منظمة وقاية النباتات للشرق الأدنى

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on management of *Tuta absoluta*
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Early studies on the control of tomato leaf miner Tuta absoluta with mating disruption tecnique in Murcia region (Spain)

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REGIÓN DE MURCIA

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Tomato production in Murcia and *Tuta absoluta*

3.280 ha Murcia greenhouse or nethouse tomato surface in 2010

Tuta absoluta 1st detection in summer 2007

In 2008 spread to all tomato surface causing heavy damages

IPM strategy

Prevention:

- Sanitation
  - Previous crop disposal
  - Clean measures
  - Soil solarization
- Proper sealing
- Complementary measures
  - Yellow sticky traps or band
  - Adulticides spray

Semiochemicals

- Mass trapping
- **¿Mating Disruption (MD)?**

Beneficials

- *Nesidiocoris tenuis*
- *Trichogramma achacae*

Insecticides application

- Bacillus thurigensis
- Flubendiamide
- Rynaxypyr
- Spinosad
- Others

Shin-Etsu *Tuta absoluta* MD dispenser-Isonet T

Main pheromone compound and ratio:

E,Z,Z-3,8,11-TDTA(90)

E,Z-3,8-TDDA(10)

Dispenser load: min. 60 mg/dispenser

Estimated dispenser life:

More than 4 month at constant temperature (25 ºC.)

Material and Methods

Trials protocol

Trial started in 2010 and continued in 2011

4 trials in 2010

3 trials finalized and 4 trials ongoing in 2011

Cultivation: multitunnel, plastic greenhouse, nethouse

Treatments

MD (1000 disp/ha)

CONTROL (Farm standard)

1 greenhouse=1 plot

2-4 pheromone traps/plot baited with pheromone lure

1 trap plot baited with virgin female (4 weeks)

1 blank trap

Weekly visits for traps check and damage evaluation throughout the growing season

Plot conditions

Good sanitation measures

Good sealing

Release of beneficials 4-6 weeks after transplanting

Material and Methods

Parameters evaluated

Traps catches (C/T/D)

Pheromone lure

Virgin female

Populations levels

% of plant with mines with living larvae

0= no detection

1= 0-5%

2= 6-25%

3= 26-40%

4= 41-100%

5= heavy damages

Chemical sprays

Pest management with chemicals spray is decided accordingly to populations levels and strategy applied

Trial Paloma 2010

Region: Murcia
Location: Aguilas

Structure: Multi tunnel

MD 1 plot surface: 6.540 m2
MD 2 plot surface: 9.300 m2

2 Control plots surface: 9.300 m2

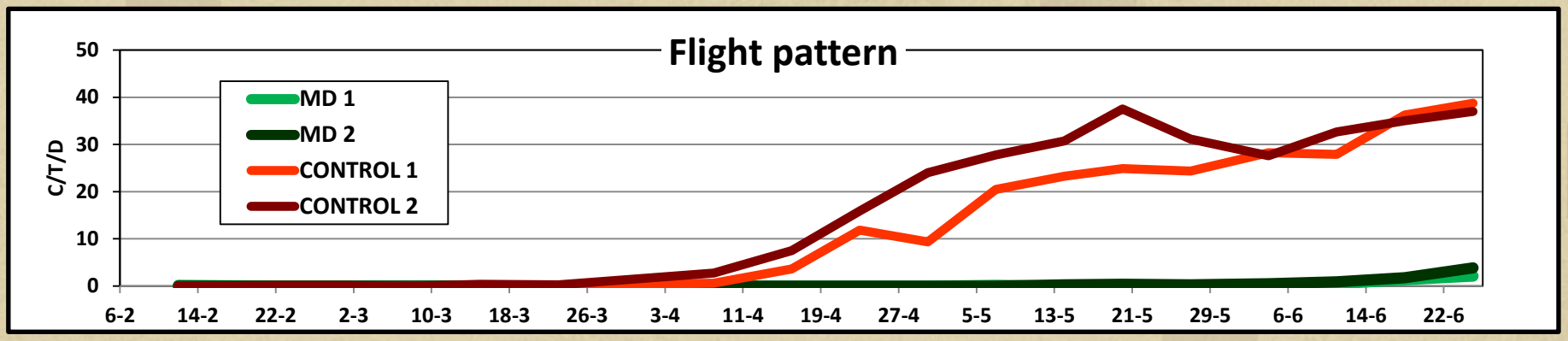
Transplant: 7 January 2011

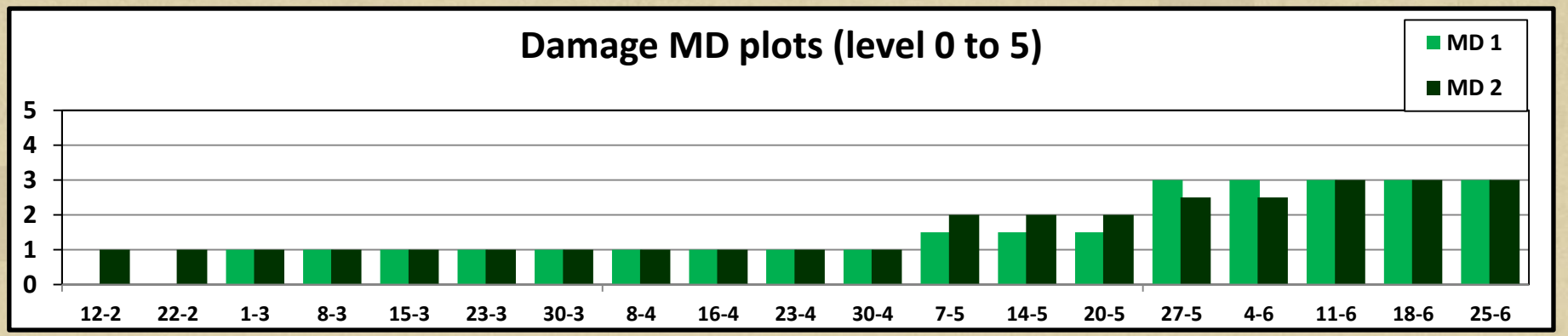
MD application: 12th of February
16th of April

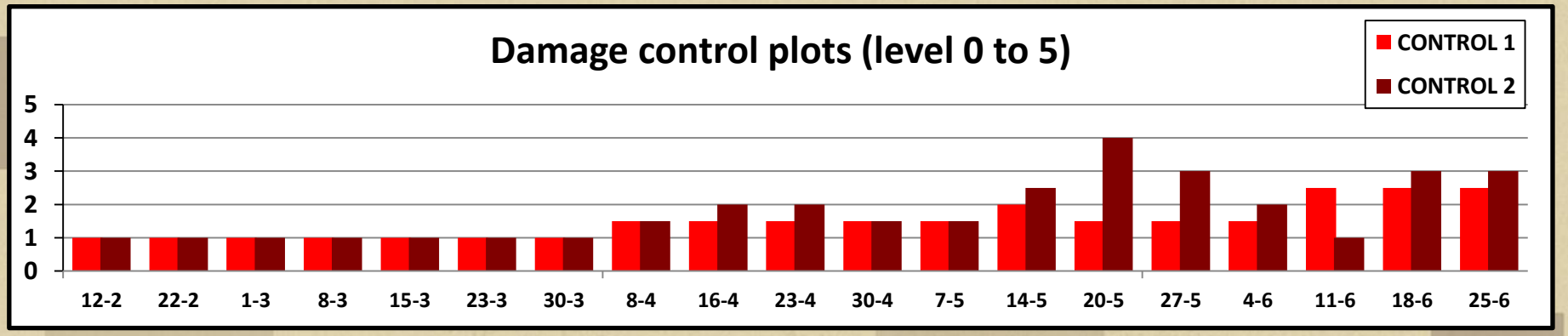
Dosage: first application 1.200 disp/ha
second application 500 disp/ha

End of cultivation: 26 June 2011

Trial results Paloma 2010







Trial Results Paloma 2010

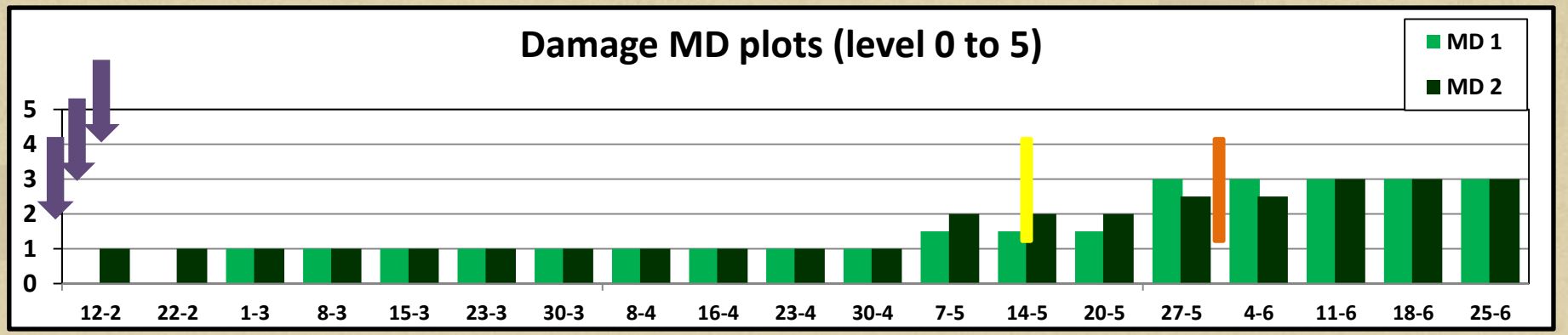
Insecticide application

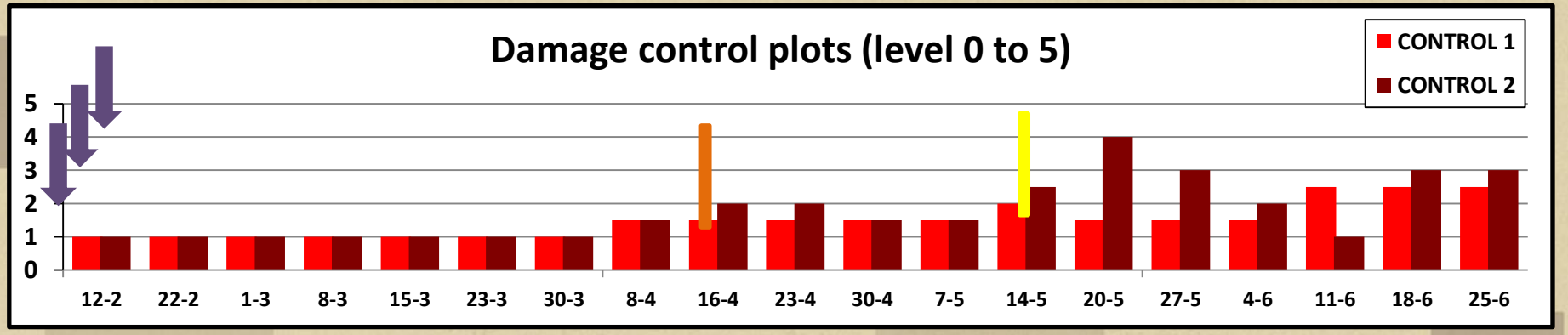
Roof vents open

Insecticide program start

MD achieved

- Delay population build up
- Good pest control with sealed greenhouse
- Delay insecticide appplication
- Less insecticide applications





Trial Hnos Gonzalez 2010

Region: Murcia
Location: Cañada de Gallego

Structure: nethouse

MD plot surface: 12.000 m2

Control plot surface: 12.000 m2

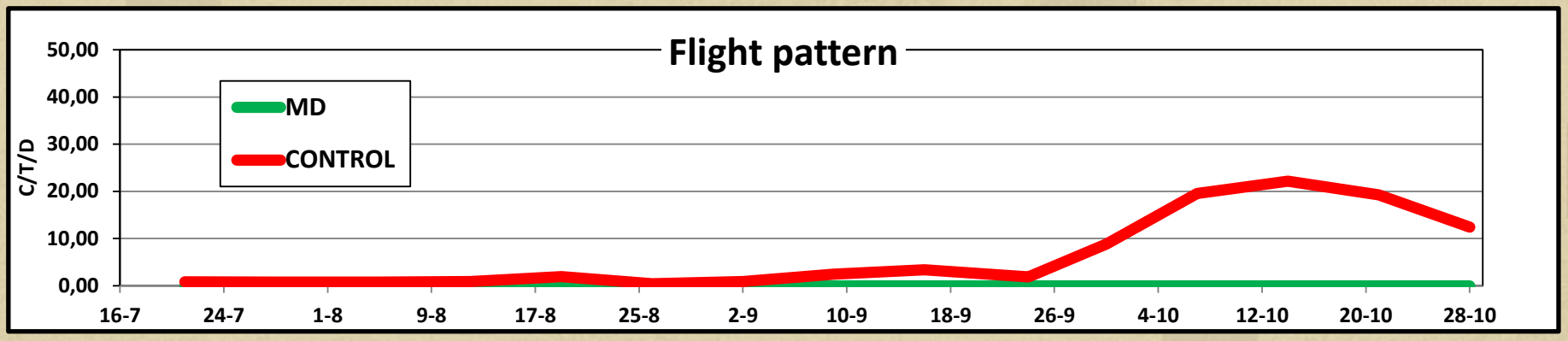
Transplant: 26th June 2010

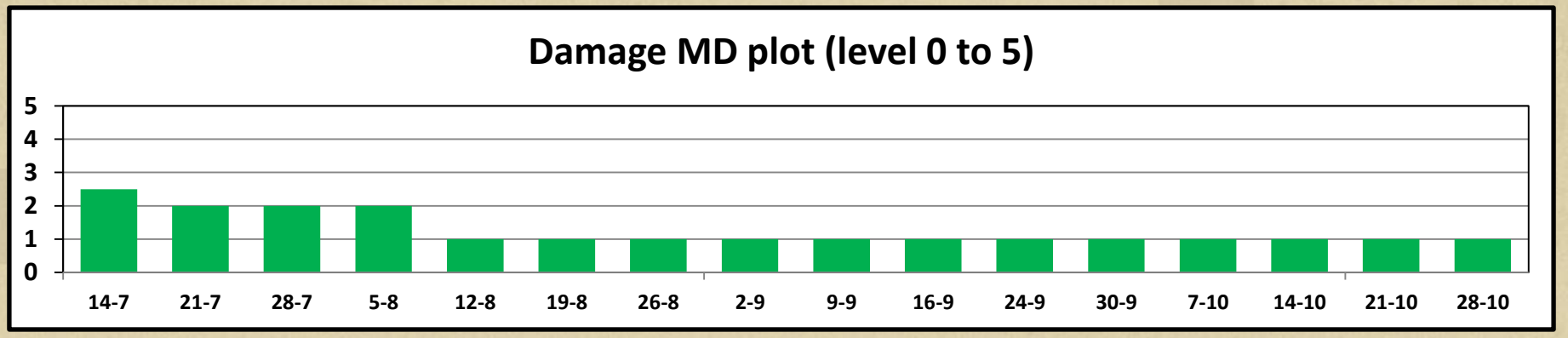
MD application: 14th July 2010

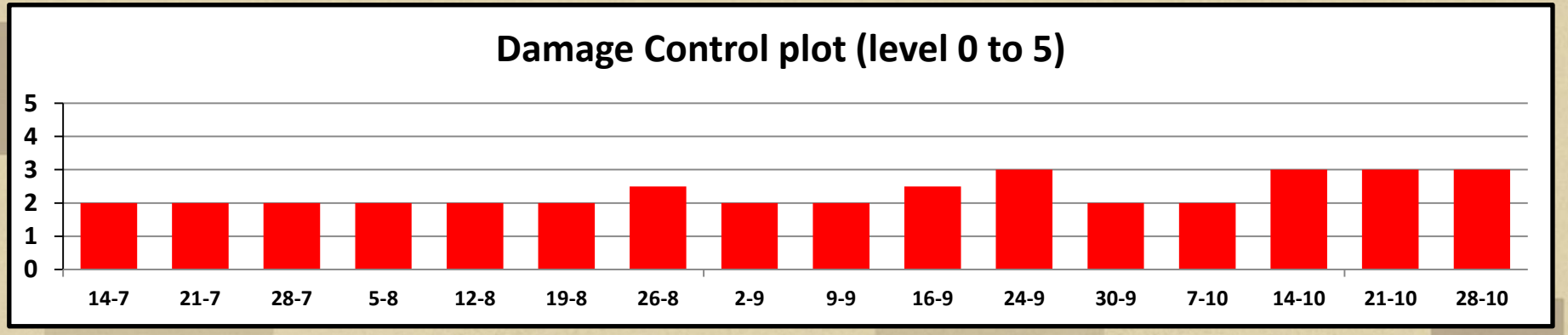
Dosage: 1000 disp/ha

End of cultivation: 30th October 2010

Trial results Hnos Gonzales 2010





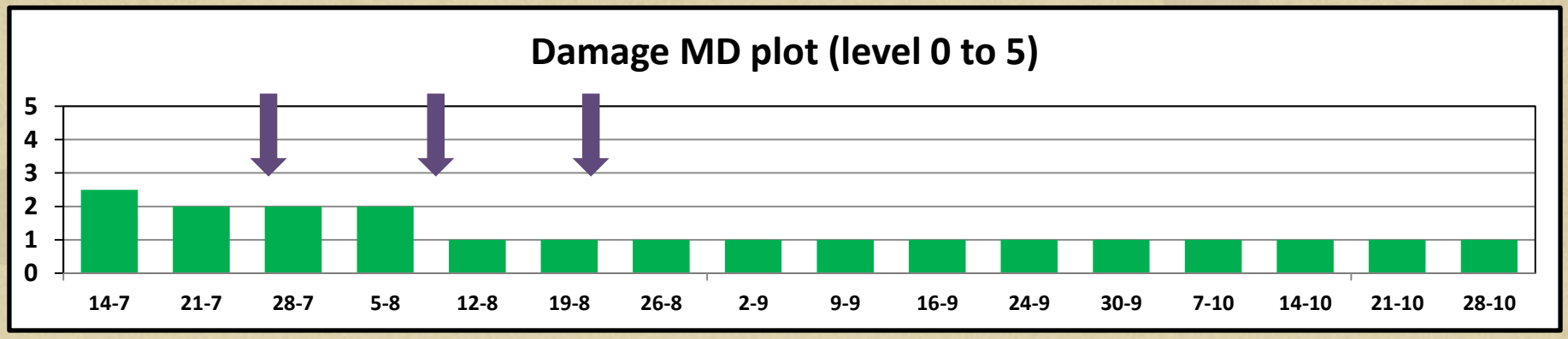


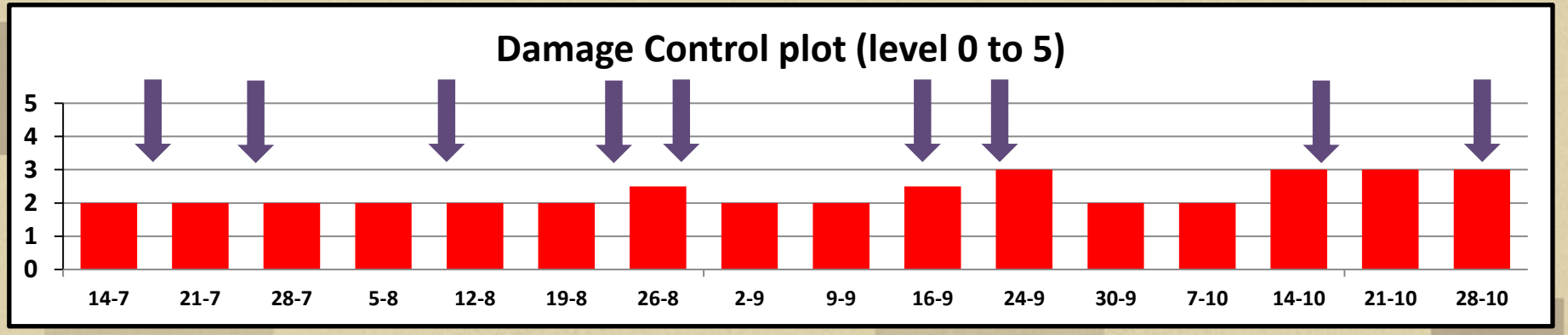
Trial results Hnos Gonzales 2010

Insecticide application

MD achieved

- Drastic reduction of insecticide applications
- Lower population
- Less damage





Trial Paloma 2011

Region: Murcia
Location: Mazaron

Structure: nethouse

MD plot surface: 10.000 m2

Control plot surface: 10.000 m2

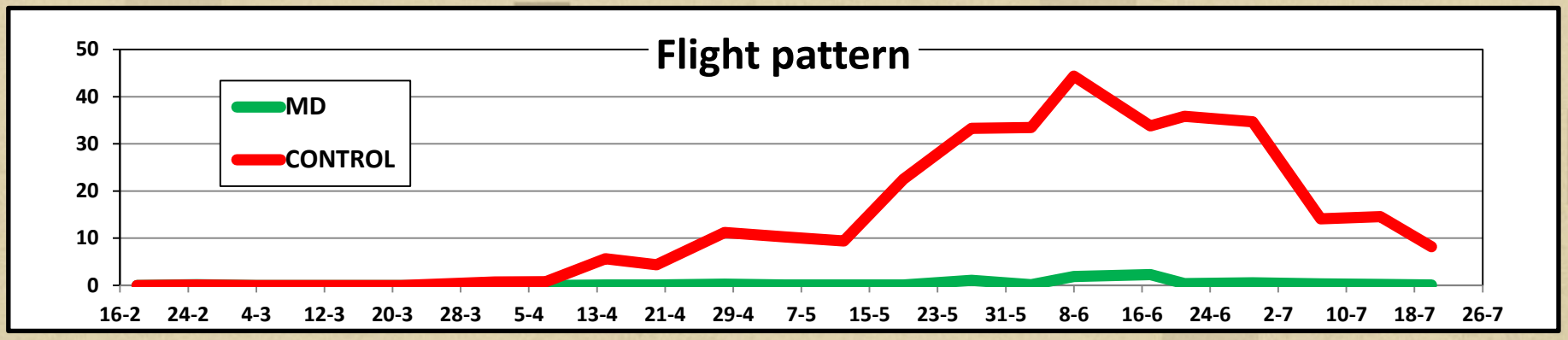
Transplant: 9th February 2011

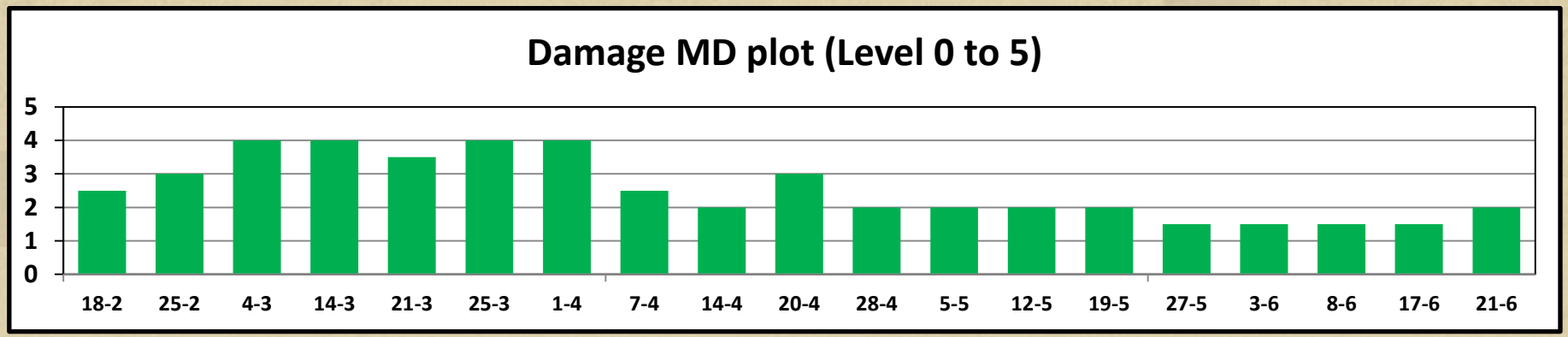
MD application: 11th February

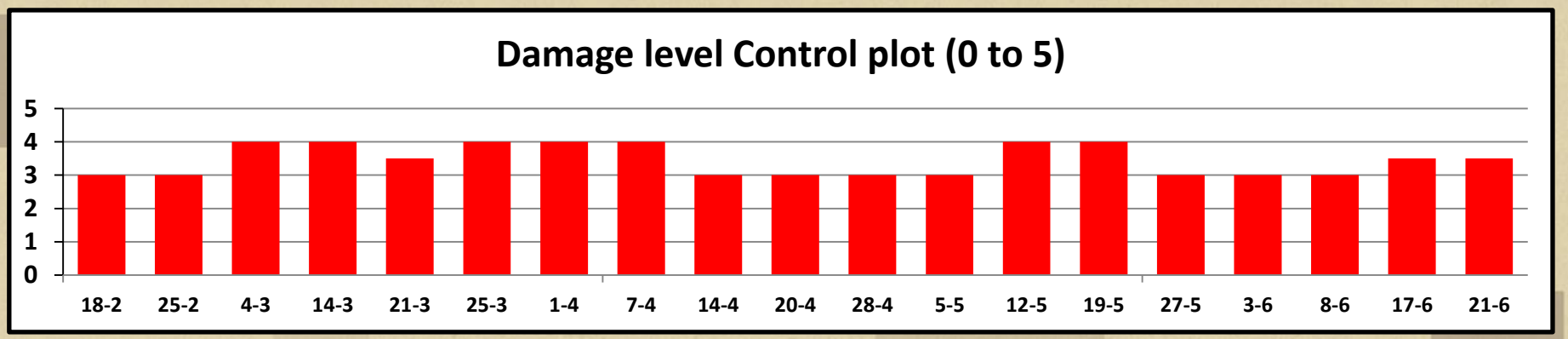
Dosage: 1000 disp/ha

End of cultivation: 26th July 2011

Trial results Paloma 2011







Trial results Paloma 2011

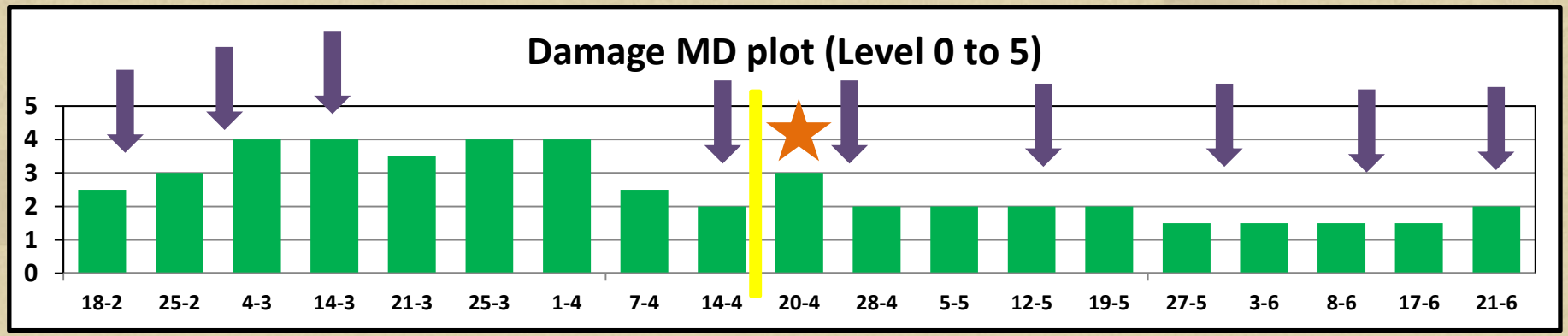
Insecticide application

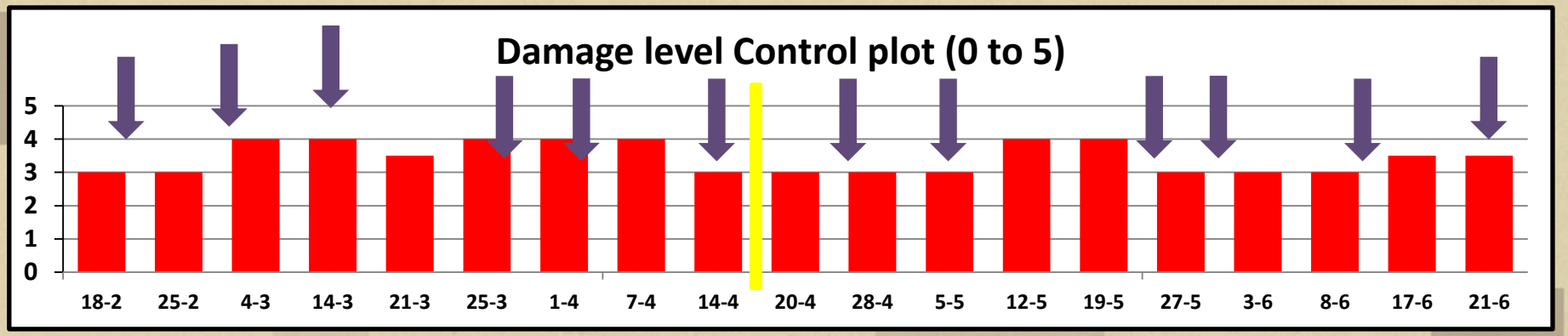
Side vents open

Female migration from neighburing field grubbed up

MD achieved

- Reduction of insecticide applications
- Lower population
- Less damage





Conclusion

Traps and catches

MD achieved trap shut down in all the trials even with high population levels for several months

Traps baited with virgin females caught few moths in MD plots

Total trap catches

Catches/trap/4 weeks

MD			CONTROL		
Pheromone lure	Virgin females	Blank	Pheromone lure	Virgin females	Blank
25.00	2.00	0.50	828.67	9.75	2.50

Conclusion

Damage and insecticide applications

- MD technique applied with Shin-Etsu dispensers proved to be an interesting tools in the control of *Tuta absoluta* when applied in greenhouses properly sealed.

- With this type of dispensers and the amount of pheromone used per ha was possible to delay pest development (Populations levels), achieving a reduction of insecticide applications and damage on the crop.

- MD technique couldn't control high pest population utilized alone. However, could be considered as an essential tool in a IPM control strategy of *Tuta absoluta*

- MD technique and dispensers used were easy to manage and totally compatibles with crop management, beneficial release and with spray programs.

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