

**“SUCCESSFUL
IMPLEMENTATION OF
BIOCONTROL PRODUCTS
INTO GREENHOUSE CROPS
IN SOUTH EAST SPAIN,
ALMERIA”**

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FACTORS FOR TERRITORIAL IMPLEMENTATION

Geographical expansions of biocontrol in the past years



Coenosia attenuata (Tiger fly)



2006

2007

2008

2009



Low greenhouse density

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EXTERNAL PERCEPTION OF THE ADVANCES OF BIOCONTROL IN ALMERIA

February 2008: Fruit Logistica Berlin

IBMA
Instituto Biotecnológico de Almería

The heroes in peppers

- the 'flower bug' (*Orius laevigatus*):
 - only 3 mm size
 - lives in the flowers
 - can eat pollen
 - eats the thrips (main pest)
- the 'mighty mite' (*Amblyseius swirskii*):
 - very small (0.5 mm) mite
 - lives in the soil and feeds on the soil
 - eats many pests, mainly whitefly and thrips



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Almería has a plan !!! Everybody on deck!

1. Andalucía government:

- Field protocols
 - for nurseries
 - for growers
- Label 'green code'
- Obliged courses for technicians of API's (growers)
- Obliged chemical analysis of plants before releasing natural enemies



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2. Cooperatives – auctions – Coexphal

- Promotion of IPM to growers
- Technicians followed training on IPM (by suppliers or by government)
- Technicians assist growers to implement IPM
- Central purchase of natural enemies
- Chemical analysis (Coexphal)



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Almería has a plan !!! Everybody on deck!

3. Suppliers of biocontrol agents

- Increase practically production capacity (investments)
- Training of field technicians
- Increase technical support to growers
- Organize logistical chain ('cold chain')



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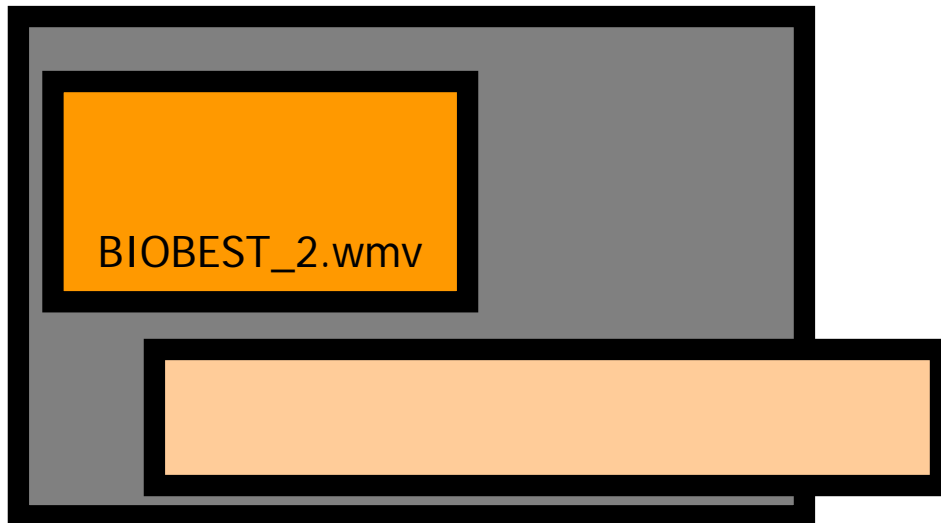
IBMA & Coexhal (Growers Association of Almería) address to the media to point the intensive change in the Spanish horticultural greenhouse sector. (Crisis of chemical residues in sweet peppers of season 2006-2007)



EXTERNAL PERCEPTION

Autumn 2008 NZZ - Documentary

Swiss documentary on biocontrol in Almería, where the development of biocontrol of pests in greenhouses were presented as a large scale phenomenon



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EXTERNAL PERCEPTION

Summer 2009: Bill boards

Wide range of beneficial offered to the growers.



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EXTERNAL PERCEPTION

Summer 2009: Bill boards



Other inputs for the horticultures, based on publicity messages of the consumption development of beneficials.

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SUCCESS FACTORS IN ALMERIA. A SUMMARY

- Crisis in sweet pepper crops (insofenfos-methyle): trigger, but not initial cause**
- Appearance of beneficials adapted to the conditions of S.E. Spain on the market: Amblyseius swirskii, Nesidiocoris tenuis, Trichogramma achaea**
- Promotion of grower associations (Coexphal, Hortyfruta): education, analysis of plant tissues before releases of beneficial, central purchase**
- Administrative support government Junta de Andalucía: Subsidies-Courses for API´s-Standardization of protocols**
- Empowerment suppliers: companies already present in the sector and new establishments**
- Predisposal to changes, generation of growers with a favorable opinion and own criteria**

The main “decision-makers” for buying beneficials are the growers



WHO ARE THE GROWERS IN ALMERIA?

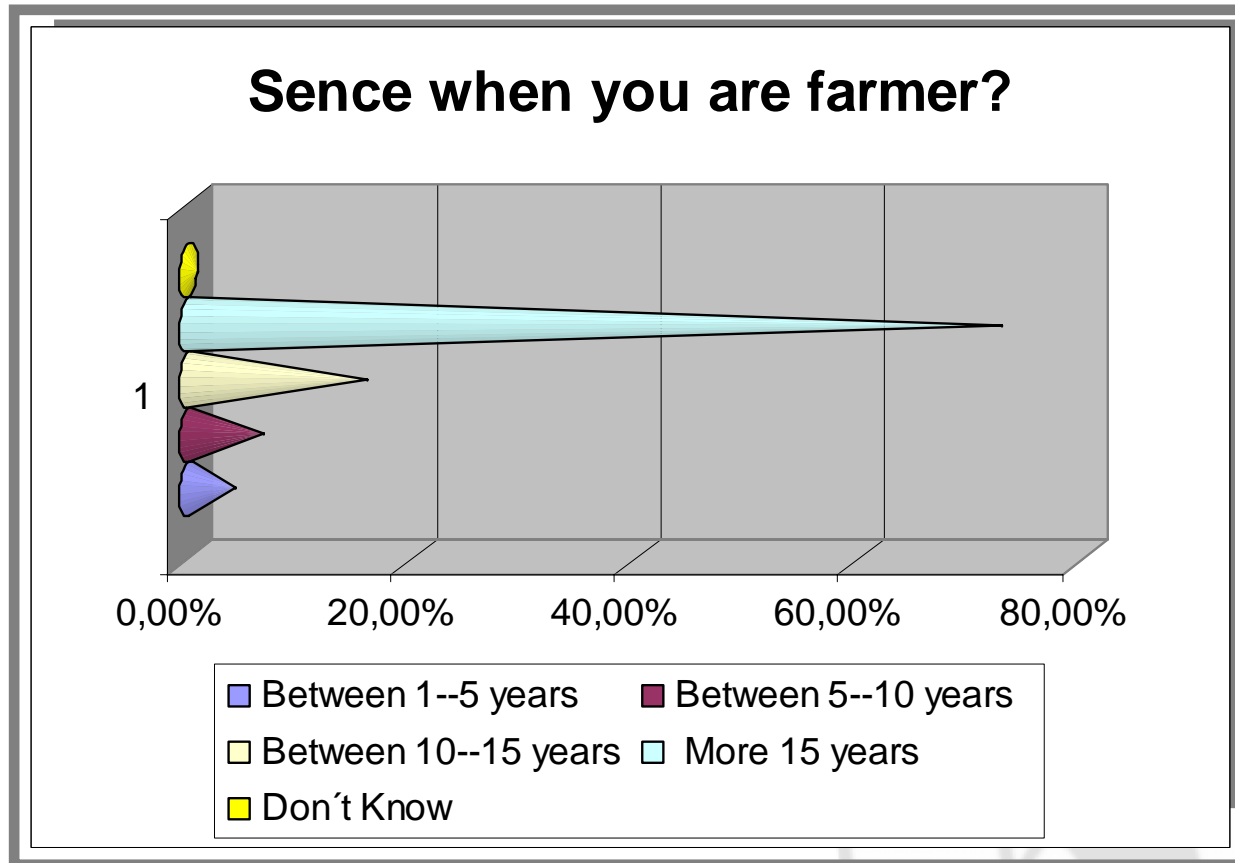
- Owners of explotations of 2-3ha greenhouses
- Associated or non associated
- Aged between 30 and 50 years
- With 15 years of experience as grower
- Sweet pepper growers, 3 season with 100% IPM



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WHO ARE THE GROWERS IN ALMERIA?

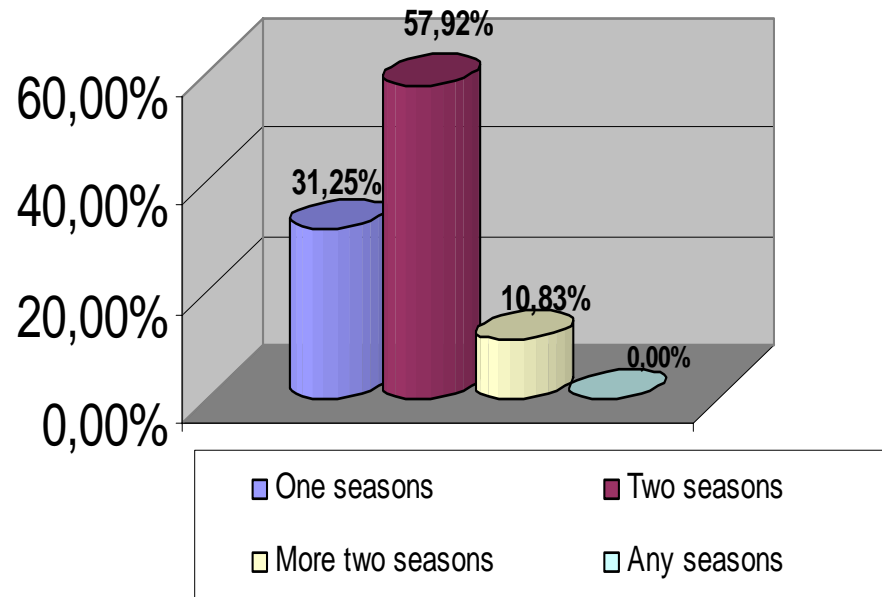


Fuente: Elaboración propia (Luz María López Parra. Dpto Marketing Biobest SB)



WHO ARE THE GROWERS IN ALMERIA?

When you start with biological control?



Fuente: Elaboración propia (Luz María López Parra. Dpto Marketing Biobest SB)

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AUTUMN IPM: REPRESENTATIVE CROPS IN ALMERIA (Tomato)



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AUTUMN IPM: REPRESENTATIVE CROPS IN ALMERIA (Tomato)

Name	José Miguel Sánchez Contreras
Age	40
Start date as growers	1992 propietario/Anteriormente secano Alpujarra
Common crop	Pepino-Tomate
Green House	8000m2 Caniles/Nobleza 4500 pies a dos brazos injertado-Plantación25/08/09-2008:17kg/m2
Neighborhood	4 invernaderos IPM-1sin IMP calabacín
Comercialization	Cooperativa
IPM experience	Decisión propia 3años tomate-2pepino retomando químico en el 3º y obteniendo resultados peores
Insects suppliers	Biobest
Parameters o criteria for selecting their bio-supplier	Calidad / Seriedad / Precio ajustado / Respuesta rápida a problemas
Non- solved problems	Aculops / Tuta?
Dosage and used products	Nesidiocoris 1 m/2 (suelta 16/09) y añadir 0,5 m/2 si aparece presión de mosca blanca excepcional. - Tratamientos previos con Abamectina y Spintor - Tuta absoluta: Feromonas. Realización de ensayo con Trichogramma achaea a la aparición de los primeros indicios de galerías. - Trips: Riesgo en primavera, pero no preocupa en los dos últimos años por la aparición espontánea de un hongo que dificulta la movilidad de los insectos.
Why is Almería implementing biocontrol at fast rate?	interés económico y rapidez/Aplicaciones mensuales de fungicidas y antes semanales/Saludable

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AUTUMN IPM: REPRESENTATIVE CROPS IN ALMERIA (Cucumber)



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AUTUMN IPM: REPRESENTATIVE CROPS IN ALMERIA (Cucumber)

Name	Carmen Parra Galdeano
Age	47
Start date as growers	1983/Anteriormente secano Alpujarra
Common crop	Pepino-Tomate-Berenjena-Pimiento
Green House	13000m2 Benito/24000m2 Borja/13000m2 Rubens /13000m2 Anetto-Plantación02/08/09-13/08/09-25/08/09-29/08/2009 (12kgm2 pepino-10kgm2pimiento)
Neighborhood	Pimiento+Pepino IPM-Calabacín no IPM
Comercialization	Subasta
IPM experience	Decisión propia 2años en todos los cultivos
Insects suppliers	Biobest 2009/ Syngenta 2008
Parameters o criteria for selecting their bio-supplier	Calidad / Precio / Respuesta rápida a problemas
Non- solved problems	Oidio/Tuta/Spodoptera
Dosage and used products	Swirskii 90 m/2 en bote y sobre (suelta Benito 20/08-26/08) (suelta Borja 08/09)(suelta Rubens 14/09)+ 8000 Aphidius
Why is Almería implementing biocontrol at fast rate?	interés económico/Obligación por residuos/Aplicaciones mensuales de fungicidas y antes semanales/Saludable/La Junta de Andalucía da ayuda



AUTUMN IPM: REPRESENTATIVE CROPS IN ALMERIA (Eggplant)



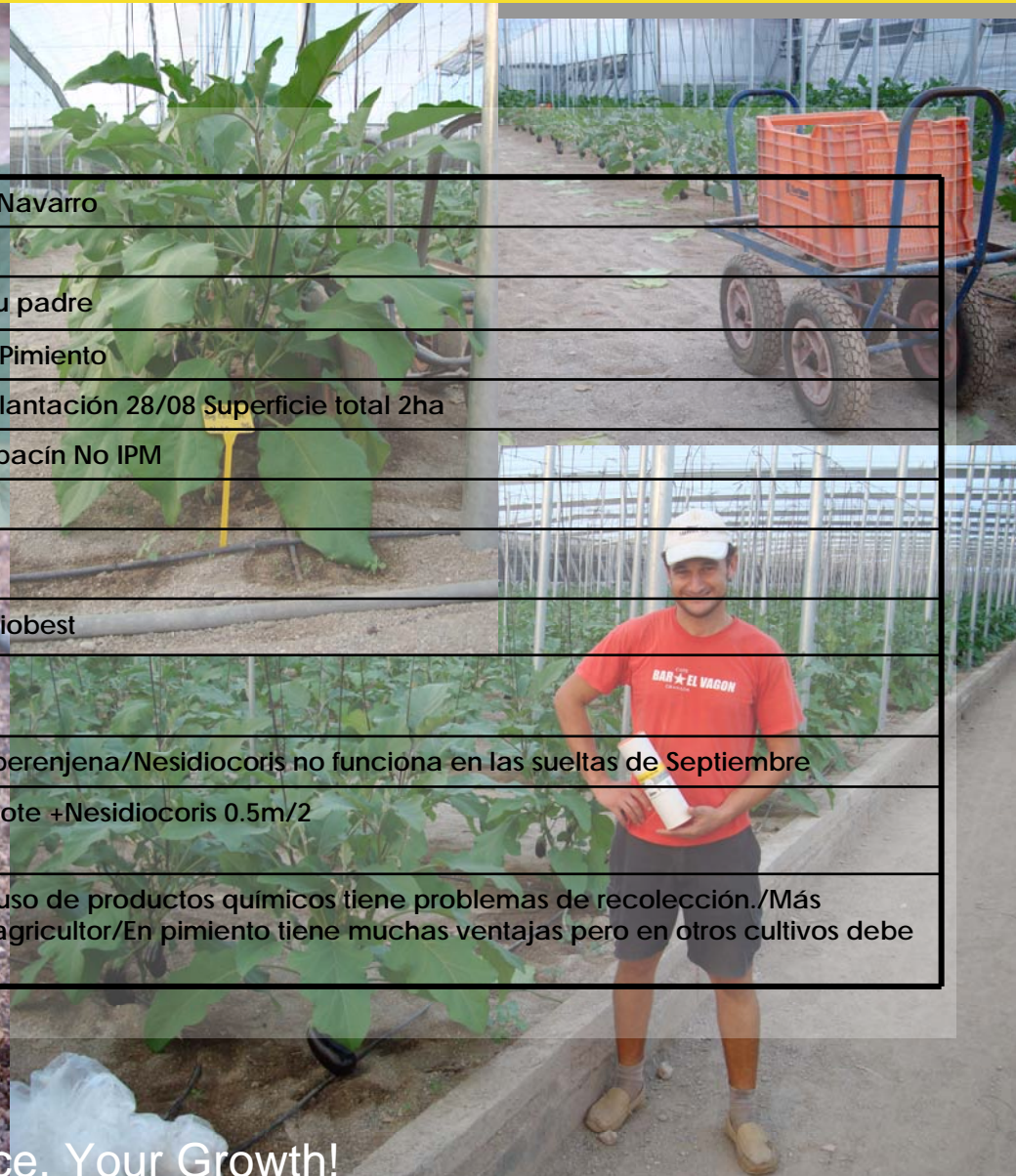
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AUTUMN IPM: REPRESENTATIVE CROPS IN ALMERIA (Eggplant)

Name	Francisco Villegas Navarro
Age	31
Start date as growers	1994 trabaja con su padre
Common crop	Berenjena-Pepino-Pimiento
Green House	10000m2 Cristal / Plantación 28/08 Superficie total 2ha
Neighborhood	Pimiento IPM-Calabacín No IPM
Comercialization	Cooperativa
IPM experience	3 años
Insects suppliers	Agrobio-Koppert-Biobest
Parameters o criteria for selecting their bio-supplier	Calidad / Servicio
Non- solved problems	Mosca blanca en berenjena/Nesidiocoris no funciona en las sueltas de Septiembre
Dosage and used products	Swirskii 75m/2 en bote +Nesidiocoris 0.5m/2
Why is Almería implementing biocontrol at fast rate?	Por obligación; el uso de productos químicos tiene problemas de recolección./Más saludable para el agricultor/En pimiento tiene muchas ventajas pero en otros cultivos debe de mejorar

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AUTUMN IPM: REPRESENTATIVE CROPS IN ALMERIA (Sweet pepper)



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AUTUMN IPM: REPRESENTATIVE CROPS IN ALMERIA (Sweet pepper)

Name	Raúl Tarifa Sánchez
Age	28
Start date as growers	1998-2002 trabaja con su padre/2003 superficie propia
Common crop	Tomate-Pepino-Pimiento-Berenjena
Green House	10000m2 Anetto / Plantación 01/09 Superficie total 1.7ha
Neighborhood	Pimiento IPM-Berenjena No IPM
Comercialization	Subasta
IPM experience	2 años
Insects suppliers	Biobest
Parameters o criteria for selecting their bio-supplier	Calidad / Precio/Servicio
Non- solved problems	Spodoptera/Tuta en el tomate/Oidio/ Pitium
Dosage and used products	Swirskii 75m/2 en bote y sobre +Orius 3m/2 Suelta 18/09
Why is Almería implementing biocontrol at fast rate?	Más saludable/Funciona en el pimiento mejor que los químicos/Obligación

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AUTUMN IPM: REPRESENTATIVE CROPS IN ALMERIA (Sweet pepper)

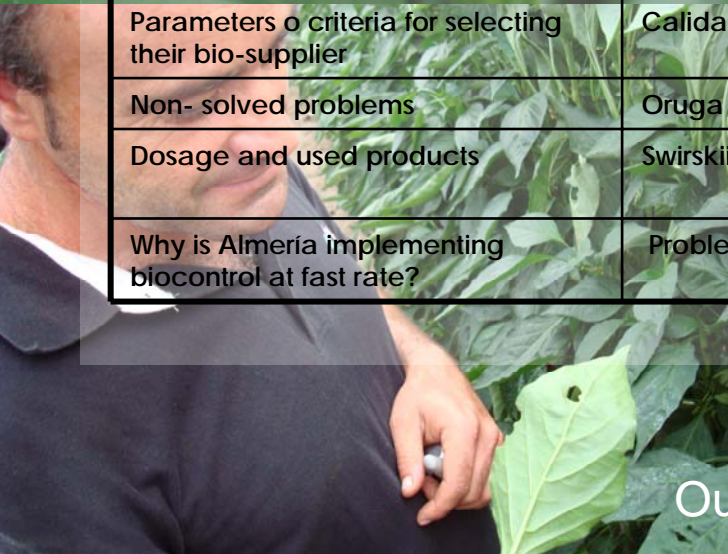


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AUTUMN IPM: REPRESENTATIVE CROPS IN ALMERIA (Sweet pepper)

Name	José Fernández
Age	48
Start date as growers	1960
Common crop	Tomate-Pimiento-Melón-Sandía
Green House	20Ha Plantación 05/09
Neighborhood	Alrededor todo IPM excepto un invernadero de calabacín
Comercialization	Cooperativa
IPM experience	3 años pimiento y pepino
Insects suppliers	Agrobio /Agrotecnologia /Biocolor/ Verdeibeirica
Parameters o criteria for selecting their bio-supplier	Calidad=Precio
Non- solved problems	Oruga
Dosage and used products	Swirskii 75m/2 en bote +Orius 3m/2
Why is Almería implementing biocontrol at fast rate?	Problema residuos/Ayudas de la Junta de Andalucía / Interés técnico



PRODUCCIÓN INTEGRADA
CONTROL BIOLÓGICO



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Thanks for your attention