

Microbial and biorational control of moth pests and fruit flies on fruit crops

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River Bioscience





How to greet an Englishman
The Aussie version:



The South African Version:



River Bioscience

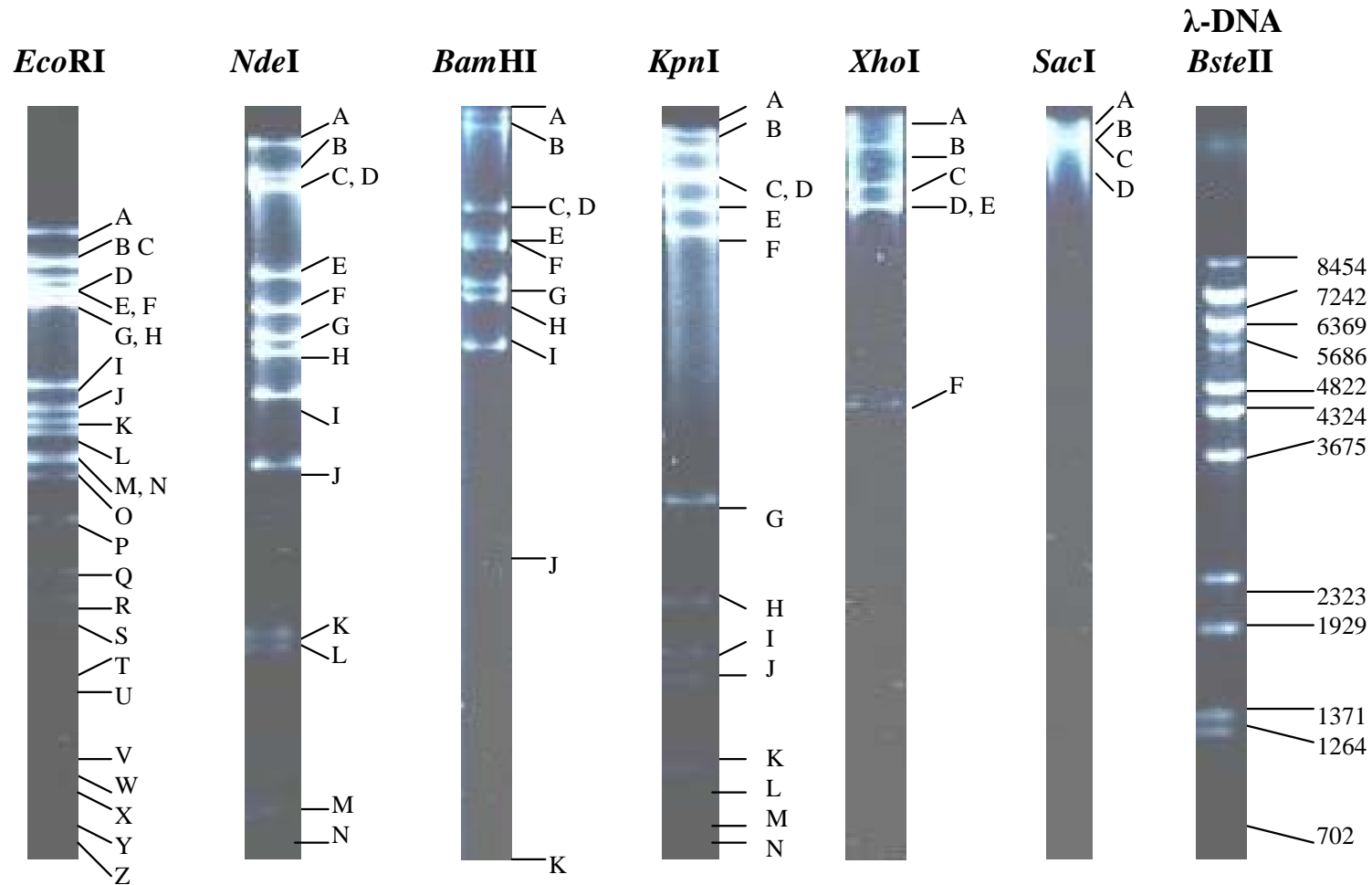
- **Based in South Africa**
- **Formed out of Citrus Research International (Pty) Ltd**
- **Owned by the Southern African Citrus Growers Association**
- **Spring board market is citrus, but reaching out to all of agriculture in South Africa, Africa and beyond...**
- **Focussing on innovative development of biological, biorational and biotechnological products for pest and disease management**
- **Currently six products:**



PRODUCTS:

- **Cryptogran - *Cryptophlebia leucotreta* GV**
- **Helicovir - *Helicoverpa armigera* NPV**
- **M3 fruit fly bait station**
- **Sensus fruit fly trap**
- **Capilure male fruit fly (medfly) attractant**
- **Questlure female fruit fly attractant**

CRYPTOGRAN: DNA profile



A novel/previously undescribed South African isolate of *Cryptophlebia leucotreta* granulovirus = CrleGV-SA

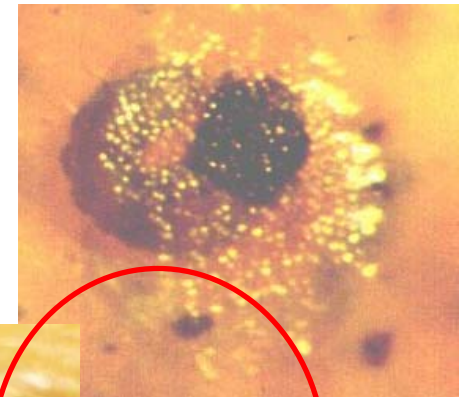
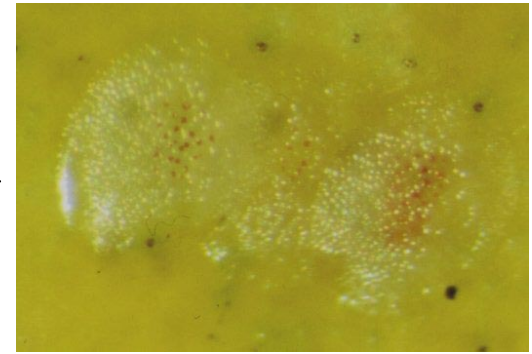
CRYPTOGRAN



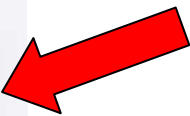
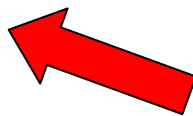
Novel South African isolate of CrleGV-SA

5×10^{10} OBs/ml in bottle
Apply 5×10^{13} OBs/ha

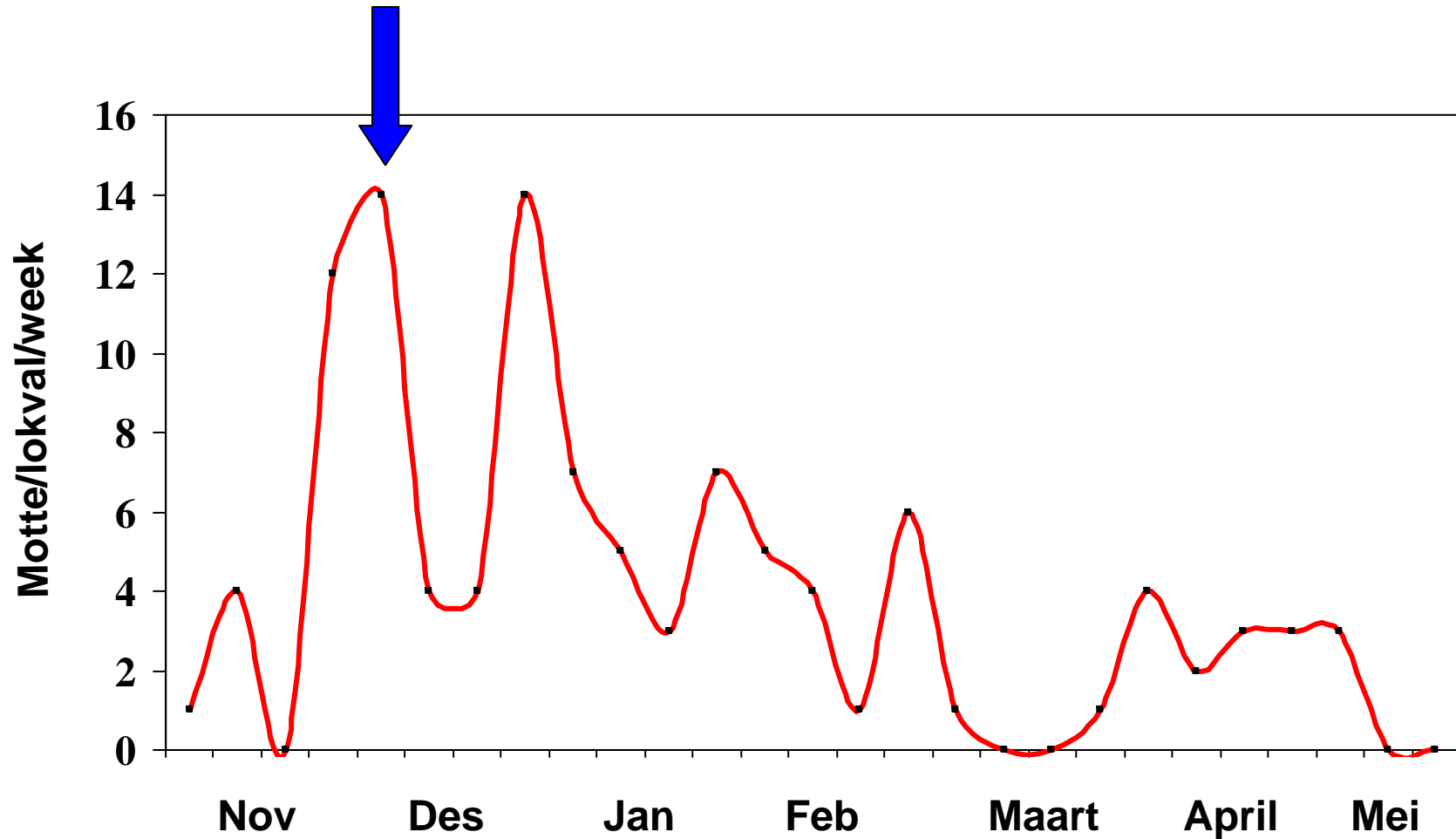




THE LIFE-CYCLE AND
PEST STATUS OF FCM



FCM PHEROMONE TRAP CATCHES

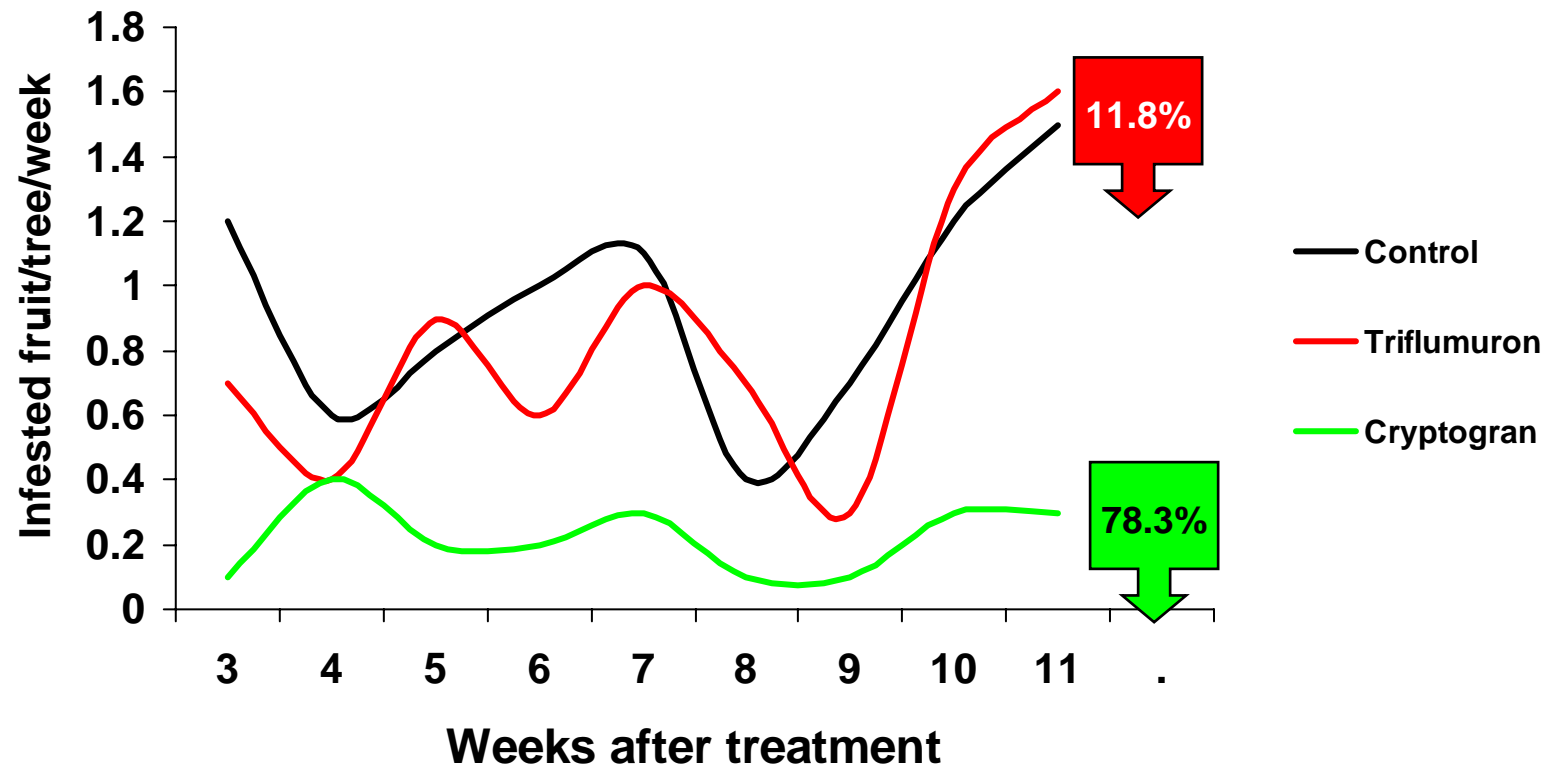


**FIELD TRIALS WITH CRYPTOGRAN AGAINST FALSE
CODLING MOTH (FCM) ON CITRUS, AVOCADOES, GRAPES,
PEPPERS & PERSIMMONS**



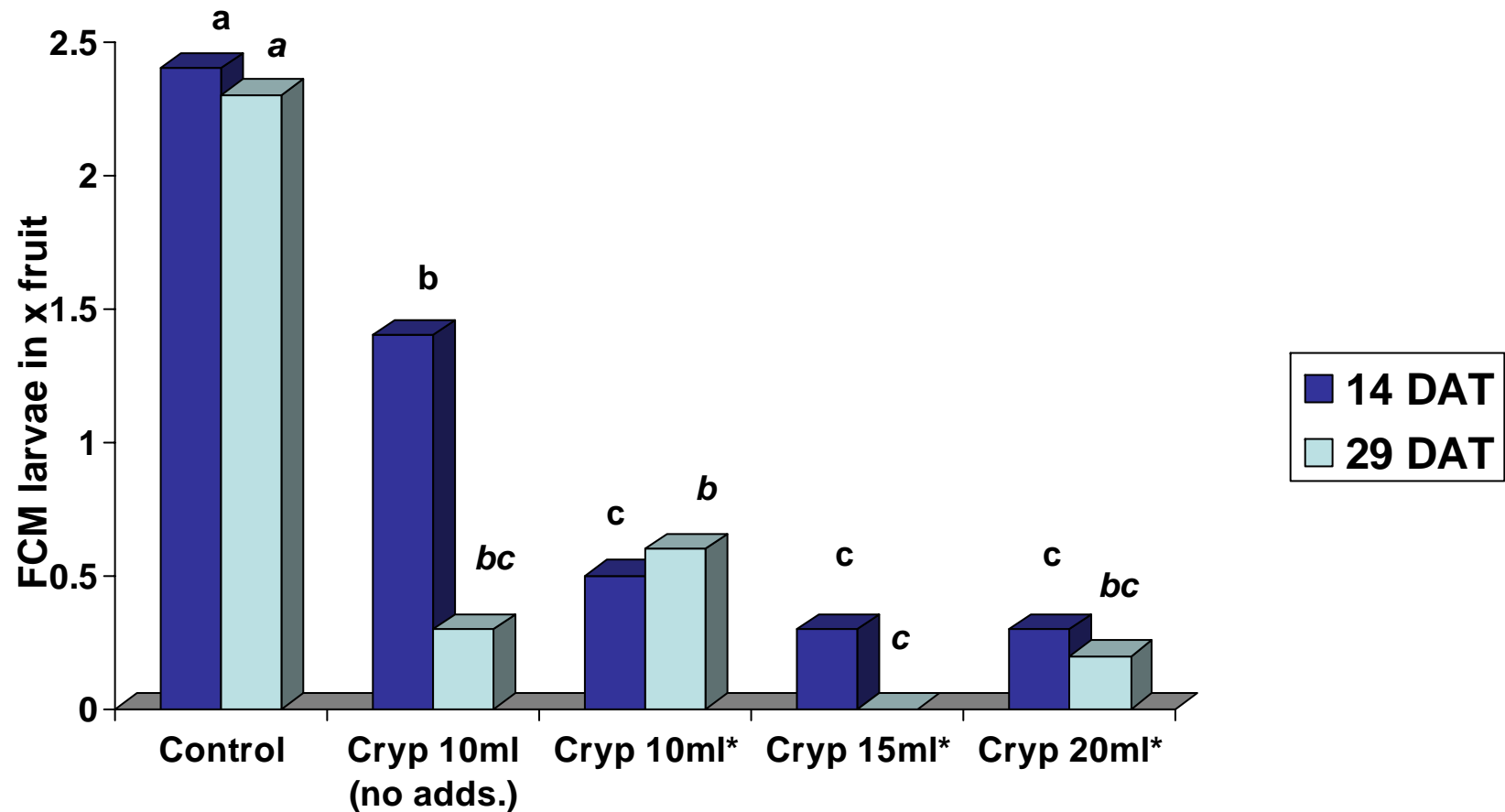
EFFICACY OF CRYPTOGRAN AGAINST FCM ON CITRUS

Navel oranges, Schoeman Estates, Mpum., 2003



EFFICACY OF CRYPTOGRAN AGAINST FCM ON AVOCADOES

Applied January 2006 (Hall & Sons, Nelspruit)

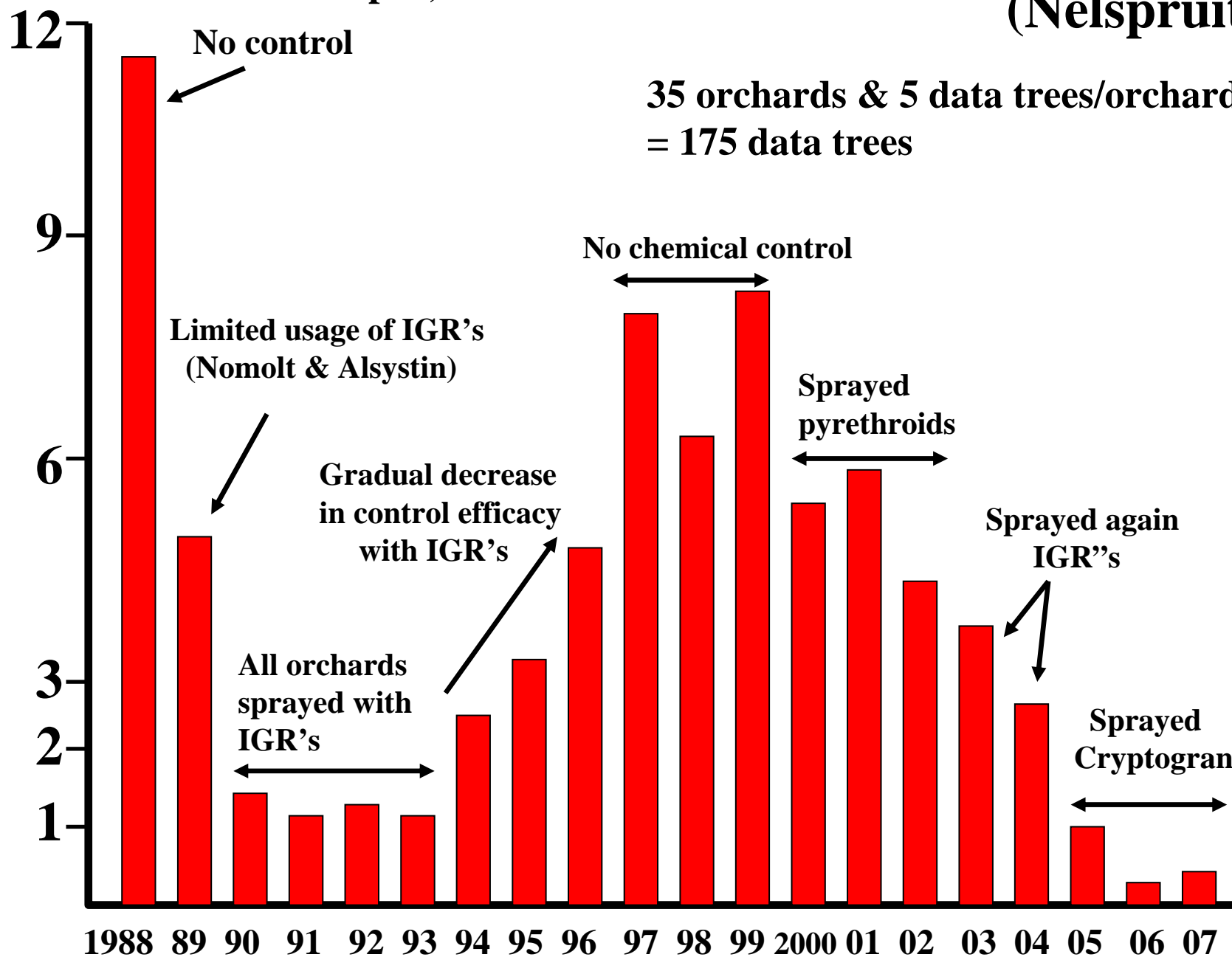


*Molasses & wetter added

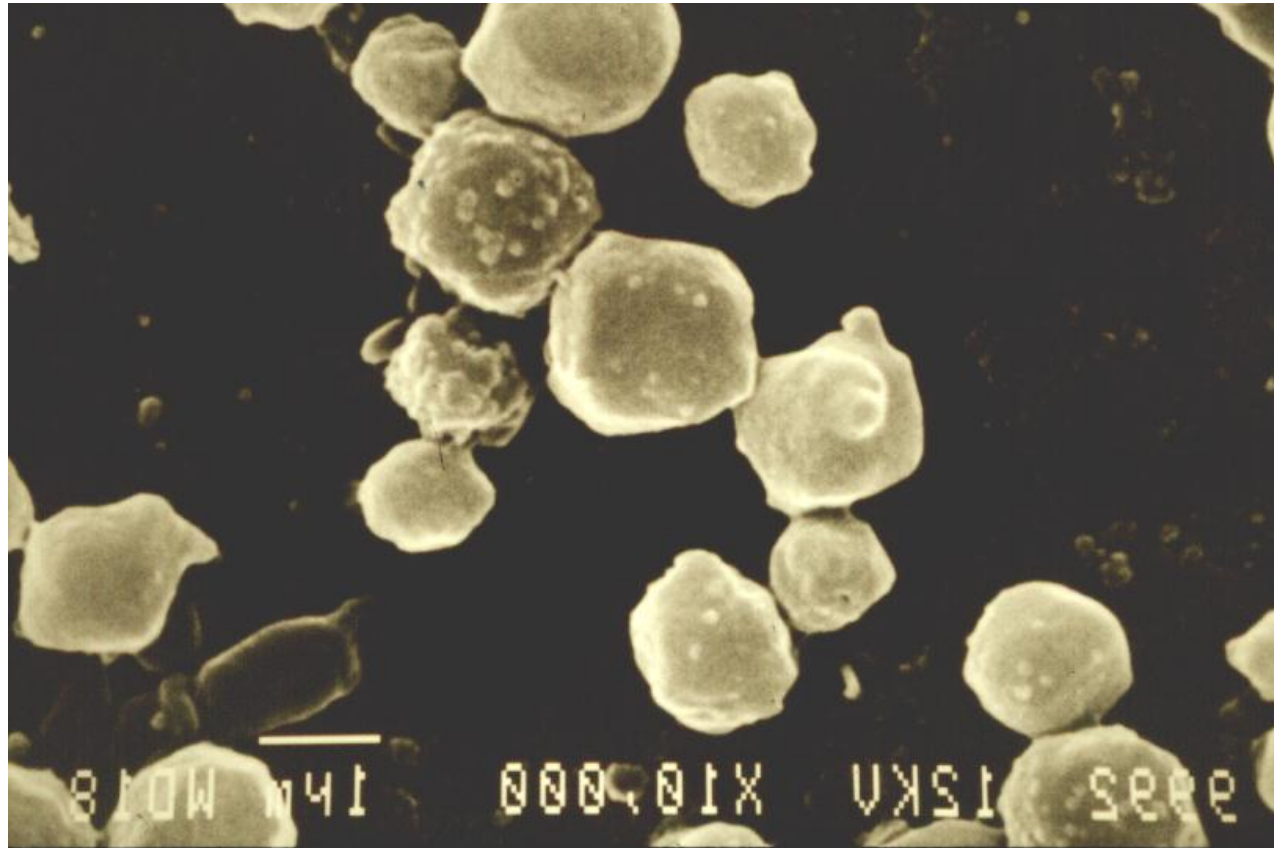
Ave. number of fruit/tree/week
(10 weeks: Mid Feb – End April)

Crocodile Valley Citrus Co.
(Nelspruit)

35 orchards & 5 data trees/orchard
= 175 data trees

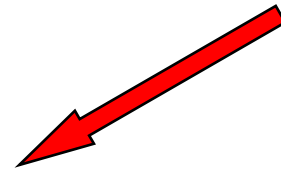
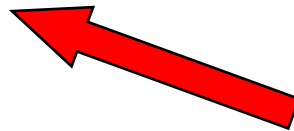
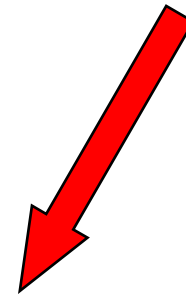


HELICOVIR – *Helicoverpa armigera* nucleopolyhedrovirus



5×10^9 OBs/ml in bottle
Apply 3×10^{12} OBs/ha

PEST STATUS OF *H. ARMIGERA*

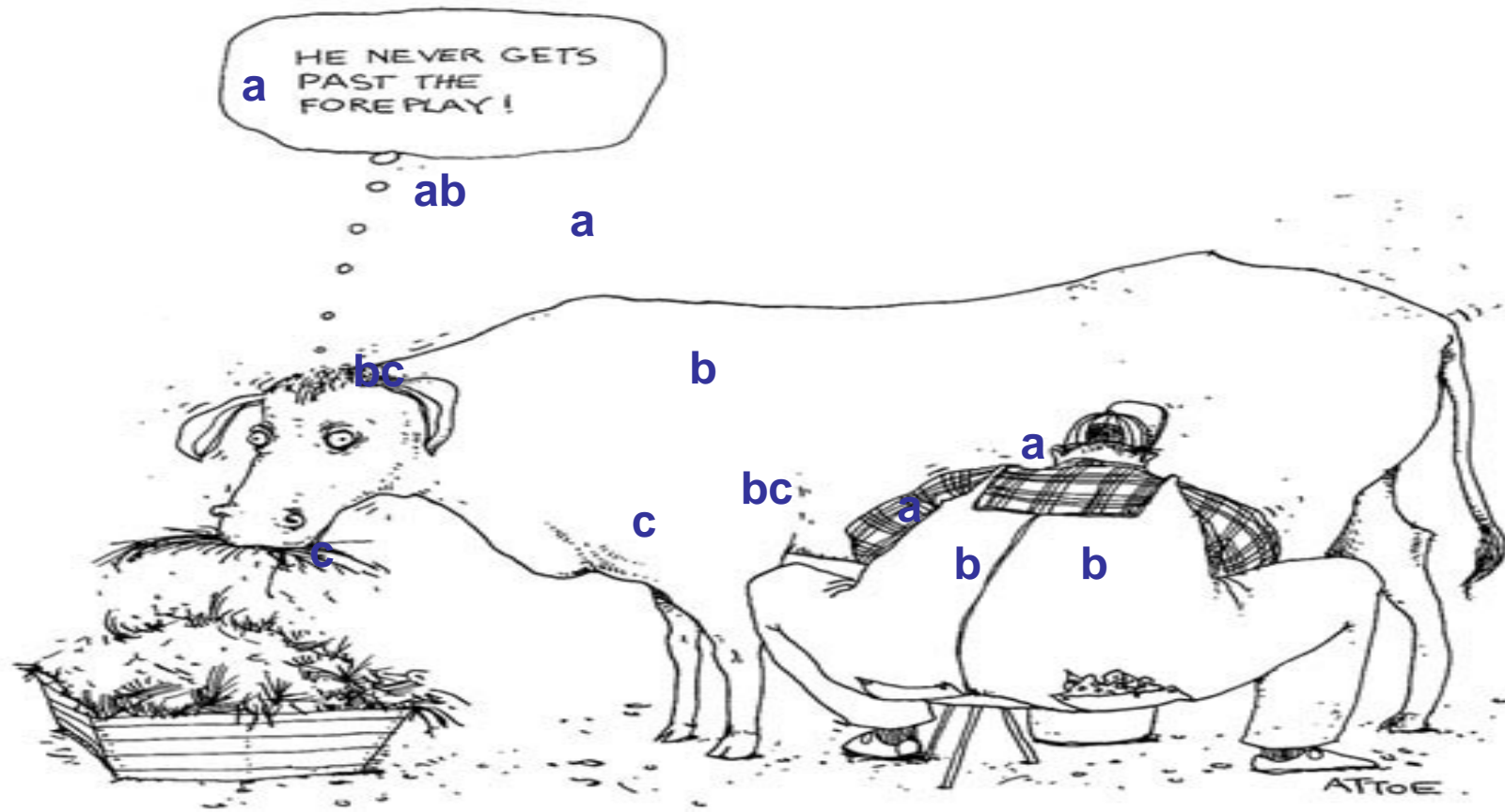


TRIALS ON TOMATOES (GREENHOUSE & FIELD), CITRUS, COTTON AND WHEAT

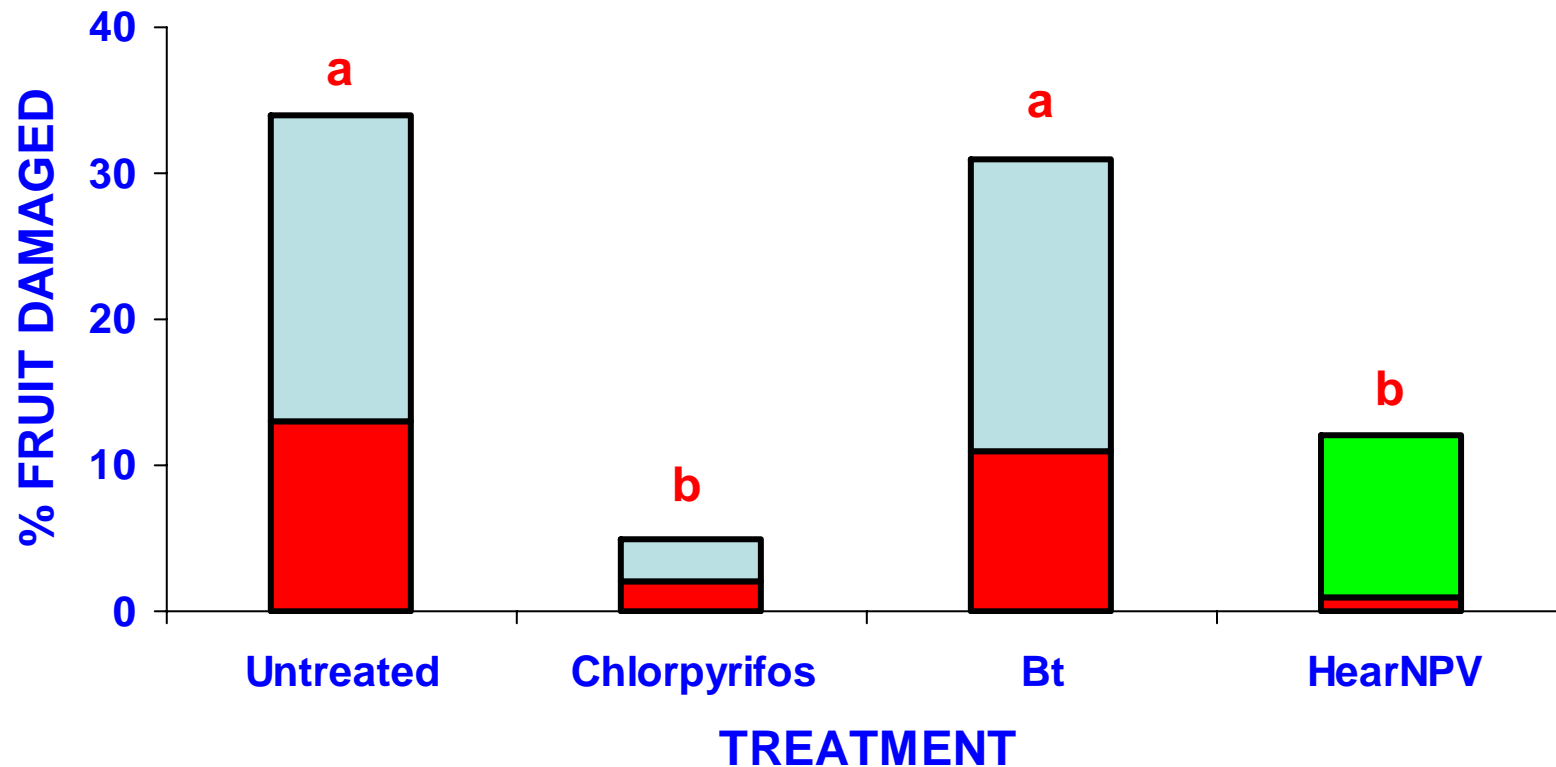




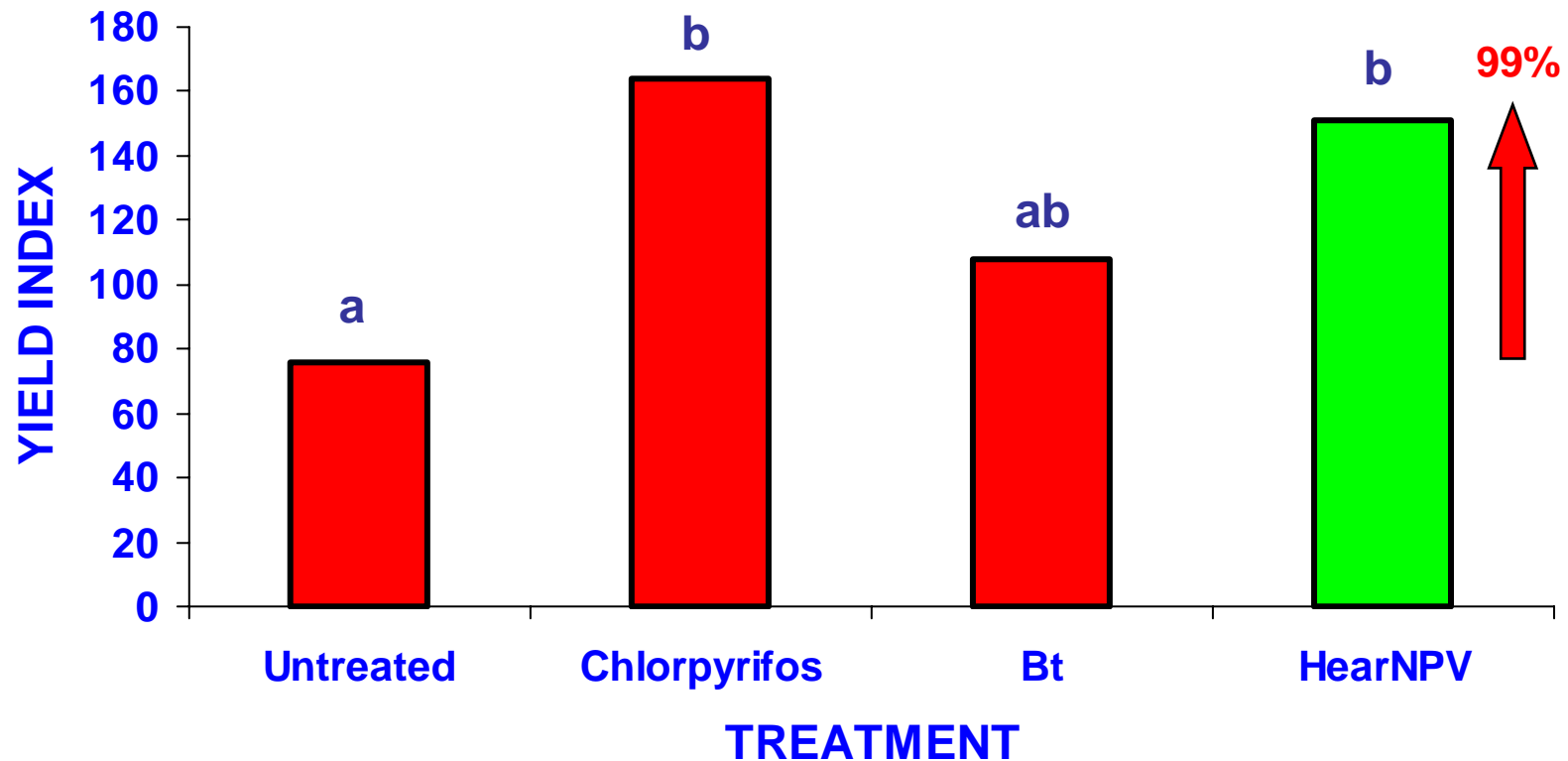
H.ARMIGERA INFESTATION ON NAVEL ORANGES (Tierhok Farm, 05/06)



H.ARMIGERA INDUCED DAMAGE TO NAVEL ORANGES (Tierhok Farm, 05/06)



RELATIVE NAVEL ORANGE YIELD INFLUENCED BY *H.ARMIGERA* (Tierhok Farm 05/06)



M3 BAIT STATION FOR FRUIT FLY CONTROL



350 – 400 traps/ha

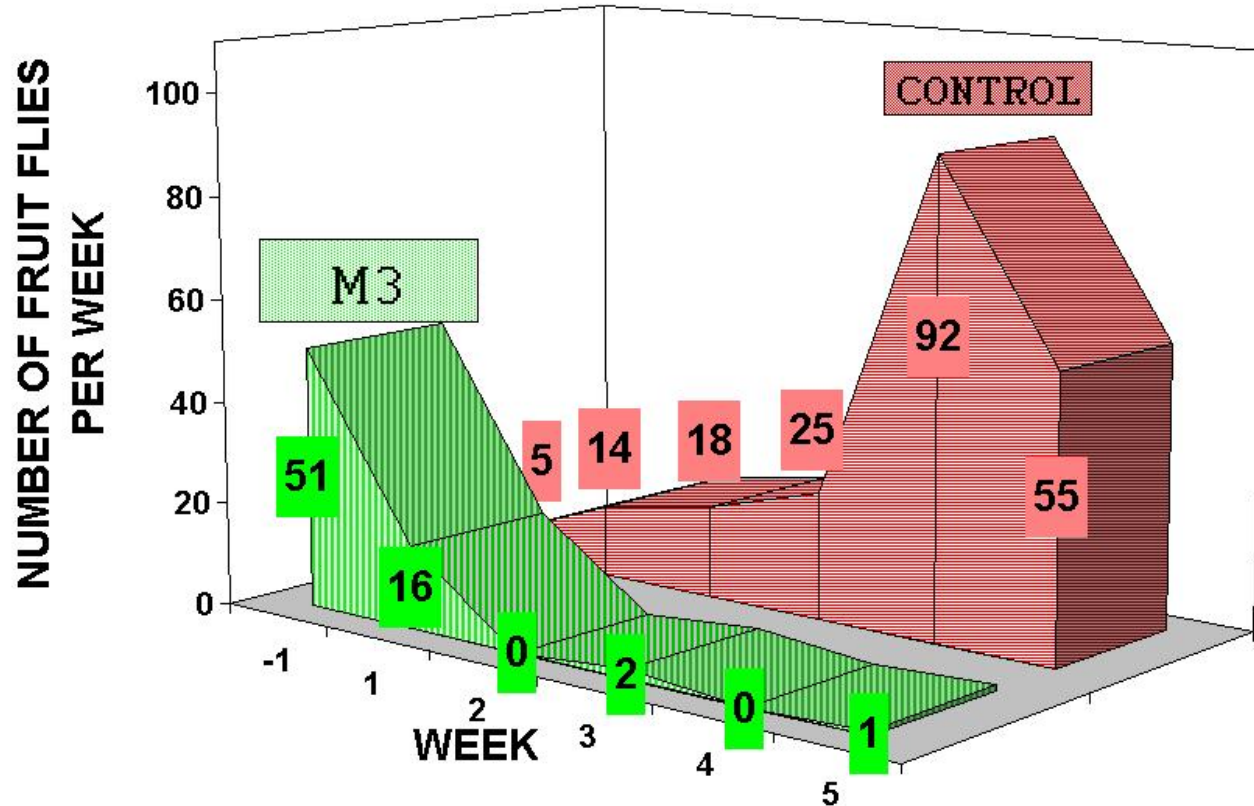
M3 Field trials

Various crops including:

- Citrus
- Grapes
- Peaches
- Litchis

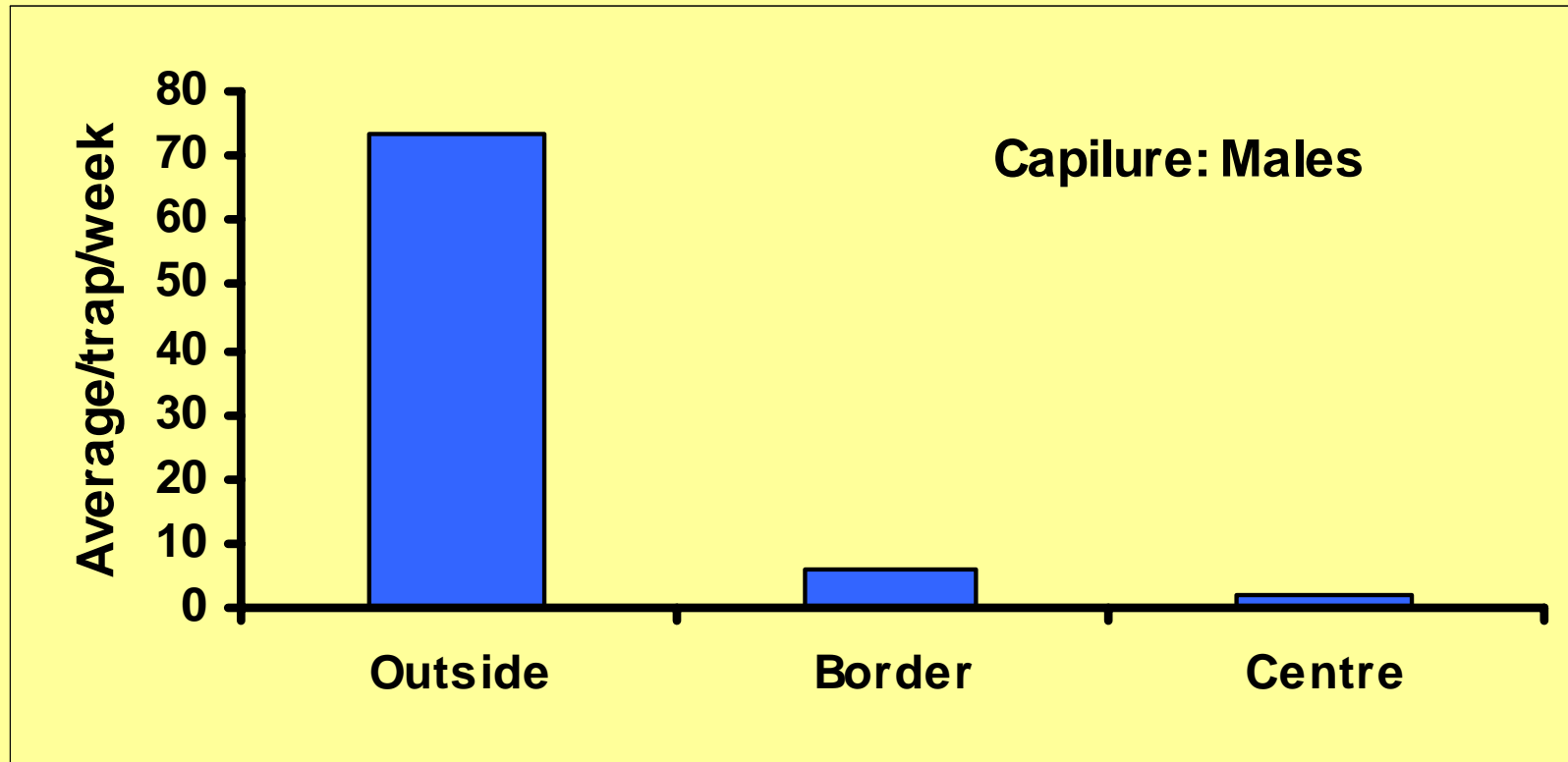


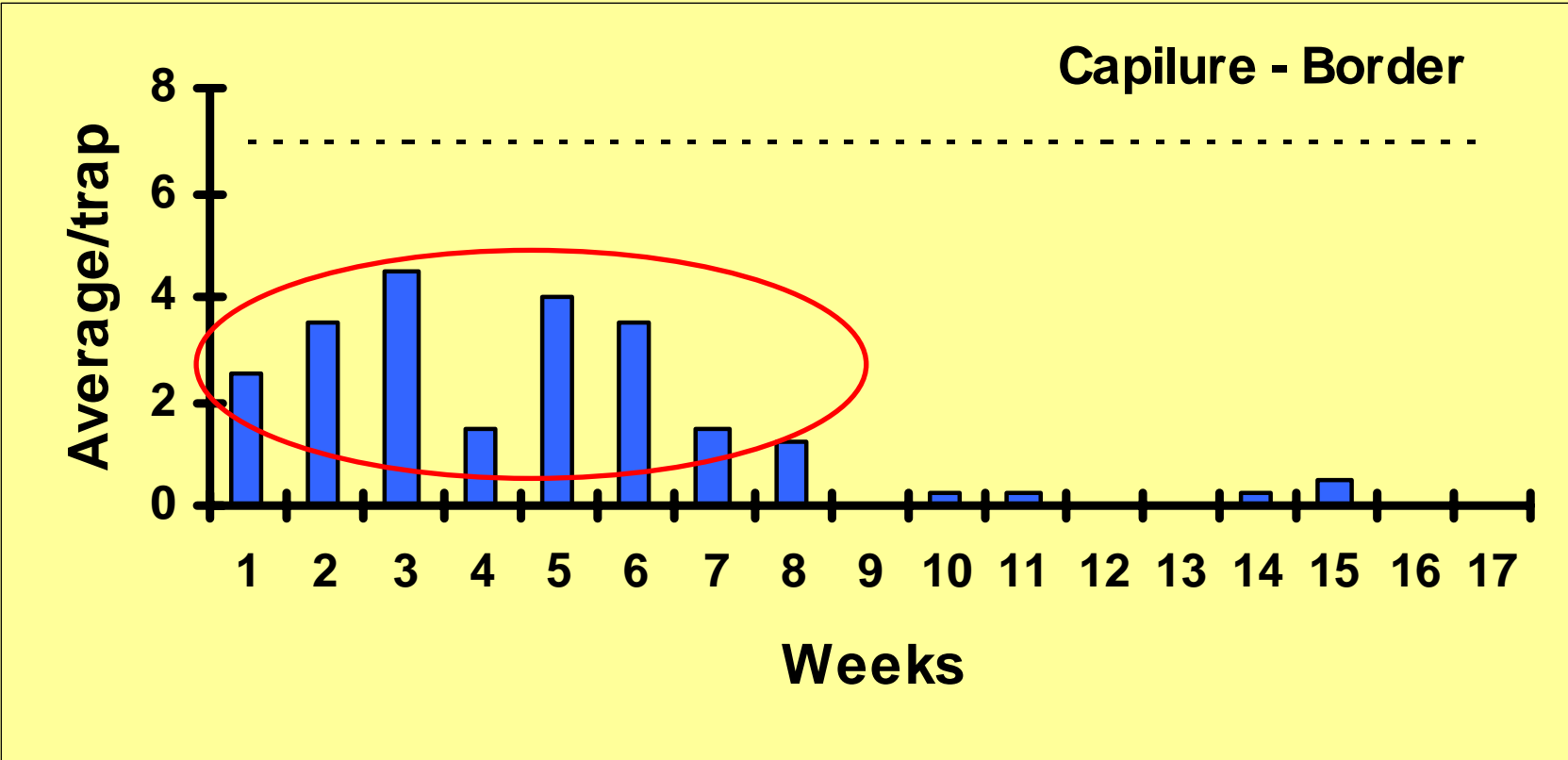
M3 BAITSTATION IN LITCHI'S



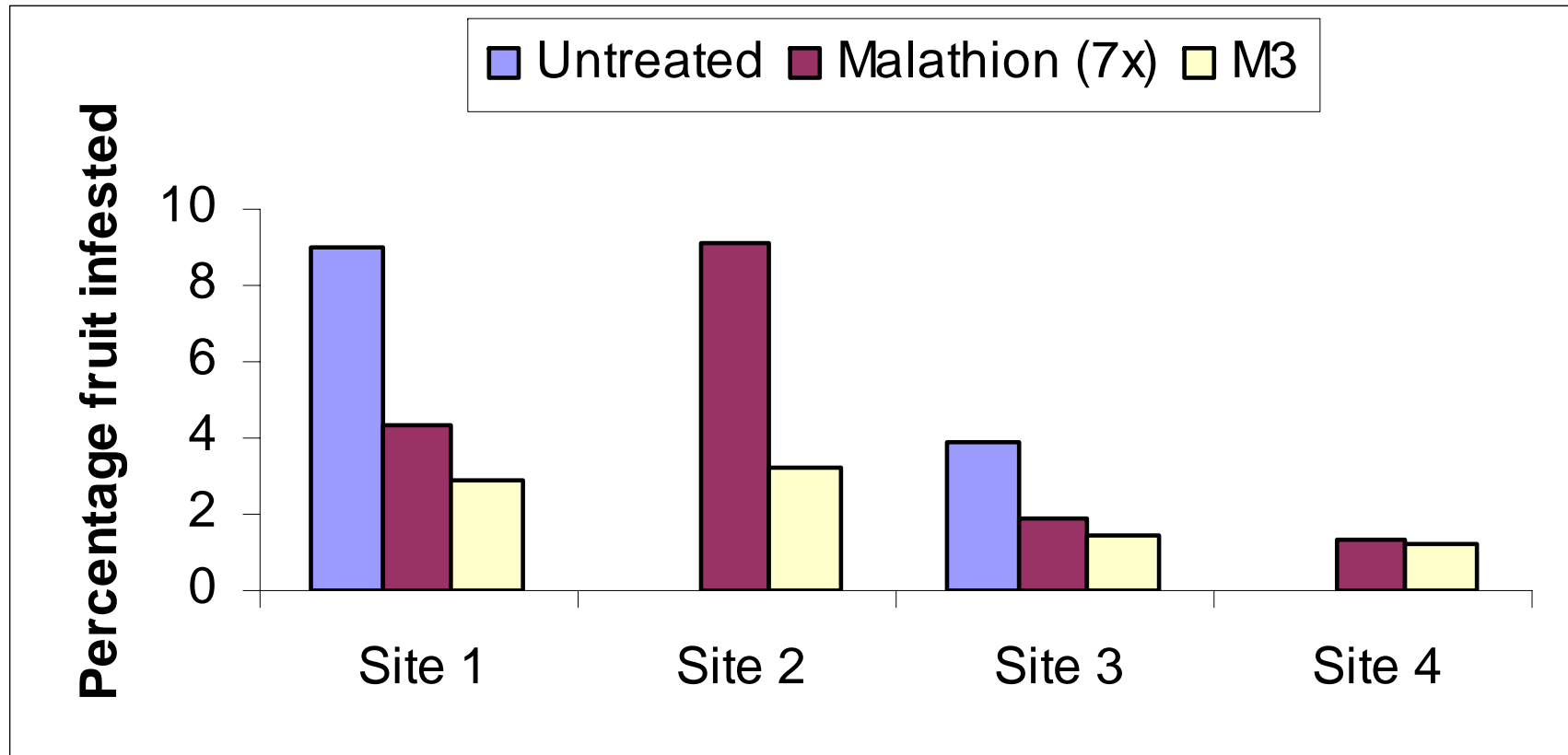
- NOTE:**
- There was no baitspraying done in CONTROL block.
 - M3 Treatment should have started at least 3 to 4 weeks earlier.
 - MONITORING done with SENSUS TRAP and CERATITISLURE.

MALE MEDFLY CATCHES IN AN M3-TREATED CITRUS ORCHARD (E.CAPE, SOUTH AFRICA)





Control of Medfly on citrus in Spain



BENEFITS OF USING THE M3

- You are in control.
- Simple to use – not require skilled labour or equipment – drivers and tractors.
- Single season treatment.
- Effective against a number of fruit fly species.
- Registered/used on all fruit types.
- No rain influence and season-long control.
- IPM compatible: No pesticidal effects on fruit or natural enemies; safe for humans.
- Could provide fruit fly free zones.

IN CONCLUSION:

The hardest part is grower education.....

