

# Pheromones



growing green ideas

# Table of contents

## **Green Ravenna**

**3**

*The Company*..... 4

*The products* ..... 4

*Research & Development* ..... 5

## **Pheromones**

**6**

*Mating disruption*..... 7

*Codling moth*..... 10

*Olive moth* ..... 12

*Green trap* ..... 8

*Olive fruit fly*..... 11

*Tomato leafminer* ..... 13

*Grapevine moth* ..... 9

# *Green Ravenna*

*The Company ..... 4*  
*The products ..... 4*  
*Research & Development ..... 5*





## The Company

**Green Ravenna** was established in 1999, specializing its activities in Turf & Lawn care. Few years later, the Company enhanced its product portfolio, including products for Professional Farmers as well as Non-Professional Users.

**Green Ravenna** is part of an industrial group, entirely dedicated to the agribusiness, leading-edge in production and industrial research of Plant Protection Products aimed to introduce on the market new sustainable products for the crops.

**Green Ravenna** headquarters are located in the city centre of Ravenna, while its operative offices, including Administration, Logistic, Sales & Marketing and Research, are in Cotignola (Ravenna). The linear structure strenghten more and more the collaboration between different business areas.

**Green Ravenna** is active all around Italy, with more than 40 sale agents and 3 line managers, working day by day to match accurately and professionally our customers technical and commercial needs.

Beyond Italy, **Green Ravenna** distributes its products all over Europe, through a strong network of selected partners.



## The Products

**Green Ravenna** markets a wide range of products both for the nutrition and protection of crops, plants and turf, covering the needs for both profesional and amateur users.

Before launching the products on the market, Green Ravenna Technicians test them in the fields to assess efficacy, efficiency and the different application techniques, in order to deliver the best possible products to our customers.

**Green Ravenna** respects the Nature and the Environment, developing environmental-friendly new products, suitable for both Conventional and Organic farming, taking care of users and people in the area.

## Research & Development

**Green Ravenna** invests every resources for R&D. Every employee in the Company is dedicated to the study of farmers and market needs, through field trials and technical advices, in order to collect as much information as possible to develop new sustainable solutions.

**Green Ravenna** organization includes a Technical area that, in addition to the development of new products, supports the application through technical teaching to farmers, trying to obtain the best performances from all products.

Further to the internal development, **Green Ravenna** collaborates with internationally-recognized Universities, Research Centers and Companies to provide a wider portfolio of environmental-friendly solutions to our farmers.



# Pheromones

<i>Mating disruption</i> .....	7
<i>Green trap</i> .....	8
<i>Grapevine moth</i> .....	9
<i>Codling moth</i> .....	10
<i>Olive fruit fly</i> .....	11
<i>Olive moth</i> .....	12
<i>Tomato leafminer</i> .....	13



# Mating Disruption

Integrated Pest Management (IPM) and Organic Farming demand an accurate and careful look at pest populations development, in order to efficiently optimize the application of Plant Protection Products on the crops and other control techniques.

**Semiochemical substances** are chemical substances, released by the organism, enabling the exchange of information with other organisms.

**Pheromones** are semiochemical substances produced and released by organisms from the same species to communicate. Pheromones can be divided into 3 categories: *aggregation*, *dispersal* and *sex pheromones*. Synthetic pheromones release in the environment enables to mask natural pheromones, changing the male adults behavior.

**Mating Disruption** technique is based on releasing a certain amount of synthetic pheromones in the Environment, confusing the insects and capturing them. This is the result of:

- **False trails** - Insects can't distinguish between natural and chemical pheromones, thus being attracted by the traps;
- **Sensorial inhibition** - loss of ability by male insects to locate females;
- **Disguise** of natural pheromones tracks.

These effects lead to:

- Reduction in total number of couplings (sensorial inhibition);
- Delay in mating, leading to a reduction in female fertility.

## Monitoring

*Capture of Target Pests adults in a sticky trap equipped with the species specific pheromones dispenser.*

*Either the number of insects captured in a week or passing specific thresholds are the correct parameters for an efficient Pest Management.*

## Mass Capture

*Increasing the number of pheromones dispensers used to monitor insects development in the area, it is possible to capture a higher number of target pests.*

*This decreases the number of adult male insects, decrease coupling rates, thus interrupting insects generation development and protecting the crops in an efficient and environmental-friendly way.*





# Green Trap

## Delta trap

**Green Trap** is a white *PET Delta trap*, resistant to adverse climatic conditions, equipped with front and back openings.

A flap inside the trap allows an easy position and substitution of the pheromone dispensers, avoiding contact with the sticky floor.

The pheromone dispenser is specific for each target pest and permits a long-release over time, even in case of climate changes, as humidity and temperature.

*Other pheromone dispensers, not displayed in this Catalogue, are available upon request.*



### PACKAGE

**Bag** (1 Delta trap, 1 Sticky panel)

10x1



### POSITIONING TIPS

*2-3 Delta traps should be placed per hectare (minimum 2), distributed linearly or diagonally from the area center.*

*Delta traps should be placed 2 m above ground level (40 cm for Tuta absoluta) and about 30 m between one and the other.*

*Delta traps should be exposed to North-East (South-West for Dacus oleae).*

*Delta traps should be placed leeward, transversely to wind's direction.*

*The traps should be placed 1-2 weeks before pest infestations start.*

*Monitoring should be done at fixed dates (e.g. every 7 days), removing the adults glued on the sticky panels.*

*Depending on weather conditions, pheromone dispensers can be substituted every 4-5 weeks.*



### TECHNICAL NOTES

*Store the dispensers in a dry, cool place, away from direct sunlight and heat sources.*

*Store at 20°C if the dispensers are used in short time. If stored at -20°C, shelf-life is 1 year.*



# Grapevine moth

*Lobesia botrana* pheromones

Several kits, composed of Delta traps, sticky panels and pheromone dispensers to monitor and control the **European Grapevine moth** (*Lobesia botrana*).



## CROPS

Grapes



## TARGET PESTS

European Grapevine moth (*Lobesia botrana*)



## PACKAGE

<b>AG KIT</b> (3 Delta traps, 3 sticky panels, 3 dispensers)	10x1
<b>AG KIT PLUS</b> (3 Delta traps, 9 sticky panels, 9 dispensers)	10x1
<b>H&amp;G KIT</b> (1 Delta trap, 1 sticky panel, 1 dispenser)	10x1
<b>RECHARGE KIT</b> (3 dispensers)	12x1

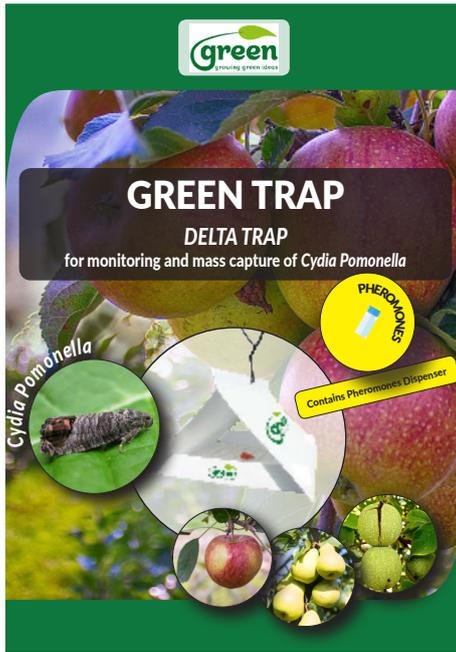


## APPLICATION RATES

<b>Timing</b> <sup>1</sup>	June
<b>Monitoring</b>	2-3 traps/ha
<b>Mass Capture</b>	70-100 traps/ha
<b>PPP Threshold</b> <sup>2</sup>	10 adults/trap/week

<sup>1</sup> Timing refers to the typical South European Pest Development

<sup>2</sup> Number of adults per trap before using PPPs.



# Codling moth

## *Cydia pomonella* pheromones

Several kits, composed of Delta traps, sticky panels and pheromone dispensers to monitor and control the **Codling moth** (*Cydia pomonella*).



### CROPS

Apple - Pear - Walnut



### TARGET PESTS

Codling moth (*Cydia pomonella*)



### PACKAGE

<b>AG KIT</b> (3 Delta traps, 3 sticky panels, 3 dispensers)	10x1
<b>AG KIT PLUS</b> (3 Delta traps, 9 sticky panels, 9 dispensers)	10x1
<b>H&amp;G KIT</b> (1 Delta trap, 1 sticky panel, 1 dispenser)	10x1
<b>RECHARGE KIT</b> (3 dispensers)	12x1



### APPLICATION RATES

<b>Timing</b> <sup>1</sup>	April
<b>Monitoring</b>	2-3 traps/ha
<b>Mass Capture</b>	70-100 traps/ha
<b>PPP Threshold</b> <sup>2</sup>	2 adults/trap/week

<sup>1</sup> Timing refers to the typical South European Pest Development

<sup>2</sup> Number of adults per trap before using PPPs.



# Olive fruit fly

## *Dacus oleae* pheromones

Several kits composed of Delta traps, sticky panels and pheromone dispensers to monitor and control the **Olive fruit fly** (*Dacus oleae*).



### CROPS

Olive tree



### TARGET PESTS

Olive fruit fly (*Dacus oleae*)



### PACKAGE

<b>AG KIT</b> (3 Delta traps, 3 sticky panels, 3 dispensers)	10x1
<b>AG KIT PLUS</b> (3 Delta traps, 9 sticky panels, 9 dispensers)	10x1
<b>H&amp;G KIT</b> (1 Delta trap, 1 sticky panel, 1 dispenser)	10x1
<b>RECHARGE KIT</b> (3 dispensers)	12x1



### APPLICATION RATES

<b>Timing</b> <sup>1</sup>	July
<b>Monitoring</b>	2-3 traps/ha
<b>Mass Capture</b>	70-100 traps/ha
<b>PPP Threshold</b> <sup>2</sup>	3-5 adults/trap/week

<sup>1</sup> Timing refers to the typical South European Pest Development

<sup>2</sup> Number of adults per trap before using PPPs.



# Olive moth

## *Prays oleae* pheromones

Several kits composed of Delta traps, sticky panels and pheromone dispensers to monitor and control the **Olive moth** (*Prays oleae*).



### CROPS

Olive tree



### TARGET PESTS

Olive moth (*Prays oleae*)



### PACKAGE

<b>AG KIT</b> (3 Delta traps, 3 sticky panels, 3 dispensers)	10x1
<b>AG KIT PLUS</b> (3 Delta traps, 9 sticky panels, 9 dispensers)	10x1
<b>H&amp;G KIT</b> (1 Delta trap, 1 sticky panel, 1 dispenser)	10x1
<b>RECHARGE KIT</b> (3 dispensers)	12x1



### APPLICATION RATES

<b>Timing</b> <sup>1</sup>	May
<b>Monitoring</b>	2-3 traps/ha
<b>Mass Capture</b>	70-100 traps/ha
<b>PPP Threshold</b> <sup>2</sup>	Not relevant

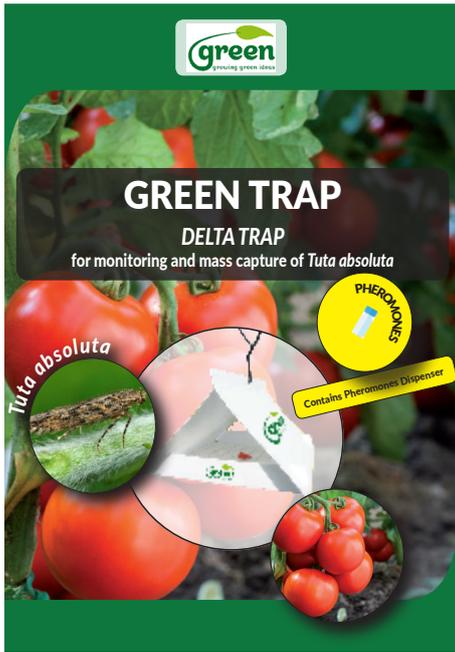
<sup>1</sup> Timing refers to the typical South European Pest Development

<sup>2</sup> Number of adults per trap before using PPPs.

# Tomato leafminer

## *Tuta absoluta* pheromones

Several kits composed of Delta traps, sticky panels and pheromone dispensers to monitor and control the **Tomato leafminer** (*Tuta absoluta*).



### CROPS

Tomato



### TARGET PESTS

Tomato leafminer (*Tuta absoluta*)



### PACKAGE

<b>AG KIT</b> (3 Delta traps, 3 sticky panels, 3 dispensers)	10x1
<b>AG KIT PLUS</b> (3 Delta traps, 9 sticky panels, 9 dispensers)	10x1
<b>H&amp;G KIT</b> (1 Delta trap, 1 sticky panel, 1 dispenser)	10x1
<b>RECHARGE KIT</b> (3 dispensers)	12x1



### APPLICATION RATES

<b>Timing</b> <sup>1</sup>	At transplanting
<b>Monitoring</b>	2-4 traps/ha
<b>Mass Capture</b>	20-25 traps/ha
<b>PPP Threshold</b> <sup>2</sup>	30 adults/trap/week

<sup>1</sup> Timing refers to the typical South European Pest Development

<sup>2</sup> Number of adults per trap before using PPPs.

# Pheromones



**Green Ravenna Srl**

**Headquarter:** Via Matteotti, 16 - 48121 Ravenna - Italy

**Offices:** Via Dell'Artigiano, 21 - 48033 Cotignola (RA) - Italy

Tel. 0545 908980 | Fax 0545 908990 | Email: [info@greenravenna.it](mailto:info@greenravenna.it)

[www.greenravenna.it](http://www.greenravenna.it)