

Sturen van vertakking door middel van plantengroeieregulatoren en LED's

Robrecht Dierck



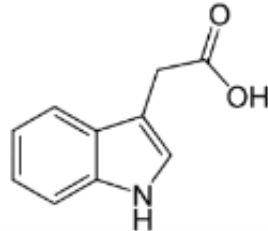
Sturen van vertakking door middel van plantengroeiregulatoren en LED's

Regulatie van vertakking met Plantengroeiregulatoren (PGR)

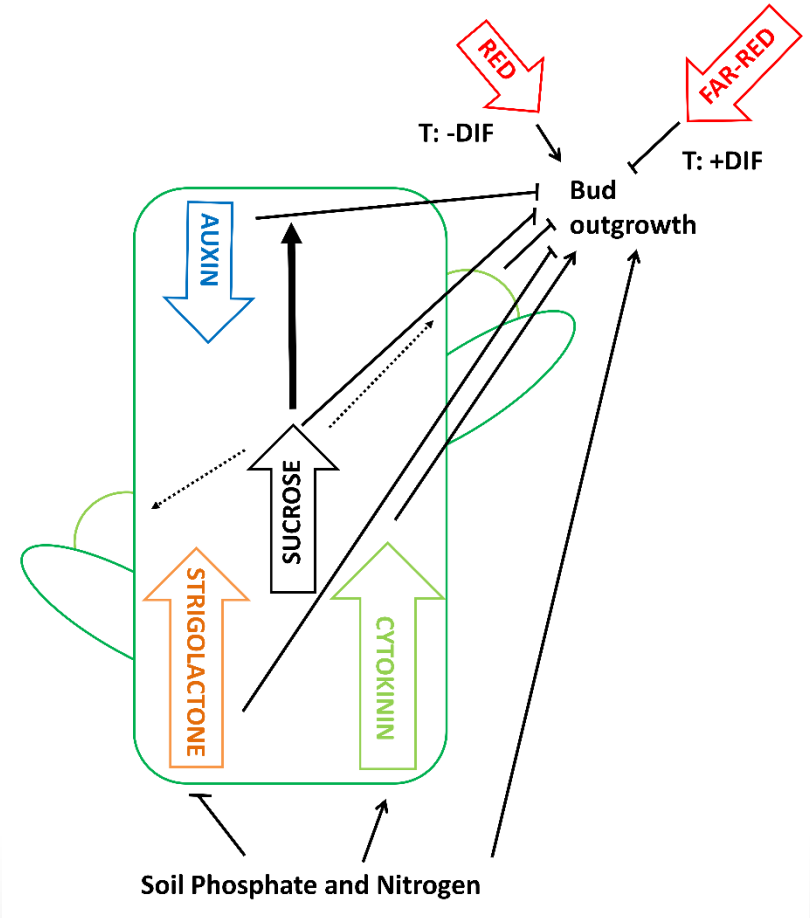
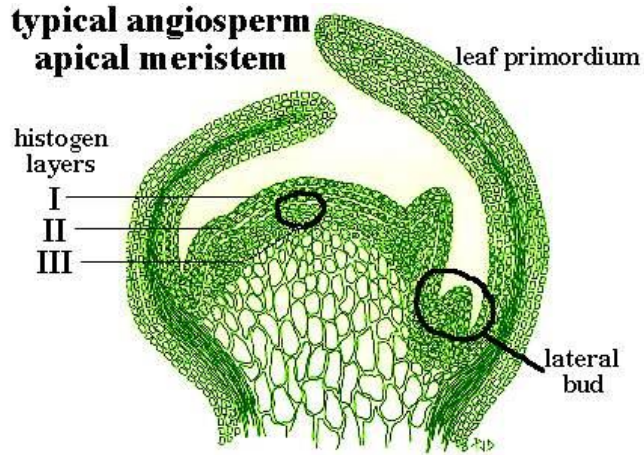
Screeningsproeven PGR

Regulatie van vertakking met LED licht

Beworteld stek

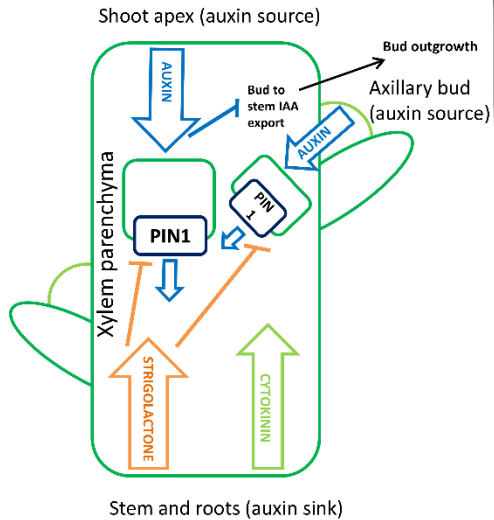


Vertakking

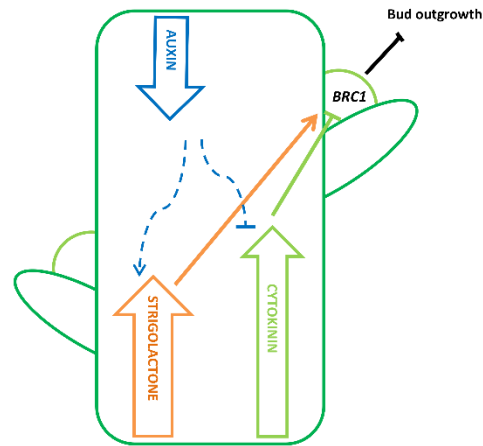


Fysiologie van vertakking

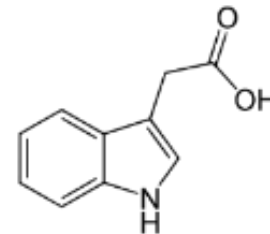
① Auxin transport canalization model



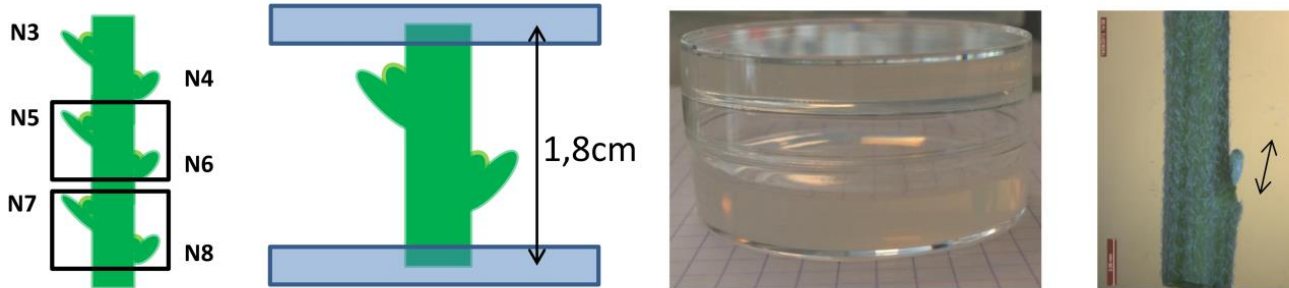
② Second messenger model



Regulatie van vertakking met Plantengroeieregulatoren (PGR) en LED



Regulatie van vertakking met PGR

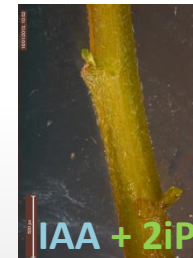
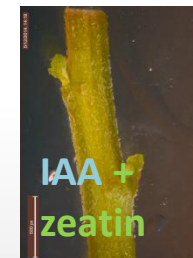


Plaatjesproef met stengelstukjes → snelle test PGR op knopuitgroei

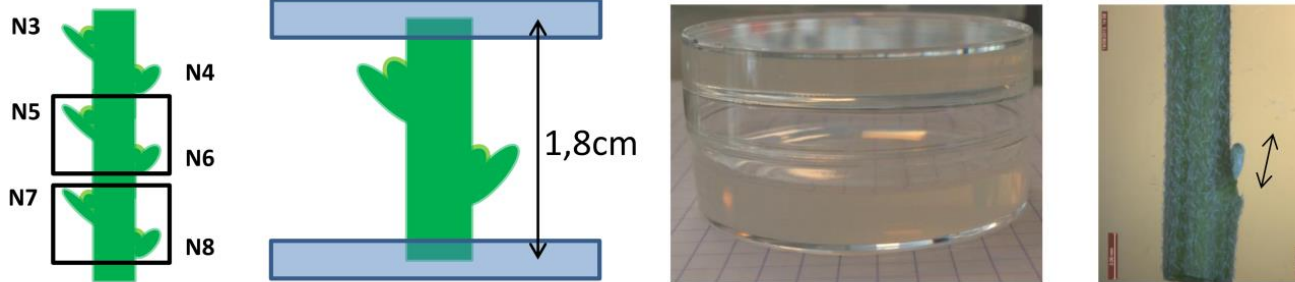
Hormonale basis van knopuitgroei en PGR:

AUXINE → INHIBITIE

CYTOKININE → KNOPUITGROEI



Regulatie van vertakking met PGR



Hormonale basis van knopuitgroei en PGR:

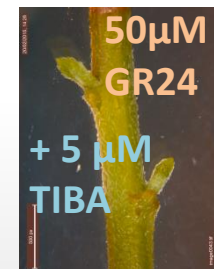
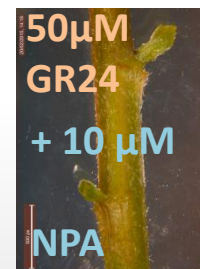
STRIGOLACTON → INHIBITIE

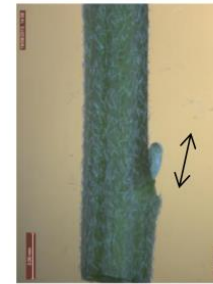
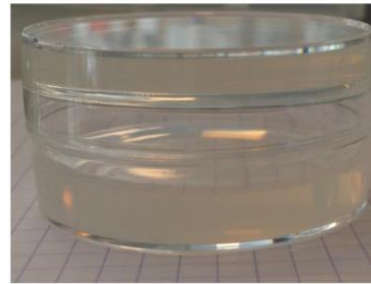
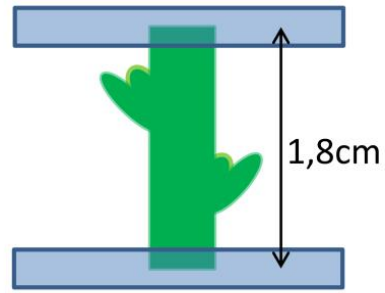
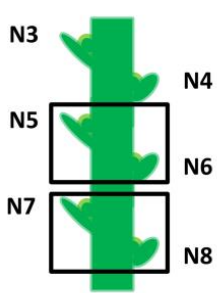
Afhankelijk van **auxintransport**

Auxintransportinhibitoren

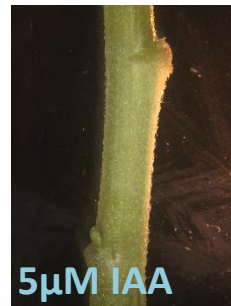
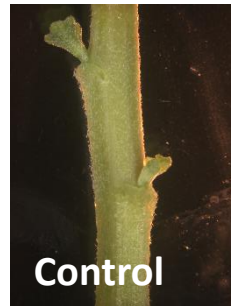
(TIBA, NPA) verminderen

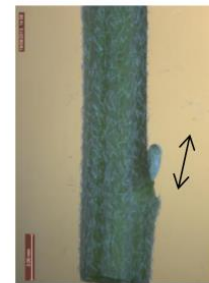
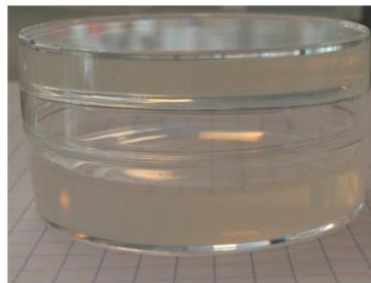
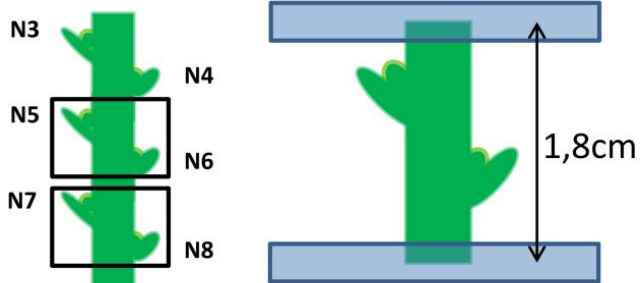
werking GR24



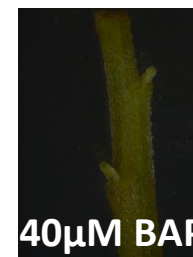
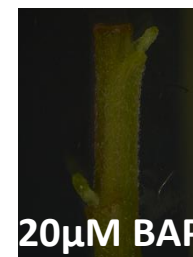
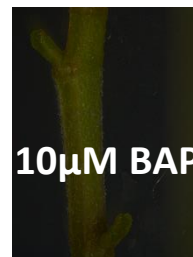
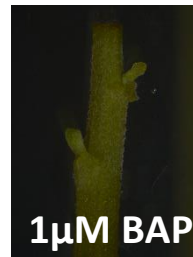


Knopuitgroei en PGR:
AUXINE → INHIBITIE
AUXINOLE
 (auxine antagonist)
 → verminderde inhibitie

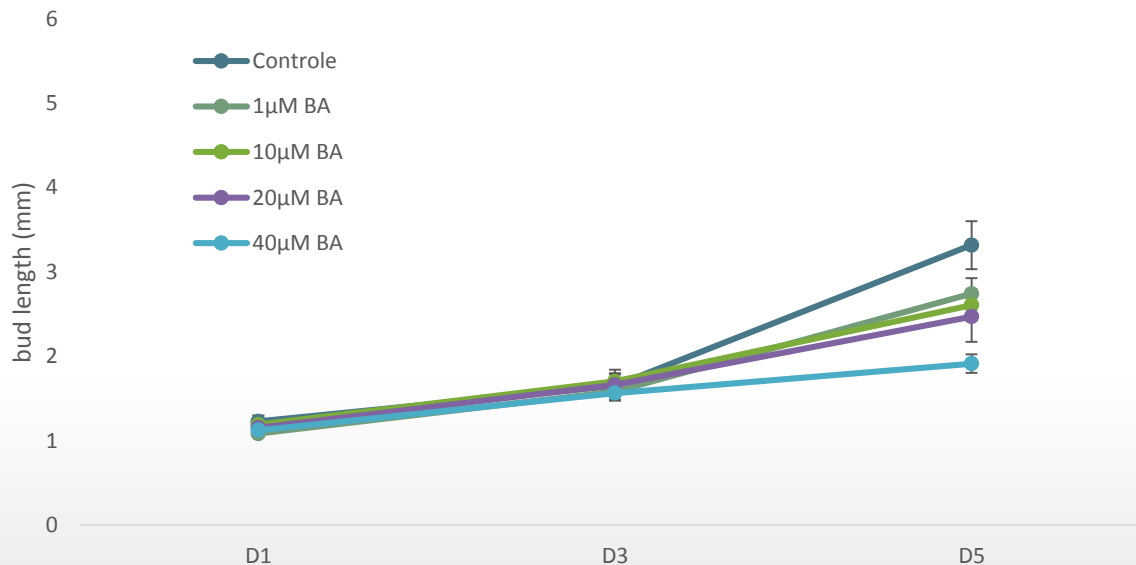


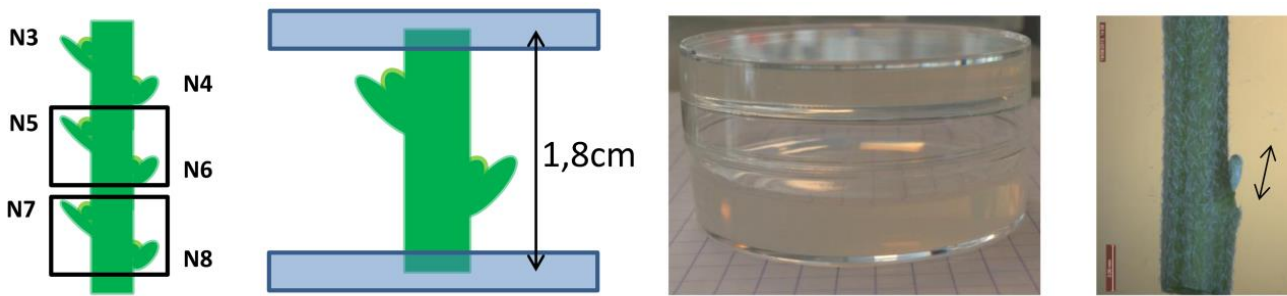


Knopuitgroeï en
PGR:
CYTOKININE BAP →
VERHINDERDE
KNOPUITGROEI

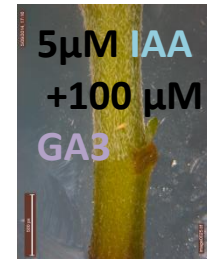
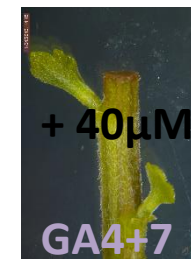
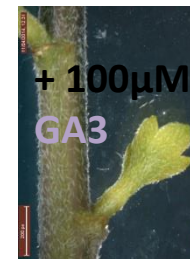


Benzyladenine zijnscheutlengte





Knopuitgroei en PGR:
GIBBERELLINEZUUR →
 ZIJSCHOUTELONGATIE
 Geen bevordering knopuitgroei



Paclobutrazol verhindert biosynthese
 GIBBERELLINEZUUR → knopuitgroei met
 verminderde elongatie

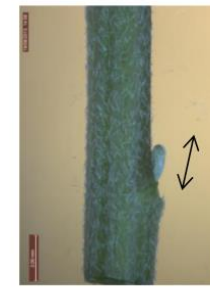
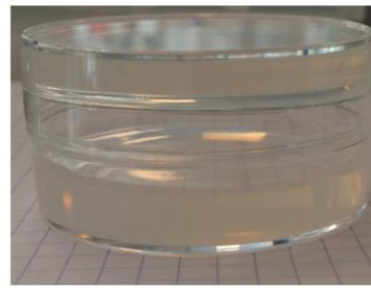
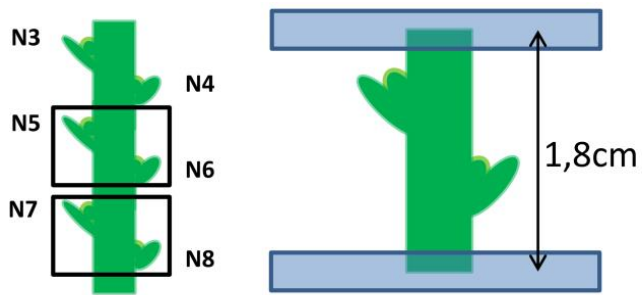


10 μM
Paclobutrazol

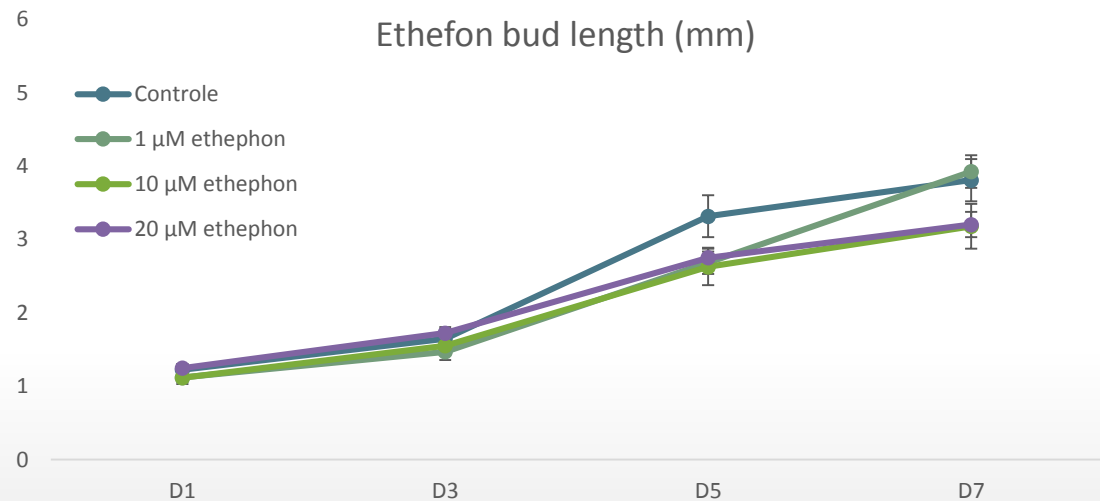
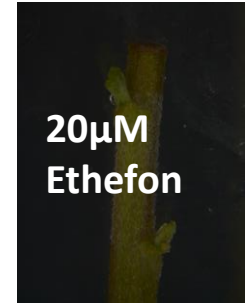
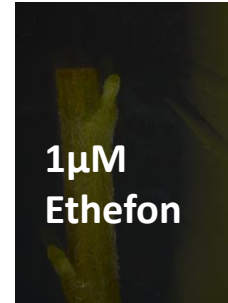
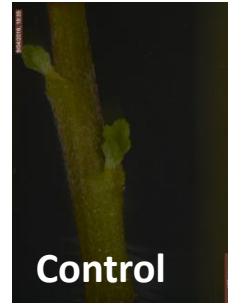
GIBBERELLINEZUUR GA4+7 en **BAP**
 (formule Promaline)

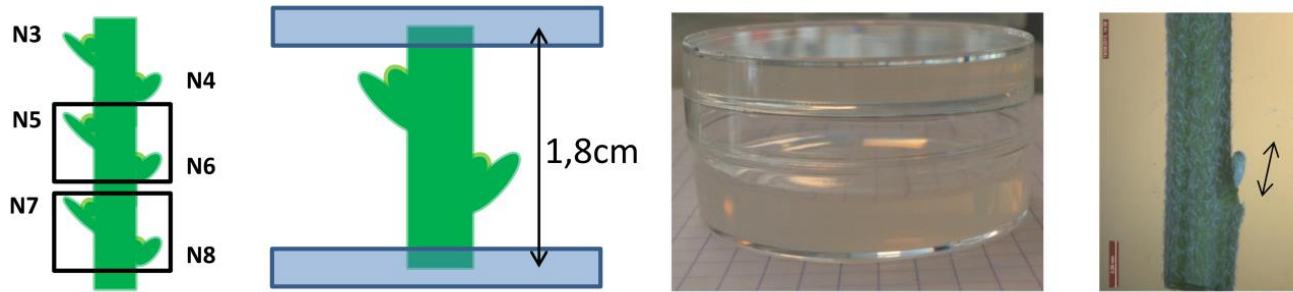


40 μM
BAP
+ 40 μM
GA4 + GA7

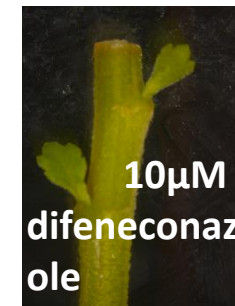
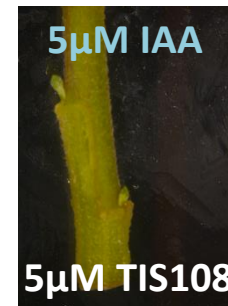
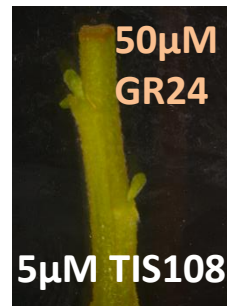
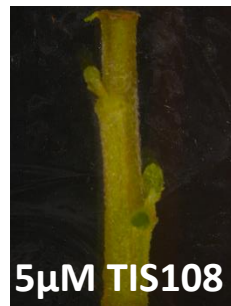


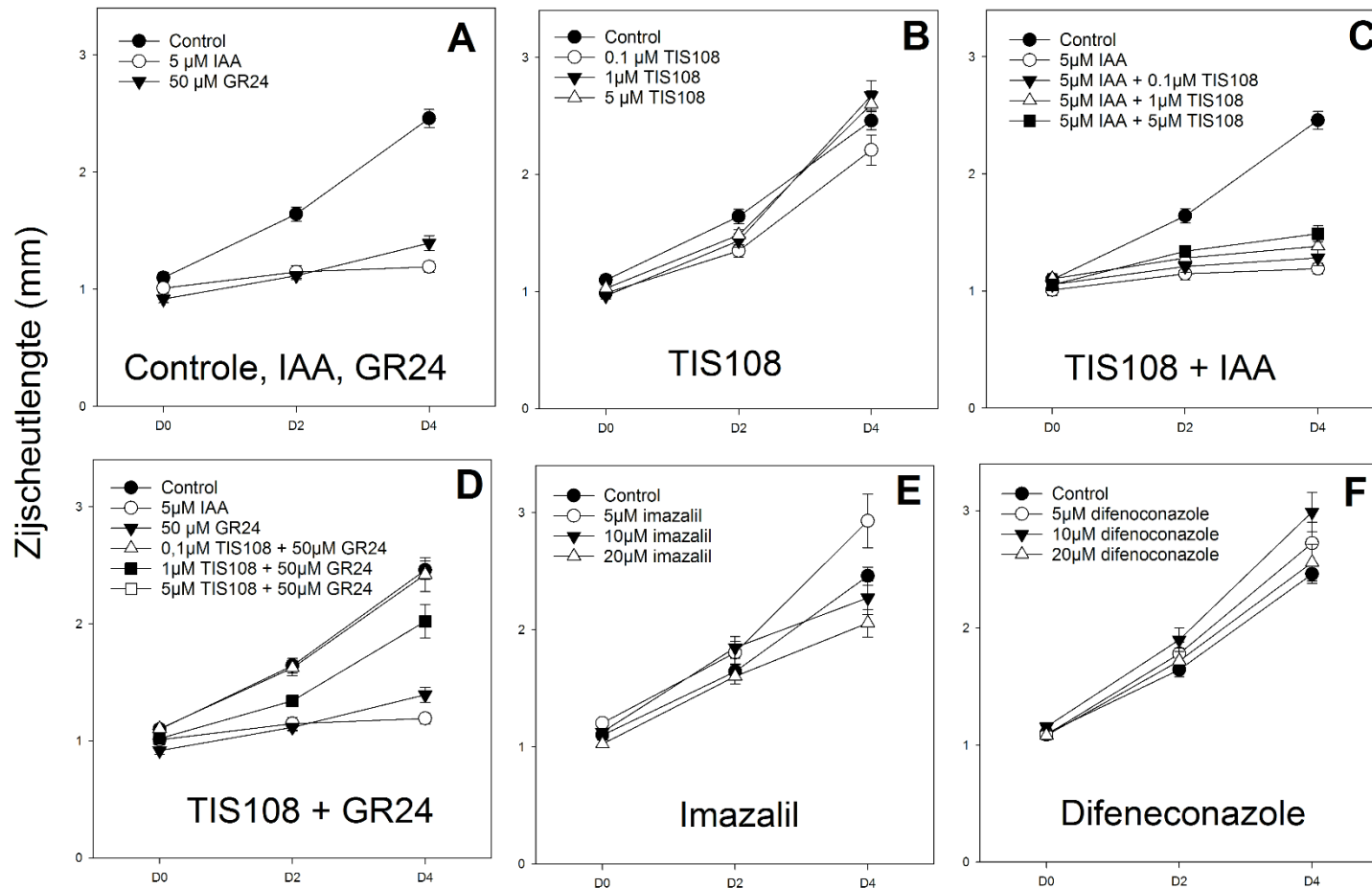
Knopuitgroei en PGR:
ETHEFON → Geen bevordering
knopuitgroei



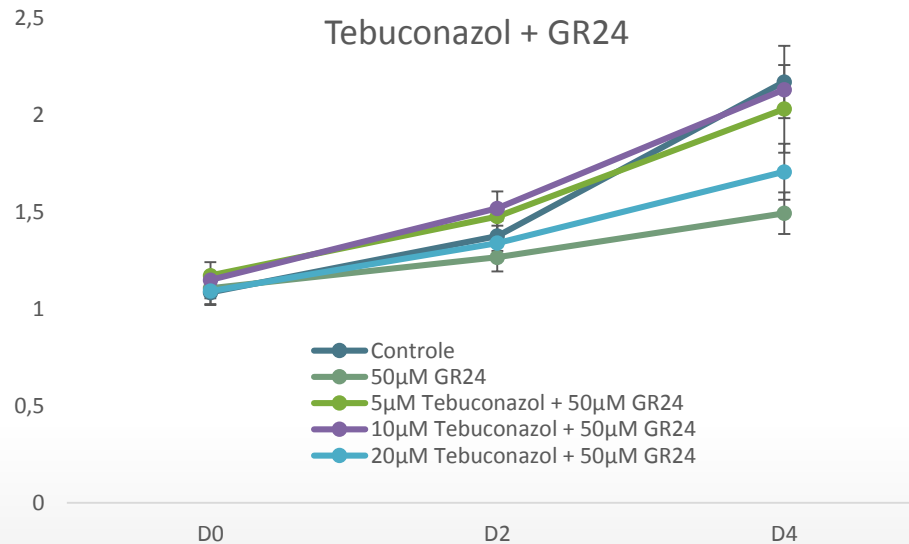
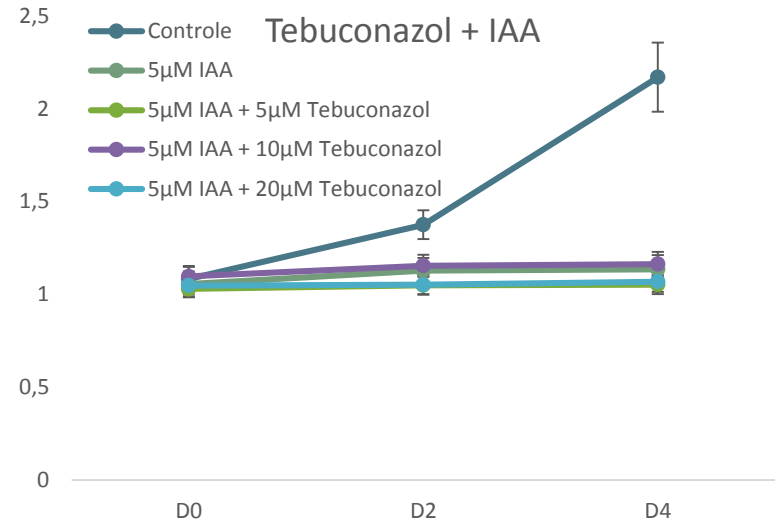
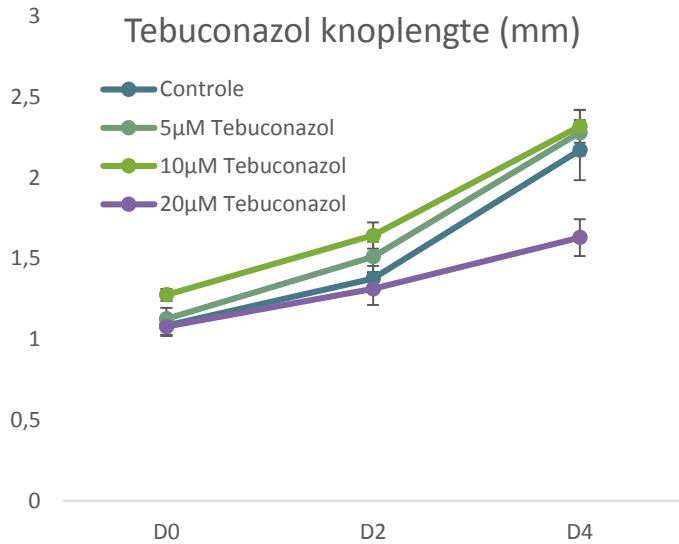


Triazolafgeleide fungiciden en triazolderivaat TIS108 kunnen **STRIGOLACTON** biosynthese verhinderen → **KNOPUITGROEI**





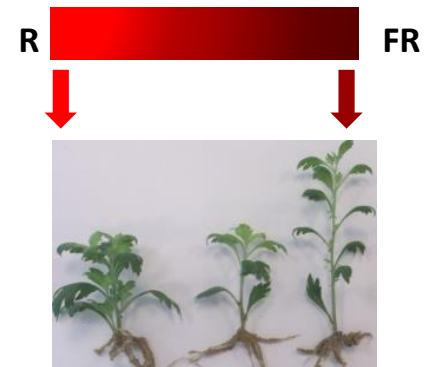
Tijdstip van opmeting over 5 dagen (D0, D1, D2, D3, D4)



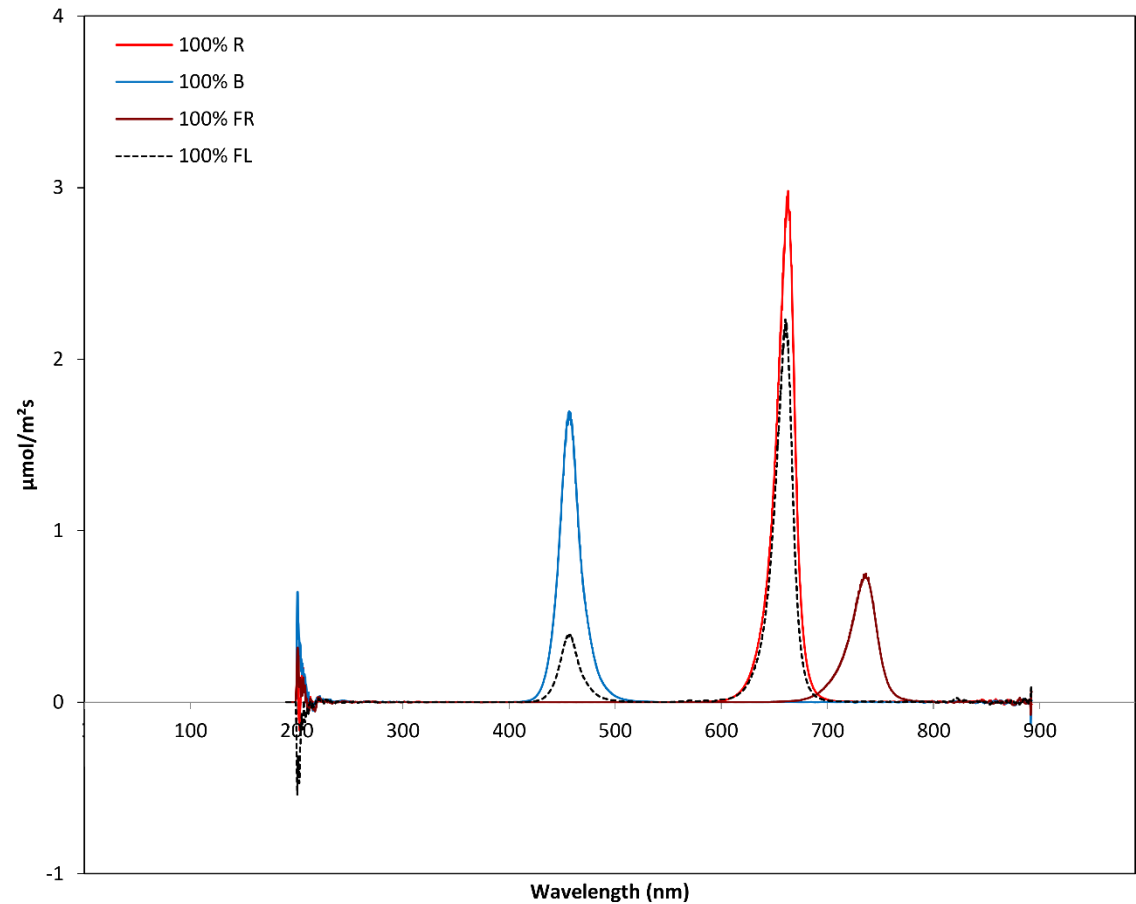
Regulatie van vertakking met LED licht

- Rode, blauwe en ver-rode LED
- Verhouding rood tegenover ver-rood licht aanpassen met LED
- Shade avoidance syndrome (SAS)
- Hoge R/FR \rightarrow meer knopuitgroei
- Lage R/FR \rightarrow minder knopuitgroei
- Testen op beworteld stek

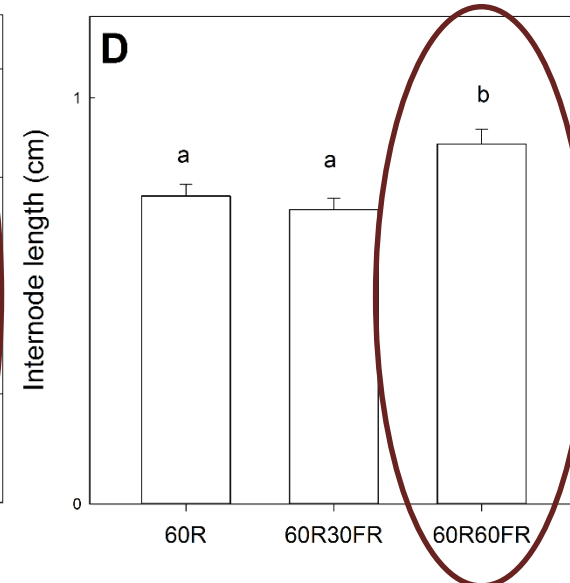
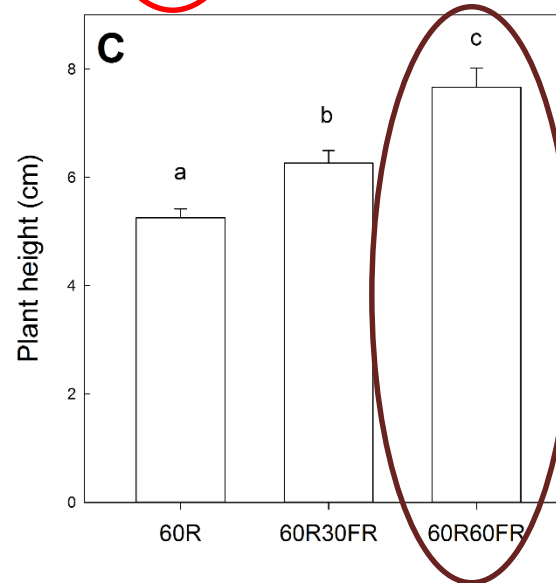
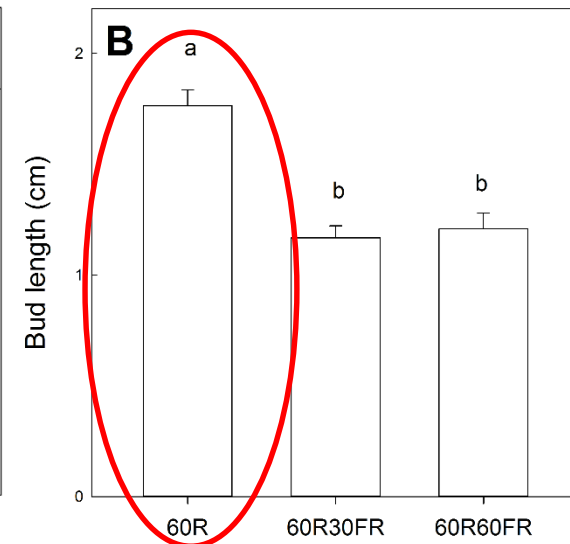
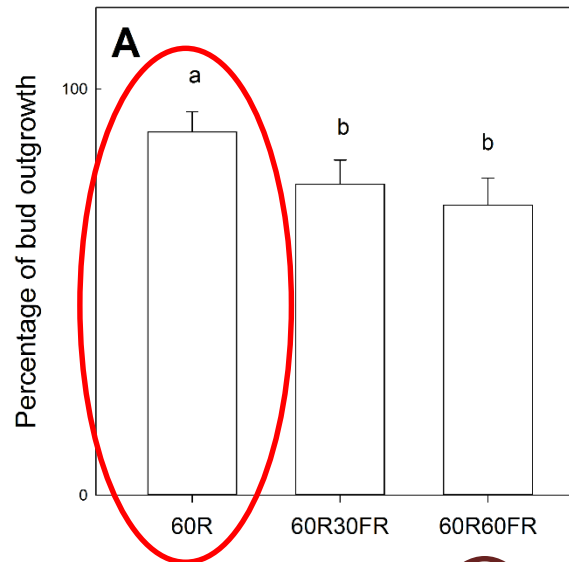
(opmeten aantal nodes en uitgelopen zijknoppen, zijscheutlengte en planthoogte)



- Beschikbaar
lichtspectrum
met R, B en FR
LED



- **Potchryasant**
- $60\mu\text{mol}/\text{m}^2\text{s}$ R
- $60\mu\text{mol}/\text{m}^2\text{s}$ R
+ $30\mu\text{mol}/\text{m}^2\text{s}$ FR
- $60\mu\text{mol}/\text{m}^2\text{s}$ R
+ $60\mu\text{mol}/\text{m}^2\text{s}$ FR





60R

60R
30FR

60R
60FR



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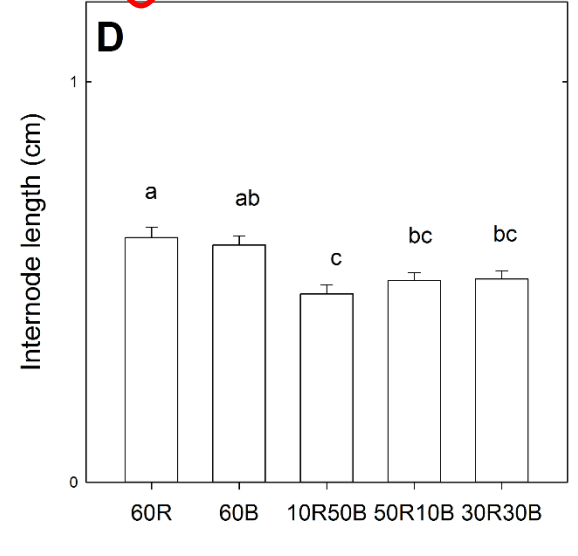
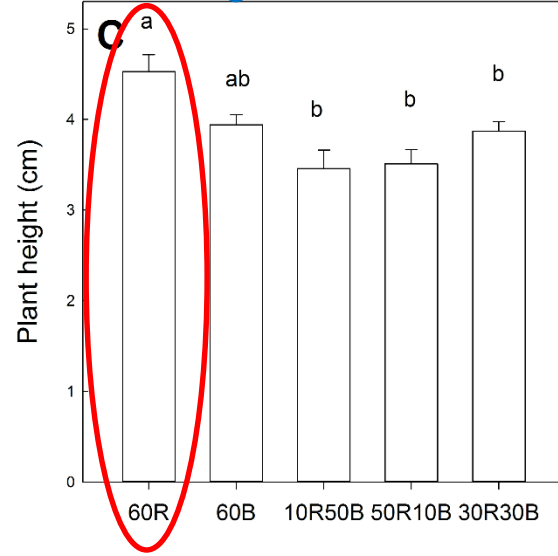
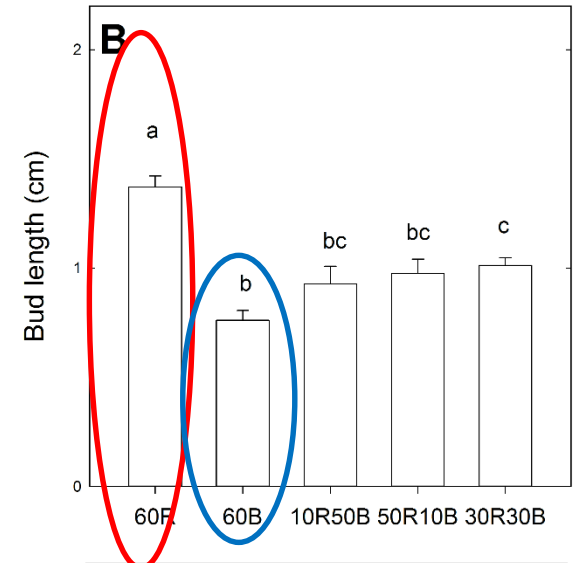
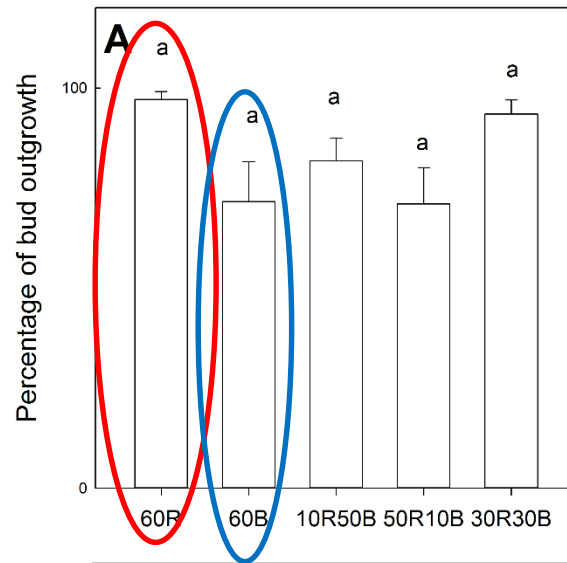


Vlaanderen
is ondernemen

Kennisplatform plantenfysiologie

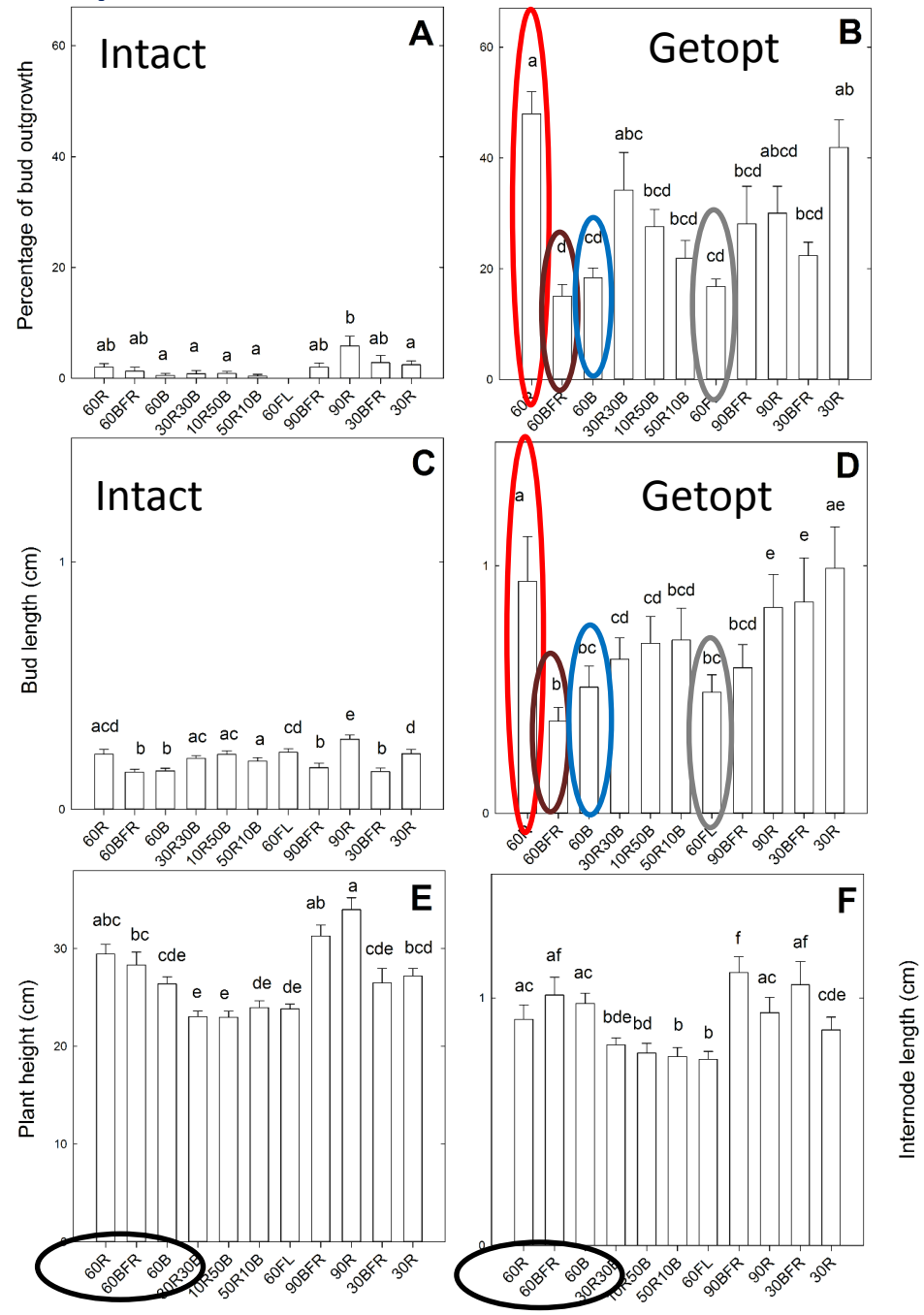
Workshop 27/10/2016 | 17

- Potchryasant
- 60 $\mu\text{mol}/\text{m}^2\text{s}$ R
- 60 $\mu\text{mol}/\text{m}^2\text{s}$ B
- 10 R 50B
- 50R 10 B
- 30R 30B



- **Snijchrysan**
- 60µmol/m²s R
- 60µmol/m²s R + 60µmol/m²s FR
- 60µmol/m²s B
- 10 R 50B
- 50R 10 B
- 30R 30B
- 60FL
- 90R
- 90B + FR
- 30R
- 30B + FR

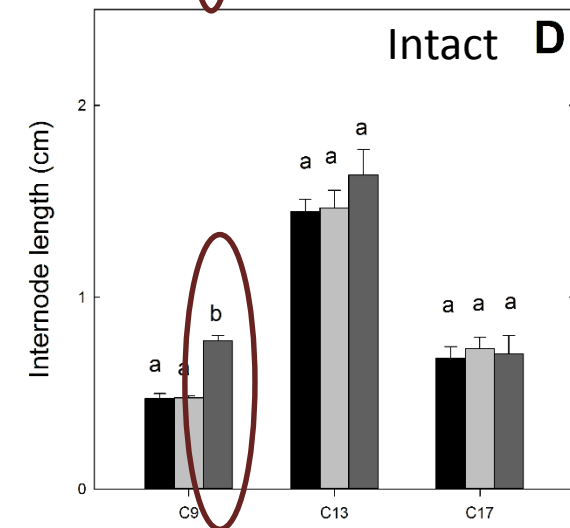
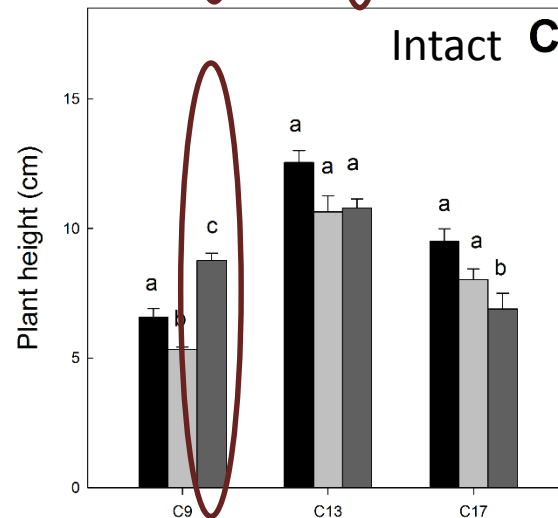
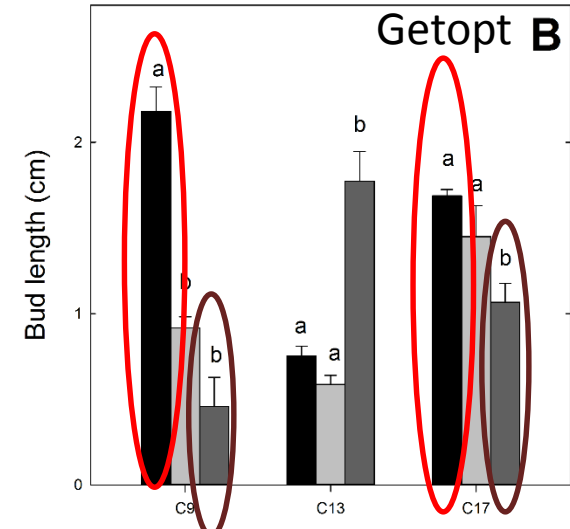
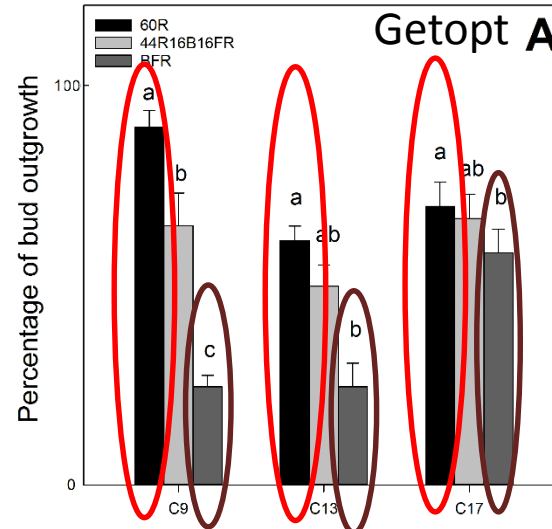
Apicale dominantie



Intact

- Snijchrystant (C17), Potchrystant (C9), Pluischrystant (C13)

- 60 $\mu\text{mol}/\text{m}^2\text{s}$ R
- 44 $\mu\text{mol}/\text{m}^2\text{s}$ R
+16 $\mu\text{mol}/\text{m}^2\text{s}$ B
+16 $\mu\text{mol}/\text{m}^2\text{s}$ FR
- 60 $\mu\text{mol}/\text{m}^2\text{s}$ B
+60 $\mu\text{mol}/\text{m}^2\text{s}$ FR



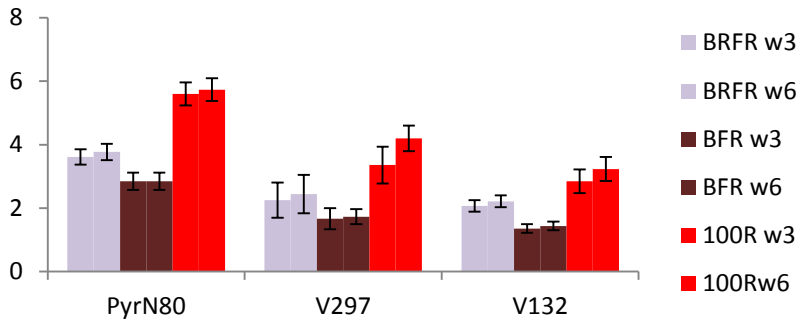
- $60\mu\text{mol}/\text{m}^2\text{s}$ R
 - Groter aantal uitgelopen zijscheuten
- $60\mu\text{mol}/\text{m}^2\text{s}$ B
 - Sterke elongatie bovenste zijscheut



- Potchryasant
 - Compacte vorm en goede vertakking (aantal uitgegroeide zijknoppen): 100%R
- Snijchryasant
 - Sterke apicale dominantie
 - Geen uitgroei van zijknoppen en elongatie van stengel: B + FR
- Cultivarafhankelijk

- Azalea: R t.o.v. FR → meer uitgegroeide zijscheuten

Azalea #uitgegroeide zijscheuten

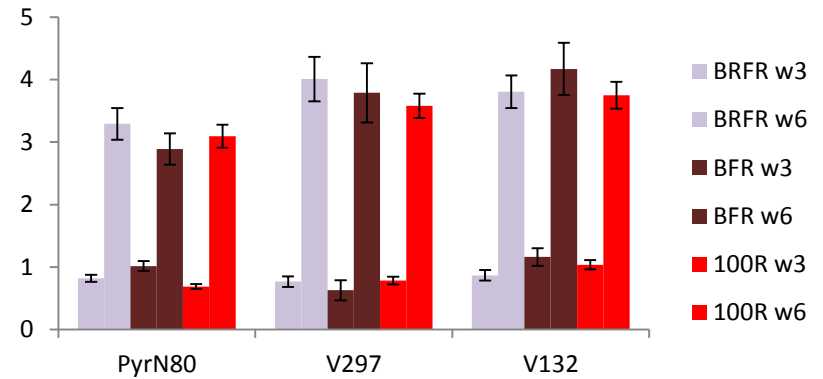


RBFR



W6

Azalea zijscheutlengte



BFR



R



100R



95R5B



BFR



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Bedankt voor uw aandacht



Technopool Sierteelt is een samenwerking tussen Universiteit Gent, Hogeschool Gent, ILVO en PCS en wordt ondersteund door de Provincie Oost-Vlaanderen



HoGent



ILVO



Met steun van:

AGENTSCHAP
INNOVEREN &
ONDERNEMEN



Vlaanderen
is ondernemen

Het Kennisplatform Plantenfysiologie is ontwikkeld door de Technopool Sierteelt en kadert in het IWT-project 110771 'Kennisgedreven sturing van plantfysiologische processen in de sierteelt ter bevordering van plantkwaliteit'.

Meer info?

Het Kennisplatform Plantenfysiologie geeft in de toekomst speciaal voor jou cursussen, workshops, bedrijfsbezoeken ...

Wens je op de hoogte te blijven van onze activiteiten, wens je advies of heb je vragen? Aarzel dan niet contact op te nemen met:

Annelies Christiaens (PCS / UGent)
E: annelies.christiaens@pcsierteelt.be
T: +32 (0)9 353 94 94
www.pcsierteelt.be
www.plantproduction.ugent.be

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Technopool Sierteelt is een samenwerking tussen Universiteit Gent, Hogeschool Gent, ILVO en PCS en wordt ondersteund door de Provincie Oost-Vlaanderen

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