

Field results of the NPV-products Helicovex and Spexit

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Virus products of Andermatt BIOCONTROL AG

- **MADEX[®]** *Cydia pomonella* GV
- **MADEX[®] Plus** *Cydia pomonella* GV
- **CAPEX[®]** *Adoxophyes orana* GV
- **CRYPTEX[®]** *Cryptophlebia leucotreta* GV
- **HELICOVEX[®]** *Helicoverpa armigera* NPV
- **SPEXIT[®]** *Spodoptera exigua* NPV
- **LITTOVIR[®]** *Spodoptera littoralis* NPV

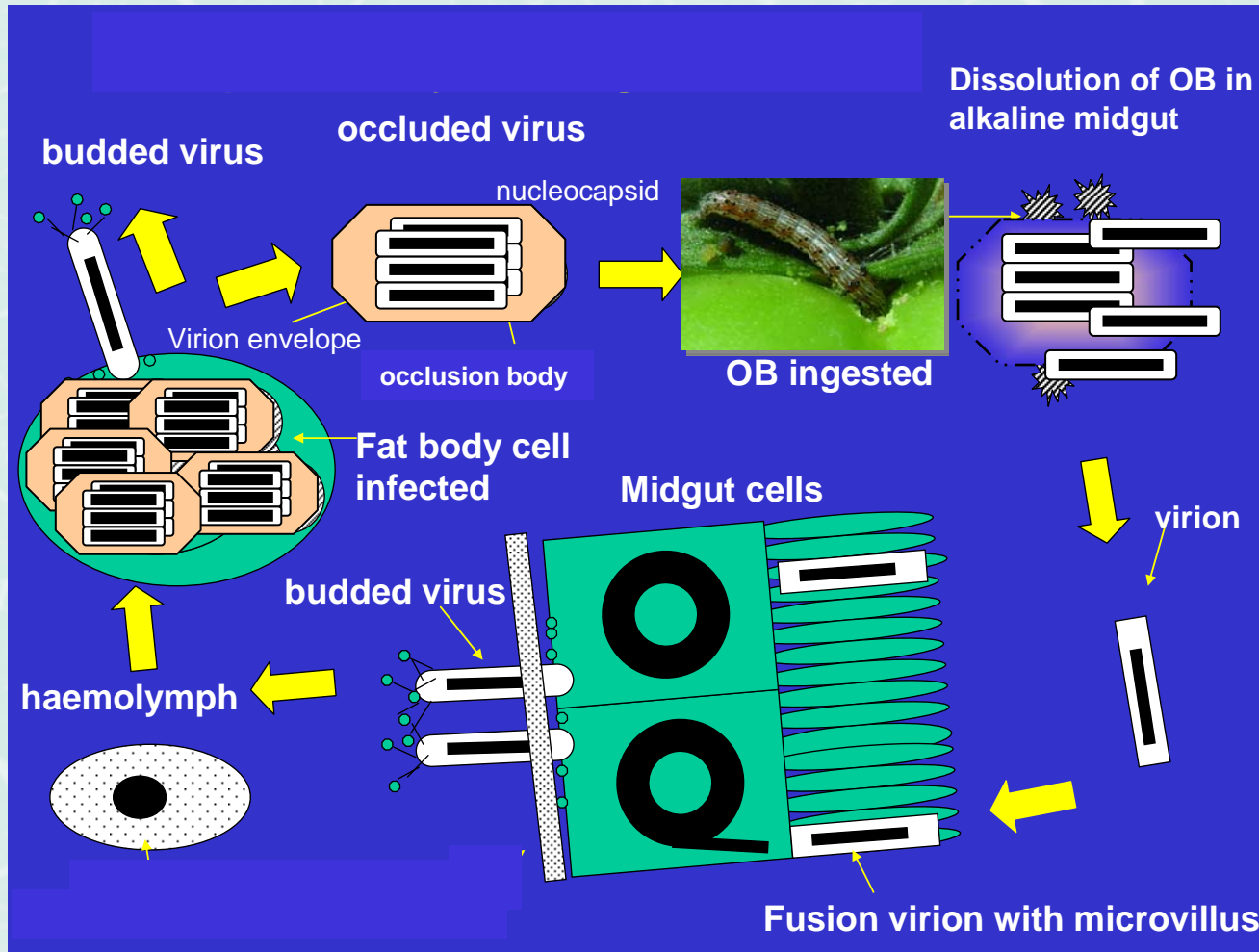


Baculoviruses are safe!

- Only found in insects (mainly lepidopteran species)
- Narrow host range, high selectivity
- No effects to plants, mammals or humans
- No production of metabolites or toxins
- Baculoviruses are safe and cause no hazards to human health (OECD, 2002)



Mode of action of NPVs



adapted after Winstanley

HELICOVEX and SPEXIT product information

HELICOVEX

- HearNPV
- against *Helicoverpa armigera*
- Suspension concentrate
- 7.5×10^{12} OB/L

SPEXIT

- SeMNPV
- against *Spodoptera exigua*
- Suspension concentrate
- 3.8×10^{12} OB/L

No chemical additives

No chemical residues

No side effects on beneficial insects

Integrated UV-protection

Low volume per ha-unit (only 200 ml)

Has to be stored in the refrigerator or in the freezer

Helicovex and Spexit

Recommendation for application

- Timing : spray on eggs and first instar larvae.
- Dosage : 100-200 ml/ha, depending on culture, infestation and region.
- Dissolve in required amount of water
- In open field a following treatment is recommended already after 8 days of sunshine.
- Repeat treatment after 14 days in greenhouses

Field trials in the Mediterranean Region



Field trials

- with SPEXIT
- with HELICOVEX

Field trials 2006 to 2008

- HELICOVEX field trials

Tomato
Lettuce
Cotton



- SPEXIT field trials

Strawberry
Ornamentals
Watermelon
Pepper
Cucumber
Lettuce



Helicoverpa against the cotton bollworm (*Helicoverpa armigera*)



eggs



L1 to L5
larvae



Adult
moths



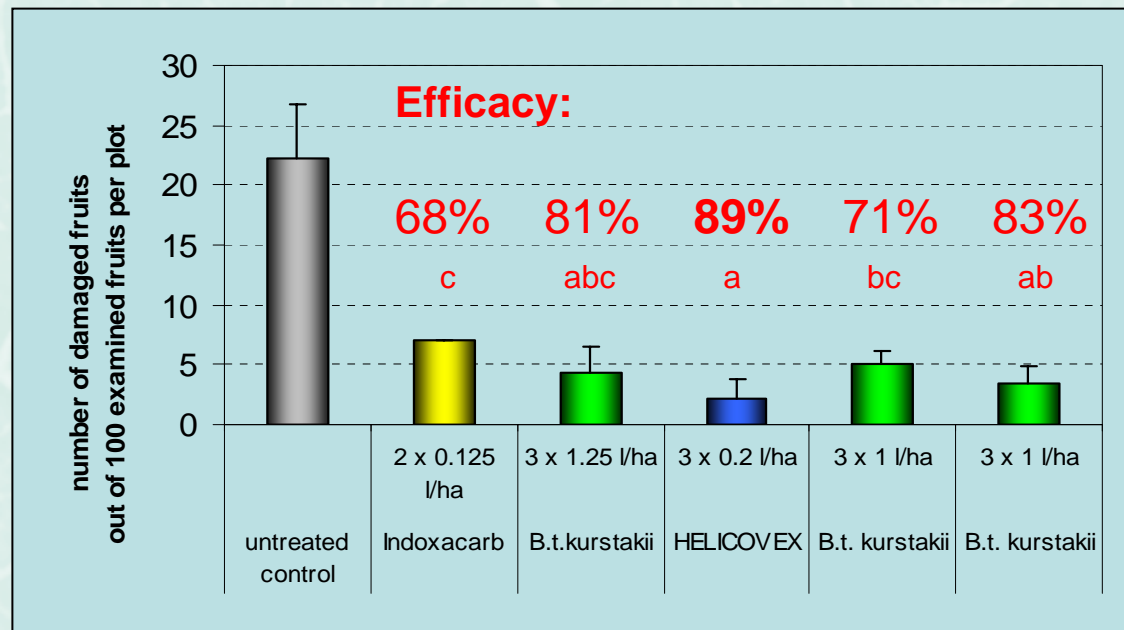
pupae



Helicovex: Field trial on tomato (open field) in Italy, 2006

(data from Intrachem Bio, Italia)

Treatments	Dose	Dates of treatments		
		11/7	19/7	25/7
<i>B.t. kurstaki</i> – EG 2348	1.000 g/ha	.	.	.
<i>B.t. kurstaki</i> – SA11	1.000 g/ha	.	.	.
Helicovex	200 ml/ha	.	.	.
<i>B.t. kurstaki</i> – EG 2348	1.250 ml/ha	.	.	.
Indoxacarb	125 g/ha	.	.	.
Untreated control	-	-	-	-



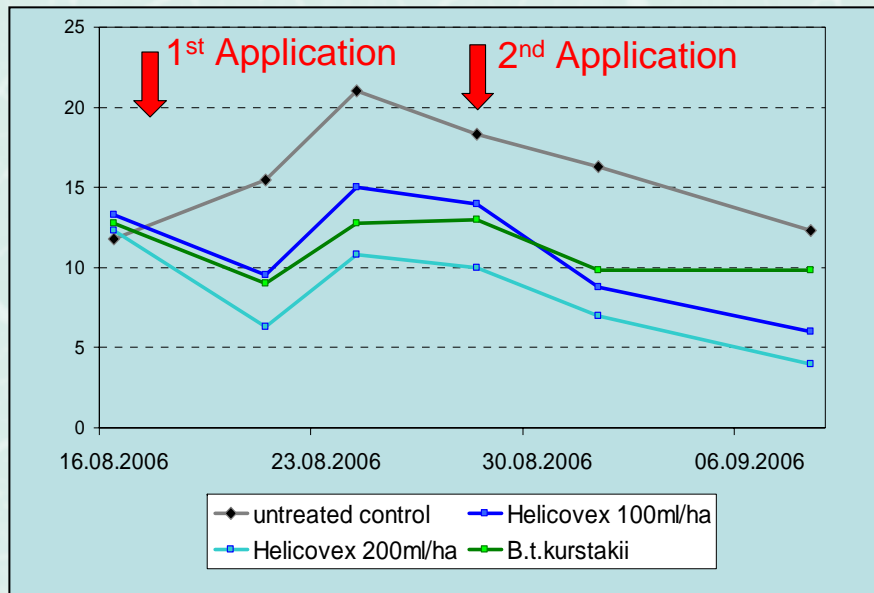
Assessment on the damage (9 days after 3rd treatment)

Helicovex: Field trial on cotton in Greece, 2006

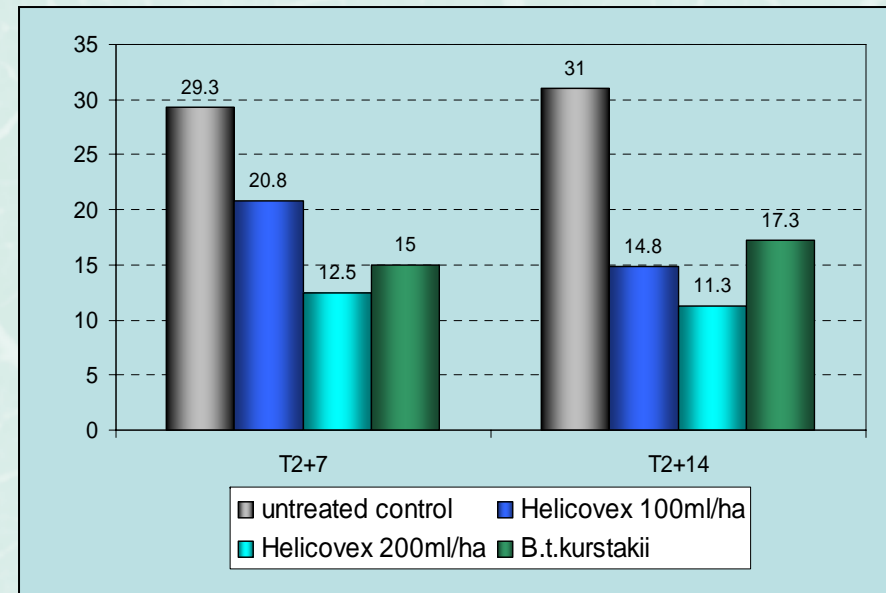
(data from Hellafarm S.A., Greece)

Efficacy of **HELICOVEX** (100 ml/ha and 200 ml/ha) and **B.t., kurstakii** (100 g/hl) on the number of *Helicoverpa armigera* larvae and damage in cotton.

Number of larvae per 200 squares and bolls



Mean percentatge (%) of damaged squares and bolls



Efficacy of HELICOVEX

on mortality of *Helicoverpa armigera* larvae and damage reduction in different crops

Crop	Place / year	Nr of treatments	Date of assessment	Helicovex 200 ml / ha Efficacy (%) <u>population</u>	Helicovex 200 ml / ha Efficacy (%) <u>damage</u>
Tomato (open field)	Italy, 2006	3	9DA3T		89 %
Tomato (tunnel)	Italy, 2006	3	27DA1T	88 %	89 %
Tomato (tunnel)	Italy, 2007	2	21DA1T		76 %
Tomato (greenhouse)	Spain, 2006	1	14DA1T	98 %	
Lettuce (open field)	Spain, 2007	1	27DA1T	86 %	
Tomato (greenhouse)	Spain, 2006	1	27DA1T	95 %	
Tomato (open field)	Greece, 2006	2	18DA2T	78 %	57%
Tomato (open field)	Greece, 2006	2	7DA2T	100 %	49 %
Cotton (open field)	Greece, 2006	2	14DA2T	67 %	64 %
Tomato (open field)	Greece, 2007	2	17DAT2	100 %	75 %
Tomato (open field)	Turkey, 2007	3	7DA3T		84 %
Tomato (open field)	Turkey, 2007	3	7DA3T		83 %
Tomato (open field)	S-Africa, 2006	4	3DA4T	85 %	

Overview of data from field trials in Italy (Intrachem Bio), Spain (Agichem Bio, Spain), Greece (Hellfarm S.A.), Turkey (VIT Verim) and South Africa (B.C.P)



Spexit against the beet armyworm (*Spodoptera exigua*)



eggs



Photo by F. Mayoral, Agrichem

L1 to L5
larvae



Photo by F. Mayoral, Agrichem

2007/05/16

Adult
moths



pupae

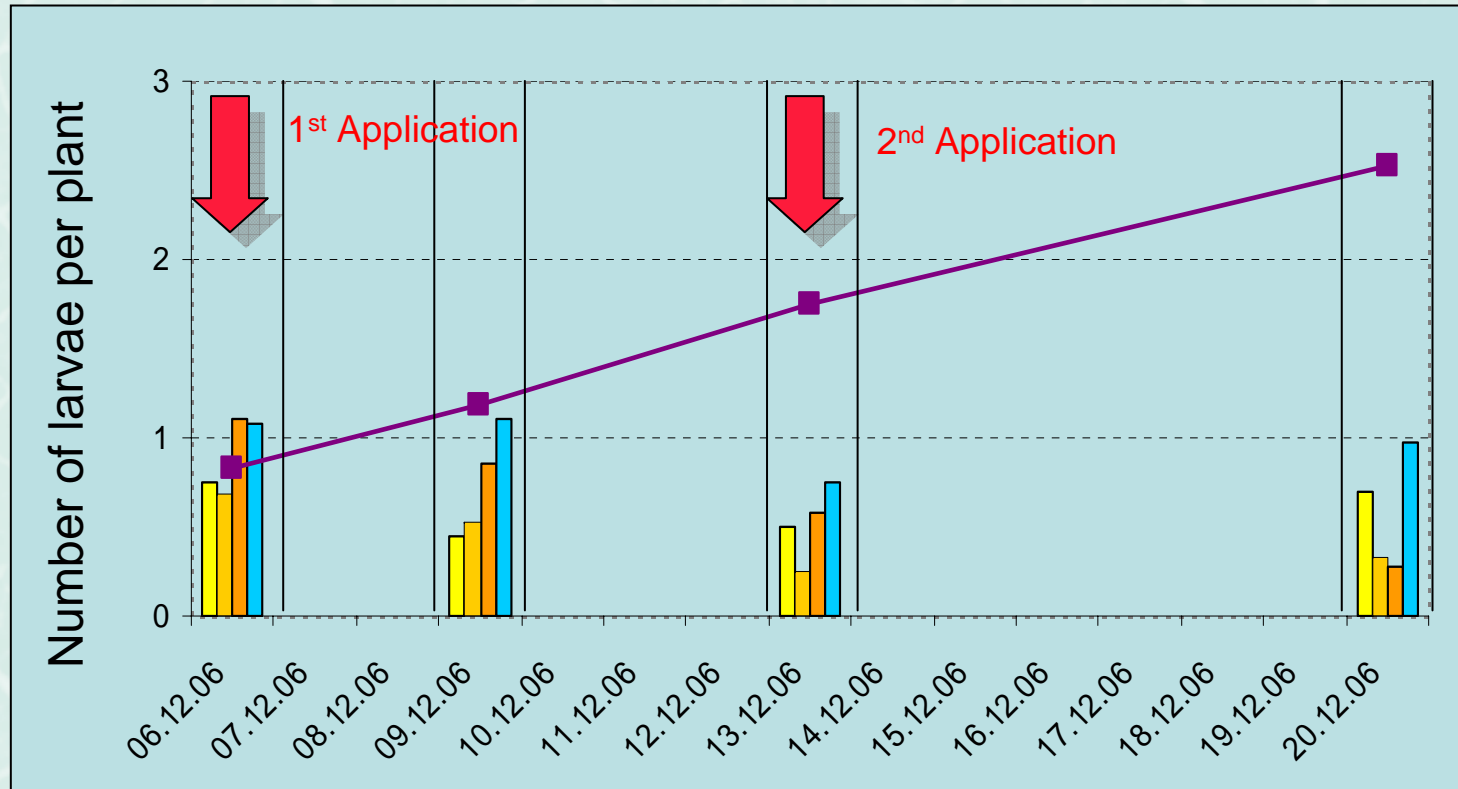


Photo by F. Mayoral, Agrichem

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Field trial on strawberries (Almeria, Spain)

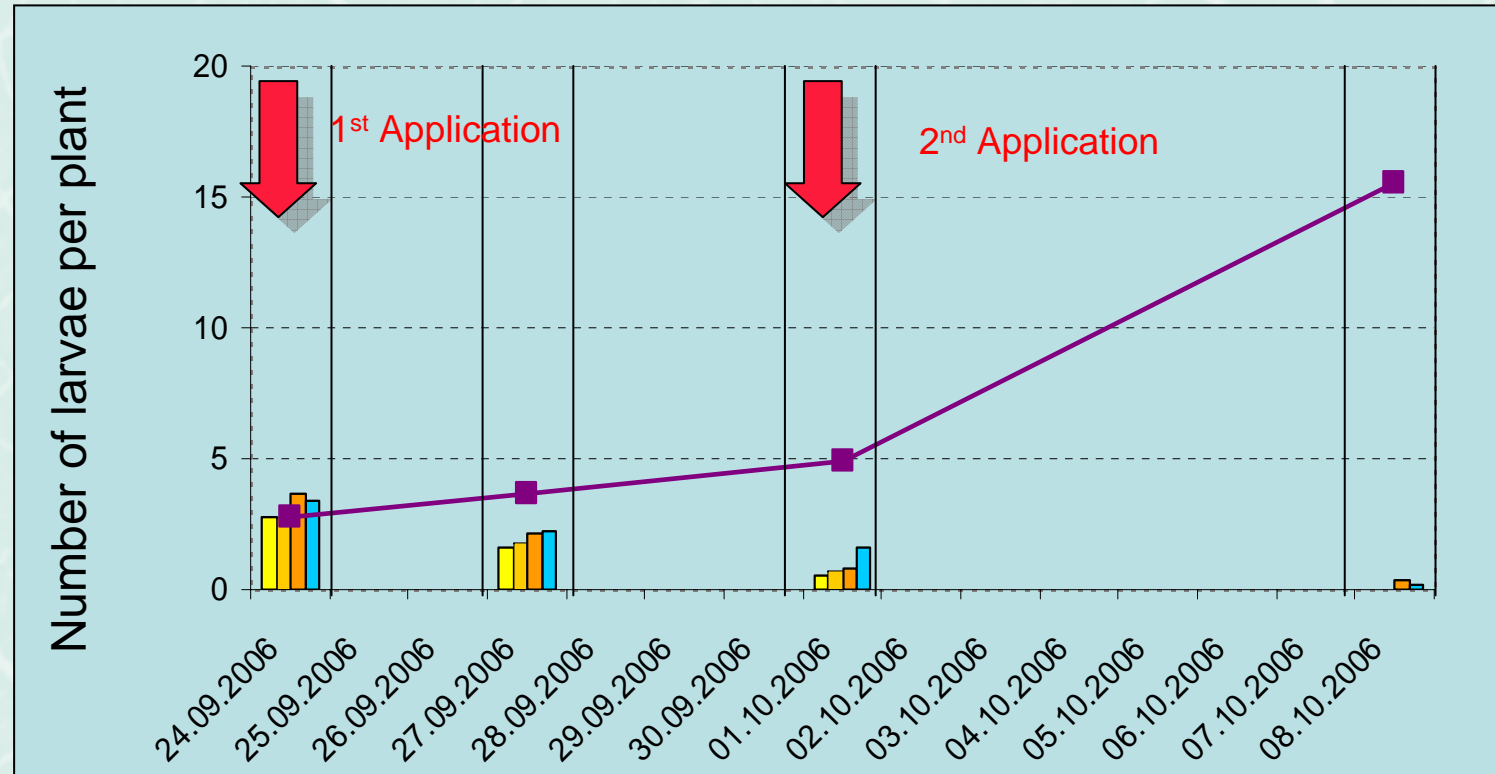
(field trial conducted by Agrichem, Spain)



Spexit 1 x 100ml/ha	68 %	Efficacy (14 days after treatment)
Spexit 1 x 200ml/ha	87 %	
Spexit 2 x 100ml/ha	87 %	
B.t. kurstakii 2 x 75 g/hL	57 %	
untreated control		

Field trial on pepper (Almeria, Spain)

(field trial conducted by Agrichem, Spain)



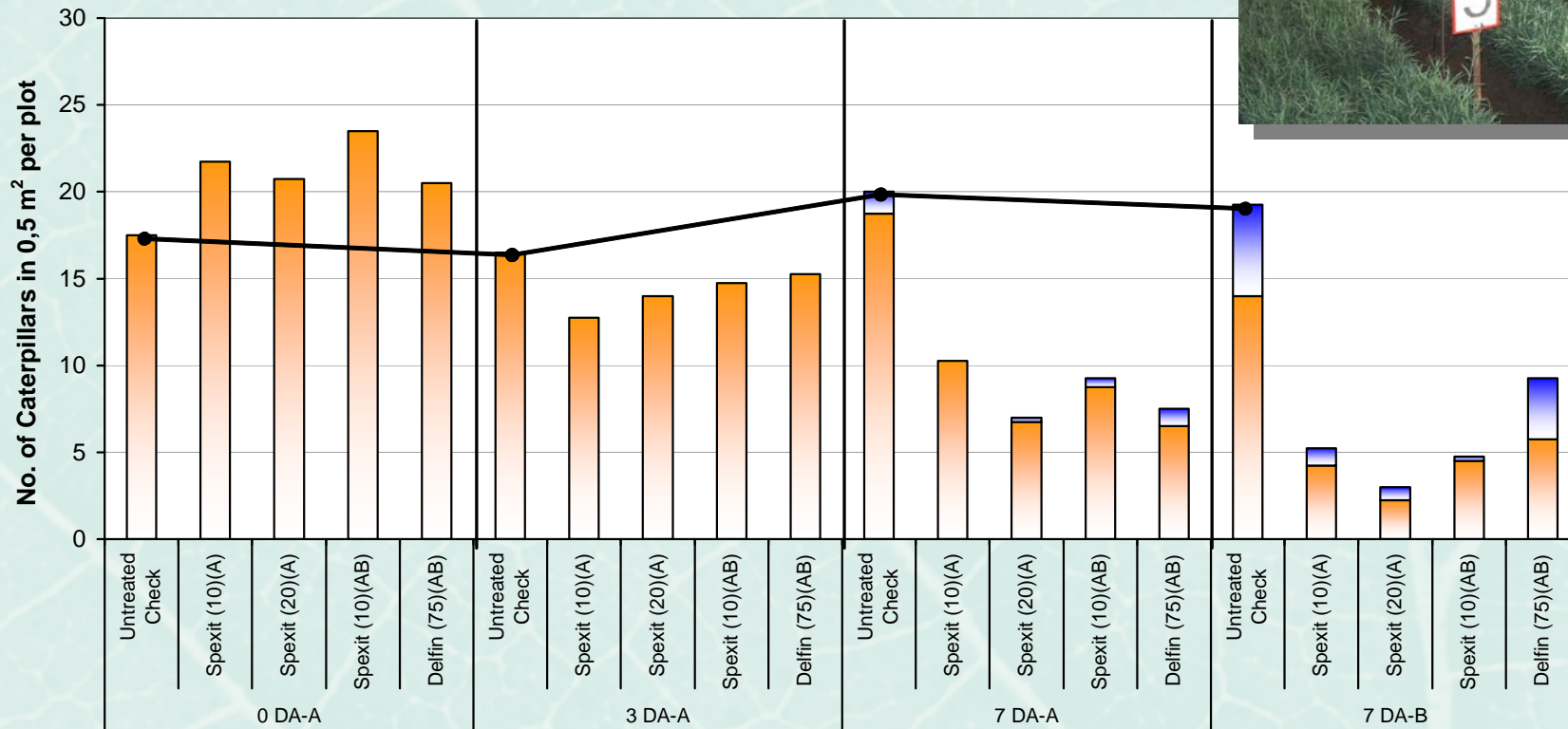
- Spexit 1 x 100ml/ha **100 % Efficacy (14 days after treatment)**
- Spexit 1 x 200ml/ha **100 %**
- Spexit 2 x 100ml/ha **96 %**
- B.t. kurstakii 2 x 75 g/hL **98 %**
- untreated control

Field trial in carnation in Spain, 2006

(field trial conducted by Agrichem, Spain)



RESULTS in CARNATION Target: *Spodoptera exigua*



(XX): Rates in ml-g/hl
(AB): Applications codes

L1-L3
 L4-L5

Trial Id.: AS 9606 L01



Efficacy of SPEXIT

on mortality of *Spodoptera exigua* larvae in different crops
Overview of data from field trials in Spain (Agichem Bio, Spain)

Crop	year	Spexit	Spexit	Spexit	B.t.kurstakii
		1 x 10 cc/HL Efficacy (%)	1 x 20 cc/HL Efficacy (%)	2 x 10 cc/HL Efficacy (%)	2 x 75 g / HL Efficacy (%)
Pepper	2006	81	93	88	74
Pepper	2007	100	100	96	98
Cucumber	2006	92	88	93	87
Cucumber	2006	79	88	93	78
Watermelon	2006	93	91	94	94
Watermelon	2006	88	88	88	87
Strawberries	2006	68	87	87	57
Strawberries	2006	74	90	91	70
Lettuce	2007	41	80	81	47
Carnation	2007	78	87	82	59
Average		79	89	89	75

Helicovex and Spexit

New powerful tools for the control
of *Helicoverpa armigera* and *Spodoptera exigua*

The use of **Helicovex** and **Spexit**

- offers a highly effective control of important pests
- guarantees a 100% residue-free production
- protects the beneficial fauna
- is fully compatible with organic farming
- can be used in combination with B.t products or chemical insecticides and offer new solutions for IP programs
- offer new solutions and tools for resistance management

Thanks to

- **Agrichem Bio, Spain**
- **Biological Control Products, South Africa**
- **Hellafarm S.A., Greece**
- **Intachem Bio, Italia**
- **V.I.T., Turkey**

