Field trial
results

# PRIMING

In the presence of *Tuta Absoluta*
in tomato

## Objective

To evaluate the effectiveness of Priming

in the presence of *Tuta absoluta* in tomato crop

## Material & methods

Location: La Cañada (Almería) - Spain

Crop: Organic tomato, variety Tomazur

Start of trial: May 7th

End of trial: June 21st

## Material & methods

Nº of plants for **TA and TB**: 15 plants x 3 repetitions = 45 plants per treatment

Type of application: radicular

Application dose: **TA** and **TB**: 2,5 l/ha

Applications:

**TA**: 3 applications with 10 days intervals

**TB**: 3 applications with 20 days intervals

Evaluations dates: according to following table

## Material & methods

| TREATMENT A (3 applications with 10 days intervals) | | |
|---|---|---|
| Date | Days after last application | Treatment |
| May 7th | | Eval./Applic. |
| May 17th | 10 | Eval./Applic. |
| May 27th | 10 | Eval./Applic. |
| June 4th | 8 | Sampling |
| June 12th | 16 | Sampling |

| TREATMENT B (3 applications with 20 days intervals) | | |
|---|---|---|
| Date | Days after last application | Treatment |
| May 7th | | Eval./Applic. |
| May 27th | 20 | Eval./Applic. |
| June 12th | 16 | Eval./Applic. |
| June 17th | 5 | Sampling |
| June 21st | 9 | Sampling |

## Evaluated parameters

Damage index

Number of eggs per leaf

Number of larvae per leaf

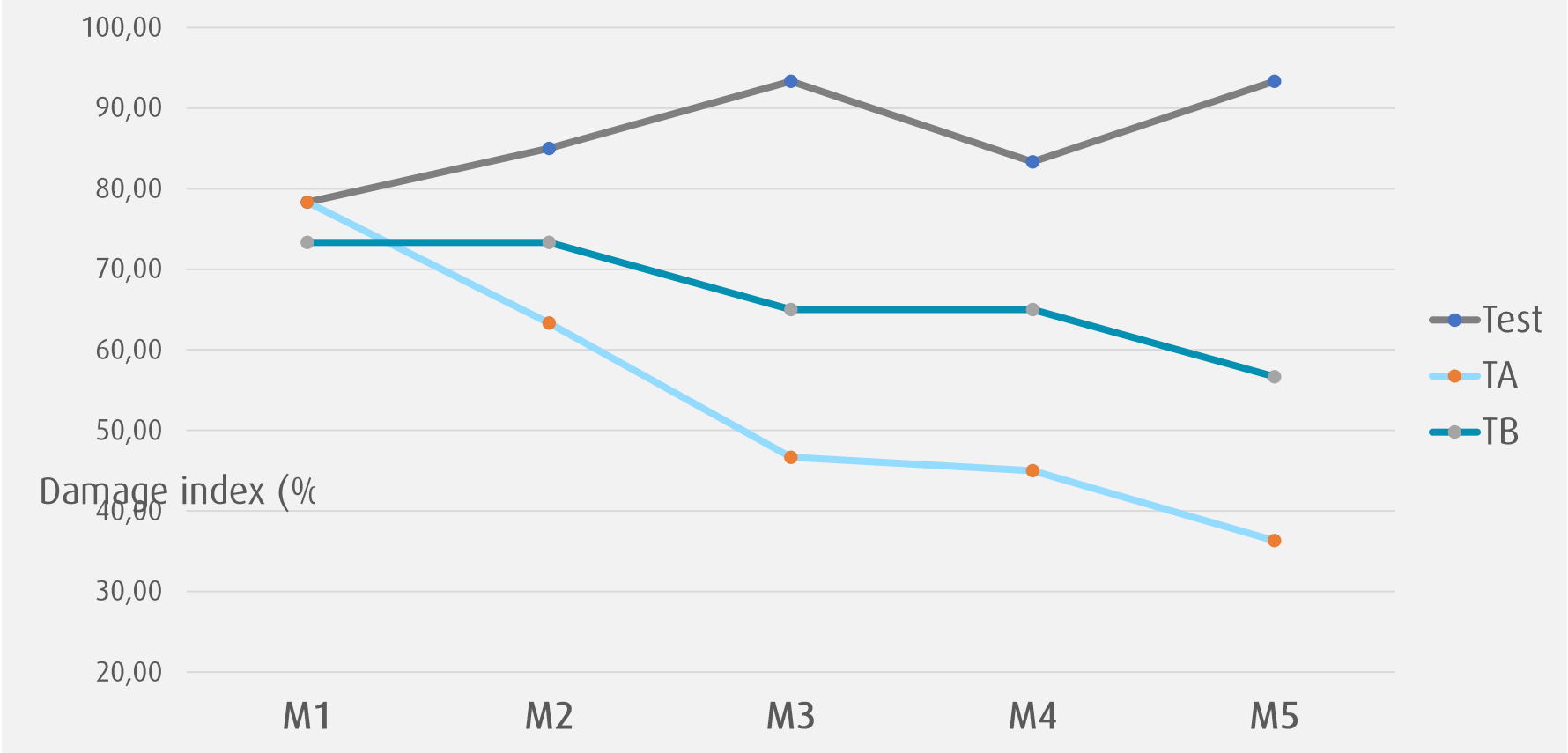
Phytohormones in leaves

## Results: Damage index (%)

| | Before first application | Before second application | Before third application | 7 days after last application | 14 days after last application |
|---|---|---|---|---|---|
| Test | 78,33 | 85,00 | 93,33 | 83,33 | 93,33 |
| Treatment A (every 10 days) | 78,33 | 63,33 | 46,66 | 45,00 | 36,33 |
| Treatment B (every 20 days) | 73,33 | 73,33 | 65,00 | 65,00 | 56,66 |

Table 1:
Damage index (%)

## Results: Damage index (%)



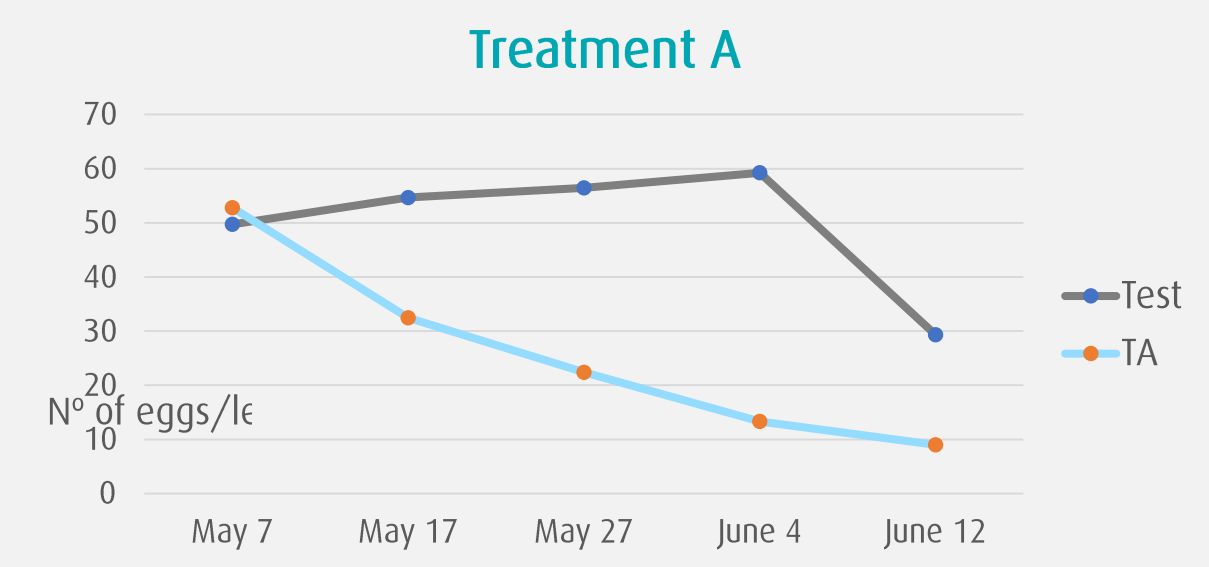

Graph 1: Damage index (%)

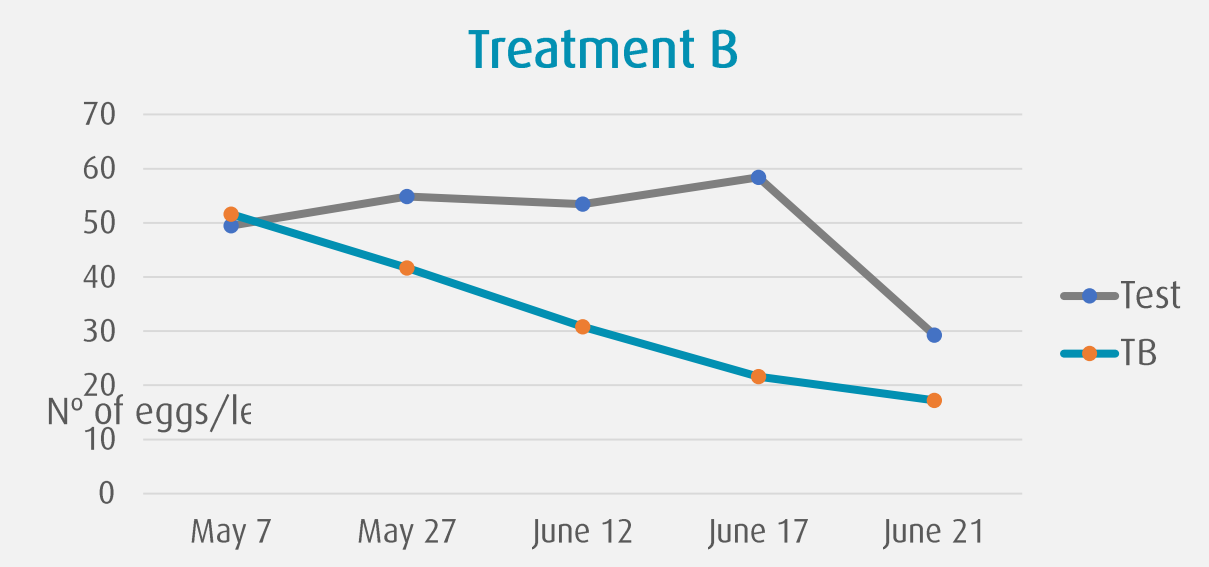
## Results: Nº of eggs

| | Before first application | Before second application | Before third application | 7 days after last application | 14 days after last application |
|---|---|---|---|---|---|
| Test | 49,73 | 54,66 | 56,46 | 59,26 | 29,33 |
| Treatment A (every 10 days) | 52,80 | 32,46 | 22,40 | 13,33 | 9,00 |
| | | | | | |
| Test | 49,46 | 54,86 | 53,46 | 58,40 | 29,26 |
| Treatment B (every 20 days) | 51,60 | 41,66 | 30,80 | 21,60 | 17,20 |

Table 2:
Average number of *Tuta absoluta* eggs per leaf

## Results: Nº of eggs



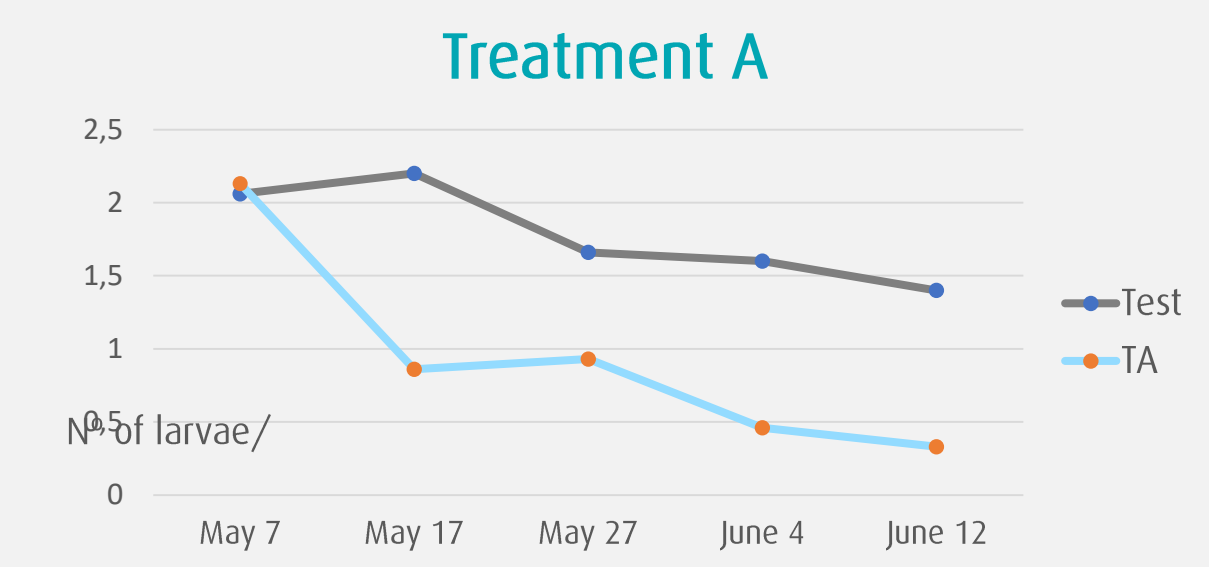

Graphs 2 & 3: Average number of *Tuta absoluta* eggs per leaf

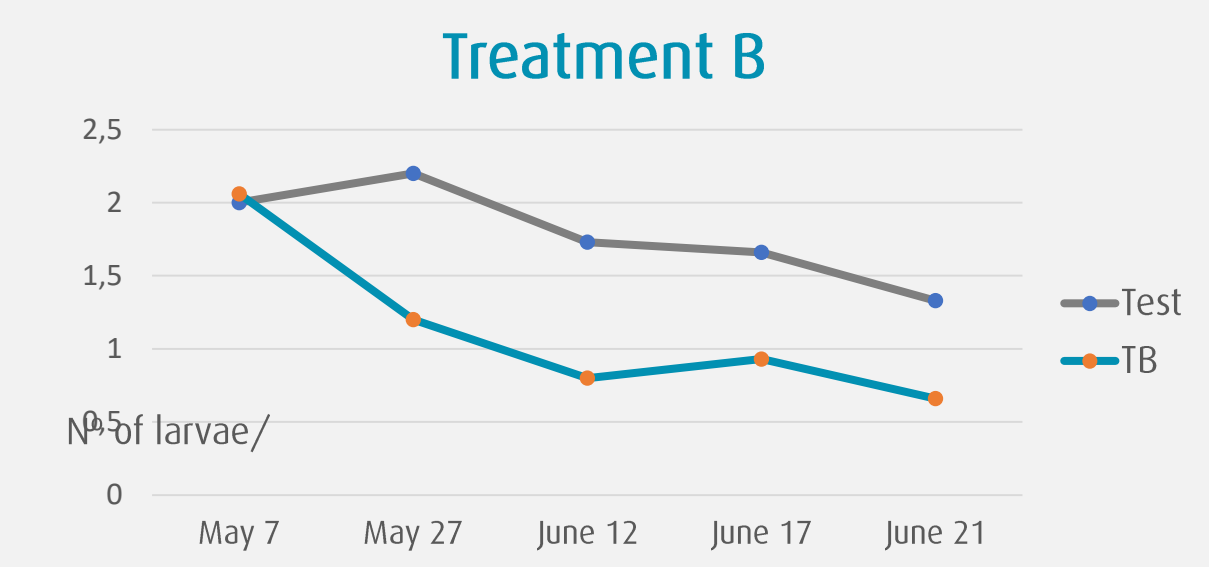
## Results: Nº of larvae

| | Before first application | Before second application | Before third application | 7 days after last application | 14 days after last application |
|---|---|---|---|---|---|
| Test | 2,06 | 2,20 | 1,66 | 1,60 | 1,40 |
| Treatment A (every 10 days) | 2,13 | 0,86 | 0,93 | 0,46 | 0,33 |
| | | | | | |
| Test | 2,00 | 2,20 | 1,73 | 1,66 | 1,33 |
| Treatment B (every 20 days) | 2,06 | 1,20 | 0,80 | 0,93 | 0,66 |

Table 3:
Average number of *Tuta absoluta* larvae per leaf

## Results: Nº of larvae




Graphs 4 & 5: Average number of *Tuta absoluta* larvae per leaf

## Results: Phytohormones

Phytohormones play an important role in the process of resistance of the plant to different pathogens. The main phytohormones that are altered are salicylic acid and jasmonic acid.

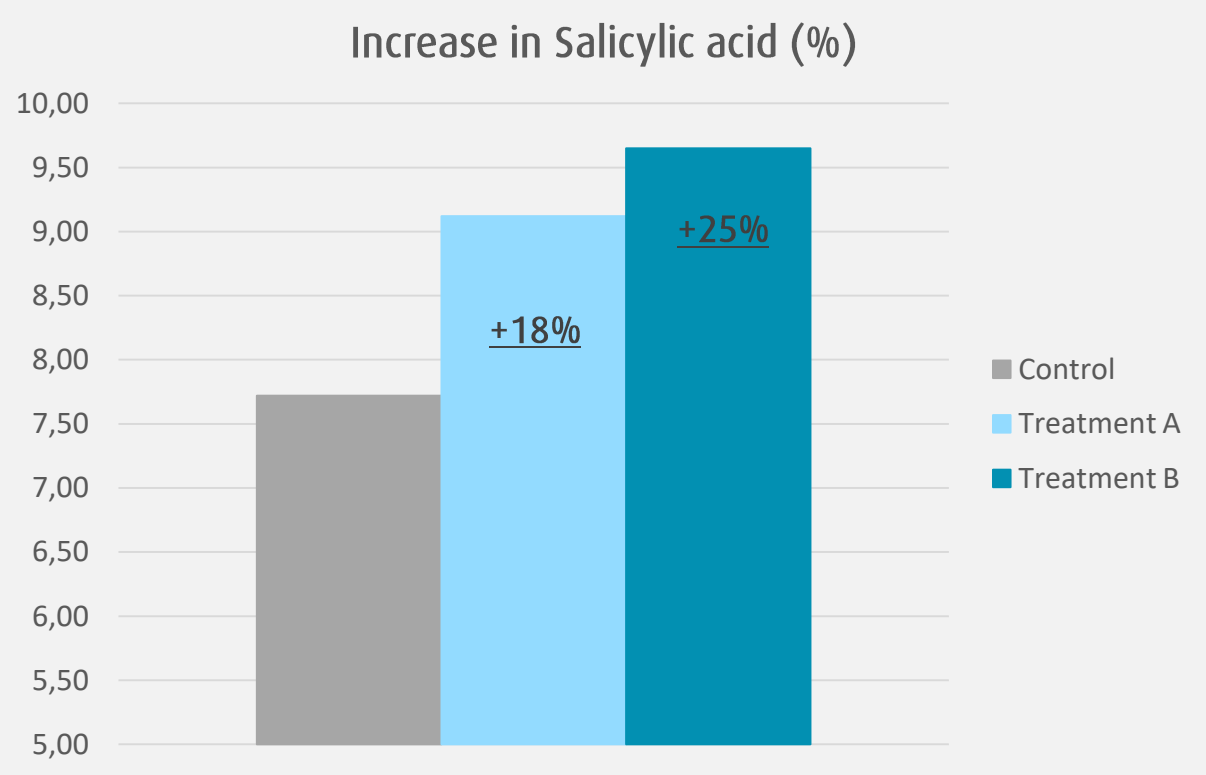
Different signals from phytohormones can trigger a series of physiological and metabolic processes in cells regulating resistance-related genes and initiate the corresponding immune responses.

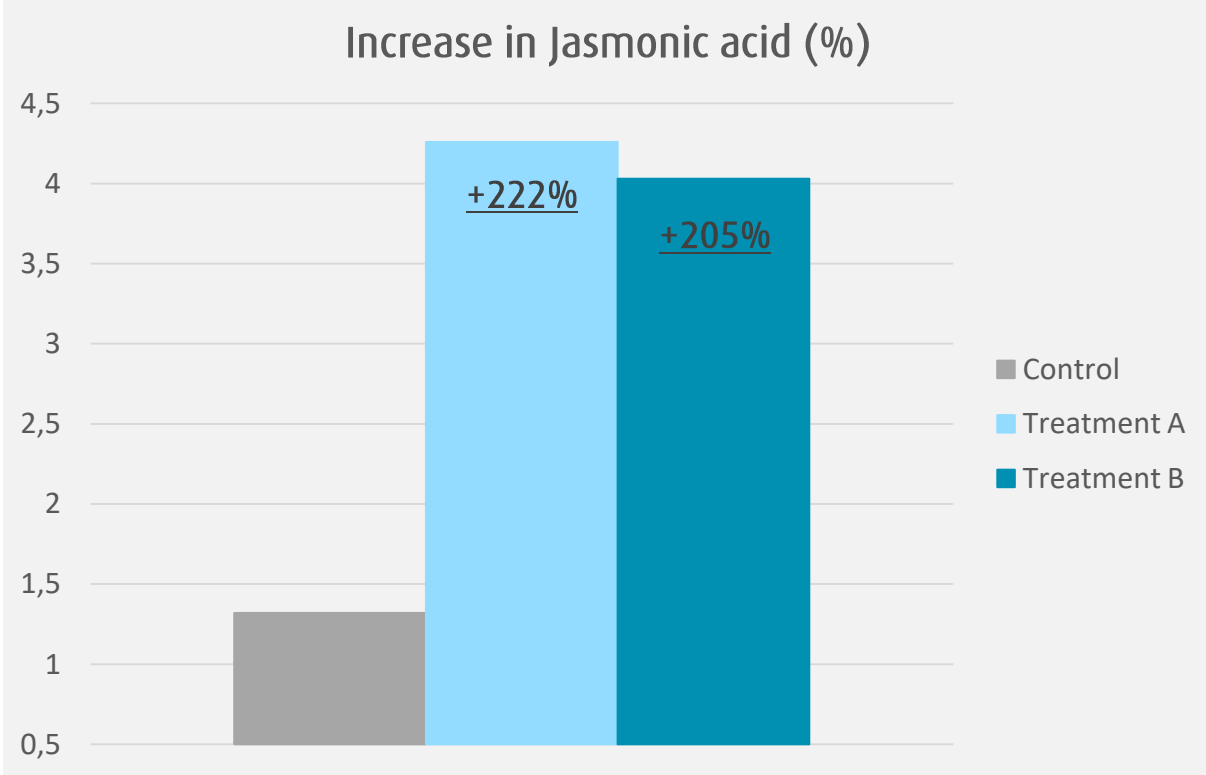
The application of priming technology causes an increase in the endogenous content of salicylic acid and jasmonic acid in the presence of biotic stress.

| Hormone | Salicylic Ac. (SA) | % | Jasmonic Ac. (JA) | % |
|---|---|---|---|---|
| Test | 7.72 | | 1.32 | |
| Treatment A | 9.12 | +18 | 4.26 | +222 |
| Treatment B | 9.65 | +25 | 4.03 | +205 |

Table 4:
Endogenous content of phytohormones in leaves (ng/g)

## Results: Phytohormones




Graph 6: Endogenous content of phytohormones in leaves (ng/g)

## Conclusions

# Applying priming technology in tomato we get:

Reduction of damage index

Reduction of number of eggs per leaf

Reduction of number of larvae per leaf

Increase of content of phytohormones in leaves