ANOR magazine - December

Welcome to the December edition of the ANOR newsletter complied by Dr Sara Beavis and Gerry Gillespie from Australia.

RECYCLED ORGANICS IN NSW ON THE INTERNET.

The Recycle Organics Unit (ROU) at the University of New South Wales, is one of finest sources of information on research into Recycled Organic products in Australia.

ROU supports the sustainable and viable recovery of compostable organic materials, and the beneficial application of a range of recycled organics products.

A small team efficiently managed by Angus Campbell has a considerable depth of information on research and all other aspects of recycled organic products. A lot of quality detail is available at their website:
http://www.recycledorganics.com/

Detail on a range of research can be found at the recently released Recycled Organics Library at:
http://www.rolibrary.com/search.php

BAR CODING AND CREDITS TO REDUCE CONTAMINATION

Queanbeyan City Council on the Southern Tablelands of New South Wales is unusual in that has highly developed recycling programs that evolved with enthusiastic council support.

Queanbeyan City currently recycles around 65% of its domestic waste stream.

Among the recycling programs available is a very advanced but technically simple, organics collection and processing service where household organics are collected from the home every fortnight. In addition householders can also drop off larger tree trimmings at a recycling centre where they are processed through a shredder.

These shredded materials are processed into a range of high quality products. Some of these are mixed with biosolids from the sewage treatment works and used by staff of the Parks Section in the City's parks and gardens, other products are returned to householders for domestic use.

In April 2001, council produced a report which clearly demonstrated that the processing and reuse of this material had a net total benefit to the Queanbeyan community of between $35 to $46 per tonne.

The South East Office of the Department of Environment and Conservation has a commenced an on-farm soil evaluation trial, using Queanbeyan City's high quality product on a demonstration site at a local farm. This site is investigating soil changes due to the addition of quality composted product. (See following story)

Many of the soils in the region, apart from river flats are generally poor to very poor with high acidity, low levels of organic material and low microbial activity. Many soils have been overworked and require organic material for improved soil health.

The potential of developing markets for recycled organic product under these circumstances is high.

The efforts of Queanbeyan City Council in conjunction with the Department of Environment and Conservation have created a scenario where an effective collection and processing system for organics could result in a substantial market for high quality product.

What is required now is a methodology to ensure that the quality of product collected from households is clean an uncontaminated.

At the commencement of organics collections Queanbeyan City Council were using a rear loader vehicle with two staff. One driving, one inspecting and emptying bins. The second person inspecting ensured that contamination levels were kept very low. If the material in the bin was contaminated in any way the bin was not emptied.

This method of collection was changed to a side-loading driver-operated vehicle in the interests of efficiency. Contamination levels have since risen.

If collections were made using a rear-loading waterproof vehicle, with a second operator inspecting the bins once again, for contamination and awarding low levels of contamination with a credit or reward, it is anticipated that contamination levels could fall to zero.

The application of credits to such a system is being implemented with the addition of a simple bar code sticker to the rear of each bin which will identify the house to a computer but not to the individual operator emptying the bin. If the bin is found to be clean and uncontaminated the operator scans the bar code with a hand-held scanner and the credit recorded to the home on the bar code.

All households given a credit have their number entered into a draw for prizes of fruit and vegetables.

This system provides a model for reduced contamination levels in all forms of recycling collection, be it urban or rural.

In this instance the credits would be directly attributable to the quality of product received at the farm gate.

In the long term it is possible to adjust this credit system so that rather than an entry into a draw for prizes the household could in fact receive carbon or community credits.

This would enable such a system to be used in a state or national scheme.

Linking the City and the Farm

The Department of Environment and Conservation and Queanbeyan City Council are trying to expand markets for organic wastes through a series of soil improvement research projects on local farms.

In the first research project which is being conducted at Danny and Kate O'Sullivan's vineyard in Yarrowlumla Shire, a combination of compost and vermicast is being added to soil to test its potential to help local farmers improve soil qualities and reduce chemical fertiliser use.

For many years Queanbeyan City Council has produced a high quality compost product for use on local parks and gardens by composting the biosolids from its local sewage treatment plant with household green waste which is collected as part of the kerbside service.

Vermicast, which promotes healthy microbial activity in the soil, is being produced on–site at the vineyard from sheep manure which is collected and placed on the worm bed along with sheep wool off-cuts and hay, and converted to worm castings.

Early indications from the project are already promising, with changes in the nature of the soil and moisture retention.

The trial is being supervised by Dr Sara Beavis a Research Fellow in Earth Sciences at the Australian National University.

PROTECTING ROADS WITH COMPOSTED ORGANICS

In conjunction with EA Systems, Yates Saltgrow trees, NSW RTA and the Wakool and Berrigan Shires, the Department of Environment and Conversation are funding a study to investigate the effects of high water tables and salinity on road pavement condition, and the potential of roadside tree plantings using composted organic materials to achieve a localised lowering of the water table beneath the pavement surface.

The study will attempt to define the set of conditions (in terms of pre-planting water table depth, water table salinity, soil salinity, leakage to the groundwater from adjacent land use, tree water use, total depth of water table and saturated hydraulic conductivity, width of tree belts and spacing between tree belts), where trees may be able to achieve a localised influence sufficient to lower the water table beneath the pavement surface to a target depth of >2m.

The study will include various organics treatments to attempt to improve tree survival and growth and hence water-use under relatively adverse soil conditions.

Assuming a change in water table depth beneath the pavement can be achieved, long-term effects on pavement condition will be monitored.

There is no assumption on whether salinity or water logging is the major cause of pavement degradation, and sites have been selected to attempt to eliminate poor quality of road base and pavement material as a cause.

The only assumption with respect to salinity is its negative effect on tree water use. The trial will continue for several years.

Waste management in prisons

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Waste management is a process which has increasingly been associated with the disposal of rubbish to landfill. However, a growing belief that waste represents a potential resource that can be diverted from landfill and either recovered, recycled or reused has emerged as the new paradigm for planners, managers and decision makers. In response, strategies have been developed, largely by Government, which address the need for new waste management and minimisation practices. Education programs and the introduction of new methods of waste collection services prompt community responses to the management of stocks and flows of waste. However, in addition to this process are smaller, institutional communities where waste management involves not only environmental but also social considerations. Australian prisons represent a unique institutional setting where waste management usually involves the collection of waste and its disposal to landfill, with some limited processing such as paper shredding of documents. All materials leaving a prison have an associated security risk, and therefore waste generation, as well as its disposal, is an issue that prisons need to address on a daily basis. Research undertaken at the Australian National University has shown that alternative approaches to waste management can be developed successfully, with significant environmental, economic and social benefits to both the prison and the broader community. Strategies can be developed that recognise the specific needs of each institution within a local and regional context. Identification of environmental needs of local and regional communities can form the basis for focussed recycling, reuse, or recovery operations. Examples include the development of small scale industries that:

- support environmental rehabilitation projects in the broader community (such as salinity, soil erosion, water quality and biodiversity issues);
- recycle toys and educational equipment for underprivileged children and/or schools;
- use recycling processes to generate fuel for supply to the underprivileged;
- provide sources of income to the prison through agriculture/horticultural production;
- support the acquisition of new skills by prisoners.

System design is based on the principles of ecologically sustainable development, and is underpinned by sound knowledge of key social, economic and environmental issues. Further information can be obtained from Dr Sara Beavis at sara.beavis@anu.edu.au.

Utilisation of domestic organic waste in viticulture

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A current project being undertaken by the NSW Department of Environment and Conservation is exploring the development of markets for household collected organics. The principal aim of the project is to secure long-term viable markets for composted products. These products are derived from yard wastes which are a part of local Government kerbside collection in the City of Queanbeyan in NSW, Australia. Difficulties exist for Queanbeyan City Council to market this material as a mulch due to competitive neutrality issues and market availability. The project has been established to address current knowledge gaps with relation to the impacts of mulching and composting on cool climate vines, and to explore market potential for organics/green-waste generated from domestic sources in the City of Queanbeyan. In particular, the project intends to explore the efficacy of the product in improving soil quality and weed suppression as a means of identifying a potential market.

The study site is located in undulating terrain which has experienced extensive clearing in the past, and is regenerating to produce scattered timber and light scrub within broader areas of completely cleared land currently used for grazing or rural residential development. Due to its close proximity to Queanbeyan and Canberra, large grazing properties have been subdivided for smaller holdings including hobby farms and commuter blocks. This development has profound impacts on catchment hydrology and ecology. The study site itself is a cool climate vineyard which is managed through a drip watering system which delivers fertiliser enriched water through gravity feed.

Degraded soils may become less productive because of the export of nutrients in the form of plant and animal products or through sediment losses by erosion. In addition, the capacity for plant uptake of nutrients in soluble form is impacted by soil moisture content. Amelioration of degraded soils traditionally involves a number of treatments that replace these losses. Artificial fertilisers are designed to replace the essential nutrients (nitrogen, phosphorus, potassium, calcium, magnesium and sulphur) and micro-nutrients (including boron, chlorine, copper, iron, manganese, molybdenum, selenium and zinc) as the basis of maintaining profitable and sustainable agriculture, horticulture or viticulture. However, depleted soils also require replacement of lost organic matter and microbial activity. Both of these are important factors in increasing the availability of nutrients to plants (including the fixation of nitrogen and micronutrients in the organic soil fraction), and developing good soil structure.

This project is trying to demonstrate what changes occur to soil physical, chemical and microbiological properties, and associated improvements to vine growth, in response to the application of composted material derived from organcis/green waste. The assumption which drives this study is that:

Composted /organcis/green waste has the potential to maintain soil moisture content, reintroduce organic matter and micro-nutrients, and increase microbial activity.

Early results in the trial indicate that plant growth increases in response to application of organics greenwaste. There is also positive evidence of improved soil physical and chemical condition. Further analyses will be undertaken at the end of the growing period and at harvest to quantify any changes in vine productivity and attempt to link these, if present, to soil physical, chemical and bacteriological properties.

Waste Wise Schools: an educational approach to waste

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Waste management within the Australian Capital Territory (ACT), Australia, is the responsibility of ACT NOWaste within the Department of Urban Services. Its primary role is to implement the 'No Waste by 2010' strategy through the provision of collection, disposal and recycling services, and policy advice that addresses waste minimisation and diversion of waste from landfill. The zero waste strategy of NOWaste, which was introduced in 1996, represented the first government zero waste initiative in the world. As an extension to this strategy, educational activities and resources have been developed for schools in order to establish sound waste management practices and a better understanding of key environmental issues in school age children and teenagers. ACT NOWaste acknowledges the pivotal role of education in achieving its zero waste goals in its strategic plan (ACT Urban Services, 2002). In 2002, the ACT Government purchased a licence for the Waste Wise Schools Program from the Gould League Victoria, which has developed the scheme for the waste management State agency, EcoRecycle (http://www.ecorecycle.vic.gov.au). It was from this point that a Waste Wise Schools Program started development and implementation within the ACT, focussing on the specific requirements of the Territory.

Waste Wise Schools are supported by ACT NOWaste to change their practices in purchasing, use of resources and curriculum development. Students and staff are motivated through award schemes, professional development opportunities, cost efficiencies and improved appearance of school buildings and grounds. Some of the activities that students become involved in include the construction and use of worm farms for composting, developing garden/horticultural plots, designing and constructing new technologies for resource recovery, and being involved in environmentally sensitive design of school grounds and classrooms. The Program has been most successful in schools in Victoria, Australia, where curriculum development is a major component within areas of science, language, the visual and performing arts, agriculture, geography and mathematics. Key outcomes that have been identified in participating schools include:

- Cost benefits to the school due to decreased need for collection services and office supplies
- Changed purchasing in school canteens in response to student pressure (minimising packaging)
- Reduced hours of work for cleaning due to a tidier/cleaner environment
- A sense of pride amongst students and staff
- Local, regional and State awards for waste management
- Focus of support for other schools interested in participating in *Waste Wise*
- Revised, integrated curricula
- Changed eating patterns and school ground design and infrastructure
- Links to community

Processes of development of the Program within the ACT can be viewed on the NOWaste website http://www.nowaste.act.gov.au/ed/education.html