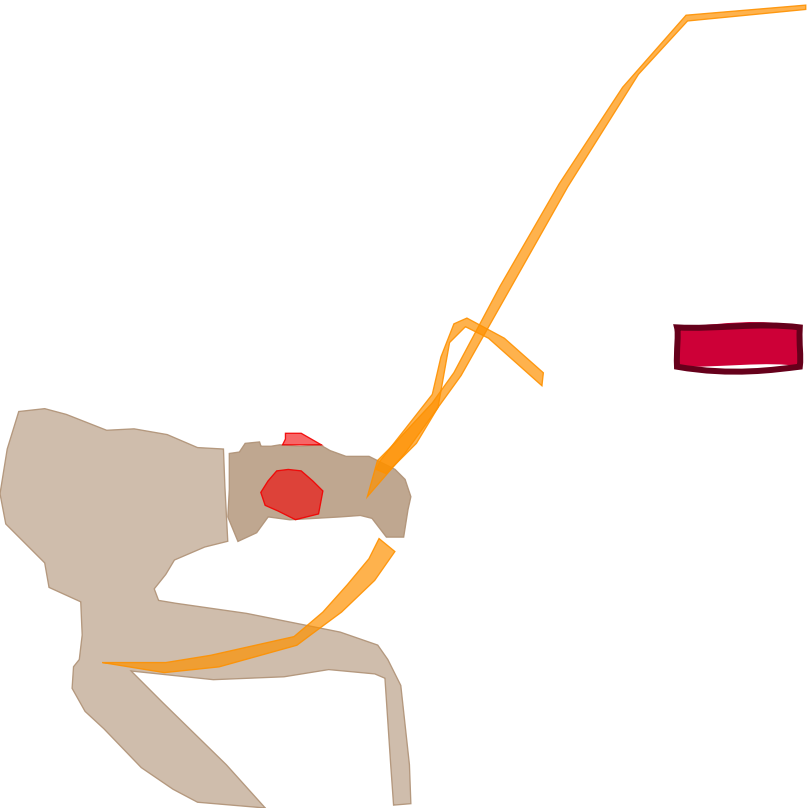
Efficacité d'une guilde de prédateurs généralistes indigènes dans la lutte aux ravageurs du concombre de serre.

François Dumont[1]
Geneviève Labrie[1]
Caroline Provost[1]
Éric Lucas[2]

[1] CRAM
CENTRE DE RECHERCHE AGROALIMENTAIRE DE MIRABEL

[2] UQÀM

Generalist predators

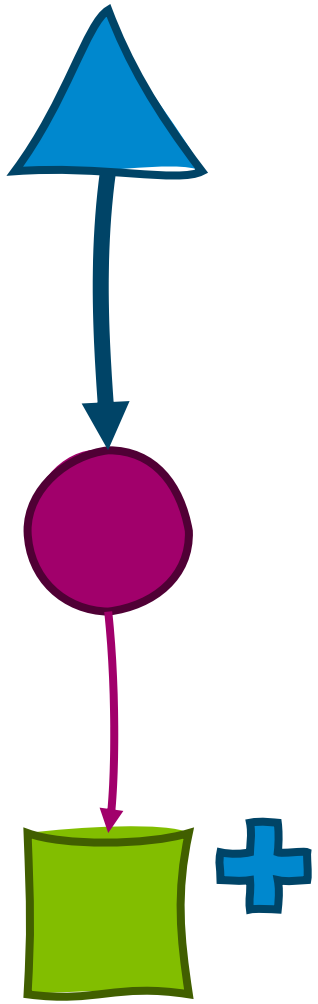


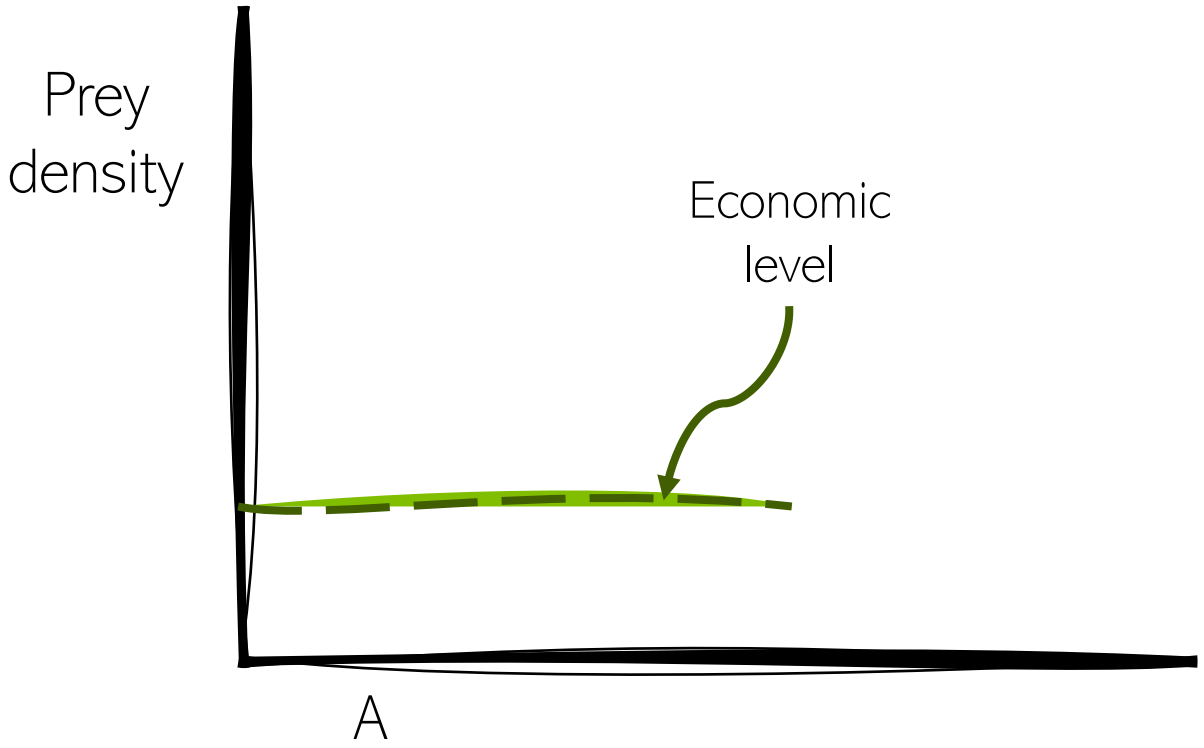
- Can feed on various pest species
- Maintain their population during period of main prey scarcity
- Usually more agressives than specialists

- Can feed on non-targeted prey (including other biocontrol agents) (intraguild predation)
- Could disrupt biological control by specialist predators/ parasitoids (in some circonstances)

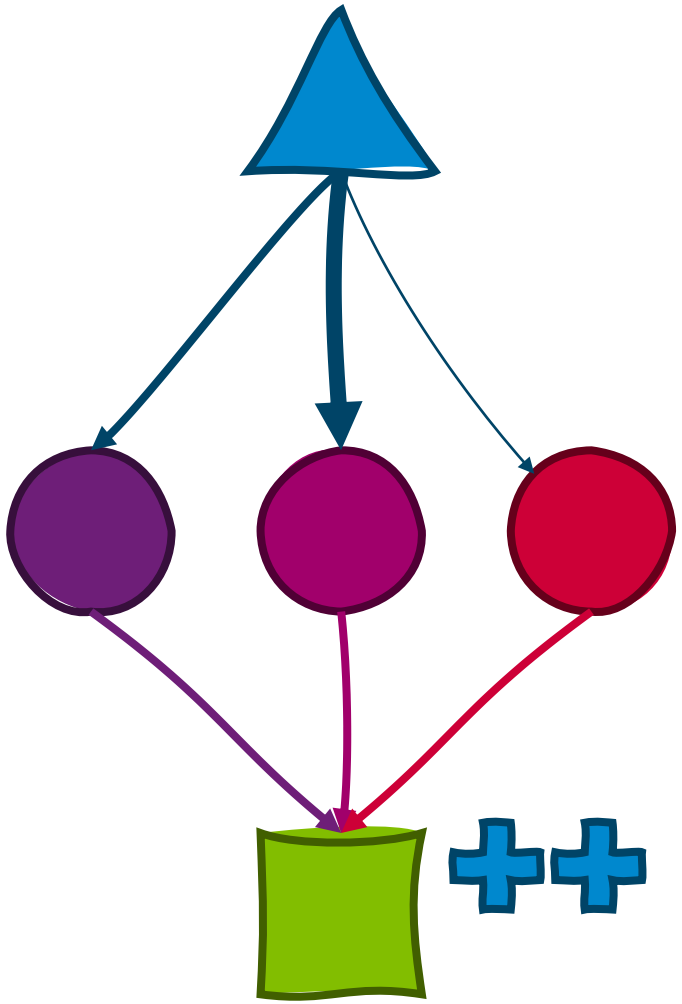
Symondson & al. 2002

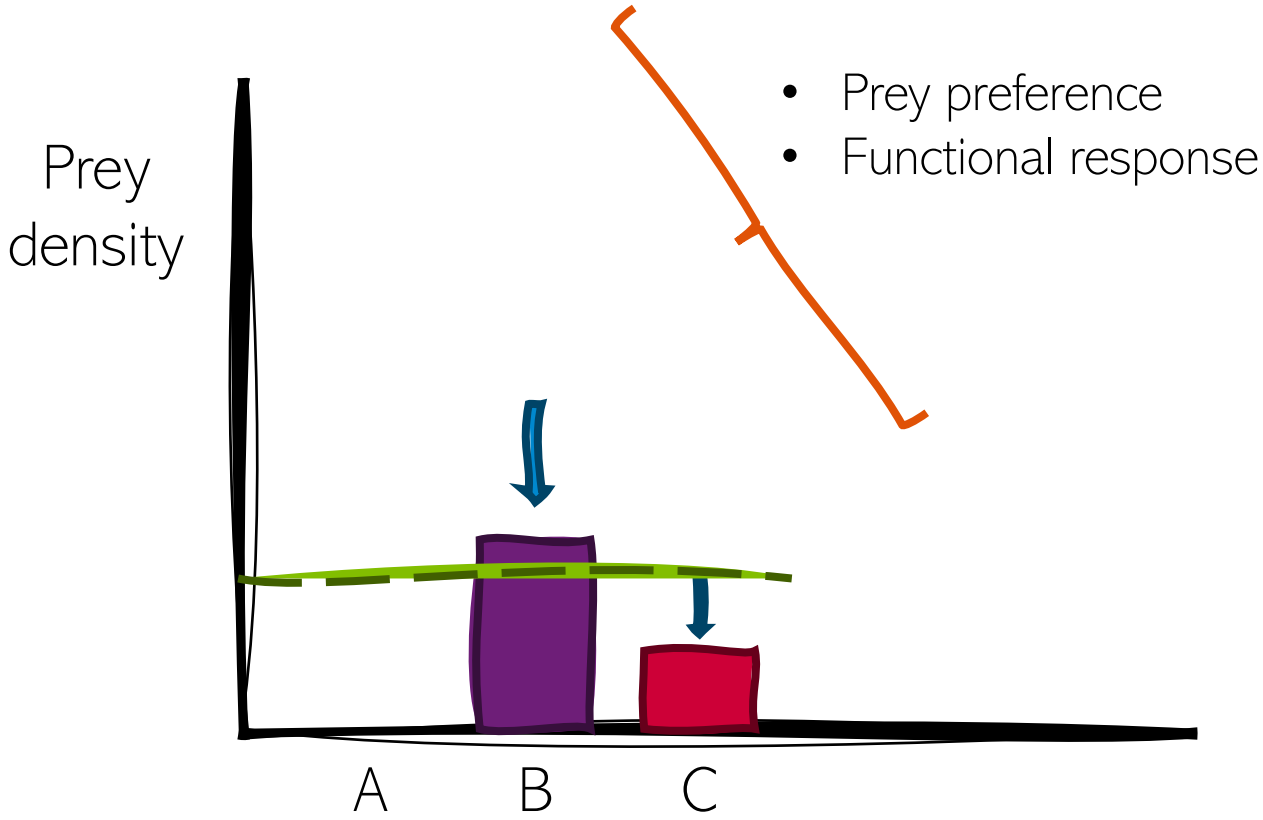
Trophic interactions: simple system





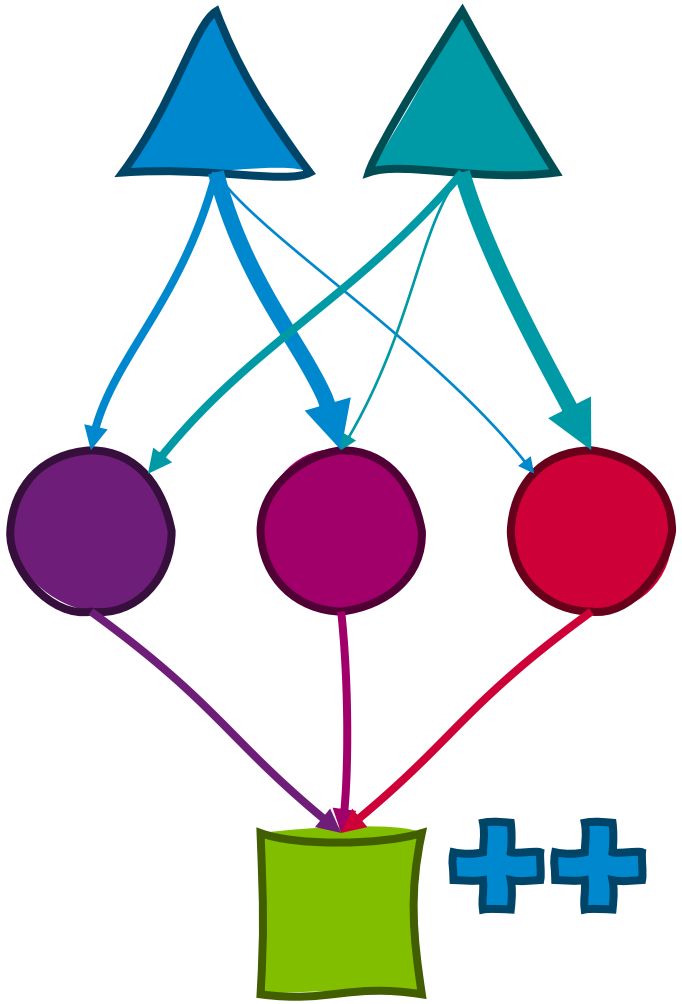
Trophic interactions: multiple prey system

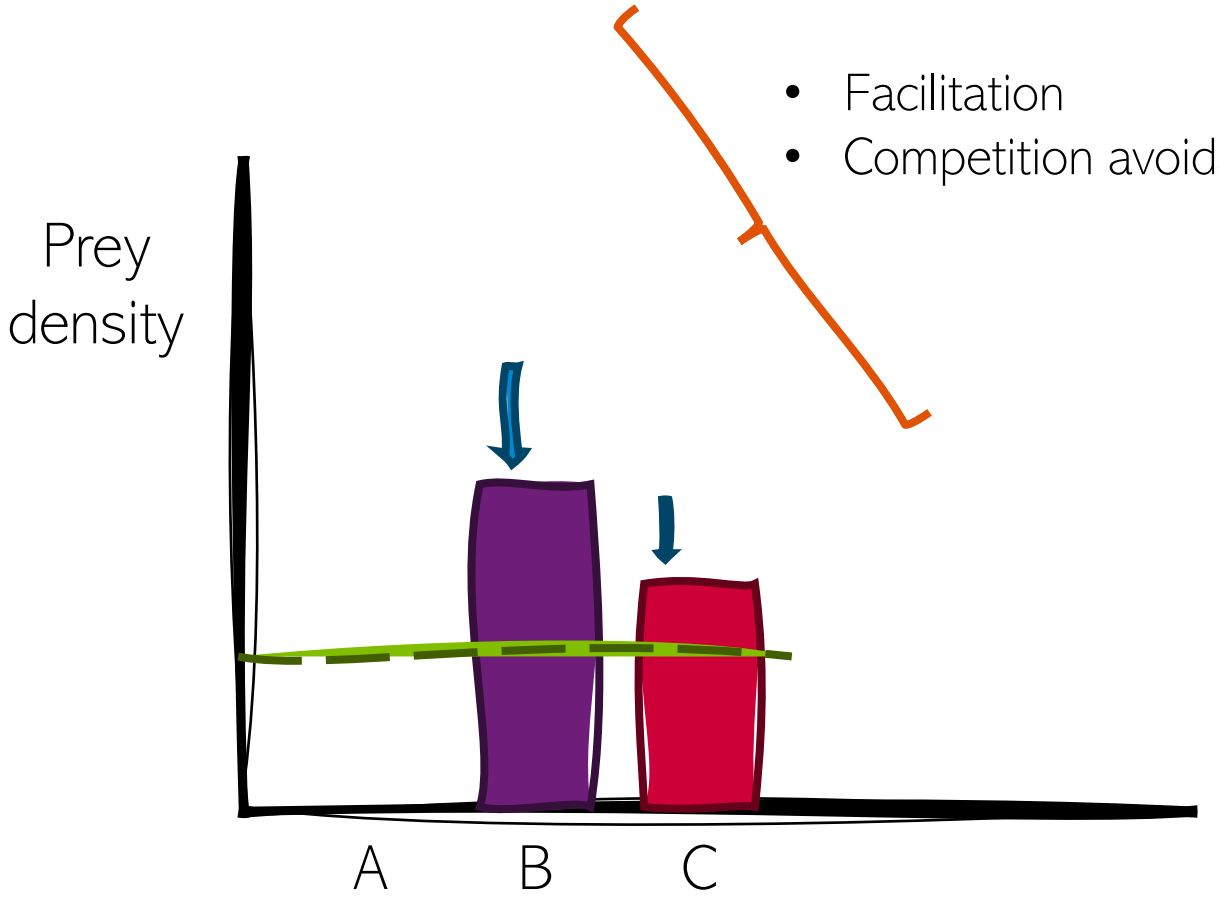




- Prey preference
- Functional response

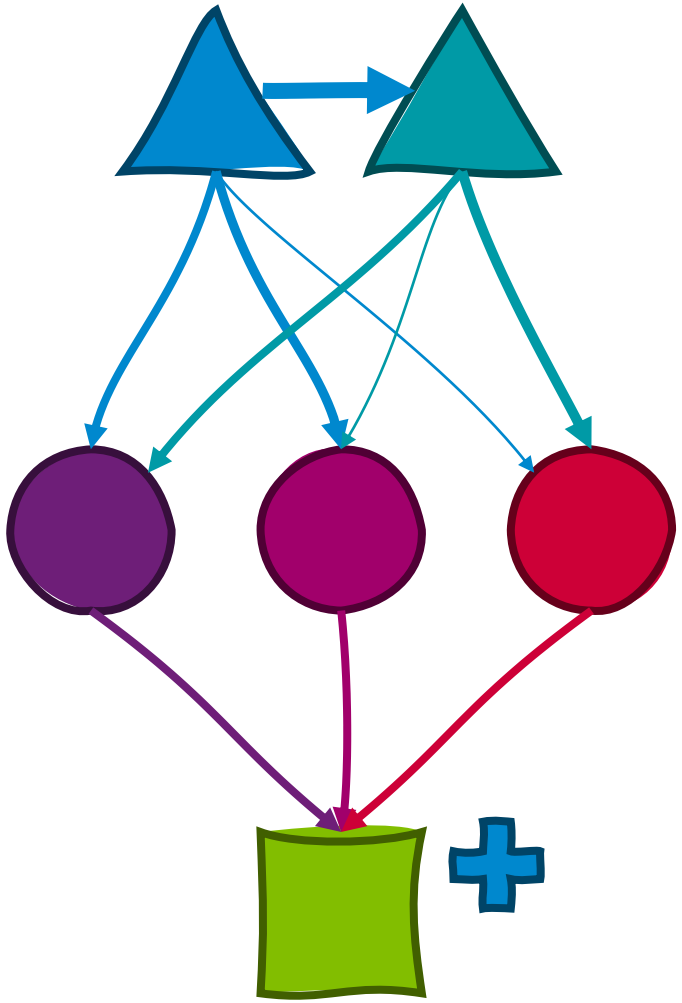
Assemblage of generalist predators

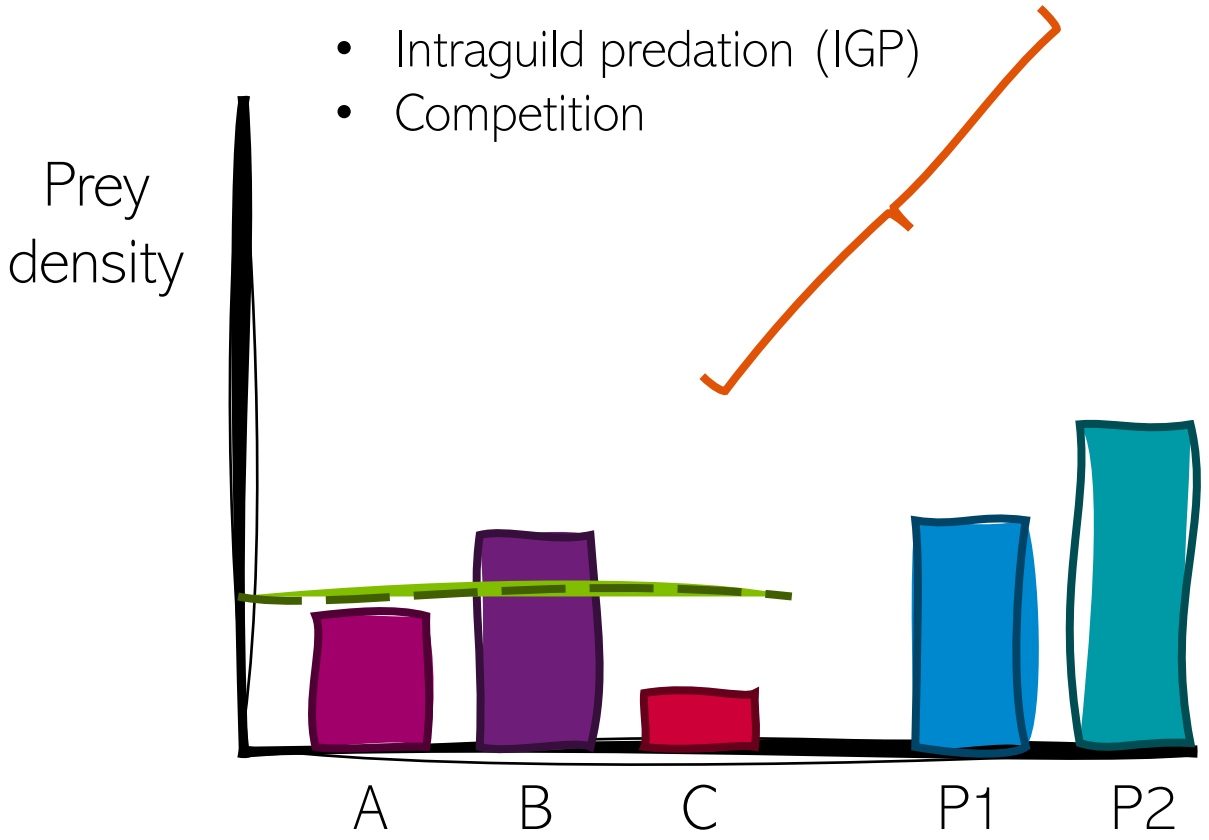




- Facilitation
- Competition avoidance

Intraguild predation (IGP)





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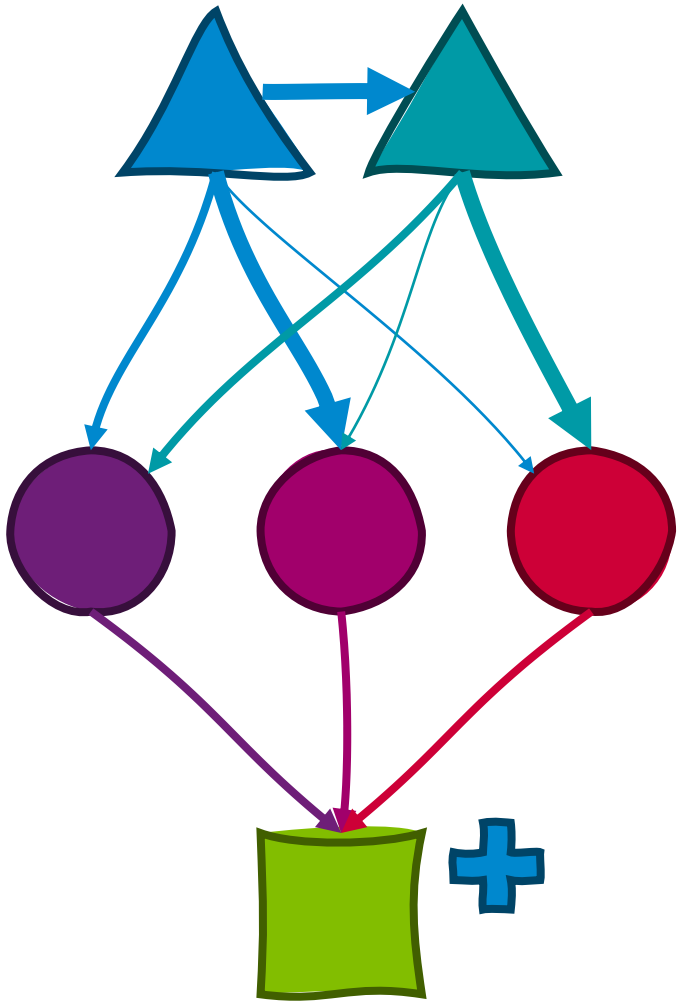
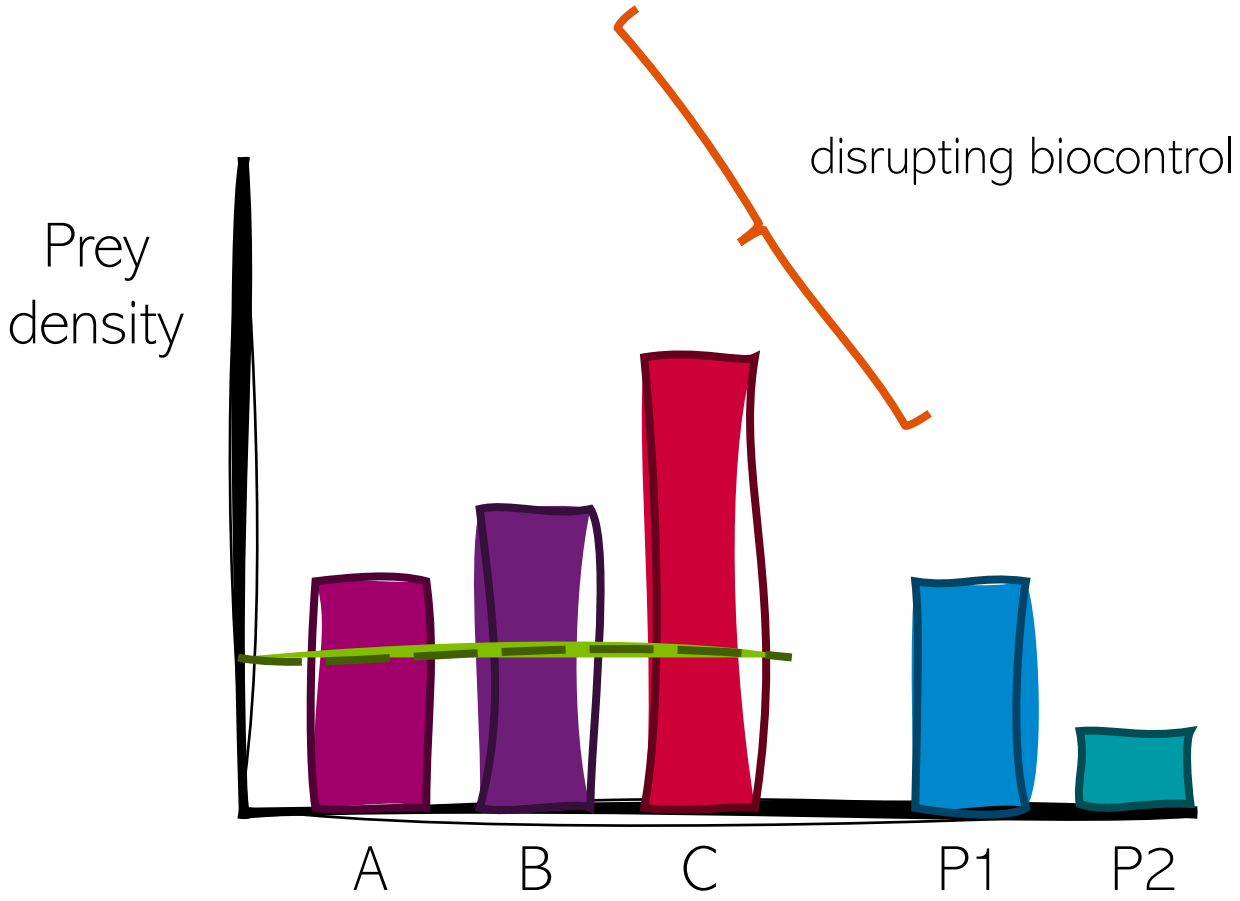
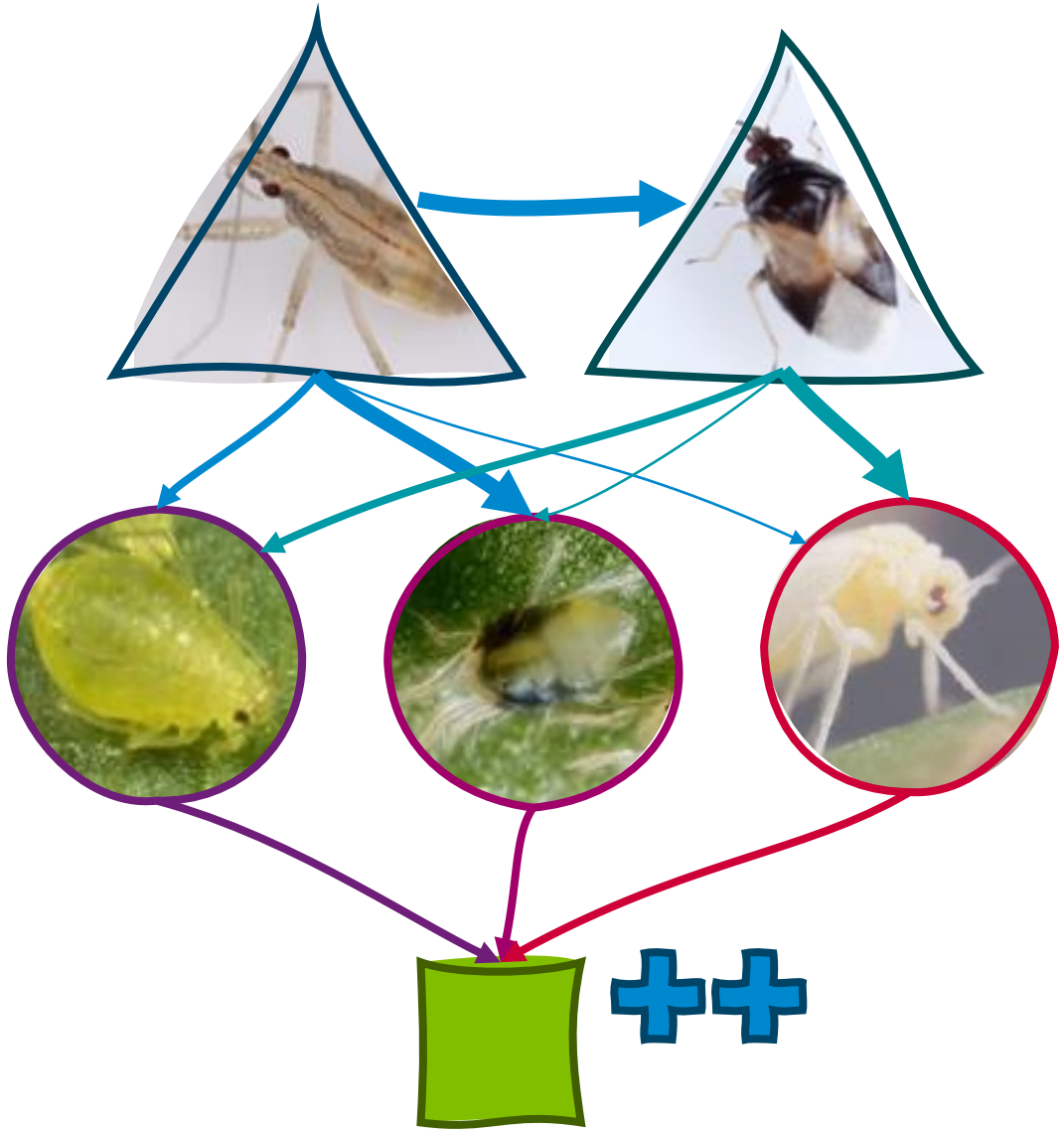




Nabis, *Orius* & pests of cucumber



- Defining the potential of *Nabis*
- *Nabis* and *Orius* respond to each other
  - Within plant distribution
  - Oviposition
- Facilitation ?
  - *Nabis* is a sit-n-wait predator
  - *Orius* is an active predator
- Different size
  - Prey sharing ?
  - Competition avoidance ?

Objectives

- Compare efficiency of *Nabis* and *Orius* on each prey
- Test de synergy between *Nabis* and *Orius*
- Measure the predator's mutual effect on their populations (IGP and/or competition)

Methods

Design

- In-cage test (32,5 x 32,5 x 77 cm);
- 1 cucumber plant (initially ~20 cm);
- Under tunnels (from June to August 2021)

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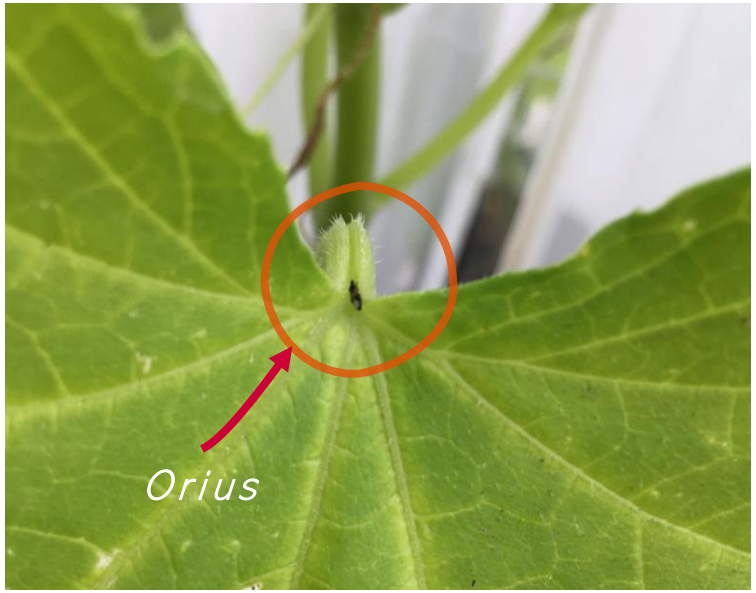
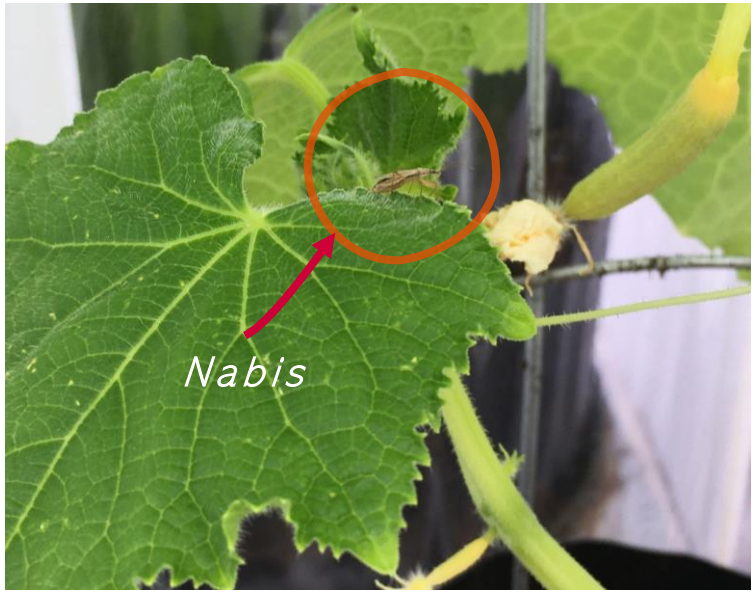
Treatments

- Prey
  - 12 aphids (*M. persicae*)
  - 12 whiteflies (*B. tabaci*)
  - 12 spider mites (*T. urticae*)
- Predators
  - 4 *Nabis* (fertilized females)
  - 4 *Orius* (fertilized females)
  - 2 of both
  - Control (w/o predator)
- 12 replicats by treatment combinaison





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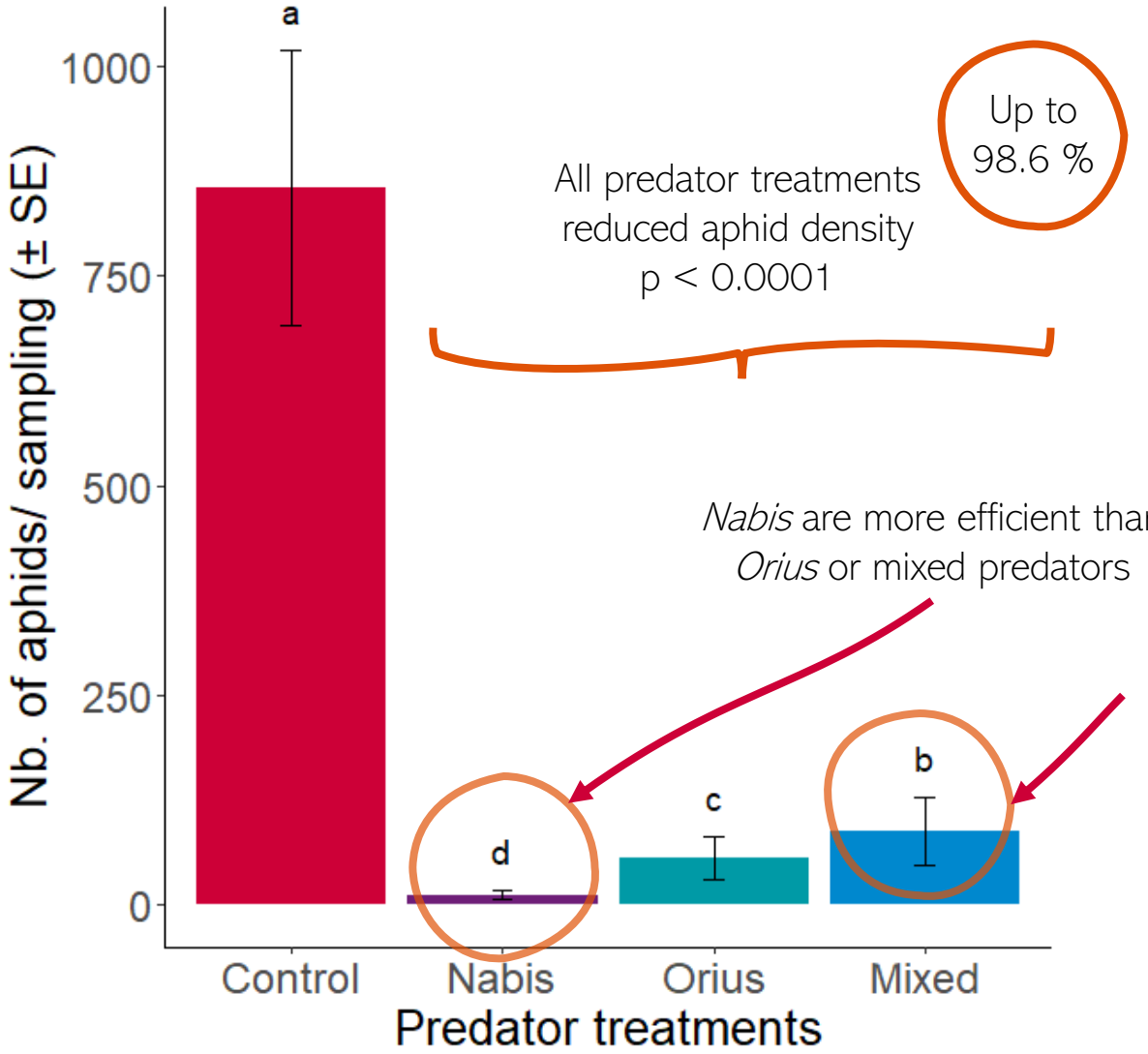
Monitoring

- Monitoring on day 14 and 28 (only data from day 28 presented here)
- Visual observation of the of stem and the petioles
  - To count predators
- Removing a randomly selected leaf per plant
  - Counting prey and predators in laboratory

Aphids

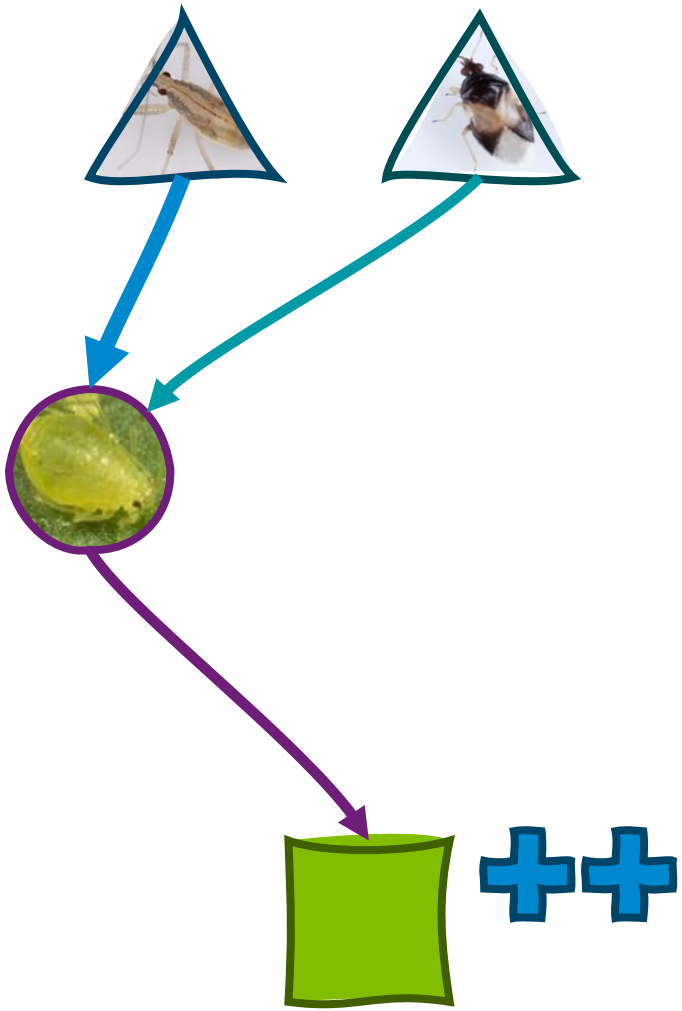


Up to 98.6 %

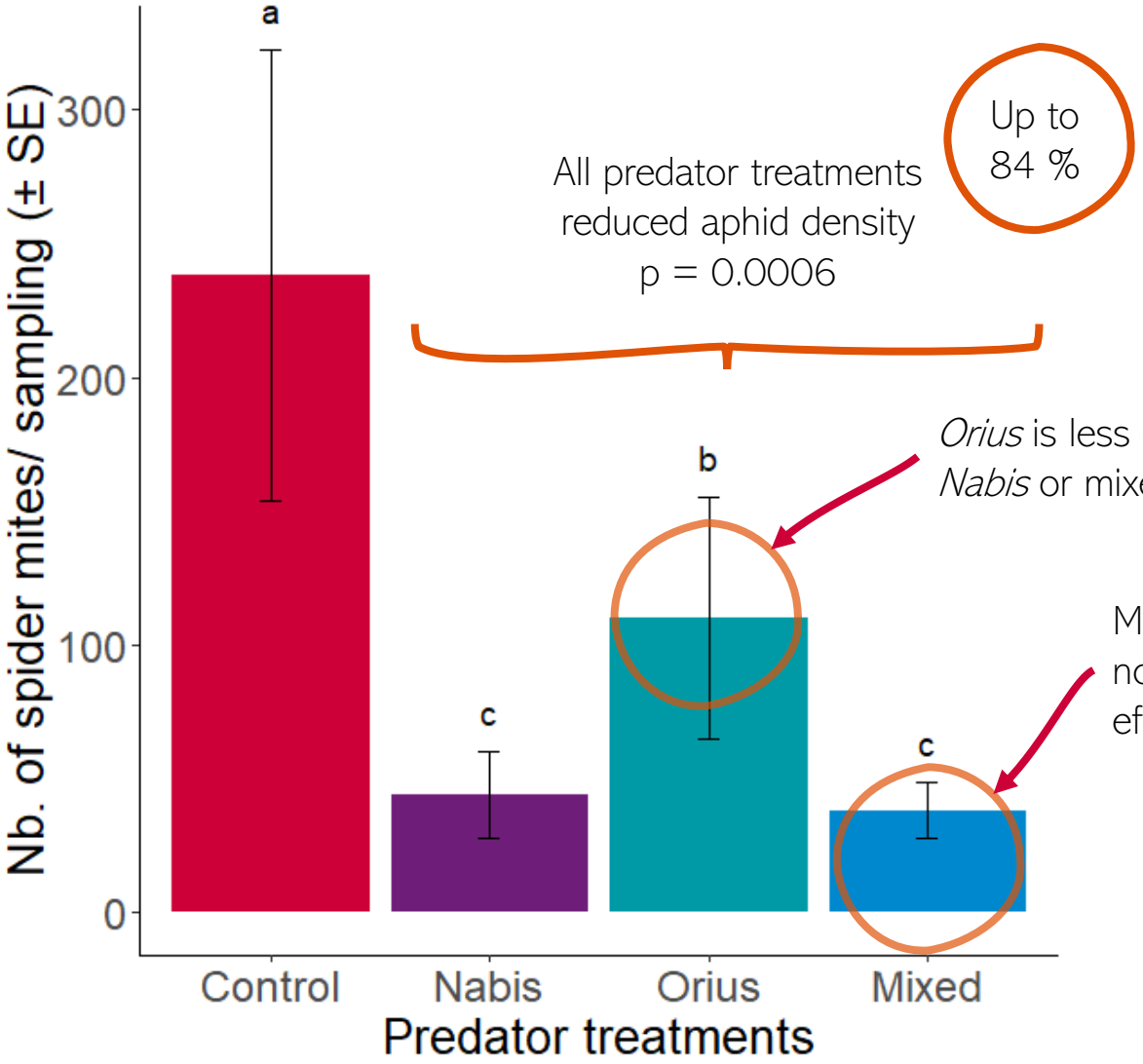
All predator treatments reduced aphid density $p < 0.0001$

Nabis are more efficient than *Orius* or mixed predators

Mixing *Nabis* and *Orius* reduced their efficiency



Spider mites

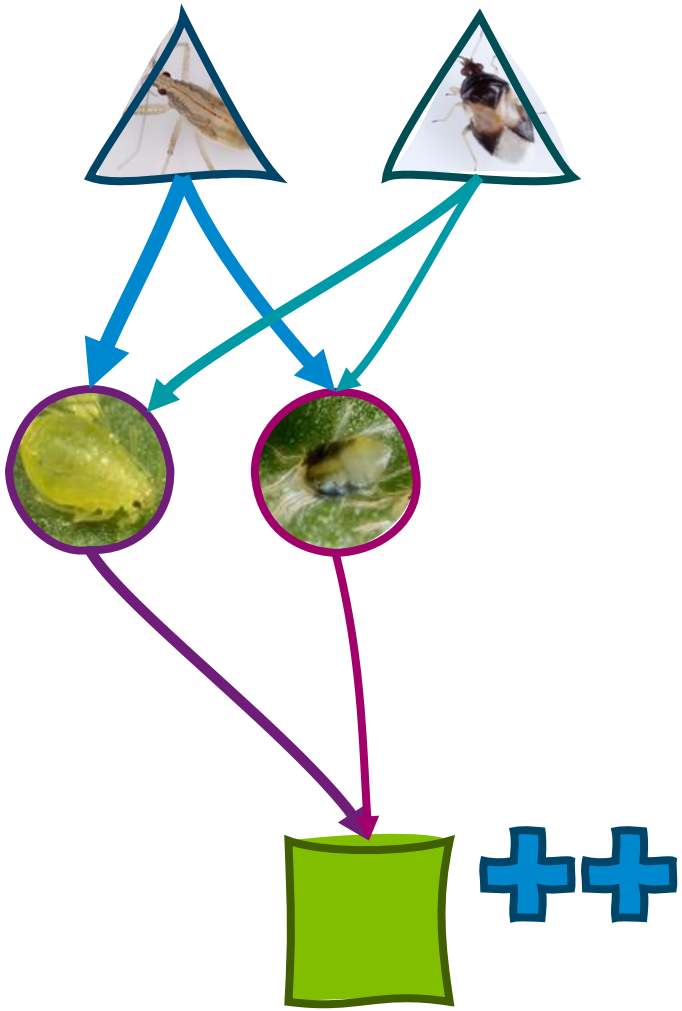


All predator treatments reduced aphid density
p = 0.0006

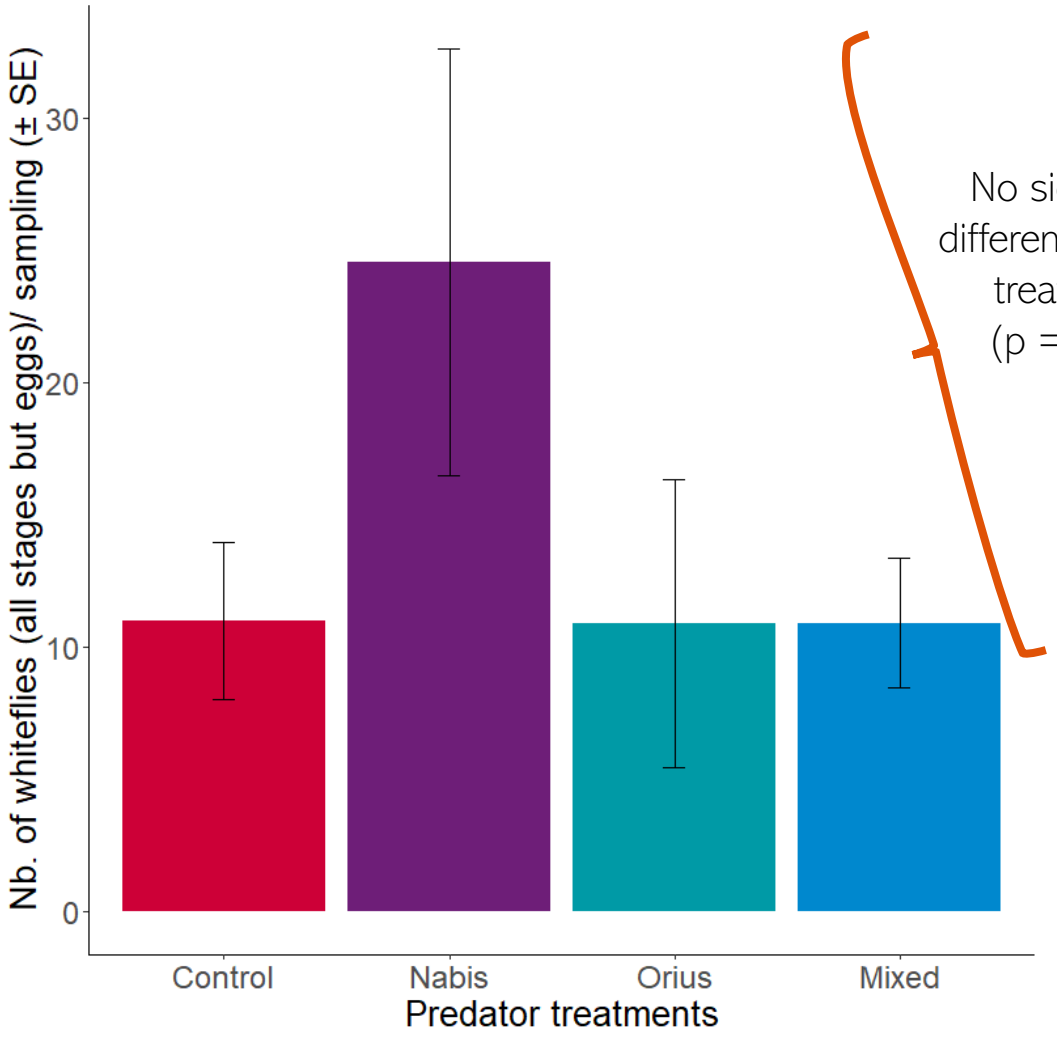
Up to 84 %

Orius is less efficient than *Nabis* or mixed predators

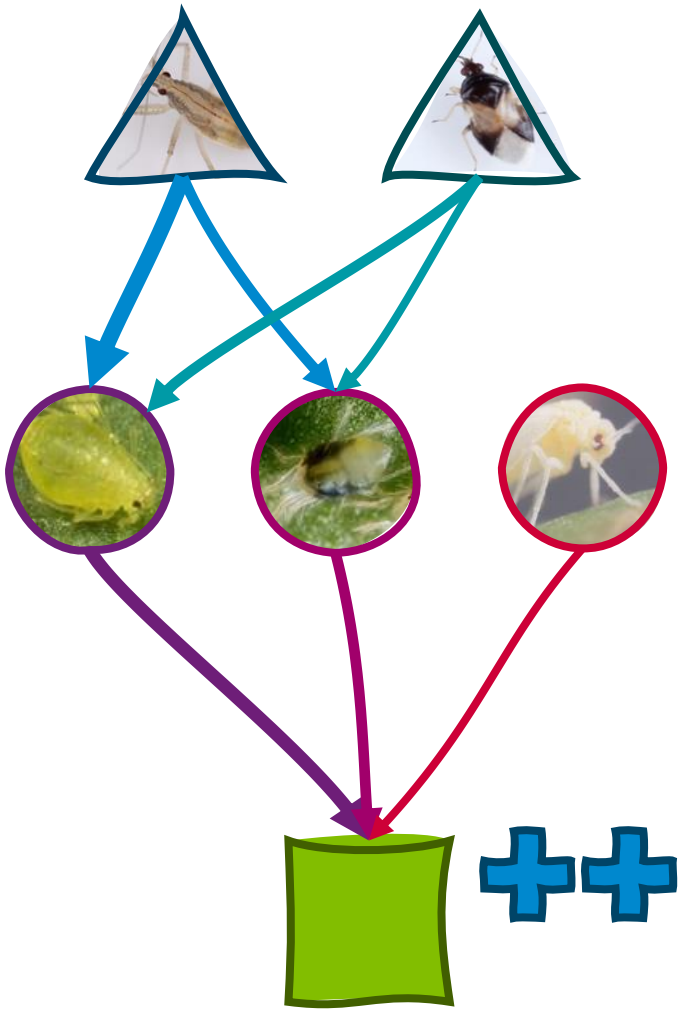
Mixing predators did not reduced the efficiency of *Nabis*



Whiteflies



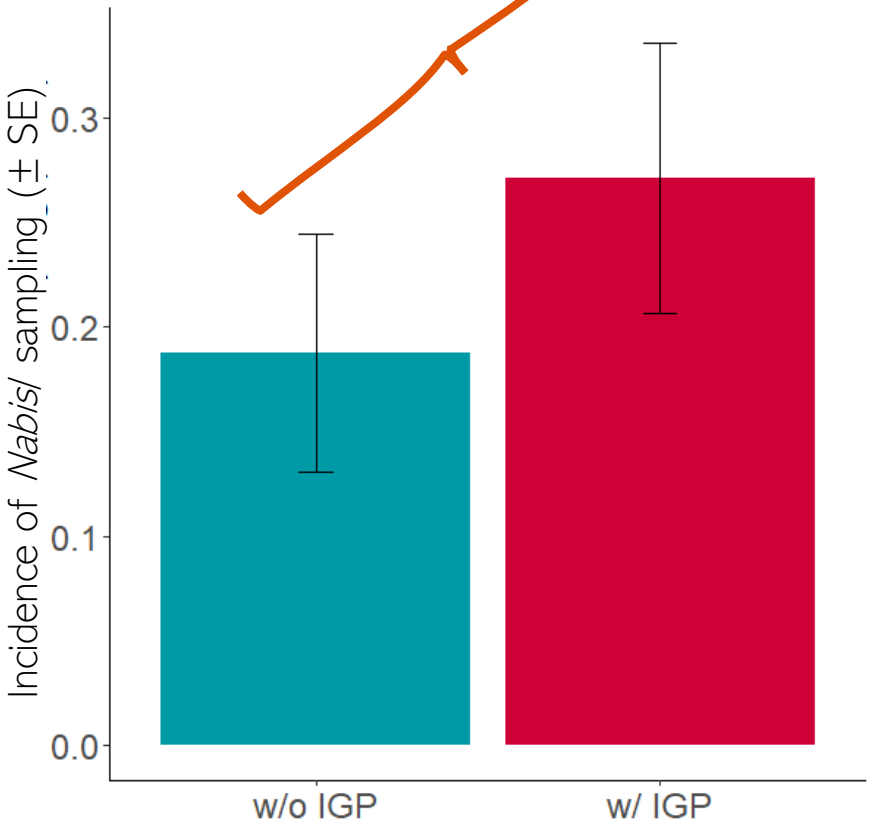
No significant difference among treatments ($p = 0{,}18$)



Intraguild predation

Nabis

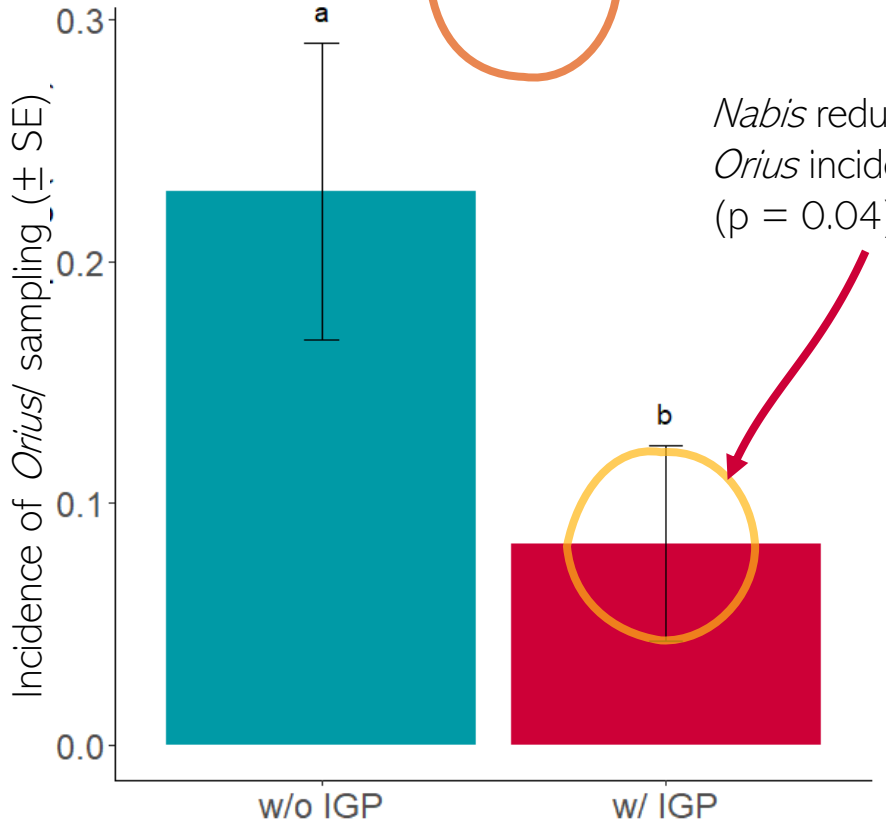
Nabis is unaffected by *Orius* (p = 0.31)



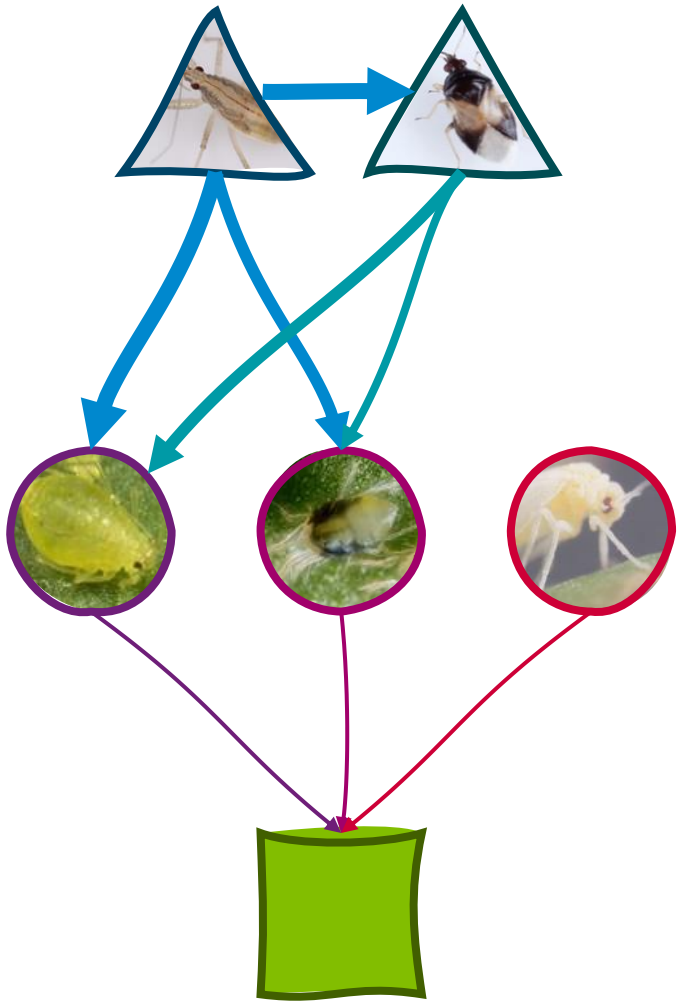
Orius

63.8 %

Nabis reduced the *Orius* incidence (p = 0.04)



En résumé…



- *Nabis* is very efficient against aphids and spider mites
  - *Orius* also significantly contributes to the reduction of aphid's and spider mite's populations;
  - Both predators did not affected whiteflies (in our experiment);
- No synergy between the two predators
  - The efficiency of *Nabis* against aphids is slightly reduced by the presence of *Orius*;
- Intraguild predation and/or competition affected *Orius* populations

Merci !

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CANADIAN AGRICULTURAL PARTNERSHIP