Applied genetics and the future of IBCA selection

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Paloma Martinez et al. 2017

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Bioline AgroSciences

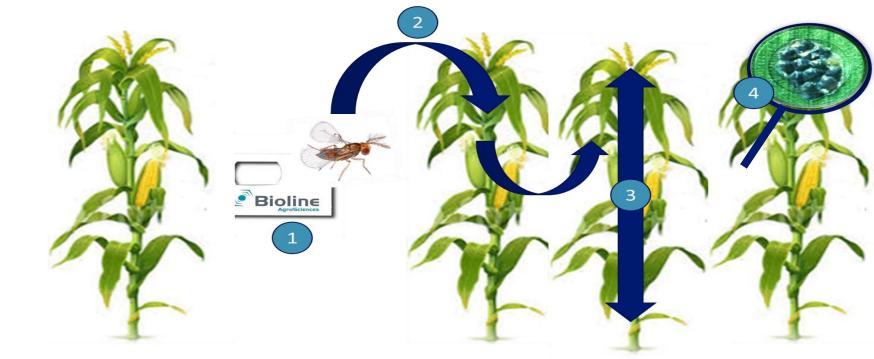**Bioline** AgroSciences

COLBICS

INRA SCIENCE & IMPACT

1

The objective: Increase efficiency

1. Good protection (see T-protect presentation)
2. Optimal field coverage.
3. Better distribution of trichogrammes to the field
4. A better rate of destruction of Ostrinia eggs

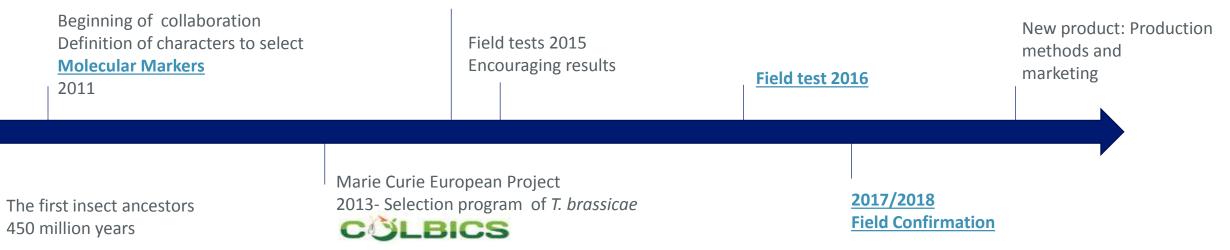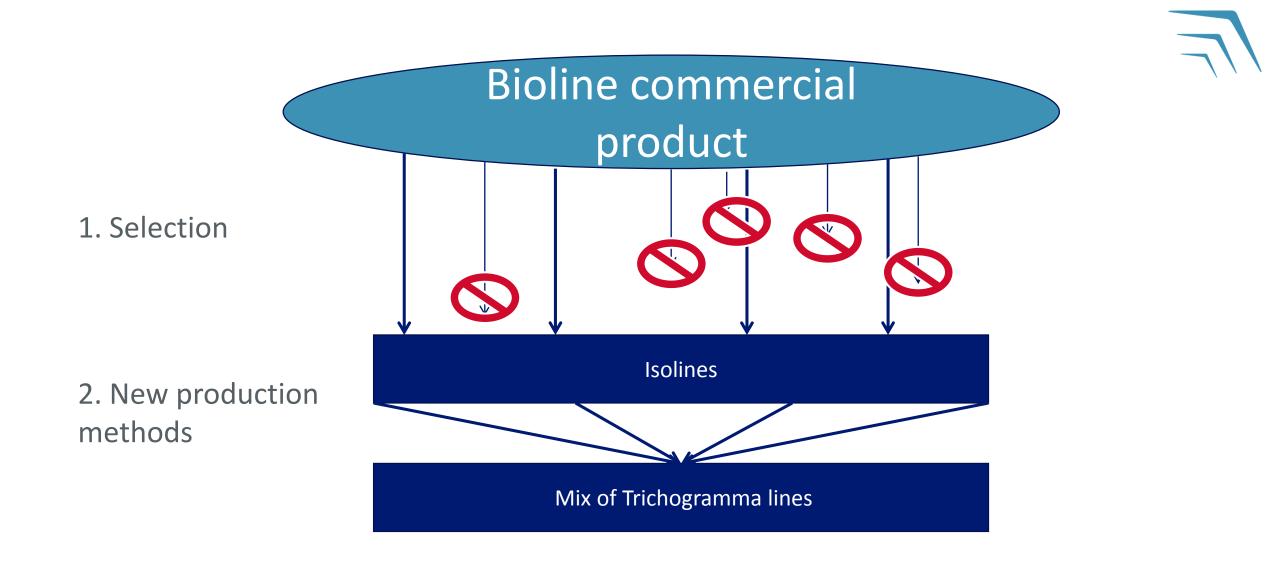INRA SCIENCE & IMPACT ⟷ Bioline AgroSciences

Lab / field phenotype

Beginning of collaboration
Definition of characters to select
Molecular Markers
2011

Field tests 2015
Encouraging results

Field test 2016

New product: Production methods and marketing

The first insect ancestors
450 million years

Marie Curie European Project
2013- Selection program of *T. brassicae*

COLBICS

2017/2018
Field Confirmation

Bioline AgroSciences

Bioline commercial product

1. Selection

2. New production methods

Isolines
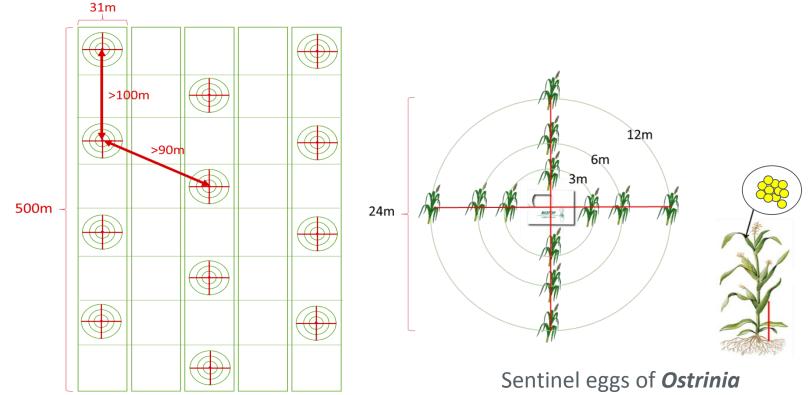
Mix of Trichogramma lines

Better Field Distribution

- 26 different lines isolated from the commercial product were released at the same time in the same plots (in competition)
- In order to detect the presence of trichogramma at some point, sentinel eggs were used.
- Molecular biology methods make it possible to distinguish the different trichogramma lines, but also, wild trichogramma.
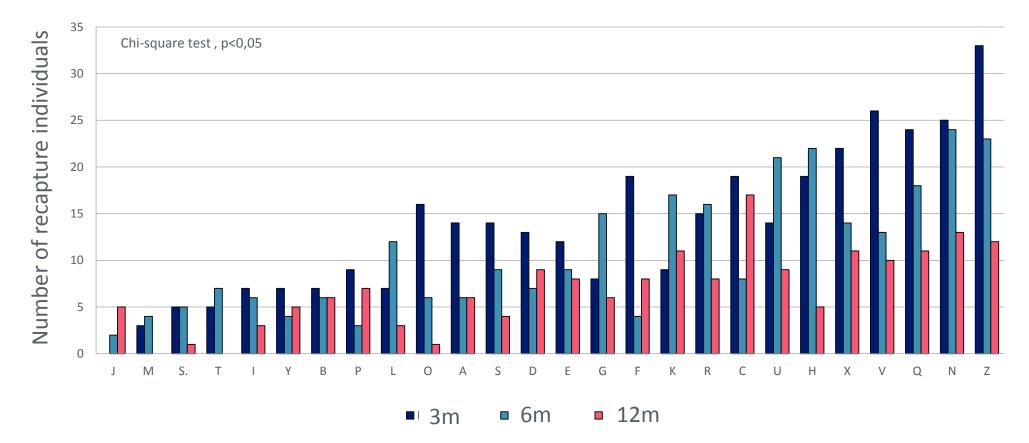

Sentinel eggs of *Ostrinia*

Test distribution 2016

The best field distribution

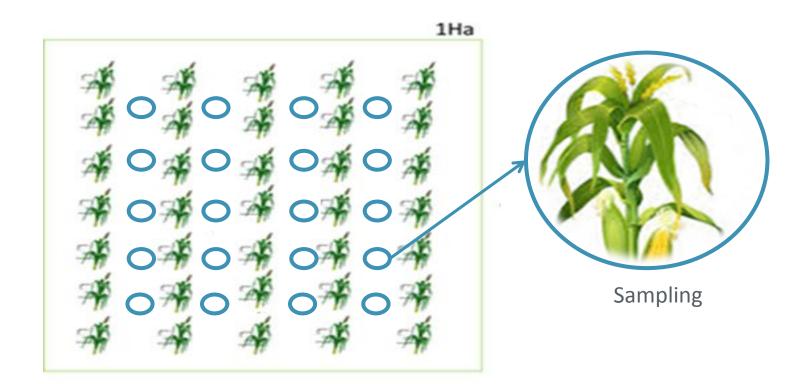**The strains are significantly different-> Selection of more efficient ones**

Chi-square test , p<0,05

Number of recapture individuals

Legend: 3m, 6m, 12m

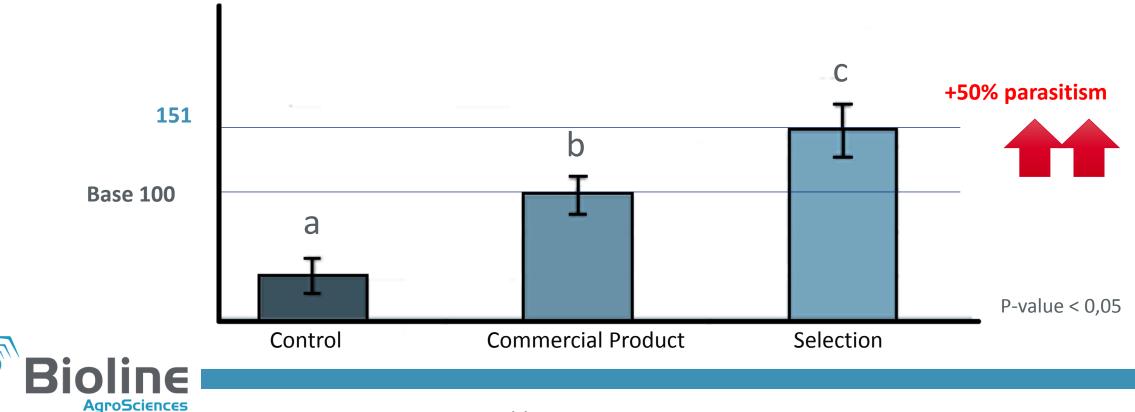Field test 2016

A better rate of eggs destruction

- **Dose: 50 dispensers/ ha**
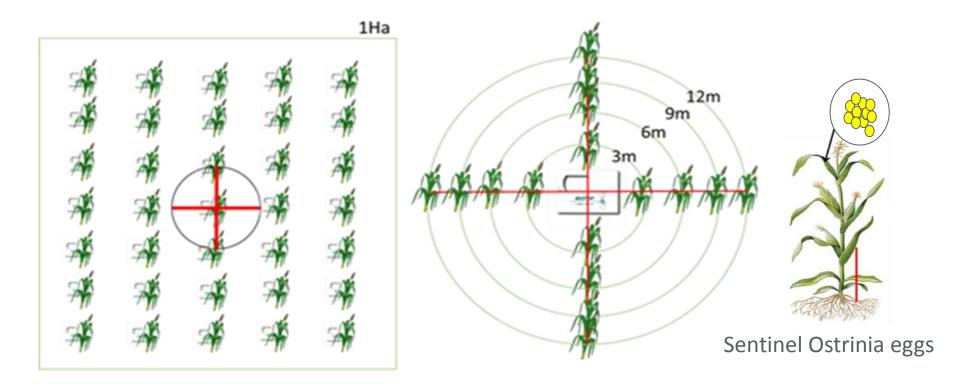- **Estimation of parasitism rate on natural eggs**

1Ha

Sampling

A better rate of eggs destruction

Rate of parasitism +/- 2SD (Natural eggs, G2)

151

Base 100

c

b

a

+50% parasitism

P-value < 0,05

Control   Commercial Product   Selection
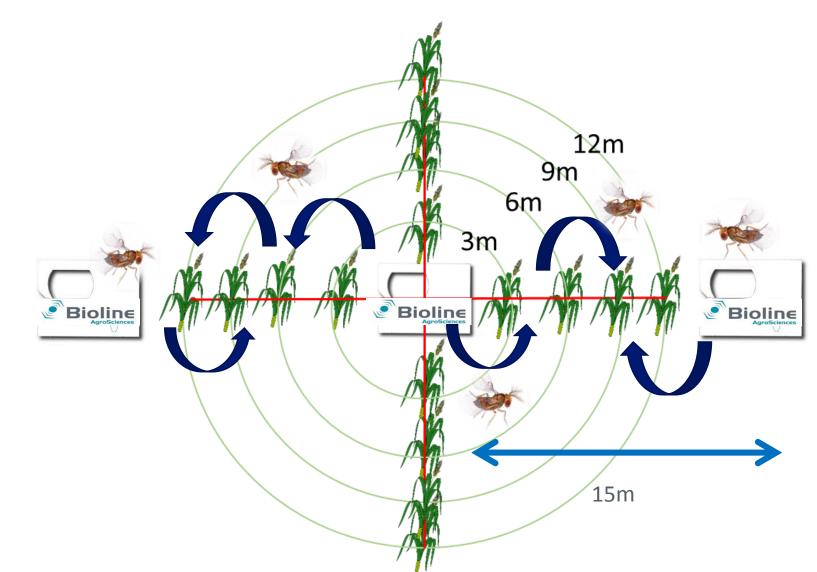
Optimal field coverage

- **Dose: 50 dispensers / ha**
- **Estimation of the rate of parasitism on sentinel Ostrinia eggs**

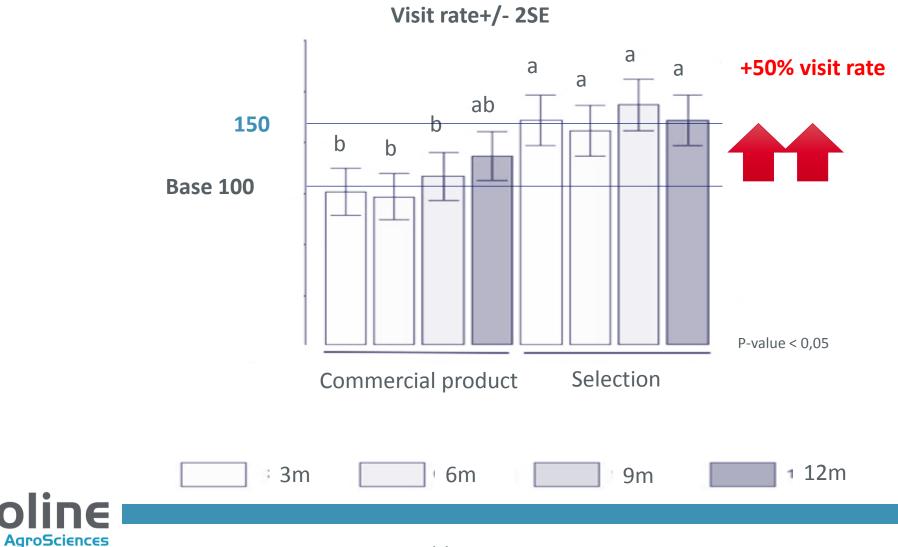

Sentinel Ostrinia eggs

12m

9m

6m

3m

15m

Optimal field coverage

Visit rate+/- 2SE

+50% visit rate

150

Base 100

P-value < 0,05

Commercial product   Selection

3m   6m   9m   12m

Conclusions:

- The selection program enabled the improvement of the commercial product

  - The best coverage
  - The best distribution
  - The best rate of destruction of Ostrinia eggs

- The new method of Trichogramma production allows the selected characteristics to be retained

Prospects

- The selection program continues, in order to propose more efficient lines

- Development of molecular markers on other species to ensure traceability

- Other selection projects are underway to improve other Bioline commercial products

Thank you for your attention