

IPM toolbox for IBMA and BPIA

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Sustainable farming



Danny Beath - Scrubs Wildflower Meadow
Kew Royal Botanic Gardens UK

Pest, diseases and weeds

Tight ecological interactions
between plants:
insects and plant diseases

Race - plants evolve
elaborate
mechanisms for
protecting
themselves

Insects and diseases
evolve more complex
ways of overcoming
plant defences

This coevolution lead to some
remarkable outcomes.

Evolution of biological control



Plant secondary compounds - botanicals

- Painter, R H (1958): Resistance of plants to insects.
Ann, Rev. Entomol. 3: 267-290
- Fraenkel, GS (1959): The raison d'etre of secondary plant substances.
Science 129: 1466-70



Microbial biological control agents

Coniothyrium minitans ***Pasteuria penetrans***

Beauveria bassiana *FUSARIUM OXYSPORUM*

Paecilomyces fumosoroseus *Bacillus firmus*

Clonostachys rosea *Trichoderma harzianum*

BACILLUS THURINGIENSIS

Gliocladium catenulatum *Bacillus subtilis*

Lecanicillium lecanii *Ampelomyces quisqualis*

Trichoderma asperellum *Metarhizium anisopliae*

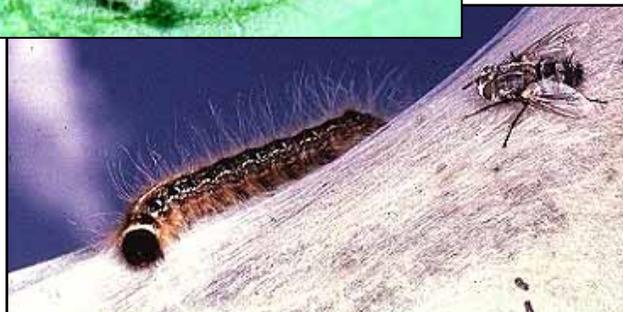
Cydia pomonella granulosis virus

Macrobial/Invertebrate Control Agents

Predators



Parasitoids



Nematodes



Biocontrol – in crop protection

- Amenable to use in **IPM** programmes
- Work best in **population management**
- Can have several effects on pest/disease:
 - kill – by direct action or secreted products
 - pest or disease suppression and competition
 - plant defence mechanism stimulation
- Useful for **resistance management**
- Useful for **residue management**



IPM based crop protection

Agro-ecology

Complex

Exciting

Biological control agents

What is available ?

What can the products do?

Where do we get them?

BCPC: Promoting the science and practice of sustainable crop production



BCPC (British Crop Production Council) promotes the use of good science and technology in the understanding and application of effective and sustainable crop production. BCPC is a Registered Charity and a Company limited by Guarantee.

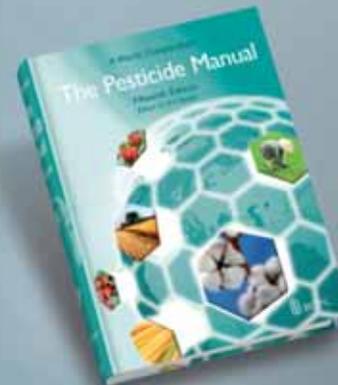
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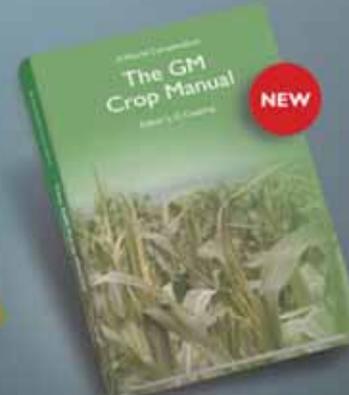
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The Manual of Biocontrol Agents

Providing valuable information on natural crop protection



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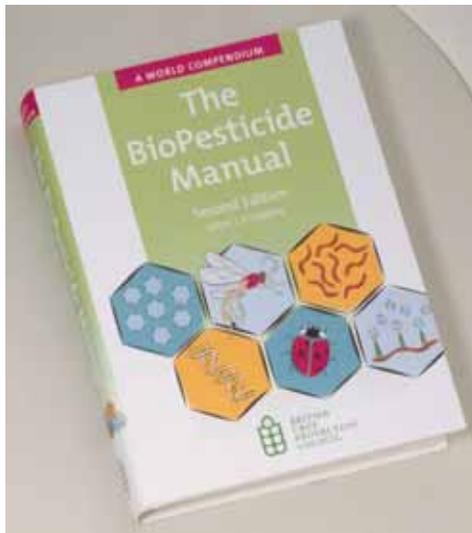
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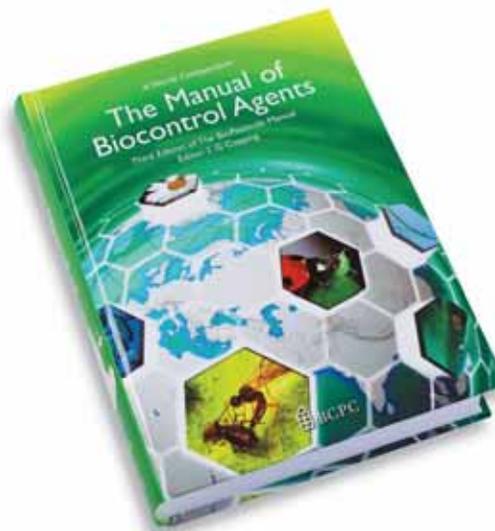
Biocontrol/biopesticide Manual

First edition 1998 – 183 entries



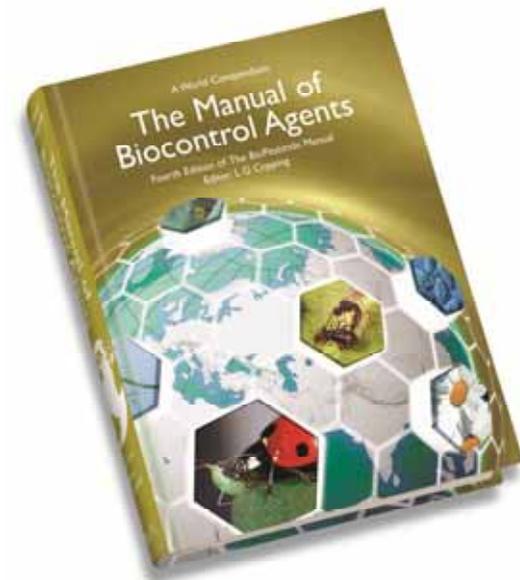
2001

254 entries



2004

373 entries



2009

452 entries

Manual of Biocontrol Agents



Purchasers	% sales
Booksellers	55.0
Chemical Companies	10.0
Other Businesses	7.0
Conference Delegates	4.5
Advisors	4.5
Individuals	4.5
Research Organisations	4.0
Horticultural Organisations	3.0
Universities	2.5
Farmers/Forestry	2.0
Others	2.0

Manual of Biocontrol Agents



Global regions for sales (including Booksellers)

UK	49%
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Europe – south & east	2.2%
Australia & NZ	2%
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North Africa	1.4%
Central America	1%
East Africa	0.8%
South Africa	0.8%
China	0.4%

Manual of Biocontrol Agents



BCPC

Manual of BioControl Agents

Four sections

- Macrobials
- Microbials
- Botanicals
- Semiochemicals

Maybe 5:

- 'Others'



Manual of Biocontrol Agents

Primary technical name +/- code

Class/Active function

FRAC/IRAC:

STRUCTURE:

NOMENCLATURE:

Approved names:

Other names:

Common names:

CAS RN:

IUPAC:

SPECIFICATION:

PRODUCTS:

Formulation type:

Registered Names:

Storage conditions:

Shelf-life:

COMPANY (AND/OR DISTRIBUTOR):

Country:

REGISTRATION STATUS:

Country where registered:

CLASSIFICATION:

TARGET PEST/DISEASE/WEED:

CROPS:

APPLICATION:

COMPATIBILITY:

BIOLOGICAL ACTIVITY:

Mode of action:

BIOGEOGRAPHY:

COMMERCIALISATION:

Production:



Manual of Biocontrol Agents



Quality

Thank you for your attention



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