ANOR
Newsletter from Australia
December 2006

Once again we welcome all ANOR members to the December edition of the ANOR newsletter compiled by Gerry Gillespie.

Great interest has been growing in Australia in regard to ANOR in 2006 and in the new year we hope to be bringing many new members into the organisation. We have strong commercial interests in supporting the group and we hope to arrange a seminar toward the end of 2007 on the issues surrounding the marketing of recycled organic products here in Australia. If you have any companies which may be interested in financially supporting such a seminar which could be held in conjunction with an ANOR meeting, please ask them to contact me at:
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As interest grows in the problem of Climate Change it is clear that to make a real difference for future generations the most important issue will be protecting our soils and sequestering vast quantities of carbon in those soils and plants through careful agricultural management and the return of quality recycled organic products to farmland.

A new group which was formed in the past year in Australia is the Carbon Coalition. Visit their web site at:
http://www.carboncoalition.com.au/

Our first story this year comes from the highly respected Dr Bob Paulin, from the Department of Agriculture Western Australia. If you are attending the US Composting Councils conference in Orlando in January next year you will hear him speak. Following are the Media and Technical summaries of Dr Paulin's work:

Identifying the benefits of composted soil amendments to vegetable production

Bob Paulin *et al.*
Department of Agriculture, Western Australia
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Media summary

A major national project to evaluate the benefits of compost to vegetable production has demonstrated compost consistently increases marketable yield and improves soil quality. Its continued use will build soil nitrogen and carbon, increase soil biological activity and cation exchange capacity, increase water holding capacity, reduce bulk density and stabilise pH.

This leads to increased returns and benefits for growers, the environment and the wider community.

When transplanting leafy crops good quality compost has been shown to elevate plant available nitrogen increasing yields and potentially allowing major reductions in applied fertiliser. Root crops were shown to be sensitive to compost quality and yield and quality increases were not as dramatic. To gain the full advantage of using compost on these crops it will be necessary to adjust fertiliser programs to account for the improved soil fertility.

Improved marketable yield and savings in fertiliser alone have been sufficient to return extra dollars particularly on light sandy soils. The greatest benefits arise when its regular use effectively 'bullet proofs' the soil against unanticipated climatic events, irrigation or equipment failure and human error that would otherwise result in loss of potential yield.

This is because compost increases soil organic matter which increases the soils ability to:
• Hold crop available nutrients and water.
• Maintain and improve soil aeration and drainage; and
• Maintain optimal pH and reduce erosion.

One of the most important findings has been the ability of compost to increase the supply of plant available nitrogen and potentially reduce the need for large amounts of inorganic nitrogen. It contains useful quantities of plant available phosphorus, potassium and magnesium and the nitrogen it contains is retained in the soil and is available for future crop use.

To achieve full benefits growers will need to incorporate the use of compost into their normal management programs and the report acknowledges that a number of changes and developments are needed before growers will use compost on a large scale. The findings highlight the potential for compost to contribute to the development of 'best practice' production systems that further improve productivity by making better use of fertiliser, irrigation and pesticides and that produce more consistent, better quality crops with less impact on soil and ground water quality.

The level of improvement in soil and crop performance that can be achieved by using compost will depend on the concentration at which soil carbon reaches equilibrium within the applied management system. The report discusses the need to change management practices to increase soil organic matter levels further and achieve greater potential benefits.

Aspects of compost quality that improve its performance have been identified and made available to the composting industry. However the challenge to the composting industry is to implement quality management that will consistently deliver the quality required for vegetable production. In the short term, achieving greater use of compost by the vegetable industry relies on reducing its cost. Since the benefits of use extends to the wider community through assisting the beneficial reuse of organic wastes, increasing the proportion of cost borne by the waste producers will provide a mechanism to reduce cost.

Technical summary

This project was established to quantify and promote the benefits of using compost in Australian vegetable production. Vegetable production faces multiple challenges of improving productivity, meeting growing demands for ‘safe, clean and green’ produce and managing increasing costs and competition while demonstrating sustainable use of soil and water resources.

Both urban communities and agriculture are also being challenged to implement ‘zero waste’ principals that include environmentally and socially acceptable recycling of their wastes. This project therefore explores the potential for utilising principally organic wastes to the benefit of both agriculture and the wider community. The research and development program involved fertilizer replacement, production system evaluation and commercial demonstration sites. A series of nutrient replacement trials were established to determine the adjustment in fertiliser program required to accommodate nutrients provided by compost.

Replicated split plot experiments were established to evaluate the nitrogen (both WA and Victoria), phosphorus and potassium (WA only) contributions from a commercial urban greenwaste based compost, applied at 0, 30 and 60 m3/ha. The nutrient under investigation at each trial site was applied at five rates from 0 to 125% of commercial practice and other nutrient requirements were applied in accordance with current best practice. Crop rotation reflected regional commercial practice and where possible combined a root and leafy crop. The System evaluation trial site in WA allowed comparison of three independently irrigated soil management strategies involving conventional inorganic best practice, compost and compost combined with clay soil amendment. Compost was applied at 30 m3/ha prior to each crop and the clay content in the clay amended plots was adjusted to 5% in the top 15 cm, prior to trial commencement.

In Victoria the focus was on the use of composts made from different feedstocks and the resultant impact on compost quality and performance. In WA, the sandy soils allowed the installation of lysimeters at both the fertiliser and system sites and combined with electronic tensiometers, allowed detailed monitoring of both irrigation and nutrient management in selected treatments. In all but one of the 17 trials conducted, yields improvement was indicated. Based on the cheapest fertiliser chemicals, savings in nitrogen, phosphorus and potassium, together with other key nutrients, initially accounted for half of the typical cost of applying compost and with continued use, savings increase to two thirds of the applied cost.

Significant improvements, particularly on the sandy soils, were noted in all soil characteristics measured, including increased soil organic matter, organic nitrogen, biological activity and diversity, cation exchange capacity, volumetric soil moisture along with improved soil pH and reduced bulk density. The addition of clay at the system site further added to both crop and soil performance. Gross marginal analysis indicated that the use of compost in vegetable production will increase returns. Further when events such as irrigation failure and or unseasonal conditions resulted in crop stress, the improvements to soil performance associated with regular compost use had the potential to produce large increases in crop and therefore returns.

The potential for vegetable production and other horticultural crops to reuse large volumes of reclaimed water from waste water treatment plants creates a need to establish permanent areas or precincts for horticultural production. Apart from challenging the current planning process of continuous urbanisation, the protection of groundwater quality within these precincts will require changes to the current farming system.

Combining the reuse of organic wastes to improve soil organic matter and soil performance with the adoption of better management will significantly increase the level of groundwater protection that can be achieved. Despite the demonstrated improvement in returns, growth in the use of compost in vegetable production continues to be limited.

Results at commercial demonstration sites have also generally been positive, but in reality the increases achieved have not been sufficient to overcome:
• cost and a reluctance to alter existing management practices;
• difficulties with making adjustments to fertiliser program; and
• requirements for storing and spreading compost and growers' limited experience with its successful use coupled to either first or second hand experiences with poor quality compost.

Results from the PhD program at the University of Western Australia confirmed that compost makes a significantly greater contribution to the development of soil organic matter than poultry manure. However, the reality is that while there is unrestricted access to low cost raw manures the higher cost and lower nitrogen availability of compost will significantly limit its use by most growers. Progress is being made in developing suitable application equipment and positive results associated with compost use in an increasing range of crops are accumulating.

The current national Compost Roadmap Project, with a focus on developing agricultural compost markets, will assist and potential changes to policies governing the application of organics to land will address some of the competitive inequities that currently reduce compost's competitiveness. The mobility of inorganic nitrogen in all soils and its impact on groundwater quality is a major challenge for vegetable production. While losses will be reduced by further improving fertiliser and irrigation practices, the use of compost will increase and maintain soil nitrogen and organic matter and provide significant additional capacity to manage nitrogen loss and to use less nitrogen.

Greater research and development focus on 'Carbon based vegetable production' to further increase soil organic matter levels will maximise the potential to reduce nitrogen, irrigation and pesticide usage. Work to develop these systems will usefully integrate aspects of cover cropping, permanent bed production (Rogers 2002) and possibly sub-surface irrigation with compost use to develop lower input, high performance production systems that better meet the combined needs of greater productivity, better resource protection and the production of safe healthy fresh food.

(Editors Note: Full copies of this report are available from Dr Bob Paulin at: bpaulin@agric.wa.gov.a)

Waste Management Association of Australia Compost Roadmap

Angus Johnston
National Project Manager – Recycled Organics

The official launch of the Compost Supply Chain Roadmap was a historic day for the Compost Industry. At what time does a diverse group of businesses involved in processing organic wastes and producing soil and energy products become a distinct industry group? When do individual businesses recognise that it is important to cooperate, not just compete?

For the Compost Industry that time is now, and the occasion was dramatically marked by members of WMAA and dignitaries at Parliament House Canberra.

On February 13, 2006 the Parliamentary secretary to the Minister for the Environment, the Hon. Greg Hunt MP, added federal political clout to an already extensive process of consultation and engagement. It is this engagement process, as much a the written document, that provides a firm foundation for implementing the industry growth strategies described in the Roadmap. People, and the networks formed between them, give the industry the capacity to deal with the many challenges they are faced with.

The networks have certainly been growing. It has been estimated that more than 600 stakeholders participated in the Roadmap conference series and follow-up events held during 2005. At the same time working groups in all five mainland states have been meeting regularly to discuss and address local issues. While at a national level the Compost Australia Division works to connect people and projects nationally.

Compost Australia has taken responsibility for maintaining the momentum and implementing the roadmap strategies. I was appointed as the Industry's National Projects Manager in January, with my main role being to translate the Roadmap strategies into actions. Funding for this position has come both from the industry and state governments.

The remainder of this article provides an insiders view on the Compost Industry, which faces a difficult transition to a higher cost base for recovery of organic waste for beneficial reuse.

Two pressures dominate the minds of processors of organic waste across the country. The fast growing supply of organic waste requiring processing and the much slower growth of high value markets for recycled organic products. It is clear that the compost industry is on the verge of a difficult transition period, particularly in NSW.

For some time a competitive gate fee for processing organic waste using an open windrow process has been around $30 a tonne. This price factored in the existence of higher value, established markets for recycled organic products in close proximity to urban areas. In Sydney these markets have already passed saturation, with oversupply resulting in increased inventory stockpiles and lower sale prices for recycled organic products. There are signs that Melbourne and Adelaide have starting to experience the same problems.

Lower value markets for recycled organic products involving considerable transport and higher application rates (agriculture and land rehabilitation) require a gate fee of $50-$60 per tonne. These gate fees reflect the costs associated with producing quality,

fit for purpose products and transporting them out of urban areas to where they are most needed.

Some processors are now faced with stockpiles of compost at the $30/tonne cost base that now require $50/tonne or more to process and deliver to a customer. Where processors decide to pass on cost increases at the gate they risk losing their supply of raw materials. Where they don't, they risk losing their business. Long term contracts mean that some processors do not have the option to raise gate fees and must bleed until the contract ends, even though these problems may not have been apparent when the contract was signed.

The message for Local Government is clear. Gate fees for source separated organic wastes are set to rise either at the end of your current contract or when your processor is forced to close the gate for financial or regulatory reasons. The good news is that processing source separated organic wastes will still be a lower cost and lower risk alternative to either landfill or mixed waste processing technologies, even at $60/tonne.

Processors who focus on producing quality recycled organic products and creating strong relationships with buyers will be best placed to deal with the transition period. In contrast processors who focus on securing supply at the expense of non-viable gate fees gate fees may struggle to survive financially. Crucially processors must understand the changing nature of markets for recycled organic products in order to make informed business decisions when submitting tenders for organic resource recovery.

State and Local Government could facilitate a smoother transition by moving to contracts for 'beneficial use' of organic wastes rather than simply tendering for organic waste 'disposal' or even 'processing'. By specifying beneficial uses for recycled organics a level playing field would be created for contractors who understand their markets and know how to make products that meet their customers needs. Local Governments, who must be guided mainly by price, would weed out poor quality contractors who are unlikely to find sustainable markets let alone achieve the highest and best use of the recycled material.

While the Compost Industry is growing rapidly it is still relatively early in its development. The fact that the large waste management corporations have yet to really buy into the industry indicates that the necessary financial returns do not exist, the business model is yet to be perfected, and the underpinning framework of regulation and incentive is still inadequate.

This is an exciting time but also a time of considerable risk. By working together through Compost Australia the Compost Industry is implementing a strategy to reduce risk and grow the industry for the benefit of both community and commercial aspirations.

Dr Richard Stewart
Chair Organizing Committee

The 2006 Recycled Organics Industry R&D Forum held in Adelaide on 26-27 September was an outstanding success. More than 74 delegates attended the Forum including representatives from industry, research institutions and government regulators. Compost Australia and Zero Waste SA generously sponsored the event.

The attendance numbers exceeded all expectations and was an indication of the level of interest that the recycled organics industry is attracting at present. It was great to see the wide diversity of research projects that are being conducted in this area, and to see the level of enthusiasm shown by the industry players.

The overall aims of the Forum were to:

- avoid duplication,
- create collaborative research opportunities,
- network throughout the industry,
- identify and lobby funding bodies for additional research funds, and
- to develop a national research framework for our industry.

Steven Marshall from Compost SA gave opening remarks on behalf of industry to set the context of the two day Forum. He reiterated that the Recycled Organics industry is currently at a cross-roads and that R&D would play a key role in addressing some of the industry's major goals going forward. He also stressed the need for a more coordinated national approach to R&D to avoid duplication and to maximize funding opportunities.

The Forum was divided into State based sessions where a designated leader presented an overview of the research being done in a particular State followed by a number of specific R&D presentations from local researchers. This format allowed industry to get a feel for the diversity of R&D being undertaken and the relative strengths and capabilities of research organizations in each State.

On the Wednesday night delegates enjoyed an entertaining and interesting dinner speech from Professor Mark Tester, Federation Fellow at the Australian Centre for Plant Functional Genomics based in Adelaide. Professor Tester spoke about "'Genetically modified crops after dinner - science and politics clash again" which certainly created some lively debate.

On Thursday morning Dr Dean Metcalf of Biocontrol Pty Ltd based in Tasmania spoke to a breakfast audience of more than 65 about the use of recycled organics products for disease suppression in vegetable growing. A few of the myths about "compost teas" were well and truly laid to rest!

The priority R&D area identified at the Forum was marketing and education, reflecting the Industry's need to disseminate the outcomes of the extensive knowledge and technologies already developed by the R&D community. This was closely followed by a need for R&D that links composts into sustainable agricultural systems and provides a better understanding of the biological effects of compost on soils. The

R&D required to support improvements quality standards such as AS4454 was also listed as a high priority.

Conference proceedings from the 2006 Forum will be made available through Compost Australia on DVD to all who registered for the conference and at a low cost to other interested parties. The outcomes of the Forum will be summarized in a draft report to be submitted to Compost Australia. Ultimately, this report will be used as a basis for creating a National R&D Framework for the Recycled Organics Industry.

I would like to extend a big thanks to the people who volunteered their time to make this event a success, including Ross Ballard, Katie Webster, Steven Marshall, Matthew Ayres, Angus Johnston (Compost Australia) and Philip Matthews (Zero Waste SA).

More information on the Compost Roadmap and composting in Australia can be obtained via email from Angus Johnston at: angus@wmaa.asn.au

Liquid Organic Products

New markets in an ancient land

By Gerry Gillespie

It may just be possible that the most cost-effective way to get recycled organic products back into agriculture may be in water.

The marketing of recycled organic products back to agriculture has always been a vexed question. Many marketers will complain that the products they are trying to sell have limited appeal to agriculture because of the cost of transportation and the difficulty of spreading the product once it gets to the farm.

The main problem of course is the bulky qualities of dry composted products . The quantities need to deliver biology, nutrient or even a simple mulching effect to agriculture are often defeated by the cost of transportation.

A firm from Townsville in Queensland, Australia is addressing this problem by producing a high quality, high nutrient, product which can be put to the land simply by spraying it onto the crop area using standard farm-based equipment.

The quality of the product and the agricultural and environmental results it achieves more than justify the transport costs of the concentrated product.

After twelve years of research and work with Australian farmers in a broad range of crops including the sugar and banana industries, Vital Resource Management (VRM) now have a range of products to suit every farming application. Their products originally demonstrated that they had the ability to control odours from the effluents of many industries. They can now confidently take a range of solid or fluid organic wastes and turn them from problems into profits.

Following are a number of small stories from this year's newsletters from VRM which clearly demonstrates the broad range of applications for their products and the future for liquid fertilisers and inoculants in the Asian region.

EM for the Sugar Mills

December 05 and January 06 were extremely busy months for the three VRM Inoculation trucks, logging many KMs trying to cover all the sugar mills north and south of Townsville. With the crushing season extending far beyond its normal dates, the sugar mills were in need to have their effluent ponds regularly sprayed with eMCA. The inoculum helps with the odour of these ponds and digests a lot of the organic material found in the water. Because of the readily available food source found in the mill wastewater, our bugs thrive in this environment and quickly take care of the stinky situation. VRM does regular inoculation programs for over 20 mills on the coast. Over the past several years, it has become evident – and widely accepted -- that successful management of their waste systems is a function of the ability to maintain consistently active populations of the right microbes. The key to VRM's success with these programs has been the location of the inoculation sites and our ability to build up populations throughout the process stream.

A Big Nod for Probiotic Cleaners!!

In an independent study conducted by the Technical University of Wels in Austria, it was found that VRM's Probiotic Cleaners were as effective at cleaning as its chemical counterparts. The study compared the effectiveness of VRM's eMC® cleaners to chemical equivalents and disinfectants. To examine the cleaning effects, surfaces were cleaned and examined for dirt using ATP measurement and conventional, microbiological methods. These controlled tests were completed in various facilities and on various surfaces.

From the Abstract: "The results show that directly after the cleaning process, the eMC® and comparative cleaning agents provided virtually identical results and were only slightly surpassed by the disinfectant. The results also indicated that the test surfaces subjected to eMC® Cleaner remained cleaner for longer, than those treated with the comparative agents. Above all, this was the case 24 and 48 hours after cleaning…"

VRM Called In

After the desludging of waste ponds at the Wastewater Treatment Plant by Townsville Citiwater created unpleasant odours for the businesses around the treatment plant, VRM was called in to help control the situation. A busy day of spraying the ponds and their edges with eM formulations and spreading Bokashi controlled the situation. We were certainly appreciative in the office, after being overwhelmed with the odours the day before.

Record Sales of BioBase

The month of November has seen VRM far exceed any previous monthly sales of BioBase, it's well known liquid fertiliser. Over 530, 000L have been brewed and shipped out of our warehouse with many thousands of litres of concentrates also moving through various distributors around the country! Most of it heading north to the Ingham and Innisfail region. BioBase has proven very popular among the sugar cane and banana farmers, as both have seen significant increases in yield, while reducing the amount of fertiliser applied to the land. BioBase is able to accomplish this by delivering nutrients in a liquid form and in a "pre-digested" state with microbes already present. This allows faster uptake of nutrients and helps build microbial populations which continue to feed plants long after fertilising.

A New EM-Based Product
Bio Start +

VRM has now introduced Bio Start +, it's latest EM-based agricultural product. This formulation, a combination of liquid kelp, humates and friendly microbes; favours a rapid development of fermentative and rhyzobial activity. For this reason the product is often used as a root growth stimulant. A key feature of this activity is a generalised stimulation of fungal activity. Because of this rapid effect, the product works extremely well as an inhibitor (by competitive exclusion) of fungal diseases. Keep an eye out for the new label coming out soon.

As you see from the above material, the applications for liquid products are extensive. More information is available from Ken Bellamy at: kbellamy@vrm.com.au

A very Merry Christmas and a successful New Year to all ANOR members

Kind regards to you all

Gerry Gillespie