HELPING FARMERS
FEED THE PLANET SUSTAINABLY

22/10/2024 - BASEL

ABIM®
Annual Biocontrol Industry Meeting®

Plant Volatiles: Controlling Aphid in Sugar Beet

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Founder and CTO Agriodor

Session 4: Biocontrol Innovations

AGRIODOR

AGRIODOR COMPANY

Our mission is to provide concrete and effective alternatives to insecticides to help farmers produce more sustainably.

Creation

INRAE spin-off created in 2019, 30 people based in Rennes, France.

Laboratory

First private laboratory in applied chemical ecology in Europe.

Biosolutions

Developing biosolutions based on kairomones et allomones. First semiochemical product formulated in granules.

WHAT WE DO

We take inspiration from nature to develop mixtures of odorous molecules from plants in order to modify the behavior of pests and protect crops.

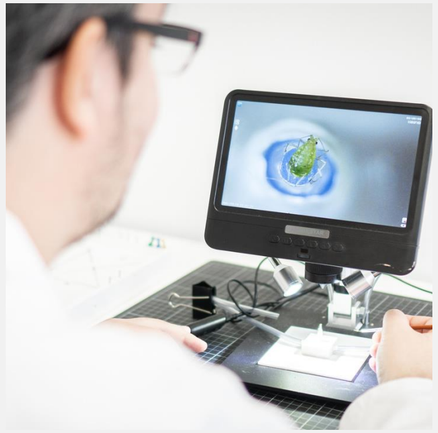
REPELLENT

ATTRACTANT

SOLUTIONS DEVELOPMENT

R&D platform

- Automated analysis
- In-house set up design and insect knowledge
- AGRIODOR's odours databases



R&D process

- VOC's blends
- Diffusion matrix
- PATENTS on blend and its diffusion in the field

Field testing

- Integration in farmer practices
- Technical knowledge of the product

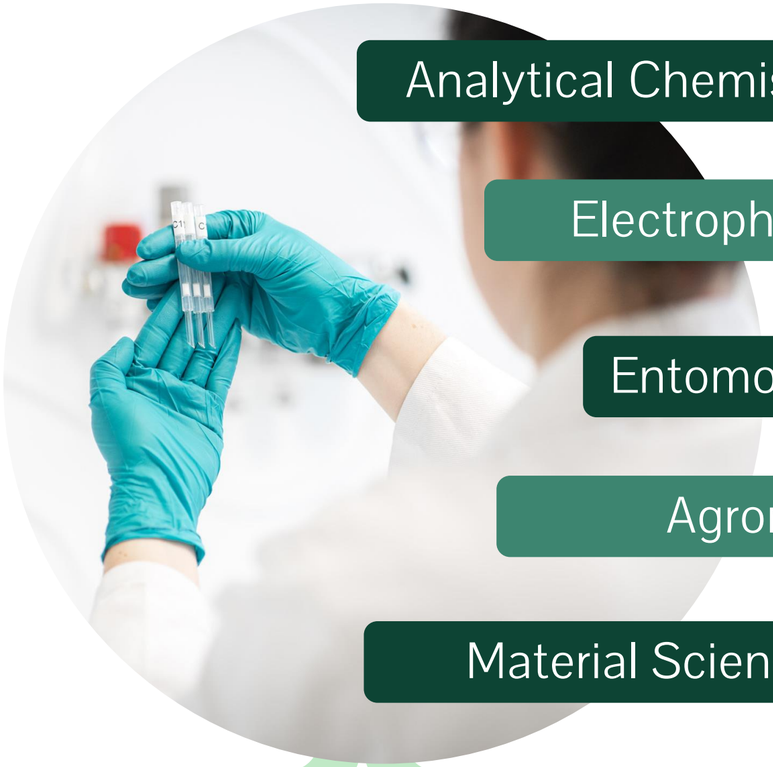
Registration

- Solution registration
- Sales

AGRIODOR'S R&D PLATFORM

A full equiped lab driven by a complementary PhD team

Patented active substances



- Analytical Chemistry
- Electrophysiology
- Entomological ethology
- Agronomy
- Material Science

Databases

THE SUGAR BEET CASE

Neonicotinoids seed coating banned in Europe.

30% yield loss in 2020

600 – 700 millions € lost for farmers and sugar industry

In 2021, launch of « Plan National de Recherche et d'Innovation », PNRI, to find by 2023 biocontrol solutions for this issue.

PNRI PLAN NATIONAL DE RECHERCHE ET D'INNOVATION

ITB Institut Technique de la Betterave

INRAE

Avec la contribution financière du compte d'affectation spéciale développement agricole et rural CASDAR

MINISTÈRE DE L'AGRICULTURE ET DE L'ALIMENTATION

FRANCE RELANCE

aGRiODOR

THE SUGARBEET HISTORY

The Blend and its action modes

2021 - 2022

- Laboratory and field VOCs identification and evaluation.
- Laboratory action modes identification and evaluation.

An easy to use product formulation

2023

- Final optimizations of the blend.
- Laboratory and field diffusion supports evaluation and selection.

Integration into farmers crop practices

2024

- Large-scale deployment of the solution in different farmers technical pathways.

Farmers use

2025

- Sales under derogation.

PROTECTING SUGARBEET WITH ALLOMONES

1

Repellent

Limits winged colonization

2

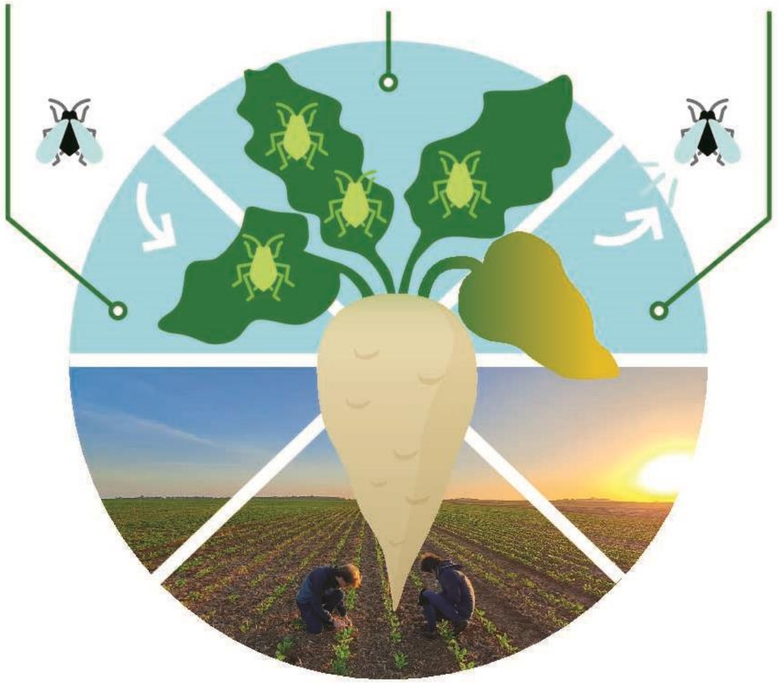
Reproduction

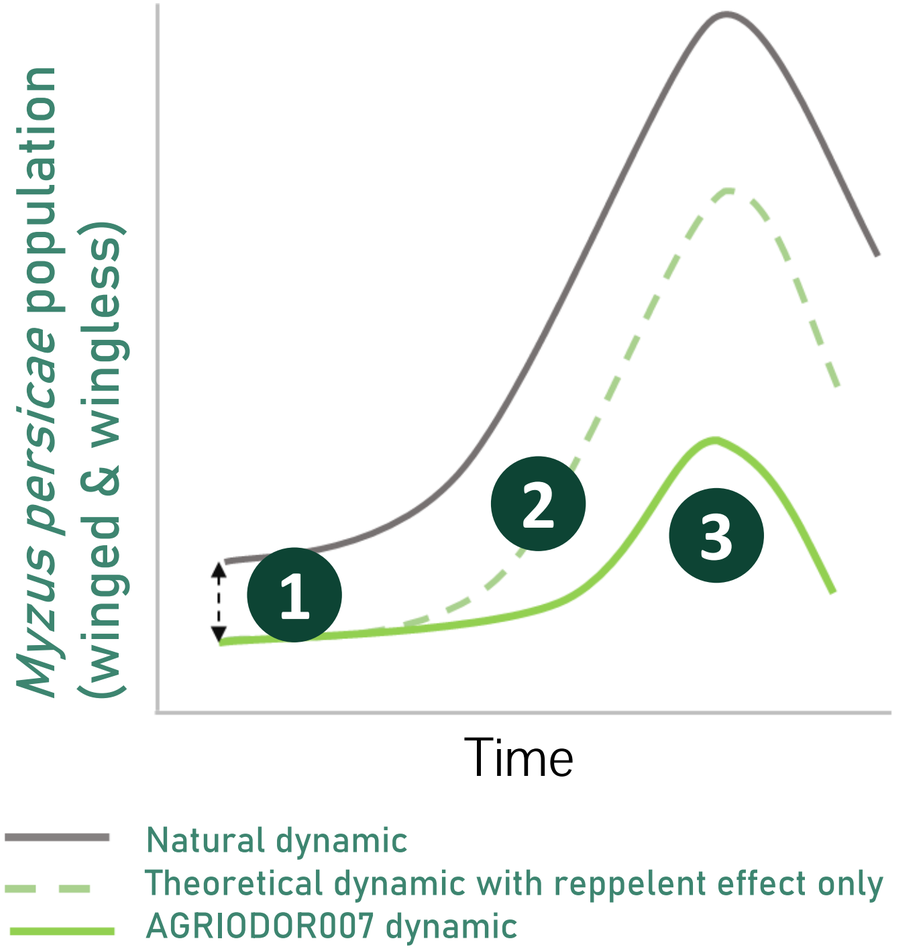
Slows reproduction

3

Feeding

Decrease the number and duration of feeding





PROTECTING SUGARBEET WITH ALLOMONES GRANULE COMPOSITION

Blend of Volatile Organic Compounds (plants odors)

A Blend which combines several VOCs in precise proportions to optimize its efficiency.

Biosourced materials

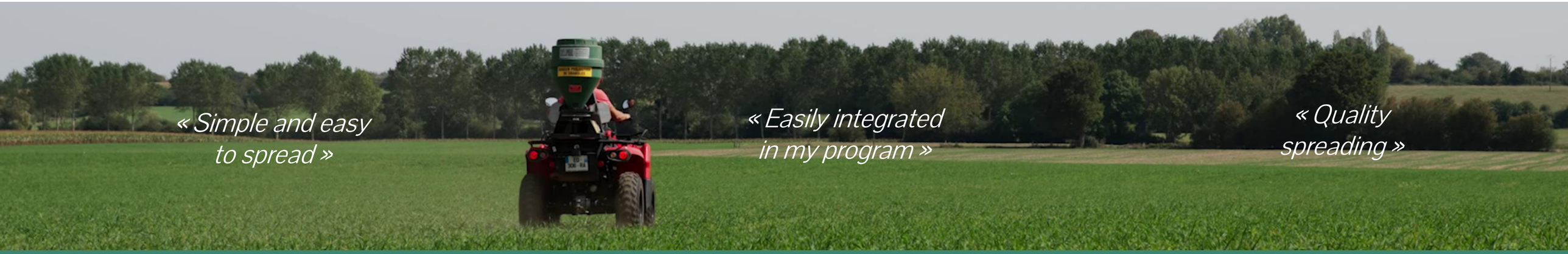
Naturally degrades.

Coating technology « Progressive diffusion»

Protects the granules from weather conditions and regulates the diffusion.

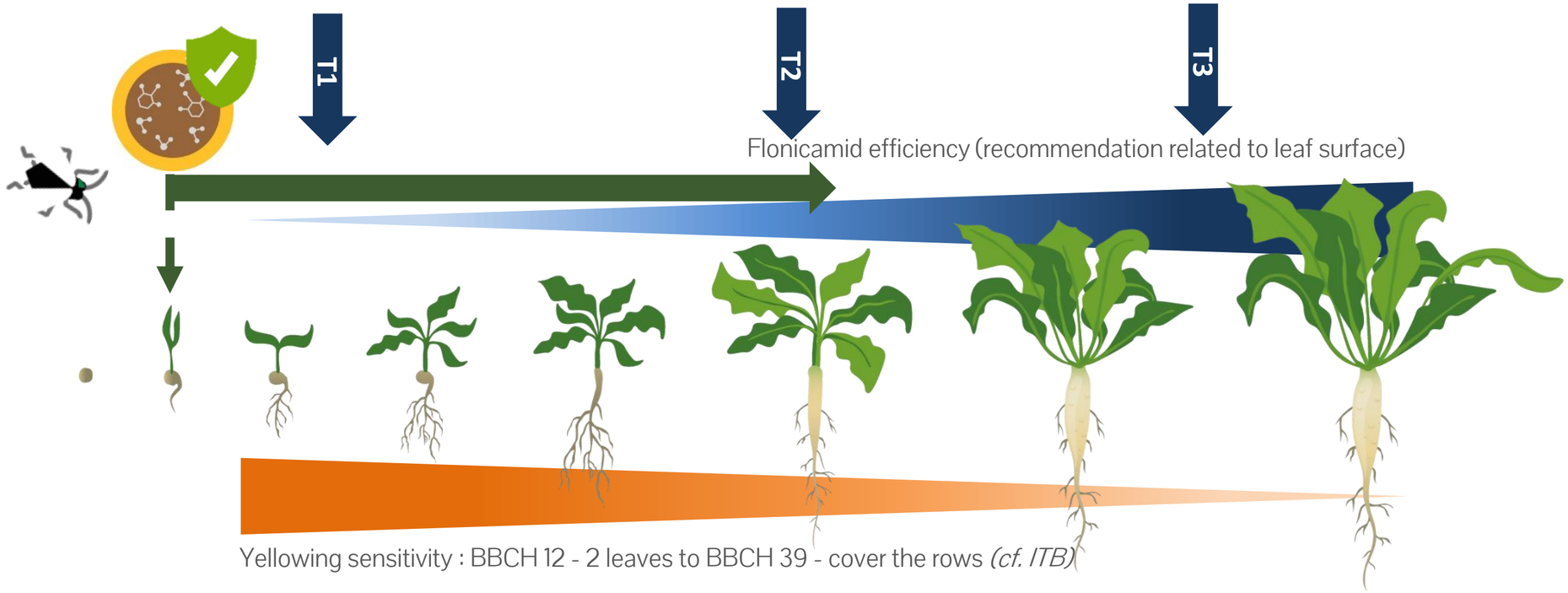
EASY SPREADING WITHOUT INVESTMENT

- Granules mechanically spreadable with a quad or tractor and centrifugal spreader.
  - 0 investment
  - Easy to use
  - Saving on the spreading compared to spayer :
    - Quad is 3 to 4 times cheaper
    - Quad is quicker



SYNERGY BETWEEN AGRIODOR AND INSECTICIDES

- Synergy between 2 different action modes :



FIELD PERFORMANCE INDICATORS

YELLOWING RISK FACTORS

Goal : decrease aphids population

Indicator : winged and/or wingless aphids population

Goal : protect plants from aphids

Indicator :
- % of infested plants
- % of <u>never</u> infested plants in every count

Goal : protect the plants during early stages

Indicator : population and aphid-free plants according to the plant development stage

EXPERIMENTAL PROGRAMS

Microplot

Determines the efficiency compared to an untreated control (natural infestation).

Over 3 campaigns :
- Spring 2023
- Autumn 2023
- Spring 2024

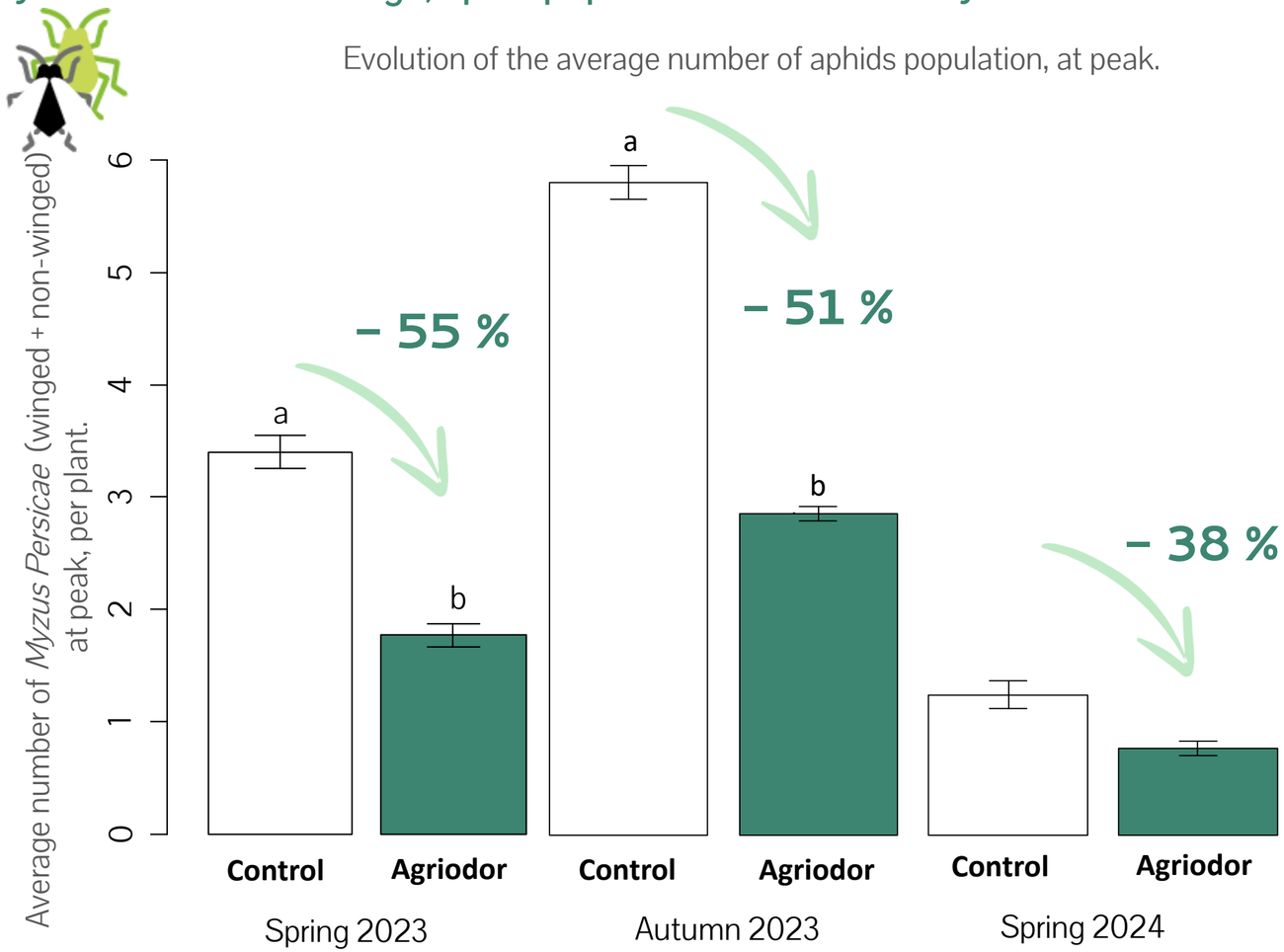
Wide stripes

Determines the synergies with farmers' insecticide strategies.

- More than 50 fields
- 0,5 acres per repetition

DECREASE APHIDS POPULATION : AT PEAK

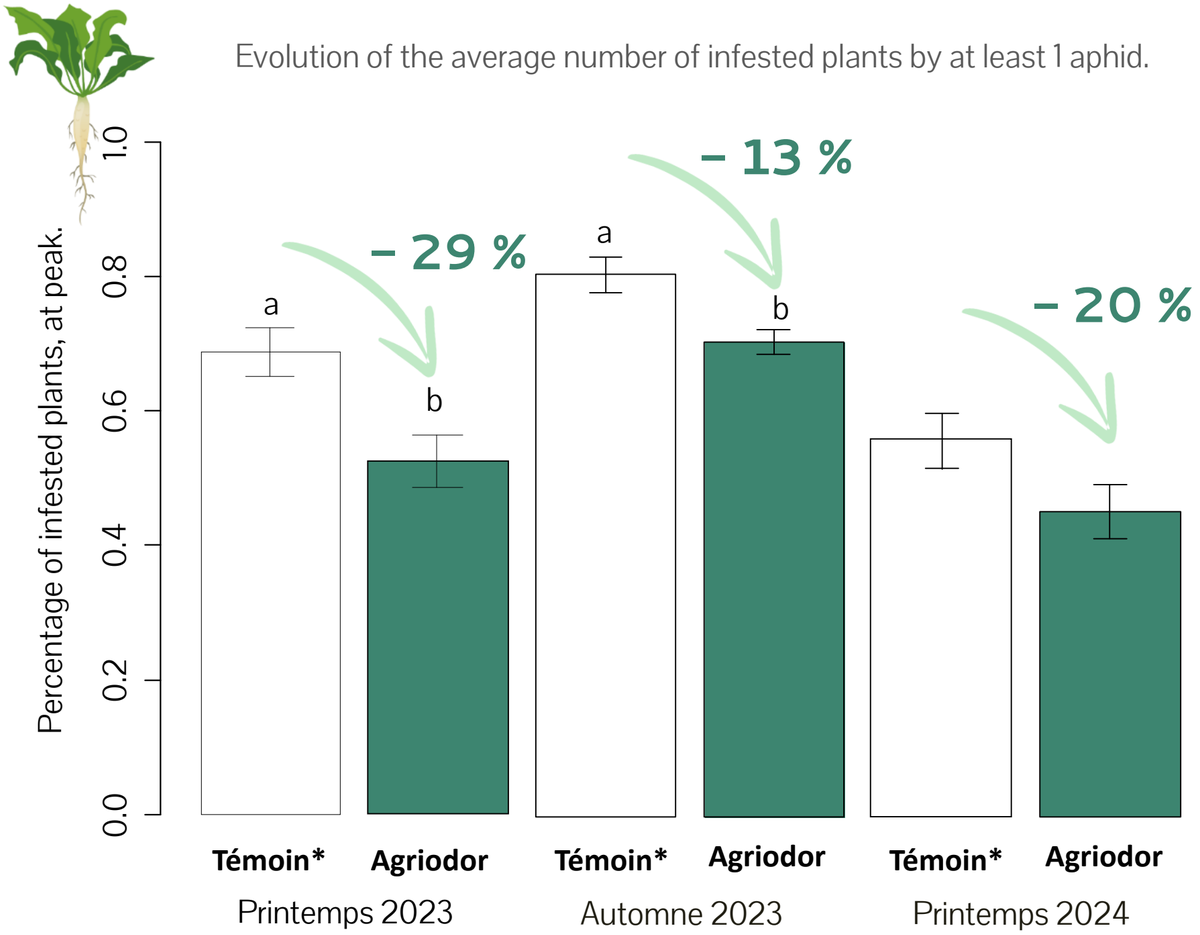
- A multi-year efficiency measured : on average, aphid populations are divided by 2.



4 randomized repetitions. 80 counted plants per repetition.

DECREASE NUMBER OF INFESTED PLANTS : AT PEAK

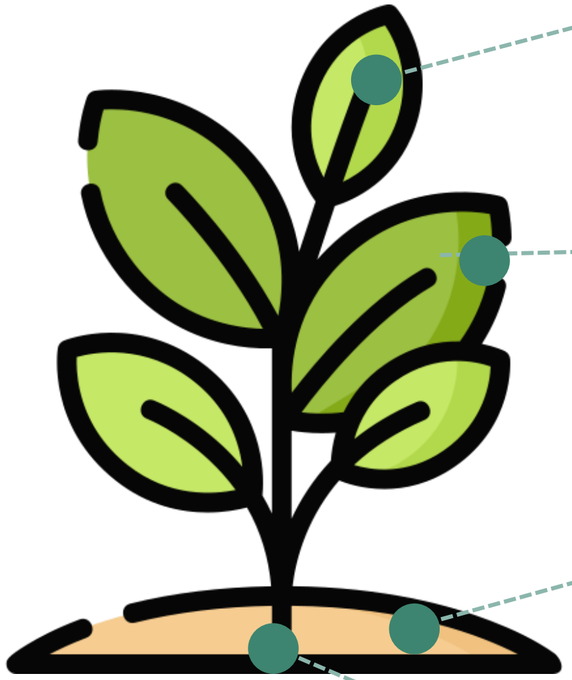
- A multi-year efficiency measured : on average, plants affected by aphids are reduced by 13 to 29%.



4 randomized repetitions. 80 counted plants per repetition.

AGRIODOR : A PIECE OF THE PUZZLE

80% of worldwide pests targeted



Insecticides

Biocontrol solutions

Agronomical practices (soil, crop associations) & Precision farming

Resistant and tolerant varieties

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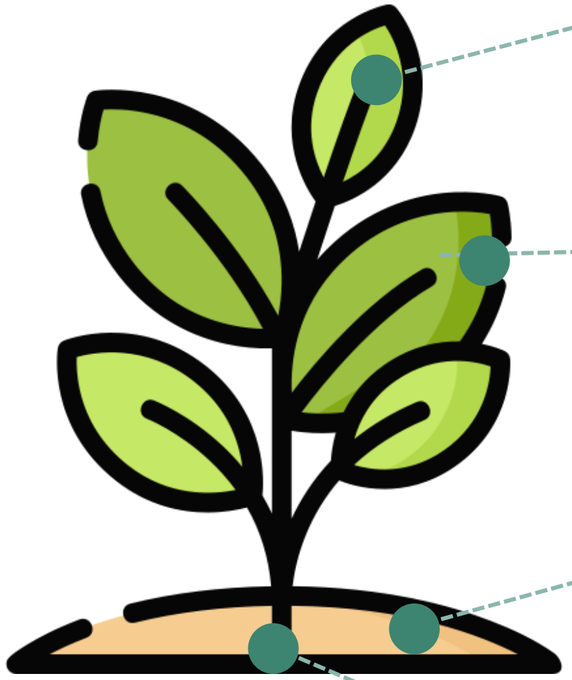

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