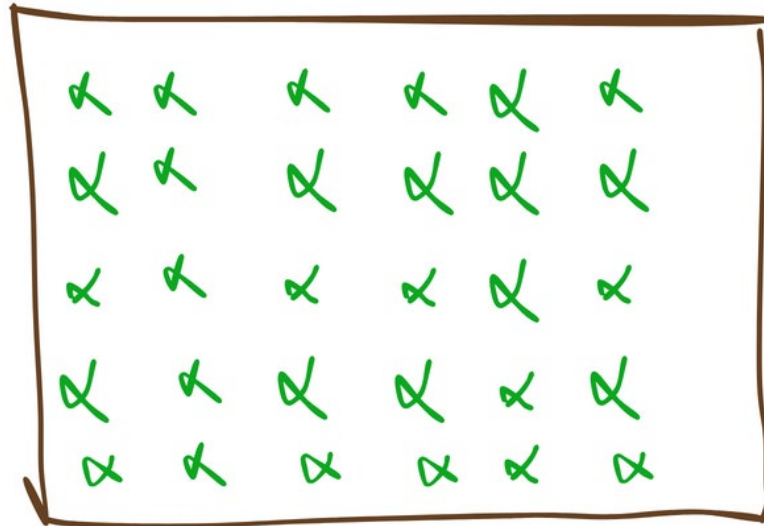
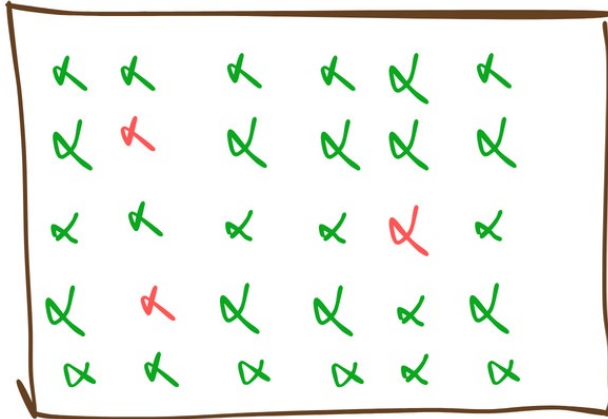


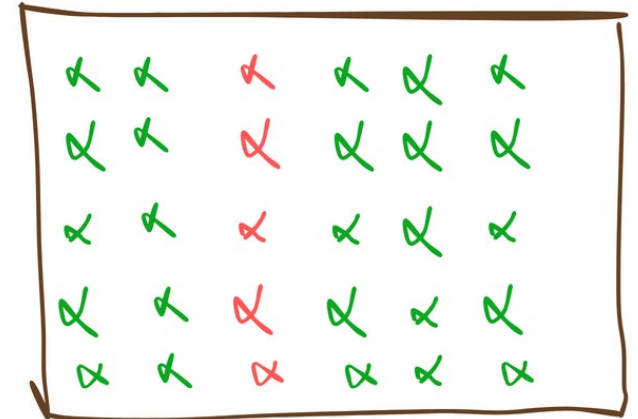
Biodiversiteit in het veld van bankerplant tot gewasdiversiteit



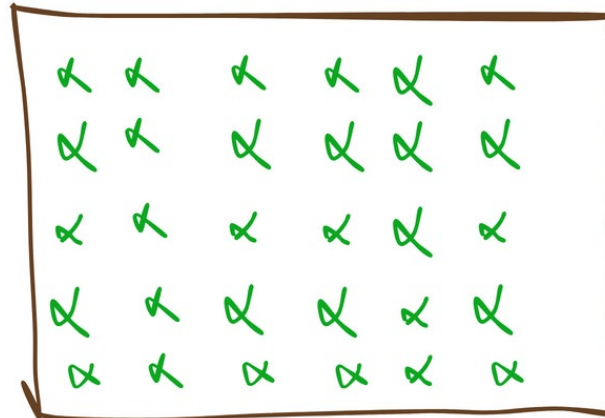
Bankerplant (CABAN)



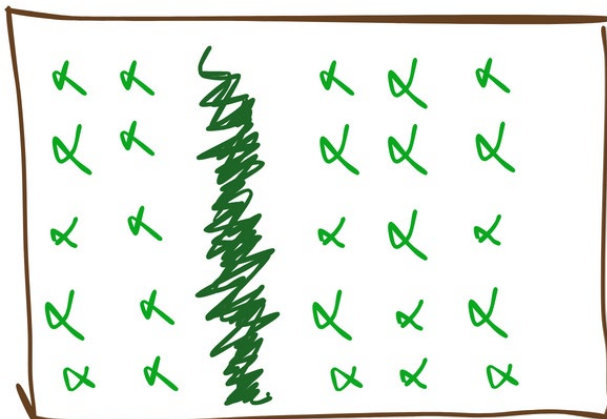
Intercropping (SUSCABFLY)



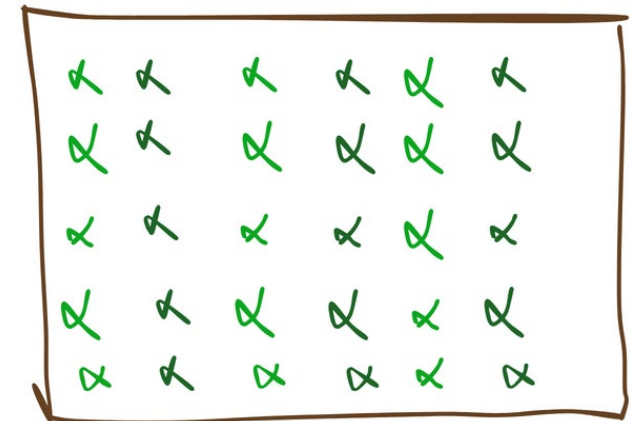
Functionele agrobiodiversiteit
IPM



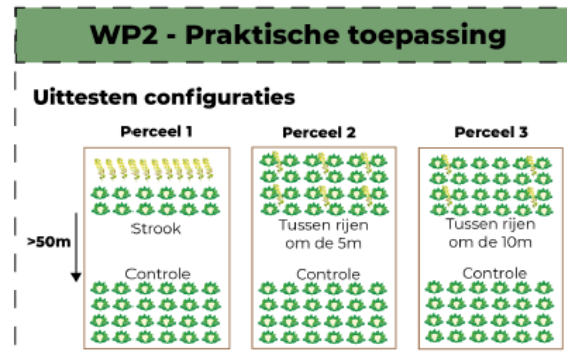
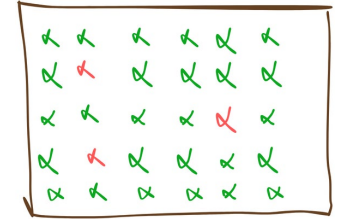
Keverbank (SUSCABFLY)



Gewasdiversiteit (LEGENDARY)



CABAN: natuurlijke vijanden stimuleren dmv een bankerplantsysteem in de biokoolteelt.



Koolwittevlieg (*Aleyrodes ploverella*)



Melige koolluis (*Brevicoryne brassicae*)

Natuurlijke vijanden

Zweefvliegen



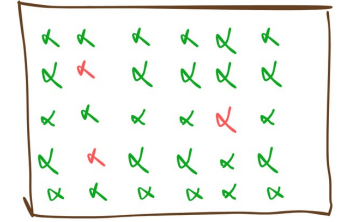
Gaasvliegen



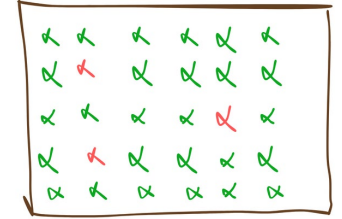
Sluipwespen



Lieveheersbeestjes

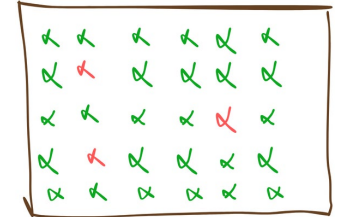


Welke planten trekken het meest natuurlijke vijanden aan?

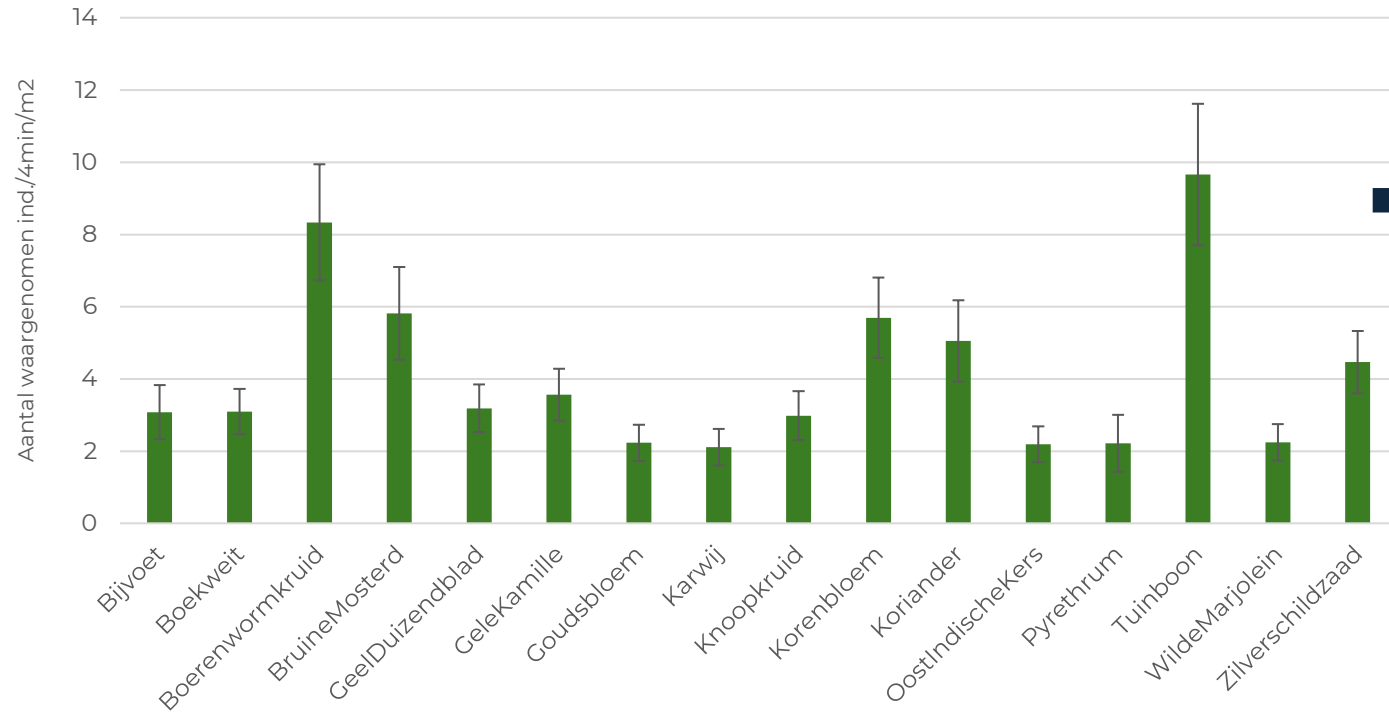


Nederlandse naam	Latijnse naam
Bijvoet	<i>Artemisia vulgaris</i>
Boekweit*	<i>Fagopyrum esculentum</i>
Boerenwormkruid	<i>Tanacetum vulgare</i>
Bruine mosterd*	<i>Brassica juncea</i>
Geel duizendblad	<i>Achillea filipendulina</i>
Gele kamille	<i>Anthemis tinctoria</i>
Gerst*	<i>Hordeum vulgare</i>
Goudsbloem	<i>Calendula officinalis</i>
Karwij	<i>Carum carvi</i>
Knoopkruid	<i>Centaurea jacea</i>
Korenbloem	<i>Centaurea cyanus</i>
Koriander	<i>Coriandrum sativum</i>
Oost-Indische kers	<i>Tropaeolum majus</i>
Pyrethrum	<i>Tanacetum coccineum</i>
Tuinboon	<i>Vicia faba</i>
Wilde marjolein	<i>Origanum vulgare</i>
Zilverschildzaad	<i>Lobularia maritima</i>

**HO
GENT**



Natuurlijke vijanden

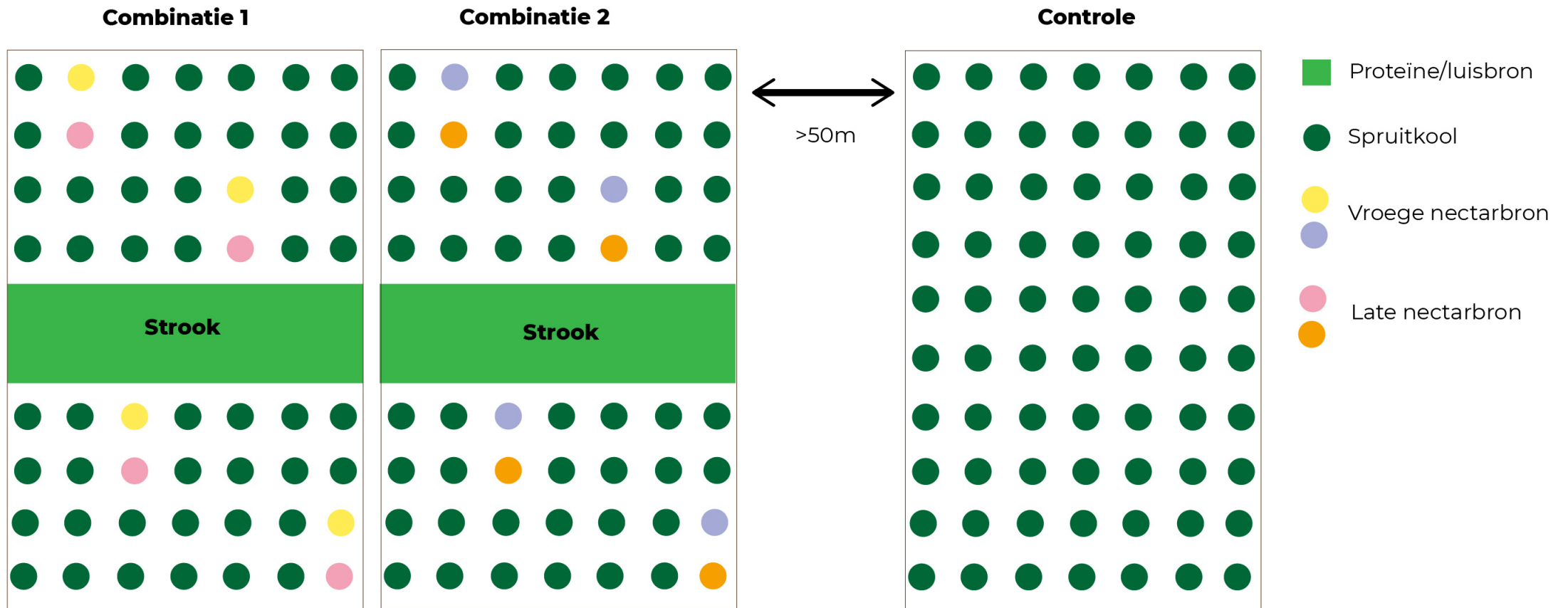
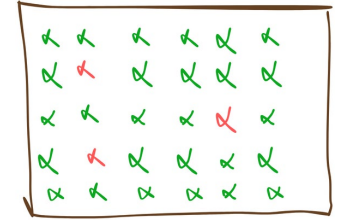


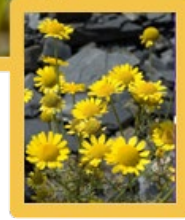
Interessante planten:

- Tuinboon
- Boerenwormkruid
- Korenbloem
- Bruine mosterd
- Koriander

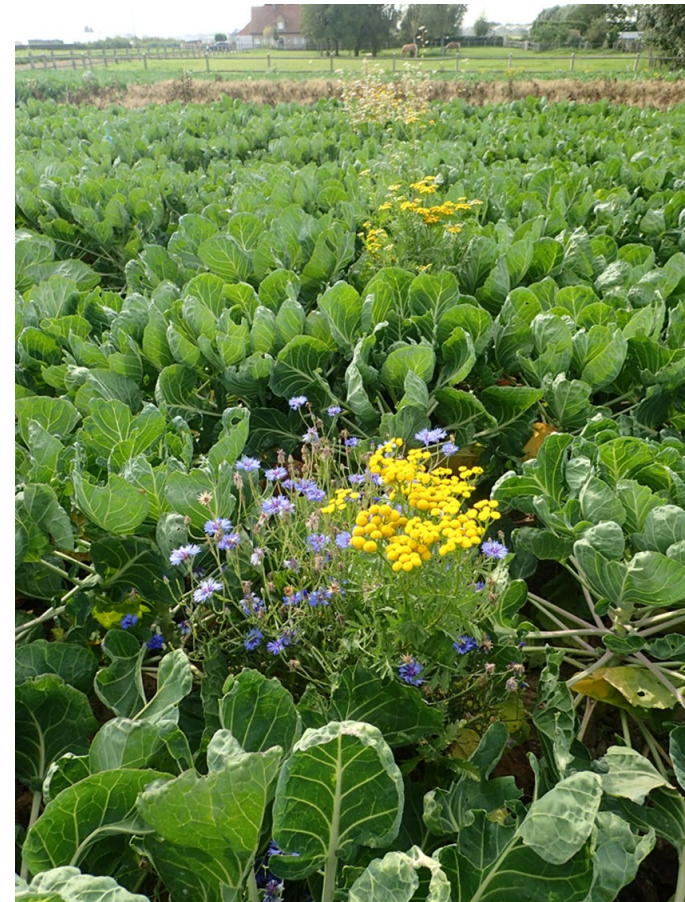
MAAR: rekening houden met **bloeduur** en eventuele aantrekking **plagen!**

Hoe in veld gebruiken → eilandjes van bankerplanten

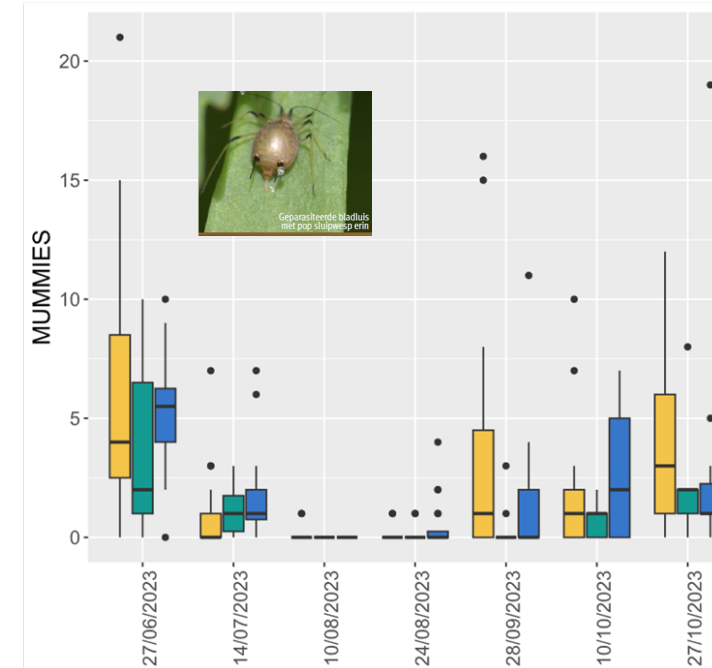
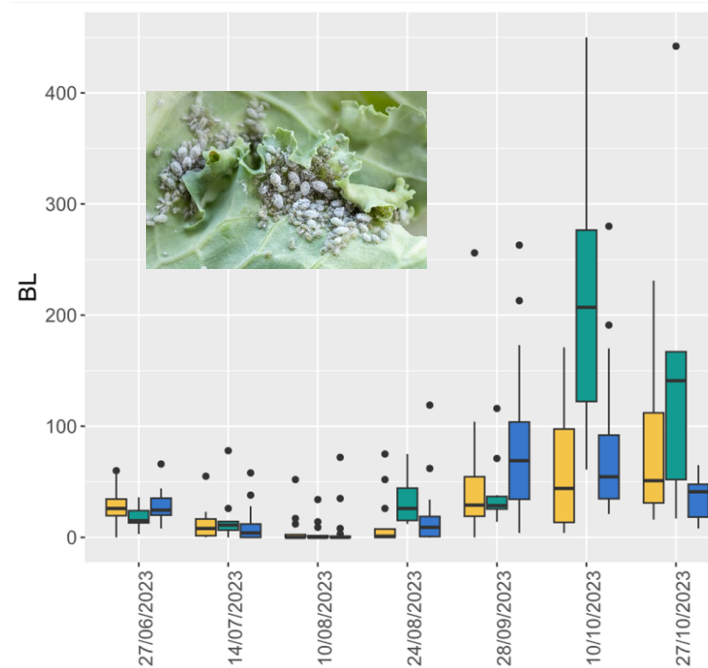
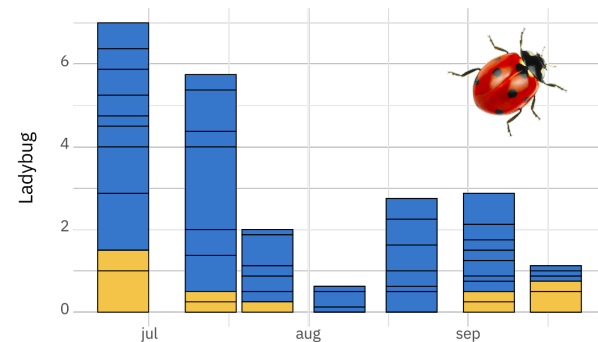
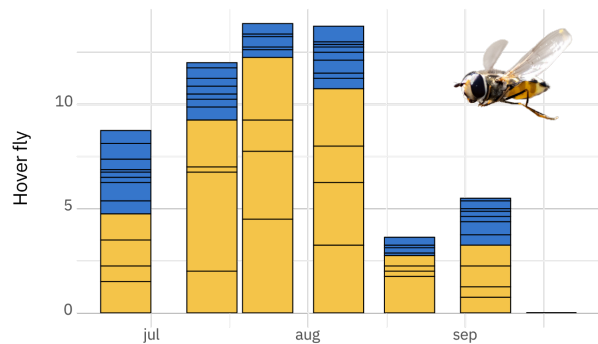
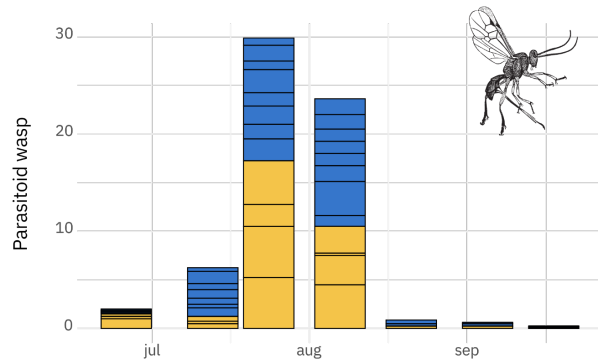
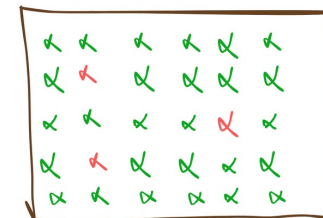




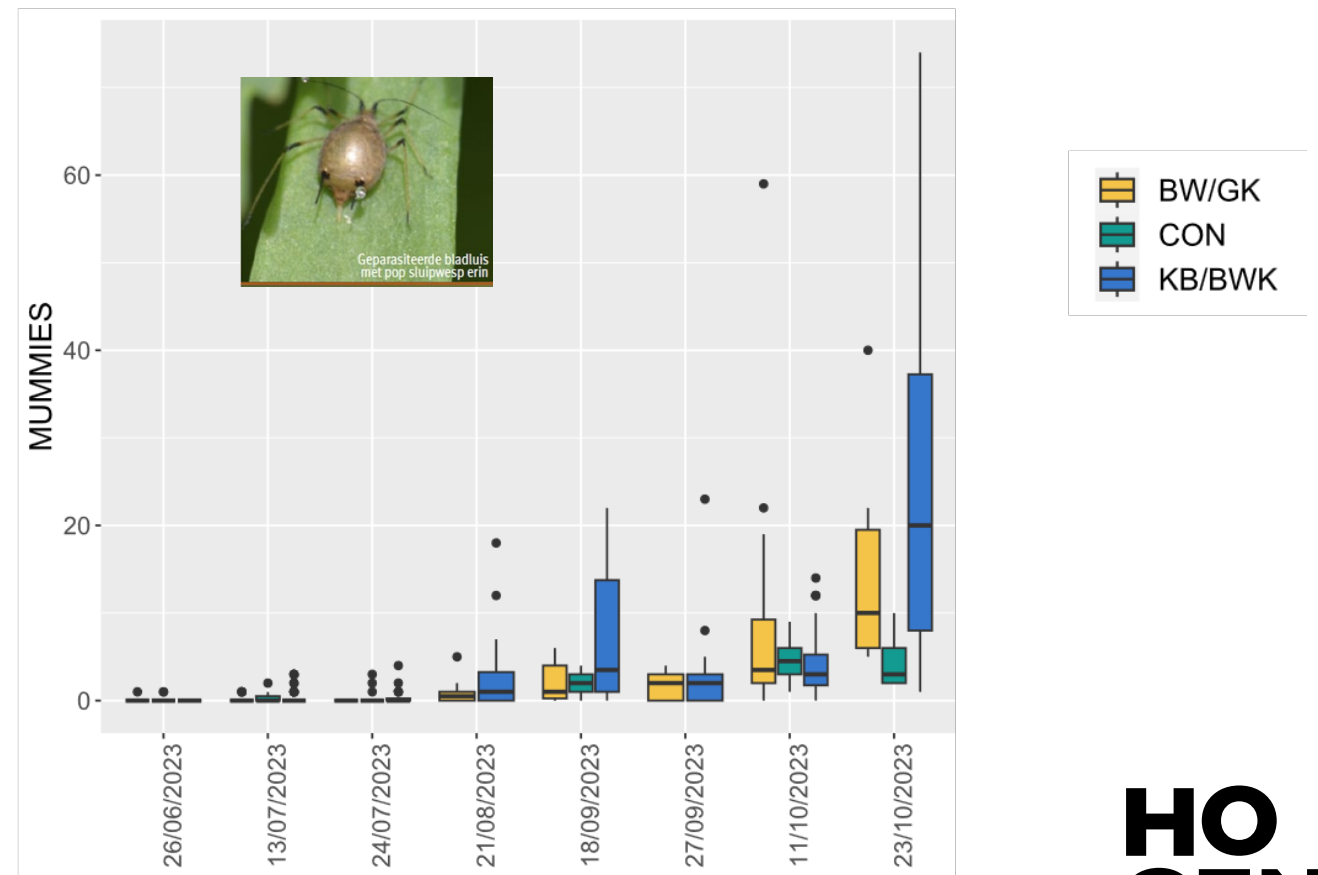
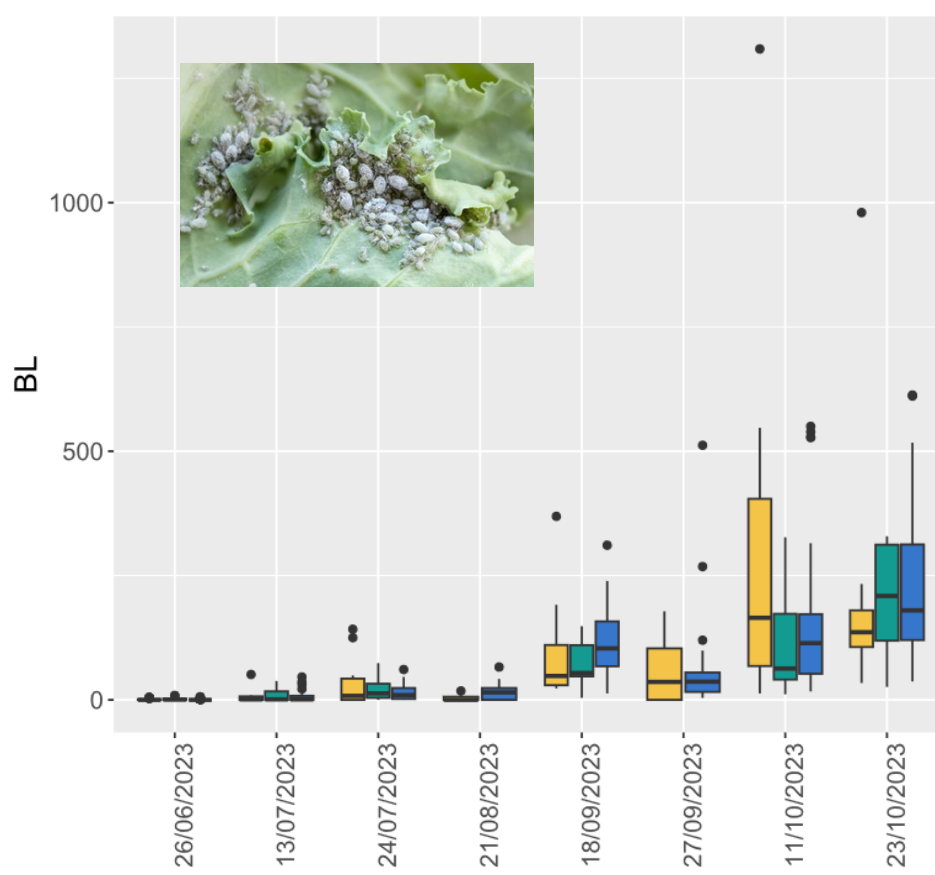
♂	♂	♂	♂	♀	♂
♀	♂	♀	♀	♀	♀
♂	♂	♂	♂	♂	♂
♀	♂	♀	♀	♂	♀
♀	♂	♀	♀	♀	♀



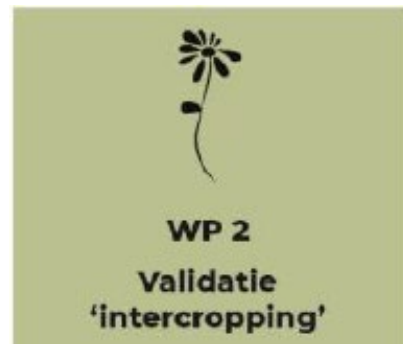
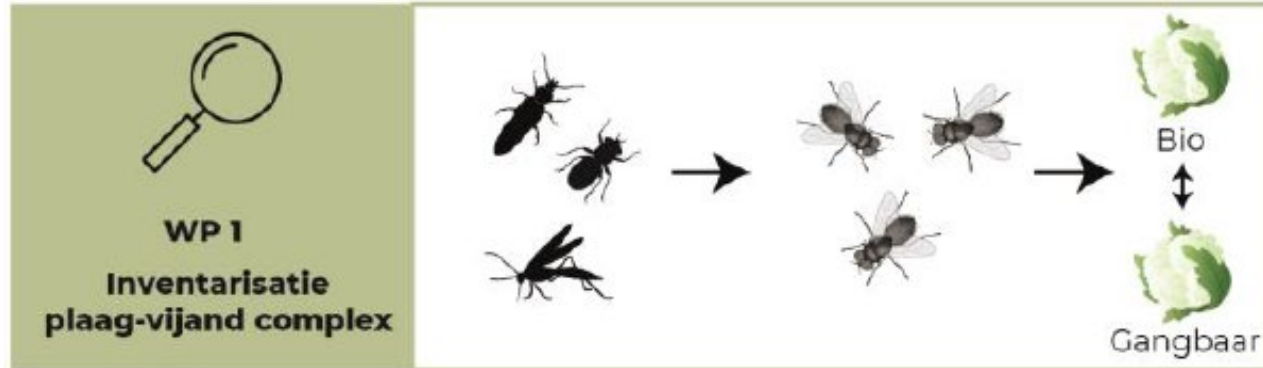
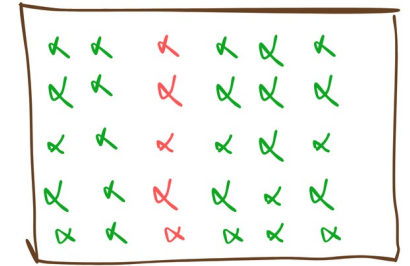
Aantallen natuurlijke vijanden afhankelijk van plant en timing.



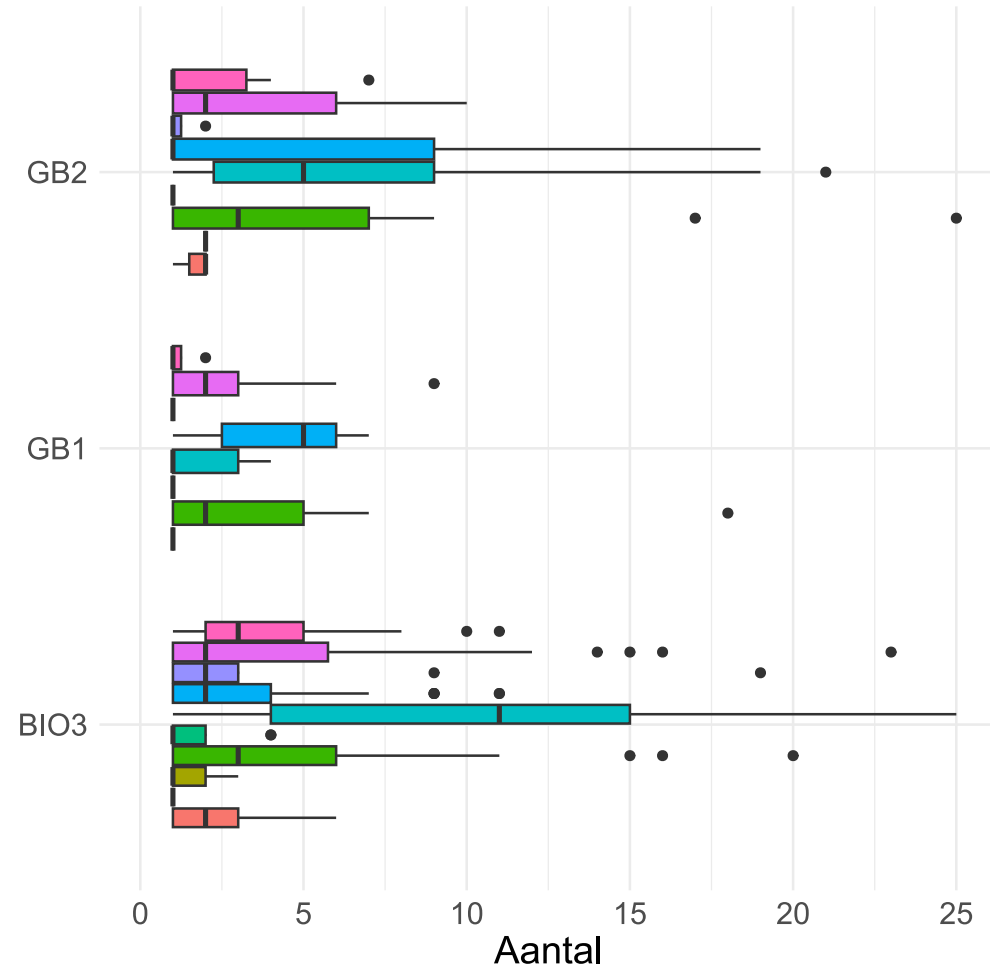
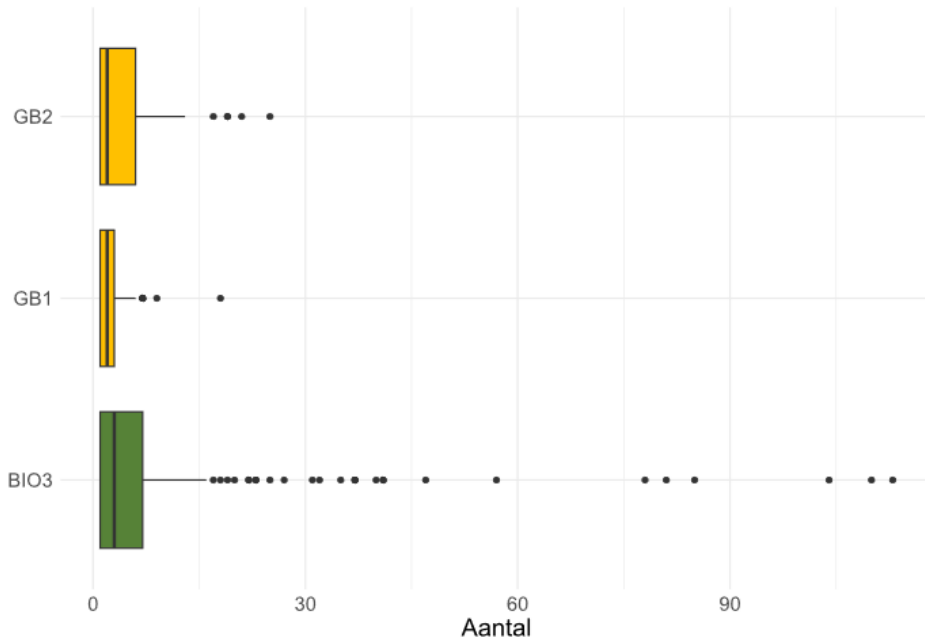
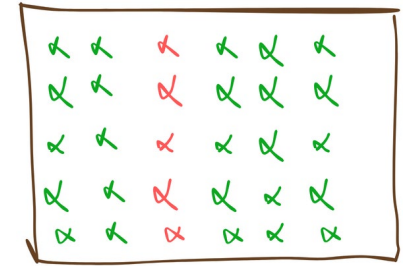
Plaagsoorten Inagro – Bladluizen minder duidelijk effect.



SUSCABFLY: duurzame beheersing van koolvlieg (Delia radicum)



Natuurlijke vijanden (algemeen)

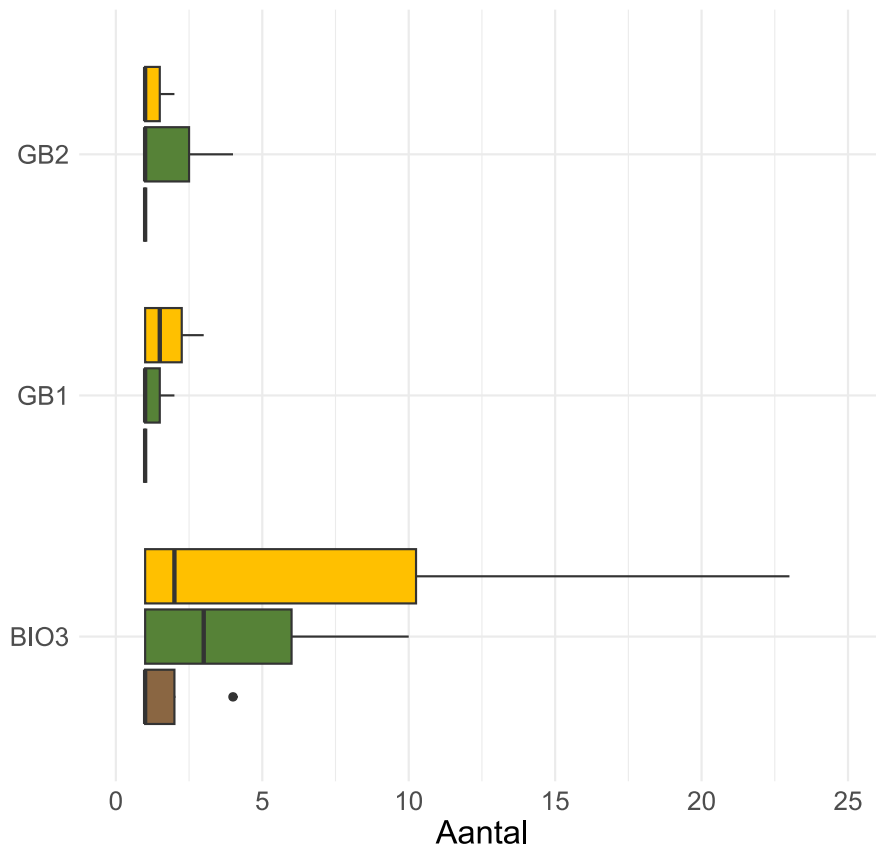


Functionele groep

- entomofage zweefvliegen
- groene gaasvliegen
- keverlarven
- kortschildkevers
- lieveheersbeestjes
- loopkevers
- roofvliegen
- roofwantsen
- sluipwespen
- spinnen

Natuurlijke vijanden (specifiek koolvlieg)

♂	♂	♀	♂	♀	♂
♀	♂	♀	♀	♀	♀
♀	♂	♀	♀	♀	♀
♀	♂	♀	♀	♀	♀
♀	♂	♀	♀	♀	♀

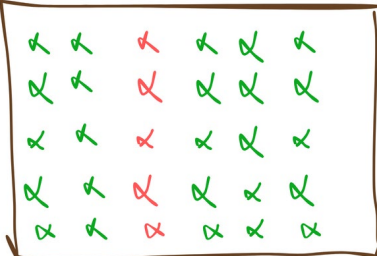


Soort

- Aleochara bilineata*
- Aleochara bipustulata*
- Trybliographa rapae*

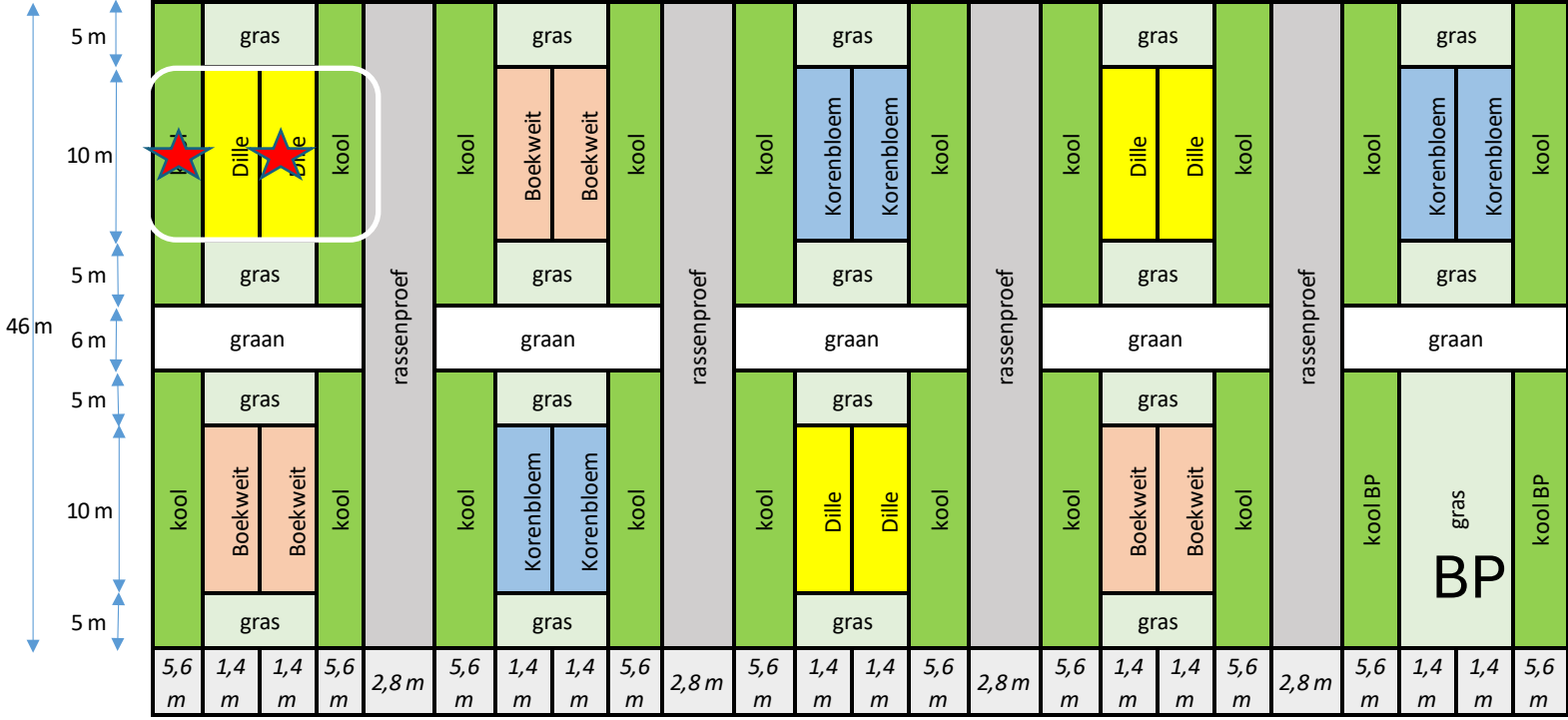


Natuurlijke vijanden stimuleren: intercropping nectarplanten?

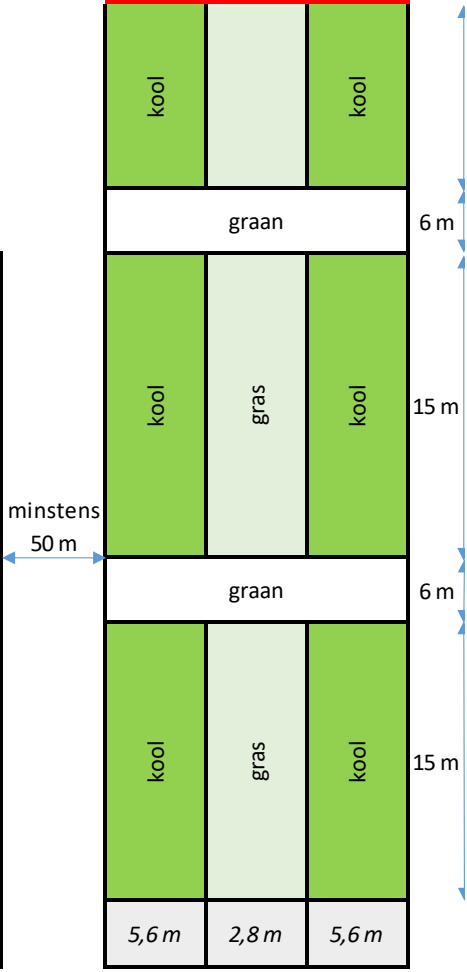


WEIDE

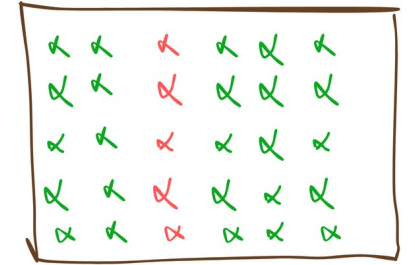
PERCEEL 27



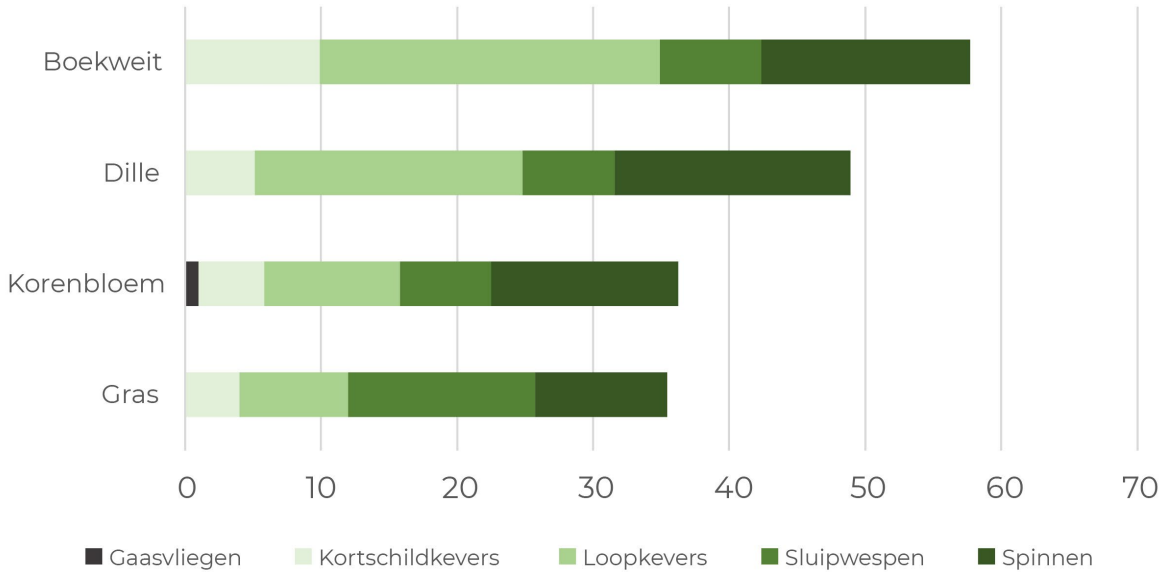
Niet in de buurt van bloemen



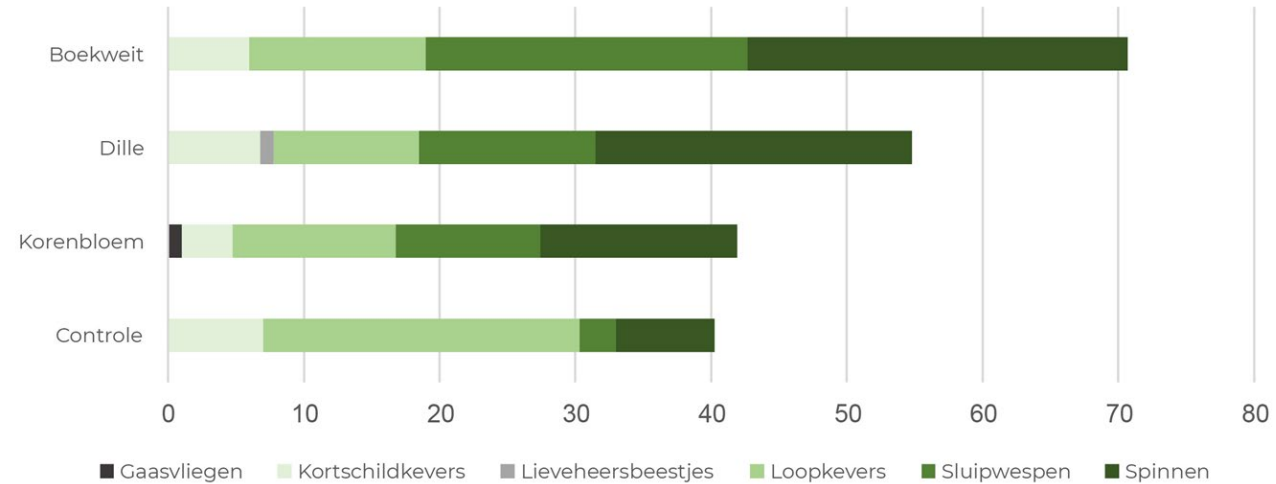
Natuurlijke vijanden



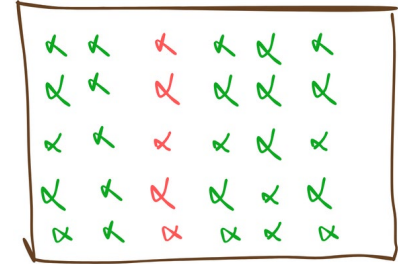
Natuurlijke vijanden - rand



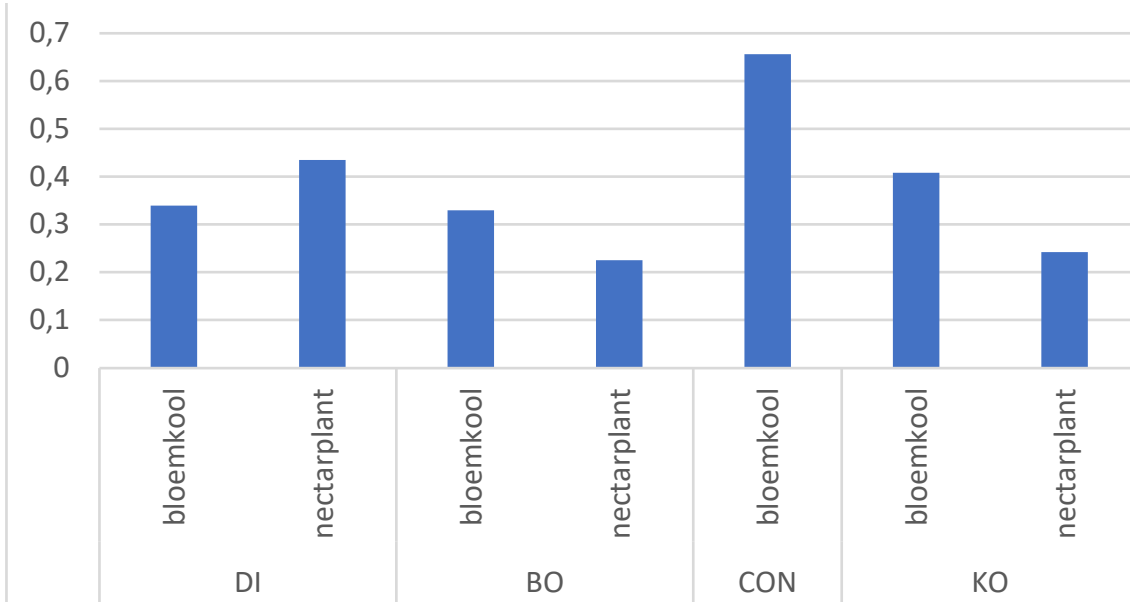
Natuurlijke vijanden - koolplot



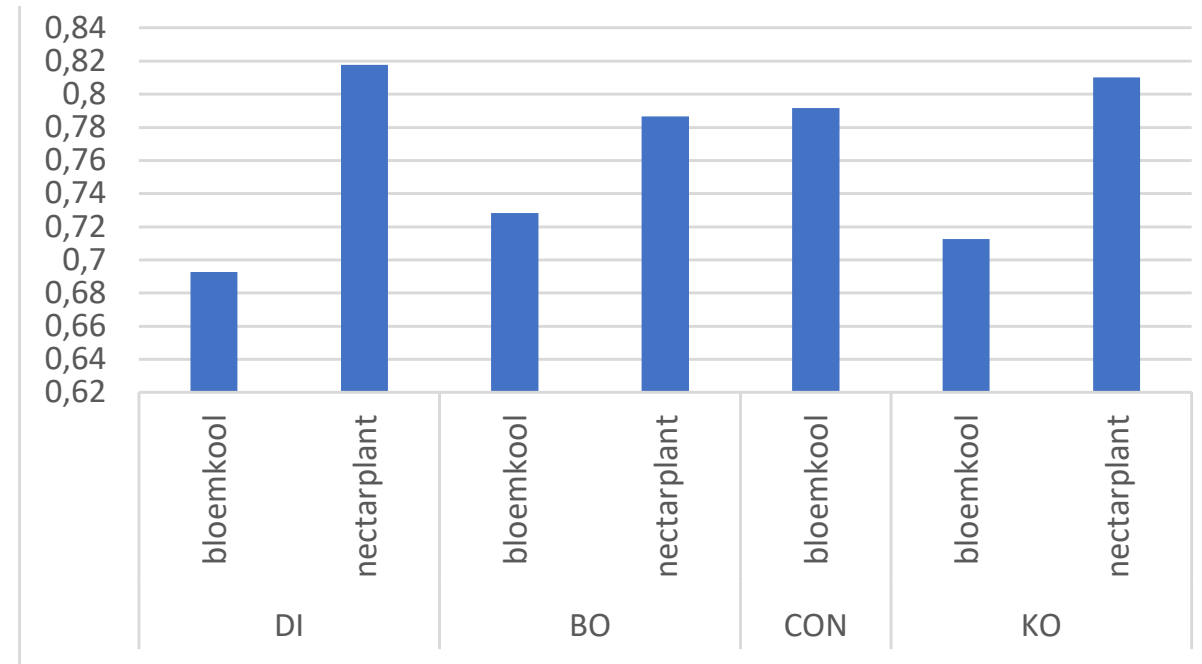
Nectarplanten proef - eipredatie



2021

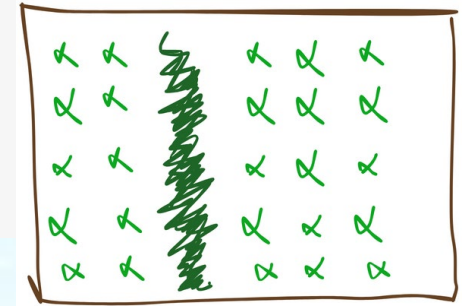


2022



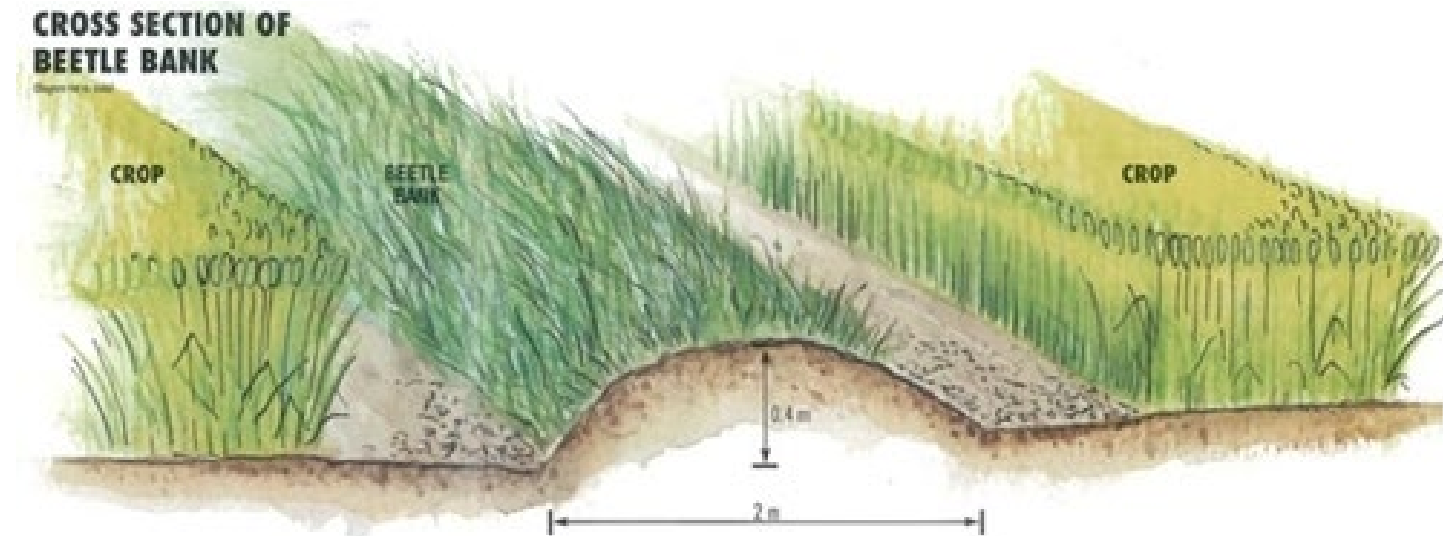
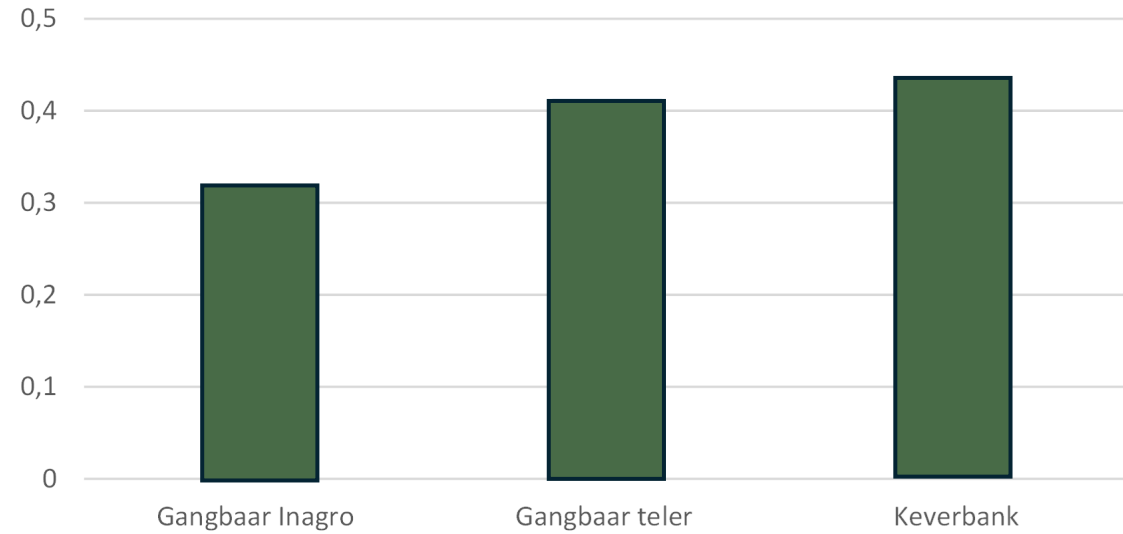
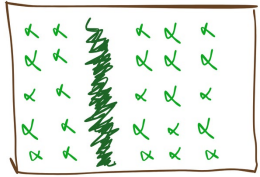
Belangrijk: nog parasitering van poppen verder analyseren!

Spruitkool naast beetlebank



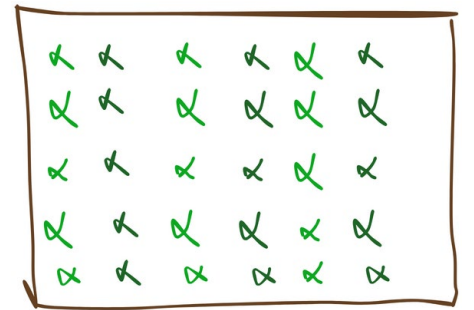
SUSCABFLY

- Determinaties lopend.
- Eipredatie.

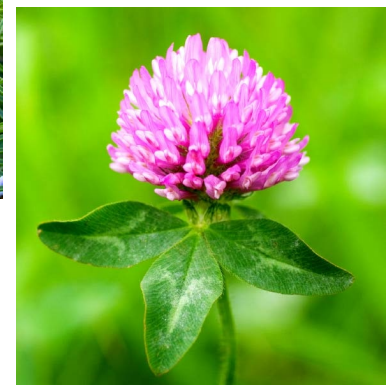


LEGENDARY:

KnowLEdGE creation and iNcreasing acreage of legumes in Diversified cropping systems by quAntification of their ecosYstem services.



- Verhoging van gewasdiversiteit bij vlinderbloemigen
- Voordelen van gebruik vlinderbloemigen:
 - Reductie chemische bemesting (verhoogde N-fixatie)
 - Klimaatresistent
 - Plagen en ziektes
 - Pollinatie
- Kwantificatie van ecosysteemdiensten door combinatie van klassieke en state-of-the-art methodes.



Monitoringstechnieken (wortelvlieg)

Lijmvallen + visuele monitoring + vangschalen



Telfiche

Proefcentrum: _____
 Plot: _____
 OPM: _____

Bijen, hommels, wespen	Aantal
Honingbijen	
Hommels	
Solitaire bijen	
Wespen	

Sluipwespen	Aantal
Sluipwespen	

Vliegen	Aantal
Entomofage zweefvliegen	
Overige zweefvliegen	
Larven zweefvlieg	
Roofvliegen	
Bloemvliegen	
Overige vliegen	

Gaasvliegen	Aantal
Groene	
Bruine	
Larven	

Spinnen	Aantal
Spinnen	

Wantsen	Aantal
Roofwantsen	
Overige wantsen	

Datum: _____
 Tijdstip: _____
 Temperatuur: _____
 Weersomstandigheden: ☀ ☁ ☔ ☕

Vlinders	Aantal
Koolwitje	
Overige vlinders	

Lieveheersbeestjes	Aantal
Adulten LHB	
Larven LHB	

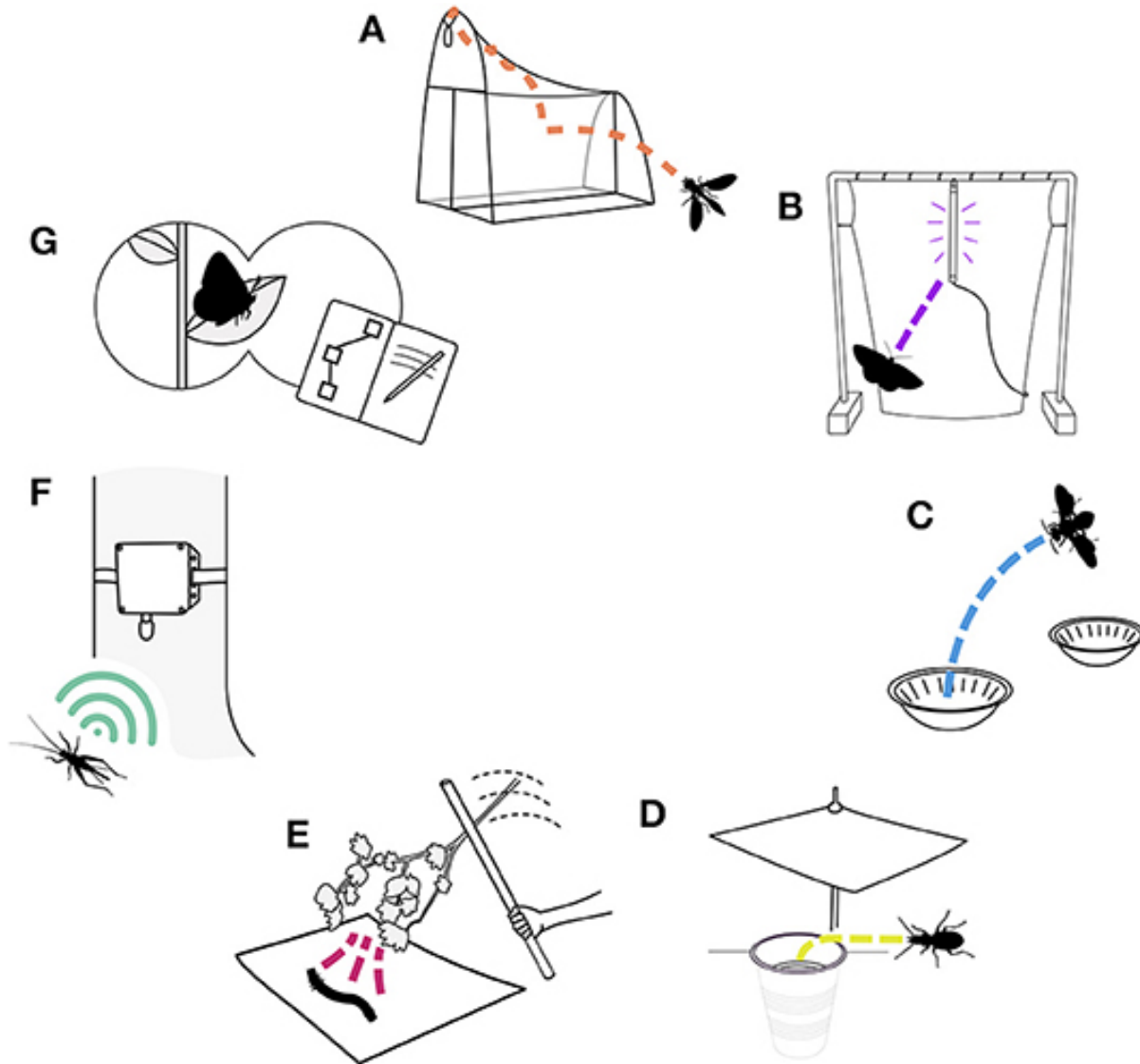
Soldaatjes	Aantal
Zwart soldaatje	
Rood soldaatje	
Overige wsk	

Overige kevers	Aantal
Overige kevers	

Opmerkingen:



Old school: observaties/vallen



Montgomery et al. 2021 Frontiers in Ecology and Evolution

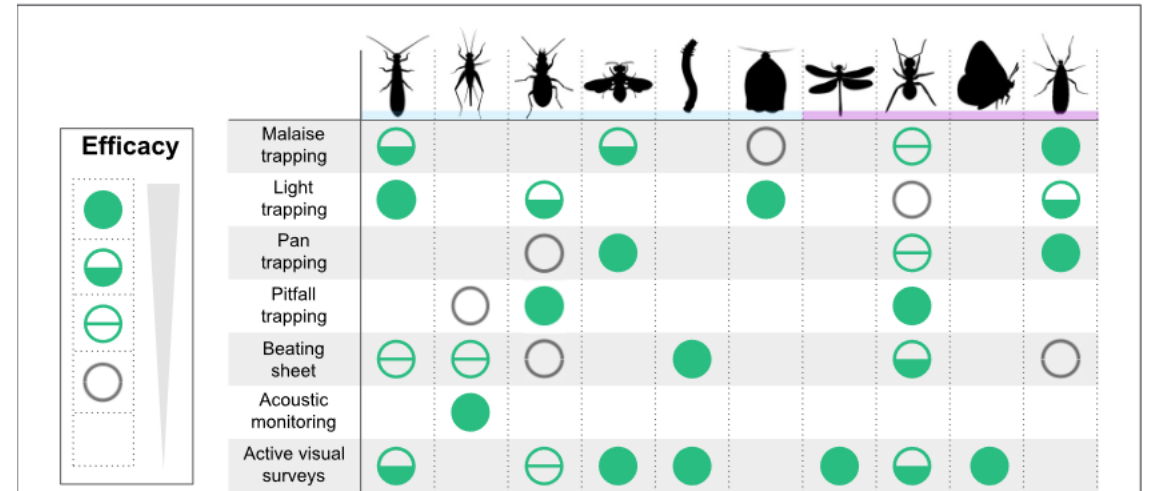
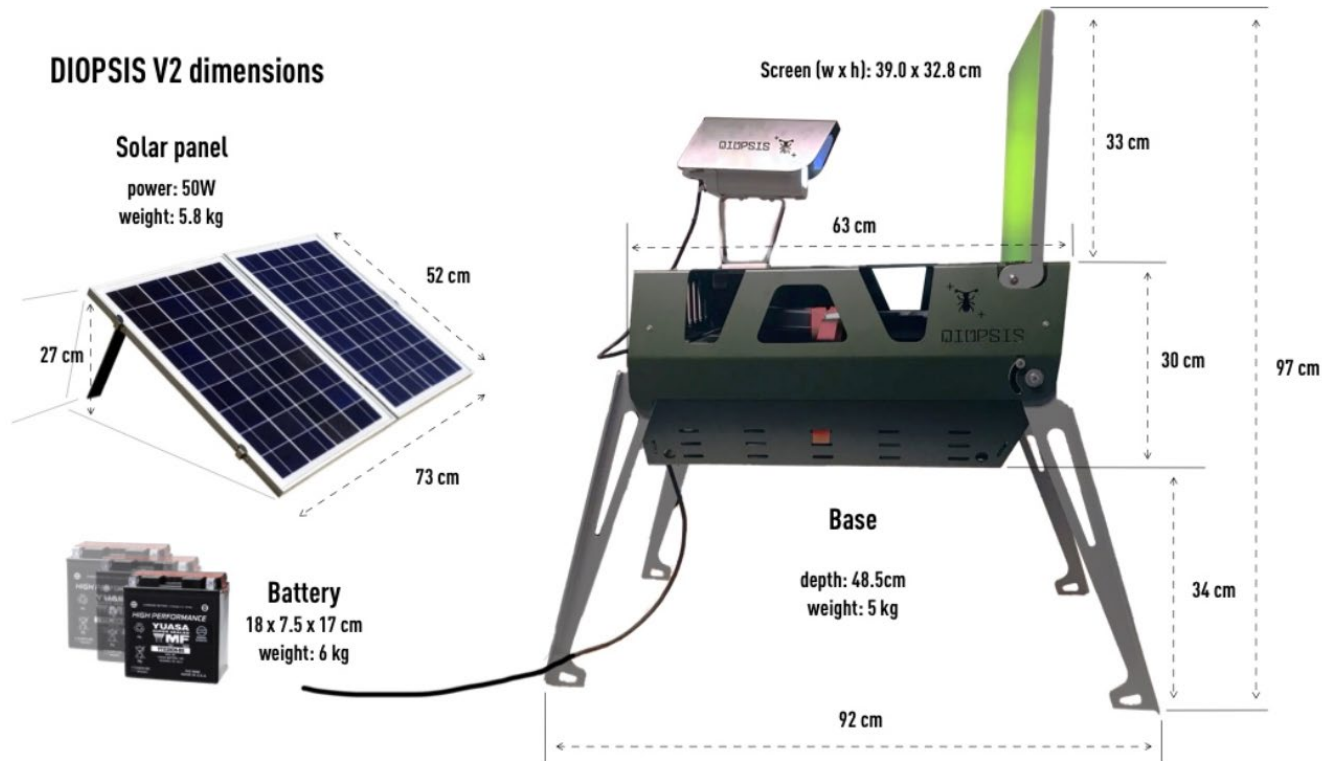


FIGURE 1 | Commonly-monitored insect guilds and taxa and the efficacy for each of seven benchmarking methods. Efficacy of each method for a given insect group is scored as follows: filled green circles indicate optimal suitability; half-filled circles indicate possible suitability; divided, unfilled circles indicate marginal suitability; unfilled gray circles indicate bycatch only; and no circle indicates general unsuitability. Insect groupings are defined by ecological traits (blue bar) or taxonomic clades (purple bar). In order by column, insect groupings are: adult semi-aquatic insects (Plecoptera, Ephemeroptera, and Trichoptera); singing insects (Orthoptera & Hemiptera: Cicadoidea); ground-dwelling beetles (Coleoptera: Carabidae and Staphylinidae); non-lepidopteran pollinators (Hymenoptera, Diptera, Coleoptera); leaf-chewing larvae (Lepidoptera and Hymenoptera: Symphyta); night-active moths (Lepidoptera); dragonflies and damselflies (Odonata); ants (Hymenoptera: Formicidae); butterflies (Lepidoptera: Papilionoidea); and flies (Diptera).

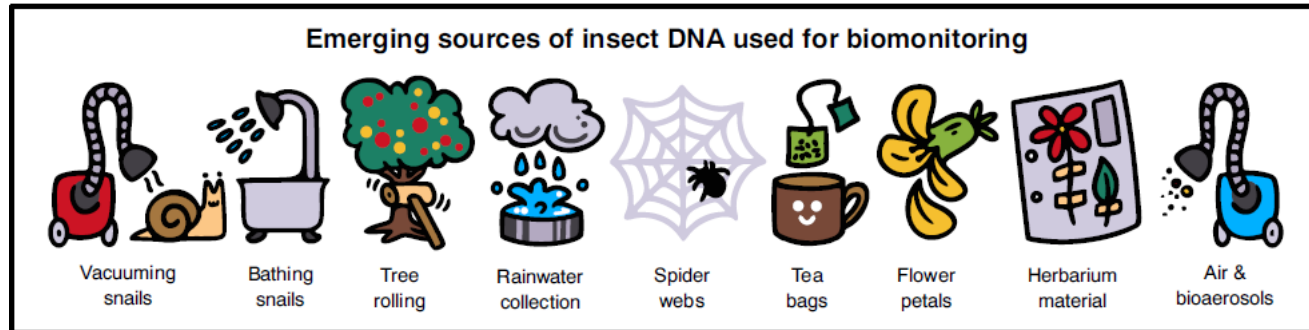
New school: AI geassisteerde camera

Continue en automatische monitoring.

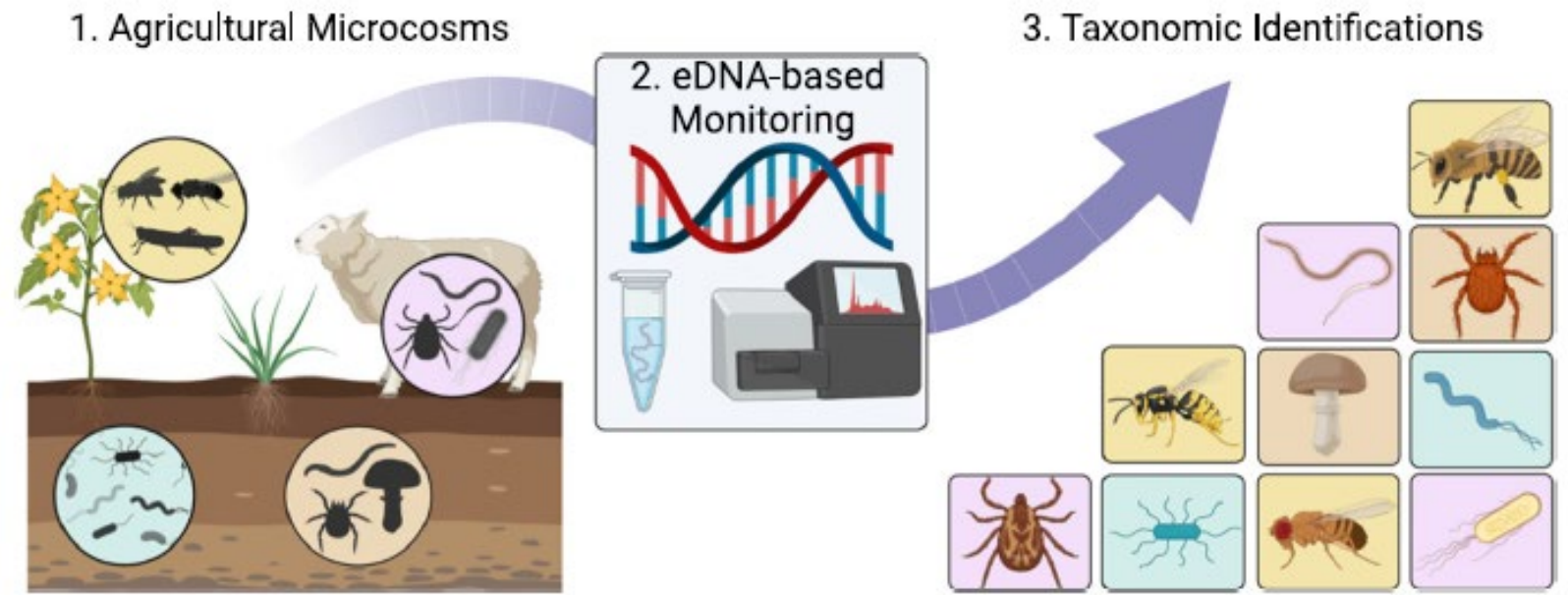


<https://diopsis.eu/en/>

New school: eDNA (environmental dna).



Chua et al. 2023 Trends in Genetics

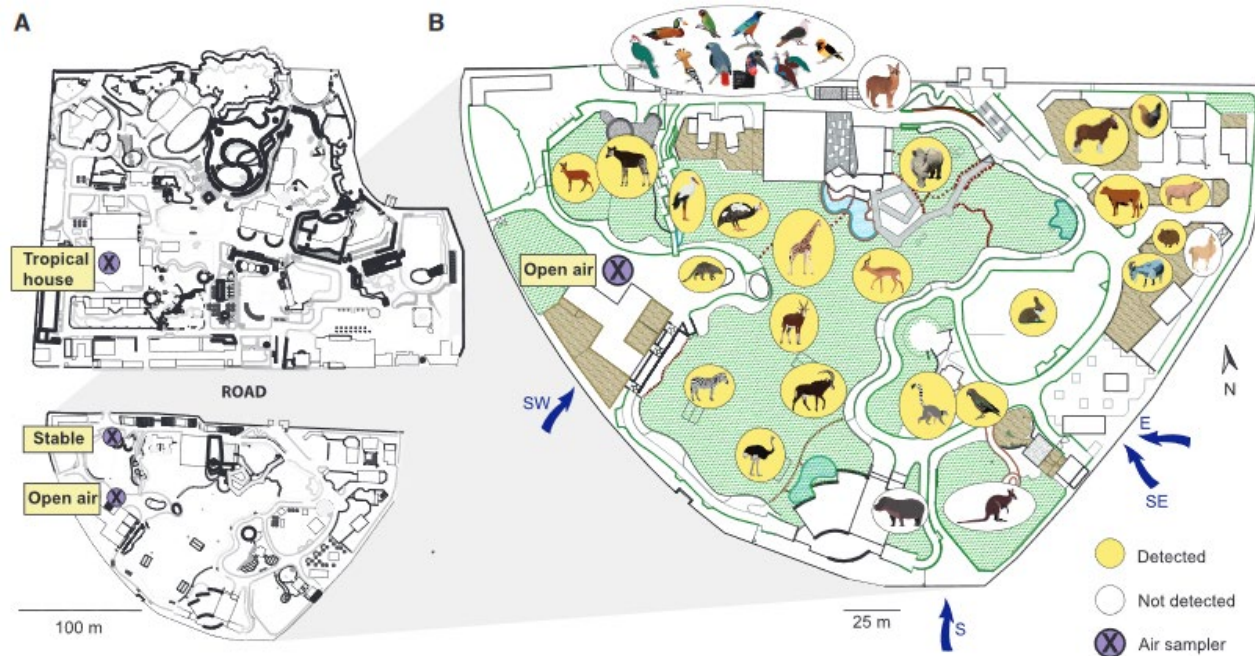


Kestel et al. 2022 Science of the Total Environment



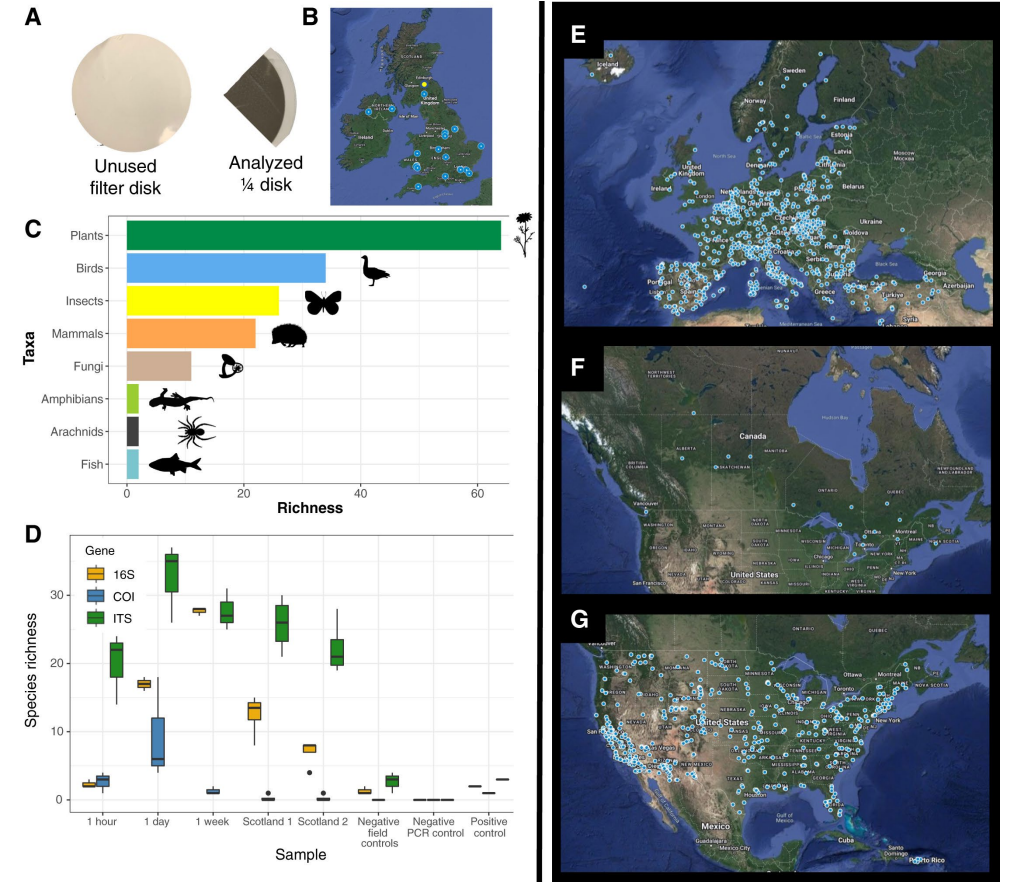
Gebruik van luchtstalen --> veelbelovend!

Luchtstalen in zoo identificeren meeste van de aanwezige diersoorten.



Lynggaard et al. Current Biology 2022

Luchtkwaliteitsensors kunnen gebruikt worden als indicatoren voor biodiversiteit



Littlefair et al. Current Biology 2023



“Scientist collecting air sample in field”

Monitoring van veld door drone en luchtstalen?

Praktische uitwerking:

- Effect van omgevingsvariabelen
- Kwantificatie (schadedrempel)

