Organic News

NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Volume 3

Issue 5
September / October 2006

ISSN 1449-325X

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Yanco NSW 2703.

Inside this Issue:

New project to improve the yield & quality of spelt & other specialty grains under organic production

With the increasing awareness of the link between diet and health, there is growing demand for specialty grains and their products within the health food sector. It is claimed that specialty grains such as spelt *(Triticum aestivum* var. *spelta)*, cereal rye (*Secale cereale*), and Kamut® (*Triticum turgidum*) exhibit superior nutritional attributes to other more common cereals such as wheat. It is these nutritional claims that have sparked the greatest interest, particularly in the health food sector. The most common use for specialty grains is as a substitute for wheat flour in breads, pasta, cookies, crackers, cakes, muffins, pancakes and waffles. In Australia, organic spelt is currently processed for flour and further value-added into bread, licorice, spelt flakes, and pasta. Specialty grains have also attracted interest in the livestock industry as feed supplements and for grazing potential. European research is investigating spelt as a high-protein meat and bone meal replacement for livestock feedstuffs.

In Australia, spelt grain production is currently estimated at 4,000 tonnes. The current estimated retail value of processed organic spelt products is $7.7 million. Estimates suggest that markets currently exist for approximately 10,000 tonnes of organic spelt grain per annum with an on-farm value of $10.0 million (de-hulled), and retail value of $19.2 million. The greatest demand is for organically produced specialty grains; however, poor yields and market irregularities are frustrating industry expansion.

Right: The new project will evaluate a large number of spelt genotypes for their agronomic, yield and milling quality characteristics. Photo shows the 2006 seed increase block at NSW DPI's Yanco Organic Research Site. Photo: R. Neeson

Currently many processors are opting to import grain in an attempt to maintain a consistent supply or as a last resort, determining to cease production altogether. Estimates suggest that more than half of the volume (around 10,000 tonnes) of these specialty grains or their products (eg flour) required by Australian processors is currently imported, thus offering opportunities for import replacement. Some processors suggest that if supply irregularities were solved, increased confidence in the market place could see the demand for these grains double over the next few years.

The introduction of specialty crops will increase on-farm biodiversity and provide increased crop rotation options for organic farmers. Environmentally, the seeming adaptability of spelt and other specialty grains suggests that they may have a role to play in Australia's marginal agricultural landscapes and in traditional cropping zones as the impacts of climate change are felt. Some overseas research suggests that spelt, Kamut® and cereal rye are able to perform better than many traditional grains (such as wheat) under limited nutrients and water availability, therefore they will help to sustain productivity and profitability of organic cereal-pasture enterprises.

A new 3-year project conducted by researchers associated with the EH Graham Centre for Agricultural Innovation (a collaborative alliance between NSW DPI and Charles Sturt University) will aim to develop more reliable cultivars of spelt and other specialty grains for organic production. The three year project is supported with funds provided through the Rural Industry Research and Development Corporation's (RIRDC) Organic Produce Program. Other groups involved in the project include the Department of Natural Resources & Environment, Victoria, organic farmers from three regions (Cootamundra, Coleambally, and Grafton) who will be directly involved in spelt selection and agronomy experiments, and The Biological Farmers of Australia Co-op Ltd. (BFA).

Project Leader, NSW DPI's Organic Farming Liaison Officer Robyn Neeson describes the project's main objectives is to improve the supply and quality of organic spelt through the selection of superior lines that are well adapted to organic production systems and which exhibit acceptable quality characteristics from a nutritional and processing perspective.

Ms Neeson said the three year project will involve intensive selection trials as well as a number of experiments to gather improved agronomic information including optimal sowing dates, sowing rates, weed competitiveness, phosphorus (P) and nitrogen (N) requirements thus enabling organic farmers to optimise the yield and quality of spelt, Kamut® and cereal rye. The information gained from the P & N experiments will enable organic farmers to make informed decisions about paddock selection for spelt, their fertiliser management, and potential performance of spelt on their farms. Information gathered from the experiments will be compiled into a comprehensive agronomic information package.

Above: Some of the different spelt genotypes at NSW DPI's Yanco Organic Research Site. Note extreme variations in plant growth habit (prostrate vs upright). Photos: R. Neeson

The project commenced in July 2006 and seed increase of 63 spelt genotypes is currently underway at NSW DPI's Yanco Agricultural Institutes Organic Research Site. A glasshouse trial has also been established at Yanco to compare the P response of spelt (3 landraces), Kamut® (1 selection), cereal rye and traditional bread wheat.

Observations are being made of the spelt genotypes growth, yield and quality characteristics. Organic farmers will be invited to assess the spelt lines growing at Yanco during a field day on December 7 and will be asked to provide valuable input for the project by ranking their order of preference for the key physiological attributes which best adapt spelt to their organic production systems.

Next year, trials will expand to include sites at NSW DPI's Yanco and Vic DPI's Rutherglen Organic Research Sites and on organic farms at Cootamundra and Coleambally. These trials will assess the spelt genotypes for their local adaptability to a range of soil types and under both dryland and irrigated conditions.

Outcomes of the project will hopefully provide producers with greater confidence in organic production requirements and techniques for these grains, leading to a more sustainable organic grain industry that is better able to expand to its full market potential.

A field day will be held at the Yanco trial site on December 7, 2006. Growers are encouraged to attend and provide feedback to researchers on the spelt genotypes. 9:30 am - 12:30pm followed by an organic lunch. No charge. RSVP Friday, December 1, 2006. Phone Robyn Neeson on (02) 6951 2735.

For more information contact: Robyn Neeson on (02) 6951 2735 or Email: robyn.neeson@dpi.nsw.gov.au

Left: Participants at the recent Riverina Organic Farmer's Organisation / BFA Organic Roadshow inspect the spelt genotype trial planted at Yanco Agricultural Institute's Organic Research Site. Photo: D. Lemerle

OFA 3rd National Conference

The Organic Federation of Australia held its Third National Conference at Darling Harbour on July 21-22. Held in conjunction with the Organic Expo the conference featured a comprehensive program of presentations on organic systems with an emphasis sequestering atmospheric CO_2 and using it in the soil to increase farm productivity.

Speakers over the 2-day conference included Allan Yeoman, Yeomans Plow Company, Andre Leu, Chairman, Organic Federation of Australia, Elaine Ingham, Director, SoilFoodweb Institute, Maarten Stapper, Principal Research Scientist, CSIRO-Plant Industries, Jan Skjemstad, Senior Researcher, CSIRO-Land & Water, Geoff Gurr, Program Leader, Charles Sturt University, Stuart Larsen, Marra Seeds, David Midmore, Head of Plant Sciences Group, Central Queensland University, Viv Burnett, Research scientist, Victorian Department of Primary Industries, Tim Kempton, Stance Agriculture, Colin Seis, Farmer, Gulgong, Kerry Cochrane, Course Coordinator, Charles Sturt University, Brian Scarsbrick, Chief Executive Officer, Landcare Australia, Eric Love, Chairman, Centre for Organic & Resource Enterprises, Daren Bragg, Manager, Organics Section - NSW Department of Environment and Conservation, Rod May, Technical Director, NASAA, Don Fraser, Chairperson, Organic Produce R&D Advisory Committee, RIRDC, Hamish Mackay, Chief Executive Officer, Biodynamic Agriculture Australia, Bellingen, James Sprunt, Independent trainer & researcher, Cheryl Kemp, Biodynamic consultant, Alasdair Smithson, Advisor/Researcher, Australian Certified Organic, Colleen Yates, President, Organic Growers Association of WA, Jane Adams, Chair, Australian Farmers' Markets Association, and Brendan Hoare, Convenor/Member, Organic Federation of Aotearoa/IFOAM World Board.

The following paper presented at the OFA Conference by Landcare Australia Lit., Chief Executive, Brian Scarsbrick perhaps best sums up the focus of the 2-days.

(Reproduced with permission from: OFA (2006). Kristiansen, P and Kemp, C. Eds. Proceedings of the Third OFA National Organic Conference "Organics- Solutions to Climate Change. OFA, Bellingen NSW)

The Importance of Climate Change to Agriculture and Landscape

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Abstract
The debate about global warming is over and most people accept that if effective action is not taken to reduce greenhouse emissions there will be significant impacts on landscape and agriculture by 2100.

Agriculture generates 16% of Australia's greenhouse gas, mainly methane and nitrous oxide which are more potent greenhouse gasses than CO_2. Adopting more sustainable agricultural practices reduces the greenhouse gasses and can improve profitability. Soil has the potential to store significant levels of carbon depending on soil type and management practices. Land use change to more revegetation has the potential to provide substantial carbon credits to offset emissions from the power, transport and manufacturing industries.

Landcare Australia is investigating the feasibility of establishing a voluntary carbon pool of biodiversity plantings in NSW to provide an income stream to landholders and drive revegetation on a landscape scale for land degradation and greenhouse reduction benefits.

The importance of climate change to agriculture and landscape
It is clear that the debate is over and global warming is a reality. The evidence is mounting that the effects of global warming are being recorded, particularly over the last five years.

Global warming is the result of increasing CO_2 concentrations in the earth's atmosphere that acts like a greenhouse trapping more heat and increasing the earth's surface temperature.

Figure 1 shows this increasing concentration dramatically over time.

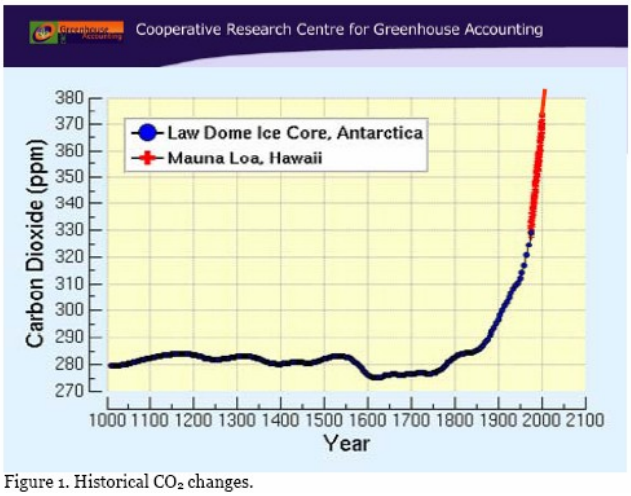


Figure 1. Historical CO_2 changes.

The increasing CO_2 concentration is resulting in gradual increases in the surface temperatures of the globe (Figure 2).

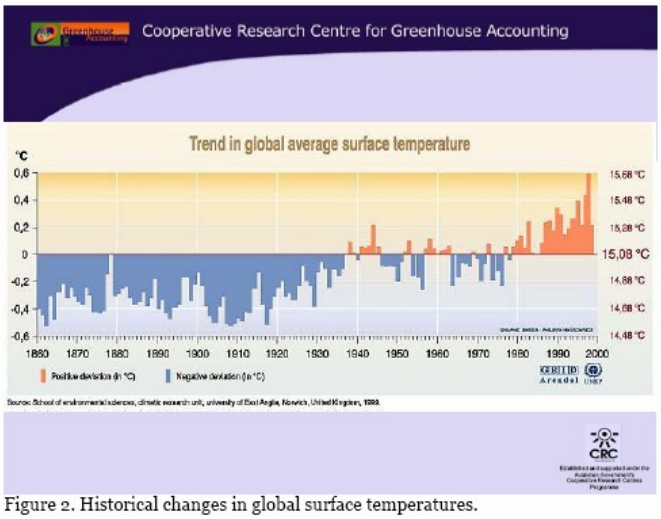


Figure 2. Historical changes in global surface temperatures.

We are now seeing increased observable impacts of climate change over the last five years.
A number of recent reports indicate that predictions of global warming of 3-4^{o}C increase in average surface temperature by 2100 are likely.

The Business Case for Early Action Report (April 2006) indicates the potential impact that 3-4-fold increase in average global surface temperature could have on landscape and agriculture are:
95% decrease in distribution of Great Barrier Reef species
20-85% shrinkage in total snow covered area in the Australian Alps
45% chance of wheat crop value below current level
128% loss in tick related losses in net cattle production weight
55% of core habitat lost for eucalyptus
16-48% decrease in flow in the Murray Darling Basin

The relative emission contribution of agriculture and landscape change
It is important to appreciate the relative contribution that agriculture and landscape change makes to Australia's emission inventory and the impact that landscape change can have on net emissions (Figure 3).

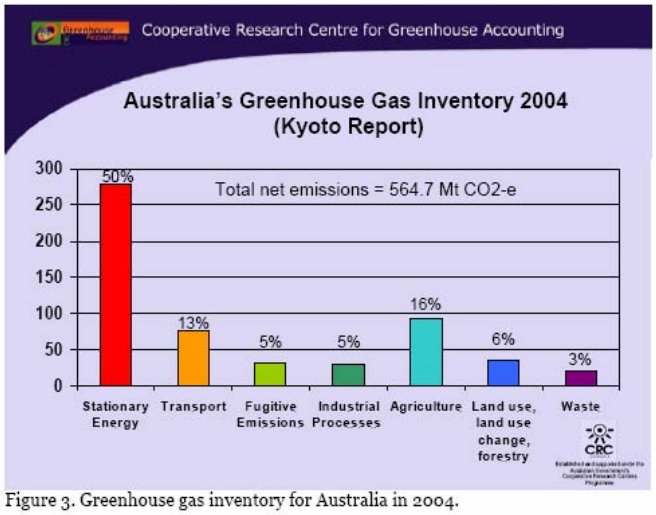
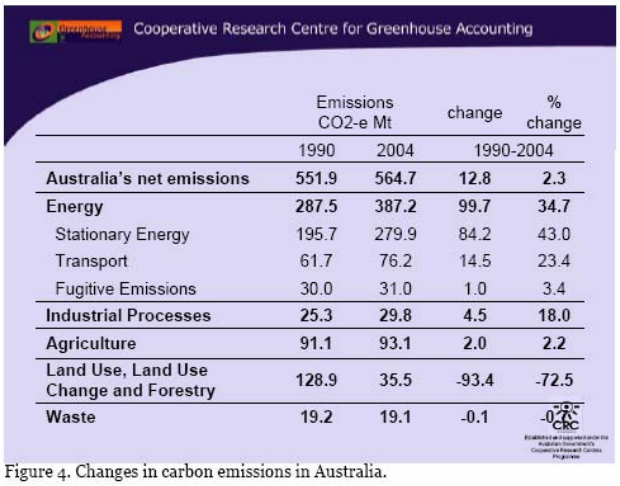


Figure 3. Greenhouse gas inventory for Australia in 2004.

It can be seen that agriculture contributes about 16% of the emissions, mainly as the loss of methane (livestock) and nitrous oxide (nitrogen fertiliser loss).

Land use/land use change contributes around 6% of emissions. However, it is the relative impact of land use change that can be seen in the next table on Australia's net emission change since 1990 (Figure 4).



	Emissions CO2-e Mt		change	% change
	1990	2004	1990-2004	
Australia's net emissions	**551.9**	**564.7**	**12.8**	**2.3**
Energy	**287.5**	**387.2**	**99.7**	**34.7**
Stationary Energy	195.7	279.9	84.2	43.0
Transport	61.7	76.2	14.5	23.4
Fugitive Emissions	30.0	31.0	1.0	3.4
Industrial Processes	**25.3**	**29.8**	**4.5**	**18.0**
Agriculture	**91.1**	**93.1**	**2.0**	**2.2**
Land Use, Land Use Change and Forestry	**128.9**	**35.5**	**-93.4**	**-72.5**
Waste	**19.2**	**19.1**	**-0.1**	**-0.5**

Figure 4. Changes in carbon emissions in Australia.

From the above it can be seen that the stationary energy sector has increased by 34% since 1990. However, this has been offset by the reduction in land clearing which has reduced those emissions by 72%. Australia's target of 108% increase on 1990 emissions by 2008 is on track. But a reduction in land clearing is a once off contribution.

However, revegetation can clearly help to offset inevitable increases in stationary energy and other emissions.

Clearly more has to be done by the energy sector and industry, but landscape change through afforestation and reafforestation can have a significant impact by providing offsets if implemented effectively.
Increasing biodiversity plantings in particular has the multiplier effect of reduced erosion, salinity and the beneficial effect of more ecological stability while sequestering CO_2 from the air.

Potential Emission Reductions in Agriculture
Of the 16% of emissions generated by agriculture, an estimated 66% is from methane (NH_3) from enteric fermentation for livestock respiration and 19% from nitrous oxide (N_2O). However, nitrous oxide is 310 times and methane 21 times more potent than CO_2 as a greenhouse gas.

The good news is that more sustainable agricultural practices have been shown to reduce the loss of both these gases. In particular, the loss of nitrous oxide from fertilisers under a grazing regime can be as high as 40% - 60% while under cropping 20% - 50% loss is common.

Action can be taken to reduce these losses substantially by adopting best management practices that also increase profitability.

Soil organic matter and CO_2 storage as carbon
The biomass of trees can be 30% - 50% below ground as roots etc.

With 50% of the biomass of trees being carbon, soils are an important store of carbon particularly under a forest situation.

The soil organic matter is made up of:
Crop residues
Particulate organic matter
Humus
Recalcitrant organic matter – charcoal

Typically, a cleared agricultural soil can hold significant carbon stores depending on soil type, climate and management regime.

The following is a typical example of soils in Wagga NSW, under wheat cropping –
Sandy soil (2.7%c) 70 tonnes c/ha
Loam soil (3.7%c) 90 tonnes c/ha
Clay soil (4.2%c) 100 tonnes c/ha

Management of the soil can play an important role in maintaining and increasing the soil carbon. The amount of crop residue of compost that is returned to the soil is the most important factor in the amount stored. From a farming point of view the following diagram demonstrates the effect of management on the amount of CO_2 stored in the soil and the changes to carbon equilibrium content over time.

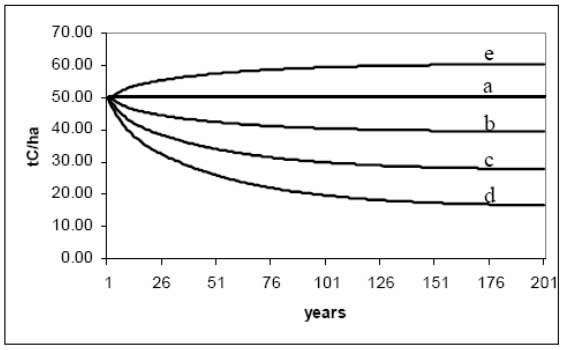


Figure 5. Changes in soil carbon over time (Skjemstad, Baldock & Wright). a = return all crop residue, including grain, to soil; b = harvest grain, return residue – no till; c = harvest grain, burn stubble; d = harvest, burn stubble, long fallow; e = application of manure, mulch, compost from external source

Clearly management has a substantial effect on the carbon stored in soils but change is long term and has limited potential to generate carbon offsets. Measuring change in the carbon stored in the soil is difficult and expensive.

Landcare Australia undertook a greenhouse emissions audit of 110 properties from 40 landcare groups. The audit revealed that there was a wide diversity of emissions from the properties ranging from net sinks where the properties had planted out substantially biodiversity areas and were on heavy soils, to substantial emitters on light soils dominated by cropping.

The study clearly indicated that where sustainable agricultural practices had been adopted, such as no till, stubble mulching and revegetation of degraded areas coincided with a reduction in greenhouse gas emissions.

In fact, it became clear that the carbon atom could be used as a measure of how sustainable a farming system had become. Where best management practices were used greenhouse gas emissions were reduced substantially.

Land use, land use change and forestry
The substantial effect that reduced clearing of land had on net emissions, i.e. a 72% reduction in emissions which helped to offset a substantial increase in the other sectors can be seen in the Greenhouse Gas Inventory (Fig 4).

Similarly, increasing the rate of revegetation of the landscape can help offset some of the unavoidable increases in emissions. Industry and the community must do more to reduce CO_2 emissions with new technology, green energy alternatives etc but encouraging offset trading schemes is important if Australia is going to meet its greenhouse gas emissions target into the future.

Landcare and carbon offsets
Since 1990 landcare groups across Australia have been revegetating degraded landscape for conservation/sustainable productivity purposes.

Opportunities are now emerging in NSW for landholders to potentially receive an income from carbon offsets associated with these plantings. Landcare Australia's close association with corporate Australia through its sponsorship activities is ideally placed to create a voluntary carbon pool of these biodiversity plantings and act as a broker to help facilitate the trading in carbon offsets to the power industry and other sectors.

Vegetation has the ability to 'lock up' or sequester carbon dioxide from the atmosphere and deliver broader environmental benefits to improve such problems as soil salinity, erosion and habitat loss. The 4,500 Landcare groups across Australia have revegetated approximately 100,000 ha (ABARE 2003) per annum since 1990 with 40,000 ha planted per annum in NSW. Figure 6 shows how much carbon dioxide a typical conservation planting will absorb per annum over 100 years.

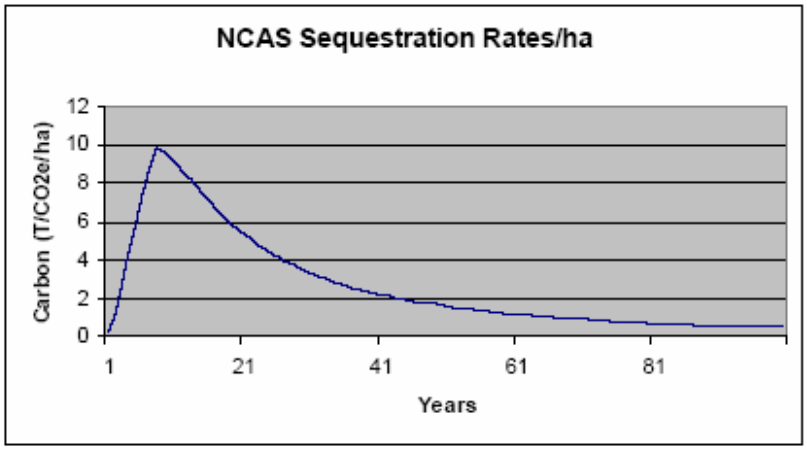


Figure 6. Rates of carbon sequestration by conservation plantings (per hectare per year over 100 years), a typical Australian profile.

Pooling Carbon
Carbon pooling is the grouping of disparate carbon sequestration projects into a larger aggregated 'pool'. A carbon pool manager administers the carbon rights from the bundled carbon sequestration projects by entering into legal agreements with the landholder(s) to acquire their rights to the sequestered carbon, and then on-selling the aggregated carbon rights to investors or to companies needing to purchase carbon credits.

Geographical diversification through carbon pooling offers a range of potential benefits to all participants including significant risk reduction, greater stimulus to undertake conservation plantings,

broader environmental benefits and greater market access for small scale operators, particularly non-commercial.

Carbon Trading
Each ton of carbon dioxide sequestered has a market value. Currently, one ton of carbon dioxide has a market value of around $13-$15 in NSW under the first legislated trading scheme administered by IPART (Independent Pricing and Regulatory Tribunal). Under this scheme 1 ton of CO_2 is equal to 1 NGAC (NSW Greenhouse Gas Abatement Certificate).

Demand for NGACs comes from benchmark signatories (power companies) who must purchase one NGAC for each ton of carbon dioxide emitted above the benchmark. The cap and trade regime in NSW offers potential to provide landholders who have planted areas back to native vegetation to gain an income stream from those plantings. This will encourage more plantings on a landscape scale to provide carbon offsets to corporate Australia.

References
CSIRO and Allen Consulting Group. 2006. The Business Case for Early Action. The Australian Business Roundtable on Climate Change.

Robinson, M. Climate Change, Carbon & Plants Briefings. Paper by the Chief Executive Officer, CRC for Greenhouse Accounting.

Skjemstad, J. 2006. Guide to Soil Carbon Management. CSIRO Land and Water.

News, Publications, Commentaries & Events

News

Drought Hotlines and Assistance
The drought continues to affect farms and communities across Australia. For NSW producers NSW DPI has established a comprehensive website which provides producers with a range of information on how best to cope during drought. The website includes a calculator to help producers make decisions on salvaging crops. The Excel spreadsheet calculates the cost of baling crops for hay or silage and of taking crops through to harvest. The NSW DPI drought assistance website can be located at: http://www.agric.nsw.gov.au/reader/drought

The Australian Federal Government is lending practical support to drought affected farmers and rural communities through income support, interest rate relief and free personal and financial counselling. The Australian Government drought assistance website can be found at: http://www.affa.gov.au/content/output.cfm?ObjectID=D0C19333-3B03-4933-91BAE3D3975BE27C&contType=outputs

Food Processing in Regional Australia Program Funding Applications Now Open
Applications for Round 5 of the Federal Governments Food Processing in Regional Australia Program are now open. The final funding round for the Program, Round 5, will close 8 February 2007.
The Australian Government is investing in the future of our processed food industry with the four-year, $12 million Food Processing in Regional Australia Program (FPRAP).

Grants of $15,000 to $200,000 are available on a competitive basis for individuals and groups seeking funding for food processing projects. Many of the grants issued to-date have been for organic production and processing enterprises.

To apply you must be:

- a small to medium farm, food processor or agribusiness
- proposing a commercially viable food business project that will benefit rural and regional Australia, and
- able to demonstrate that you can match Program funding.

Under new guidelines, small-to-medium sized agribusinesses located anywhere in Australia are eligible to apply. The previous classification excluded agribusinesses in some inner-regional locations.

The degree to which projects will have a positive impact on rural and regional communities is a major point of consideration in assessing the relative merits of each application.

All Round 5 projects must be no longer than 12 months in duration.

For more information and applications forms go to:
http://www.affa.gov.au/content/output.cfm?ObjectID=C0FA5B83-A059-472A-B0807C505079DC3D

Publication reviews:

Title
Bias in peer review of organic farming grant applications

Abstract
Peer reviews of 84 organic farming grant applications from Sweden were analysed to determine whether the reviewers' Affiliation to one of two types of agriculture (i.e., organic and conventional) influenced their reviews. Fifteen reviewers were divided into three groups: (1) scientists with experience in organic farming research; (2) scientists with no experience in organic farming research; and (3) users of organic farming research. The two groups of scientists assessed the societal relevance and scientific quality of the grant applications based on three criteria (i.e., presentation, methodology, qualifications), whereas the user group only assessed societal relevance. The analysis showed that the two groups of scientists provided very different reviews. Scientist reviewers with experience in organic farming research agreed more with the user group on research relevance than did scientist reviewers without such experience, and the assessment of relevance was closely correlated to the assessment of scientific quality within both scientific groups. As both scientific groups did not clearly distinguish between societal relevance and scientific quality, the idea of an objective science is challenged. The contextual values associated with the norms of good agriculture were not clearly distinguished from the constitutive values of science associated with the traditional norms of good science. This raises the question of whether organic and conventional grant applications should be mixed for review regardless of the reviewers. [References: 31]

Authors
Rasmussen J. Langer V. Alroe HF.

Source
Agriculture & Human Values. 23(2):181-188, 2006 Sum.

New Publications:

The Common Agricultural Policy and Organic Farming: An Institutional Perspective on Continuity and Change by K Lynggaard
August 2006 Hardback 1845931149

Going Organic: Mobilising Networks for Environmentally Responsible Food Production by S Lockie, K Lyons, G Lawrence, D Halpin
August 2006 Hardback 1845931327

Organic Agriculture: A Global Perspective by P Kristiansen, A Taji, J Reganold
July 2006 Hardback 1845931696
Sociological Perspectives of Organic Agriculture: From Pioneer to Policy by G Holt, M Reed
July 2006 Hardback 184593038X

Global Development of Organic Agriculture: Challenges and Prospects by N Halberg, H F Alroe, M T Knudsen, E S Kristensen
April 2006 Hardback 1845930789

Some slightly older books:

Animal Health and Welfare in Organic Agriculture by M Vaarst, S Roderick, V Lund, W Lockeretz
December 2003 Hardback 085199668X

Organic Fruit Growing by G Lafer, K Schloffer, G Innerhofer, H Meister, K Lind
September 2003 Hardback 085199640X

Organic Agriculture: Sustainability, Markets and Policies by OECD
July 2003 Paperback 0851997406

Soil Use and Management Supplement: Soil Fertility in Organically Managed Soils by D B Davies
September 2002 Paperback 0851996582

Sustainable Management of Soil Organic Matter by R M Rees, B Ball, C Watson, C Campbell
December 2000 Hardback 0851994652

Events:

Fivebough and Tuckerbil Wetlands Trust Presents:

The MURRUMBIDGEE WETLANDS FORUM: 'Practical Management in an Altered Environment' & the BIRDING AND NATURE FAIR
Leeton, NSW, 22nd- 24th November 2006

Fivebough Birding and Nature Fair is a new concept in Australia and the Fivebough and Tuckerbil Wetlands Trust invites you to join them at the inaugural Birdfair, to see and learn more of the wild birds of inland south-eastern Australia. The Birdfair comprises a number of different events over the week, all related to birds, nature and cultural heritage.

This unique event includes:

- Seminars and lectures about birds and other aspects of the natural world
- Displays from Birding and Nature related organisations
- Trade Market Stalls
- Exhibits of interest to the bird watching industry
- Wetland, Birding and Nature Tours
- Entertainment, Art, and Varied Cultural activities.

Personalities attending the Fivebough Birding and Nature Fair include:

- **Dr. Gillian Gilbert**, Research Biologist with the Royal Society for the Protection of Birds (RSPB) UK
- **Dr. Iain Taylor** Senior researcher Land Water and Society Institute, Charles Sturt University,

- **Mr. Sean Dooley**, author, comedian and avid birdwatcher, and
- **Paul Janssens**, Curator of the Living Collection, Australian National Botanic Gardens.

For More Information check out their website: http://www.fivebough.org.au or contact:
Leeton Tourism (02) 6953 6481, or **Fivebough and Tuckerbil Wetlands Trust**
PO Box 357
LEETON NSW 2705
Email: Trust@fivebough.org.au

Do you have any Organic News?

Do you have any research results, field day reports or other information that may be of relevance to organic agriculture? If so, let us hear about it! Send your contributions to:

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