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Fertcare® A model for industry engagement in public policy

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Abstract

This paper gives a brief overview of environment and food safety issues related to fertilizer use in Australia. It describes the regulatory environment and discusses the philosophy adopted by the fertilizer industry in addressing these issues, and achieving full engagement in the development and delivery of public policy.

The management of eutrophication of surface waters is the highest profile public policy issue for the fertilizer industry in Australia. Nitrate leaching is an issue in a few areas and concern about the contribution of nitrogen fertilizers to greenhouse gas emissions is currently the subject of further study. Contaminants such as lead and cadmium that represent a food chain risk have received considerable attention from both Government and the fertilizer industry.

In order to become fully engaged in the development and implementation of public policy in these areas the fertilizer industry has made significant commitments to effective product stewardship through the development of the training and accreditation program Fertcare. The process of developing and implementing this program and its value in effectively leveraging the fertilizer industry's participation in public policy will be discussed. Whilst this program is specifically Australian, the process and objectives are likely to have direct application to Government and industry globally.

Background

Australia has a strong environmental movement, including a political party, the Greens, and environmental issues are major policy areas for both State and Federal Governments. The role of agriculture is central to many of these debates both as a custodian of much of the land mass of Australia and as a contributor to the health and quality of land, air and waterways.

There are a number of environmental issues that arise when plant nutrients, either native to the soil or applied as fertilizers, move out of the farm production system. Eutrophication of waterways, pollution of groundwater and acidification are all significant issues where fertilizers are clearly identified as a contributing factor.

Greenhouse gas emissions from soil nitrogen are thought to be a significant contributor to Australia's total net greenhouse gas emissions.

Impurities in fertilizer products, notably heavy metals and fluorine, can present a food safety concern. Their accumulation in soils adds an environmental dimension to the problem.

All of these issues have a public profile in Australia and there is a significant amount of detailed information from credible sources that is very accessible to the public.

The level of public information and public concern ensures that high level public policy will be developed to manage these issues.

The Australian fertilizer industry provided 6 million tonnes of product to users in 2004, supplying 1,056,527 tonnes of elemental nitrogen, 487,362 tonnes of elemental phosphorus and 214,814 tonnes of

elemental potassium. The beneficial use of nutrients has enabled the steady growth in agricultural productivity that has allowed Australian farmers to compete effectively in world food markets.

Nutrient inputs to Australian agriculture are a significant part of input costs, totalling at least A$2.5 billion in 2004. The importance of export markets to Australian agriculture and the resulting competitive pressures create an economic landscape in which costs are under constant scrutiny and must remain internationally competitive.

The significant size of the fertilizer market and the coexistence of farmland and natural ecosystems mean that there is a clear risk that fertilizers may contribute to adverse environmental impacts. Measures to manage these risks must also consider the underlying economic imperatives.

Impurities

The heavy metals lead, cadmium and mercury represent potential risks to human health if they enter the food chain in sufficient quantity. While each of these elements can be present in various fertilizers as impurities, plant uptake is only likely to be significant for cadmium. Whilst there is some risk of lead contamination through the use of foliar fertilizers, particularly trace elements, monitoring of produce in Australia has clearly shown that cadmium is the heavy metal of concern.

In 1991, FIFA and the Horticultural Research and Development Corporation (HRDC) funded a three year project by the Commonwealth Scientific and Industrial Research Organization (CSIRO), to study the effect of fertilizers on cadmium levels in vegetables. This was the industry's first major investments in an issue of such national concern, and one that was likely to lead to a significant change in policy directly affecting the industry.

FIFA continues it's involvement in heavy metal policy development through its involvement in the National Cadmium Minimization Strategy. FIFA is an active member of a stakeholder group, the National Cadmium Management Committee that co-ordinates the strategy. The committee is made up of representatives of the farming community, CSIRO, State and Federal Government departments of agriculture, environment, and public health, as well as FIFA. The committee co-ordinates activities of the strategy and reports to the national Primary Industry Standing Committee which is composed of the relevant Federal and State Government Department CEO's.

Under this strategy the industry has;

- reduced cadmium levels in fertilizers through the selection of raw materials (particularly in relation to phosphate rock for single super phosphate manufacture.);
- produced low cadmium single super phosphate for use in higher risk situations;
- helped to develop maximum permitted concentrations of cadmium in fertilizers; and
- through the committee, produced targeted information packages for those agricultural industries where cadmium risks are greatest (potatoes and leafy vegetables on sandy and or acid soils).

Cadmium inputs to Australian agriculture have been reduced by 75% as a direct result of these strategies.

The industry has also been active in promoting uniform product description laws amongst the Australian States to provide appropriate consumer information in the form of analyses of heavy metal content and product use warnings.

Information on the management of cadmium in Australia can be found at www.cadmium-management.org.au.

Information on food standards for cadmium in Australia can be found at www.foodstandards.gov.au.

A consequence of selecting low cadmium phosphate rock has been an increase in fluorine concentration in singe super phosphate. Initial modelling in Australia and New Zealand suggests that in the medium term (50 years) current use rates could lead to problems in dairy cattle and milk supplies. FIFA is monitoring the development of data in New Zealand that will further elucidate this issue.

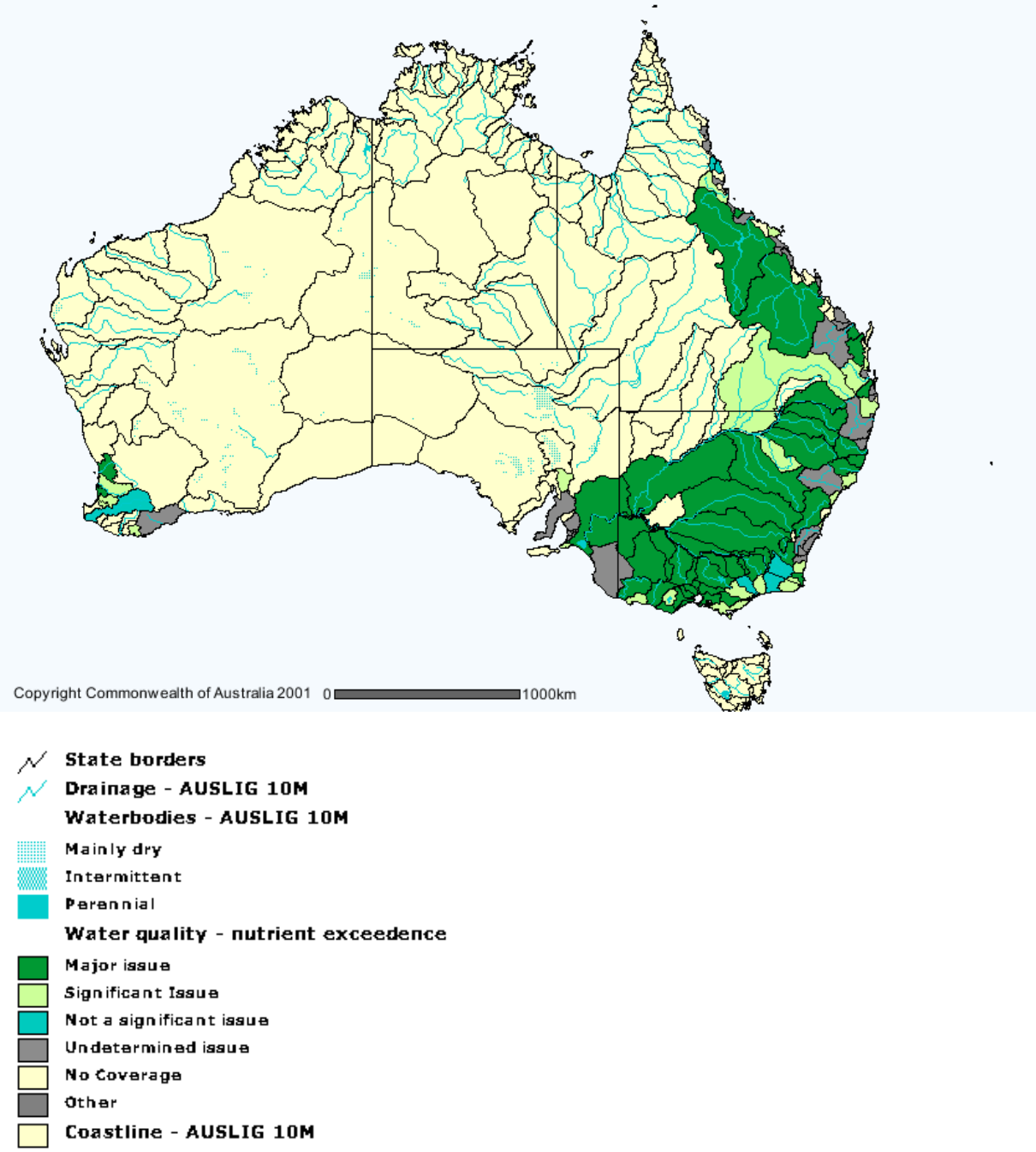
Surface Water Quality

Nitrogen and phosphorus concentrations in waterways and oceans have a significant impact on fauna and flora composition. Significant changes in the concentration of nitrogen and phosphorus in waterways are therefore of major environmental concern, particularly in ecologically valuable areas such as the Great Barrier Reef and its rivers and estuaries.

The Australian Government has developed a comprehensive program of auditing and reporting on the state of the Australian environment – the Australian Natural Resources Audit and the State of the Environment Reports. FIFA member companies contributed to collection of data for this initiative by providing soil test and fertilizer use data. As a result of this program there is a lot of publicly available data from a reputable source on several environmental issues of relevance to the fertilizer industry, and particularly on surface water eutrophication.

Figure 1 shows a rating of Australian catchments where nutrient levels exceed the desired water quality for environmental health. The areas on the map where nutrient levels are a major or significant issue represent more than 80% of Australia's agricultural land.

Figure 1. Water quality exceedence. (Australian Natural Resources Atlas 2001)



A very public outcome of eutrophication is the occurrence of algal blooms in inland waterways that prevent use for recreational, domestic and livestock purposes. These blooms can be toxic and occur across wide areas on a regular basis.

The impact of nutrients on the water quality of the Great Barrier Reef and its catchment area is of particular public concern. A report prepared for the Great Barrier Reef Ministerial Council contains the following.

"The increase in pollution discharged to the Reef since c1850 is as follows –

- Sediment loads – up between 300 and 900%
- Phosphate – up between 300 and 1,500%
- Total nitrogen – up between 200 and 400%
- Pesticide residues – now detected in tidal sediments.

Even more worrying is the fact that almost all pollutant loads are increasing annually and showing no sign of abatement. Of particular concern is the rapid increase in fertilizer delivered nitrogen (nitrate and ammonia) which is the most dangerous to marine ecosystems …" (Great Barrier Reef Marine Park Authority, September 2001)

The report goes on to recommend that in order to reach water quality targets a mix of regulatory and non-regulatory measures will be required.

Fertilizers in the Great Barrier Reef catchments have been clearly identified as a contributor, amongst many others, to eutrophication in the GBR lagoon.

Scientific information on the Great Barrier Reef can be found at the Reef Cooperative Research Centre http://www.reef.crc.org.au and at the Great Barrier Reef Marine Park Authority http://www.gbrmpa.gov.au.

Groundwater Quality

There are parts of Australia, where groundwater resources are used for human consumption. Nitrate leaching into these aquifers could represent a human health risk and would be an issue of high public concern should it occur. At this stage, current levels of concern are low.

Soil Acidity

Soil acidity is a significant environmental issue in Australia. Whilst fertilizers play a role, the acidification of soil is an inherent part of productive agriculture. Soil acidity is a high profile subject amongst the farming and agricultural science community but is not yet high on the public agenda.

Nutrient Depletion

Nutrient depletion is identified in the Australian Natural Resources Audit as a bigger issue than salinity or acidity – in terms of land management. Some Australian farming systems rely solely on the natural fertility of the soil, without replacing the nutrients lost through harvest. In such systems, plant cover can be insufficient to protect the soils from wind and water erosion – resulting in extensive soils loss to waterways.

Whilst there are limited circumstances in Australia where fertilizer is over applied, there is a large net deficit when nutrient removal in agricultural produce is compared with nutrient application as fertilizers. This means that for much of Australia, the effective management of environmental impacts of fertilizer use may be a significant increase in total fertilizer use.

Information on the Australian Environment including issues of surface water quality, acidity and nutrient depletion can be found at The Australian Natural Resource Atlas, http://audit.ea.gov.au/anra/.

Greenhouse Gas

Global warming is an issue of very high public concern that is constantly in the news. Whilst the pubic expectation is that Governments need to act, the complexity of the issue confounds clear policy direction.

Nitrous oxide emissions from agricultural land have been identified as a major contributor (3.4% of total net emissions), but the confidence in this estimate is very low (Table 1).

Table 1. Agriculture sector CO2-equivalent emissions, 2000

Greenhouse Gas Source and Sink Categories	CO_2-equivalent emissions (Gg)				%Total Net National Emissions
	CO_2	CH_4	N_2O	Total	
Total net national emissions (Kyoto)	404,577	108,468	30,701	550,049	100
4. AGRICULTURE		**73,625**	**23,656**	**97,281**	**17.7**
A Enteric fermentation		62,748		62,748	11.4
B Manure management		2,048	1,286	3,334	0.6
C Rice cultivation		400		400	0.1
D Agricultural soils		NE	18,716	18,716	3.4
E Prescribed burning of savannas		8,220	3,564	11,784	2.1
F Field burning of agricultural residues		209	89	298	0.1

Source: Australian Greenhouse Office, Department of the Environment and Heritage, May 2005.

More information on greenhouse gas in Australia is available at the Australian Greenhouse Office web site www.greenhouse.gov.au/index.html.

While each of the above issues have varying degrees of risk and impact, the Fertcare product stewardship program described below, aims to minimise the detrimental contribution made by fertilizers to each of the issues.

Industry Approach

The very direct relationship between fertilizers and the heavy metal impurities that they can contain meant that the fertilizer industry had to deal effectively with this issue. The industry chose to work with Government to develop strategies that would manage the food safety risk and maintain internationally cost-competitive supplies of phosphate fertilizer products.

Under the National Cadmium Management Strategy, the industry and Government agreed on the lowest achievable maximum permissible concentrations of heavy metals in fertilizers, and a timetable for a two stage implementation. Through changes in phosphate rock sources and substitution of higher analysis fertilizers for single super phosphate, total inputs of cadmium in fertilizer has dropped by 75% since 1989.

The strategy recognises that there are some specific combinations of crops and soil and water factors that may still result in unacceptable uptake of cadmium by food crops. The strategy has provided for additional measures including the manufacture of low cadmium superphosphate for high risk uses and education campaigns to ensure that cultural practices in these situations minimise the risk of uptake.

The history of success from the industry's approach to heavy metal impurities was a significant factor in the willingness of the industry to adopt a similarly constructive approach to environmental issues.

With eutrophication, which the industry had identified as its most important environmental issue, there is not the same direct link with fertilizers that was clearly the case with heavy metal impurities. Nutrients from a range of sources, including native soil and biota, industrial effluent, and sewerage can all be significant contributors. Furthermore, a range of processes affect the contributions from soils, including through the physical movement of nutrients adsorbed to soil particles and dissolved nutrients in surface and sub surface drainage. These processes can be significantly altered by a range of farm and land management practices.

The application of fertilizer increases the pool of available nutrients and can therefore impact on the concentration and loading of nutrients from these loss processes. The method of fertilizer application, the timing, the form of nutrient and the rate and frequency of application can all interact with the loss processes to alter the risk of losses occurring.

On top of these factors, seasonal climate variability has a large impact on the processes of nutrient movement and on the concentration of nutrients in waterways through direct effects such as erosion and changes in flow volumes.

Despite all of these potentially confounding factors the industry has accepted that eutrophication is an important issue and that fertilizers can and do contribute to the process in some agricultural situations. The industry does not see any benefit in arguing over how much fertilizers actually contribute. Rather, the imperatives for the industry are to meet its responsibilities in managing these issues and to do it in a way that enhances industry involvement in public policy development and implementation.

As most of the environmental risks occur at the point of use, the industry has implemented a comprehensive product stewardship program. Fertcare aims to meet the industry's responsibilities for environmental protection, and facilitate its involvement in public policy development and implementation.

The industry also decided that it must be in a position to provide reliable statistical data on the use of fertilizer nutrients as this was likely to be of interest to those developing public policy.

Fertilizer Use Statistics

FIFA members since 2002 have provided the association with sales statistics on a State by State basis. The statistics cover major and minor nutrients supplied by all products, as well as details on volumes of the 8 major products. These statistics have been made available to Government agencies and researchers, with the total Australian figures for nitrogen, phosphorus and potassium made available on the FIFA web site. Table 2 summarises the data for major nutrients and the major products from 2002 to 2004.

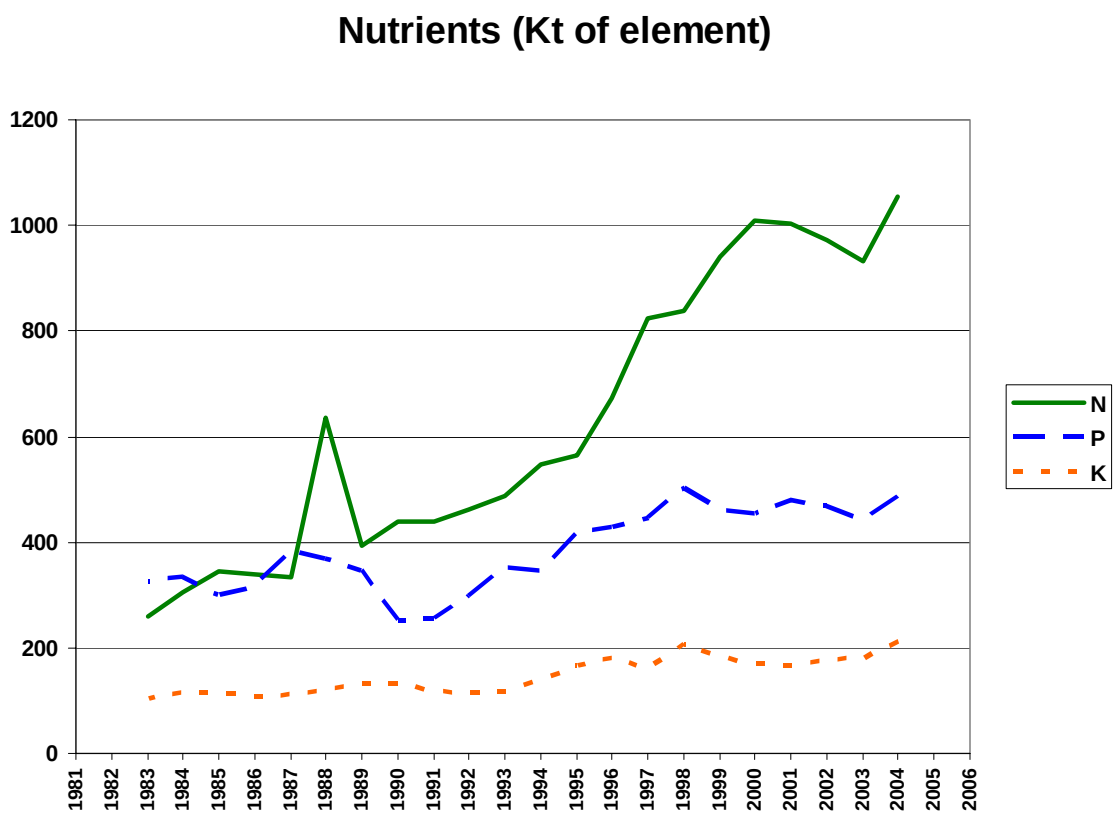
Table 2. Australian Fertilizer Sales 2002-2004
Tonnes of Product

	2,002	2,003	2,004
Urea	1,306,400	1,194,177	1,303,032
SOA	237,908	226,272	304,668
Anhydrous Ammonia	84,115	69,116	90,490
DAP	730,009	621,662	655,423
MAP	558,796	761,460	834,064
TSP	193,762	117,665	106,730
Single Super	1,297,819	1,223,572	1,251,389
MOP	340,788	353,037	406,431
Sub Total	**4,749,599**	**4,566,961**	**4,952,227**
Other Products	680,927	623,188	996,737
Grand Total	**5,430,526**	**5,190,148**	**5,948,964**
Tonnes of Nutrient Element			
Nitrogen	972,266	932,911	1,056,527
Phosphorous	470,399	445,099	487,362
Potassium	178,953	183,231	214,814

Source: FIFA member survey, unpublished (FIFA 2005).

The industry has also combined these statistics with historical data from the Australian Bureau of Agricultural and Resource Economics to illustrate the long term trend in fertilizer nutrient use in Australia as shown in Figure 2.

Figure 2. Fertilizer Nutrient Trends in Australia



In addition to making these these State based figures readily available, the industry has contributed to specific initiatives including estimate fertilizer use on a regional and catchment scale to the Great Barrier Reef Water Quality Protection Plan..

Fertcare

Fertcare is an accreditation program based on training, quality assurance and certification. Developed with funding assistance from the Australian Government's Natural Heritage Trust and National Landcare Program it is the centrepiece of the industry's commitment to managing environment and food safety issues.

Fertcare Training

Fertcare trains industry staff in the competencies required to meet their direct responsibilities for food safety and environmental risk management and in particular the competency to warn, advise and or refer customers to information about the risks and how to manage them. It also develops awareness of occupational health and safety issues associated with fertilizer and soil ameliorant products.

Fertcare is a three level training program delivered by registered training organisations (RTO's) that meets national competency standards under the Australian Qualifications Framework. Individuals can attain

certificates of competency by successfully completing the courses and these may be used as part of a formal qualification (eg. Certificate Level III in Rural Operations).

The training program is focused on food safety and environmental risk management but to do this effectively, it provides appropriate background knowledge and contextual reference at each of the levels (A, B and C). Specific OH&S issues associated with fertilizer storage handling and use are also discussed.

The training material covers understanding and managing risk directly, and providing appropriate warning, advice and referral to customers. It is clear that the Level B course in particular, will significantly improve participants understanding of nutrient related issues and improve their ability to communicate effectively with customers. An incidental benefit is that the background knowledge gained and the ability to communicate it effectively will add to participants' sales skills.

The three levels of training have specific objectives and characteristics. After completing a Fertcare training course participants should have an understanding of what each of the levels of training involves and be confident to draw on the skills and knowledge of colleagues who have completed a different level course.

The training material is given local relevance through the delivery and assessment processes, which require participants to gain an understanding of local issues, policies and programs.

Level A

Level A has a strong focus on environment and food safety risk management, particularly in relation to handling, transport and storage. Level A is targeted at the operational level. The core module includes a basic understanding of fertilizer and soil ameliorant products including:

- physical identification;
- understanding labels;
- storage and handling characteristics; and
- the main environment and food safety risks.

Level A also has three elective modules of which at least one must be completed:

- Spreading;
- Storage; and
- Transport.

A fourth module for aerial operators is under development.

Level B

Level B is focussed on developing underpinning knowledge of nutrient issues relating to environment and food safety. It provides basic education in plant nutrition designed to enable personnel to improve communication with their customers, and provide warnings and simple advice. Importantly, Level B emphasises the need to refer customers to Level C trained staff where appropriate. It is envisaged that Level B training will be combined with company specific training to deliver effective sales skills as well as meeting stewardship objectives. Level B will also cover logistics and OHS issues at an awareness level. The major subject areas covered at a medium level of complexity are:

- soils and nutrients;
- fertilizers;
- application;

- environment & food safety;
- regulation;
- sampling;
- logistics; and
- occupational health and safety issues.

Level C

Fertcare training covers only some of the competencies required at the advisor (C) level. The other competencies should have been attained through other education and training programs and will be assessed through a process of 'recognition of prior competency'. In this regard, Level C has two components.

Level C1, provides training that covers a detailed and complex knowledge of:
- environmental issues;
- fertilizer environmental stewardship review methodology;
- food safety issues;
- sampling;
- the regulatory framework and label requirements; and
- awareness of OH&S and stewardship issues in transport, storage, handling and application of fertilizers.

Level C2 is the recognition of prior competency (ROPC): Fertcare Accreditation includes assessment of competency in;
- soil, nutrient and fertilizer knowledge; and
- systematic development of interpretation and recommendations based on sound science.

Fertcare Quality Assurance

To maintain accreditation under the Fertcare program all trained personnel are required to participate in a biennial refresher process. This will include updates on technical knowledge, reminders of key issues and self assessment of how the Fertcare skills and knowledge have been applied. In addition, there are specific quality assurance measures for advisors and for premises that store bulk fertilizer.

Advisors

To become an accredited Fertcare Advisor, Level C training and ROPC must be satisfactorily completed. In addition, participants must then meet the requirements of a third party biennial audit of the fertilizer recommendations they have made. The audit process will ensure that advisors are adopting a systematic approach to providing;
- appropriate evaluation and advice based on soil physical, chemical and biological factors that may impact on plant and nutrient behaviour and management;
- appropriate evaluation and advice on soil or plant nutrient status and implications for productivity and environmental outcomes;
- appropriate recommendations for application of products taking into consideration the users' expectations and management, the available response data and environment and food safety risks;
- recommendations that are clear to the end user and include choice of product, rate and method of application, frequency of treatments and timing of treatments;
- recommendations that give appropriate qualification of the basis for the suggested approach where data or methods are limited; and

- explicit reasons and explanation for any variations from the best available response data and scientific consensus in the recommendations made..

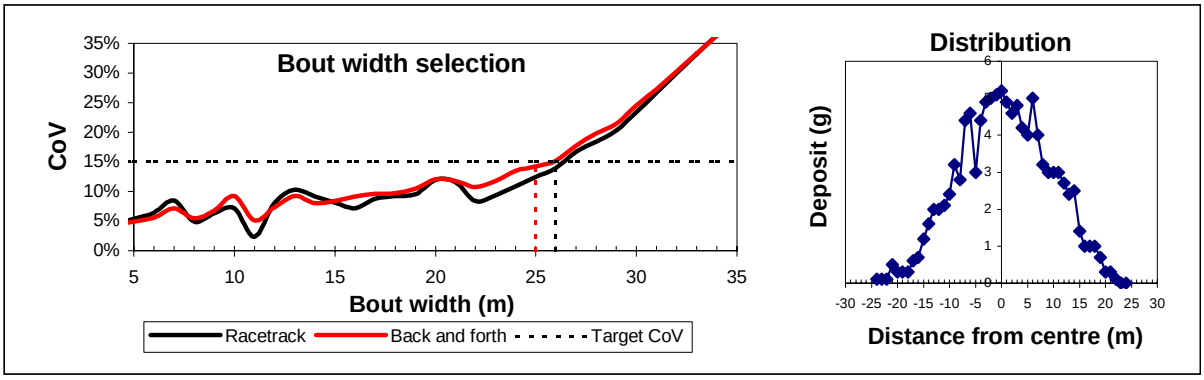
Premises

Premises that store bulk fertilizer are required to undergo a biennial audit that assesses the management of environmental risk and product specific occupational health and safety. Premises managers are required to develop a management plan following a simple risk assessment process and the audit assesses the plan and its implementation.

Fertcare Certification

The Fertcare Accu-Spread program assesses the width and uniformity of distribution of fertilizer spreading equipment. The spreading machine is driven over a set of collection trays, the contents of which are then individually weighed. A graph of the distribution and the co-efficient of variation at various distances of overlap (Figure 3), are then created. Machines are certified to spread at overlap (bout) widths where the co-efficient of variation is less than 15%.

Figure 3. Fertcare Accu-Spread program print out for a well adjusted broadcast spreader.



Fertcare Accreditation

The training, quality assurance and certification activities are brought together in the Fertcare Accreditation program. The program licenses businesses to use the Fertcare logos based on their compliance with the program targets for training, quality assurance and certification. The industry is commited to achieve 100% coverage of eligible staff, premises and contract spreading equipment by the end of 2008. Eligible staff are those involved in providing advice on fertilizer and soil ameliorant use, either in a sales or advisory role and those involved in the storage, handling, transport and application of fertilizers and soil ameliorants.

Table 3. Fertcare accreditation program targets.

Measure	**2005**	**2006**	**2007**	**2008**
Eligible staff Fertcare trained	20%	45%	70%	100%
Trained staff refreshed/quality assured			100%	100%
Eligible premises quality assured		50%	100%	100%
Spreaders Accu-Spread certified	50%	75%	100%	100%

Source: Fertcare implementation handbook, unpublished (FIFA 2005).

The intention is that the Fertcare logos (Figure 4) will become recognised as symbols of expert, up to date and independently audited advice and service, and sought out as part of a farmers quality assurance program

Figure 4. The Fertcare logos.

A publicity and promotion plan is underway to explain the value of the program to the fertilizer industry, farmers, government agencies, and regional natural resource management bodies. The program was officially launched on October 12, 2005 by the Australian Government Minister for Agriculture, Fisheries and Forestry, the Hon. Peter McGauran MP.

Quality Control, Independence and Credibility

To gain acceptance amongst a range of stakeholders as a mark of quality advice and service, the program has been developed in consultation with those stakeholders, using significant input from external organisations and individuals with relevant expertise and high credibility. A list of contributors is provided at Appendix 1.

The involvement of the Australian Government in guiding and funding the project has also contributed significantly to the programs credibility.

In addition, the training programs for each Fertcare level have been 'mapped' to new and existing national competencies, under the Australian Qualifications Framework. Fertcare is delivered by appropriately qualified third parties under the control of Registered Training Organisations. The RTOs also ensure course participants are independently assessed and fully meet the competencies required.

Progress and Targets

The members of FIFA estimate that there are 3000 staff eligible for training within the industry. The Australian Fertiliser Services Association estimates that there are at least 1000 contract fertilizer spreading trucks in Australia.

Training at Level A has been available since 2000, with Level B and Level C introduced during 2004. A total of 711 personnel have successfully completed training to the end of September 2005:

- 352 at Level A;
- 201 at Level B; and
- 158 at Level C1.

220 spreader trucks are currently Fertcare Accu-Spread certified.

Advisor recognition of prior competency and audit programs are under development and will be available from January 2006. The premises audit process is under development and will be available from July 2006.

Delivery Modes

The three levels of training each focus on using the skills and knowledge acquired. Workbooks and role plays require participants to put the knowledge into the context of their local environment and job roles.

However the three levels are delivered in different modes to reflect the likely learning styles of the participants.

Level A is conducted in the workplace as a face-to-face session followed up by on-the-job evaluation. Presentations are supplemented by short videos and the emphasis is on practical activities.

Level B is a computer based self paced learning module where the learning material is covered by an audio tutorial with associated pictures and text and an accompanying work book. Participants can also opt to print the material. The learning phase is followed by a workshop which focuses on practice and evaluation of the knowledge and skills learned through hands on activities and role plays.

Level C is text based detailed information and a series of workbook challenges and case studies followed by an evaluation workshop that includes further case studies and role plays.

Costs

The program is run on a cost recovery basis with a small margin to fund maintenance of course materials. Delivery is by commercial organisations and prices are subject to normal commercial processes. However, a typical Fertcare training course will cost the participant around $500 and will involve a full day at a regional location plus around 20 hours of preparation, research or on the job assessment.

Costs for accreditation are currently $50 per premise and Fertcare Accu-Spread certification costs $500 per machine. The costs for Level C ROPC and audit and for premises audit are yet to be finalised.

These represent significant costs to fertiliser businesses which range between mult-million dollar companies and single-spreader operators. With 3000 staff and 1000 machines, the direct training and certification costs to the industry would be around A$2 Million, with the effective cost likely to be at least double this.

Evaluation

The primary aims of the Fertcare program are to effectively manage the environment and food safety risks associated with fertilizers and to support the industry's role as an effective partner in public policy development and implementation. Whilst numbers of personnel, equipment and premises will give a clear

picture of the progress of implementation of the Fertcare program, they do not measure effectiveness against these objectives.

Environment and food safety risk management

Pilot programs of each of the levels of training have been conducted and detailed feedback received from the participants. This has given the industry a high level of confidence that the training is at the appropriate level of complexity, is relevant and the skills and knowledge gained are useful in the participants' day to day roles. Comments to the effect that the training has made it much easier to discuss issues with farmers, provide strong anecdotal evidence that the program will improve the level and quality of advice provided.

The biennial refresher process and the audit of advisors will give some assurance that the knowledge and skills taught in the training program continue to be used.

To evaluate how effective that improved advice could be in changing user behaviour, workshops are currently being run in catchments of the Great Barrier Reef across a range of agricultural industries. The workshops are facilitated by a consultant and involve Level C trained advisors in the delivery. Growers are provided with soil and plant analyses for their properties and the implications of the results to environmental and productivity outcomes are discussed. Growers complete a survey about their nutrient management practices prior to the workshops and again after the workshops. This project will give some indication as to how effective good advice about environmental risk is in changing grower behaviour.

Engagement in public policy

In August 2004 the Australian Fertilizer industry organised an international conference with two themes, Environment and Quarantine. 350 people attended which was the maximum capacity of the venue. Senior staff from the Department of the Environment and Heritage and the Department of Agriculture Fisheries and Forestry attended with some making presentations to the conference. Several State Departments of Agriculture and or Environment were represented and a meeting of the National Cadmium Management Committee was held during the conference.

In public forums like the industry conference, in smaller meetings and in personal communication, the various levels of Government have expressed very strong support for the Fertcare program and see it as an opportunity to help achieve public policy goals. This is confirmed by FIFA's growing involvement in a range of public policy development forums:

- Represented on the Fertilizer Working Group which coordinates State policy on fertilizer issues;
- Involved with the National Cadmium Management Committee for a number of years.
- Involved in two industry liaison groups for the Reef Water Quality Protection Plan.
- Consulted early in the development of the Western Australian Algal Management Strategy.
- Commitment from the Victorian Environment Protection Authority in the development of the Fertcare premises quality assurance program.
- Approached by the Department of the Environment and Heritage to assist in managing issues with excess levels of heavy metal contaminants in imported trace element products, resulting in FIFA's implementation of a code of practice for purchasing, developed in consultation with DEH.

On 12 October 2005, the Australian Government Minister for Agriculture Fisheries and Forestry officially launched Fertcare Accreditation on the lawns of Parliament House, and urged everyone involved in agriculture to get behind the program.

Conclusions

Fertcare is a comprehensive and credible program that will significantly lift the skills and knowledge of the Australian fertilizer industry with regard to environment and food safety management. It is likely to have a real effect on fertilizer use practices that will reduce risks and improve the efficiency of use of fertilizer inputs. This will result in less movement of nutrients from both fertilizer and native sources from farming systems into the wider environment.

Fertcare is an effective means of assisting in the implementation of public policy.

- It will provide 3000 trained personnel who can deliver information and advice to all fertilizer users across Australia.
- It will ensure that detailed nutrition advice provided by Fertcare advisors is consistent with the best available scientific information with regard to both productivity and environmental outcomes.
- It will provide a mechanism to ensure that rural distribution premises do not become point sources of nutrient pollution.
- It will provide assurance that contract fertilizer spreaders are operating effectively and that the operators can manage environmental risks.

Fertcare has significantly enhanced the credibility and standing of the fertilizer industry and enabled significant involvement in the development and delivery of public policy relating to fertilizer.

The contributing factors to success

The clear public statement of the issues by reputable parties was a significant factor in achieving a strong and uniform view within the industry. Subsequent public statements of likely policy options in the Great Barrier Reef catchment, new powers in the South Australian Agricultural and Veterinary Chemicals Act 2002, and the instigation of an Algal Management Strategy in Western Australia confirmed the industry view that the issues must be dealt with, and that the development of Fertcare was timely.

A number of positive implications from dealing effectively with nutrient related environmental issues were identified early in the development of the industry position. Nutrient depletion, a significant issue in Australia has clear positive implication for the fertilizer industry. In general improving fertilizer use efficiency, which improves the economic benefit of using fertilizers, is consistent with reducing environmental risk. Managing issues of food safety is clearly of benefit to an industry reliant on food producers.

The successful history of the National Cadmium Management Strategy created a receptive background for the partnership with Government approach adopted for the development and implementation of the Fertcare program and for the industry's broader engagement with public policy on environmental issues.

Funding support from the Australian Government to develop materials and programs was significant in speeding up the rate of development; it also added credibility and reinforced the decision to pursue a cooperative approach to the issues. The Government support has also contributed to efforts to communicate with stakeholders such as the regional natural resource management groups.

In a very competitive industry the cost of the program is a significant consideration. The public commitment by the industry to achieve 100% compliance with the accreditation program was a significant factor in giving all participants the confidence to make this investment. This commitment has been a powerful argument in describing the potential benefits of the program in helping to achieve public policy objectives.

Within the industry, the availability of appropriate training to suit all levels of job complexity from logistics through to detailed advice, and the linking of the levels to each other, has created a very positive view of the program – everyone is included. The delivery modes have proven overwhelmingly successful with very positive feedback from course participants. The effect of the training in improving participant's ability to add value to the customer relationship from both a productivity and environmental management perspective gives it intrinsic value to the fertilizer businesses.

The involvement of stakeholder representatives, particularly from the public sector added significantly to the quality of the program and to its acceptance outside the industry.

The decision to use an external qualifications framework with the attendant quality controls, record keeping and approvals processes gives the program instantly recognised credibility.

Nearly half of the recent external funding for the program has been for activities to promote the program to relevant stakeholders including the fertilizer industry, farmers, government agencies and independent consultants. Understanding of the program and acceptance of its quality and value by these stakeholders will be a critical factor in the success of the program.

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Appendix 1 Stakeholder Involvement

Project Steering Group (Strategic Direction)

Peter Arkle	Policy Officer	National Farmers Federation
Jenny Brownbill	Consultant	Agrifood Industry Skills Council
Colin Boldra	Accreditation Manager	Agsafe
Donald Carter	Past National President	Australian Fertilizer Services Association
Margaret Clarke	Program Manager	Chemcert
Shane Dellavedova	National President	Australian Fertiliser Services Association
Tim Ogden	Policy Officer	Department of Agriculture Fisheries and Forestry
Kirsten Rappolt	Marketing Manager	Incitec Pivot Limited
Alistair Steven	Fertilizer Manager	AWB Landmark
Simon Veitch	Director	Department of Agriculture Fisheries and Forestry
Nick Drew	Executive Manager	Fertilizer Industry Federation of Australia

Training Committee (Technical Quality)

Colin Boldra	Accreditation Manager	Agsafe
Andrew Cannon	Fertilizer Manager	Elders
Dr. Cameron Gourley	Science Leader	Victorian Department of Primary Industries
Cathy Lescun	Consultant	Cathy Lescun Consulting
Craig Goodhand	Training Manager	Elders
Shane Dellavedova	National President	Australian Fertiliser Services Association
Donald Carter	Logistics Committee Chair	Australian Fertiliser Services Association
Garry Kuhn	Product Stewardship Manager	Incitec Pivot Limited
Jonnie White	Agronomist	Agrow Canpotex
Martin Shafron	Environment Manager	Fertilizer Industry Federation of Australia
Nigel Bodinnar	Technical Services Manager	Incitec Pivot Limited
Peter Flavel	Technical Services Manager	Hi-Fert
Eddy Pol	Technical Services Manager	CSBP
George Rayment	Principal Scientist	QLD Department of Natural Resources & Mines
Sandy Alexander	Agronomy Manager	Summit Fertilizers
Andrew Spiers	Agronomy Manager	Hi-Fert
Peter Verrion	Program Manager	Bendigo Regional Institute of TAFE

With additional input from:

Dr Richard Eckard	CRC for Greenhouse Accounting/ Melbourne University
Dr Mike McLaughlin	CSIRO Division of Land & Water.