



# TRICHOGRAMMA and LADYBIRDS

## Outdoor utilization, in France





## **BIOTOP: Outdoor Biocontrol,**

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Biotop offers several products for fields and greenhouses:

- Trichogramma: corn fields
- Ladybirds: gardens,
- Orius, Macrolophus, ...: greenhouses,
- Anthocoris: orchards,
- Pheromons: mating disruption and traps

**The main activity is in open « fields »:**

2 exemples:

- Ladybirds: garden and parks (interesting hobby market)
- Trichogramma: agriculture (a Biocontrol success story example)

How did we manage it? Difficulties? Needs?

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## 2 different ladybirds

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### **Harmonia axyridis:**

- 1990: field trials by INRA (orchards, vegetables)
- 1995: commercialisation of larvae in garden centers  
(aphids on rose bushes and then on other plants)
- 2000: flightless strain (wild strain stopped)  
(looking for better efficacy and principle of precaution)

### **Adalia bipunctata:**

- 2003: to offer solution for:
- markets having difficulties with Harmonia (exotic beneficial),
- situations where better efficacy is obtained with Adalia,

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## Ladybirds: for garden and park

	<b>COCCIBELLE</b> <i>Harmonia axyridis</i> , flightless strain	<b>COCCIFLY</b> <i>Adalia bipunctata</i>
	<b>For small plants</b> vegetables, bushes, ...	<b>For high plants</b> trees, bushes, ...
<b>LARVAE</b>	10 - 30/m <sup>2</sup>	40 - 80/bush (or 20 - 50/m <sup>2</sup> on small plants)
<b>ADULTS</b>	4 - 8/m <sup>2</sup>	10 - 20/tree

Utilization also possible for agriculture, with spot releases (cost)



## TRICHOGRAMMA / ECB IN FRANCE

### ■ 1975-1985 : Research, experimentations with INRA

To produce *T. brassicae* on *Epehstia* eggs:

- with diapause (availability, reliability, quality)
- in small cardboard capsules



#### **Capsules:**

Protection of beneficials,  
very easy to release,  
by hand or  
mechanical way  
(plane, ....)

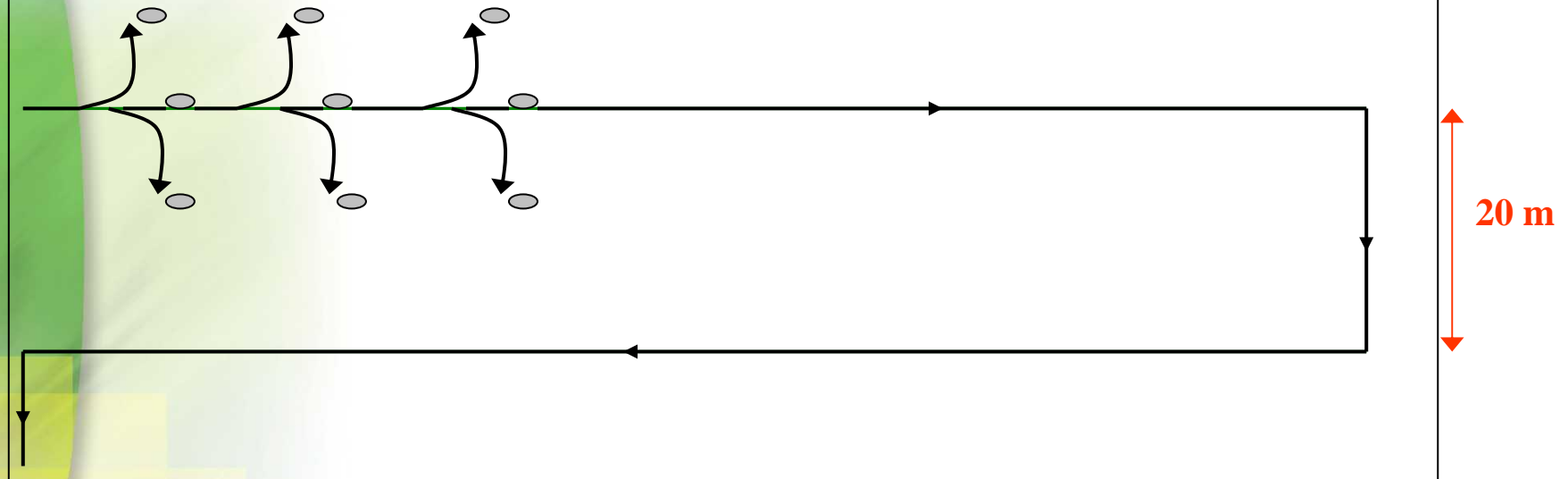
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## 1985 : 3 releases/1st generation of ECB

capsules on the soil on 100 points / hectare



### But:

- 3 releases = too much time (and costs),
- Product on soil: not adapted for early Ostrinia/small corns



# TRICHOGRAMMA / ECB in France

Evolution with successive improvements, simplifications:

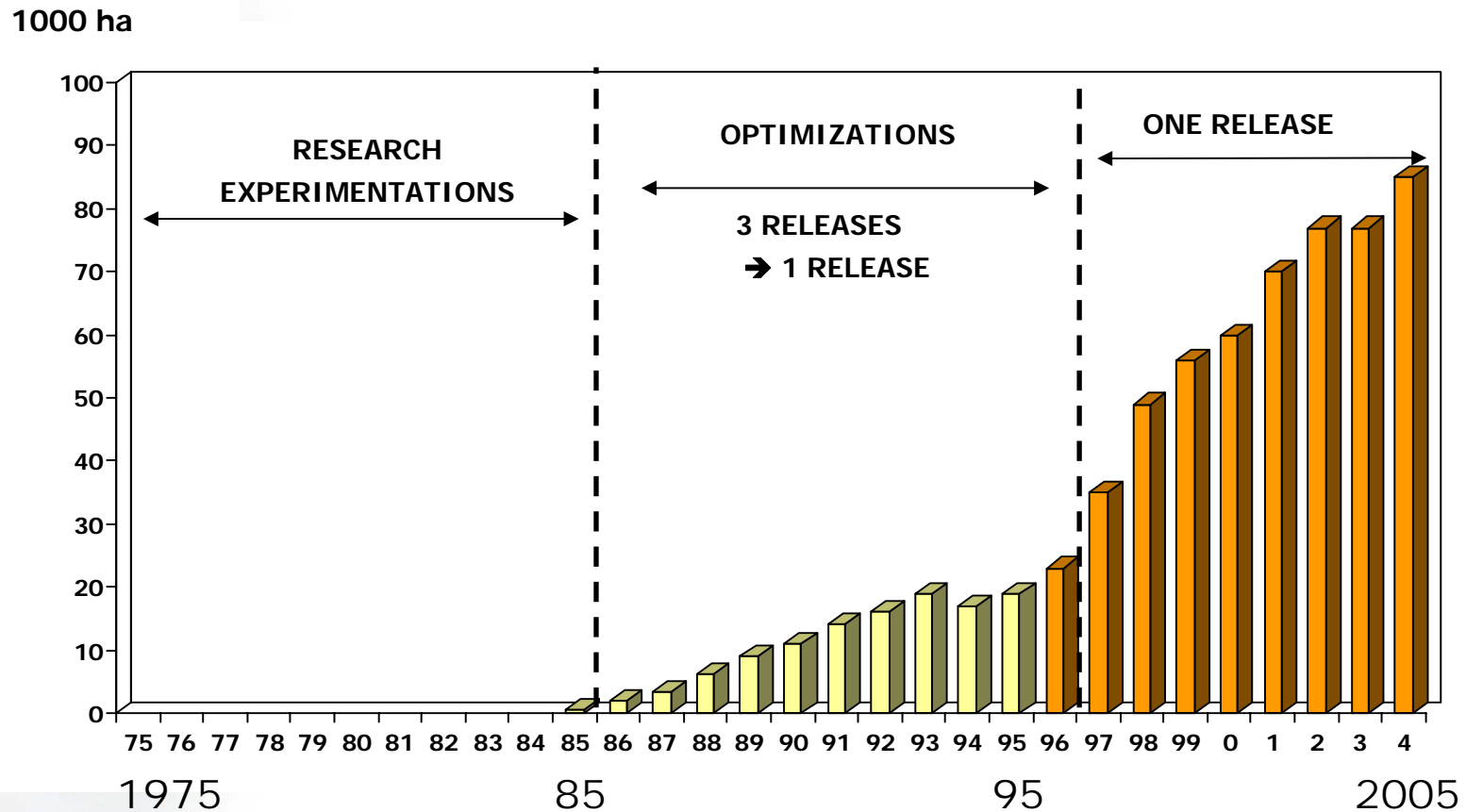
<b>85</b>	$\frac{R1}{W1} \quad \frac{W2}{R2} \quad \frac{W3}{R3} \quad \frac{W4}{R3} \quad \frac{W5}{R3} \quad \frac{W6}{R3}$	
<b>88</b>	$\frac{R1}{W1} \quad \frac{R2}{W2} \quad \frac{R3}{W3} \quad \frac{R3}{W4} \quad \frac{R3}{W5}$	
<b>92</b>	$\frac{R1}{W1} \quad \frac{R2}{W2} \quad \frac{R2}{W3} \quad \frac{R2}{W4}$	
<b>94</b>	$\frac{R1}{W1} \quad \frac{R2}{W2} \quad \frac{R2}{W3}$	
<b>96</b>	<b>One release</b> $\frac{W1}{W1} \quad \frac{W2}{W2} \quad \frac{W3}{W3}$	
<b>04</b>	<b>One release, new dispenser</b> W1 + W2 + W3	
<b>05</b>	<b>One release, new dispenser, increased persistence of action</b> W1 + W2 + W3 + Ultra Delayed Trichogramma	





# TRICHOGRAMMA / ECB IN FRANCE

MORE THAN 20 YEARS STORY, ... FOR A SUCCESS







## Trichogramma/ECB in France

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**Very good technical and even commercial performances** (about 20% of the ECB market, despite of high competition with chemicals which are easy to use and very cheap, ...).

**But:** economically very hard project,  
only profitable about 20 years after the beginning,

### **And still challenges:**

- large evolution of climate // *Ostrinia* development and Trichogramma utilization method?
- transgenic crops?
- mycotoxines?
- new pests (*Diabrotica*, *Heliothis*, ...)?
- ...

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## Ladybirds and Trichogramma

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Nice and interesting examples of success in biocontrol,

But, there are so few examples of success in open fields

Because:

- very long time to set up and to improve systems
- very long time to have a profitable activity,

Therefore, difficult and risky investments,

Biocontrol is still very difficult to develop,  
(despite of all talks about environment, pollutions, ...)

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## Biocontrol: main need?

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### Encourage investments and reduce risks on it, by:

- strong, long term public help on basic knowledge:  
more people working on pests, on beneficials, on systems, ... (naturalists, taxonomists, biologists, ....)  
and training end users, ...
- close public/private cooperations:  
to set up production and utilization methods, ...
- simple way to introduce new products on the market:  
simple and cheap regulation, without increasing time  
and difficulties to develop methods,



## Conclusion

**Biocontrol: good for the environment, make it:**

- Reliable,
- Simple,
- Profitable (end-users, producers/distributors)



THANK YOU