

Natural Enemies of *Tuta absoluta*:
Orius, *Geocoris* and new species?



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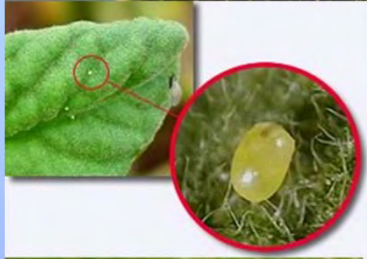
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Tuta absoluta

- Originates from South America
- Can cause yield losses up to 100%
- Attacks all stages of tomato plants



In Brazil besides, *T. absoluta*....

Two other important lepidopteran pests on tomato



Tomato fruit borer
Neoleucinodes elegantalis
(Lepidoptera: Crambidae)

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Two other important lepidopteran pests on tomato



Tomato fruit borer
Neoleucinodes elegantalis
(Lepidoptera: Crambidae)



Tomato fruitworm
Helicoverpa zea
(Lepidoptera: Noctuidae)

Control of *Tuta* and other lepidopterans in Brazil



- Mainly chemical control

- ≈ 36 sprays per 12 weeks
- Vegetable with highest pesticide use (59,4 Kg a.i./ha;12 weeks)
- Resistance development against pesticides
- Elimination of natural enemies

Biological control

- *Trichogramma pretiosum*
 - Does not yet provide reliable protection against the pest



What might be the best natural enemy for *Tuta* and the other lepidopterans?:

Generalist egg parasitoid?

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Generalist egg parasitoid? (not effective)

Specialist larval parasitoid?

What might be the best natural enemy for *Tuta* and the other lepidopterans?:

Generalist egg parasitoid? (not effective)

Specialist larval parasitoid? (not effective against other leps)

Generalist predator?

Yes, because they kill other pest species

What characteristics should be studied to identify an efficient predator for control of *T. absoluta*?

1. *Walks and reproduces on tomato plant ?*
2. *Kills sufficient prey ?*
3. *Efficient and economic mass rearing system possible ?*
4. *Kills other pest species (leps, whiteflies, aphids etc.) ?*

Predatory bugs in use:

Nesidiocoris tenuis



Macrolophus pygmaeus



Nabis pseudoferus

Arnó et al., (2009); Mollá et al., (2009), Urbaneja et al. (2009); Cabello et al, 2009, Calvo et al., (2010)

Potential predatory bugs for use:

Anthocoridae

Generally occurring species in Brazil:

Orius insidiosus (effective for thrips control, commercially used in Brazil)



Orius insidiosus (Say)

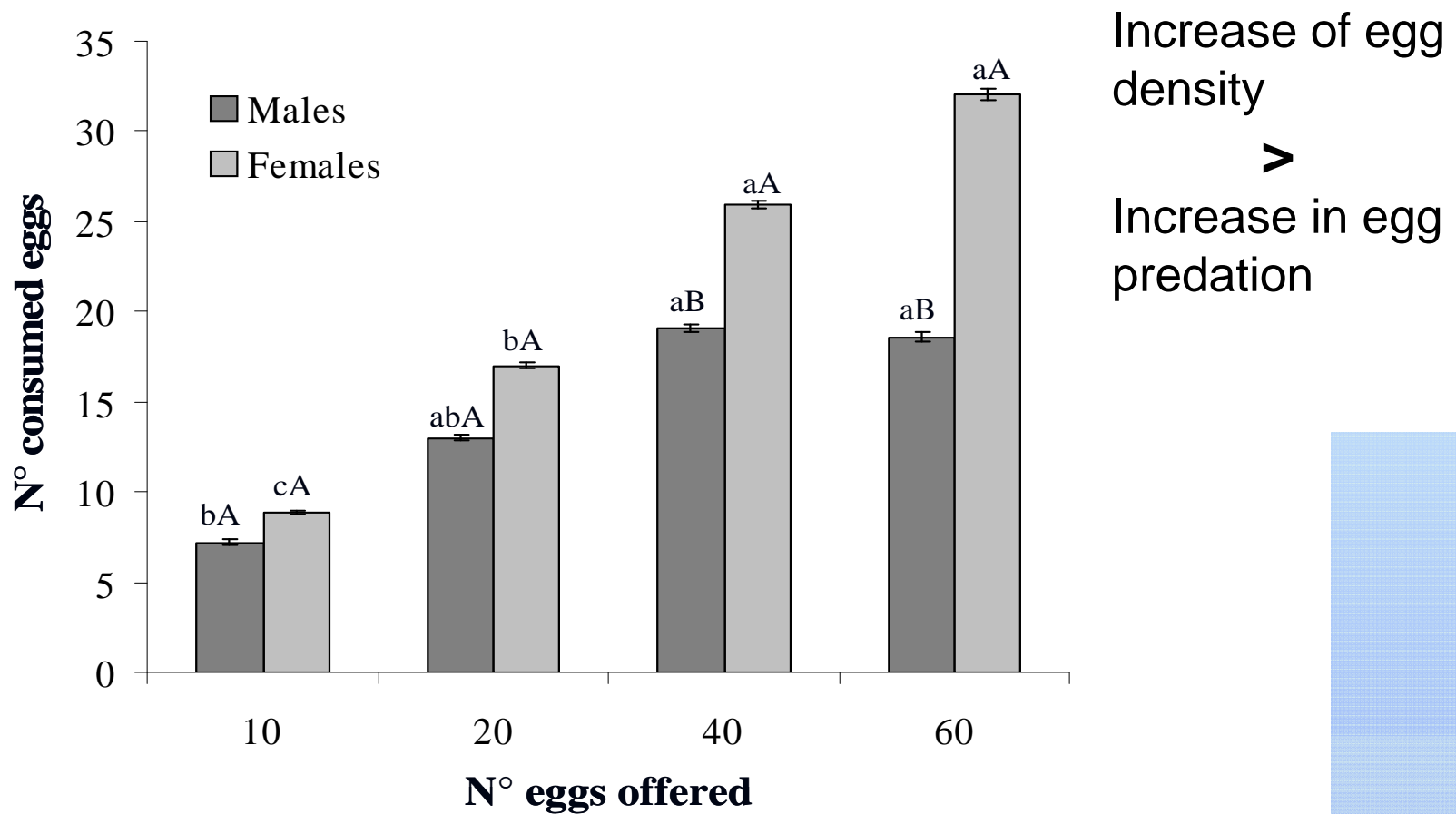
Geocoridae

Geocoris punctipes (not commercially used in Brazil)



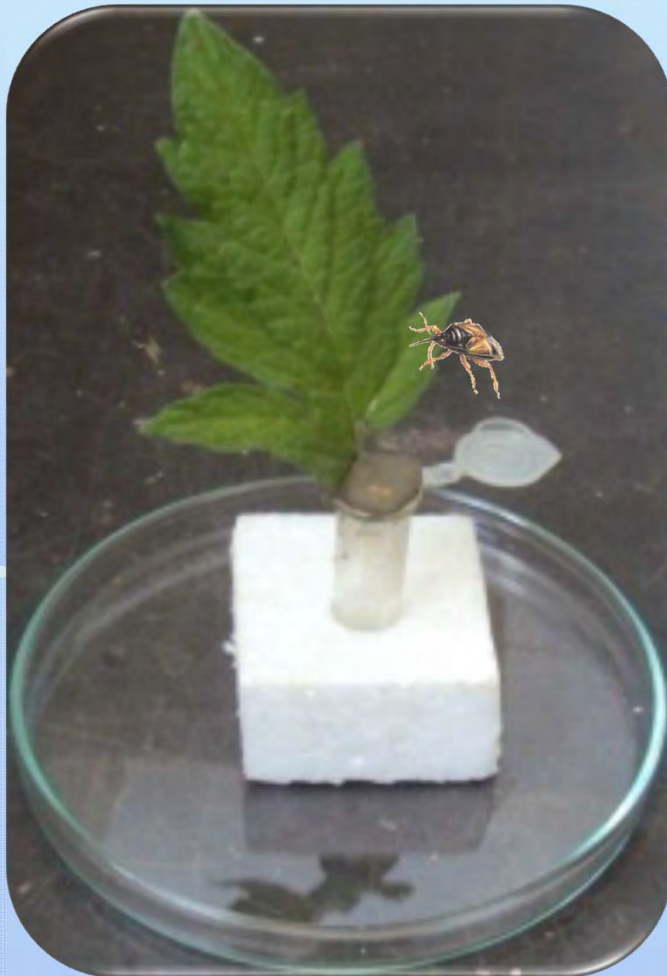
Geocoris punctipes

Both are reported as natural enemies of *T. absoluta* in Brazil



O. insidiosus can eat up to 30 eggs of *Tuta* per day

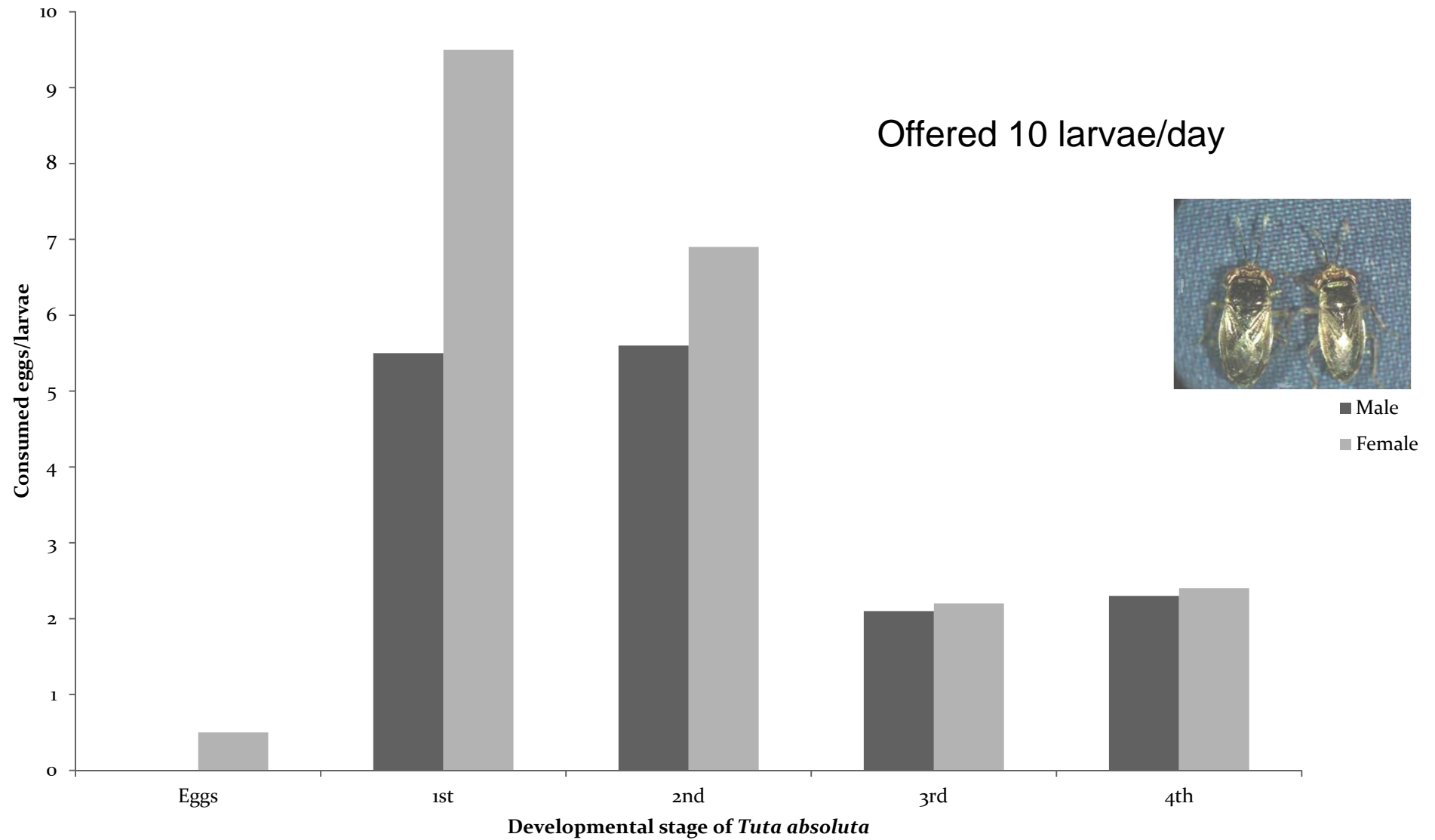
O. insidiosus were able to walk on the leaflets, find, prey upon and consume the eggs of *T. absoluta* !



But, can it walk on the stems.....?

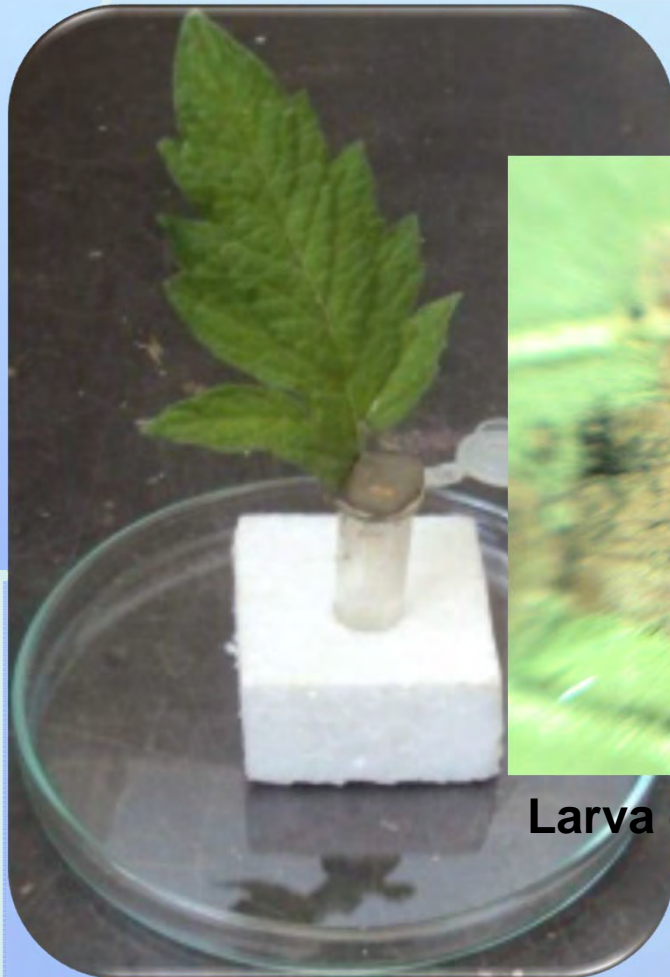


Geocoris punctipes: eats few eggs; mainly eats larvae at least 9 per day



G. punctipes were able to walk on the leaflets, find, prey upon and consume the larvae of *T. absoluta* !

But, it also can not walk on the stems...



Larva of *Tuta* preyed by *Geocoris*

And... now the Good News!

We found recently 4 new *Tuta* predators
in Brazil

- . they can walk on the stem; and
- . they reproduce and establish on tomato....

They are now being studied by my
research group



Thank you Muito Obrigada



Research Group

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