

ACTIVITIES

The Googie Tower of Terror

The Australian Olympic Super High Diving trials are on and Johnny Egg and his competitors are hoping to make the team. There is only one spot on the team and it will go to the diver that successfully dives from the greatest height.

You are the lead engineer of a construction company competing for the contract to provide a diving platform and filling the pool. It seems a simple enough job but you have just been handed the design considerations. Firstly, there is a drought on and the pool is empty and tight water restrictions require that you cannot refill it with water. Secondly, the original contractor – Shonky and Sons – went out of business after buying all the materials for their design. The materials are on site and the AOC is insisting that you use these materials they have already paid for. With the Shonky plans tied up in legal red tape it is up to you to create your design from the materials provided.

Wanting to get on the good side of the AOC you and your competitors have each sponsored a diver who will test your tower and pool filling as part of the competition.



Dean Beliveau (Faculty of Engineering & Surveying)

I am the Faculty of Engineering and Surveying's Research Technologist, providing electronics and programming support for all the engineering disciplines and the surveying discipline. In the nearly 13 years of employment here at USQ, I have used my Bachelor of Science Degree in Electronic Engineering Technology to assist researchers gather data in projects ranging from multi-legged robots to sugar cane harvesting yield monitor systems to the construction of a hypersonic wind tunnel. It has been quite exciting to apply my electronics and programming knowledge to new and different projects on an almost daily basis.

Before working at USQ, I worked as a sales and service manager for an electronics company in Canada; designing, installing, selling and servicing data acquisition systems and other electronic devices. Growing up in Canada, I did the typical Canadian thing – I played ice hockey. Here in Toowoomba, the distinct lack of ice has had me swap ice skates for rollerblades. I have played and coached for most of the years I have lived in Australia.

The above activity is of particular interest to me as it explores impact attenuation – something, you might guess, I have first hand experience in. Advances in sensor technologies now allow us to measure wirelessly such things as impacts of tackles during football games or body checks in ice hockey. They can also be used in control systems to trigger actions such as deploying airbags in a car during an accident. Using sensors to gather data about processes and phenomena are a major part of the engineering research that I do. The data is then analysed and can either prove or disprove a theory or theories the researcher had hypothesised.

It gives me great pleasure to contribute to the new knowledge being created through research in the Faculty of Engineering and Surveying. I am currently studying a masters degree in engineering management focussing on providing research support on a 'big picture' scale and moving beyond just developing data acquisition systems but also resource management systems and learning environment systems to ensure the researchers have what they need, when they need it to complete their research.

Plastic Bridges – How strong are they?

Bridges are usually built with conventional construction materials like steel, concrete and timber. Recently, fibre reinforced plastics (FRP) are being used as a new material in constructing such bridges. In this session, you will be building a model 'plastic' bridge using plastic straws! We will test this bridge with small trucks (as loads) until it fails. The design, self weight of bridge and the load it carries will all be considered in selecting the winning bridge!



Dr Mainul Islam (Faculty of Engineering & Surveying)

I am professionally a Mechanical Engineer and I teach Engineering Statics which is related to how the various structural components act when the static loads are applied to them.

I graduated from Bangladesh Institute of Technology (BIT), Khulna in Bangladesh and then joined Kyushu University in Japan to study and conduct postgraduate research through Master of Engineering program in Fracture Mechanics. I did my research on crack opening displacement profile in an aluminium alloy under tensile load. I came to Australia to conduct my PhD research on Composite Materials in the Discipline of Mechanical Engineering of the University of Newcastle. During my PhD, I developed a building material to be used as an interior wall and ceiling board.



Mr Allan Manalo (Faculty of Engineering & Surveying)

I am a Structural Engineer and I teach subjects related to the design of structures and engineering problem solving.

I obtained my Bachelor of Civil Engineering degree from the University of the Philippines Los Baños, Philippines and my Master's of Engineering Degree major in Structural Engineering from Saitama University, Japan. I am now nearing completion of a PhD in Structural Engineering at USQ. My research interest is on the application of fibre composite materials for civil engineering infrastructures. My PhD research aims at understanding the behaviour of fibre composite sandwich structure with a view of using this composite material in the development of railway turnout sleepers. During my Master's studies, I conducted several research works on the application of hybrid fibre reinforced polymer composites in bridges.

We both are attached to the Centre of Excellence in Engineered Fibre Composites (CEEFC) within the Faculty of Engineering and Surveying where the Centre have been involved in building real 'plastic bridges' that can carry heavy trucks. This will be the future material in the building and construction industry and there are exciting opportunities to be explored!



Great Australian Science Relay Quiz

The Great Australian Science Relay Quiz is one of the activities run by YSA that tests the participants general science knowledge in an exciting environment. Teams are set up in groups around a central marking station with one mentor assigned to each group to collect answers and distribute questions.

Each typical round of questions consists of 8 questions worth 1 mark each and a ninth question worth 2 marks, hence a maximum score of 10. A bonus round held at the adjudicator's discretion may see questions worth double points – a maximum score of 20.

The questions are relayed (hence the name) two at a time (except for the single ninth question) from the mentor to the group. Once the first 2 questions have been answered, they return to the mentor to collect the next 2 questions, and so on, until all 9 questions have been answered and returned. This constitutes a round!

There will be as many rounds of 9 questions as time permits – we are aiming for nine rounds in the 60 minutes we have for the quiz. Once one group has returned all 9 questions in a given round, all remaining groups have 10 seconds (and not a second more) to return their questions to their mentor.

Clinical and Counselling Psychology

This session is about de-mystifying the practice of clinical psychology. During this activity, a brief outline will be provided of the training required to become a clinical psychologist and a demonstration provided of what a counselling session may look like. Some of the common mental health disorders will be discussed in the hope of reducing the stigma of mental illness.



Gavin Beccaria (Psychologist)

I have been a practicing psychologist for over 15 years. When I graduated from fourth year in 1993 I worked at the Department of Family Services (now known as the Department of Child Safety) in the areas of child protection and juvenile justice. In 1994 I commenced working as a psychologist at Queensland Health, and worked in a number of services areas including, general health, rural outreach, acute mental health, rehabilitation, and extended inpatient mental health. I have also provided clinical psychology services across all age groups from children to the fragile aged. From 2005 until 2007, I was the Director of Psychology of the Toowoomba Health Service District where I managed a budget over \$1M and I was professionally responsible for over 30 psychologists.

Web Programming

Programming is challenging, yet extremely rewarding! In this session you will learn the basic layout of a dynamic web page and how to enter basic JavaScript code. In the end you will have created a fun game.



Dr David Lai (Faculty of Sciences)

My first degree is in Physics. Then I continued my studies with Education, and finally Information Technology. I started my IT career as a Communication Engineer. I can still remember climbing up the roof of a barn to set up a wireless link for my client while the ground temperature was well above 34°C. Compared with the working environment in USQ, I would say "I love USQ!"

My research interests include security, networking and service sharing. I teach various courses including programming courses; industry (Cisco) aligned networking courses; and wireless networking courses.

Astronomy – Looking at the Cosmos

This activity involves using telescopes to look at the nearest star (the Sun) during the day, and look much further out into the night-time sky. Light travels at 300,000 km/s, so the light from distant stars and galaxies has taken hundreds to millions of years to reach us. Telescopes are time machines that allows us to see the past history of the universe, further back in time the further we look.

This activity will involve observing the Sun with a very special safe filter, and stargazing with the naked eye and a telescope. The experience is weather permitting but regardless of the weather we can talk about the cosmos and discuss your favourite questions about astronomy.



Dr Brad Carter (Faculty of Sciences)

At USQ I teach astronomy (the observational study of the universe) and the fundamental laws of physics that govern everything in the universe. My research field is astrophysics, which aims to combine astronomy and physics to explain the stars, planets, galaxies and other things in our universe, as well as the universe as a whole.

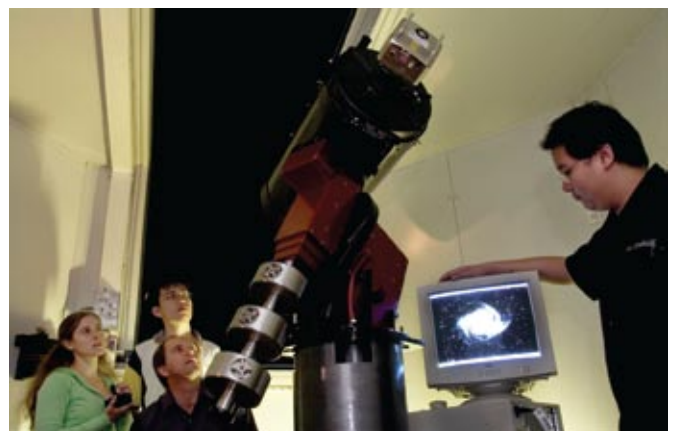
My speciality is the study of stars and their planetary systems. Our Sun is one star among several hundred billion in our Galaxy alone, with many of these stars expected to have orbiting planets. In a very real sense, astrophysics provides a scientific basis for addressing questions of how the universe and we came to be, and what the distant future holds.



Rodger Macqueen (Faculty of Sciences)

I am an external student at USQ, studying astronomy and astrophysics. I have a keen interest in sharing my love of observational astronomy so I hold a number of free public astronomy nights each year. This gives everyone a chance to ask astronomy questions and to look through a telescope to view some of the amazing things that the eye simply cannot see.

As a part of the USQ Astronomy Team, I help with astronomy education outreach programs. These outreach events include visits to schools, nights at clubs such as the Scouts, as well as conferences or private functions that are interested in including observational astronomy as a part of their event.



Physiological Activities and Data Analysis

Students engage in two students will engage in two physiological activities:

(i) **Peak Expiratory Flow** - a measure of the degree of airway obstruction is useful in diagnosing asthma.

(ii) **Vertical Jump** – a test of leg power is important in many sports eg basketball. The performance data of the group is collated and displayed graphically. The use of statistics in assessing this physiological performance data is discussed.



Linda Galligan (Faculty of Sciences)

I am the Department of Mathematics and Computing's Academic Liaison Officer and Senior Lecturer. I teach mainly into first year statistics and mathematics. I also have strong links with schools to provide programs and activities for students and teachers.

After completing a Bachelor of Arts from University of Queensland (majoring in Mathematics and History), I went on to complete a Diploma of Education. I then taught in various high schools in Queensland for about 10 years. After moving to Toowoomba in 1987, I began working at USQ teaching both international students and mature aged students who wanted to enter university but did not have the necessary skills. During this time I undertook a Masters of Education with my research comparing mathematical word problems in English and Chinese. I also undertook Masters of Applied Linguistics with one of the research topics being students code switching in Chinese/English when they solve mathematics problems. While working at USQ I also supported students who were under-prepared in mathematics including nursing students. This work led me to undertake a PhD in the area with my research in developing a model of embedding academic numeracy in university programs using nursing as a case study.



Christine McDonald (Faculty of Sciences)

I am a lecturer in the Department of Mathematics and Computing, where I teach mainly into undergraduate statistics and first year mathematics. After being awarded a Bachelor of Science at the University of Queensland (majoring in Mathematics and Statistics with a minor in Chemistry), I completed a Diploma of Education. For the following six years I taught high school mathematics and science in Toowoomba and Pittsworth.

In 1989, I began working at USQ teaching statistics to undergraduate on campus and distance students. In 1993 I completed a Master of Letters through the University of New England with my research topic being regression diagnostics, applying this to data predicting gestational age of the human foetus from a variety of ultrasound measurements. Over the years I have provided statistical support to a variety of different disciplines, including physiotherapy, teacher education, asthma research and twin studies.

Currently I am undertaking a Doctorate in Education researching the contribution that online tutorial support makes to the teaching and learning of statistics for distance students.

CSI: A Mouldy Murder!

You are a member of a CSI forensic investigation team.

Harold has been found with a stab wound to the chest in the grounds of USQ Toowoomba. A search of Harold's bakery in Ruthven Street, Toowoomba, has found seven knives belonging to Harold. The body, along with the knives have been taken to the laboratory for forensic examination in order to determine which, if any, may be the murder weapon.

Your task:

To identify unknown material/s found on the victim's wound and the potential murder weapons (knives), you will be required to isolate crime scene samples and perform a series of tests:

1. Microscope observations
2. DNA extraction (for DNA fingerprinting: you will be supplied with example fingerprints)
3. Identification of DNA sequences using web based tools.



Morwenna Boddington (Faculty of Sciences)

I am a Technical officer in the Faculty of Sciences, USQ. The Department of Biological and Physical Sciences Technical Team, of which I am a member, is primarily responsible for the preparation of the technical requirements of practicals for the courses run by our Department. Each technician tends to specialise in a particular area – my main focus is Microbiology.

This is a great job, with lots of variety...and the occasional opportunity to display some creativity – not everyone gets to create a murder scene for their job! There are many challenges as well – I work with a lot of living material including bacteria, fungi and viruses, and they don't always perform as expected! But my education and experience really help me overcome these problems when they do occur.

I possess an Associate Diploma in Applied Science, and recently obtained my Masters of Science – I studied both of these at the USQ. My master's research focused on the discovery and evaluation of new antibiotics against several human diseases.

I am excited to be given the opportunity to introduce you to a scientific experience which you have probably not encountered in your schooling. I hope you enjoy your time with us.



Kay Lembo (Faculty of Sciences)

I have worked as a secondary science teacher with Education Queensland for over 20 years. For the last 4 years I have been involved with managing initiatives as part of Queensland's 'Spotlight on Science' and 'Science Education Strategy'. These involve coordinating the Toowoomba Technology Maths, Science Centre of Excellence (TTMSCE) and as Director of Southern Queensland Science Centre of Innovation and Professional Practice (SCIIPP). These initiatives involved encouraging more students into scientific and technological qualifications and careers by developing more coherent links between schools, Universities and the scientific world. Through this role I have supported primary and secondary teachers in the Darling Downs Southwest region through the provision of professional development activities for Science Education to allow them to enrich and enhance their science curriculum. I have an intense interest in science education and has received two Science Education Awards: 2005 Peter Doherty Award for Excellence in Science and Science Education and 2006 Westfield's Premiers Education Scholarship for recognition to leadership in teaching. I have also presented workshops at regional, state, national and international science conferences.

I am currently working as Academic Liaison Officer (School Engagement) for the Faculty of Sciences at the University of Southern Queensland and as National Manager (Program Delivery) for the Primary Industry Centre for Science Education (PICSE).



Investigating a Mouldy Murder

ACTIVITIES

Dogs as a Tool in Science

This presentation will be about the use of Detector dogs in Agricultural programs ie OC detection and Heliothis pupae detection in Cotton crops, the selection and training of detector dogs, a demonstration of retrieve drive and what we look for in a detector dog and a detector dog search demonstration.



Greg Horrocks (Senior Inspector, Biosecurity Queensland)

I am a Senior Inspector with Biosecurity Queensland.

I became involved with Detector dogs in 1997 when the DPI conducted a feasibility into the use of dogs in the detection of Oganochlorine (OC) chemicals in the environment. Successful identification of OC chemical residues is important in protecting market access for Queensland animal products.

Since 1997 we have selected, trained and worked detector dogs on rural properties all over Queensland to improve the efficiency in being able to identify contaminated areas.

We also use our dog team to deliver a "Help an Animal Smile" message as part of an Animal Welfare educational program to primary school students.

Fishing for our Future : Freshwater Fish Ways, Recreational Fishing and Aquaculture

In this activity, a very brief overview will be provided of some of the techniques used to study, monitor and manage our freshwater fish populations in south east Queensland – for conservation and recreational purposes. Highlights should include lungfish study techniques, stocked recreational fisheries and fish passage throughout our waterways.



Rod Cheetham (Extension Officer, DEEDI - Qld Primary Industries & Fisheries (QPI&F) Fisheries - Kingaroy)

Originally from Victoria, I spent 15 years at the State Fish Hatchery at Snobs Creek. Here I gained a sound knowledge of introduced trout in stream, dam and aquaculture situations, plus native fish breeding research. I was also responsible for setting up and day-to-day running of the Visitor Centre, with world class freshwater aquarium displays.

Since becoming a Queenslander I have assisted many farmers and prospective aquaculturalists in refining their operations. (I also discovered the Maroons, Broncos and the Queensland way of doing business and have absolutely no plans to move south!)

Based in Kingaroy in SE Queensland, I am also heavily involved with the QPI&F Freshwater Fish restocking program. This ongoing project is designed to build up recreational fishing opportunities in man made impoundments and provide new and exciting economic development throughout Queensland rural communities.

Other freshwater fisheries activities include monitoring of stocked and natural freshwater fish populations, plus pest fish monitoring and eradication programs. It is my aim to give prospective fisheries biologists or managers an insight into freshwater programs throughout Queensland today.

Odour and Intensive Livestock

Odour continues to be one of the biggest issues affecting the intensive livestock industries in the '00's. With the number of odour complaints against these industries continuing to rise, the need for well-focused research into this area is becoming more important.

QPI&F's intensive livestock environmental management officers are involved in research into odour related issues for intensive livestock industries investigating the areas of:

- Odour generation, emission and dispersion from intensive livestock facilities;
- Odour management;
- Odour detection and perception within the general community.

Odour generation, emission and dispersion are affected to different degrees by diet, weather, facilities and management. Our research focuses on enhancing facilities, management and planning to minimise negative environmental and community impacts.

The measurement of odour leaving an intensive livestock facility is an area of continuing research due to the complex nature of livestock odours. Livestock odours are typically a combination of many different compounds, and their interactions prevent overall odour from being described according to its components.

Many factors influence odour detection and perception, with different people reacting to odours in different ways.

For this activity, I will demonstrate how odour samples are collected via a wind tunnel. Examples of previous sampling activities will be presented and you will also be able to see QPI&F's Olfactometer (air quality laboratory) where samples are analysed once collected.





David Duperouzel (Environmental Scientist, Animal Science, Toowoomba DEEDI)

I am an Environmental Scientist working with the Sustainable Intensive Systems group in the Queensland Primary Industries and Fisheries. I joined the QPI&F some 10 years ago as a technical officer, working on a variety of research projects that investigated means to reduce the environmental impact from intensive animal systems. We researched areas of composting animal waste, monitoring rainfall run-off from paddocks, and monitoring the nutrients eaten by animals and also monitoring the nutrients out of that animal.

My main area of research lies with assessing the odour emissions from feedlots, piggeries, and also poultry sheds. This involves collecting samples of air from sources such as feedlot pens, waste water ponds, and inside chicken sheds, then analysing these samples through our olfactometer. This essentially is a building where eight people sniff the air sample and tell us how smelly it is. From these results we can calculate an emission rate, and hence compare samples and sample locations as to how smelly they are. A current area of interest is using sonar devices – fish finders – to depth gauge wastewater ponds. When I commenced employment with the (then) DPI&F, I possessed an Associate Diploma in Applied Science (Plant Protection), and since have completed a Bachelor of Applied Science (Crops and Rangelands) and a Graduate Certificate In Agricultural Studies.



Erin Gallagher (Environmental Scientist, Toowoomba DEEDI)

I am an Environmental Scientist with the Sustainable Intensive Systems group. I began working with the (then) Department of Primary Industries and Fisheries as an industry placement student in 2003 as part of my university studies. I was then employed as a casual where I made odour sample bags for use in the olfactometer, assessed odours in the olfactometer as an air quality assessor or sniffer, and helped out with field work where required. I also completed all field work for a small research project measuring dust fallout from a beef cattle feedlot on the Darling Downs. I was able to use this project for my honours project as part of my Bachelor of Agricultural Science (Rural Technology) degree. Upon completion of my studies I was employed full-time as a project scientist measuring odour and dust emissions from meat chicken and egg production sheds both in Queensland and Victoria. My role ranges from on-farm sample collection to attending international conferences where I present research results.



Chris Clayton (Supervisor Dynamic Olfactometer, Toowoomba DEEDI)

I am a researcher working with Sustainable Intensive Systems unit for Animal Science, QPI&F. My skills and experience are analysis based from my previous work as a Water Treatment Plant operator. My career in QPI&F started in 2002 when I was employed to operate our Triangular, Forced choice, Dynamic Olfactometer. I have many different occupations in my time such as a construction worker in the early 1980's, the Army in the late 1980's and 1990's, Water Treatment operations and now the QPI&F. I am currently working improvements to accuracy and repeatability with relation to our Olfactometer which is used to measure odours in intensive livestock situations. This includes testing, design and application as well as calibration of our olfactometry unit.



Entomology

Entomology is part of the Queensland Agri-Science Crop Protection Team. The entomology team aims to manage insect pests of field crops in Queensland in an environmentally sustainable manner that reduces dependence on traditional insecticides and yet maintains profitability for producers.

In order to reduce the reliance on conventional insecticides for the management of pests we promote the adoption of Integrated Pest Management (IPM). IPM means the integration of a number of different strategies to manage pests and insecticides are really used as a last resort.

The focus of our work is on developing and investigating alternative insect management options including:

- biopesticides
- more selective synthetic insecticides
- biological control
- host plant resistance
- refined insect thresholds
- understanding pest and beneficial biology and ecology.

We develop sustainable integrated pest management programs incorporating the above technologies and convey this information to clients through development and extension activities. A number of our projects are funded by Cotton and Grains Industry bodies.

Our research group has also had considerable success in dealing with one of Australia's most damaging insect pests, the corn earworm or cotton bollworm, *Helicoverpa armigera*. Management tactics to combat this pest include; conservation of natural enemies, use of biopesticides and less disruptive insecticides, monitoring and the use of thresholds (knowing when a pest is damaging and needs to be controlled).



Kate Charleston (Senior Extension Officer (Entomology), Toowoomba)

I am a development extension officer with the entomology team. I liaise closely with the entomologists to provide current advice to farmers and industry in relation to insect pests and management. I do this through publications, information on our IPM website and Beat sheet blog as well as through presentations to growers and industry. Another component of the extension role is to provide training to growers and industry representatives in the principles of IPM.

Extension officers often have to convert scientific information into more common English and therefore need to have a good background in science. The majority of people entering this field have a Science or Agricultural Science degree. Additional qualifications in training also benefit extension officers. If you like science and communicating with growers and the general public, extension may be a great job for you.



More crop per drop: increasing wheat yields in the face of climate change

Demand for wheat is increasing. As the large populations in Asia become more wealthy, they are eating more wheat products and a lesser proportion of traditional foods such as rice. They are also eating more meat products produced from grain fed animals. Grain is also being increasingly diverted from the food supply and into ethanol production to replace fossil fuels.

The main limitation to wheat production is water availability. In all but a few seasons and on most properties in Australia grain yield is severely limited. We know that our current varieties can produce yields of 6 to 8 tonnes per hectare. However, the average yield in most areas of Australian is less than 2 tonnes per hectare. The main cause of this difference is water stress.

Unfortunately, climate change is expected to have an adverse effect on grain production in Australia. As temperatures increase so will evaporation. This will tend to increase the amount of water needed by wheat and other plants. Thus it will be increasingly difficult to maintain grain production, let alone trying to increase production, into the future.

A range of new technologies to study and improve plants have recently become available. These include methods for identifying the genetic fingerprint of plants with superior performance under drought. There are also methods to detect plants with superior performance in the field. For example, thermal imaging can be used to detect plants that have better access to water and so remain cooler.

I would like to tell you about how plant scientists are using these new methods to ensure that we can maintain wheat supplies into the future.



Troy Fredericks (Research Scientist (Crop Physiology, DEEDI))

I am a plant scientist. I study how plants work.

The DEEDI, Crop Physiology team at the Leslie Research Centre Toowoomba, studies how to improved crop performance. Locally crops are affected by extreme climatic conditions, hot and dry, but also cold frosty mornings in the winter and spring. I have spent the last 10 years studying frost resistance in wheat and barley. Plants play a vital, if often overlooked, role in maintaining the health of the planet and supporting human life. I am interested in better understanding how plants function, with the aim of improving the productivity of crops.



Nematodes

My presentation will discuss nematodes in general, describing what they are, where they come from and how they invade plants. I will illustrate various methodology used to extract nematodes from soil and plants and techniques used for identification and quantification. The talk will highlight various crops the soil microbiology team are involved with and the aim of these studies relevant to root-lesion nematode. In particular the presentation will focus on root-lesion nematode and the two species we work with at Leslie Research Centre.



Tim Clewett (Experimentalist, Plant Science, Toowoomba DEEDI)

I am a technician working with the Crop Protection Unit within Agri-Science Queensland DEEDI. I have been working in soil microbiology for over 25 years dealing with nematodes and several soil borne fungi in winter cereals.

My current research involves winter and summer crops and experimenting with different cropping options and rotations to manage root-lesion nematodes within the Northern Grain Region.



Weeds: get them before they get you!

The weed seed washing and counting activity is intended to give students an insight into one of the technical tasks undertaken in weed ecology, followed by an explanation of some of the implications of what the students will find during the activity.

Students will split into two groups for the first part of the activity. Working in pairs, group A washes pre-made soil samples that contain three different species of weed seed, using QPI&F soil washing facilities and equipment. Also in pairs, group B takes some similar seed samples (pre-washed and dried), sorts them into species, and counts the number present in each species, using large magnifying lenses or dissecting microscopes. Pictures and notes will be available for the groups to identify which species their seeds belong to. Formulas will be given for each group to calculate a seed bank density per square metre given the number of seeds they have identified in each sample. Each activity will take approximately 12 minutes and then the two groups will swap activities.

After both groups have washed and counted soil samples, there will be a short presentation where we discuss the species they have found and counted. Agronomic aspects of each species will be considered - when each emerges, whether they typically compete with summer or winter crops, and whether they are long-lived or short-lived in the seed bank. Basic information on the impact of weeds in cropping generally will be also briefly mentioned.



David Thornby (Research Scientist (Weed Management), Plant Science, Toowoomba DEEDI)

I am a research scientist working as part of the weed science team at DEEDIW. My background is in horticulture, where I became interested in how plants grow in response to different kinds of stimulus. I did a PhD at the University of Queensland between 2000 and 2003, looking at the ways cotton plants grow after being damaged, and produced computer models of the plants and their responses. Following this I worked on computer models of weeds in northern California. On returning to Australia I started work for the DPI&F, where I study weed populations evolving resistance to herbicides, using computer models to investigate the issues and explain them to scientists, growers, and agronomists.



Luke Boucher (Experimentalist, (Weed Management), Plant Science, Toowoomba DEEDI)

I am an experimentalist working in the Weeds group in QPI&F based at Leslie Research Centre. I began my career with the DPI&F in 2006 after completing a Bachelor of Science (Biology) at USQ. As a technical officer I perform technical duties across a wide range of weed research projects. I am responsible for the establishment and day to day operations involved with weed trials such as planting, spraying, soil coring/washing, and herbicide efficacy assessments in field and glasshouse environments. I am currently working on a project monitoring weed seed fluctuations in the soil which ultimately will be used to develop a computer model to help farmers predict weed emergences. I am also involved with work on preventing and controlling herbicide resistant weeds and a project that involves applying herbicides to barley and wheat varieties to assess possible herbicide damage to the crops.

