


For further information please contact the EWSN Research Facilitator:

c/o John Innes Centre, United Kingdom

Tel: +44 (0)1603 450643 Fax: +44 (0)1603 450045

E-mail: network.ewsn@bbsrc.ac.uk

Web site: <http://www.whitefly.org>

 Insect Symbiosis
ISBN: 0-8493-1286-8 Co-authors:
Kostas Bourtzis & Thomas Miller
Online at: <http://www.crcpress.com>



Newsletter

Designed and Presented by: Dr Ian D Bedford and Mr David J Oliver

May
2003
Issue No 16

New Company launch AGRI-50e

A new company has been formed to manufacture and distribute AGRI-50 in Europe. It is a venture of **CAL-AGRI products L.L.C.** of California and **Just Green Ltd** of the United Kingdom. The new company AGRI-GREEN will be marketing the product in the U.K. shortly and will follow up with distribution in Spain and other European countries that have whitefly problems. The product, AGRI-50e, is highly effective for control of whiteflies and is non-toxic (to animals and humans) and biodegradable. This product, as a foliar spray, shows excellent results against other insects such as aphids. The response from growers that have tested AGRI-50e is outstanding and the new company AGRI-GREEN is actively looking for distributors in other parts of Europe. Further details are available online at: <http://www.cal-agri.com>

Mr R. Steckler & Mr K. Head
of AGRI-GREEN Ltd

AGRI-GREEN



A new 'purpose built' insect culture unit...



is now commercially available. The **'Polaris Insectary'** has been designed to overcome many of the problems usually associated with culturing and using insect colonies for research. It consists of two chambers, separated by a template, through which plant pots are positioned into pre-cut holes (4 x 14cm or 6 x 11cm

diameter although other sizes are available on request). The bases of the plant pots sit into the watering arena where plant foods can be added to the water if necessary. A water level sensor indicates when watering is required and automatic watering is available as an option. The upper chamber where the insects are maintained, is vented at the rear by a small fan and 50 micron mesh apertures within the side panels. Access to the insects is through two removable panels which are held in place by magnetic strip. However, the complete front and back panels can also be removed easily to insert or remove larger plants. The **Polaris Insectary** uses plastic panels that are easy to dismantle and re-assemble for cleaning, sterilising or replacement in case of damage. It is 560 x 600 x 600mm in size and weighs 12Kg. The unit can be packed flat for shipment.

Polaris Instruments Ltd.

E-mail: sales@polaris.co.uk

Website: <http://www.polaris.co.uk>

Getting closer to the whitefly pest



Entomologists are using a new range of ergonomically advanced microscopes from Vision Engineering. They are finding these microscopes to be perfect for entomological studies, providing long term operator comfort with superb image clarity.

The **Mantis** is a low magnification viewer used to assist in the handling, sorting and sexing insects as well as examining infested plant material. The **Mantis** allows a clear, bright stereo image of the subject to be viewed by the operator. Because the **Mantis** has such a large working distance, objects such as small plants can easily be manipulated underneath the viewer. This allows for an all round view of the subjects. **Mantis** is very popular with the researchers because of the clarity and brightness of the image.

Also used are **Alpha stereo zoom microscopes**. These microscopes are used for detailed study of individual specimens. Alpha uses an expanded pupil eyepiece, being comfortable to use all day without any operator discomfort. A floating stage allows plant samples and petri dishes to be easily moved under the microscopes, maintaining a constant working distance. Alpha stereo microscopes are fitted with a camera attachment which connects to a conventional digital camera. This camera allows the researchers to display live video to a monitor as well as capturing high resolution images for filing or inclusion in reports.

Mr G Collins of Vision Engineering Ltd.

Website: <http://www.visioneng.com/biomed>

FORTHCOMING EVENTS:

The International Symposium on Greenhouse Tomato - Avignon, South of France, 17th - 19th September, 2003

Integrated crop protection & organic production methods/research

Website: <http://www.fruits-et-legumes.net/pratique/agenda/tomate/programme.asp>

XXX Congress of the Colombian Society of Entomology
Calli, Colombia, 17-19th July 2003

Organized by the Colombian Society of Entomology (SOCOLEN)

E-mail: socolen@mafalda.univalle.edu.co

Website: <http://socolen.com.co>

IOBC/WPRS *working group meeting on Protected Crops in Mediterranean Climate*
30th Nov - 4th Dec, 2003. Agadir, Morocco

E-mail: Dr Abdelhaq Hanafi at: hanafi@iavcha.ac.ma

Website: <http://www.iavcha.ac.ma/IOBC/congress.html>

The 2nd European Whitefly Symposium

Spurred by the tremendous success of the 1st European Whitefly Symposium in Sicily 2001, preparations are now commencing for the next symposium at **Cavtat, Republic of Croatia from 5th to 9th October 2004**, hosted by Dr Katja Zanic and her colleagues from the institute for Adriatic Crops and Karst Reclamation - Split (Institut za jadranske kulture I melioraciju krsa), Croatia.

Whiteflies continue to maintain a high pest status within Europe where crop losses are caused through direct feeding and indirectly through the transmission of plant viruses. As new whitefly species and viruses spread into and within Europe new problems are to be expected. Croatia, where whitefly problems have recently escalated, will provide an excellent location for scientists, industrialists, growers and plant health officials to address many of these issues.

Five keynote areas will be covered by this symposium:

Faunistics, Systematics & Ecology, Whitefly Transmitted Viruses & Epidemiology, Whitefly Natural Enemies, Chemical & Physical Controls and Integrated Pest Management & Biological Control each led by leading experts within the field. The official language will be English.

This symposium will also aim to address the recent advances that have been made within European crop protection towards satisfying current legislation and effectively controlling problems.



Photo: North East Adriatic coastline at Cavtat, Croatia



Pre-register your interest by visiting online at: <http://www.whitefly.org/EWSII-info.htm> or contact the EWSN Events organiser at: ewsn.organiser@whitefly.org for your pre-registration form

EWSN gratefully acknowledges the following for their support:



also:























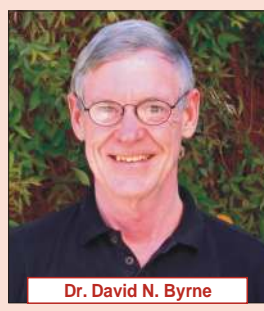


John & Pamela Salter
Charitable Trust

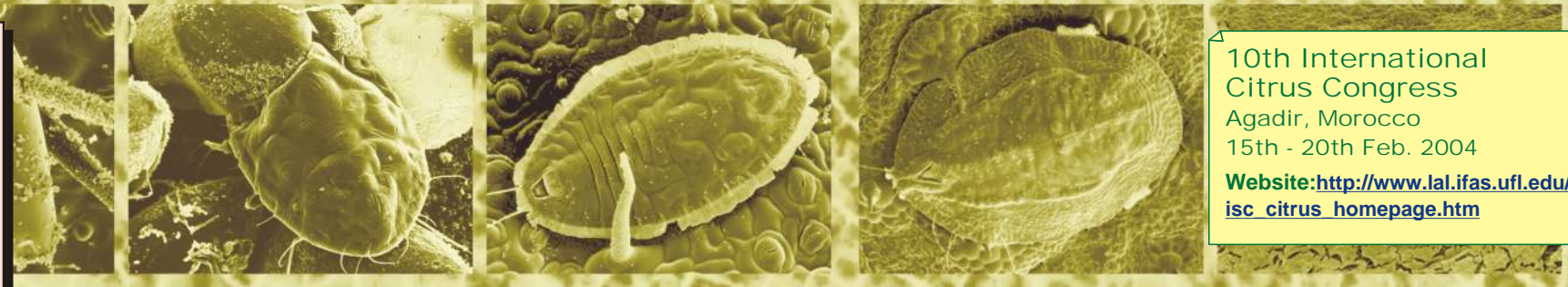
EWSN was initiated through an EC FAIR 6 Concerted Action Grant CT98-4303 (MAR-99 to MAR-01)



Dr. Judith K. Brown



Dr. David N. Byrne



10th International Citrus Congress
Agadir, Morocco
15th - 20th Feb. 2004
Website: http://www.lal.ifas.ufl.edu/isc_citrus_homepage.htm



3rd International Bemisia Workshop Barcelona, Spain, 17-20 March 2003...

was an outstanding success, enabling 122 scientists from 23 countries to discuss their research on *Bemisia* and related problems. Two keynote speakers over viewed each of 7 working sessions. The session on Biology highlighted the lack of knowledge on the biology of the different biotypes identified so far. The Ecology session covered population dynamics, sampling and *Bemisia*-host plant relationships, whilst the Virology and Epidemiology session covered virus identification and strategies for mitigating virus epidemiology. The session on Biological Control had the most contributions. Delegates endorsed *Eretmocerus sp.* as the most promising biological agent but also emphasized the importance of background predation for *Bemisia* control. Other non-chemical control methods were presented on plant resistance and the use of screening and UV-absorbing plastics. The chemical control and resistance session focussed on insecticide management to delay resistance development. The workshop culminated with a round table discussion of the different IPM approaches used throughout the world. The 4th workshop is scheduled for 2006, location to be announced.

Organizing Committee.
Workshop sponsored by: The Spanish Ministerio de Ciencia y Tecnología, the Departament d'Universitats, Recerca i Societat de la Informació (Generalitat de Catalunya) and 10 private companies.

For a copy of the abstracts (Adobe PDF document) please visit <http://www.irta.es/bemisia2003>
For further details contact: Judit Arnó and Jordi Riudavets
E-mail: jordi.riudavets@irta.es or judit.arno@irta.es

IWSN - North American Group

The North American Whitefly Network is co-ordinated and co-chaired by **Drs. Judith K. Brown** and **David N. Byrne** from the University of Arizona, Tucson, USA. The team are faculty members of one or more departments in the College of Agriculture, including Entomology, Plant Pathology, and Plant Sciences.

Research and outreach/extension efforts directed by this network are also carried out in the UA campus labs of Drs. Paul Baker, Timothy Dennhey, and Mary Olsen. Research and Extension are also carried out at the Maricopa Agricultural Center by Dr. Peter Ellsworth & team, and research efforts are conducted for lowland agriculture at the Yuma Agriculture Center in Yuma, by Dr. John Palumbo.

The coordinators welcome other interested American whitefly groups who wish to joint this beneficial network, e-mail Dr Brown or Dr Byrne. Details of this network are also online at: <http://www.whitefly.org>

Dr. Brown's work at the UA's Dept. of Plant Sciences involves molecular epidemiology and diversity of begomoviruses of cotton and vegetable crops, taxonomy and biology of the *B. tabaci* species complex, elucidating the mechanisms underlying the transmission pathway & virus-vector interactions, and whitefly endosymbionts.

Her lab team includes: Graduate students Kate Baumann, Rafael Caballero, Matt Gallucci, and Kate Mills; post-docs Sue Hum-Musser, A.M. Idris, Shai Morin, Rich Musser; Lab Manager, Donald Rogan; and Research Specialist Marcia White.

Dr Judith K. Brown Email: jbrown@ag.arizona.edu
Websites: <http://gemini.biosci.arizona.edu/>
<http://ag.arizona.edu/pls/faculty/websitejkbapril02.htm>
<http://ag.arizona.edu/ENTO/entohome.html>

Dr Byrne's research studies at the UA's Dept. of Entomology are focussed on migration and dispersal by *Bemisia* and its parasitoids, parasitoid ovigeny, whitefly dispersal in response to crop conditions.

Studies are supported by: Mark K. Asplen; David E. Bellamy; Vanessa Jacobs-Lorena and Jesse A. Hardin

Dr David N. Byrne Email: byrne@ag.arizona.edu
Website: <http://ag.arizona.edu/ENTO/entohome.html>



FOR NEXT ISSUE:
Citrus blackfly ("black" whitefly)
World's largest living collection of whitefly populations
Influence of UV-blocking films on Glasshouse Whitefly
Emergence of a resistance breaking strain of cotton leaf curl virus in Pakistan

Amitus fuscipennis: a promising control agent of *T. vaporariorum*

Trialeurodes vaporariorum is often a major pest on bean crops in Colombia, resulting in intensive insecticidal use. As an alternative to chemical control effective biological control agents are currently being sought. The parasitoid *Amitus fuscipennis* MacGown & Nebeker was evaluated as a potential biological control agent of *T. vaporariorum* on beans in Colombia in the recently finished Ph.D. project of Maria R. Manzano at Wageningen University (supervised by Joop van Lenteren and co-directed by Cesar Cardona [CIAT]). *A. fuscipennis* has certain characteristics that indicate its potential as a valuable biological control agent:

Culture method: *A. fuscipennis* is an easy insect for mass rearing. The developmental time of the parasitoid is about 8 days longer than that of *T. vaporariorum* at 19°C. For efficient mass rearing special attention is needed to have sufficient whitefly nymphs of 1st & 2nd instars for oviposition. *A. fuscipennis* showed a strongly female-biased sex ratio as a result of thelytoky probably caused by *Wolbachia*. For mass rearing, thelytokous reproduction is an advantage.

Reproductive potential: The r_m values of *A. fuscipennis* were found to be higher than those of *T. vaporariorum* in tropical highland and midland areas. If the r_m value were the only criterion to consider, we might conclude that biological control of the greenhouse by *A. fuscipennis* would be possible at the climatic zones considered.

Searching behaviour: *A. fuscipennis* showed area-restricted searching. This is an adaptation of searching for hosts that occur in a clumped manner, such as *T. vaporariorum*. *A. fuscipennis* seems to have adapted to search for aggregated hosts. By searching, *A. fuscipennis* remains longer on leaves where hosts are present.

Field releases of *A. fuscipennis* are needed in order to prove its efficiency. These releases will lead to a better understanding of the role of *A. fuscipennis* in biological control of *T. vaporariorum*.

Dr. Maria R. Manzano
Email: mariamanzano@coomevemail.com
Dept. of Biology, Universidad del Valle, Cali, Colombia



A useful new Natural Enemy

A newly discovered predator has shown great potential as a biological control agent within protected crops. Not only do adults of *Coenosias attenuata* 'Tiger Flies' kill adult whiteflies and leaf miners, but larvae of *Coenosias* flies which live in the soil, predate soil dwelling pests such as fungus gnat larvae. Since *Coenosias* flies predate a wide range of pest species, they could play an important role as biological control agents within many horticultural crops. Studies also show they resort to cannibalism when prey numbers are low, where females attack male flies. This has the effect of reducing the *Coenosias* fly population to a proportional level of the prey. Greenhouse crops provide a good habitat for *Coenosia* flies. Adults are found on the upper leaves and on the wood or steel structures of greenhouses. They rapidly fly when they detect movement, often to capture a passing whitefly. This airborne predation can often be observed within the greenhouse as can the bodies of the predated victims on the leaves.

Throughout the year the *Coenosia* flies have been recorded within greenhouse-grown Dalías in Almeria, Spain. They have also been found to spontaneously occur in Germany and Italy, colonising greenhouse crops from outside sources. Studies within these countries have shown this fly to be effective for reducing populations of whiteflies, leaf miners and fungus gnats in protective crops. These countries have begun to use artificial breeding methods for producing large numbers of Tiger flies for biological control. The possibility of breeding them for controlled releases within IPM programmes on horticultural crops in Almeria, has yet to be studied.

Results obtained from: The INIA project (RTA01.095-C3-2), Scientific Research Project (RTA programme 2002-3).

Drs M.D. Rodriguez & A.M. Aguilera
E-mail: mdrrodriguez@univia.es



The adults of *Coenosia attenuata* are small dipterous flies (2.5 - 3 mm in length) and similar in appearance to the domestic house fly. Females are slightly larger than the males. Their bodies are grey with three black stripes across the abdomen. Their legs are black with yellow tibiae and antennae are short and black. In contrast, the males are silver grey with no abdomen stripes. Their legs and antennae are yellow. Females oviposit into soil, laying around 25 oval, light brown eggs in groups of 4 to 6. The three larval stages develop within the soil as do the pupae. The larvae are translucent white and the pupae are hazel (green/brown) yellow in colour.

http://ag.arizona.edu/crops/vegetables/insects/veginspub.html#whitefly