildew eating insects (mites, laybirds)

Thanks!

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Sprays

- Reference : 8 x fungicide
  - Timing weekly
- DSS : 7 x fungicide
  - Timing variable based on DSS AgroVision
- Bio + High risk fungicide : 4 x
- Organic low risk 8 x
  - Treatments D t/m J
  - Timing weekly
  - Strategy
    - Elicitors
    - Micro-organisms
    - Salts