

AUSTRALIAN SIT NETWORK

AUSTRALIAN NEWSLETTER ON FRUIT FLY STERILE INSECT TECHNIQUE



Issue 03, April 2008

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Foreword

Welcome to the 3rd issue of 'Australian SIT Network Newsletter' in a new layout. This issue focuses on Australian SIT Facilities, SIT programs, research, public relations, and notifications.

Currently, the newsletter is sent out bi-annually. So the next edition is scheduled for Dec 2008. I plan to be on maternity leave but Rose Fogliani (DAFWA) is able to take on the task of collating the articles in December. I hope to be back in April next year, in time for a May addition ;o)

Thank you to everyone who has contributed to this issue and I hope it continues for the future. See you next year.

Regards,
[Vanessa Cockington](#)



South Perth, Western Australia

Three new staff members join the South Perth team

The WA Medfly team recently welcomed three new members to work on the Medfly programme and a new national Cooperative Research Centre for National Plant Biosecurity (CRC NPB) project on light brown apple moth. The past few months has seen a flurry of activity in both facilities with Alven, Michael and Amandip very quickly learning the ins and outs of rearing two different insects with very different requirements, alongside the respective research trials – all this right in the middle of a Medfly outbreak in Ceduna, South Australia, and a sterile release programme in the Shire of Katanning, southeast of Perth.

The trio brings a host of new skills and experience to the team, which will be put to very good use to advance SIT in Australia.

Alven Soopaya has a background in crop physiology, having lectured at the University of Mauritius and conducted research on sugar cane, and more recently has worked at the School of Plant Biology at UWA.

Michael Littlely has worked as an orchardist growing stonefruit in the Perth hills. He recently returned to the Department to work with PaDIS (Pest and Disease Information Service). Mike's direct experience with Medfly and other horticultural pests and his industry connections have already proven invaluable in recruiting co-operators for our trapping trials.

Before joining the team, Amandip Kaur worked as a surveillance officer with DAFWA's apple scab group and, prior to that, with the grain products laboratory. She has a background in technology transfer and agricultural extension education.

New to the team (l to r): Alven Soopaya; Michael Littlely and Amandip Kaur. Photo by Peter Maloney, DAFWA.



Contact: Rose Fogliani 08 93683886

Tatura, Victoria.

New SIT facility

The long awaited Victorian SIT facility is currently in the final stages of being commissioned. A program of 9 weeks of releases is planned to test out the facilities equipment and release methods, with the aim of tackling a small Qfly outbreak using SIT next during the 2008/2009 season.

Tatura SIT Facility



A visit to SA by Victorian SIT officer Ingrid Stava in January has greatly benefited the Vic SIT program. The collaboration with SA researcher Vanessa Cockington enables Ingrid to learn valuable QC techniques that will be incorporated into future VIC release programs. Being able to witness different release methods was a highlight and will positively contribute to the Victorian methods of QFF release. It is hoped that the visit enables greater communication between the states and can help increase the exchange of ideas between all Australian SIT researchers.

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Two outbreaks declared

SARDI entomology was delivered suspect wild flies to be confirmed which were caught in South Australia's permanent trapping grid. The confirmation of the wild flies led to PIRSA declaring a Medfly outbreak in Ceduna in January 2008 and a Qfly outbreak in Daw Park in February 2008.

At the Ceduna medfly outbreak the Department of Agriculture and Food Western Australia (DAFWA) has loaned Primary Industries and Resources South Australia (PIRSA) a portable controlled temperature room (shown in photo below) and with their assistance a pre-release treatment of ginger root oil (GRO) aroma was established for the medfly sterile release program. They are using ventilated buckets and GRO wicks hung in the rearing room to increase the sexual competitiveness of the sterile males before release. The Western Australian group describes the detail of this treatment in the following article 'Shire Council in WA Invests in Novel Approach to Fruit Fly Control outbreaks'.

Both outbreaks have had a period of Naturalure baiting (baiting team for the Daw Park outbreak shown below) to lower the wild flies and are currently in the middle of sterile insect release programs. SARDI and PIRSA work closely together to formulate the best program possible with the current resources.

Daw Park baiting team with Senior Plant Health Inspectors Wayne Marshall and Lib Colagiovanni. Sent in by P Morrison (PIRSA)

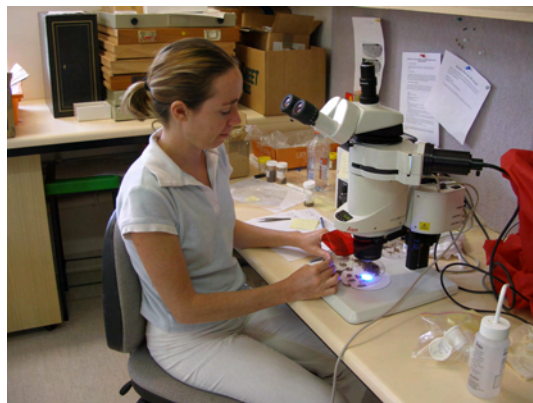


WA developed the room design for their regional programs, and loaned it to PIRSA for this outbreak.



Laboratory quality control (QC) tests are carried out on every batch of sterile Medfly and Qfly to the IAEA standard. PIRSA's Plant Health Inspectors conduct the pre-release QC and subsequent identification of recaptured sterile Medfly in their mobile office in Ceduna. Lakshmi Nacey (SARDI/PIRSA) carries out the same work for Qfly in Adelaide, and provides support for the Medfly program where needed. Ms Nacey is shown below identifying recaptured steriles.

Lakshmi Nacey (SARDI/PIRSA) at SARDI identifying fly trap captures.



Shire Council in WA Invests in Novel Approach to Fruit Fly Control outbreaks

Fruit Fly control has taken a new approach in Katanning, a prosperous wheatbelt town with large residential blocks and beautiful gardens, many with stone fruit trees. Although it is a non-commercial fruit production area, town residents were keen to put an end to their days of eating fruit infested with Medfly. They lobbied the Shire to re-introduce an efficient fruit fly control program. After problems with debt collection for "user pays" schemes, the Shire decided to include a Medfly control program in their budget. The cost is covered by Shire rates in the same way that many other services are provided by the Shire. This is regardless of whether or not the service is used by individual ratepayers. Shire Secretary and long time town resident Val Jolly has been a key advocate and organiser of the program.

A 5-month baiting scheme was started in 2002-03 using Trichlorfon and protein fruit fly bait. This was modified in 2003-04 to a 7 week baiting program before Christmas followed by 12 weeks of coordinated mobile ground release of sterile male Medfly. The activities were initially part of the Department of Agriculture and Food Western Australia (DAFWA) field trials. The Shire has also invested in 2 constant temperature (CT) rooms in which they rear sterile flies emerging from pupae. Sterile pupae delivered from the DAFWA production facility at South Perth are partially paid for by the Shire along with other related consumables. Shire employees receive training and support by DAFWA staff for fruit fly baiting and the Sterile Insect Technique. Shire Works Manager, Willie Roe and his team headed by Vicky Wallace have provided logistical support through the allocation of staff and modifications to equipment. The fruit fly population is monitored by 30 sentinel traps placed throughout the 5km² town area. The traps are serviced mainly by Shire staff and audited by DAFWA.

Techniques for the Katanning program have been refined in several areas over a five year period. The Shire now uses an organic fruit fly bait (Naturalure®) containing the insecticide spinosad. Although it is three times the cost of a trichlorfon bait, the choice of this organic product is based on its efficacy, improved acceptance by town residents and its safety for operators. The 2007-08 fruit fly control program also used recent improvements to the Sterile Insect Technique to protect fruit grown for home consumption. The exposure of 3 day old adult flies to ginger root oil aroma and releasing them when they are sexually mature 4-5 day old adults instead of immature 1-2 day old flies was implemented as standard practice for the first time. Larger 100ml containers of agar gel were used to supply sufficient food for the adult flies during their 5 days of containment

Ginger root oil is a source of alpha copaene, known to enhance the mating competitiveness of male Medfly. Ant proof mesh windows were added to the 5 litre paper tubs used to house the sterile flies before their release from a moving vehicle. The vented tubs allow aroma from cotton wicks impregnated with ginger root oil and placed in the CT rooms for 24 hours to enter the tubs. Ginger root oil was used at a rate of 0.5ml/m³ of room space. This technique originated mostly from the work of Todd Shelly and Don McInnis, USDA. The practices were also an extension of verification tests conducted by the Department of Agriculture and Food in collaboration with the USDA, SARDI and Agriculture NSW in 2007.

Each paper tub contained around 40ml of pupae and over 1 million flying sterile flies were released each week. Sterile flies were released twice each week for a total of 8 weeks. The monitoring traps (Jackson sticky type) are checked weekly in for four weeks after the last release of sterile flies. Any wild fly detections are reported to the Shire by DAFWA and are dealt with by the Shire, usually by baiting.

The Medfly population in Katanning has been reduced significantly since before the start of the control program five years ago. Only 2 wild Medfly have been trapped during the 7 week baiting period in 2007-08 and no wild Medfly were captured during January, February and early March during the sterile fly release period. There have been no reports of infested fruit from residents and there has been much community support for the program.



Flies in tubs being exposed to Ginger root oil aroma



The release of sterile male Medfly by Katanning Shire staff. Photos by Simon Eyres (DAFWA)

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Wagga Wagga Agricultural Institute

After 15 months in her role as a Research Entomologist with NSW DPI, Dr Olivia Kvedaras has established and completed a number of research experiments pertaining to the control of the Queensland fruit fly 'Qfly'.

A national project, funded by the Cooperative Research Centre for National Plant Biosecurity (CRC NPB) and Horticulture Australia Limited (HAL), which aims to validate a strategic trapping system to prove and effectively manage area freedom from fruit flies, has now established trapping sites in NSW and WA. Olivia leads the NSW component and her team have successfully established the first trial, with trapping sites in Cootamundra, Gundagai & Junee. In each town 16 strategic traps (located on a fixed grid point, 400m apart in either a fruit tree or a broadleaf evergreen) and 16 dynamic traps (also located on a 400m grid but always in a fruiting tree) are being compared and are monitored on a weekly basis. Jianhua Mo, NSW DPI is also looking at historical trap catch data in NSW, with the assistance of Bernie Dominiak, to compare wild Qfly numbers in fruiting trees as opposed to non-fruiting trees. The overall aim is for a reduction in total trap numbers and strategic placement of traps, while still maintaining trap catch efficiency. Thereby reducing the costs of servicing the traps and avoiding placement of traps where fruit flies are unlikely to be caught, if present.

In recent years, there have been issues with regards to the post-production performance and adequate dyeing of the sterile Queensland fruit fly which has led to the cessation of the use of the sterile insect technique (SIT) within the NSW FFEZ. One of Olivia's major projects on the SIT, funded by HAL, is directly addressing this issue and aims to optimise the sterile insect technique for Qfly, so that its use in the FFEZ can be reinstated. This season has involved a number of research experiments seeking to improve the current SIT methods for emergence and release of sterile Qfly, including comparison of pupal loadings for pupal release under varying temperature and humidity, use of different pupal substrates for pupal release, PARC box loadings for use in adult release and a comparison of the adult release methods used by NSW (PARC box) and SA (bin) (Fig 1); the latter in collaboration with SA. An important aspect of all of this work has been ensuring that adequate dye on the ptilinum is obtained and thus far, all sampling completed has shown adequate dye attainment on the ptilinum (Fig 2).

A trial which is soon to commence will look at the effect of chilling adult Qfly, for use in chilled adult release, on recovery, longevity and flightability. This will be followed up next season with field cage and field trials.

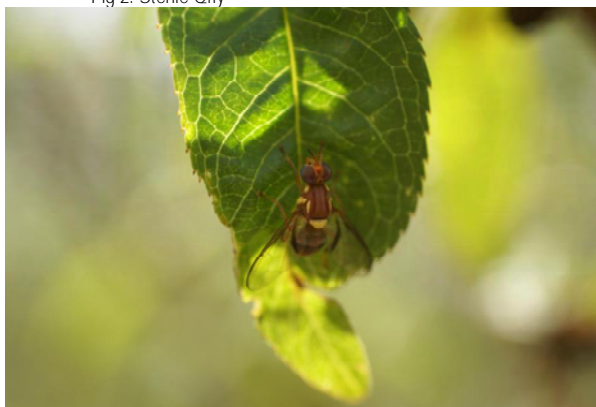
In April, Olivia will be attending the 'Third Research Coordination Meeting on Improving Sterile Male Performance in Fruit Fly Sterile Insect Technique Programmes', Valencia, Spain. Olivia's attendance at this meeting, which is specifically addressing post-production issues of sterile fruit fly performance, is of direct relevance to her current work and will allow her to assimilate the latest ideas in this area, and also establish contact with overseas researchers who have expertise in this area.

In May, Olivia in collaboration with Prof. Geoff Gurr (CSU, Orange) and Andrew Jessup (IAEA, Vienna, Austria) will be welcoming two Masters students from Imperial College, London for three months. Corin and Anna will be based at CSU, Wagga under the direct supervision of Olivia and will be completing the research component of their Masters looking at the effects of different radiation dosages on both the development of the Queensland fruit fly and the performance and development of two of its braconid parasites, *Diachasmimorpha tryoni* and *Fopius arisanus*. This project has been awarded funding and support from the Australian Institute of Nuclear Science and Engineering and the University of Sydney Rural Management Research Institute. This project will assist the development of a complementary, non-chemical approach: biological control using parasitic wasps and a PhD project along these lines is currently under review by the CRC NPB. The PhD project has already received financial support from Riverina Citrus with matching voluntary contribution funds from HAL.

Fig 1: Olivia Kvedaras with a Bin and PARC box (crate)



Fig 2: Sterile Qfly



South Australian Research and Development Institute (SARDI)

Methoprene increasing sexual maturity

SARDI entomology have been working on sterile Queensland fruit fly (Qfly) mating trials involving both topical application and feeding of the juvenile hormone analog methoprene at our Waite insectary. Overseas preliminary work, on other *Bactrocera* species, have applied methoprene to sterile male flies indicating that the rate of sexual development may increase.

We tested the effect of methoprene topical application on the sexual maturity of flies using mating competition trials. Treated males were placed in bugdorm cages (shown in photo below) with control males and mature females. Mating pairs were collected and the male identified with respect to its treatment (assigned rotating fluorescent dye colours). The results of these trials indicated a significant effect of day and treatment on the likelihood of mating, confirming that flies mature earlier when the methoprene is applied topically.

In practice, during SIT programs very large numbers of flies would need to be treated and it is envisaged that the substance would be incorporated into the food or water supply. We have just completed a series of replicates using the following treatment groups: 0.05% methoprene in 5% sugar water provided for 24 hours or for 48 hours and the topical application. Mating competition trials were again conducted in bugdorms. The results are being analyzed.

Bugdorm mating cage under SARDI insectary dusk conditions



Bin versus Crate Queensland fruit fly releases

We have also been working on a joint project with Olivia Kvedaras (NSW Dept of Agriculture) comparing the recapture rates of sterile Qfly that have emerged within either 45L garbage bins or crates. The final of four bin vs crate releases was on the 12th of March 08 and we are still awaiting the final recapture results over next month. Below is a photo of the rearing set up for this experiment at PIRSA's Netley rearing facility.

Bin and crate setup at the Netley rearing facility



New SARDI microscope

Leica MZ 16 FA fluorescence stereomicroscope

A fantastic microscope for identifying sterile fruit flies with a blue and violet filter set has recently been purchased. SARDI is now able to view all colour dyes used on sterile pupae from both the Camden (NSW) and Perth (WA, also with a similar microscope set up) fruit fly rearing facilities. We would recommend our set up to anyone wanting to view a range of fluorescence dyes.

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Macquarie University

Basic and Applied SIT Research and Training at Macquarie University

While the general themes of our research have not changed much since the last newsletter, we have made some considerable advances in our understanding both of basic Q-fly biology and of some applied issues over the past year. As ever, the more we learn about Q-flies and Q-fly SIT, the more new questions and possibilities we uncover. In coming months we will have many publications coming through on diverse topics including, to name a few, cue-lure responses, remating inhibition, balancing nutrition, optimisation of irradiation treatment, male calling and courtship songs, and development of more refined Quality Control (QC) protocols. We have some new faces in the group this year but, sadly, we are also losing several of our most valued members who are graduating to the next stage in their research careers.

Dr Diana Perez-Staples, who has been an integral part of the group since 2005 (supported by Fellowships from DEST Endeavor and UNESCO-L'Oreal), is returning to Mexico in May to take up a much-deserved academic position at Universidad Veracruzana. We owe Diana a debt of gratitude for the many contributions she has made to the knowledge base on which SIT rests. During her time in the group, Diana has worked on potential benefits of pre-release protein feeding, sperm storage and use by mates of sterile and fertile males, costs and benefits of female remating, male and female control of copulations, and aromatherapy. She will be missed.

Preethi Radhakrishnan, supported by a scholarship from Macquarie University, has recently completed her PhD research on mechanisms regulating female remating inhibition in Q-flies and will soon be leaving us to take up a post-doc position at Central Florida University. Preethi's work has been valuable in illustrating that sterile male Q-flies are grossly deficient in sperm transfer and are unable to replenish sperm supplies after mating so that their later copulations are almost entirely aspermic. Wild females that mate with both a sterile and a wild male will retain high fertility because most or all of their stored sperm will be fertile ones from the wild male. However, Preethi has also found that the lack of sperm does not impede sterile male ability to inhibit female remating through molecules transferred in the ejaculate and passed into the female's body, and this helps to ameliorate the problem: thirty to forty percent of females are expected to remate regardless of whether their first mate is a sterile or fertile male. Preethi's work has provided us a great start in this area, but more than anything has served to illustrate how little we still know about the Q-fly mating system through which SIT operates.

Dr Chris Weldon, supported by grants from Horticulture Australia Ltd, has been working in close collaboration with Diana, Preethi, Sam, and Wendy, and has also been gathering some very interesting data on how adult nutrition influences cue-lure responses of both male and female Q-flies. This work has recently been accepted for publishing. As always, keep an eye on our website to keep up to date with recent and forthcoming publications. This year Chris is presenting the findings of our HAL-funded research in Valencia, Spain, at an IAEA CRP meeting (also on behalf of Cathy Smallridge and Vanessa Cockington).

Sam Collins, whose PhD research is funded by a joint scholarship from a Horticulture Australia Ltd grant and Macquarie University, has been working toward optimisation of irradiation procedures for sterilization of Q-flies, as well as testing some of the basic assumptions of the standard QC protocols (which were mainly developed for medflies and later applied to other species with little modification for species differences). He has recently completed studies of field cage design and how irradiation dose rate influences Q-fly quality and sterility, and both have recently been accepted for publishing. His current work focuses on standardisation of 'flightability' and 'mortality under stress' tests, as well as some particularly valuable work on how total irradiation dose influences sterile Q-fly quality and sterility. Perhaps there is room to improve fly quality through reduced irradiation dosage without any reduction in sterility.

Wendy Rahtz, a new member of the group, is an Honours student working on larval diets in Q-flies. The overall goal of her work is to test some alternative diets that might be of value in mass-rearing programs. Of particular interest, Wendy is linking the larval diet work with size, a full range of QC tests, and biochemical analyses of nutritional stores of newly emerged flies. These links among different measures of quality that have been used separately in various tephritid studies have never been adequately explored together in any fruit fly, and so this work has great novelty and will provide some much needed integration.

Ben Fanson is a new PhD student (from USA), funded by a scholarship from Macquarie University, who will be working on optimal Q-fly nutritional strategies for reproduction and longevity for the next 3½ years. Ben arrives in June and we are very much looking forward to the interesting theoretical territory into which his research will take us, and then how we can apply the knowledge gained in enhancement of Q-fly SIT.

As for myself, I have been kept very busy with writing grants, planning experiments, and preparing manuscripts with staff and students of the group as well as with colleagues elsewhere. It has been a successful and rewarding, but challenging, year since the last newsletter. As for all Q-fly and SIT researchers, funding is a constant concern. It is an especially pressing concern for the basic biology and mating system research that provides the essential foundation for any applied work and yet is itself difficult to place a dollar value on. Regardless, the next year is looking to be at least as productive as the last and we look forward to telling you all about it in the next newsletter.

For further information, see: <http://galliform.bhs.mq.edu.au/~phil/>

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NSW DPI

Tub release densities do matter

One of the problems faced by release teams in the field is the balancing act between high quality release flies and how many flies per container. If a small number of flies are placed in each adult release container then there will be many container, and this all takes extra "administration". There will be additional trips with release tubs, all consuming extra time and fuel. So the temptation is to increase the tub densities to overcome the extra work of release.

In an earlier trial, we loaded tubs with up to 60,000 pupae and evaluated the impact on emergence and adults. We also tested the loose method of leaving pupae in the bottom of a container and compared it with bagged pupae in a mesh bag. Eclosion rates were significantly higher for bagged (average 85%) than loose (average 79%) treatments. Emergence rates declined significantly at rates higher than 30,000 pupae per container. Non-emerged pupae remained largely unchanged however partly emerged pupae increased significantly above loadings of 30,000. The number of viable adults also declined as the loading increased. The combination of declining emergence and lower proportion of viable adults does little to support high loadings. The results suggest that increasing tub loadings to overcome operational concerns is not a good strategy.

Contact: Gus Campbell or Bernie Dominiak 02 63913703

LBAM research

DAFWA

Aloha from Christchurch

In February a meeting was held in Christchurch, New Zealand, as part of the joint CRCNPB(Australia) & B3(NZ) project aimed at developing more effective means to eradicate exotic pest incursions. Participants were welcomed to HortResearch at Lincoln by Science Leader, Max Suckling, and toured the impressive laboratory facilities. Scientists from WA, SA, Vic, ACT & NZ were resplendent in the team uniform: Hawaiian shirts. Visiting USDA scientists Eric Jang & Don McInnis gave the meeting a true Hawaiian touch. Light brown apple moth has been chosen as the model species for this project. Topics discussed included LBAM taxonomy, radiation doses required for sterility, inherited sterility, mass rearing and integrated approaches to pest eradication. The next meeting will be in Melbourne in August.

Participants of the joint CRCNPB(Australia) & B3(NZ) project



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Field Cage Competitiveness Testing for Moths

The midnight oil or at least the LED head torches were burning during recent light brown apple moth (LBAM) trials at the Department of Agriculture and Food, South Perth. Bill Woods and his team along with visiting USDA/ARS researcher Don McInnis from Hawaii ran mating competitiveness tests with the night mating moths. The research is funded by the CRC for National Plant Biosecurity. The experience gained in running similar tests with fruit flies was used to set up the trial.

Male and female LBAM were irradiated either as pupae or adult moths. The moths were released into one of five cylindrical tents according to their treatment. Each tent had an observer. Sterile and normal male moths competed in the tents for either sterile or normal female mates. LBAM mate after dark so it meant a midnight finish for all the staff involved. Data from the matings will indicate sterility levels and competitiveness values for each group of sterilised males.

These tests being conducted for the first time on LBAM have provided an opportunity to develop new techniques. Information from the results will contribute to the development of SIT control methods for LBAM populations. It is particularly relevant to California where an eradication program against LBAM is underway.



Light from head torches illuminates tents during LBAM tests



Don McInnis (USDA) and Ernie Steiner (DAFWA) searching for mating LBAM during recent tests (photos : [Simon Eyres](#))

Contact: Ernie Steiner 08 9368 3584

Public Relations

DAFWA

Science in action through education

The WA Medfly team is regularly host to visiting scientists, industry representatives and decision makers, as well as student groups from all levels, providing an insight into what's involved in rearing the millions of insects required for an SIT programme. This was taken a step further in late 2007 when, with the co-operation of researchers in various sections of DAFWA, two full-day programmes were organised to educate school principals and science teachers about work being undertaken at the Department. The objective was to equip them with information and ideas to integrate into their teaching and, hopefully, spark an interest in science in their students.

The feedback from the attendees was very favourable and it is hoped that in future the programme can be expanded and refined to provide an opportunity for professional development for science teachers which will eventually lead to more students taking up serious studies in science.

Phil Lawrence (centre, with green cap) demonstrates larvae collection to teachers visiting the Medfly rearing facility.



Steve Gibellini (1st Left) answering questions

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PIRSA

Fruit Fly Exclusion Zone

As a direct response to the current Daw Park Qfly outbreak PIRSA has been conducting random mobile roadblocks on roads leading into the Riverland segment of the Fruit Fly Exclusion Zone. Andrew Tomkins from Vic DPI and Andrew Green Executive Officer SA Citrus Industry Development Board (photo 1) visited the Blanchetown Random Roadblock with Bruce Baker PIRSA's Manager Compliance and surveillance recently and Peter Morrison CLO. At the same time DPI Vic were operating random roadblocks between Euston and Mildura on the Sturt Highway in NSW. The cooperative three state approach ensures that travellers going into the FFEZ are being reminded of the importance of the zone.

Photo 1: Bruce Baker (far left), Andrew Tomkins from Vic DPI (Centre white shirt and tie) and Andrew Green Executive Officer SA Citrus Industry Development Board (light trousers and green shirt).



Photo 2: Signs in South Australia

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Notifications

Please contact [Rose Fogliani \(rfogliani@agric.wa.gov.au\)](mailto:rfogliani@agric.wa.gov.au) if you would like to contribute to the next newsletter in Dec 2008.

1 st Meeting 7 th to 8 th April, 2008.	TEAM-Tephritid Workers of Europe Africa & the Middle-east. 1 st Meeting on current Advances in the Ecology of Fruit Flies of Europe, Africa & the Middle East. More detailed information (2 PDFs) is on http://www.sardi.sa.gov.au/fruitflysit At the University of the Balearic Islands in Palma of Mallorca, Spain. http://www.uibcongres.org/congresos/programa.en.html?cc=145 Contact: Abdel Bakri (bakri@ucam.ac.ma)
World-Wide Directory of SIT Facilities (DIR-SIT)	DIR-SIT is a sub-database of IDIDAS (The International Database on Insect Disinfestation and Sterilization). It is being developed with the objective of aiding the retrieval of information on all mass rearing facilities of sterile pest insects, ticks and mites. The database compiles information on production size, radiation process, quality control parameters, dosimetry, programme objective, trans-boundary shipment, field release data, and the facility staff and full address. The content of the directory is under the responsibility of the facility's editor, who may update the information over the Internet to fulfill the new requirement of their program. Abdel Bakri would be glad to add records of SIT facilities not yet in the DIR-SIT database. http://www-ididas.iaea.org/IDIDAS/default.htm Contact: Abdel Bakri (bakri@ucam.ac.ma)
Australian Entomological Society's 39 th AGM and Scientific Conference 28 th September to 1 st October 2008	In Orange Agricultural Institute, Orange, NSW. www.aes2008.org
TWD	Invitation to add your record to the Tephritid Workers Database (TWD). www.tephritid.org
Australian SIT Network Web Page	http://www.sardi.sa.gov.au/fruitflysit

Flying Around

Poem

The Fly
Poem lyrics of The Fly by William Blake.

Little Fly,
Thy summer's play
My thoughtless hand
Has brushed away.

Am not I
A fly like thee?
Or art not thou
A man like me?

For I dance
And drink, and sing,
Till some blind hand
Shall brush my wing.

If thought is life
And strength and breath
And the want
Of thought is death;

Then am I
A happy fly,
If I live,
Or if I die.