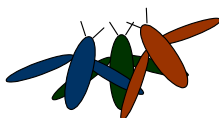


AUSTRALIAN SIT NETWORK

AUSTRALIAN NEWSLETTER ON FRUIT FLY STERILE INSECT TECHNIQUE



Number 4, March 2009

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Foreword

Possibly the most exciting news of 2008 for fruit fly researchers in Australia was the official release in November of the Draft National Fruit Fly Strategy (NFFS) aimed at improving fruit fly management in this country. Amongst the raft of recommendations are specific calls to consider seriously the sterile insect technique for Medfly and Queensland fruit flies. Supported by appropriate research, SIT has proven to be an effective means of eradicating or controlling pest fruit flies around the world and there are several examples of its successful implementation in Australia. The considerable expertise already present, coupled with much current research to improve its application and success rate will be strengthened by another NFFS initiative, the 'Fruit Fly Body of Knowledge Project', which will help to identify areas where more work is needed.

Other recommendations to "maintain and enhance fruit fly research capability, capacity and resources", and to actively encourage collaboration and cooperation between fruit fly researchers, both nationally and internationally, will also assist in achieving effective fruit fly management. Pest fruit flies are a global problem requiring *many heads working together* to solve it, and the exchange of ideas and expertise can only hasten a solution. Therefore this issue of Australian SIT Network includes, in addition to a round-up of local news, a couple of items from researchers overseas which highlight areas of collaboration on the application of the SIT for both fruit flies and light brown apple moth. Let the excitement continue!

Fruit fly research in South Australia

One stage of research on Queensland fruit fly in South Australia has come to a close with the completion of the HAL funded project 'Improving the sterile insect technique for Queensland fruit fly' (Project CT05002). This project was a joint effort between PIRSA/SARDI, Macquarie University and the Department of Agriculture and Food Western Australia (DAFWA) and yielded progress both in Queensland fruit fly applied biology and in liaison among the various fruit fly workers in Australia through research and operations meetings, reciprocal visits of managers to the Mediterranean and Queensland Sterile Insect Production Facilities, the newsletter and other extension activities.

Scott Groom was appointed in August to undertake fruit fly research in Adelaide this season. Scott has a BSc (Hons) from Flinders University. His Honours research thesis was entitled 'Origin and dispersal of *Homalictus*: Phylogenetics of a halictine bee sub-genus'. Scott's work this season will be to test two brands of Capilure for their effectiveness in attracting Mediterranean fruit fly, working with sterile fruit fly from the Western Australian sterile Medfly production facility. He will also be looking at modifying field release techniques with the focus on reducing the magnitude of the change in environmental factors prior to and during release.

Cathy Smallridge is currently dividing her time between a project gathering basic biological information on Island fly, *Dirioxa pornia*, and a Qfly trapping project led by Francis DeLima (DAFWA).

Vanessa Cockington, SARDI's fruit fly research officer, is currently on maternity leave, having given birth in May to a beautiful baby girl, Isla Rose.

DPI Victoria SIT program hosts 'Young Rural Scientists'

As part of DPI Victoria's LandLearn initiative, four grade 9/10 students from Wanganui Park Secondary College in Shepparton were given the opportunity to learn about fruit fly SIT through the 'Rural Young Scientists' program, and got an insight into what is involved in working for the Department of Primary Industries. They spent several days learning about the key components of the SIT program for Queensland fruit fly in Victoria, and were assigned some 'challenges' to aid their learning, including: (i) design a brochure for the Victorian SIT program; (ii) propose an alternative design to the current release boxes; and (iii) suggest improvements to the release vehicles.

The students visited a local orchard to learn about the export implications of Qfly and gave a short presentation on fruit fly and SIT to local primary school children. They witnessed a number of activities associated with SIT and Qfly monitoring, toured the Victorian SIT facility, checked Qfly and Medfly traps and made their own vinegar fly traps. They also visited an outbreak area and assisted with fruit stripping activities (thus also experiencing firsthand our best rain in months). They attended a presentation on SIT and observed techniques for the rearing and release of sterile flies and the equipment involved.



Students get hands-on experience working with the Qfly SIT program at DPI Victoria

Everyone agreed that the experience was very positive. At its conclusion the students presented their responses to the challenges to DPI Tatura staff. They included many fresh and innovative ideas, some of which will be incorporated into the Victorian SIT program.

- Students designed a very professional-looking brochure for the Victorian SIT program which will be further developed for when SIT is used in eradication programs, and for raising public awareness at field days.
- Blueprints for a new release box, incorporating such requirements as adequate ventilation and surface area, transportation and materials, were presented using 3D modelling software.
- Improvements to release vehicles were suggested, in particular, the use of a trolley system in the back of the vehicle to aid removal of release boxes.

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EH Graham Centre for Agricultural Innovation*, NSW

* The EH Graham Centre for Agricultural Innovation is a collaboration between NSW DPI and Charles Sturt University (CSU).

The fruit fly team at Wagga is ever changing. Vincent van der Rijt recently joined the team as a Technical Officer and has proved exceptional in his ability to conduct fruit fly related research, having come from a field crop background. While two Masters students, Anna and Corin, have now left us, we welcome PhD student Jen Spinner, but more on the students later.

Studies to improve fruit fly emergence and release for the sterile insect technique (SIT) are progressing well. A pupal release trial has demonstrated that this method of release may be of particular use from December through to April, and has also identified suitable pupal loadings during these times.

EH Graham Centre for Agricultural Innovation, continued

A collaborative study with Cathy Smallridge (SARDI, South Australia) has revealed that Queensland fruit fly 'Qfly' emerging from PARC boxes have better eclosion and flight when compared with bins, however overall trap recapture rates show little difference between the two release methods. Chilled adult release studies have revealed that this form of release is a viable option under Australian conditions for Qfly and is currently being pursued in further studies.

The joint CRC National Plant Biosecurity/HAL funded trapping project, in collaboration with Dr Francis DeLima (DAFWA), has now completed both a summer and winter season of trapping. Trapping is an important monitoring tool for sterile fruit fly releases in addition to wild fruit fly detections and the initial results are very encouraging. Results suggest that traps located in non-host trees catch fewer fruit flies than those located in favoured host trees and that fewer *dynamically* placed traps may be required to achieve efficiency similar to that of the current static traps (see Australian SIT Network, May 2008 for definitions of trap types).

Miss Anna Harris and Mr Corin Pratt (MSc students, Imperial College London/EH Graham Centre), who in July completed the research component of their thesis in Wagga under the supervision of Olivia Kvedaras, Prof. Geoff Gurr (CSU, Orange) and Mr Andrew Jessup (IAEA, Vienna, Austria) have both now submitted their Masters theses and are currently writing these up for journal publication. Corin and Anna looked at the effects of different radiation dosages on both the development of the Qfly and the performance and development of its braconid parasite, *Diachasmimorpha kraussi*. Their studies have revealed dose ranges for both irradiated eggs and larvae that either exclude the emergence of Qfly or produce sterile Qfly, while still obtaining fertile parasitoids. Their highly promising results merit follow-up work to optimise the procedure for *D. kraussi* and to assess the potential for other parasitoid species.

Mrs Jennifer Spinner (PhD student, EH Graham Centre), under the supervision of both Olivia and Prof. Gurr together with Andrew Jessup, was recently awarded a PhD scholarship with the CRC NPB, together with voluntary contribution funds from HAL/Australian Citrus to work on an approach to control fruit fly that involves biological control using parasitic wasps. Jen is located in Wagga and is currently surveying widely in eastern Australia to determine which native and introduced wasp species tend to cause most mortality to Qfly. Later, project members will tour wasp rearing facilities in the USA, Mexico & Guatemala to ensure world best-practice is followed in the pilot plant to be set up in New South Wales. Once that starts to produce wasps of the selected species, optimal releases strategies will be investigated. In Australia, when combined with the use of the SIT, this technique may provide more economic and effective management of fruit fly outbreaks in the so called Fruit Fly Exclusion Zone (FFEZ) which encompasses some of Australia's most valuable horticultural production areas, including Sunraysia, the Mid Murray and the Goulburn Valley in Victoria, along with the Murrumbidgee Irrigation Area of New South Wales and the Riverland of South Australia. Benefits will extend to suppression of wild fruit fly populations in the surrounding Risk Reduction Zone. So, think twice before swatting the next wasp you see. It may be part of the team contributing to better fruit fly pest control!

Do keep an eye out over the coming year for the first spate of publications from Olivia's team, on fruit fly SIT and complementary use of biological control.



Queensland fruit fly wasp parasitoid, *Diachasmimorpha kraussi*

Olivia Kvedaras ph. (02) 6938 1613, olivia.kvedaras@dpi.nsw.gov.au

NSW DPI SIT program investigates eclosion of Queensland fruit fly

Effects of radiation, dye and vibration on eclosion of Queensland fruit fly

Marking pupae with fluorescent dye is an essential component of all SIT releases for Queensland fruit fly (Qfly) in Australia. Variable rates of adult eclosion occur at field release sites possibly due to travel stress (vibration and temperature) over and above that due to natural causes, packaging, irradiation and dyeing. We compared six vibration treatments of between 0 and 8 hours duration under laboratory conditions and conclude that vibration is not a significant cause of mortality. The addition of dye, however, caused a significant reduction in adult eclosion – 16% more than the 22% loss attributed to natural mortality, packaging and irradiation. We conclude that there is an urgent need to reassess current dye protocols used in the preparation of Qfly pupae for sterile insect release.

We welcome suggestions for additional work in this area.

A.J. Campbell, A.J. Lynch, B. Dominiak and H. Nicol

Anoxia periods – how long is punitive for Qfly?

For some time, we have assumed that consignments of irradiated Qfly pupae need to be opened within 48 hours of packing, for fear that longer periods would quickly result in decreasing emergence. In four examinations, we tested emergence at 17°C, 21°C and 26°C. In the one test, periods from 0 to 96 hrs reduced the emergence from 89.4% to 79.5% with the 17°C and 26°C treatments ranging from 84.3% to 78.2%. Following these unexpected results, we extended the period to 192 hours for both fertile and irradiated flies. At 192 hours, the emergence was 73.4% for fertile flies and 66.5% for sterile flies. We conclude that either Qfly is remarkably tolerant of anoxia – or our plastic bags are permitting gas exchange. We plan further work in the future and welcome any advice regarding testing gases with hand held devices in a cost efficient manner.

Assuming there is gas exchange and that pupae are not really in anoxia at the time of irradiation, the irradiation in partial oxygen appears not to be as punitive as originally thought. We are increasingly convinced that the dye is much more punitive than the irradiation process.

Bernie Dominiak, Laura Jiang, Selliah Sundaralingam, Helen Nicol

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Fruit Fly Research Laboratory at Sydney University

To borrow a phrase from Mark Twain, rumours of the demise of the FFRC are greatly exaggerated – we are now officially the FFRL (L for laboratory) rather than the FFRC. But a rose by any other name....

Currently, we are in the middle of two projects at the FFRL. The first will produce better flies to be used in the Fruit Fly Production Facility. Up until now, the strain used in the factory has been quite inbred. This inbreeding has been a problem even when new flies from the wild are brought into the factory, as our DNA microsatellite studies have shown. We are using traditional animal breeding techniques to show that it is simple to construct 4-way hybrids that perform better than the factory flies. The hybrids are as productive as the factory flies but more hardy. At the moment, we are doing mass-release trials to compare the dispersal of the two types of fly. With equivalent survival rates, dispersal becomes the next most important parameter for successful SIT. At the same time, we are developing new genetic markers for future factory strains that will speed up DNA identification of sterile and wild flies at least 10 times.

In other research at the FFRL, we have successfully developed genetic transformation techniques for Queensland fruit fly. This provides a tool for basic research into Qfly and is also a crucial step in developing a male-only strain of Qfly.

On a 'low-tech' note, Alfie Meats is designing and setting up field experiments at the UWS, Hawksbury, testing new 'push-pull' techniques for behavioural control of fruit flies for village agriculture in PNG.

GAC Beattie is supplying the money (courtesy, ACIAR) and Farman Ullah is spending his sabbatical from Islamabad as 'the man on the land'.

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Group website at www.bio.usyd.edu.au/fruitfly

SIT research and new facilities at Macquarie University

It has been a very busy year and, in addition to work on other projects, we have published eight SIT-related articles on Qflies in international journals, including topics as diverse as adult nutrition and its effects on cue-lure response, insemination, male manipulation of female sexual receptivity through seminal molecules, description of male reproductive organs and glands, descriptions of male calling and courtship 'songs', and development of Qfly-optimised field cage tests. As ever, reprints of our publications are available on the group's website.

Having spent the past six years working in modified garden sheds and ancient, leaky, demountables we are now moving into a new building with custom-built laboratories. It will take a while to settle in, but the new facilities will provide opportunities for much more sophisticated approaches to our research and the tools to address questions that have up until now been out of reach. Of course this is all very exciting for us. We have also been constructing substantial new field cage facilities that we will use for a wide variety of studies on Qfly ecology, traps and lures, and mating behaviour. I'll be sure to have some nice photos of the new facilities for the next newsletter. Please consider visiting us when you are next in Sydney.

Dr Chris Weldon, supported by grants from HAL, has recently published a very interesting paper detailing how adult nutrition influences responses of both male and female Qflies to cue-lure, and continues his studies of behavioural and ecological differences between wild type flies and mass-reared sterile flies. Last year Chris presented findings of our HAL-funded research at an IAEA CRP meeting in Valencia, Spain, at the 7th Meeting of the Working Group on Fruit Flies of the Western Hemisphere at Mazatlán, Mexico, and at a Fruit Fly symposium arranged by Riverina Citrus.

Sam Collins, whose PhD research is jointly funded by HAL and Macquarie University, continues his now prolific work on optimisation of irradiation procedures for sterilization of Qflies. Earlier in 2008 Sam published several important 'foundation papers', one describing optimal field cage methods and another on how pupal irradiation dose rate influences fly quality. He has just completed preparing a very interesting manuscript on the relationship between total pupal irradiation dose and fly quality. It may be that a slight reduction in irradiation dose could produce higher quality flies without compromising sterility at all. Sam is also preparing a paper detailing the consequences of female remating for fertility - what happens if a female remates with a wild male after mating first with a sterile male (or vice versa)? I'm particularly excited about this study, as it explores a very important but under-investigated issue for SIT.

Ben Fanson, funded by a scholarship from Macquarie University, is working on optimal nutritional strategies for reproduction and longevity of Qflies. Ben's work is theoretically oriented, dealing with the ability of flies to compensate physiologically for specific deficiencies and to make decisions about what to eat based on recent feeding history. However, his work has obvious applications through the development of improved larval rearing media. Ben has been developing a synthetic diet so we can manipulate each nutritional component independently to study the consequences for larval performance.

Wendy Rahtz completed her Honours project on larval diets in Qflies. Wendy investigated some alternative diets that might be of value in mass-rearing programs. Of particular interest, Wendy linked the larval diet work with size, a full range of QC tests, and biochemical analyses of nutritional stores of newly emerged flies. Hers is the first study to explore all of these measures in unison and has provided some very useful guidance for subsequent investigation.

As for myself, I continue to keep myself amused with writing grants, planning experiments, and preparing manuscripts. Recently, to facilitate communication amongst fruit fly researchers I established the Australian Fruit Fly Listserver. More information about the listserv appears on page 10 of this issue.

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Western Australian sterile Medfly program

Katanning fruit fly control program

The Department of Agriculture and Food (DAFWA) Medfly control program with the Shire of Katanning continued for its fifth season in 2008/9. Although Katanning is not a commercial fruit production area a lot of fruit is grown by residents for their own consumption and enjoyment. The residents successfully lobbied the Shire Council several years ago to implement an annual fruit fly control scheme.

Four weeks of baiting were followed by twice weekly releases over an area of 6 km². Approximately 11 million sterile male Medfly were released over a six week period ending in mid February. A system of trimedlure sticky traps was used to measure the Medfly population and the control program's progress. During the release period, the traps were forwarded weekly to the Sterile Medfly unit at South Perth for inspection under an epi-fluorescent microscope. Costs for the program were met by the Shire through rates applied to all residents. Shire staff received training during December and January to set up pupae for emergence, expose flies to ginger root oil, and carry out the releases.

Gingin lufenuron bait feeding stations

A new fruit fly bait developed and used against Mediterranean fruit fly in Spain is being tested on a citrus orchard 90 km from Perth. The gel food source contains the insect growth regulator lufenuron and female fruit flies that ingest the bait lay eggs that fail to hatch. After prolonged feeding, males can also transmit a sterilising effect to females. The bait feeding stations are hung in fruit trees at a prescribed rate per hectare. The system has only been tested so far against Medfly. It is compatible with SIT programs because it is not lethal to sterile male Medfly and provides a food source for visiting flies. The trial is scheduled to run for three years.



Lufenuron bait feeding station



Feeding station for local wildlife

Importation of improved Medfly genetic sexing strain into WA

The VIENNA 7/Mix 99 strain has been in continuous production at the South Perth Sterile Medfly facility since 1999. There are recent indications that the strain is losing competitiveness against its wild counterparts. Geneticists at the International Atomic Energy Agency (IAEA) and the USDA have recommended that VIENNA 7/Mix 99 be replaced with the VIENNA 8 strain. This relatively new strain has advantages in mass production and mating competition. To facilitate importation from Vienna to South Perth, remedial works have recently been instigated in the former Quarantine Insectary to achieve Quarantine Containment level 2. The repairs follow recommendations issued by a certified Quarantine Facility Assessor who inspected the building in 2006. The availability of the VIENNA 8 strain for field release will benefit SIT programs in South Australia and Western Australia.

Improvements to sterile Medfly production facility

A remote sensing system for temperature and humidity was recently installed in the Sterile Medfly Production Facility at South Perth. Key production areas are now monitored continuously and log reports are available. Staff can view temperature and relative humidity conditions in the rearing rooms on a LCD monitor in the central laboratory of the facility. The Delta Trak Flashlink® system is commonly used in cold chain stores in Australia. The usefulness of sensors with external probes for monitoring conditions in larval stacks will be investigated.

Preparations are also underway for the installation of a larger ribbon type mixer to replace the cement mixer currently in use for the making of the larval diet at South Perth. The old hot water system is also being replaced with a larger capacity gas storage system to meet the requirements of the new mixer.

SIT for pest moths

There is increased interest in the use of SIT for eradication and area wide management of moth pests. In Canada there is an operational program on area wide management of codling moth using sterile insect release. New programs against codling moth are being set up in Argentina, Brazil and South Africa. Also in South Africa, work is proceeding on SIT of the damaging citrus pest false codling moth. In California SIT has been used to prevent establishment of populations of pink bollworm in cotton for over 30 years. SIT is being used to prevent the spread of *Cactoblastis* from the southern USA into the native cactus flora of Mexico.

In Australia, as part of a CRC NPB initiative, over the last two years researchers from WA, SA, Victoria and New Zealand have been investigating SIT of light brown apple moth (LBAM). The aim of the project has been to provide Australian researchers hands-on experience in the complexity of moth SIT and to investigate the potential for eradication/area wide management using SIT and other integrated techniques such as mating disruption.

The first stage of the project has been to study the irradiation biology of LBAM. Unlike fruit flies, moths are very resistant to radiation and require doses of around 400 Gy for complete male sterility. However, due to their genetic make up, moths demonstrate what is called inherited sterility. At higher doses the F1 progeny of irradiated male moths are more sterile than their parent and the sex ratio is biased towards males. It is possible to irradiate at a dose that gives 100% female sterility but incomplete male sterility and use inherited sterility to achieve population suppression. In phase 2 of the project we aim to use modelling and field studies to further investigate the complex relationships between parental sterility, inherited sterility, over-flooding ratio and moth competitiveness on the degree of control achieved.

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Fruit fly research in Hawaii

Aloha! Here are a couple of items from my lab in Hawaii. As has been shown with ginger root oil for Medfly and methyl eugenol for the oriental fruit fly, *Bactrocera dorsalis*, we have examined the possibility of increasing sterile male mating efficiency for the melon fly, *B. cucurbitae*, through exposure of sterile males to one of several known melon fly attractants. Compared to the untreated control, melolure, cuelure and zingerone increased the proportion of sterile mating (RSI) values by 26%, 24% and 19% respectively when in competition with wild males in field cages one day after the sterile males were exposed to the lures in small lab cages. Further work is needed to investigate modes of exposure, and the duration of the benefit in mating ability after exposure. This work was presented at the 7th Meeting of the Working Group on Fruit Flies of the Western Hemisphere in Mazatlán, Mexico, in November 2008.

We are also looking at the potential difference between holding Medfly in the lab for five days instead of two days prior to release, and measuring the difference in fly mortality in the holding boxes and the mortality in the field over the same period of time, as evidenced by trap catch in large outdoor field cages. So far, we are finding a big advantage in the number of flies reaching sexual maturity (five days of age) from holding the flies longer in the lab prior to release. The differences have been about 2-3 fold when we provide sugar agar as food in the field cages, compared to 5-10 fold when we don't provide any food or water in the cages.



Exposing sterile male melon flies to lures in a lab cage

Fruit fly research in Hawaii, continued



Exposed sterile male melon flies compete with wild males in a field cage

More recently, most of our work has been on developing the sterile insect technique for light brown apple moth, as has Bill Woods's group in Perth.

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Fruit fly rearing group at FAO/IAEA labs in Austria

The FAO/IAEA Fruit Fly Rearing Group at Seibersdorf, located less than one hour's drive south east of Vienna, consists of one Research Entomologist, four Technicians and several Fellows and visiting scientists. Facilities include a fully-equipped entomology laboratory, several controlled environment rooms and greenhouses, a Gamma Cell irradiator and an X-ray machine. The group maintains lab cultures of different strains of seven pest fruit fly species:

- *Anastrepha fraterculus* (South American fruit fly)
- *Bactrocera dorsalis* (Oriental fruit fly)
- *Bactrocera cucurbitae* (Melon fly)
- *Bactrocera invadens* (Invasive fruit fly)
- *Bactrocera oleae* (Olive fly)
- *Bactrocera carambolae* (Carambola fruit fly)
- *Ceratitidis capitata* (Mediterranean fruit fly).

The objective of the Fruit Fly Rearing Group is to foster collaborative and cooperative research and development into improving the mass rearing of insect pests for the SIT by a) improving techniques for laboratory rearing of fruit fly species, b) supplying test insects to collaborating research agencies around the world and c) training, or obtaining assistance from, Fellows and visiting scientists from member states. The group is conveniently co-located with a number of other groups involved with SIT R&D: the Fruit Fly Genetics, Tsetse Fly, and Mosquito Groups.

Projects currently underway include:

- (a) *B. oleae* – up-scaling of a lab colony to a level suitable for mass rearing and SIT
- (b) *B. invadens* – testing the specific status of this newly described species from Sri Lanka and Africa
- (c) Gamma vs X-ray – comparing the effectiveness and effects of X-rays with Gamma irradiation for use in SIT programs
- (d) Shipment of insects and diet ingredients to other research agencies for collaborative studies on pest fruit flies, including SIT, genetics, nutrition, behaviour, pheromones and speciation.

The researchers at the FAO/IAEA will be collaborating with Australian researchers involved in the CRC NPB project on the specific status of species within the *B. dorsalis* complex in a CRP on fruit fly species complexes and how they impact on SIT programs, due to commence early in 2010. There's also a Lepidoptera SIT/rearing Quality Control CRP being set up. More information on these collaborations will appear in future issues of this newsletter.

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7th International Conference on Integrated Fruit Production

The International Organisation for Biological and Integrated Control of Noxious Animals and Plants / West Palaearctic Regional Section (IOBC/WPRS) Working Group on Integrated Plant Protection in Fruit Crops, 7th International conference on Integrated Fruit Production was held from 27-30 October 2008 in Avignon, France. A record 228 delegates from 32 countries convened to give a total of 200 posters and oral presentations on integrated fruit production, pests and diseases, including six on fruit flies and 60 on Lepidopteran pests (37 specifically on codling moth, *Cydia pomonella*).

The record number of presentations attests to the high level of commitment to the development of environmentally and economically sustainable fruit production systems in the West Palaearctic region. Almost half of the presentations dealt with aspects of IPM but, interestingly, only one of these was on the use of the sterile insect technique, a poster entitled 'The sterile insect technique as a component of area-wide integrated pest management' by Andrew Jessup and Marc Vreysen (FAO/IAEA Labs, Seibersdorf, Austria). It appears that little is known or understood by delegates from this forum on the SIT, despite its current use as a stand-alone strategy or as a part of area-wide IPM in many, seemingly well-documented, fruit fly and Lepidoptera suppression programs around the world. The SIT needs to be more visible.

Andrew Jessup, A.Jessup@iaea.org

7th Meeting of the Working Group on Fruit Flies of the W. Hemisphere

Since its beginnings, the mission of the Working Group on Fruit Flies of the Western Hemisphere (WGFFWH) has been to promote communication among researchers and people working in action programs against fruit flies. The intention of this group has been to provide a platform for sharing experiences and discussing problems in the management of fruit fly pests, in order to focus research and technological innovation to resolve the needs of action programs. A further objective has been to promote collaboration between different institutions of the western hemisphere and the rest of the world, with the aim of optimising the use of human resources and to synergise technical achievements in fruit fly control.

Previous WGFFWH meetings have achieved great success in the presentation and discussion of new knowledge with potential application in the different areas of action programs, with the participation of fruit fly workers from most of the countries in the Americas. On this occasion, the 7th Meeting of the WGFFWH held in Mazatlán, Mexico, from 2-7 November 2008, the objectives and principles that gave origin to this group have been successfully achieved once again. Some 250 participants attended, not only from the Americas, but also from Europe, Asia and Australia. One of the highlights of the meeting was the presentation of Recognition of Merit Awards to Jorge Hendrichs (FAO/IAEA, Austria), Bob Mangan (USDA-ARS, USA) and Aldo Malavasi (Moscamed Brasil, Brazil) for their contributions to fruit fly biology and management.



(l-to-r) Bob Mangan, Aldo Malavasi, Jorge Hendrichs

Abdel Bakri, bakri@ucam.ac.ma

Notifications

●Introducing The Fruit Fly Listserver

A 'fruit fly listserv' has recently been established to facilitate communication amongst researchers, industry groups and administrators with an interest in the biology or management of tephritid fruit flies. It is free and can be used to disseminate information about upcoming meetings, recent publications, new methods, new policies, funding opportunities, scholarships etc. Anyone on the list can post messages, and these are automatically distributed to everyone on the list. It shouldn't ever become a high traffic listserv (it is for distribution of information only, NOT a discussion board) and so won't become an intrusion. But it will hopefully go some distance toward ensuring that information sloshes freely around among the diverse groups with mutual interests in fruit flies. The list is moderated to ensure that any inappropriate postings or spam is filtered out.

Please let me know if you would like to be included on this listserv (it is easy to remove yourself later), and let your colleagues know that this service is now available.

Phil Taylor, ph. (02) 9850 9463, phil@galliform.bhs.mq.edu.au

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●Tephritid Workers Database (TWD)

If you are listed in the Tephritid Workers Database TWD, we would like to update your record and would be very grateful if you could do this online through [www.tephritid.org]. If you are not listed and would like to be a member, first please fill out the [membership form](#) online (you will need to choose your own username and password), then [login](#) and [complete further forms](#) related to your research activity, bibliographic references, the subjects on which your activity is focused, and tephritid genera of interest.

Also, we would like to remind managers of Sterile Insect Technique facilities to update their data in the DIR-SIT Database [<http://www.ididas.iaea.org/IDIDAS/default.htm>]. Please contact us if your facility is not yet listed in the database.

With many thanks in advance for your collaboration and we will be pleased to help if you do not remember your username and password.

*Tephritid Workers Database (TWD) www.tephritid.org

*Tephritid Workers of Europe Africa and Middle East (TEAM)

<http://www.tephritid.org/twd.team/srv/en/home>

*The International Database on Insect Disinfestation and Sterilization (IDIDAS)

<http://www-ididas.iaea.org/IDIDAS/default.htm>

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●Postgraduate Coursework in Plant Biosecurity

As part of its Education and Training Program the CRC for National Plant Biosecurity is offering courses in Plant Biosecurity at three levels: Graduate Certificate, Graduate Diploma and Masters, to be delivered by a group of five Australian universities. Except for a one-week residential component, most units will be available in external mode (on-line) and largely self-paced. The courses cascade into one another, culminating in the Masters degree which includes an industry-based research project and will be recognised in Canada, the USA, New Zealand and Australia.

More information is available at <http://www.crcplantbiosecurity.com.au> under Education and Training.

* * * * *

●Draft National Fruit Fly Strategy

The full document can be downloaded from the Plant Health Australia website at

<http://www.planthealthaustralia.com.au/fruitfly/public.asp?pageID=243>

Calendar

27 April–1 May 2009 Christchurch New Zealand	1 st RCM of CRP on Increasing Efficiency of Lepidoptera SIT Through Enhanced Quality Control http://www.iaea.org
21–25 Sept 2009 Pereybere Mauritius	Final RCM of CRP on Improving Sterile Male Performance in Fruit Fly SIT Programs Final RCM of CRP on Development of Mass Rearing for New World (<i>Anastrepha</i>) and Asian (<i>Bactrocera</i>) Fruit Fly Pests in Support of SIT http://www.iaea.org
25–28 Sept 2009 Darwin Northern Territory	40 th Annual AGM and Scientific Conference http://aes2009.org
2–6 Nov 2009 Fuzhou China	1 st International Congress of Biological Invasions http://www.icbi2009.org
12–17 Sept 2010 Valencia Spain	8 th International Symposium on Fruit Flies of Economic Importance http://www.fruitflyvalencia2010.org

Flying around

Poems about flies seem to be in short supply, in sharp contrast to the variety and abundance of these pesky critters, but there are other insects eager to fill the breach...

“Once upon a time, in a forest far away
Lived a family of ants who cherished every day.
And on one special day in a land beneath the sky
Was born a special ant and his family named him ... Fly.”

Go to http://EzineArticles.com/?expert=Jody_Campbell to see what happens to “An Ant Named Fly”.

... the last word ...

THANKYOU for your contributions to this issue of Australian SIT Network. I hope you've found the articles informative and interesting—please contact the relevant authors for more information on any of the items. I sincerely apologise for the late distribution, but I've appreciated the opportunity to 'have a go'. Vanessa will be back to edit the next issue and will be asking for your contribution shortly. Please send your fruit fly news to Cockington.Vanessa@saugov.sa.gov.au. This newsletter will soon be posted on the SARDI website at <http://www.sardi.sa.gov.au/fruitflysit>.

I wish you lots of success in all your fruit fly pursuits in 2009.

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“We're in the middle of an eradication program and can't afford the luxury of research”. Quoted in Walsh (1981) *Science* **214**: 1221-1223. Thankfully, times have changed.