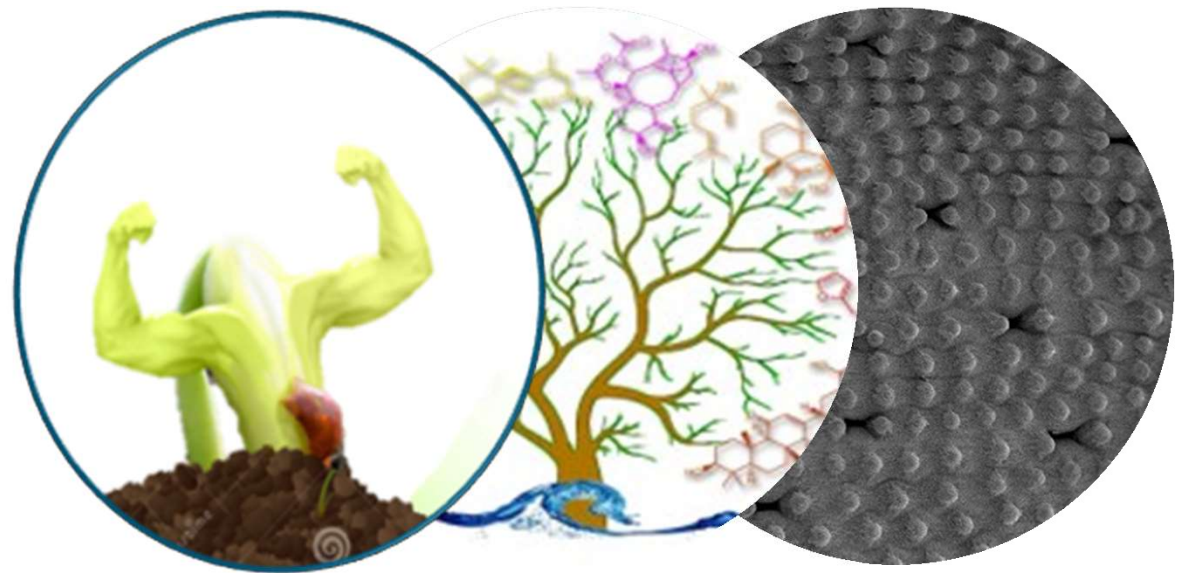


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# Plant weerbaarheid

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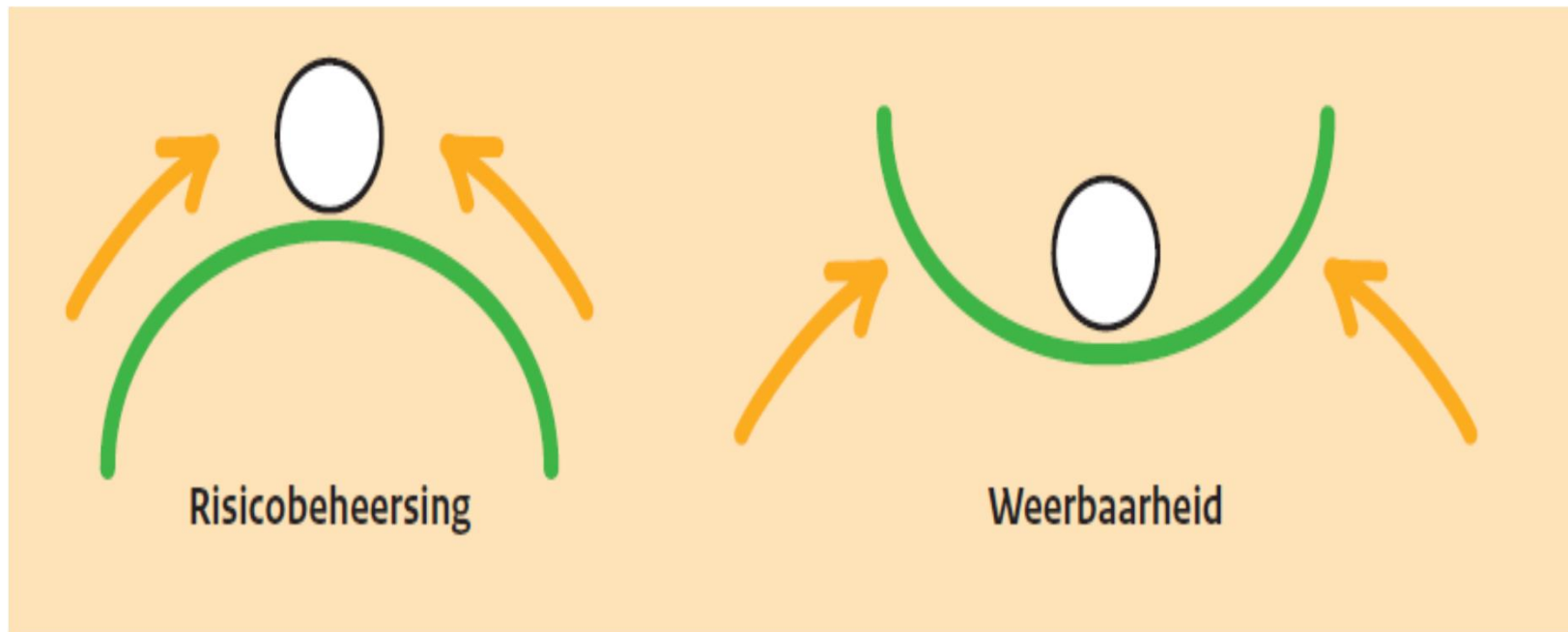


**Kirsten Leiss**

**Senior Onderzoeker Plantgezondheid**

# Plant weerbaarheid

## Uitvoeringsprogramma: Toekomstvisie gewasbescherming 2030



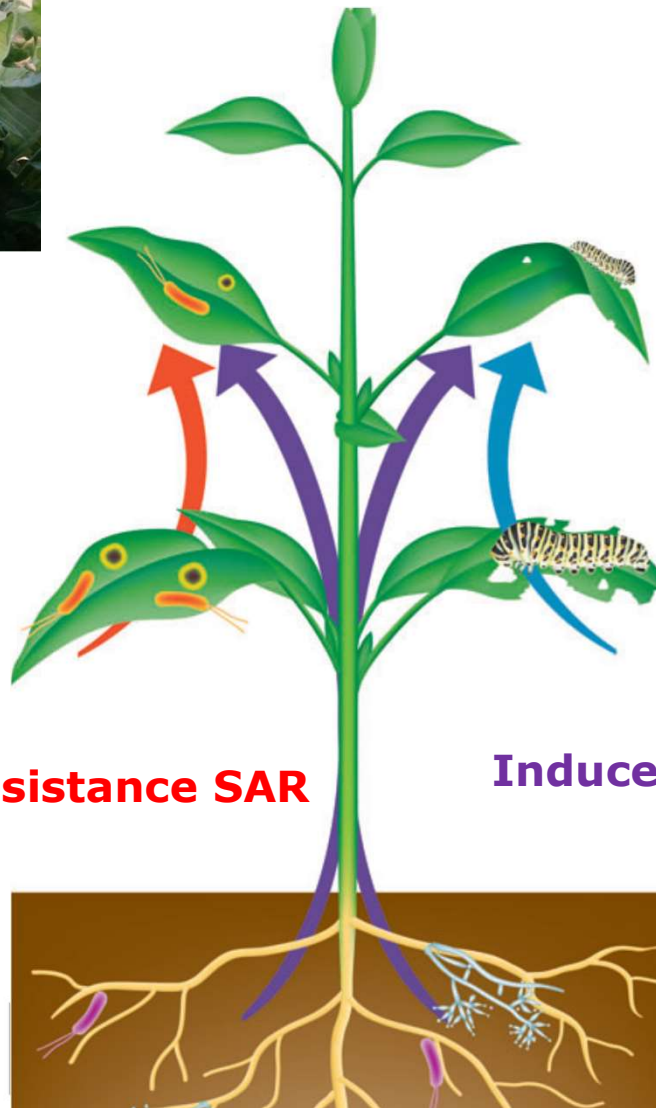
# Plant weerbaarheid



Salicylzuur  
SA

Pathogenen

Systemic acquired resistance SAR



Jasmonzuur  
JA

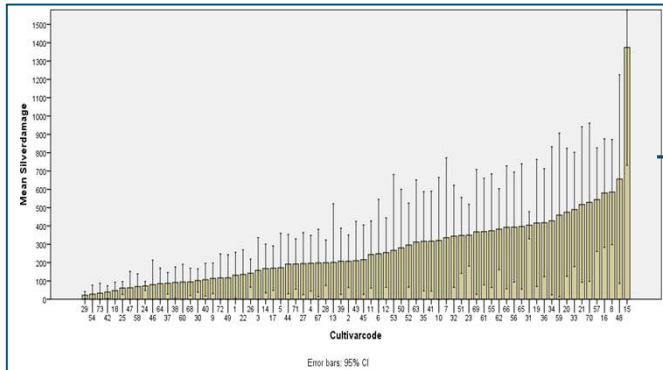
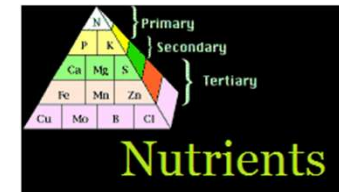
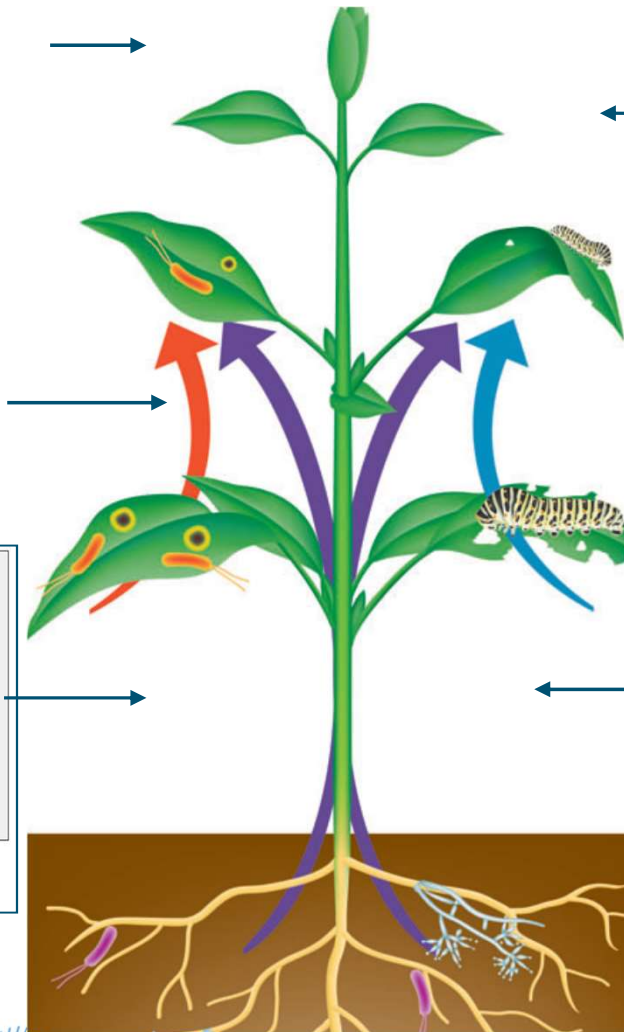
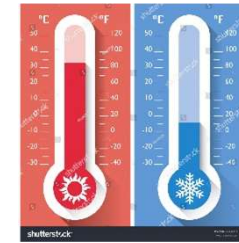
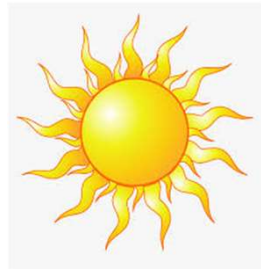
Insecten  
Necrotrofe pathogenen

Induced systemic resistance ISR



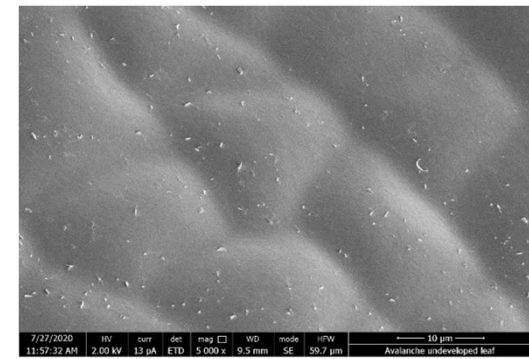
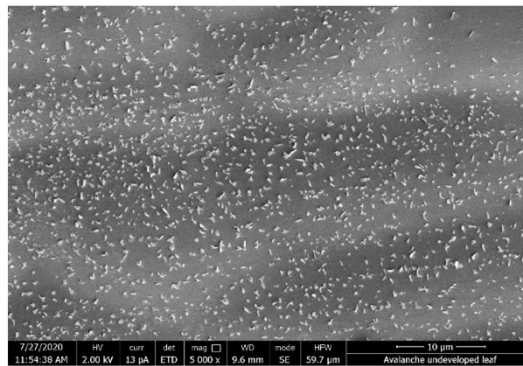
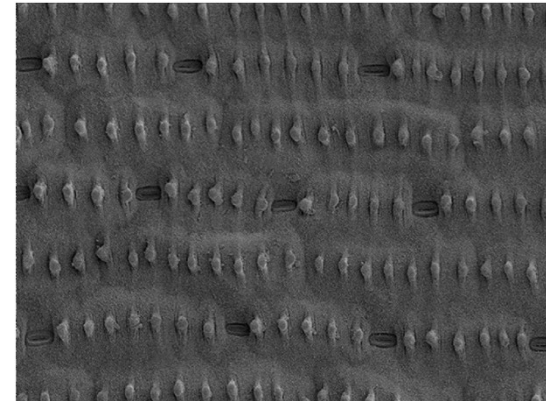
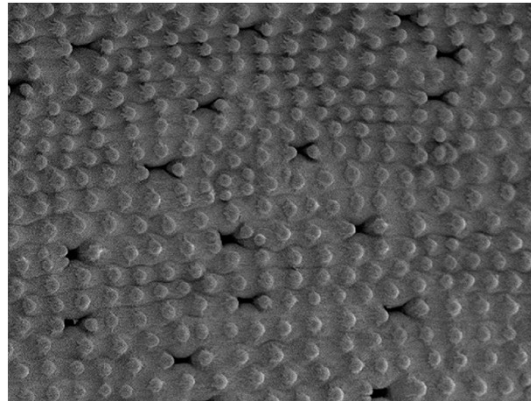
Ethyleen

# Weerbaar teeltsysteem

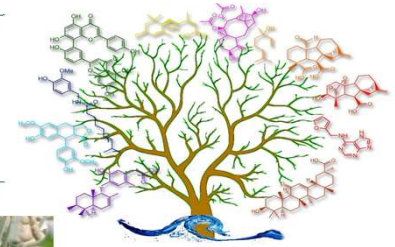




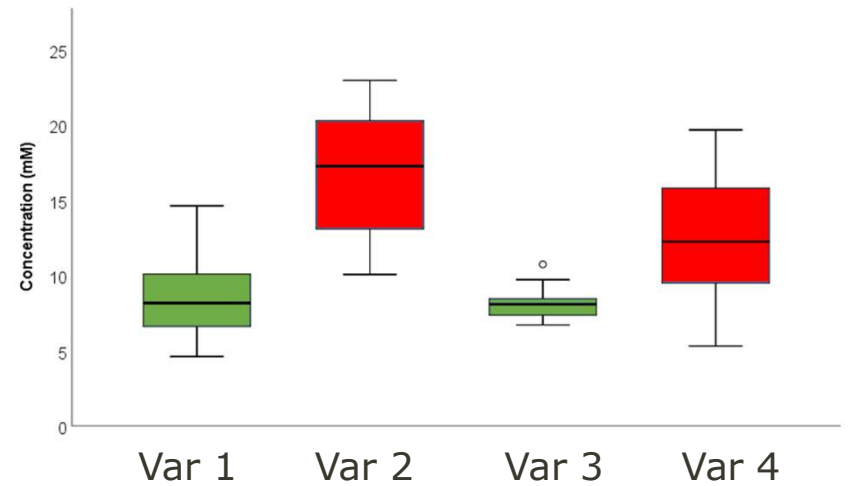
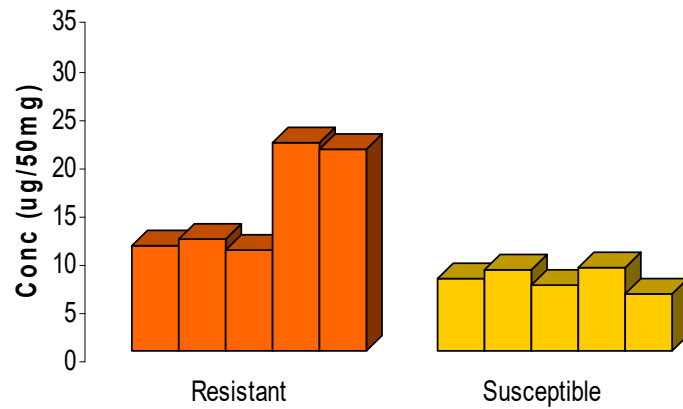
# Morfologische kenmerken



# Chemische kenmerken



Chlorogenic acid



Leiss et al. 2009 Plant Physiol.

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# Metingen

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- **JA, SA**
- **Genen**
- **Enzymen**
- **Morfologische kenmerken**
- **Metabolieten**

**gekoppeld aan Bio-assays**

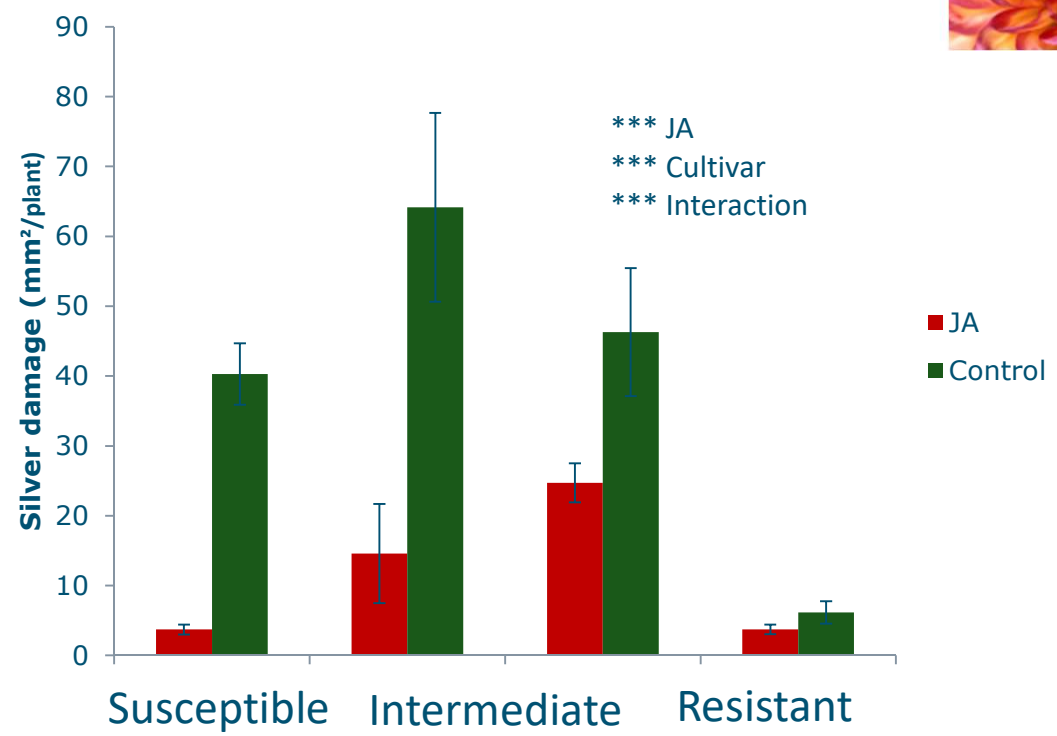


**Weerbaarheid aanzetten**

# Chemische elicitors

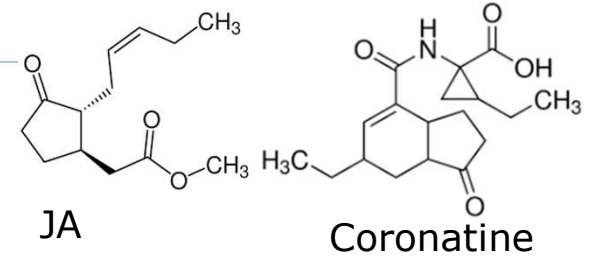


## Proof of principle

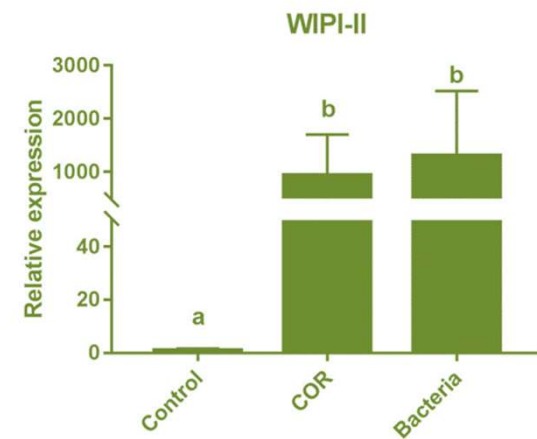
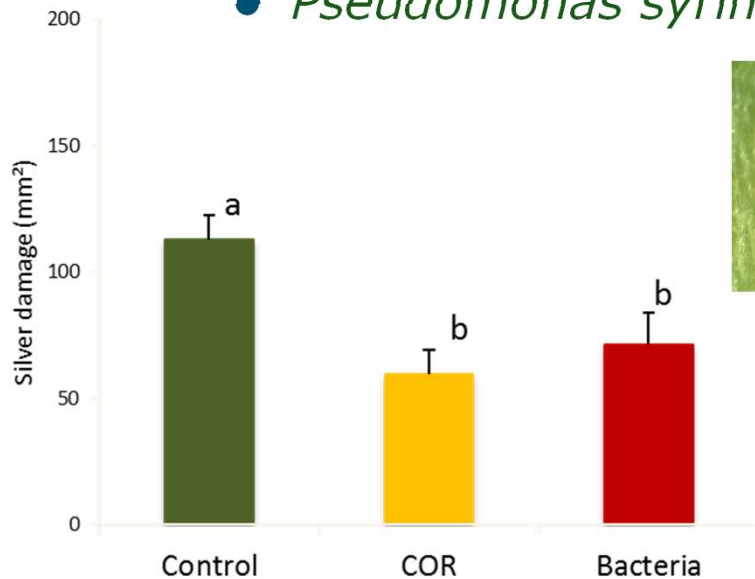




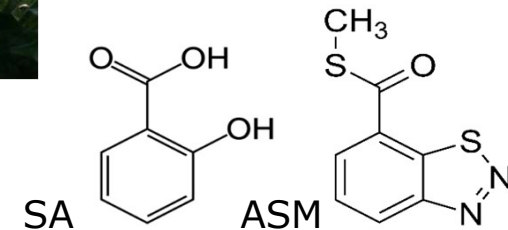
# Elicitors - JA



- JA (jasmonzuur) analogen
- **Coronatine** → geproduceerd door bacterie (*Pseudomonas syringae*)
  - Chemische productie is nu nog duur
  - *Pseudomonas syringae* is een pathogeen

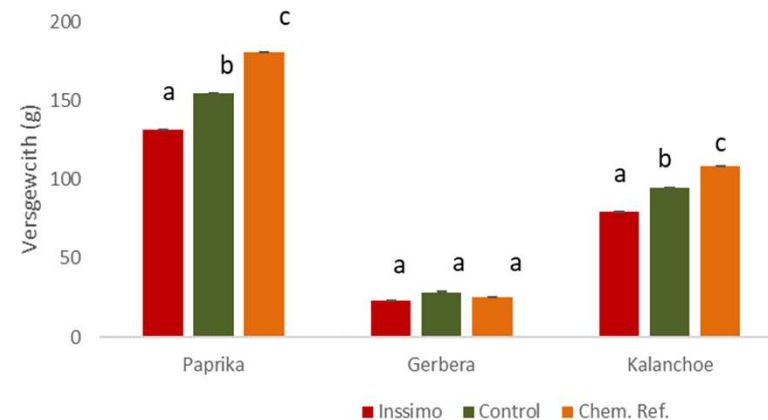
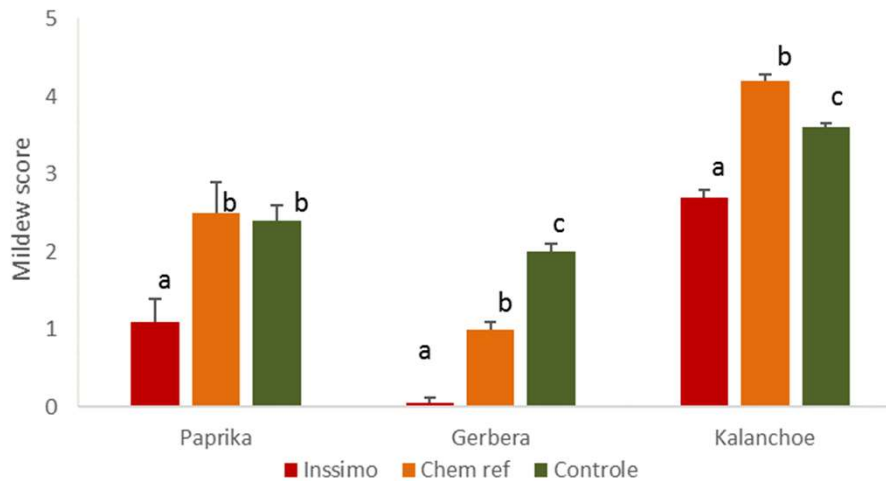


# Elicitors- SA



- SA (salicylzuur) analogen:

**ASM** → actieve stof van Inssimo → bedekte teelt chrysant, gerbera, kalanchoë, roos, impatiens; vaste planten buiten; veredeling en zaadteelt



# Elicitors - Polysacchariden

- Laminarine → Vacciplant → ontdekt in algenextract
  - Aardbei → echte meeldauw



- COS-OGA → FADO → Komkommer, tomaat, aardbei, snijbloemen en potplanten → echte meeldauw



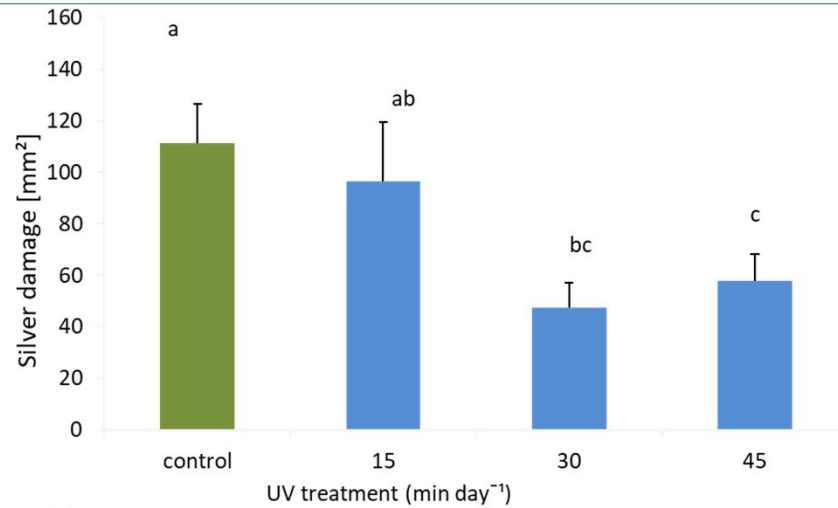
- 
- Chitosan → plantversterker



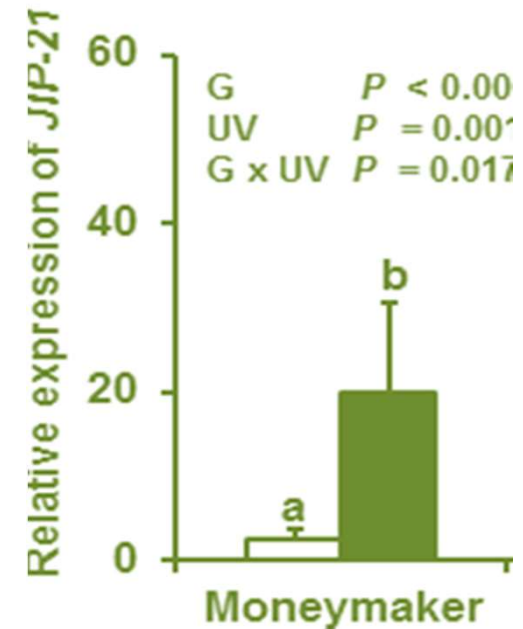
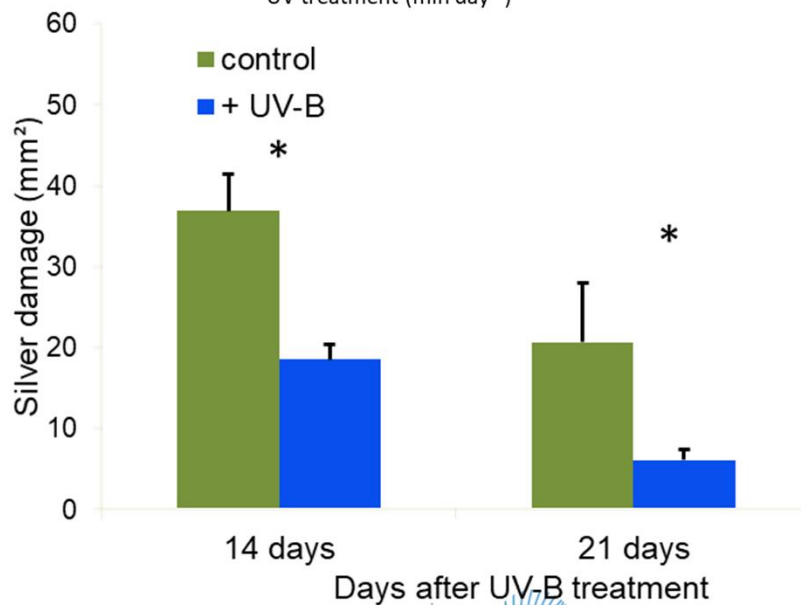
- Champost → restproduct van champignonteelt



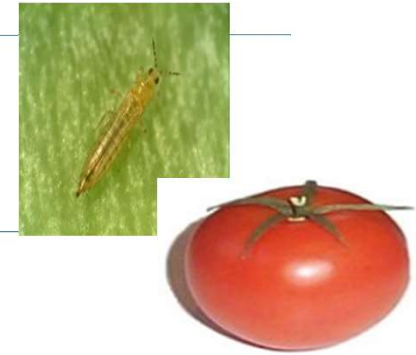
# Licht: UV-B



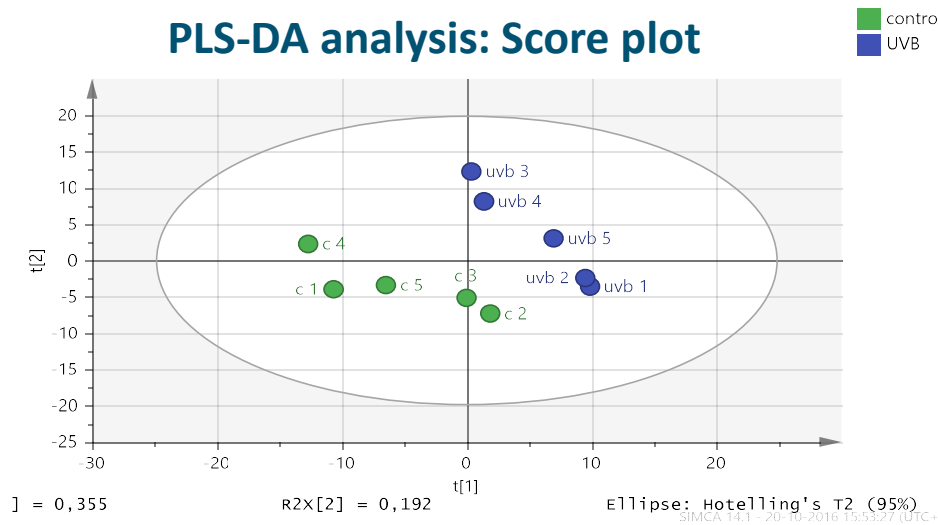
control  
high UV



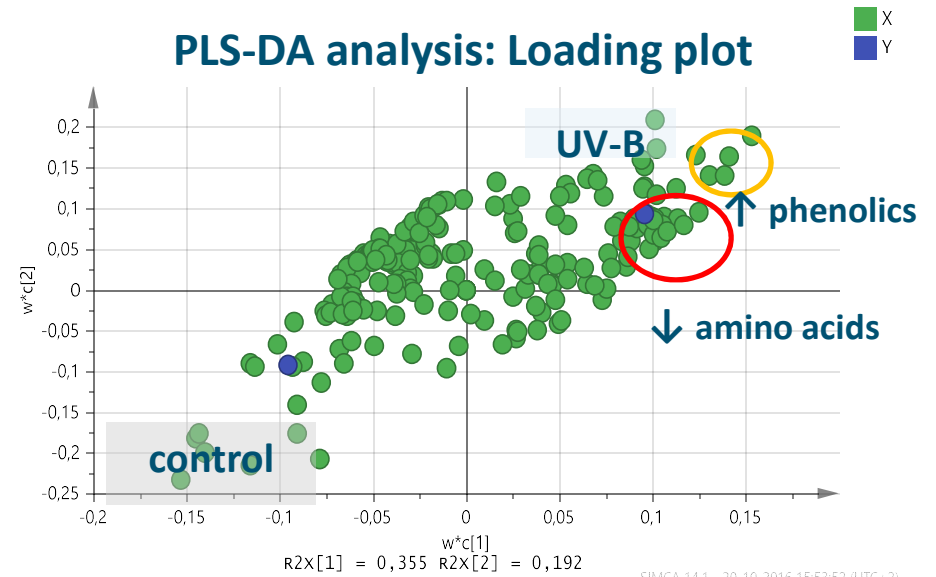
# Licht: UV-B



## PLS-DA analysis: Score plot

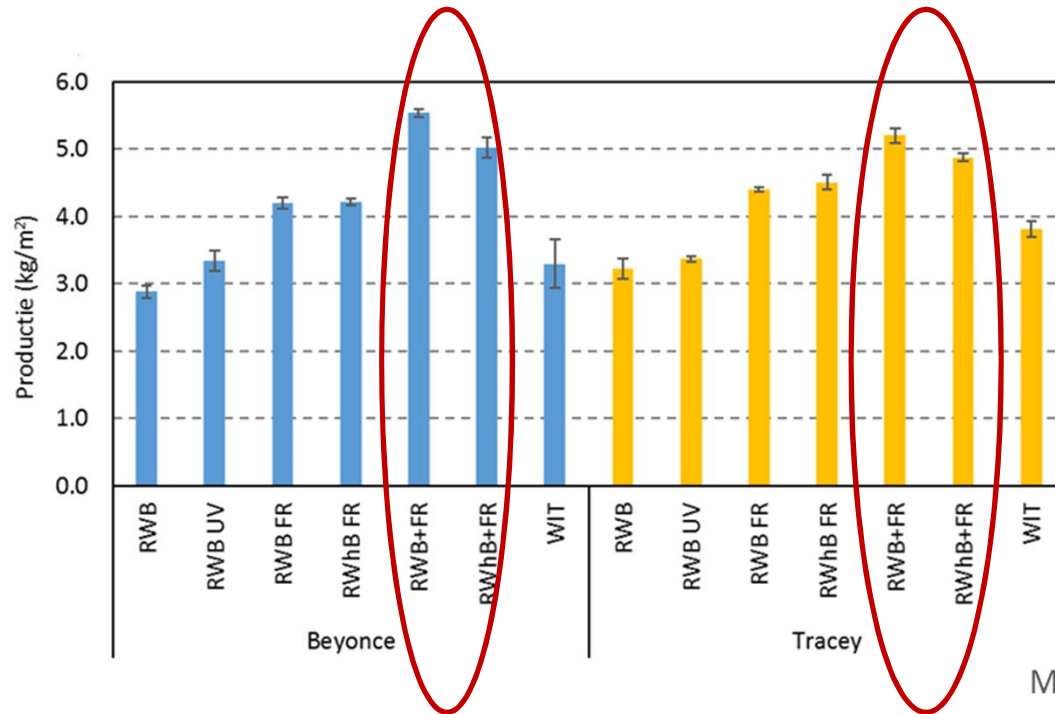


## PLS-DA analysis: Loading plot

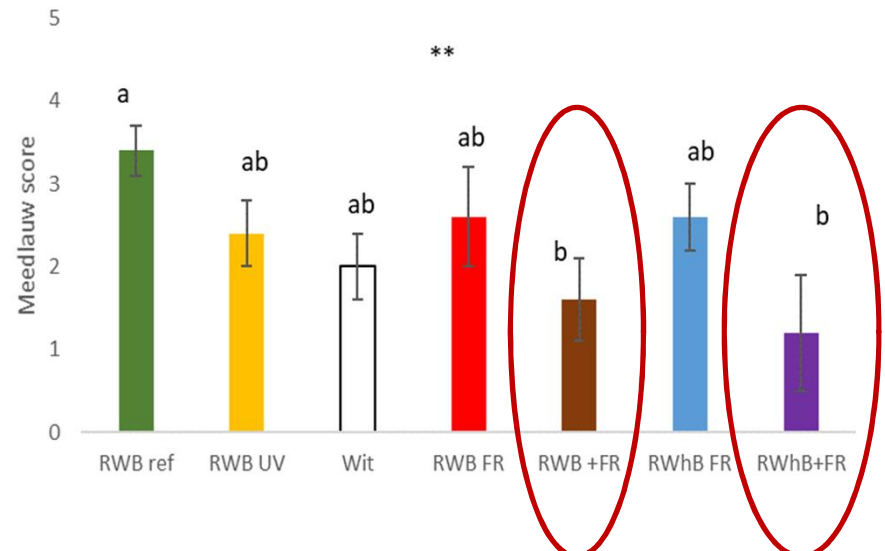




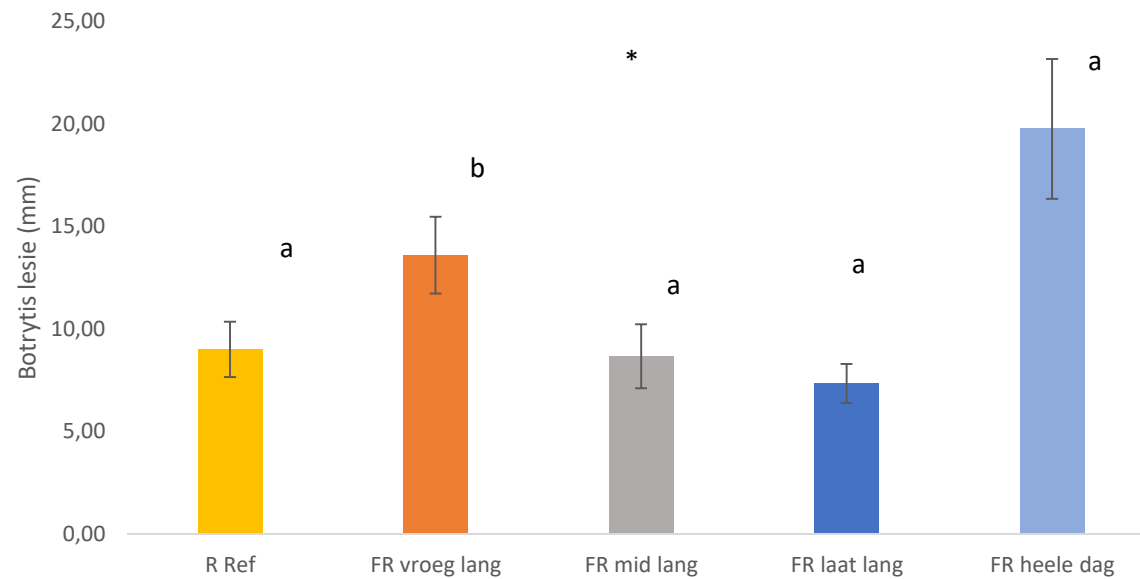
# Licht: R:FR



Meeldauw schade per behandeling, generatief



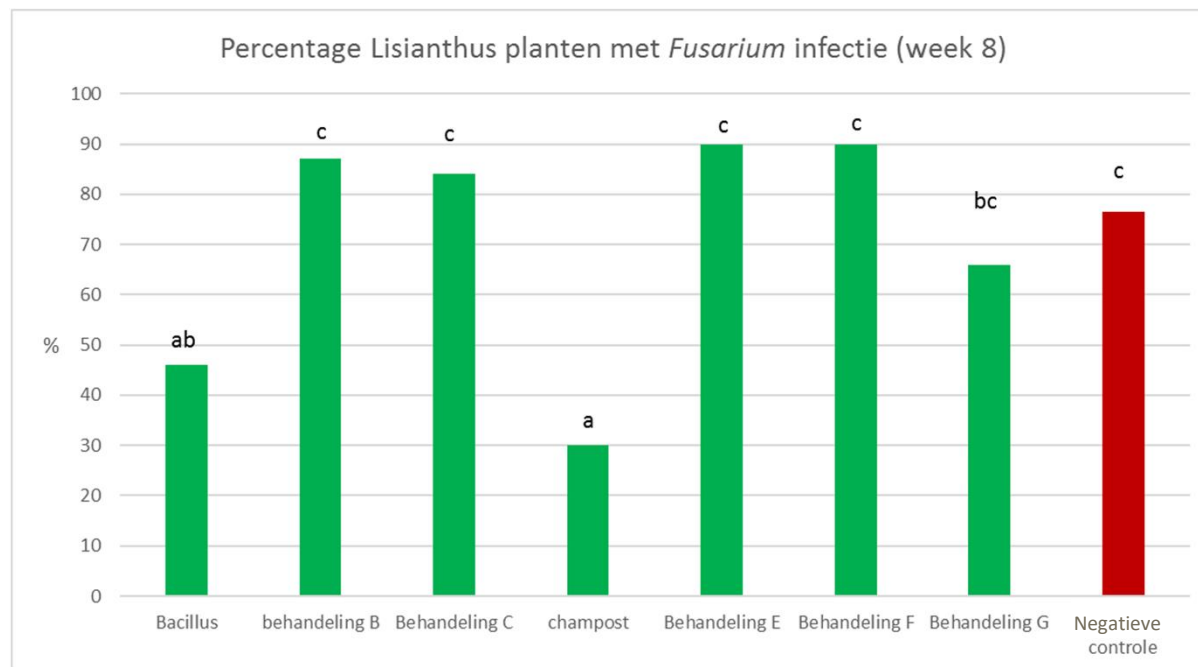
# Licht: R:FR



# Micro-organismen



- *Bacillus subtilis* QST713 (Serenade®) → groente, aardbei, siergewassen, bollen, akkerbouw gewassen → Botrytis, Sclerotinia, echte meeldauw, Phytium, Alternaria, Rhizocotonia



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# Toepassing in de praktijk

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- Verhogen weerbaarheid is preventieve maatregel
- Integratie in IPM nodig!

# Hiaten

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## Onderzoek

- Mechanismen
- Interacties

## Praktijk

- Timing
- Frequentie
- Trade-off's
- Meten in de praktijk



# Dank



Ministerie van Landbouw,  
Natuur en Voedselkwaliteit



## Dank voor U aandacht!



**TOPSECTOR**  
TUINBOUW & UITGANGSMATERIALEN