Australian Government

Rural Industries Research and Development Corporation

# TEA TREE OIL

## RIRDC Completed Projects in 2010 - 2011 and Research in Progress as at June 2011

RIRDC Publication No. 11/125

RIRDC Innovation for rural Australia


# TEA TREE OIL

## RIRDC Completed Projects in 2010–2011 and Research in Progress at June 2011

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*RIRDC Completed Projects in 2010–2011 and Research in Progress at June 2011 - Tea Tree Oil*
*Publication No. 11/125*



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In submitting this report, the researcher has agreed to RIRDC publishing this material in its edited form.

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# Foreword

RIRDC produces summaries of completed and continuing projects for each financial year. Our intention is to:

- provide stakeholders with early access to the results of ongoing and completed work to inform their decisions, and
- inform researchers of results to shape research directions.

Tea Tree Oil *RIRDC Completed Projects in 2010–2011 and Research in Progress at June 2011* contains short summaries of projects funded by the Program. The Tea Tree Oil Program aims to support the continued development of a profitable and environmentally sustainable Australian tea tree oil industry that has established international leadership in marketing, value adding, product reliability and production.

The research objectives of the Tea Tree Oil Program are to:

1. enhance production systems to maintain the competitiveness of Australian growers
2. identify regulatory regimes and market barriers, and enhance the ability of industry to meet safety standards
3. demonstrate proof of concept/efficacy for innovative applications of tea tree oil
4. foster communication that increases understanding and thereby encourages greater use of tea tree oil.

This report is an addition to RIRDC's diverse range of over 2000 research publications most of RIRDC's publications are available for viewing, free downloading or purchasing online at www.rirdc.gov.au. Purchases can also be made by phoning 1300 634 313.

**Craig Burns**
Managing Director
Rural Industries Research and Development Corporation

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### Demonstrate proof of concept/efficacy for innovative applications of tea tree oil



### Enhance production systems to maintain the competitiveness of Australian growers



### Foster communication that increases understanding and thereby encourages greater use of tea tree oil

# Completed Projects – Demonstrate proof of concept/efficacy for innovative applications of tea tree oil

## PRJ-002334 Tea tree oil for control of sheep ectoparasites

| | |
|---|---|
| **Start Date:** | 01/10/2008 |
| **Finish Date:** | 29/09/2010 |
| **Researcher:** | Peter James |
| **Organisation:** | The Department of Employment, Economic Development and Innovation, Queensland |
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| **Objectives** | Increasing the market for tea tree oil by:<br>1. Demonstrating the effectiveness of tea tree oil (TTO) formulations in controlling sheep lice (*Bovicola ovis*) at concentrations that make development of a commercial formulation economically viable.<br>2. Demonstrating the effectiveness of a TTO based formulation in treating flystrikes and protecting wounds against new strikes.<br>3. Providing data towards the assessment of the commercial feasibility of development of TTO-based sheep ectoparasiticides and that can support registration of TTO products suitable for use in conventional and organic production systems. |
| **Background** | Tea tree oil has documented insecticidal and repellent effects against a range of arthropods and potential for its use in 'natural' pesticides has been widely canvassed. TTO composition is stipulated under international standard ISO4730A. The wool and sheep meat industries are well placed to capitalise on growing consumer attraction for natural products and there is increasing demand for safe, environmentally benign, low residue pest controls and particularly those that could be accredited for use in organic production systems. Veterinary pesticides and repellents, and in particular those for use in the sheep and wool industries represent a significant potential market for tea tree oil. |
| **Research** | A series of laboratory and animal studies were undertaken to develop formulations suitable for application to sheep and to test insecticidal and repellent effects against different stages of sheep lice (*Bovicola ovis*) and sheep blowflies (*Lucilia cuprina*). |
| **Outcomes** | Sheep blowflies: TTO demonstrated insecticidal effects against all stages of sheep blowfly maggots. TTO was also shown to be strongly repellent to blowfly maggots with most rapidly evacuating TTO treated areas. Insecticidal effects, often by fumigant action, were also observed against eggs, pupae and adults of L. cuprina.<br>TTO formulations were also strongly repellent to adult L. cuprina and in laboratory studies with treated wool, suppression of egg laying was evident for up 6 weeks.<br>Sheep lice: In laboratory wool dipping assays, 1% TTO formulation reliably gave 100% kill of lice. The majority of this effect appeared to be due to fumigant effects from the most abundant component of TTO, terpinene-4-ol. There were also ovicidal effects against lice eggs. Dipping heavily louse-infested sheep in TTO formulations two weeks after shearing appeared to eradicate lice. No lice were found on any treated sheep at inspections of at least 40 fleece partings per animal at 2, 6, 12 and 20 weeks after treatment.<br>In studies of long wool efficacy, jetting sheep with 6 months wool with TTO |

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| | formulation reduced louse numbers by up to 94% in comparison to controls and significantly reduced wool damage. |
| **Implications** | With its documented antimicrobial effects and reputed wound healing properties, toxic effects against young larvae and eggs, repellent action against older larvae and repellent effects against gravid female flies it is considered that TTO could be a useful ingredient in flystrike and wound dressings and protectants.<br><br>Eradication of lice by dipping with TTO formulations and results from jetting studies suggest potential for the development of a TTO-based dipping and jetting formulations. |

# Completed Projects – Demonstrate proof of concept/efficacy for innovative applications of tea tree oil

### PRJ-002395 Anticancer activity of *Melaleuca alternifolia* (tea tree) oil

| | |
|---|---|
| **Start Date:** | 02/10/2007 |
| **Finish Date:** | 01/06/2011 |
| **Researcher:** | Thomas Riley |
| **Organisation:** | University of Western Australia |
| **Phone:** | (08) 9346 3690 |
| **Fax:** | (08) 9346 2912 |
| **Email:** | triley@cyllene.uwa.edu.au |
| **Objectives** | The major objectives of this study are to:<br>1. Optimise the in vivo administration of topical tea tree oil (TTO) treatment in subcutaneous tumour bearing mice to establish its maximum efficacy.<br>2. Identify and investigate the in vivo mechanism of action of TTO on tumours. |
| **Background** | Topical delivery of chemotherapy represents a non-invasive, convenient method of treating tumours of the skin. We have previously identified that tea tree oil can inhibit the growth of and kill cancer cells in vitro. Moreover, in our preliminary animal studies, topical tea tree oil formulations inhibited growth and temporarily cleared solid tumours in mice. These observations warranted further investigation, to confirm this effect, and to identify how topical tea tree oil reduces/regresses tumour size. |
| **Research** | Tumours implanted under the skin in mice were allowed to grow to a size of $9mm^2$. Tumours were then treated topically by rubbing the skin/tumour area, with a combination of tea tree oil with a chemical to reduce its evaporation and increase its penetration through the skin. This study aimed at examining the effect of this topical treatment on tumours and how topical tea tree oil may inhibit tumours from growing and induce regression of tumours. |
| **Outcomes** | The combination of tea tree oil with a skin penetration enhancer applied topically to the skin of mice bearing solid tumours inhibited the growth of and induced temporary tumour regression. A number of different doses and combinations of tea tree oil with other agents were also tested. The most effective topical tea tree oil formulation is safe, with no toxic side effects; the only reported effect was some skin irritation which resolves completely after treatment. Importantly, this skin irritation may be necessary for tea tree oil to induce its anti-tumour effect, as our studies have shown that topical tea tree oil stimulates the immune system to inhibit the tumour from growing. |
| **Implications** | The results of this study demonstrate for the first time, the remarkable effect of topical tea tree oil formulations on solid tumours in mice and are extremely promising. This study has great potential to translate into the clinic for the treatment of human patients with skin cancer or precancerous lesions. |
| **Publications** | Greay, SJ, Ireland, DJ, Kissick, HT, Heenan, PJ, Carson, CF, Riley, TV, Beilharz, MW, Inhibition of established subcutaneous murine tumour growth with topical *Melaleuca alternifolia* (tea tree) oil. Cancer Chemother Pharmacol, 2010. 10.1007/s00280-010-1267-3.<br>Greay SJ, IDJ, Kissick HT, Levy A, Beilharz MW, Riley TV, Carson CF, Induction of necrosis and cell cycle arrest in murine cancer cell lines by *Melaleuca alternifolia* (tea tree) oil and terpinen-4-ol. Cancer Chemother Pharmacol, 2010. 65(5): 877 |

# Completed Projects – Demonstrate proof of concept/efficacy for innovative applications of tea tree oil

### PRJ-003529 Can tea tree oil prevent the development of antibiotic resistance?

| | |
|---|---|
| **Start Date:** | 30/10/2009 |
| **Finish Date:** | 01/04/2011 |
| **Researcher:** | Kate Hammer |
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| **Phone:** | (08) 9346 3288 |
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| **Objectives** | The major objective of this research project is to investigate the effects of low levels of tea tree oil and terpinen-4-ol on the rate at which resistance to antibiotics develops in vitro using the test organisms *Staphylococcus aureus* and *Escherichia coli*.<br>The specific objectives are to:<br>1. Determine whether tea tree oil or terpinen-4-ol alter the frequency of single-step antibiotic-resistant bacteria.<br>2. Determine whether tea tree oil or terpinen-4-ol prevent or slow the development of resistance using a serial-subculture assay conducted over several days.<br>3. If appropriate, characterise any antibiotic tolerant or resistant organisms that may arise. |
| **Background** | Resistance to antibiotics, including antibacterial and antifungal agents, is an enormous problem in modern health care. The discovery of antibiotics revolutionised medicine in the twentieth century and their decline in efficacy due to increasing resistance is potentially disastrous. Whilst there are many strategies in place aimed at reducing rates of resistance acquisition such as prescribing antibiotics less frequently and optimising duration of therapy, these tactics are not always enough to halt resistance acquisition by microorganisms.<br>Tea tree oil is well-recognised for having antimicrobial activity, shown in numerous laboratory studies and human clinical trials. However, its use as a valid therapeutic agent is still not widespread. This study proposes to investigate a novel mechanistic angle that may increase the acceptability of tea tree oil, namely antibiotic resistance prevention. This study will test the hypothesis that low (sub-inhibitory) levels of tea tree oil can slow the rate at which microorganisms become resistant to antibiotics. If this is shown, it would have enormous benefits in terms of both extending the life of many antimicrobial agents and providing a unique mechanistic action for tea tree oil. |
| **Research** | 1. Frequencies of single-step antibiotic-resistant mutants<br>This assay allows for the detection of organisms that have become antibiotic resistant by a single genetic mutation (single-step). The effects of the presence of tea tree oil on single-step mutation frequencies for 4 antibiotics was determined for 10 isolates of *Staphylococcus aureus* and 10 isolates of *Escherichia coli*. Organisms were cultured in the presence and absence of tea tree oil then cultured on solid media containing antibiotics, with or without tea tree oil. Frequencies occurring in the presence and absence of tea tree oil were then compared.<br>2. Multi-step method to generate antibiotic-resistant mutants in vitro<br>This method allows for one or more step-wise mutations (multi-step) to occur in the test organism during exposure to the antibiotic, resulting in antibiotic |

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| | resistance. This is achieved by inoculating test organisms into a series of dilutions of antibiotic in broth, with and without tea tree oil and incubating for a total of 6 days. Each day organisms growing in the highest concentration of antibiotic alone or antibiotic with tea tree oil are transferred into a fresh set of dilutions of antibiotic with or without tea tree oil and the process repeated. The step-wise development of resistance can then be recorded and the presence of tea tree oil evaluated. |
| **Outcomes** | Antibiotic resistance frequencies differed significantly in the presence and absence of tea tree oil in several instances for both *S. aureus* and *E. coli*. However, differences in frequencies were generally of no more than 1 log in magnitude and were therefore relatively minor. Put differently, the presence of tea tree oil did not have a major impact on the occurrence nor survival of single-step mutants.<br><br>Similarly, some significant differences were seen when tea tree oil or terpinen-4-ol were present in multi-step antibiotic resistance assays. However, these differences did not follow any obvious trends and were not large so were therefore considered to have limited implications. Since no unusual or distinctive antibiotic resistant mutants were seen, research objective 3, which was to (if appropriate) characterise any antibiotic tolerant or resistant organisms that may arise, was not pursued.<br><br>Both assays demonstrated that tea tree oil and/or terpinen-4-ol appear to have little impact on the development of antibiotic resistance. |
| **Implications** | The implications of this research for industry are that the acceptability of tea tree oil may be increased and new markets developed which will result in increased sales. For communities, these data add further support for the use of tea tree oil in medical and agricultural settings. |
| **Publications** | Manuscript in preparation entitled "Effects of tea tree oil on the development of antibiotic resistance in *Staphylococcus aureus* and *Escherichia coli*" by KA Hammer, CF Carson & TV Riley. |

# Completed Projects – Demonstrate proof of concept/efficacy for innovative applications of tea tree oil

### PRJ-003939 Use of tea tree oil handwash products to remove bacterial spores from hands

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|---|---|
| **Start Date:** | 27/07/2009 |
| **Finish Date:** | 01/06/2011 |
| **Researcher:** | Thomas Riley |
| **Organisation:** | University of Western Australia |
| **Phone:** | (08) 9346 3690 |
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| **Email:** | triley@cyllene.uwa.edu.au |
| **Objectives** | Hand hygiene is one of the simplest yet most effective ways of preventing the spread of infectious agents such as bacteria, fungi and viruses. This is especially true in the hospital environment where pathogenic bacteria may be easily spread by contaminated hands. Of particular concern are spore-forming bacteria such as *Clostridium difficile* because these spores are extremely hardy and are resistant to a wide range of environmental and chemical conditions. The aim of this project is therefore to examine the efficacy of tea tree oil (TTO) handwashing products for the removal of bacterial spores from hands.<br>The major objectives of this project are to:<br>1. determine the in vitro sporicidal activity of tea tree oil handwash products.<br>2. evaluate the effectiveness of tea tree oil handwash products for removing bacterial spores from hands.<br>3. compare the removal of bacterial spores to other non-spore-forming bacteria after use of tree oil handwash products.<br>4. compare the effectiveness of tea tree oil handwash products to other standard handwash products for removing bacterial spores from hands. |
| **Background** | Effective hand washing plays an important role in preventing hospital acquired infections as healthcare workers hands are the main vehicle for the spread of pathogens between patients. It is imperative that healthcare workers decontaminate their hands between examining patients to prevent transmission of infectious agents such as *Clostridium difficile* spores, which are the causative agents of serious infectious diseases. The aim of this project was to assess the effectiveness of TTO hand washes for removing spores from artificially contaminated hands. |
| **Research** | In vitro sporicidal activity testing was conducted on TTO, hand washing products containing TTO and 4% chlorhexidine gluconate skin wash. A hand washing trial was conducted to achieve the remaining objectives, artificially contaminating hands with *Bacillus atrophaeus* spores. The effectiveness of hand washing products containing 5%, 10% and 15% TTO for removing spores was evaluated as well as 4% chlorhexidine gluconate skin wash and soft soap. The effectiveness of a hand washing product containing10% TTO for removing *Serratia marcescens* vegetative cells was also evaluated and compared to soft soap. Residual activity testing of this product was also conducted, using both artificial contaminants. |
| **Outcomes** | The TTO, TTO hand washes and 4% chlorhexidine gluconate were not deemed to be sporicidal in vitro. A 5% TTO hand wash was found to be as effective as soft soap and 4% chlorhexidine gluconate skin wash for removing *Bacillus atrophaeus* spores from artificially contaminated hands. The 10% TTO hand wash was more effective at removing vegetative cells than spores. Hand washing products containing TTO were well liked and tolerated which could help to |

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| | increase hand washing compliance. The numerous benefits of this are decreases in the incidence of hospital acquired infections and patient care days, resulting in substantial cost savings. |
| **Implications** | Although this study did not show that TTO hand washes are any more effective than plain soap at removing spores, the TTO products were well liked and tolerated by participants. Implementing TTO hand washes in healthcare facilities in an attempt to increase hand washing compliance would most likely increase demand for these products. This would increase the demand for TTO, with obvious benefits for the industry and wider community, especially in the vicinity of tea tree plantations. |

# Research in Progress – Demonstrate proof of concept/efficacy for innovative applications of tea tree oil

### PRJ-005131 Anti-tumour mechanisms of action and prophylactic activity of tea tree oil

| | |
|---|---|
| **Start Date:** | 30/06/2009 |
| **Finish Date:** | 07/03/2015 |
| **Researcher:** | Manfred Beilharz |
| **Organisation:** | University of Western Australia |
| **Phone:** | (08) 9346 2663 |
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| **Email:** | sara.rooney@uwa.edu.au |
| **Objectives** | 1. Examine the efficacy of various poloxamer gels of tea tree oil (TTO) and TTO components and other appropriate pharmaceutical formulations of TTO in terms of:<br>(i) skin penetrative capacity and efficacy in non-tumour bearing mice.<br>(ii) anti-tumour efficacy in a range of tumour bearing mice.<br>(iii) safety and any side effects in mice.<br>These studies are designed to optimise the efficacy of TTO in the current subcutaneous tumour models.<br>2. Identify the mechanism by which TTO induces local immune activation by measuring the:<br>(i) activation of dendritic cells (DCs) in vitro following TTO treatment and the possible interaction of TTO components with toll-like receptors (TLRs).<br>(ii) relationship between immune activation and tumour clearance by anti-tumour effector T cells.<br>This will enhance the likelihood of describing a unique mechanism underlying our current phenomenology.<br>3. Examine the in vivo preventative and therapeutic efficacy of TTO formulations in a solar simulated ultraviolet (SSUV) induced murine skin cancer model to:<br>(i) prevent/protect against the development of skin carcinogenesis e.g. actinic keratoses (AK) (precancerous lesions)/skin cancers by treating "high risk" SSUV exposed mice with TTO formulations.<br>(ii) prevent/protect against skin carcinogenesis by concomitantly exposing mice to SSUV and TTO formulations.<br>(iii) investigate the efficacy of TTO formulations to inhibit and possibly regress the growth of SSUV induced skin carcinomas.<br>This de nova cancer induction will further delineate the underlying mechanisms of immune activation and will identify TTO's ability to prevent and treat skin cancer. |
| **Current progress** | Despite topical 10% TTO/dimethyl sulfoxide (DMSO) inducing an accumulation of neutrophils, DCs and also T cells, the anticancer activity of TTO does not appear to be solely immune mediated. Experiments in immune-depleted animals (mice lacking either neutrophils or T cells) demonstrated TTO remained efficacious suggesting these immune cells were not required for the anticancer effect. Electron microscopy of tumours treated topically with TTO demonstrated direct and selective cytotoxicity. Cell destruction manifested as dissolution of cell membranes, swollen and bloated mitochondria and evidence that mitochondria may have impaired function resulting in lipid accumulation |

within tumour cells. It is concluded that TTO has a direct effect in vivo which may be boosted by immune activation. Neutrophil accumulation may be a surrogate marker for TTO efficacy as topical application of a trial batch of 20% TTO in Vitamin E TPGS (a surfactant used) was shown to increase neutrophil numbers. Stable and reproducible batches of 3%, 10% and 15% TTO solid lipid nanoparticle (SLN) lotions and 3% TTO poloxamer lotion, 10% poloxamer gel and 20% Vitamin E TPGS cream have been formulated. All TTO formulations are undergoing testing for penetration through pig epidermis and once confirmed to be well tolerated in mice will be tested for anti-tumour activity in clinically relevant models.

# Research in Progress – Enhance production systems to maintain the competitiveness of Australian growers

### PRJ-003689 Highly improved tea tree varieties to maximise profit

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|---|---|
| **Start Date:** | 27/07/2009 |
| **Finish Date:** | 30/04/2014 |
| **Researcher:** | Trevor Olesen |
| **Organisation:** | New South Wales Department of Industry and Investment |
| **Phone:** | (02) 6626 2422 |
| **Email:** | trevor.olesen@dpi.nsw.gov.au |
| **Objectives** | To release highly improved seed and clones to maximize the production of high quality oil and plantation profitability. Progressive genetic improvement is achieved through:<br>1. the on-going development of established seed orchards (Clonal seed orchard est. 1994 [CSO1], clonal seed orchard est. 2006 [CSO2], second generation seedling seed orchard est. 2001 [SSO2], second generation partial seedling seed orchard est. 2001 [SSO2p]) using a recurrent breeding strategy.<br>2. the establishment of new orchards (third generation seedling seed orchard est. 2010 [SSO3] and third generation partial seedling seed orchard est. 2010 [SSO3p]) to ensure the long-term advancement of genetic gain.<br>3. the establishment of new progeny, yield and clonal trials to provide data for orchard culling and selections for cloning and to quantify yield gains from orchard progeny and elite clones.<br>4. investigating the insect resistance of specific genotypes, with a view to reducing insecticide use.<br>5. investigating the frost tolerance and survivability of specific genotypes, with a view to reducing losses to climatic extremes. |
| **Current progress** | Project seed has been available to growers since 1997. Total seed sales are now over 11.6kg (enough to plant over 1600 ha). Released seed is from the best provenances, together with improved seed from both seedling and clonal orchards. Over 1.1kg of seed from the clonal orchard has been sold since 2004 when yield gains of over 69% (averaged over 5 harvests) were confirmed for this seedlot.<br>Demand for improved seed increased significantly during 2008 and still remains high. To supply the demand, seed from the second-generation seedling seed orchards was released. Seed sales from these orchards now exceed 3.7kg. Sales for 2011 total 100g.<br>During 2010, 8 trials were established: 2 orchards to further improve yields; 3 yield trials to quantify gains and 3 progeny trials to provide data to cull the orchards. An early assessment of these trials indicated excellent survival rates (>98%), good growth, no recorded frost damage, minimal pyrgo damage and no Myrtle rust. Trials will again be assessed (the yield trials for oil characteristics) later this year.<br>In response to the spread of Myrtle rust this year, a tea tree breeding strategy was developed and presented to industry should Myrtle rust impact oil production. Monitoring for rust is ongoing to assess its impact and thus the need to implement the strategy. To date, negligible rust infections have occurred in plantations.<br>The project is currently evaluating and negotiating to purchase a tree improvement database program. A database management program will better |

ensure the security of project data while enhancing the capacity for long term data storage and retrieval.

# Research in Progress – Enhance production systems to maintain the competitiveness of Australian growers

### PRJ-005771 Improving the sustainability of plant protection in tea tree oil production systems

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|---|---|
| **Start Date:** | 15/10/2010 |
| **Finish Date:** | 30/09/2011 |
| **Researcher:** | Peter Entwistle |
| **Organisation:** | North East Agricultural Services |
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| **Objectives** | To enhance production systems and to maintain the competitiveness of Australian tea tree producers by:<br>1. Identifying more effective chemical control options for Pyrgo beetles in tea tree.<br>2. Determining any risk of chemical residue in tea tree oil from these control options.<br>3. Obtaining permits from the Australian Pesticides and Veterinary Medicines Authority (APVMA) for the selected effective insecticides.<br>4. Identifying safe and effective selective broadleaf herbicides for use in tea tree.<br>5. Identifying safe and effective post harvest pre-emergent herbicides for use in tea tree.<br>6. Identifying safe and effective in crop directed spray herbicide options for use in tea tree.<br>7. Obtaining permits from the APVMA for the selected effective herbicides.<br>8. To determine the suitability of emergency fungicides for myrtle rust control in tea tree. |
| **Current progress** | The project has successfully identified two pesticides for the control of Pyrgo beetles in tea tree. Indoxacarb and abamectin have been selected after bio-assay and field trials were used to determine the effetiveness of these compounds. The bio-assay selected these compounds along with imidacloprid and fipronil as potentially effective control options. The field trials, which included a small plot trial and a larger field trial, showed that the effectiveness and differing chemical grouping make indoxacarb and abamectin suitable for use.<br>The small plot trial was used to take samples for residue testing. The first sampling was taken at 21 days after pesticide application and the last sampling at 3 months. A final report is still to be received but none of the samples taken had chemical residues detected. A further trial is being considered to determine if sampling at shorter intervals will detect residues.<br>A submission for obtaining a Minor Use Permit for both indoxacarb and abamectin is currently being developed and will be submitted to the APVMA shortly.<br>The trialling of broadleaf selective herbicides has been delayed by the ongoing wet weather and will have to be completed in the spring later this year. The delay until spring is necessary to have the right combination of crop growth stage and significant weed species present. The compounds that are to be investigated include over the top of the crop applications and directed sprays simulating the use of a shielded spray unit. The chemicals being considered at this stage are linuron, metalochlor, aciflourfen, methabenzthiazuron, and |

imazethapyr and possibly others.

# Research in Progress – Foster communication that increases understanding and thereby encourages greater use of tea tree oil

### PRJ-004221 Tea tree oil communication project

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| **Start Date:** | 05/06/2009 |
| **Finish Date:** | 30/04/2012 |
| **Researcher:** | Tony Larkman |
| **Organisation:** | Tony Larkman |
| **Phone:** | (07) 5465 2095 |
| **Email:** | tlarkman@attia.org.au |
| **Objectives** | This project is designed to put into place some tools that will, over many years into the future, provide a basis for development of the tea tree oil (TTO) industry. It will do this by:<br>1. Developing, fostering and integrating a Quality Assurance (QA) system which ensures that purchasers of Australian TTO that the quality of the product is demonstrably controlled from the paddock to the point of export. This will include collation and dissemination of generic safety data to help ensure that TTO is handled and stored appropriately from point of manufacture to point of consumption.<br>2. Creating and implementing a web site that has substantial interest not only for stake holders in the industry but also for casual users of TTO by enabling quick, efficient and useful communication of the uses, results of research and other communication which will increase understanding and greater use of Australian TTO. This will include a database of existing uses of TTO worldwide.<br>3. Creating a categorised dossier of existing tea tree oil research that will be available to researchers and anyone involved in TTO from paddock to end-user. Abstracts and/or summaries of existing research will also be developed and made available to facilitate information gathering. |
| **Current progress** | The Code of Practice (COP) QA program now has 44 accredited members (58%). In addition to these there are a further 10 members who have begun the process of becoming accredited. Two commercial distilleries and two commercial buyers have now endorsed the COP by integrating it into their own QA procedures. This has resulted in several new applications to ATTIA as growers seek to become COP compliant. There is also evidence that both European and North American buyers may be seeking to endorse COP as part of their QA system. COP accredited producers now account for approximately 400 metric tonnes or 80% of the 500 metric tonnes produced in Australia annually.<br>The website is complete except for the library links and is functioning well as a communication tool for both members and non-members. It continues to receive 30 – 40 000 hits per month from a wide range of countries.<br>The database listing of existing TTO research is now substantially complete with more than half of the finalised 750+ documents available in PDF format. Copyright issues continue to be far more difficult than originally envisioned. New research papers are continuously being added to the dossier. |

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- foster communication that increases understanding and thereby encourages greater use of tea tree oil.

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