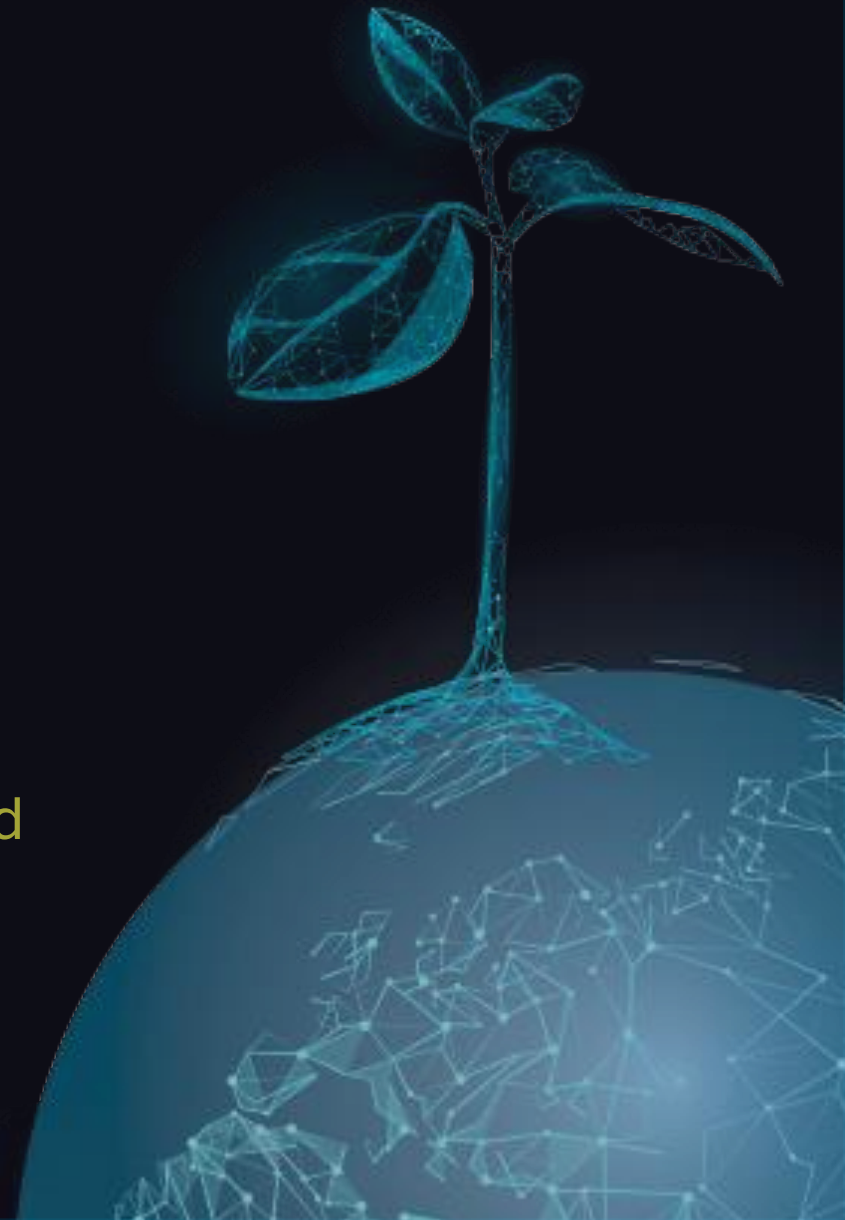


*Towards an integrated pest
management approach
for sucking insect pests in
deciduous fruit orchards in
South Africa*

AC Kleynhans | African Explosives and
Chemical Industries (AECI)



Toward an integrated pest management approach for sucking insect pests in deciduous fruit orchards in South Africa

AC Kleynhans



Hortgro Technical Symposium
27 May 2026



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forward together
sonke siya phambili
saam vorentoe

HORTGRO

Growing Fruit IQ



science

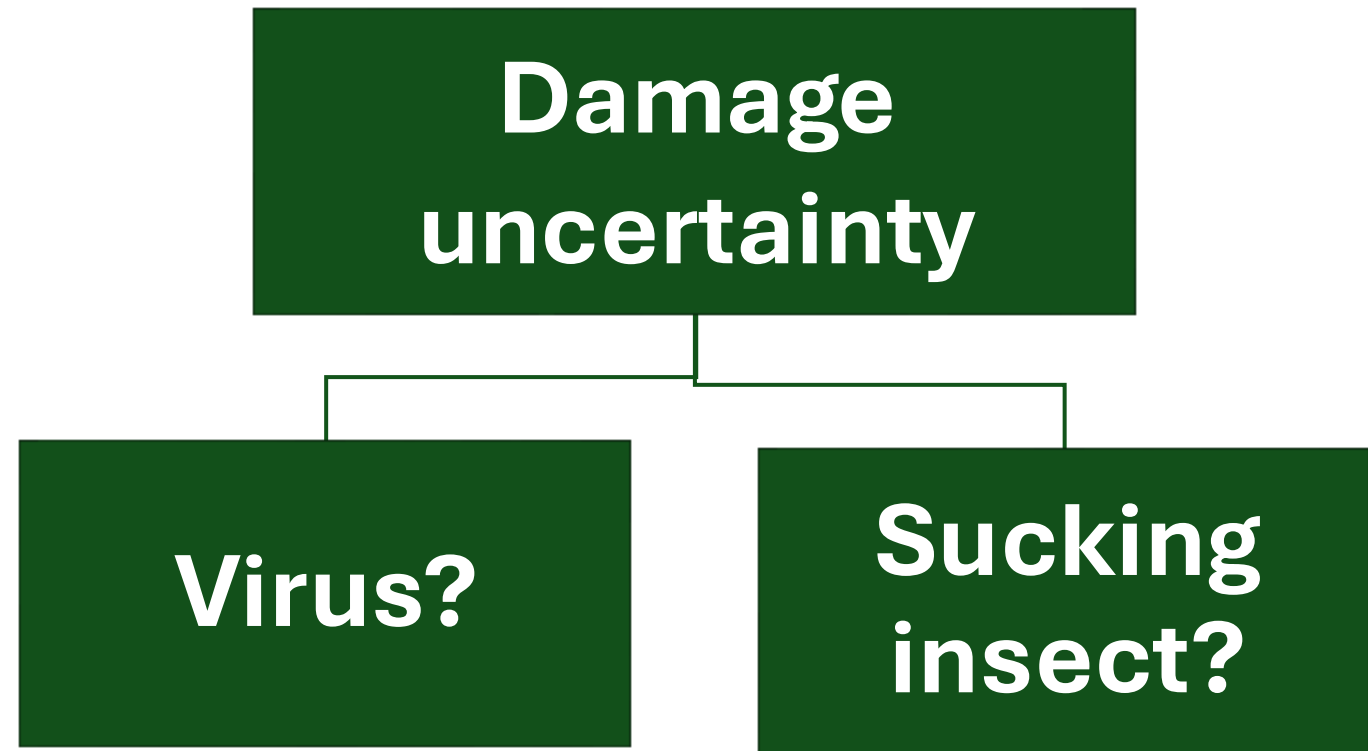
Background

Sucking insect emerging in pome fruit orchards:

- Mealybug
- Woolly apple aphid
- *Oxycarenus* sp.
- Stink bug complex

Control problems:

- Strict export market
- Losing chemical actives
- Insect resistance to chemicals

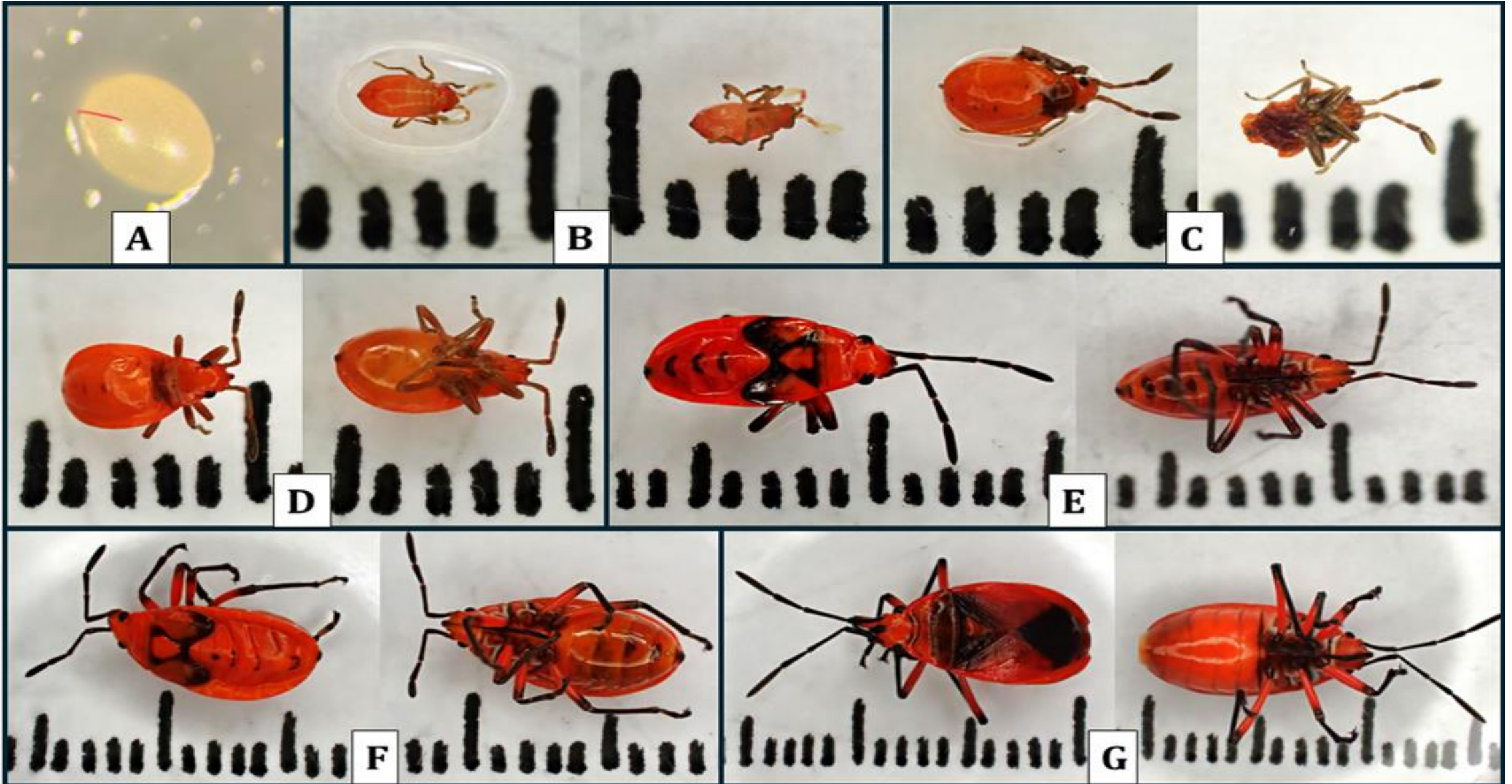


Insect Background

- *Cenaeus carnifex*
- Hemiptera: Pyrrhocoridae
- Red bug, rooi gogga, wamakertjie
- Damage >50%



Red Bug: Life Cycle



Red Bug: Host Plants

- Cheeseweed a.k.a **kiesieblaar**
- Tall fleabane
- Bristly oxtongue
- Tall whistleweed
- Twin cross
- Dandelion
- Scotch thistle
- Sow thistle



Red Bug: Reported Damage



Insect Background

- *Antestiopsis thunbergii*
- Hemiptera: Pentatomidae
- Antestia bug
- Orchard edge damage reported



Antestia Bug: Life Cycle



Egg cluster



Nymphs



Instars



Adults

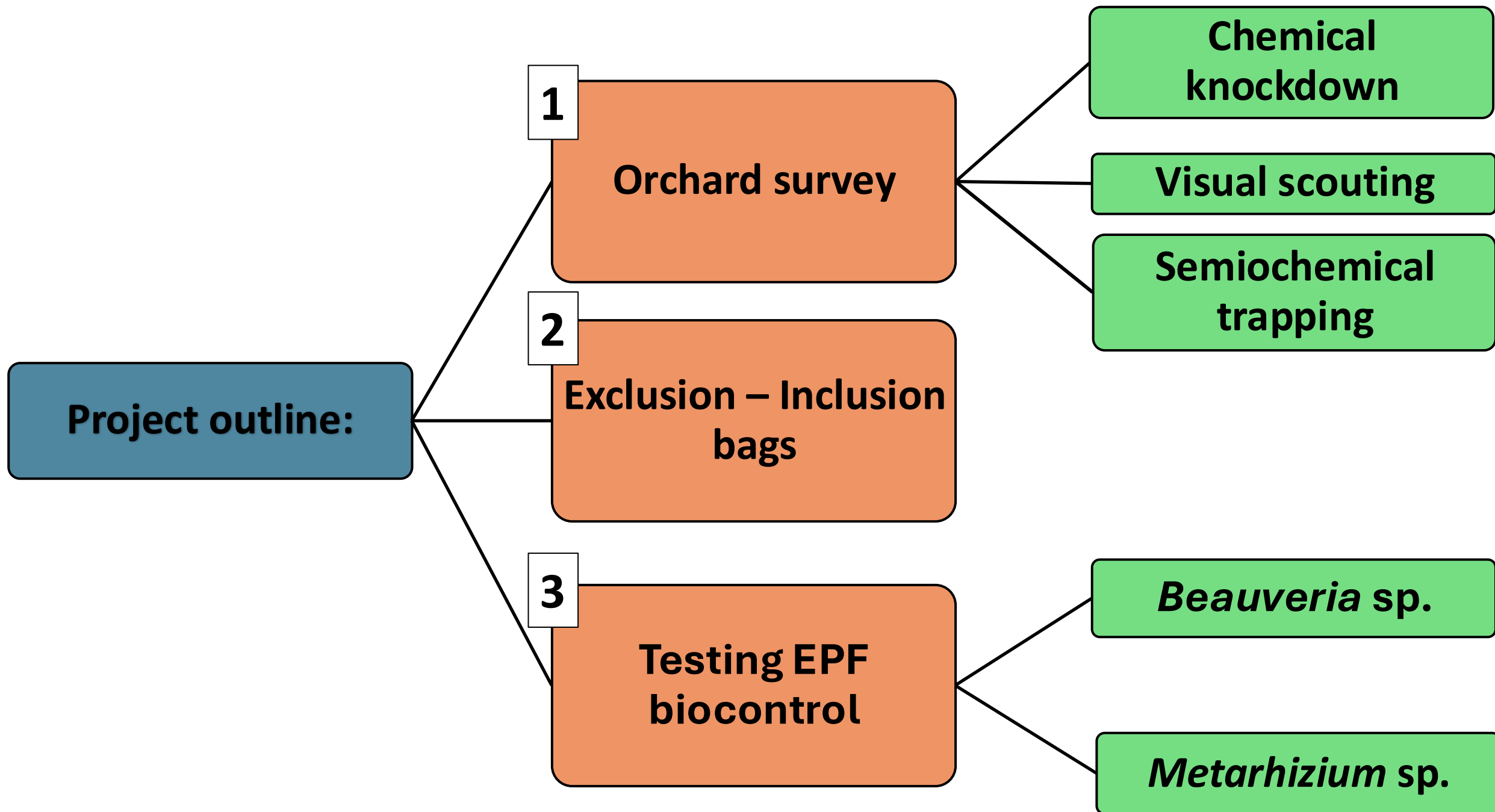
Antestia Bug: Host Plants

- Pine trees
- Red Alder
- White Alder
- Black wattle
- Camphor bush
- Proteas
- Coffee
- Citrus



Antestia Bug: Reported Damage





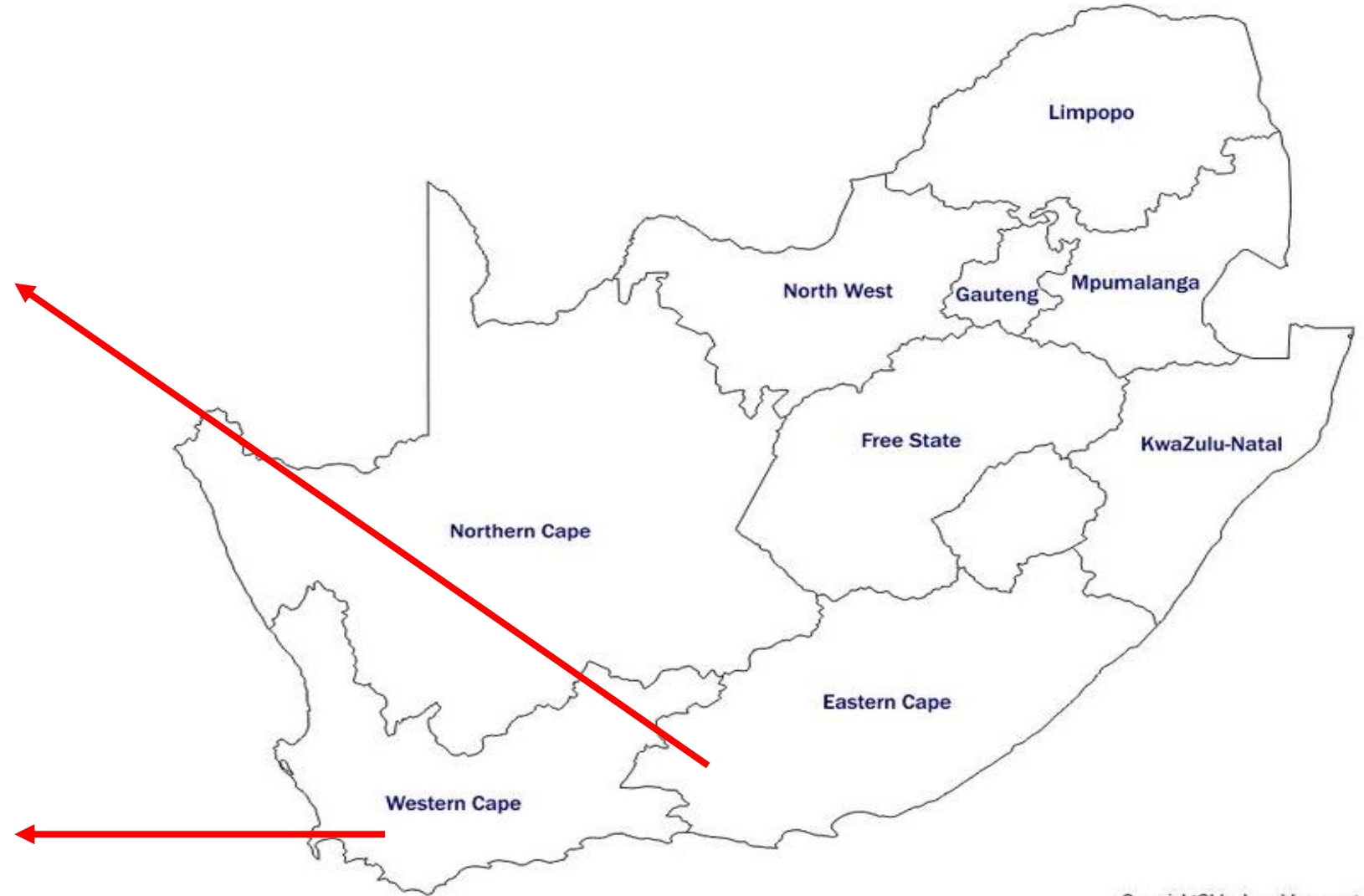
1) Orchard Survey: Monitoring

Langkloof:

- 3 x pear orchards
- 3 x apple orchards

Grabouw & Vyeboom:

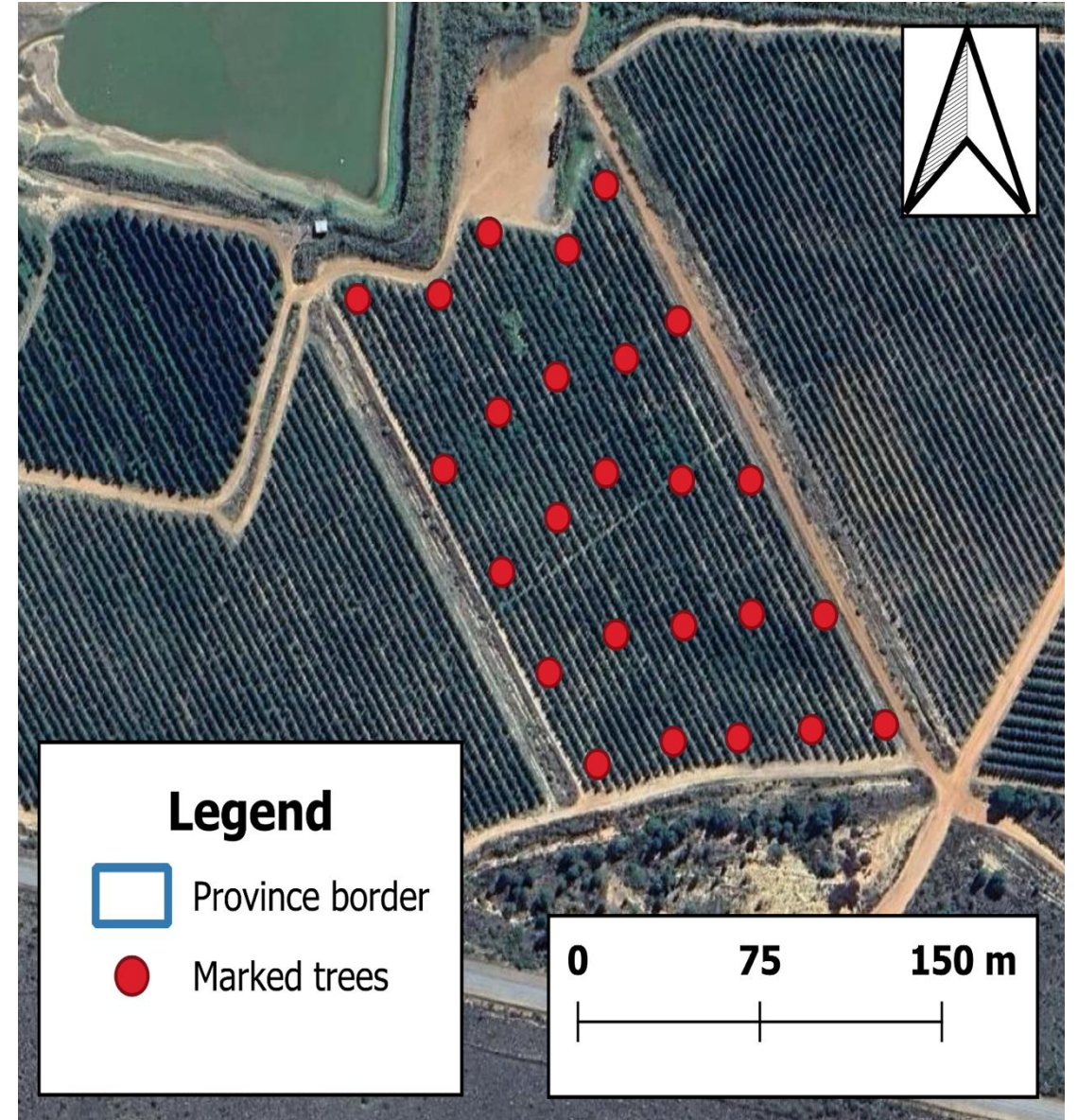
- 3 x pear orchards
- 3 x apple orchards



Fogging



Scouting

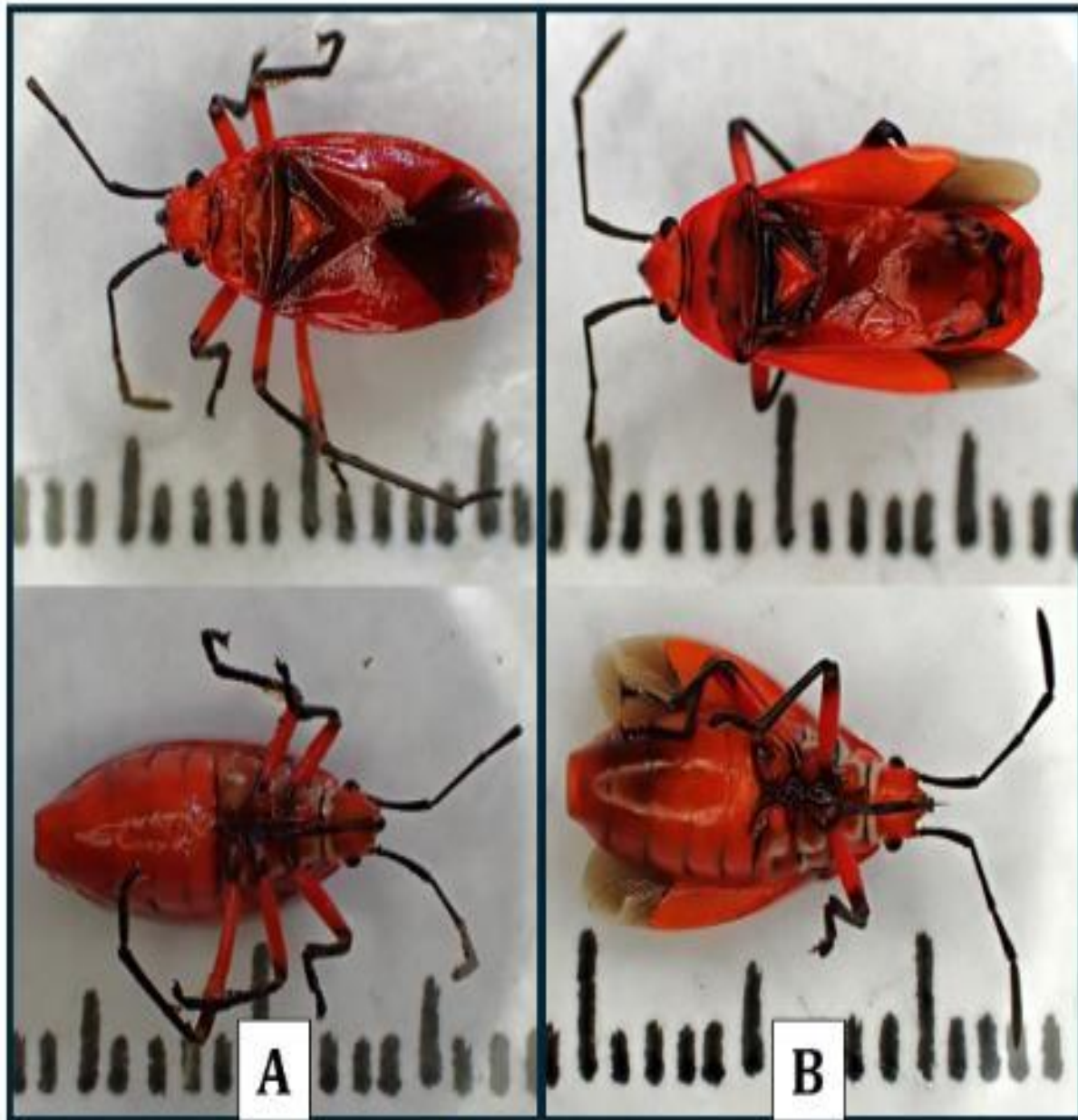


1) Orchard Survey: Result - Langkloof

- Red bug – most abundant species through fogging and scouting
- 99% of Red bug – orchards with no trunk barrier
- *Oxycarenus* sp. and False chinch bug caught
- Single Antestia bug caught

Treatment	Number of Red bugs
No trunk barrier	254
Trunk barrier	3
TOTAL	257





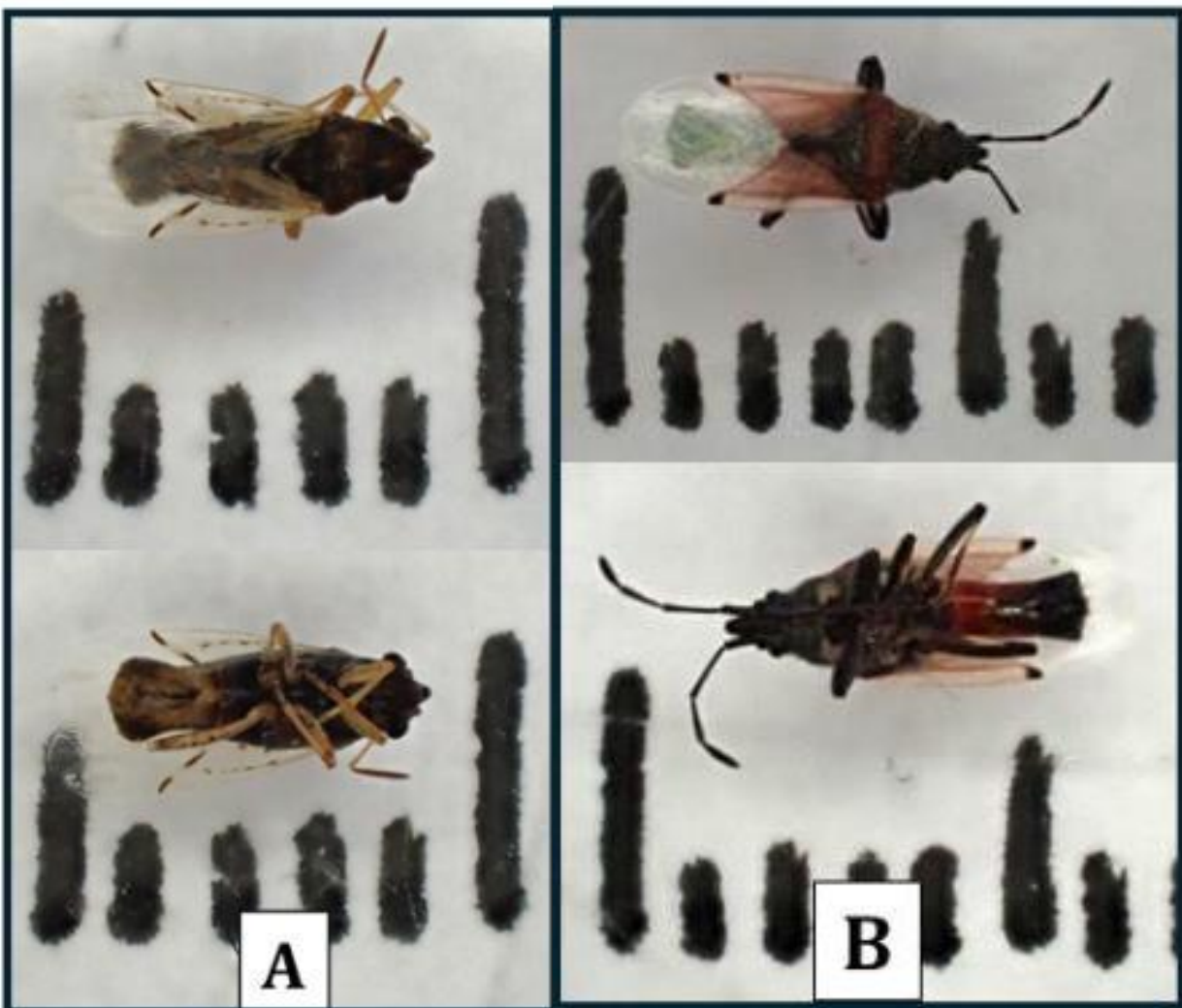


Figure A: *Nysius cf. natalensis*

Figure B: *Oxycarenus sp.*

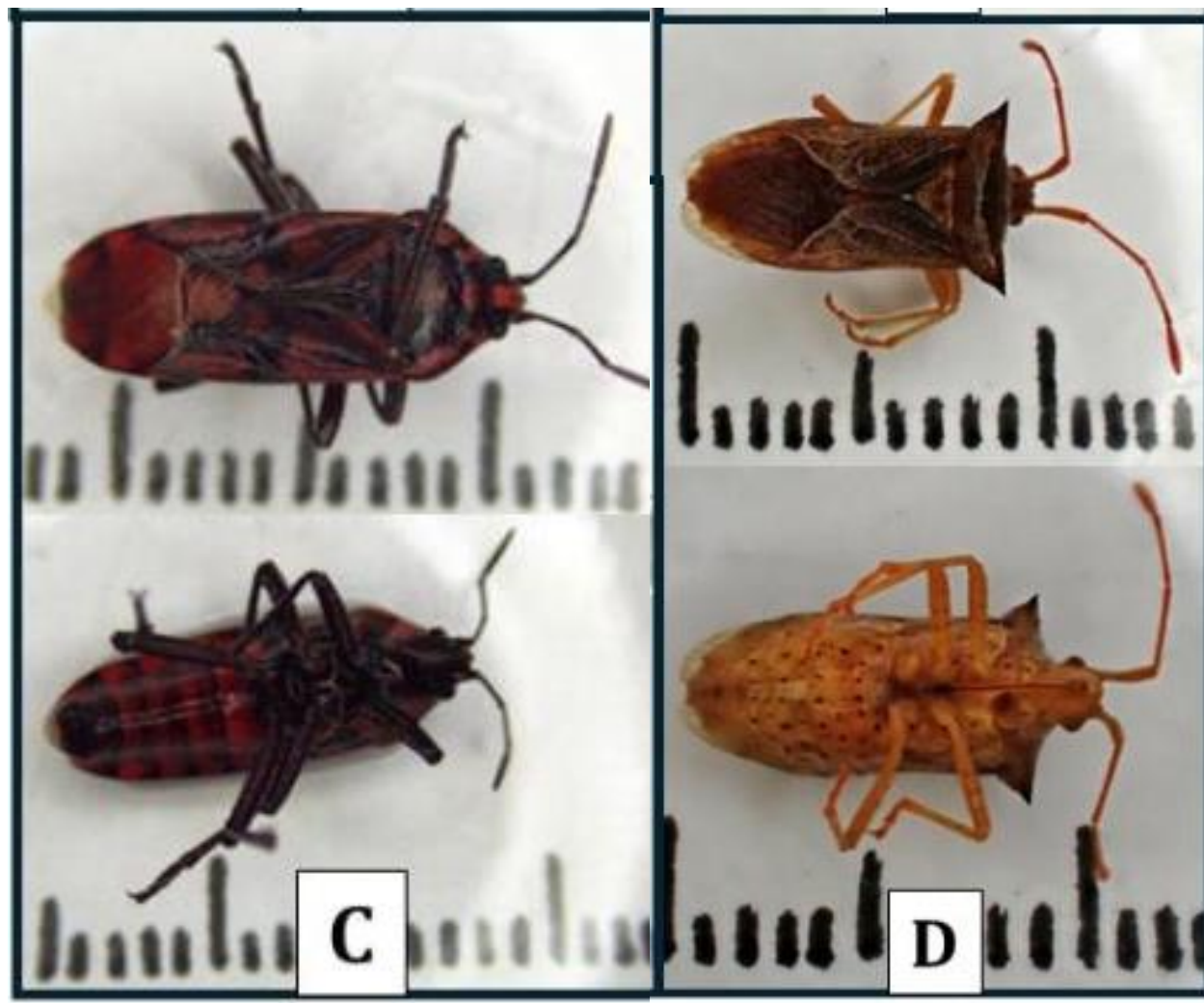


Figure C: *Spilostethus pandurus*

Figure D: *Cletus sp.*

1) Orchard Survey: Results – Grabouw & Vyeboom

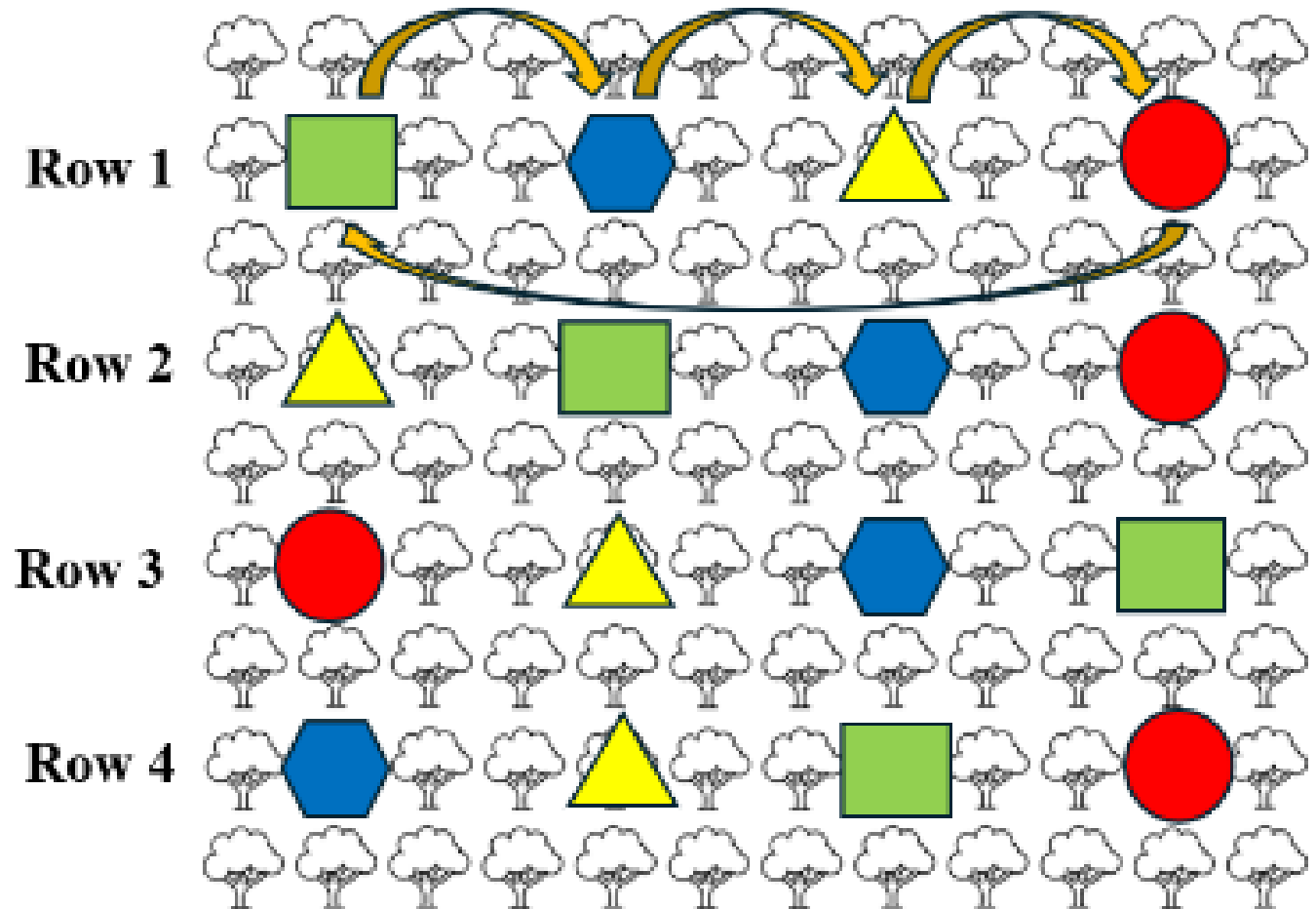
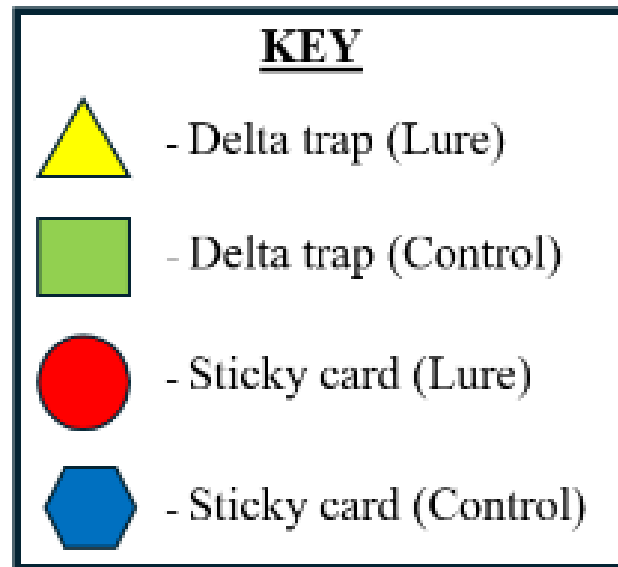
- All heteropterans were collected through fogging
- Antestia bug – most abundant species caught
- *Bagrada hilaris* – other pentatomid species caught
- Single Red bug caught



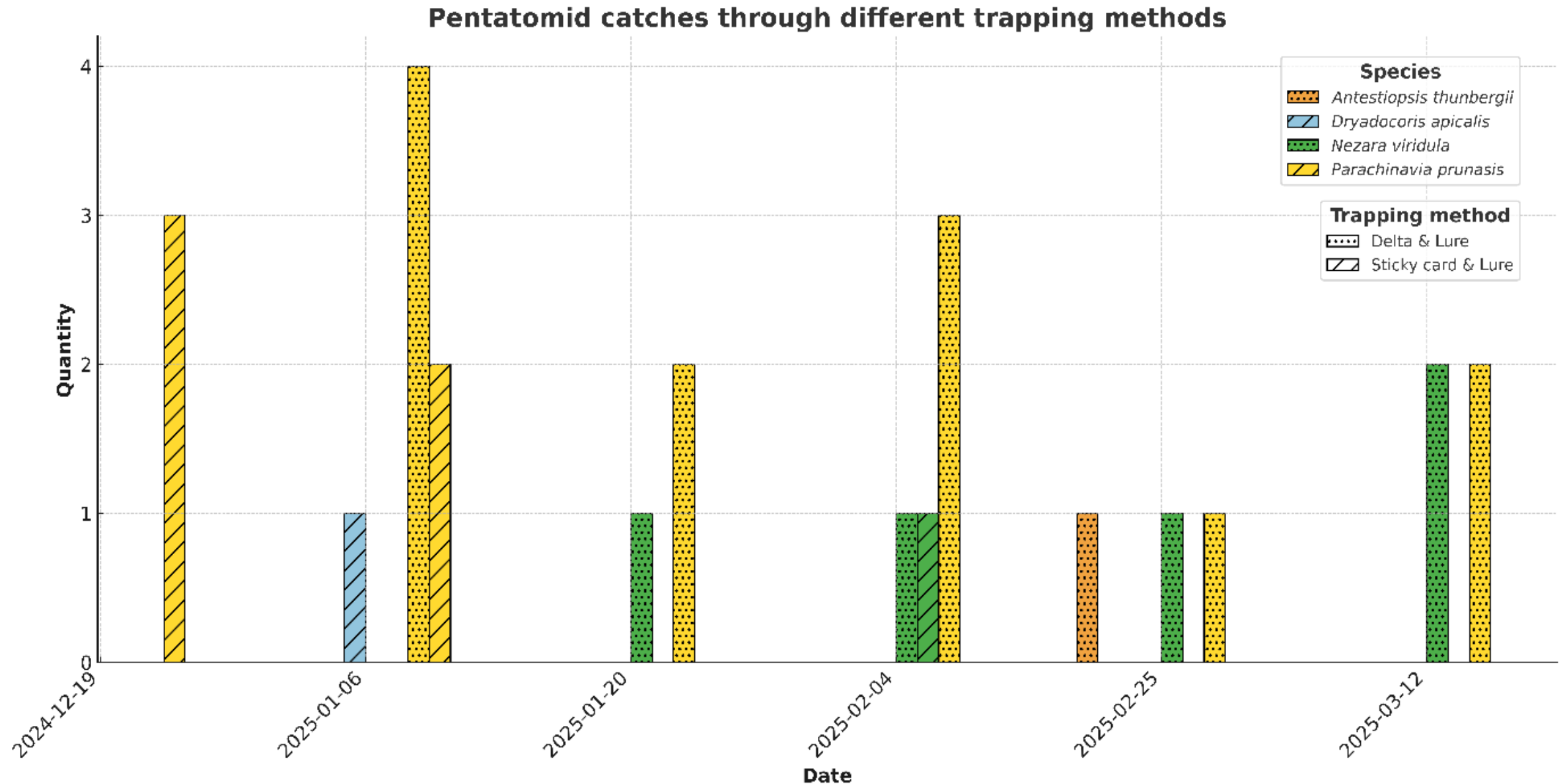


Figure A- C: *Antestiopsis thunbergii thunbergii*

1) Semiochemical Trapping



1) Semiochemical Trapping: Results



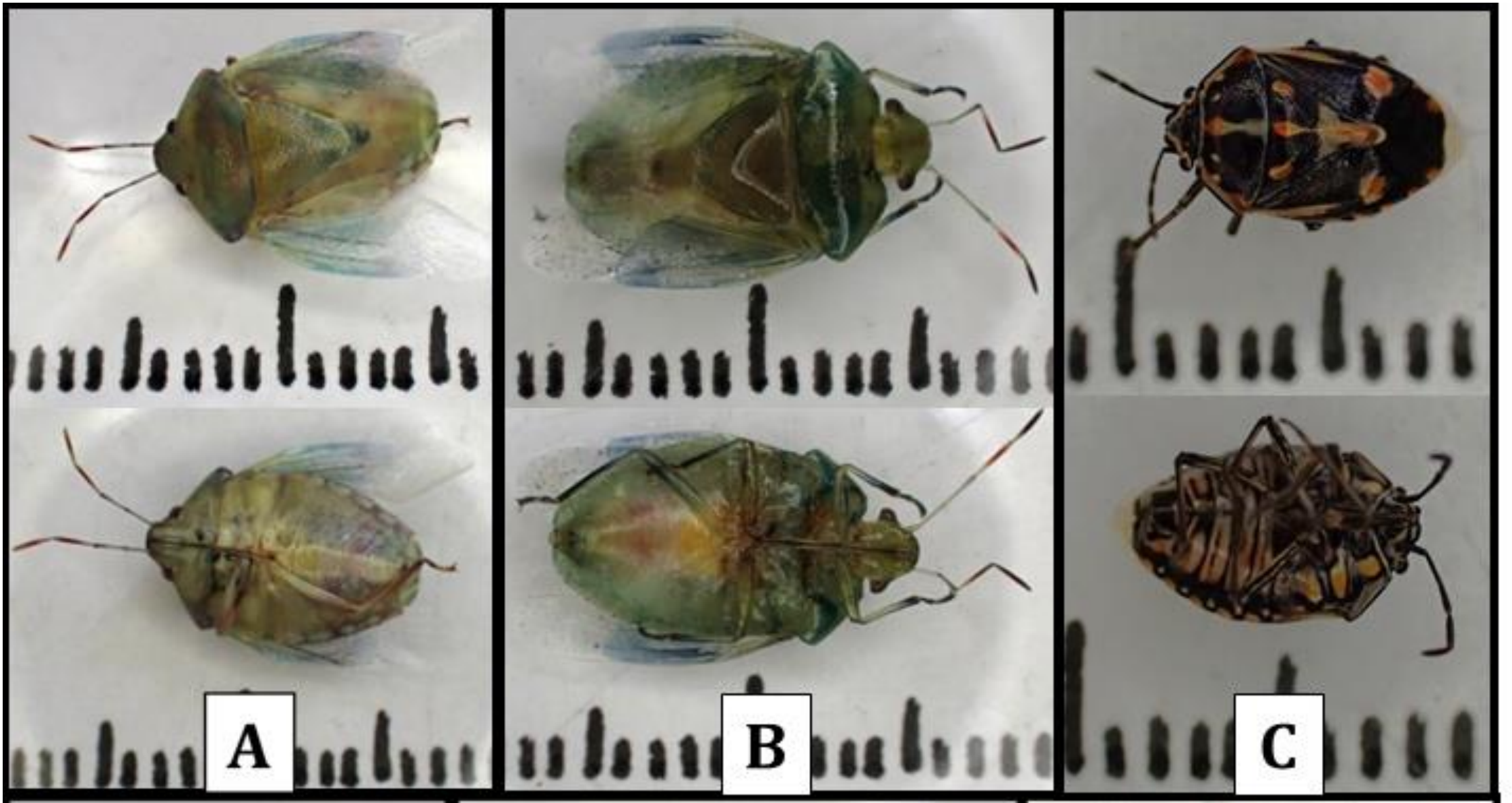


Figure A & B: *Parachinavia prunasis*
Figure C: *Bagrada hilaris*

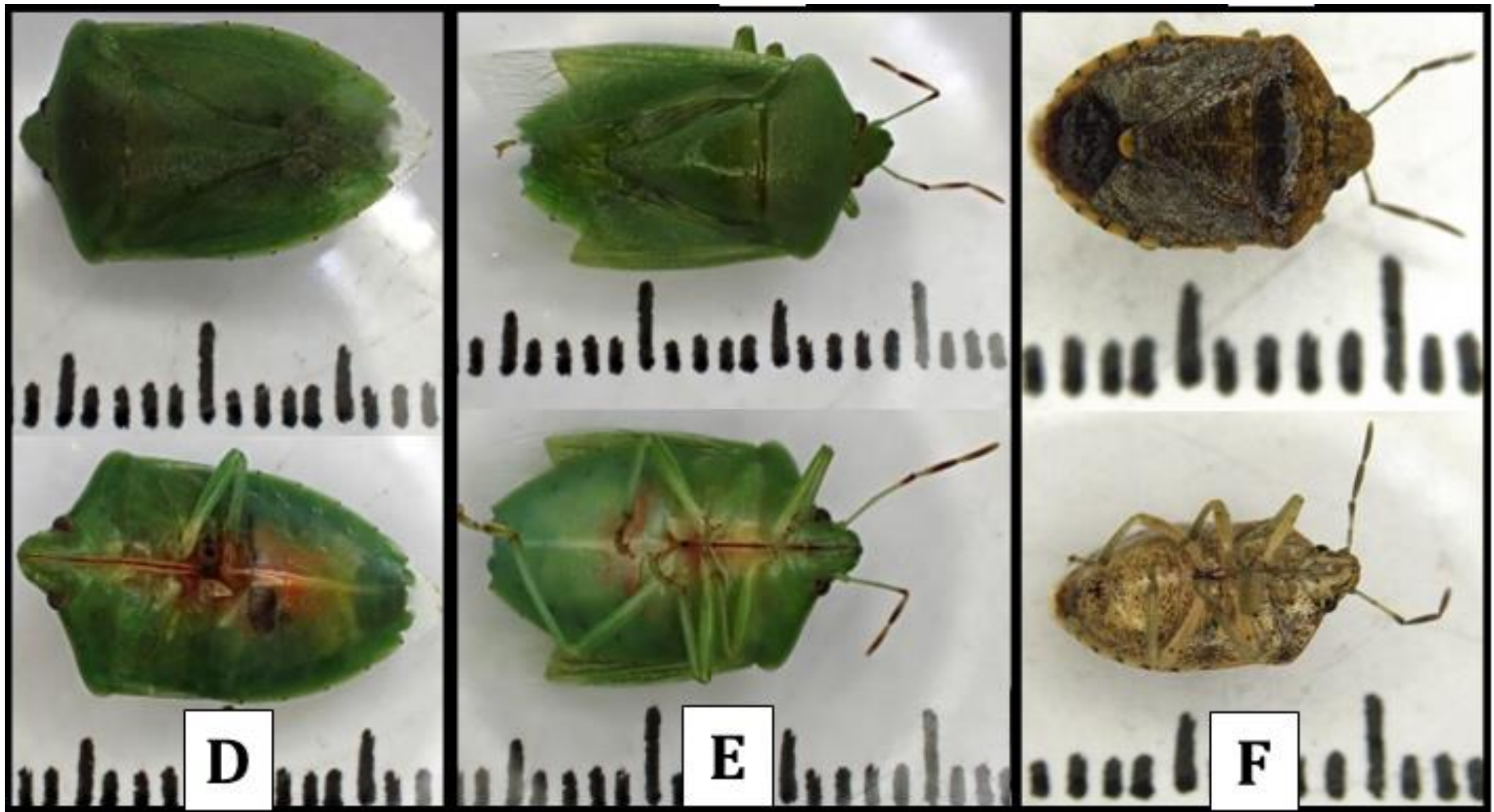


Figure D & E: *Nezara viridula*
Figure F: *Dryadocoris* sp.

2) Exclusion – Inclusion

- Red bug experiment in the Langkloof
- Mesh bag with plastic inner
- Inclusion bags – 2 to 3 insects
- Exclusion bags – no insects

Inclusion:



Fruit set



Medium fruit



Large fruit

Harvest

Exclusion:



Fruit set

Harvest

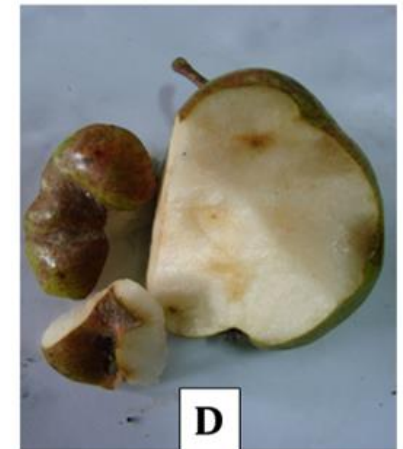
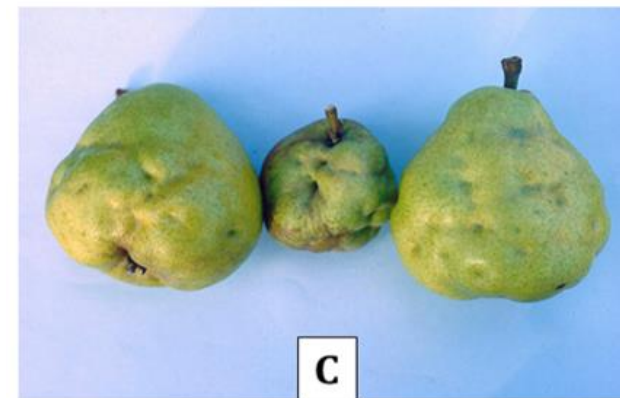
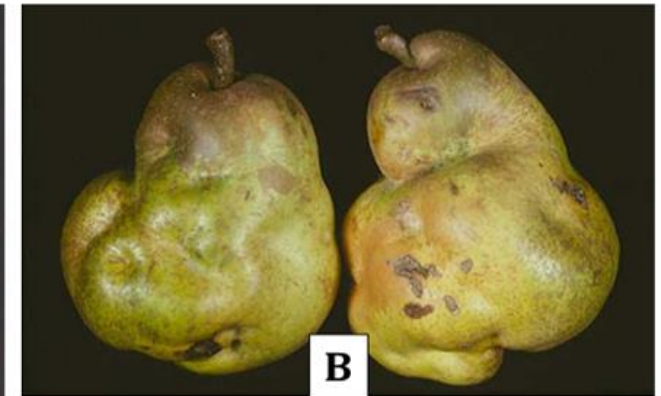
2) Virus Screening

- Virus testing for Apple Stem Pitting Virus (ASPV)
- ASPV causes Pear Stoney Pit Disease (PSPD)
- Tested all Exclusion – Inclusion trees
- 20 leaves per tree

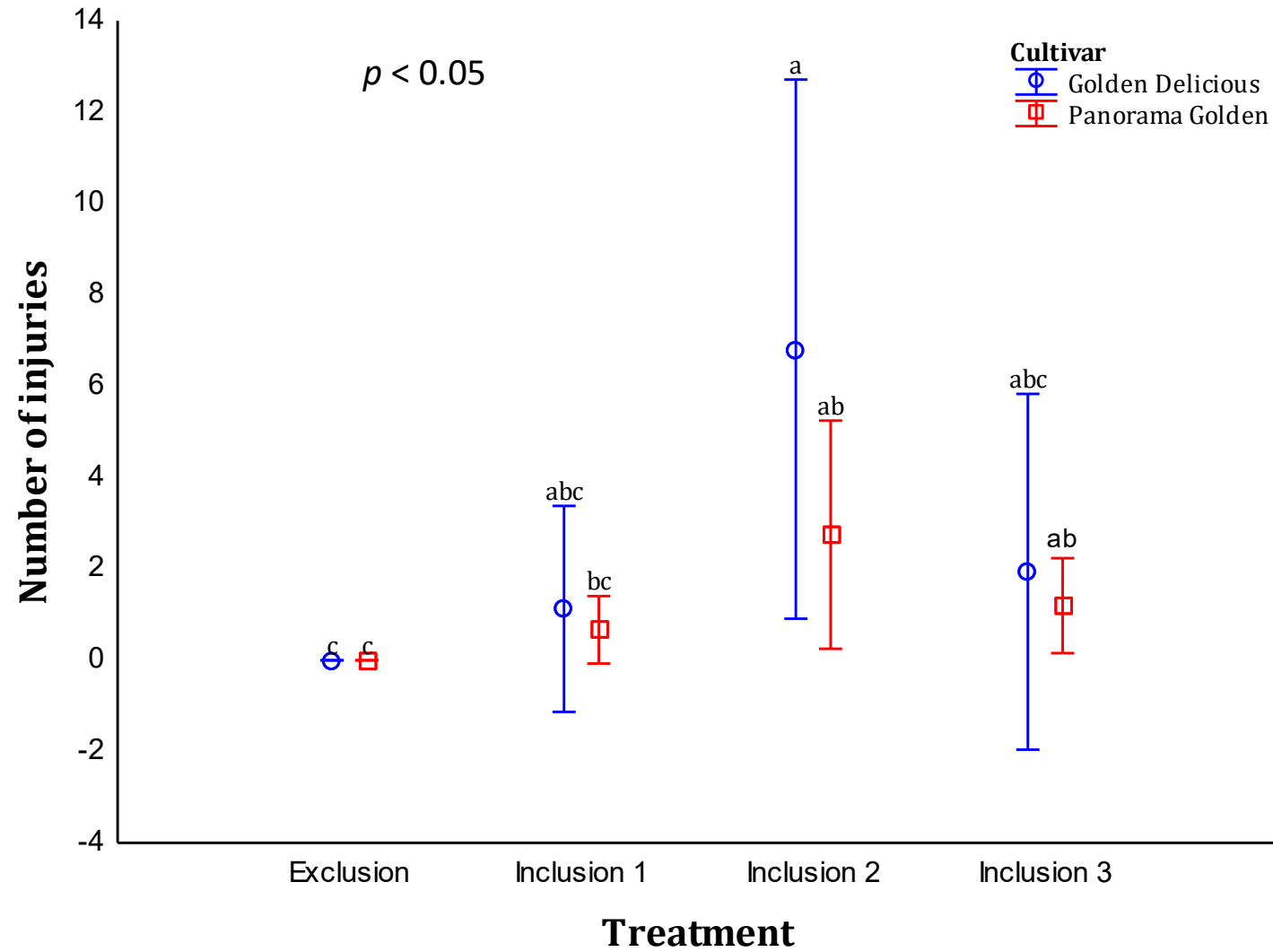


PATHO SOLUTIONS

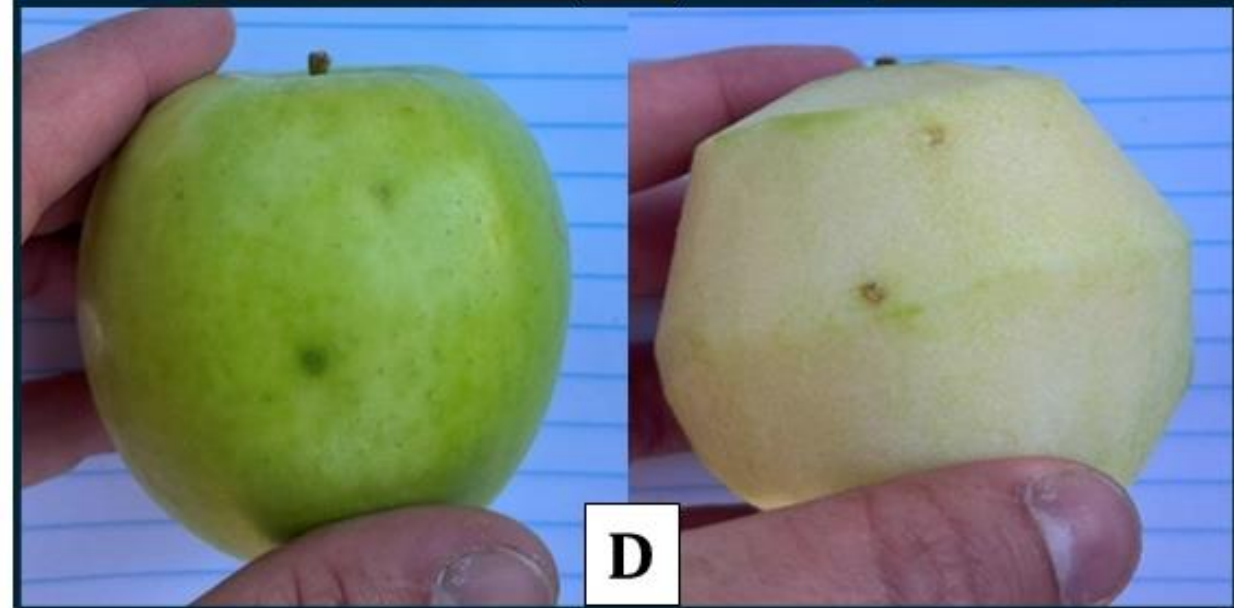
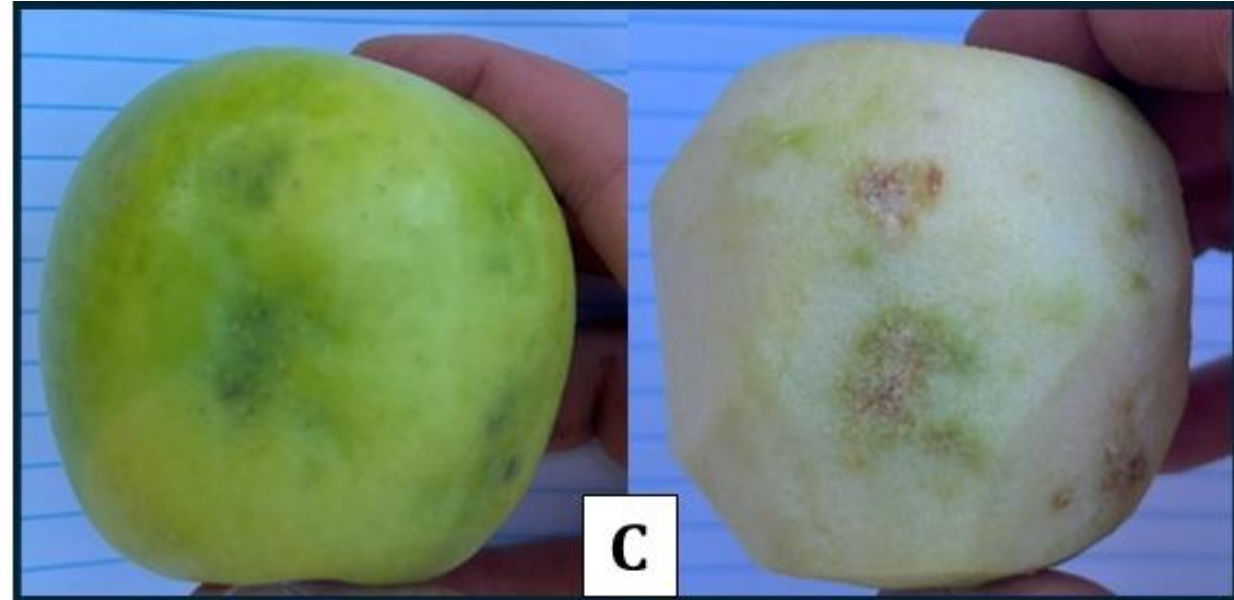
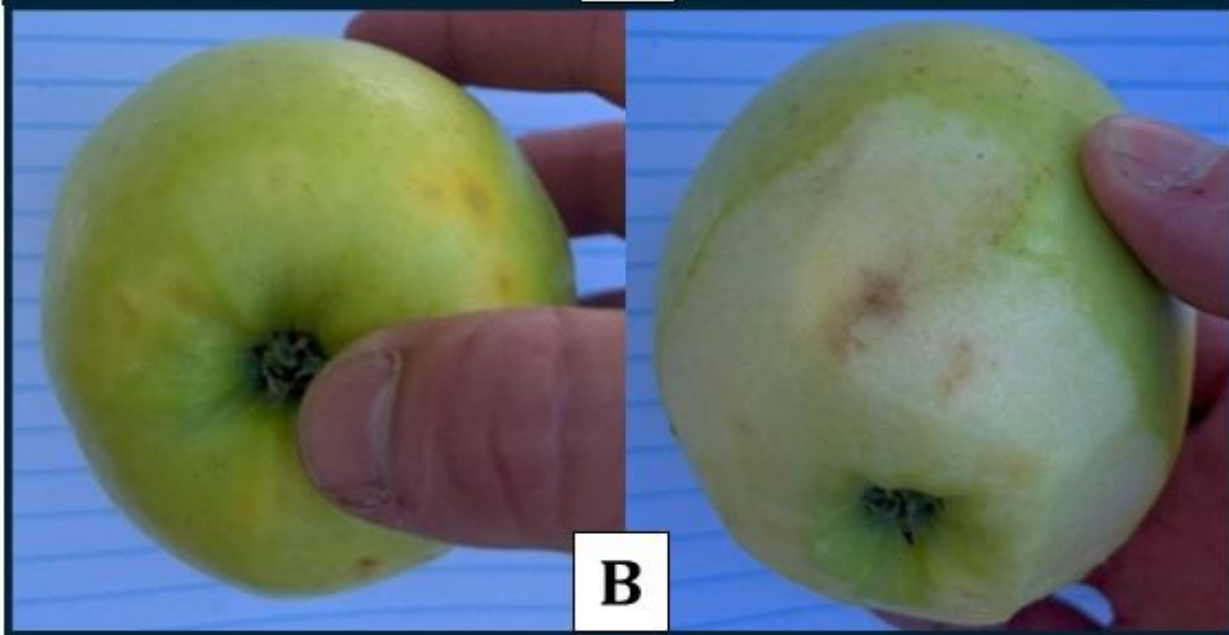
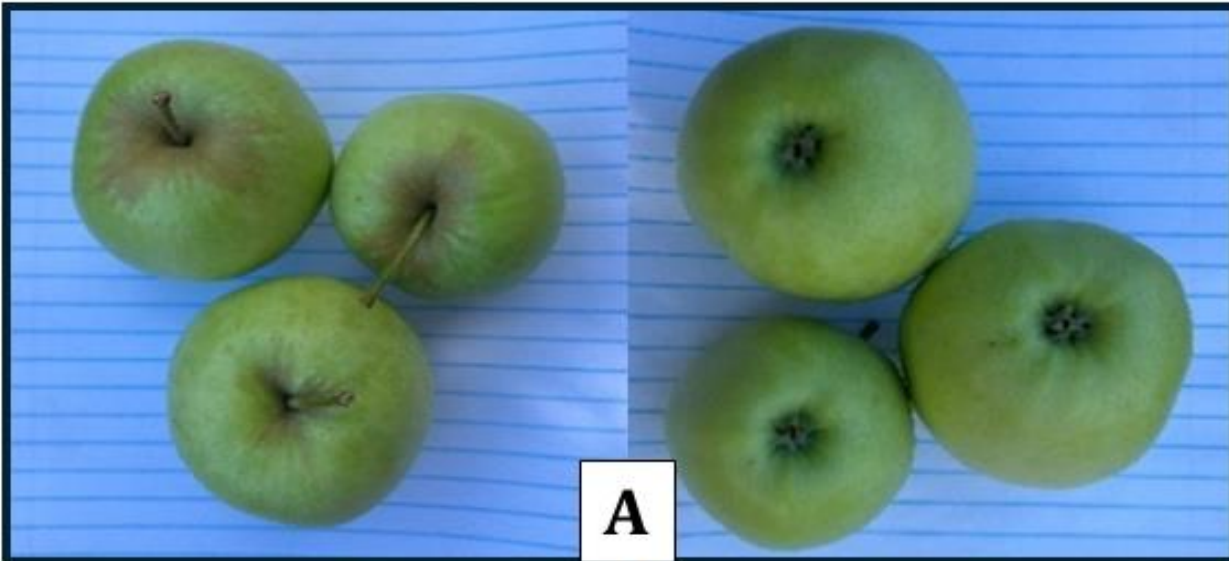
Plant Pathology Practice and Research Station



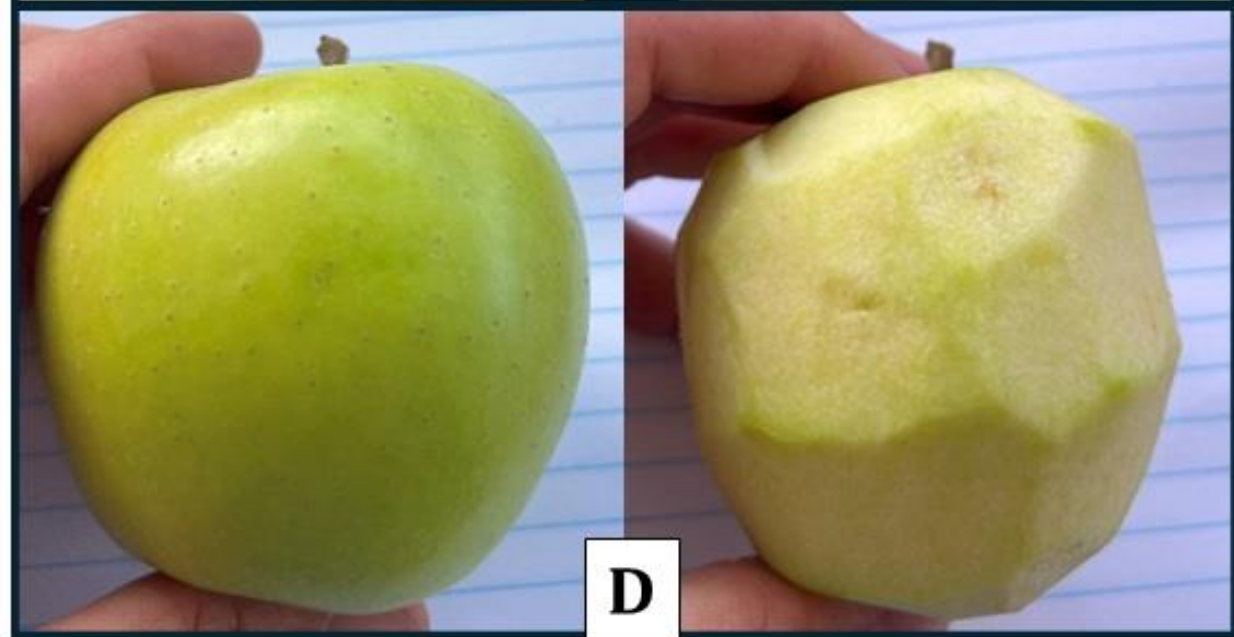
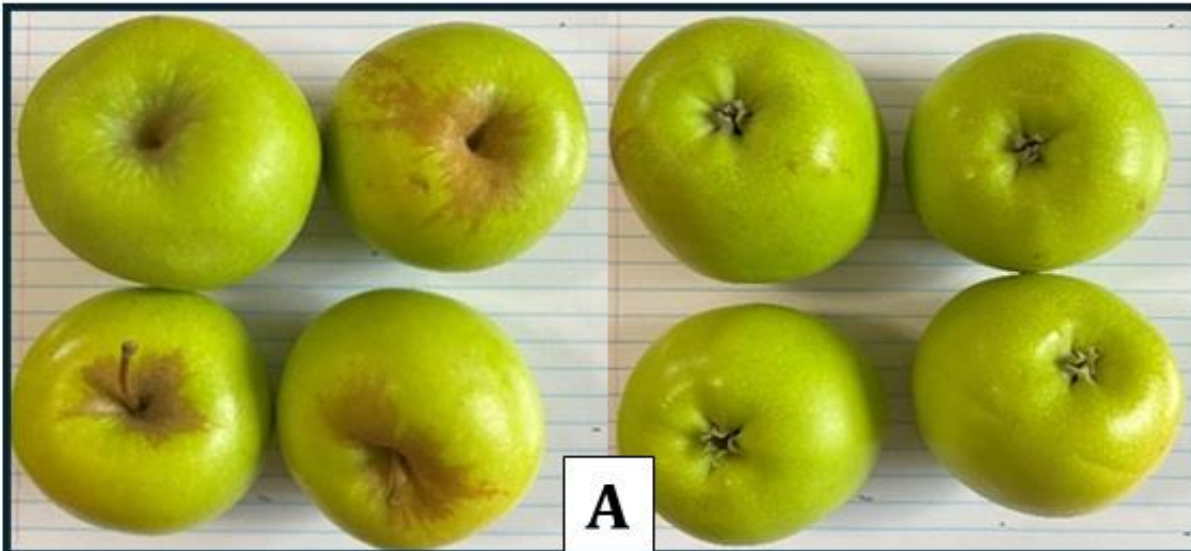
2) Exclusion – Inclusion: Results (Apple)



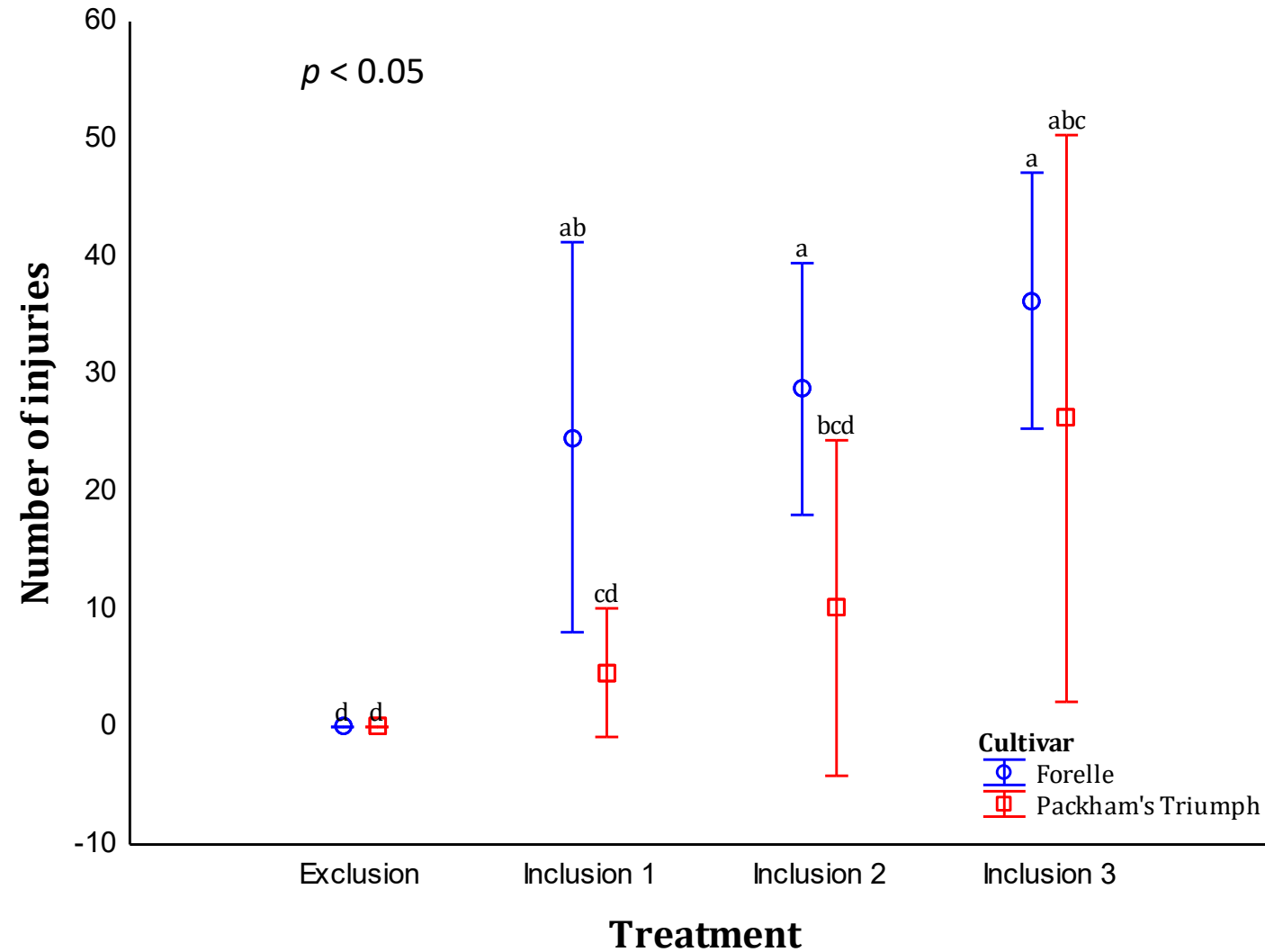
2) Exclusion – Inclusion: Results (Golden Delicious)



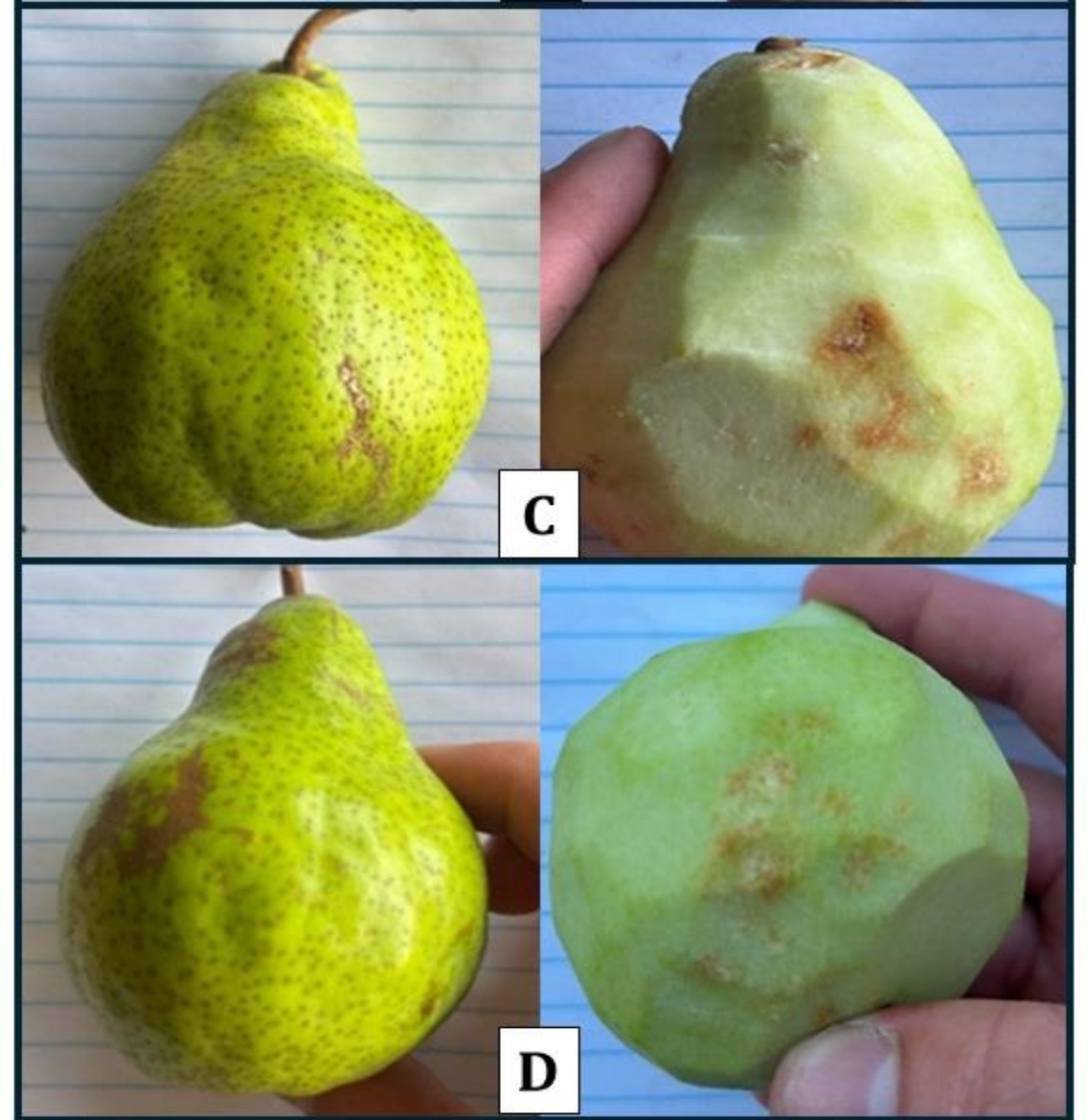
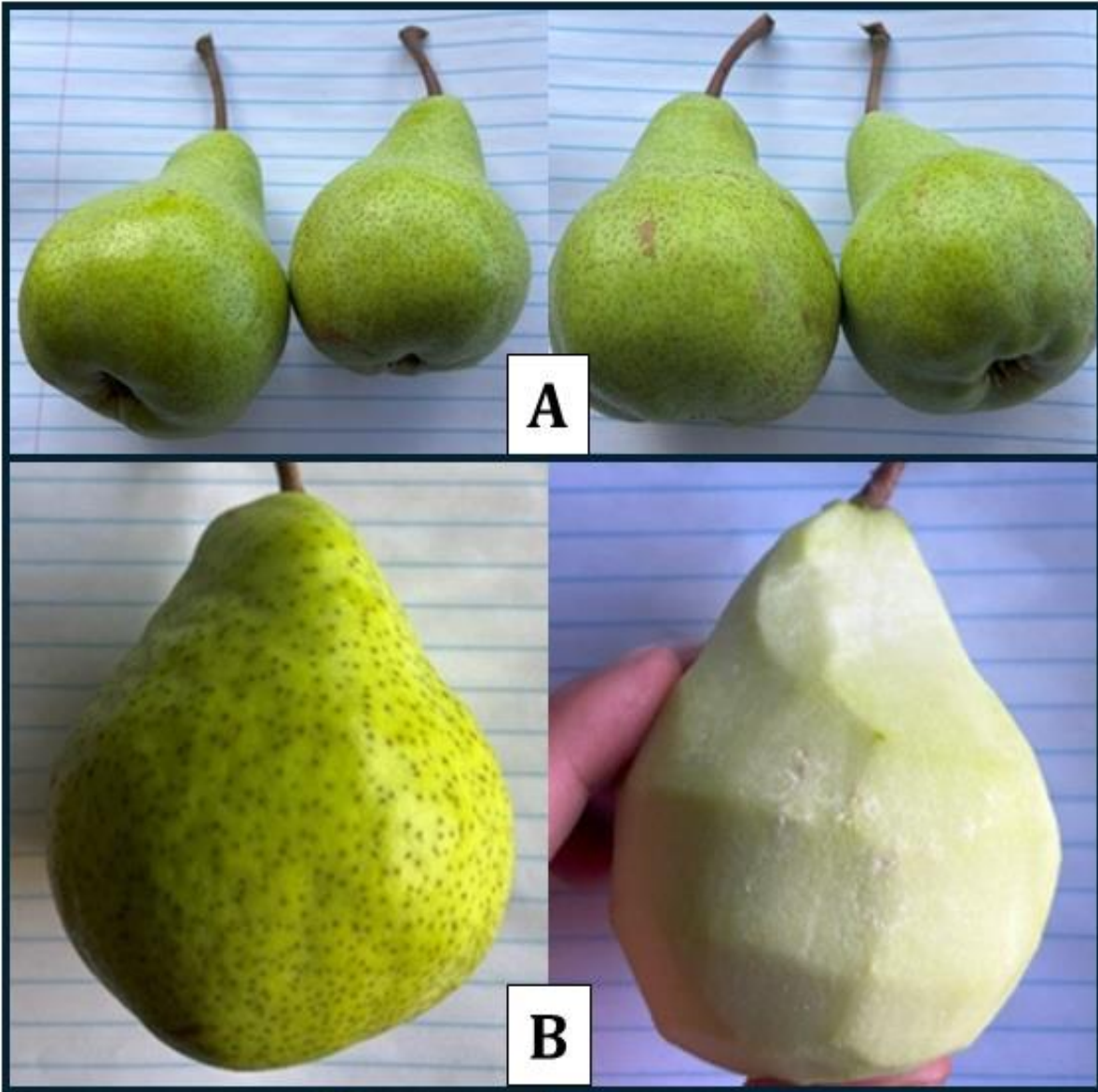
2) Exclusion – Inclusion: Results (Panorama Golden)



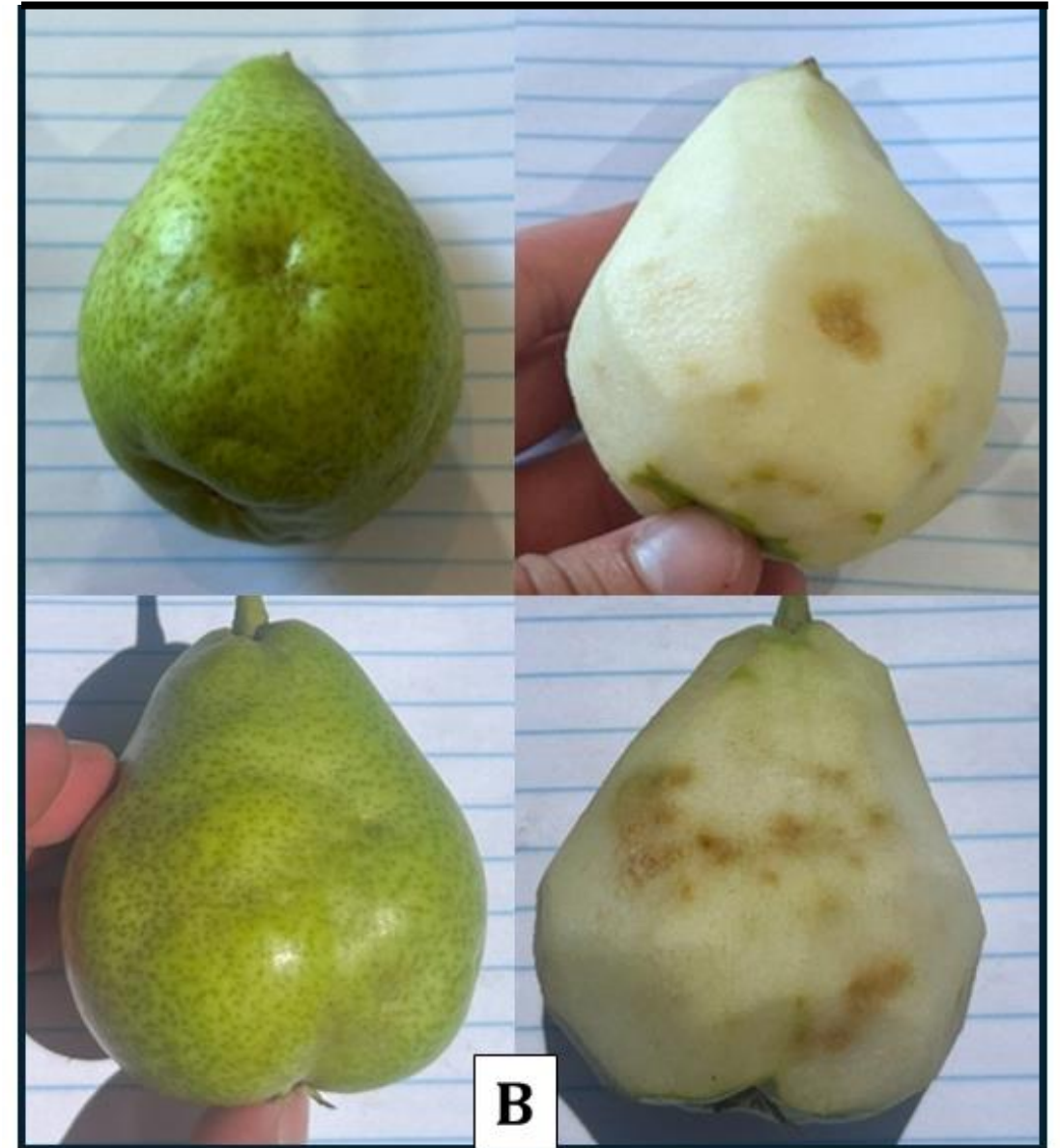
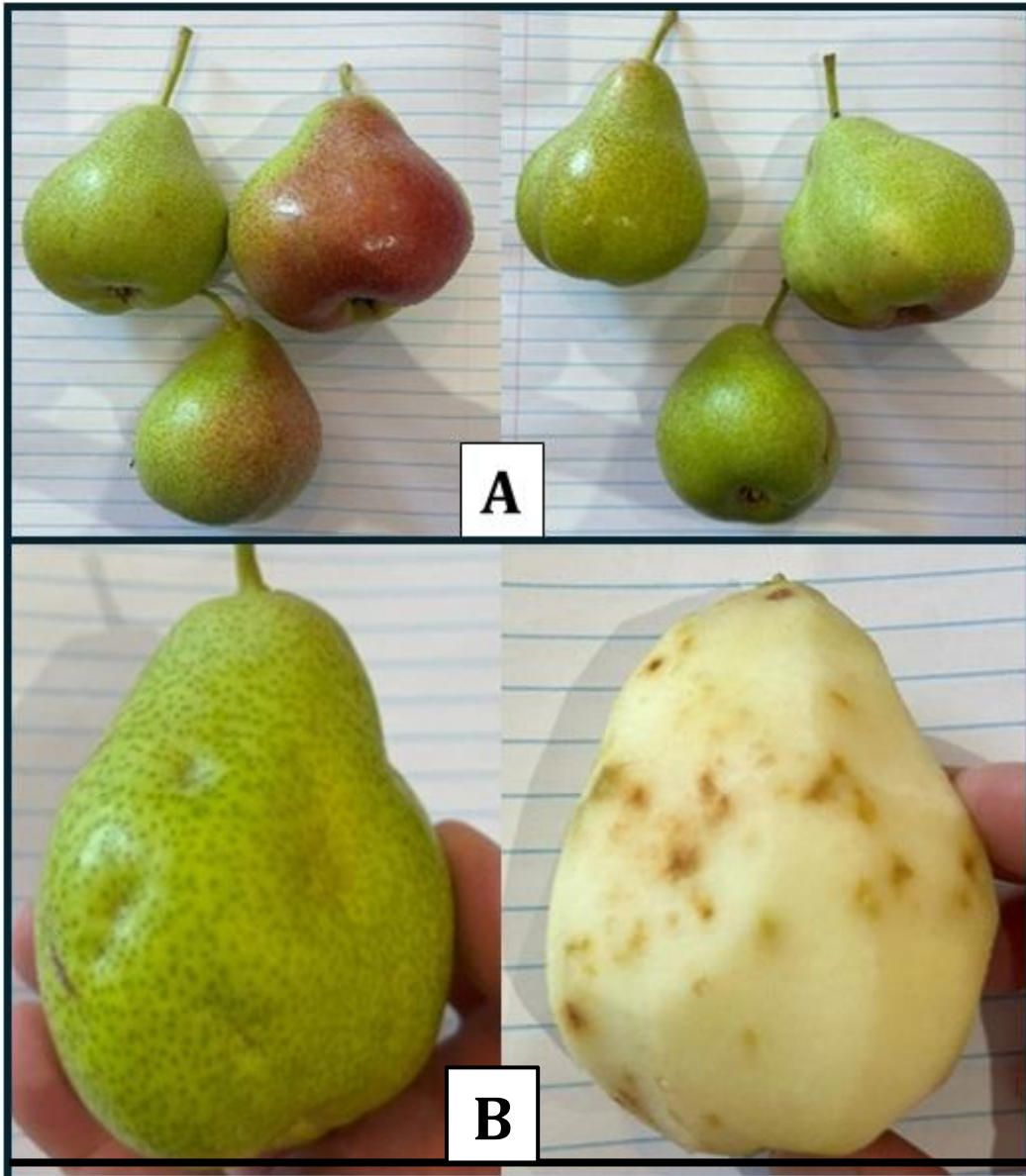
2) Exclusion – Inclusion: Results (Pear)



2) Exclusion – Inclusion: Results (Packham's Triumph)



2) Exclusion – Inclusion: Results (Forelle)

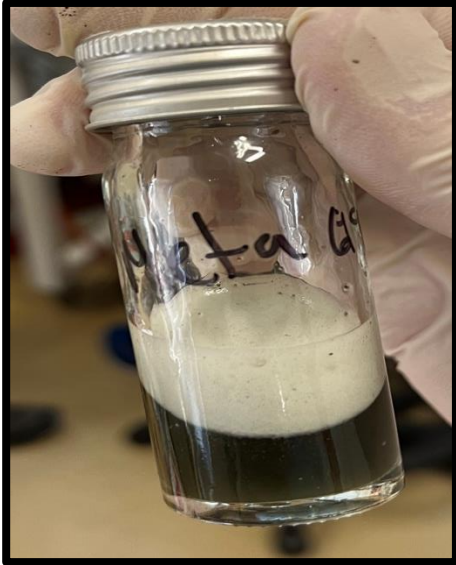


2) Exclusion – Inclusion: Results (Forelle)



3) Biological Control (EPF)

- 5 treatments {2 x *Beauveria* sp., 2 x *Metarhizium* sp. & control (Water)}



- Standard concentration, 1.0×10^7 spore/ml
- Insects dipped - 30 seconds
- Surface sterile pear
- Sterile sand layer
- 5 replicates per treatment
- 10 insects per replicate
- Mortality monitored for 14 days, daily
- Dead insects on agar
- Assess for mycosis

3) Biological Control: Mycosis

Beauveria sp.

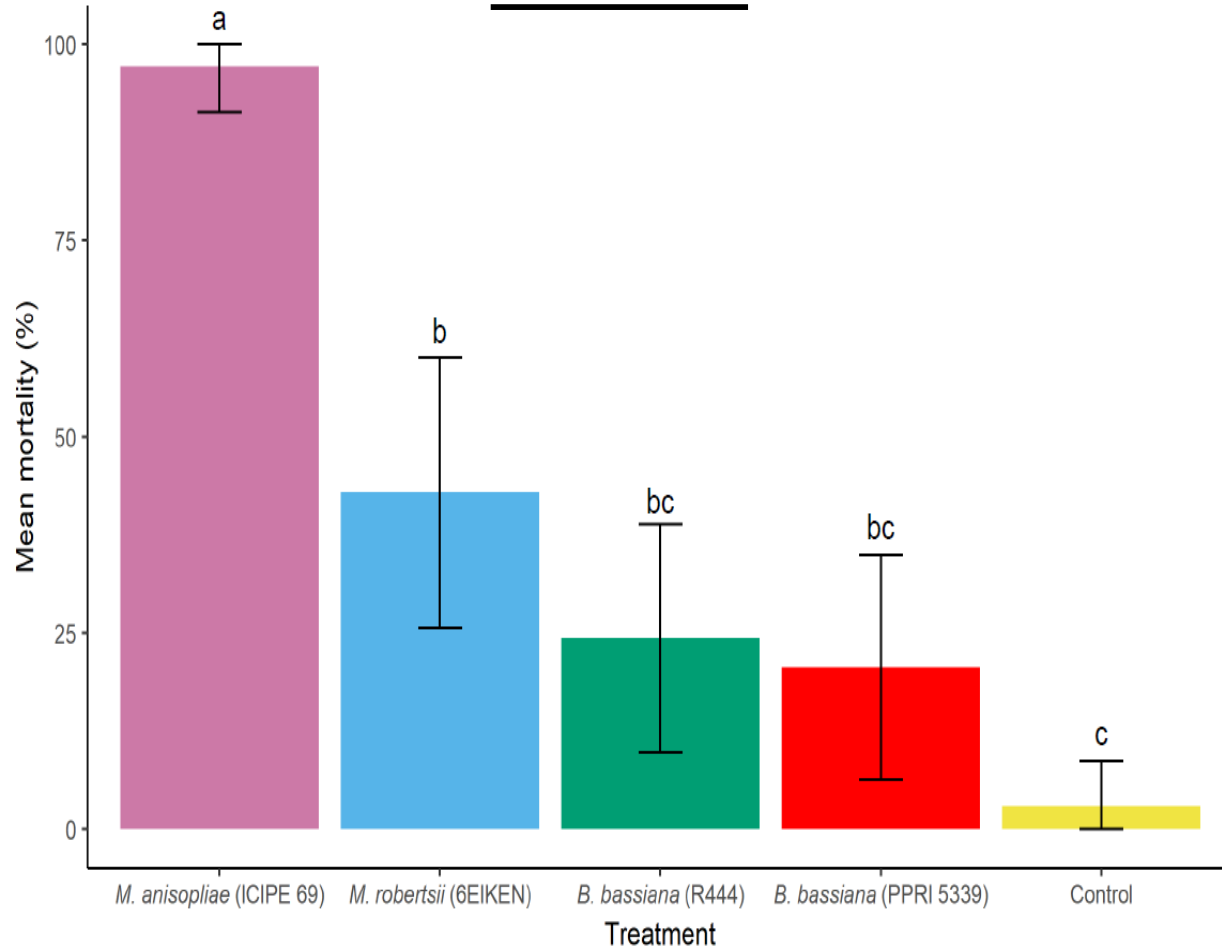


Metarhizium sp.

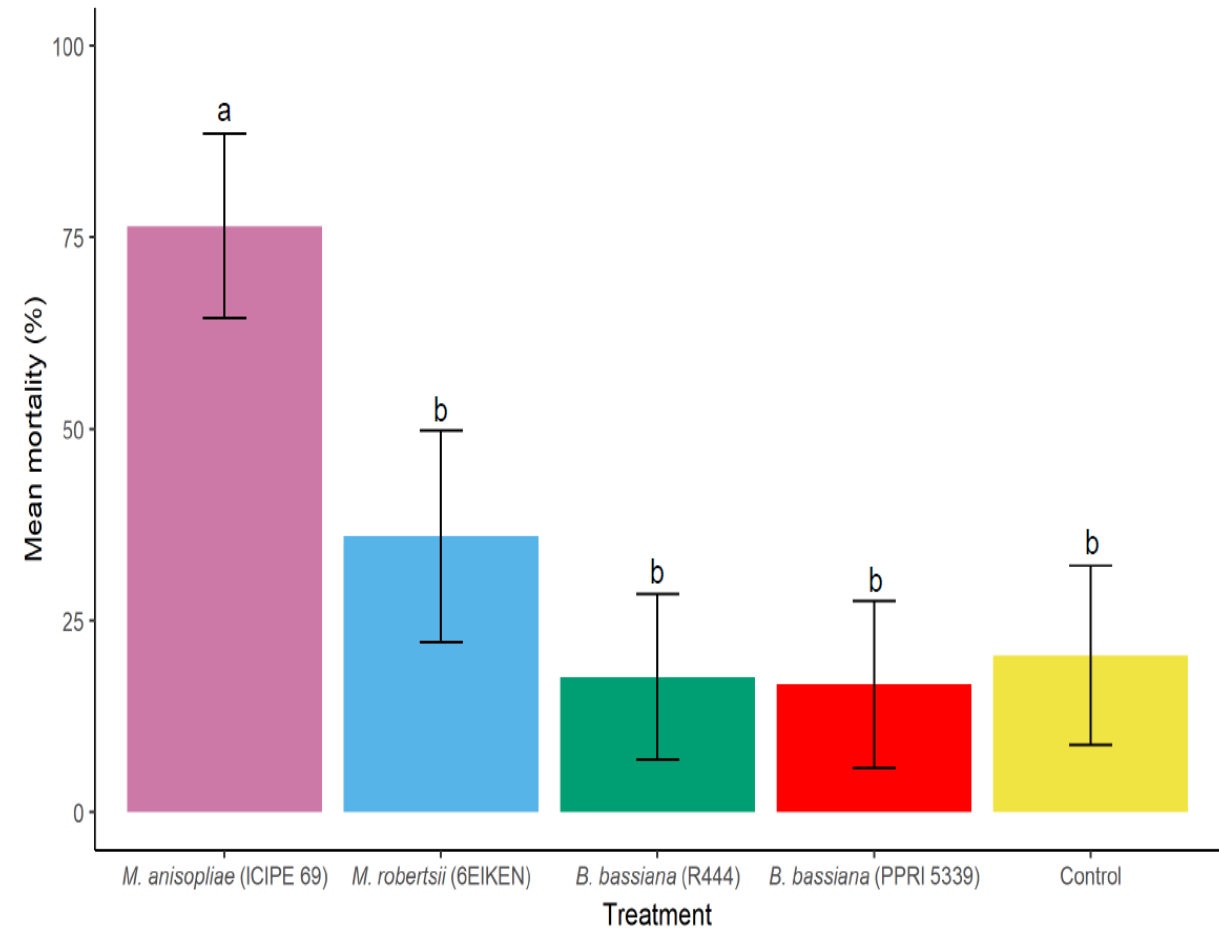


3) Biological Control: Results

Batch 1

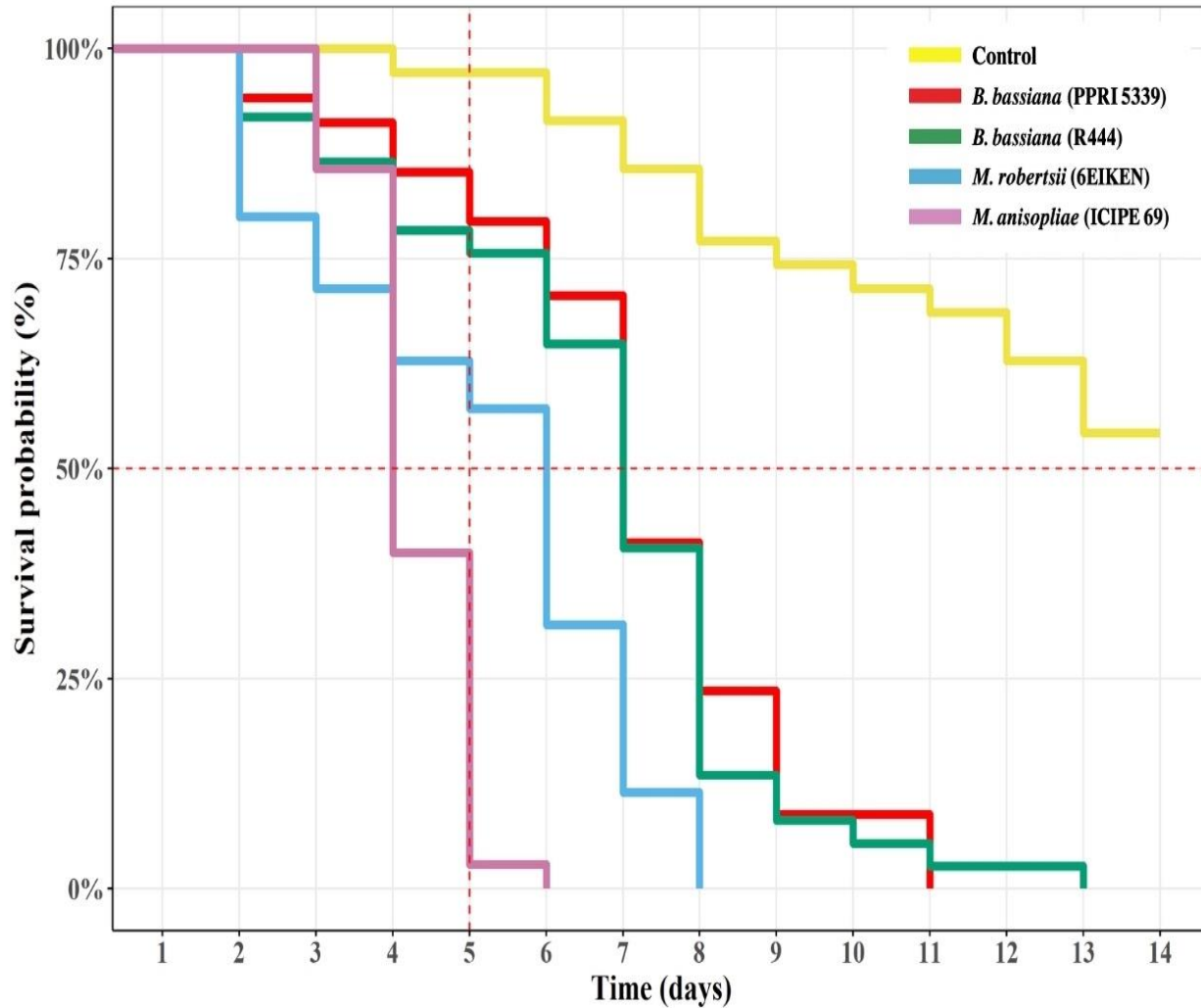


Batch 2

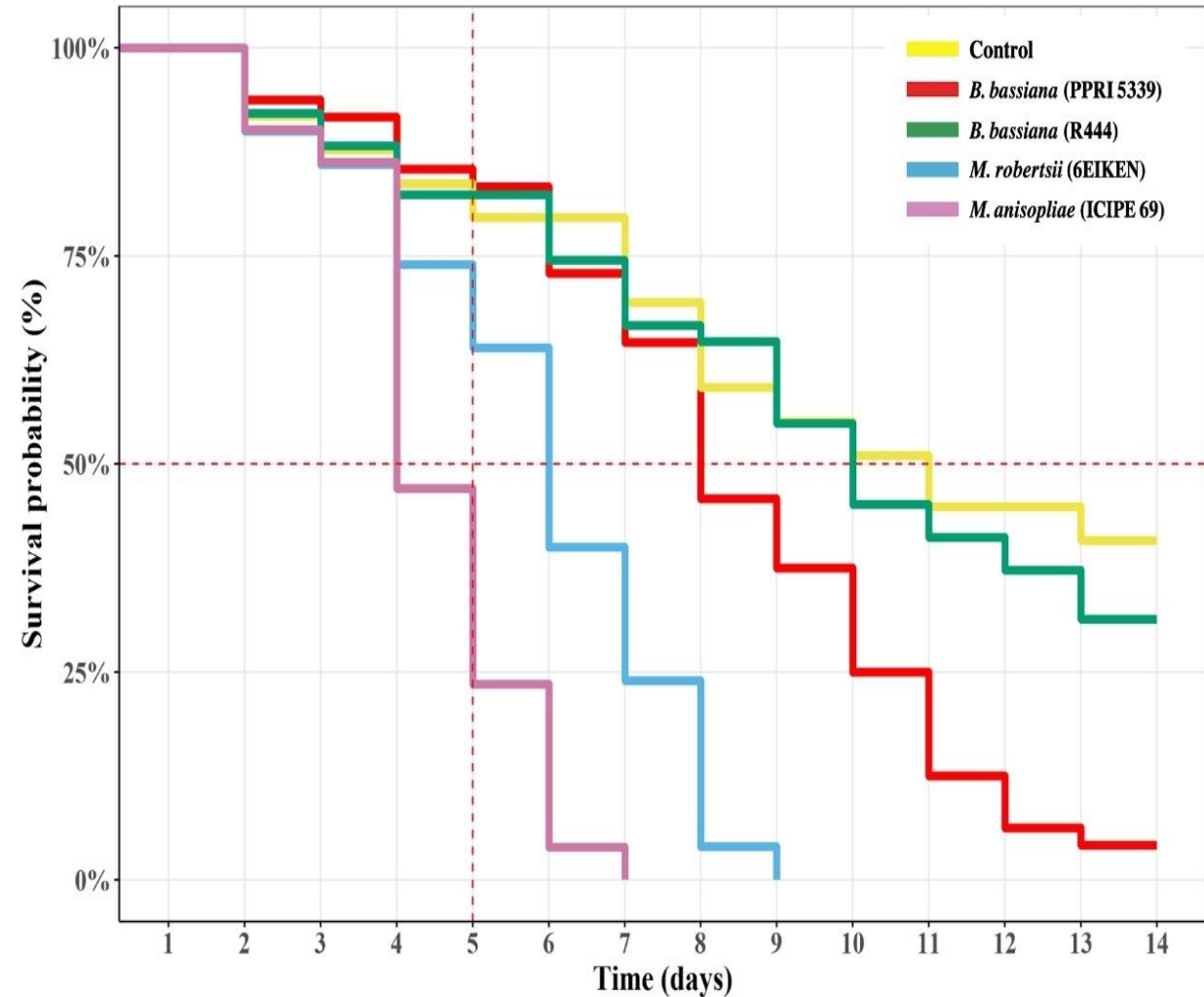


3) Biological Control: Results

Batch 1



Batch 2



Thank you.



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