Spring 1995 Edition No 3

NSW Association of Agriculture Teachers

Bulletin of the NSW Association of Agriculture Teachers

B.A.A.T.



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Bulletin of the NSW Assn. of Ag. Teachers

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Some thoughts from the Editor

Sustainability

In this issue there are articles concerning this theme. Many will take time after reading the articles to reflect on teachings and practices of past and present generations which are being questioned or replaced. Historically, erosion and land degradation have followed unsound land use. Many types of disturbance have lead to land degradation and it is a fact that land used for Primary Production remains the greatest contributor to the problems of erosion and degradation.

Desertification

Degradation of the land resource takes many forms, and in Australia we need to be interested and concerned over the trends towards desertification in many countries. (To illustrate the process in Australia: Desertification studies of the Gascoyne Basin in Western Australia are alarming. The findings suggest that with less than 100 years of grazing an estimated 67% of the land was degraded.) The magnitude of Africa's problem of desertification is exemplified by the Sahara Desert which has engulfed 650,000 square kilometres of once useful land in the last 50 years.

In Conclusion

My thanks to the Contributors and others who have taken the time to present their concepts and philosophy for our magazine. I hope this Bulletin's articles produce stimulating, innovative lessons in classrooms as a method of enhancing Agriculture Teaching and Learning.

Please consider contributing something for BAAT next year. The Bulletin is only as good as its contributors' items.

One last point!

This issue represents the concluding BAAT for 1995. I leave you with this Irish Blessing:-

May the road rise to meet you.
May the wind be always at your back.
May the sun shine warm upon your face.
May the rains fall soft upon your fields
And until we meet again,
May God hold you in the palm of His hand.

Until 1996, Best wishes,

John Musgrave

THE PRESIDENT WRITES

Spring 1995 Edition of BAAT Edition No. 3

Final Report for 1995

'day Welcome aboard!

This issue will offer information concerning the challenges of 95/96. Doesn't it seem the workload has escalated? There is increasing paper work, discipline problems, welfare issues and never ending dead lines to meet. I think it is essential for us to stand back and reflect on the "big picture" of our teaching. Part of this reflection must be an examination of our work to make sure we provide students with a balance so the challenges they meet can be handled in a positive and reasoned way.

We need to sustain the importance of our subject in educating students in meeting the challenges and using the technology we offer them.

Being President has shown me the work teachers are prepared to put into this subject to be able to sustain it in our schools. Congratulations to all involved.

To the organisers of 2 Unit trial papers and Year 9 & 10 exams, nothing but positive comments from members of the NSW ATA. Can these continue next year?

"Agriculture in my school."

Thanks to the supporters of this section of BAAT. Casino's Ian Marriott and Nimbin's Greg Reid. We welcome any other schools interested in this section. Please contact John Musgrave with your information and photographs.

TAS Consultants

If you spot one of the nine TAS Consultants in NSW make sure you put the word in for our subject. Pleasing to hear the variety of Ag. projects students did in '95.

Is there any chance of a list of projects?

Ag. Teachers are needed for marking Ag. project components of TAS in 1996.

Scott Hollingsworth from the Board of Studies will shed some light on this area. Those who have already marked speak highly of this activity. Thanks to Ian Marriott of Casino, Peter Giblin of Byron Bay and Peter Jones of Colo High.

Congratulations to Phil Hurst, Hawkesbury.

for taking a position on the Animal Ethics Committee. Hopefully a change in the budget in '96 will allow other country members to join the committee.

Congratulations to Trevor Sewell and his team at Berry

for your preliminary organisation towards the 1997 Biennial Conference. Trevor would appreciate hearing from any one with information or ideas.

Thanks to James White (TAS N.W. Cons.)

for filling us in on our consultants and departmental restructuring.

I express concern

for students and communities living in a timber town.. They must obtain a balanced education. The demise of rural communities is a real issue and Government policies and legislation are not dealing with this situation.

Interesting reading from :

- The Public Land Users Alliance Group. "Common Ground". You need this information in your school.
- FPA Michael Taylor.

A big thank you to the Executive for hours upon hours of paper work. Rewards are coming through.

Thanks also to all those who have helped me so far in my time as President.

Finally to all members (and families) have a Merry Christmas and a happy and prosperous New Year

Stewart & wife Susan (and No 1 bub in a day or two).

The Treasurer's Report 1995

EXPENSE ACCOUNT
NSW Association of Agriculture Teachers

Opening Balance 21/3 95		$12,322.00
INCOME		
Membership		7,418.00
Refund from Tamworth Conference 1993		3,360.00
TOTAL		$23,100.00
EXPENDITURE		
Joint Account	$417.93	
Australia Post	$912.95	
Printing BAAT No 1 and No 2	$2,241.02	
Computerising Membership Details & other expenses	$791.47	
Refunds to schools (overpayment)	$135.00	
Airfares (Meetings in Sydney)	$519.00	
Technology Conference Sydney	$305.00	
BAAT Editor	$600.00	
Rural Training Council	$500.00	
South Coast Conference 1997	$1,000.00	
Bank Charges	$30.00	
Refund to North Coast AAT: Sale of Conference Proceedings	$720.00	
Estimated cost of BAAT No 3 1995	$1,800.00	
TOTAL EXPENSES	$9,972.37	
CURRENT BALANCE	**$13,127.63**	
	$23,100.00	

Although the current balance of $13,127 looks quite healthy it is important to note that, with similar expenditure in 1996 and very little income, (most members having paid for the Biennial period), the funds will be quickly eroded.

The Insurance Premium for the Incorporation alone is approximately $650.00 for 1996.

If the Association is to continue producing BAAT in its current format and quality it is inevitable that the membership fees must be substantially increased.

This matter will be discussed at our next Conference on the South Coast in January 1997. Please give it some thought.

Mick Medino

Why Consider Sustainable Agriculture?

By Chris Alenson (1993)

(This Article should not be reproduced without the Author's consent.)

"Sustainable agriculture is a system of agriculture that is capable of producing food and fibre economically utilising energy conserving management techniques that are not only environmentally benign, but which enhance the quality of our resources such as soil, water, and agroecosystems. This sustainable system will also ensure that rural domestic and global communities are not disadvantaged by agricultures production goals."

1. ABSTRACT

The intention of this working paper is to examine the issues relating to sustainable agriculture and to provide sufficient information that will enable the reader to determine whether changes to our agricultural initiatives and strategies are necessary.

It will become apparent that sustainable agriculture has a wide range of definitions depending on the perspective given to it by the author or researcher concerned. We will carefully examine the issues involved and see if it is possible to arrive at a working definition that might best provide the basis for future agricultural development in Australia.

Reeves (1988) sees sustainable agriculture as a moving target and this is a most important observation, given the dynamic factors that are involved in agricultural production. Our agricultural practices have been modified over time according to markets, indications of productivity decline, environmental concerns, and economics.

Australia is a major producer and exporter of agricultural produce. It has managed to do this through increasing the area farmed and through the use of machinery, agricultural chemicals, improved crop and pasture varieties and irrigation.

It has however been producing food and fibre from its soils over a relatively short period of time in its history, and therefore we are still very much going through a learning curve in understanding our soils and how to produce at optimum levels within the environmental constraints that are peculiar to our continent.

It is apparent however, that many farmers, agricultural scientists, land managers, government officials and consumers are concerned that the application of modern intensive agricultural practices, although resulting in great increasing productivity, have been achieved at the expense of ecological damage. Problems such as soil degradation, pollution from fertilisers and pesticides, and consumer concerns over food quality are issues that a sustainable agricultural system must be able to address.

Agriculture has in the past tended to develop as an isolated industry that has had difficulty responding not only to land degradation problems, but to wider environmental concerns, food safety, viability of small farm systems and quality of rural life.

Research has been directed at solving more immediate short term problems rather than looking at the longer-term health and sustainaability of our agricultural systems.

The information in this paper illustrates that sustainable agriculture has a lot to offer in the way we manage our resources and there may be additional economic benefits for Australia by adopting sustainable practices, in that we are well placed to supply the growing world demand for food free from chemical contamination that is grown under some sustainable managed systems.

2. INTRODUCTION

The gross value of Australian rural production was $21,700 million in 1988-89 which corresponds to a doubling in volume of agricultural commodities since the 1950's. We are a major world producer and exporter of agricultural products and our farmers are efficient, low-cost producers.

However, this increase in rural production and productivity is seldom equated with the longer-term viability and stability of our farming systems. Land degradation is therefore rarely seen as an inadequacy in the agricultural production system (Williams 1991).

Extensive land degradation, pollution of our rural environment by pesticides and fertilisers and episodes of food contamination are testimony to the fact that many of our current farming systems are not sustainable.

If we are to continue to produce agricultural commodities cost effectively well into the next century, then our departments of agriculture and our land managers must develop systems of farming that not only consider economic wellbeing, but look at the overall health of our agricultural ecosystems and social justice issues in rural communities.

National Farmers Federation president, Mr Blight, said at a recent conference that 6500 to 7000 people left the land in 1990-1991 and that a similar number could be expected to leave the land this year. The trend in the Western world is for amalgamation of farms with a smaller workforce employed in its management.

The question has to be asked is this type of agriculture, which is characterised by highly specialised, large-scale, capital and chemical intensive crop and livestock farming operations, the sustainable agriculture system that will lead Australia to growth and prosperity? The following discussion may help to provide some of the answers.

3. AIMS OF THE PAPER

The aims of this paper are to canvass the issues relating to agricultural sustainability with sufficient clarity to enable a clear strategy to be mapped out that will ensure the continued growth and prosperity of the rural sector while protecting and enhancing our environmental and social resources.

4. WHY CONSIDER SUSTAINABLE AGRICULTURE?

4.1 *Introduction*

While conventional agriculture has led to remarkable productivity increases in the past, it is becoming increasingly clear that there are negative aspects for farmers, society and the environment as a whole. We will now examine some of these problems in a little more detail.

4.2 *Geomorphological Constraints to land Management in Australia*

Possibly one of the most fundamental issues that Australian agriculture has faced, is that at no time in our history does it seem that we have adopted land management strategies based on the needs of our inherently poor soils.

Many scientists have emphasised that over geological time the parent materials from which our soils were formed have been through several weathering cycles resulting in the leaching of many of the elements required for plant nutrition. Australian soils are between 60-230 million years older than their European and North American counterparts (Crane 1989, Beckmann and Coventry 1987, Rovira 1990, Thompsone et al 1983, Lindsay 1985). Many soils are so depleted that they have been described as trace element deserts (Anderson 1959).

Northcote et al (1983) estimates that about 75% of Australian soils have an organic carbon content of less than 1% with a mean nitrogen content of .1% Organic matter referred to as the constitution of the soil by Albrecht (1982) is essential for soil stability, food for macro and micro soil organisms, its role on decomposition in providing a range of substances essential for plant nutrition, and for its beneficial effects related to the fostering of a healthy microbial environment.

4.3 Historical Aspects of Land Management in Australia.

Early agriculturalists had great difficulty coming to grips with our poor soils and our harsh environment. The first unsuccessful crop of barley was sown in Australia in 1788 followed by many other failures. As animals were scarce, manure was not available for fertilising the soils and as a consequence most crops barely survived.

Thompson et al (1983) sees our approach to land use as originating from the pioneering period when the overwhelming desire was to recreate European conditions by modification of our landscape and to exploit the natural resources at every opportunity.

The inadequacy of European management over the last 200 years has meant that there has been extensive and rapid modification of the environment, including overcropping and overgrazing, complete removal of vegetation in some areas, and replacement in other areas with introduced species. As a result unstable ecological conditions lead to soil erosion, desertification, soil compaction, salinity, and siltation of water courses. (Hobbs and Hopkins 1990 Reeve 1988).

The introduction of superphosphate in the cereal-fallow rotation in the 1900's led to a large increase in productivity, until the decline in organic matter led to nitrogen becoming the limited factor. The continued use of superphosphate and minor elements, and the introduction of clovers and medics in a ley-farming system gave increased yields, until problem areas with soil acidity, soil compaction, root disease carryover and lower nitrogen levels caused by the affect of soil acidity on the nodulation of the legumes. (Reeves 1988).

Similar to the rest of the western world agriculture in Australia was now highly mechanised and energy intensive with ever increasing fertiliser, herbicide and pesticide applications. The earlier land exploitation by our pioneers was continued with the added problems of contamination of the environment by agricultural chemicals such as the chlorinated hydrocarbon group which include DDT, dieldrin, heptachlor and others.

4.4 *Land Degradation Issues*

4.4.1 Soil erosion

Land degradation including erosion is perceived to be among the greatest environmental problems confronting

Australia. (Looney 1991). A government report (1978) documents that up to 51% of Australia's agricultural and pastoral land needs active protection from erosion. Beckmann and Coventry (1987) warn that our management must change if we are to avoid the inevitable consequences of continued erosion.

The inherent lack of fertility of Australian soils and their shallow depth have led to agricultural practices that contribute to the land degradation problems. In many areas continuous cropping, bare chemical fallows and over-cultivation are having disastrous effects on organic matter levels in the soils. (Clarke and Russel 1977). Once organic matter is removed from soils they lack binding qualities and it either blows or washes away.

Where the topsoil has been entirely removed, or where it has been severely eroded, crop yields are from 20%-65% lower than non eroded soils (Langdale et al 1979). Roberts (1987) argues that the degree of urgency in this area of environmental action is highlighted by the amount of productive capacity already lost in the first 200 years of settlement.

4.4.2 Salinization

Each year more and more land is taken out of production. In Victoria alone 90,000 hectares of agricultural land is affected by dryland salting. (Jenkin 1979). Prior to the clearing of vegetation, in particular, trees and forests, the hydrological cycle was in balance. However, once cleared, water is free to move through the profile and enters the groundwater table to rise and come to the surface and bring with it saline salts.

Salinity is a problem is both dryland and irrigation farming, and is increasing in many areas. (Jenkin 1979).

4.4.3 Acidification

The permanent and ley based legume pastures dressed with superphosphate introduced in the 1940's and 1950's were once thought to be sustainable. The system was that the fertility built up under the grazed clover ley could be utilised by a succession of cereal crops. However, it is now evident that this management has led to widespread soil acidity (Roveri 1990, Williams 1991, Helyar 1988, Reeves 1988).

Acidification also results through the natural process of plant growth, where carbonic acid is formed at the plant root tip and exchanges for nutrient cations held in the soil colloid in a process called cation exchange. If these metal cations are not replaced on the soil colloid then the hydrogen ion predominates and soil acidity is the end result.

4.4.4 Nutrient depletion

Low phosphorus, nitrogen and other elements in low fertility soils were major constraints to our first farmers. (Thompson and Moore 1983). Many soil scientists believe that nutrient depletion must be addressed if sustainable cropping systems are to be continued. (Roveri 1990, Williams 1991, Lipsett and Dann 1983).

More information such as soil analysis and input and output relationships should be acquired to enable a balanced approach to the maintenance of soil fertility.

4.4.5 Structural decline

The amount and quality of soil organic matter affects the structural stability of soils. A biologically active soil will contain a range of organic and organometallic complexes, polysaccharides, etc which assist in binding soil particles together in aggregates thus protecting the soil from erosion. (Chaney and Swift 1984, Reganold 1990, Parr 1983). Because Australian soils are mostly low in organic matter, over-cultivation and prolonged fallow period in some areas will deplete these supplies leading to structural decline. The increasing use of high analysis nitrogen fertilisers such as anhydrous ammonia further uses up valuable supplies of organic matter.

4.5 Pollution of Environment

The improper and overuse of fertilisers and pesticides can have devastating affects on the environment. Runoff and leaching of soluble fertilisers can pollute both surface and groundwater systems leading to eutrophication and growth of algae blooms. (May and McBarron 1973). In particular nitrogen fertilisers can lead to levels of nitrate which pose hazards to man and animals. (Sun 1986). Herbicides and pesticides are now found quite widely in groundwater in the USA. (Cox 1992, National Research Council 1989).

Rachel Carson (1962) was one of the first scientists to warn of the dangers of indiscriminate use of pesticides. Since then Rudd (1964), Graham (1970), Arden-Clarke (1988) and others have continued to alert people to the dangers of pesticides in the environment and on human health. (O'Brien 1984, Curtis 1986).

4.6 Pesticides and Fertiliser Inputs

Pesticides have the ability to affect a broad spectrum of biological life. It is common for not only the pest to be killed but also the insect's predators. One of the greatest problems caused by intensive pesticide use is the development of insect strains resistant to the chemicals used. In the 1930's there were about 7 resistant species and in 1980 there were 432 resistant species (Patton et al 1982 in Hodges and Scofield 1983). Pathogens and herbicide resistance is now also an increasing problem. (Bane 1992).

Several scientists have reported on the ability of nitrogenous fertilisers, herbicides and pesticides to promote pest and disease build-up in plants. (Vogtmann 1981, Schuphan 1974 Chaboussou 1986, Altmann and Campbell 1977), Hodges and Scofield (1983) coin the

term agrocologenic disease or farmer induced disease for problems of this nature.

4.7 Quality decline in farm produce

The decline in the protein levels of wheat (Williams 1991) has serious implications for our export markets. The narrow rotations and the decline in the organic matter levels of the soil appear to be affecting the supply and the mobilisation of nutrients for plant nutrition. Some scientists have warned that a decline in the fertility of the soil would lead to a concomitant decline in the quality of that produce (McCarrison 1936, Howard 1943, Balfour 1943, Price 1945, Bear 1962, Albrecht 1975, Vogtman 1981).

4.8 Off-farm Problems

Agriculture since the second world war has been dominated by the scientific and technological and agribusiness paradigm which implores producers to aim for higher and higher yields. (Reeve 1990). By treating the farm as an industrial enterprise, with measured inputs and outputs, the dynamic nature and biological aspects to farm production have at times been neglected.

The pressures brought to bear on the soil and adjoining ecosystems are often more then they can handle, and degradation or other environmental problems arise. (Vogtman 1984).

It is apparent that the agricultural chemical industry also plays on the fears of farmers in warning of the dangers of falling crop yields if fertilisers and crop protection chemicals are not used.

Ockwell (1989) and Kaine (1990) describe how processors of farm products can place selective pressures on the farm sector by demanding that products must have certain characteristics that fit their marketing strategies, such as cosmetic perfection in vegetables and fruit supplied to supermarkets. This creates a system that is predisposed towards greater and wider use of farm chemicals and the use of undesirable land management practices (pers. comm. with foreman of contract vegetable farm 1988).

4.9 Farmer exodus

It was reported earlier in this paper that there is an increasing number of people leaving the farm industry. The trend in Australia is being repeated throughout the western world. Ronald Rosmann (1992) a member of the IAA President's Council, in the USA, said that the agricultural path being followed was drying up small and medium-size farms and the small towns and community values that go along with them. He calls for a sustainable agricultural system that ensures long-term food safety and availability, sustains a large number of farms and farmers, and supports strong and vibrant rural communities.

5. SUSTAINABLE AGRICULTURE

5.1 Introduction

Concerns relating to environmental issues, in particular land degradation around the world, have been expressed by a number of authors (Howard 1943, Pfeiffer 1947, Bromfield 1949, Southwell 1950). It was not however until the late 1960's and early 1970's that several trends or events occurred that gave the sustainable agricultural movement a growing voice.

The impact of technology on agriculture with its emphasis on the use of synthetic fertilisers and pesticides was being held responsible for many environmental problems and together with the energy crisis helped to give credence to the 'spaceship earth' concept which implored that greater thought should be given to the use of non-renewable resources and to pollution of the environment. Environmentalism was at its peak.

The convoluted development of sustainable agriculture evolved from problems annunciated above and from the implementation of recommendations of the Economically Sustainable Development Working Group that was formed to look at the proposals and concepts laid down for sustainable development by the World Commission on Environmental Development (WCED 1990).

5.2 Sustainable Economic Development

The concept of sustainable development was proposed by the World Commission on Environmentaal Development (WCED) in 1990, and was founded on the notion that economic development and environmental stability aare not conflicting but can be mutually enhancing goals. The Ecological Sustainable Agriculture Working Group was one of nine working ggroups requested to recommend policies for the implementation of ecologically sustainable development principles within their industries.

The group's final report (1991) recognised that Australia was an efficient, cost effective major world producer and exporter of agricultural products, achieved through increased area of land farmed, use of machinery and agricultural chemicals, introduction of improved crops and pastures, and expansion of irrigation.

As a consequence of this expansion the group recognised that many environmental problems (previously discussed) emanated from these developments. The groups priority objectives for economically sustainable development in agriculture were:

- the maintenance of long-term productivity
- improved system resilience and stability
- increased efficiency of use of resources
- intergenerational and intragenerational equity, and
- improved human health and safety

It is unfortunate that the final report appears to have been watered down, especially in the area of rationalisation of

farm chemicals and specific courses of action to phase some more toxic ones out of agriculture. The final report was heavily attacked by most of the participants that took part.

5.3 Terminology

A number of definitions and terms have been applied to denote sustainable agriculture. The definitions of sustainability are not only broad, but to confuse the issue further, alternative forms of agriculture are also included under the wing of this definition. These include agroecology, alternative, organic, biodynamic, ecological, permaculture, natural and chemical-free systems.

Current mainstream agriculture is usually referred to as conventional agriculture.

5.4 Sustainable Agriculture

Only a short time ago there seemed to be only two management options that farmers could take. One was conventional farming and the other, although hardly recognised, was organic or biodynamic farming. Whatever view one had of the organic/biodynamic system, at least there were distinct differences between the two systems.

However, since then new terms have been introduced by authors often to suit their own interpretation. Terms such as biodynamic, alternative, ecological, agroecosystem and low-input agriculture have been proposed for systems varying only slightly from the previous one, all of them from time to time being referred to as sustainable systems.

Hodges (1991) when discussing the various options or management systems available to farmers believes that the term sustainability is probably the most confusing, in that it is applied to all sorts of production systems often without much understanding of what the term really means.

Douglass (1985) illustrates the confusion by defining three definitions-based aspects such as food sustainability, ecological sustainability and social and community sustainability.

There appear to be two clearly defined areas in which scientists have applied the definition of sustainable agriculture; firstly, definitions which relate more to on-farm management practices and their effect on the immediate environment, and secondly those definitions which embrace ecological, community and global systems as well as the farm system (Gliessman 1992, Keeney 1989, Allen et al 1991). Collectively, they all still appear to take a more holistic and systems approach to the development of agricultural systems.

Perhaps the simplest definition is by Wendell Berry (quoted in Keeney 1989), when he describes sustainable agriculture as. "...agriculture that does not deplete soils or people."

There is no doubt that many of the definitions or terms provided for sustainable agriculture are heavily weighted towards an environmental, resource conserving or eccentric approach, but there are others such as low-input sustainable agriculture, minimum tillage/no-till systems and conservation farming that reflect the technocentric approach to agriculture which is based on the beliefs that increased production, expansion and profit maximisation, increasing use of science and technology are worthy goals. (Ikerd 1990).

Lockeretz (1988) in trying to sort his way through the maze of definitions sees sustainable agriculture as "...a loosely defined term for a range of strategies to cope with several agriculturally related problems causing increasing concern in the USA and around the world." He provides readers with something more concrete to work with by listing some of the general concepts that sustainable agriculture is based on :

1. diversity of crop species to provide farm ecosystem stability
2. selection of crop varieties and stock that are suited to that environment
3. maximise the use of on-farm or local resources over those brought in from farther afield.
4. To operate within as closed a nutrient cycle as possible.
5. Low stocking rates fed as much as possible on feed produced on the farm.
6. An emphasis on building soil fertility that will supply nutrients from the humus fraction of the soil.
7. An emphasis on providing a covering on the soil as much as possible through mulching, green manuring, cover crops etc.
8. Rotations for improving soil fertility, preventing disease build up and for weed control.
9. Use of soluble fertilisers based on the needs of the plants, only when these nutrients cannot be met from animal manures and legumes.
10. An emphasis on maximising the cultural management systems to control pests, weeds and disease. Pesticides and insecticides to be used only as a last resort.

The term sustainable agriculture was first used in Australia in about the 1980's in soil conservation literature. (Reeve 1990). The term was used to describe systems of agriculture that preserved the physical integrity of the soil resource base, so that yields and farming enterprises were maintained or increased in the future.

In 1986 the National Association for Sustainable Agriculture Australia (NASAA) was formed and their definition of sustainable agriculture was based on the one provided by the USDA Study Team on Organic Farming (USDA 1980). NASAA's definition refers mainly to what

inputs and practices are allowed and what inputs are not allowed (NASAA 1991). It is certainly evasive in its description of on farm management practices but does not emphasise wider environmental or social justice issues.

Reeves (1988) points out that looking historically at agriculture, we have not as yet developed a system of agriculture that proven over time will endure. He argues that no one system has proven to be stable. He concludes by suggesting that sustainable agriculture will be a moving target that will require our approach to be dynamic, open-minded, forward-thinking and flexible. He perhaps is ignoring some agroecosystems which do appear to be stable and resource conserving.

Reeve (199)) after reviewing much of the literature on sustainable agriculture seems to cover most of the salient points when he lists the conditions that a sustainable agriculture will need to satisfy if it is to be classed as a truly sustainable system. They are:-

- it must be profitable for the farmer
- be able to produce adequate amounts of food and fibre for a stable global population
- produce food and fibre of quality
- conserve the agricultural resource base
- minimise the use of non-renewable resources
- minimise deleterious off-farm environmental impacts

5.5 Alternative Agriculture

It is evident from the literature, that like sustainable agriculture, alternative agriculture suffers from a plethora of terms and definitions that often differ little from the definitions given for sustainablity. The term is used as more of an umbrella term for a range of practices that may have more precise definitions. Often the terms alternative, ecological or biological agriculture are used interchangeably.

It seems that any farmer that utilised management practices that differed from the conventional approach of the time, or had concerns about modern 'high-tech' farming, was classified as using alternative practices (Madden 1989). Boeringa (1980) came to the conclusion that many of the differences between alternative and conventional agriculture are due to different conceptions of nature and its place in nature.

Definitions of alternative agriculture by Youngberg (1986), and the National Research Council (1989) share some basic goals summarised by Lockeretz (1988):

- reduced use of or complete prohibition of purchased inputs, especially toxic or non-renewable ones;
- less damage to the environment
- and better protection of water, soil, and wildlife

5.5.1 Organic Farming

Organic farming described by Wolf (1977) is both a philosophy and a farm management system. It seeks to farm within as closed a nutrient cycle as possible utilising biological systems and local resources to build a healthy 'living' soil. Howard (1943) was regarded as a father of organic agriculture, and his work on composts and the waste products of agriculture, and his hypothesis that linked soil health to the health of plants and animals, initiated other like minded scientists and farmers to follow his example (Albrecht 1975, Hainsworth 1954, Bromfield 1949, Sykes 1946, Balfour 1943, Pfeffer 1947, Whate and Hicks 1953).

Lampkin (1990) developed on behalf of the International Federation of Organic Agriculture Movements (IFOAM), a working definition of organic/biological agriculture which has been adapted from the aims provided in the IFOAM standards (IFOAM 1989) for a low input system. Lampkinn's definition sets out eight aims:

1) to work as much as possible within a closed system and draw upon local resources.
2) To maintain the long-term fertility of soils.
3) To avoid all forms of pollution that may result from agricultural techniques.
4) To produce foodstuffs of high nutritional quality in sufficient quantity.
5) To minimise the use of fossil energy in agricultural practice.
6) To give all livestock conditions of life that conform to their physiological needs and human/ethological principles.
7) To make it possible for agricultural producers and their families to earn a living through their work and develop their potential as human beings.
8) To maintain the rural environment and preserve non-agricultural ecological habitats.

The USDA (1980) study on organic farming gave the industry a catalytic boost and legitimised its existence, when in its summary it stated that, "the study found that many of the current methods of soil and crop management practiced by organic farmers are also those which have been proposed as best management practices for control of soil erosion, minimising water polluton and conserving energy...."

More recent research and reports on the industry such as the comparative study of a conventional and an organic farm by Reganold (1987), and the NRC (1989) study on organic farming have widened the interest of organic farming to many farmers and scientists.

From a system that initially placed its greatest emphasis on land management, organic agriculture has now become a market driven production system that caters for the demand of consumers who are keen to purchase food grown with minimum risk of pesticide contamination. Strict standards are imposed on farms and production units to ensure that the risk of contamination is minimised on both the farm and local ecosystems. It is this author's experience that many organic systems may not necessarily

be sustainable systems, in that many farms visited over a 20 year period are purely substituting one allowable input for a prohibited one. There appears to be a lack of understanding about how to maximise the natural biological cycles and operate within a reasonably closed input/output cycle. These systems may in the end be exploitive of the farm's resources.

5.5.2 Biodynamic Farming

Biodynamic farming methods developed from the lectures of Steiner (1924) in Germany and its methodology have been widely explored by many scientists and farmers around the world (Koepf 1989, Koepf et al 1976, Vereijken 1986). It is a system of measures to be taken in gardening and farming with the final goal of improving the organic and humus state of the soil (Pfeiffer 1948). Certain biodynamic preparations are used to enhance and develop microbial activity in the soil and the influences of cosmic forces are an accepted part of the system. There is minimal use of fertilisers.

Biodynamic farming is widely practiced in Europe where it is recognised by governments as a genuine alternative to conventional agriculture. There is a great emphasis on the farm as a living system, and as such, a holistic approach to management is utilised.

Podolinski (1985) who founded the biodynamic farming association of Australia has been successfully using these techniques on broadacre properties throughout Australia.

The major criticism heard of the biodynamic system is that there has to be a deficit in the input/output relationship of crop nutrients, as biodynamics usually does not allow input products to be used. Biodynamic farmers and advocates argue that nutrients are mobilised from the sub soil and lower profiles, thereby creating a huge pool of future crop nutrients. Further research may help to support this hypothesis.

5.5.3 Low-Input Sustainable Agriculture (LISA)

LISA refers to reduced use of off-farm input materials. Schaller (1989) and Wagstaff (1987) define LISA as an agriculture that is productive, profitable for farmers, conserves soil and water resources, protects the environment by lowered use of farm inputs and ensures a safe food supply. LISA is included under the heading of alternative agricultural practices because it is seen by supporters of mainstream conventional farming, and in particular, the input manufacturers, as throwing away the technology necessary for continued high yields.

Understandably many in the alternative agricultural movement see LISA as a watered down method of conventional farming.

LISA has however gained the acceptance of many scientists and as a result various research programmes, including ones utilising intergrated pest management schemes have been undertaken and completed in the USA. It appears that governments can support such an approach without suffering the same amount of ridicule and derision that would be the case if total support was thrown behind organic or biodynamic farming programmes.

5.5.4 Ecological/Agroecosystem Approaches

Ecological agriculture has often been used interchangeably with organic and biological agriculture. Agroecology is a scientific discipline that studies agriculture from an ecosystem perspective based heavily on time tested more traditional farming systems (Alteri 1987), Gliessman et al 1981).

5.6 Sustainable Agriculture in Australia

Sustainable agriculture is practiced in Australia by many adherents of the above alternative agricultural practices and others who would argue that their management utilises similar techniques. The three major bodies in Australia are the Biodynamic Agricultural Association of Australia (BDAA), the National Association for Sustainable Agriculture Australia (NASAA), and the Biological Farmers of Australia (BFA).

Based on comprehensive production standards these associations accredit producers through a certification scheme which allows them the use of the organisations logo which identifies their produce in the market place as originating from a genuine organic/biodynamic production system.

Studies by Conacher (1982) and Wynen and Edwards (1982) illustrate that alternative/sustainable agricultural practices in Australia are economically and environmentally desirable.

Recent on-farm studies by Small (1992) are following this trend and further indicate that the biodynamic practices studied are not only soil fertility enhancing techniques, but are also resulting in healthier livestock.

Hassel and Associates (1990) believe that there are between 1000 and 1500 producers in Australia. The BDAA (quoted in Hassel and Associates 1990) maintain that their members farm more than 6000,000 hectares.

A survey by the Victorian Department of Agriculture in 1989, of 900 Victorian farmers found that 36% were interested in trialing organic farming (quoted in Hassel & Assocs. 1990).

The above information illustrates that there are many farmers successfully managing their properties utilising alternative or sustainable agricultural practices. Many of these successful farmers are generating considerable interest among much of the rural population.

No matter what you do, do your best at it. If you're going to be a bum, be the best bum there is. Robert Mitchum

6. INDICATORS OF SUSTAINABILITY

To review all the various methods of sustainable agriculture and to decide on one which might be appropriate for Australian agriculture is a daunting task.

It may be advantageous to use Gliessman's (1992) approach which is to examine the indicators of sustainablity in an agriculture system. This would allow an objective assessment of what sort of condition Australian agriculture is in, and what action should be taken to ensure that a sustainable system was implemented.

1) Soil resource - **long-term** indicators such as soil depth, percentage organic matter, bulk density, water infiltration (aggregate stability), mineral levels and cation exchange capacity; **short-term** erosion rates, nutrient uptake efficiency, nutrient levels.
   Hydrological factors - water use efficiency, infiltration rates, soil moisture holding capacity, rates of erosion losses, water-logging, drainage, surface water flow, sedimentation, agrochemical levels groundwater quality, water movement into profile, leaching of nutrients (nitrate) and pesticides
   biotic - microbial biomass, biomass turnover, diversity of microorganisms, nutrient cycling balance between beneficial and pathogenic microorganisms
2) system level indicators - emergent qualities of agroecosystems, productivity, diversity, stability, resilience, external inputs, nutrient cycling, population regulation.
3) Community relations

7. MARKETING OPPORTUNITIES

It is conceived by a large proportion of the consuming public that the use of agricultural chemicals poses a risk to their health and to the environment. There is therefore a great interest in the elimination of these chemicals from the production system. Coincidently, this happens to be the approach and philosophy shared by the various organic/biodynamic associations, who have implemented quality control systems to guarantee that produce carrying their respective logos originates from organic/ biodynamically managed systems. A government report (DPI 1988) recognises the legitimate nature of organic/biodynamic agriculture and suggests that the increasing world demand for 'clean' food could be accommodated by Australian producers. Hassall and Associates (1990) further expanded on the prospects for growth in the area of 'clean' food in both the domestic and export markets.

8. HINDRANCES TO ACHIEVING SUSTAINABLE AGRICULTURE IN AUSTRALIA

Resistance to the implementation of a sustainable agricultural system may come from quite a few areas. Input manufacturers are well known for praying on the fears of farmers, and is likely that any reductions in agricultural inputs will be met with some resistance (Reeve 1990).

Both Ockwell (1989) and Kaine (1990) see agribusiness as putting pressure on the farm sector to continue their current practices to ensure they are supplied with an adequate amount of agricultural commodities.

There will also be resistance to a sustainable low-input system from perhaps the agricultural colleges and research organisations who have tied much of their research and development to corporate high-technology agribusinesses. Hightower and De Marco (1987) point out that the vast majority of farmers, farm workers, small-town business people and residents, and the rural poor have been sadly neglected by much of agricultural research.

In the area of international trade, with the pressure to reduce tariffs, Australia will face increasing competition from trading partners in the area of agricultural products, who will be producing with systems that are far from sustainable. This will make it harder for us to adopt these practices and remain competitive.

9. CONCLUSION

Over the years a great deal of evidence has been provided by many scientists as to the problems faced by Australian agriculture, whether they might be land degradation issues, nutrient depletion, energy intensiveness, environmental pollution or social justice issues. These problems are common to the western world where modern intensive farming systems are in place.

In Australia because our soils are historically more fragile, even greater care has to be exercised in their management. Our record in the past for land management has not been good. A much longer-term vision has to be at the forefront of our agricultural strategies to ensure that the importance of remaining economically viable does not cloud the issues of environmental sustainability.

Before any progress can be made in the area of implementation of sustainable strategies, it will require first that scientists, politicians, land managers and farmers accept that there are major problems with the current conventional agricultural system.

While some of our agricultural practices may be close to sustainable, there are many that fall well short of the definition provided below.

We have seen that many agricultural producers are successfully utilising alternative farming methodologies. These systems using a mix of scientific and technological know-how, and acquired wisdom, are optimising biological systems to farm in an economic and ecologically sustainable manner. We must be open-minded enough to look at these systems and see where our more conventional systems can benefit from some of their approaches.

Despite the number of definitions available that define sustainable agriculture, there are a number of factors common to all of them, which provide building blocks on which strategies can be based. The department must now closely examine this issue and take the next step to move this current theoretical debate into the area of policy and then to map out these strategies which will ensure that Australian agriculture is both economically viable and environmentally responsible.

10. RECOMMENDATIONS

The aim of the various departments of agriculture must be to produce food and fibre for people, efficiently, economically, safely, and reliably without undue stress on our environmental resources. The departments are to be encouraged to accept the definition (at the beginning of this article) for a sustainable agricultural system provided by the author.

In pursuit of the goals of this definition the following recommendations are suggested:

1. That based on the best available evidence, many of our systems of agriculture could benefit from approaches based on the goal of sustainability. This goal is not incompatible with many of the objectives of the departments of agriculture. This may mean that we develop low input systems similar to the LILSA programmes based on many of the desirable features of some of the alternative agricultural systems.
2. There is a need for comprehensive multidisciplinary studies focusing on perhaps the indicators of sustainability as provided by Gliessman (1992), to pinpoint the areas where our agricultural systems are falling well short of our definition of sustainable agriculture.
3. Once sufficient data has been gathered, develop strategies that will enable all forms of our agriculture to benefit from a sustainable approach.
4. Develop a working relationship with alternative agricultural associations to provide assistance where possible and to develop markets for certified organic produce.
5. That research work with a whole systems approach be carried out on economically successful alternative farms, with emphasis in the areas of nutrient cycling, soil fertility promotion, use of on-farm waste recycling and pest and disease management.
6. There are at present a number of universities, agricultural colleges, and research institutes around the world which are closely studying alternative forms of agriculture, agroecosystems and biological pest control, It is important that we do not stay in an academic vacuum as we have tended to do in the past. We must make contact with these bodies and encourage our own institutions in Australia (such as UNE) to take up the challenge and provide curriculum and research facilities

11. FURTHER INFORMATION REQUIREMENTS

11.1 Short-term information requirements

11.1.1 There is a need for us to have reliable up to dat information on the number of primary producers pursuing sustainable agricultural methods. This will involve access to government statistics, communication with organic/biodynamic associations, land-care and salinity and conservation groups. There is a great deal of information on alternative agriculture to be gleaned from associations such as NASAA, and the Organic Advisory Service run by the Organic Retailers and Growers Association of Australia (ORGAA).

11.1.2 There is a requirement for information on all aspects of alternative agriculture and this means that a data base needs to be established. Information pertaining to this area exists but it is widely dispersed in books, journals and department publications.

11.2 Long-term information requirements

Detailed information to be provided from research that is investigating all aspects of the sustainable agricultural indicators.

(EDITORS NOTE: *'Space' does not permit us to reproduce the extensive list of references supplied with this article but they can be obtained upon request.*)

Chris Alenson, President
Organic Retailers & Growers Association of Australia
PO Box 12852 (A'Beckett Street, Post Office)
MELBOURNE VIC 3000
Telephone (03) 386 2999

FARM SAFETY SOLUTIONS

A Project of the Commonwealth Rehabilitation service and the Australian Agricultural Health Unit (Farmsafe 1995 -7)

Rural people are invited to contribute to the production of a manual of farm safety solutions, the aim of which is to make available to farmers across Australia, practical methods of reducing risk of injury on farms. How have you solved problems like:

- Lifting heavy and awkward items or animals
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- Making jobs easier on your body and reducing physical strain
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- Getting the job done with just a single pair of hands

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Free call 1-800 633859 Fax 067 668061

Organic Retailers & Growers Association of Australia

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Education Kits

It is of vital importance that our school children have the opportunity to access information on all aspects of organic/sustainablity agriculture. The Organic Retailers & Growers Association of Australia (ORGAA) believes that these kits will provide the range of information and resource material that will enable studies to be undertaken on the organic industry. The kits contain the following information:

- **Teacher Notes**
- **Key papers on organic farming**
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- **Reference information sheet**
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These kits are targeted at secondary schools

Organic Retailers & Growers Association of Australia, Organic Advisory Service, Stringybark Farm, 15 Tschampions Rd. MACCLESFIELD, VIC 3782
Ph (059) 683040

Organic Retailers & Growers Association of Australia
Organic Advisory Service Fact Sheet

BASIC ORGANIC GARDENING

Organic gardening is about raising flowers, herbs, vegetables and shrubs using techniques and methods that cause no potential poisoning risk to humans or to birds and insects in the garden environment.

Gardeners because they are managing smaller areas of land should be more able to look after their respective areas than farmers who are managing large areas of land with scarce labour resources.

There is therefore in the garden, the opportunity to duplicate nature's system by having a diversity of plants, and by cycling nutrients in almost a closed system. This means that all possible wastes are returned to the soil. The **Law of Return** is strictly adhered to.

It is important therefore, in planning a garden, that these many qualities are considered and that above all a holistic approach is taken in its management. This means that every activity that is carried out is carefully considered to ensure that no other part of the garden system suffers as a result of that activity.

For example it may be easier to spray a toxic pesticide or herbicide to gain control over a particular problem, but we must consider what effect that action is going to have on our health, birds and insects in the garden ecosystem, and the soil life that ultimately controls the quality of the plants raised on it.

Our garden is our sanctuary and a large sign should be erected in it which states:-

"NO TOXIC CHEMICALS ALLOWED".

Diversity is important in both the range of plants and trees grown and in the biological life that often is unseen, both above the ground and beneath the ground.

Grow flowering plants for colour, and herbs, shrubs and trees which may provide fruit, nuts, valuable leaves for mulch, shade or nitrogen for other species.

Permaculture is similar to the now scientifically studied concept of agroecosystems which is heavily based on the food producing techniques utilised by peasant societies in Mexico, South America and other areas of the third world. These techniques are very productive, resource conserving and energy efficient.

One of the key differences between conventional vegetable growing and organic vegetable growing is that in conventional management the emphasis is on feeding the plant or particular vegetable with specific fertiliser mixes.

Organic growing emphasises fostering a high state of soil fertility by the addition of composts, green manures, other plant wastes, mulches, and mineral fertilisers. In other words feed the soil, and this **living soil** with its incredible array of biological life, will make nutrients available for plant nutrition, and help to protect plants against invasive disease organisms.

Agriculture teachers' perceptions of the integration of Agriculture into Design and Technology and the Technology and Applied Studies Key Learning area.

I am an Agriculture teacher at Prairiewood High School in Sydney and have just completed a Masters of Education Course. Part of the course required me to do a research project. I chose to look at how Agriculture teachers felt about the recent changes ie. TASKLA formation and Design and Technology Syllabus implementation. I have included a short extract from the project that may be of interest to other Agriculture teachers.

This is a section of a project I submitted as part of my Masters of Education Degree. I hope that it is of some interest to readers of BAAT. If anyone would like more information on this research they can contact me.

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ABSTRACT:
In recent years NSW schools have experienced change at a rapid rate. Just two of these changes involve the formation of Key Learning Areas and the implementation of new mandatory syllabi.

The purpose of this research is to investigate how the formation of the TASKLA, the introduction of the Design and Technology Syllabus, and the placing of Agriculture within the TASKLA have affected Agriculture teachers and agriculture teaching in Metropolitan South West High School.

The study adopted a qualitative approach using semi-structured interviews to gather data. Three major study questions provided the central theme for each interview, Eleven Agriculture teachers representing eight schools were interviewed.

Drawing its findings from teacher perceptions, the investigation found an enormous number of different implementation models in place in the schools. Some schools have made major changes to their organisation to accommodate the TASKLA and Design and Technology. In others the changes have been minimal.

At the teaching level, some Agriculture teachers are heavily involved in the teaching of Design and Technology and have incorporated its philosophy into Agriculture programmes. This contrasts with other Agriculture teachers who have made a clear decision to have no involvement.

All agriculture teachers affirmed the important role Agriculture plays in the school curriculum and their desire for its continuation. Some felt threatened by the recent changes whilst others saw advantages to themselves and the subject of Agriculture.

A number of recommendations conclude the study. These centre on bringing about an improvement in the position of Agriculture within the TASKLA and in respect to the teaching of Design and Technology. They also suggest improvements to enhance teachers' attitudes towards the recent curriculum changes.

CHAPTER 1 THE PROBLEM

1.1 BACKGROUND TO THE PROBLEM

The NSW Government's White Paper "Excellence and Equity" (1989) highlighted the inadequacy of the across the curriculum approach to design and technology education. The paper established the Technological and Applied Studies (TAS) Key Learning Area and outlined the need for a mandatory course in secondary schools for design and technology. This recommendation led to the development of the Design and Technology syllabus for Years 7-10.

Up until the introduction of Key Learning Areas, Agriculture in High Schools was considered to be a part of Science, or as a separate entity. Often Agriculture teachers taught some Science classes and vice versa. In most cases the Head Teacher of Science also oversaw the administration of Agriculture.

Agricultural education has a long and proud history in New South Wales schools, being part of the curriculum as far back as 1860. With the introduction of Key Learning Areas and the Design and Technology Syllabus came much upheaval and disruption in Agriculture. Under the changes, Agriculture was placed under the umbrella of the Technology and Applied Studies Key Learning Area and Agriculture was also a context area within the mandatory Design and Technology syllabus. New administrative structures were developed, different teaching styles were emphasised, new relationships formed and old systems were forced to change.

1.2 STATEMENT OF THE PROBLEM

The formation of the Technology and Applied Studies Key Learning Area in our schools and the implementation of the Design and Technology syllabus 7 -10 has brought about many significant changes in structure of school systems, teaching methodology and the feelings of all affected teachers. The Technology and Applied Studies Key Learning Area joined Agriculture with many other pre-existing syllabus areas which had previously functioned separately.

Agriculture teachers, due to their small numbers, lack of support by the Department of School Education and Board of Studies, lack of representation at executive level in schools and relatively small numbers of students studying the subject, have arguably experienced the most conflict and difficulty during these changes. At this point in time, no studies have investigated this impact on Agriculture teachers.

1.3 PURPOSE OF THE STUDY

This project investigates how the introduction of the TASKLA and the consequent implementation of the Design and Technology Syllabus has impacted on Agriculture and Agriculture teachers in the Metropolitan South West region. It looks at this impact at three levels:

- **the school administrative level** - which includes areas such as period loads, head teacher supervision, resources, class sizes and faculty restructuring.
- **The teaching level** - have the teaching methods of Agriculture teachers changed?
- **The personal level** - how do Agriculture teachers feel about the changes and the impact of the changes on Agriculture.

1.4 MAJOR STUDY QUESTIONS

The major study questions are:

1. What has been the impact on schools caused by the inclusion of Agriculture in the TASKLA?
2. How has this inclusion influenced the teaching approaches of Agriculture teachers?
3. How have the beliefs and attitudes of teachers been affected by the change?

CHAPTER 5 IMPLICATIONS AND RECOMMENDATIONS ARISING FROM THE STUDY

5.1 IMPLICATIONS

This study investigates teachers perceptions of the impact that the formation of the TASKLA and the implication of the Design and Technology syllabus has had on Agriculture and Agriculture teachers. The research data gives rise to a number of implications.

IMPLICATION 1

There exists a feeling of disparity within the TASKLA. Agriculture teachers feel that if they are to be considered as members of the TASKLA, then they should have reduced class sizes, in line with the other subject areas.

Agriculture teachers cited many advantages in teaching smaller groups of pupils. A very important benefit mentioned by teachers was that of improved student safety, in what is a very practical curriculum area.

IMPLICATION 2

Some Agriculture teachers have chosen not to teach Design and Technology, because by doing so it would have reduced the number of teaching periods given to Agriculture. Many teachers also express concern that by teaching Agriculture as a context of Design and Technology, Agriculture would lose its identity. It would be viewed as only a minor partner in a large conglomerate.

Concern was also expressed in relation to the number of students that would select Agriculture as an elective subject. Some teachers felt that if students only experienced Agriculture as a context area of Design and Technology they would be less likely to study Agriculture in later years.

IMPLICATION 3
Agriculture teachers perceive that not enough funding has been provided to ensure students have access to current technology. Even though exposure of students to technology is a major focus of the TASKLA and Design and Technology, little improvement has been made. Teachers noted the difficulties in obtaining computer time for their students on inadequate computer facilities.

IMPLICATION 4
Agriculture teachers have had a diverse range of exposure to Design and Technology. As a consequence there is a range of acceptance and adoption of the Design and Technology philosophy. Teachers who have received training in Design and Technology or have been taught using a similar philosophy at a tertiary level are more likely to be teaching it. They are also more likely to have incorporated its philosophy into their teaching of Agriculture.

IMPLICATION 5
Generally Agriculture teachers have had limited professional development in Design and Technology prior to and since its implementation. In many instances this is because they have not been aware of the courses available of have chosen not to attend as they felt these courses were not relevant to them.

IMPLICATION 6
A variety of organisational structures exist in schools relating to the TASKLA and Design and Technology. In some cases Agriculture teachers feel that they are not being adequately represented at the executive level. There is also some confusion and overlapping of supervisory roles by Head Teachers.

IMPLICATION 7
Teachers are concerned with the long term survival of Agriculture in schools. All Agriculture teachers expressed their commitment to their subject area. Many demonstrated this in their extra curricular involvement at shows, camps and displays. They are striving to promote the image of Agriculture and ensure its survival in High Schools. Agriculture teachers are adamant that their subject area provides opportunities for students that do not exist elsewhere in the school curriculum.

IMPLICATION 8
The majority of Agriculture teachers expressed concern in the appropriateness of placing Agriculture in the TASKLA. A number of teachers would be happier if Agriculture was still linked to Science, not to TAS.

IMPLICATION 9
A majority of Agriculture teachers see that students would benefit through the use of Design and Technology techniques. They were happy with many of the ideas espoused by the syllabus.

5.2 RECOMMENDATIONS

Based on the implications arising from this study the following recommendations are made:

RECOMMENDATION 1
The Department of School Education should modify school staffing formulae to bring Agriculture classes into line with the other subject areas within the TASKLA. Pupil numbers in all subjects within the TASKLA should be no greater than 20.

RECOMMENDATION 2
Design and Technology should be implemented so as not to disadvantage Agriculture. The number of periods allocated to Agriculture teachers teaching Design and Technology should be at least equal to the number of periods they were allocated when teaching Agriculture.

RECOMMENDATION 3
Agriculture teachers who are teaching Design and Technology should develop Design Briefs that expose students to a wide range of activities that may take place on the school farm. Alternatively they many chose to take time out from students' Design projects to ensure that students experience a range of Agricultural activities. These actions may help to overcome the concern teachers have that students see only a limited part of Agriculture when taught as a context of Design and Technology. It may also encourage selection of Agriculture as an elective.

RECOMMENDATION 4
Funding should be made available to schools for the purchase of current technology. Schools should be adequately resourced to enable Agriculture classes to use facilities such as computers. Other technology such as environmental monitoring units, electronic scales, hydroponic systems, embryo transfer and Agriculturally specific software should be (financially) within the reach of all schools offering Agriculture if required.

RECOMMENDATION 5
Teacher training institutions must be more responsive to changes that take place within the Department of School Education. They must adequately prepare trainees for new courses they are likely to teach.

Tertiary institutions for teachers of Agriculture (and the other KLA members) need to include Design and Technology into their curriculum. They must actively encourage its philosophy and instruct teachers in suggested teaching practices appropriate for this syllabus.

RECOMMENDATION 6
Professional development of Agriculture teachers in the area of Design and Technology needs to be encouraged. Agriculture teachers need to be specially targeted ahead of the other TASKLA members as generally the have

experienced less inservice training in Design and Technology.

Recently appointed teachers who have been trained in Design and Technology should be utilised in the development and presentation of these courses.

Teachers who have completed the data programme at its various levels should also be utilised in the development of all Agriculture staff.

In addition teachers who are actively and successfully teaching Agriculture as context area should be called upon to demonstrate their lessons to others.

RECOMMENDATION 7
Agriculture teachers must further develop links with other teachers within the region and into other regions. Sharing of resources, programmes and experience needs to be encouraged.

RECOMMENDATION 8
The Agriculture Teachers Association should be given the financial support to provide guidance to Agriculture staff in strategies of incorporating the Design and Technology philosophy into their lessons. Release days for Agriculture staff inservices and meetings are required.

RECOMMENDATION 9
Schools should discuss and decide on the organisational structure (Head Teacher, staff room, timetabling etc.) that best suits the school, students and staff. Collaborative decisions should be made. These decisions have far reaching effects and are more likely to be accepted if those involved are given a part in the decision making process.

RECOMMENDATION 10
Currently the TASKLA and the teaching of Design and Technology is executed in different ways within each school. As may be expected some techniques are achieving greater success than others. TASKLA teachers and the executives responsible should be given the opportunity to view methods of implementation at other schools. This would enable the adoption of exemplary practices.

RECOMMENDATION 11
Agriculture needs committed representation at the executive level in schools. Head Teachers who have been allocated the responsibility of supervising Agriculture must be more familiar with the particular needs of the subject area.

An alternative proposal may be that Agriculture teachers are invited to attend executive meeting so that Agriculture is better represented.

RECOMMENDATION 12
Since the appointment of a regional TAS consultant, Agriculture has been better recognised and represented at the regional level. The Board of Studies has also recently appointed an Agricultural trained teacher to the position of Curriculum Officer, which has resulted in Agriculture having a 'voice' at the Board. This position is only a temporary one and needs to be made permanent.

RECOMMENDATION 13
The Department of School Education and the Board of Studies must publicly express their commitment to Agriculture and the other TAS subjects. This is needed to allay the fears of teachers who are concerned that these subjects may be lost for purely economic reasons.

RECOMMENDATION 14
The Agriculture Teachers Association must continue its work in promoting Agriculture in schools and to the broader community. However, it is unreasonable to expect teachers to continue with this work without support from the Department of School Education. The Department should provide some means of compensation: perhaps financial, or by releasing staff from teaching duties.

Agriculture faculties at Universities and TAFE must also continue to promote Agriculture as an education and career option.

Editor's Note

May I congratulate John on behalf of the members of the Association. He has produced some valuable research and I encourage him to "give us more" in future editions of BAAT.

Where to from here?

What can members do to address these issues? May I suggest that we allow John a session at our Annual Conference where he can outline his research - with the full picture. Our Action Plan can be better organised and effective if we are fully aware of this complex issue.

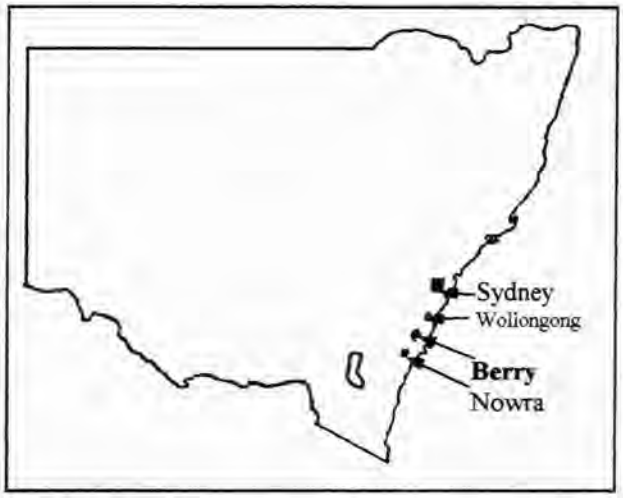
Your correspondence to John or BAAT is encouraged.

J.M.

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Narellan Road
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FARM SAFETY AND INJURY PREVENTION EDUCATION PROGRAMMES FOR SENIOR PRIMARY AND HIGH SCHOOLS

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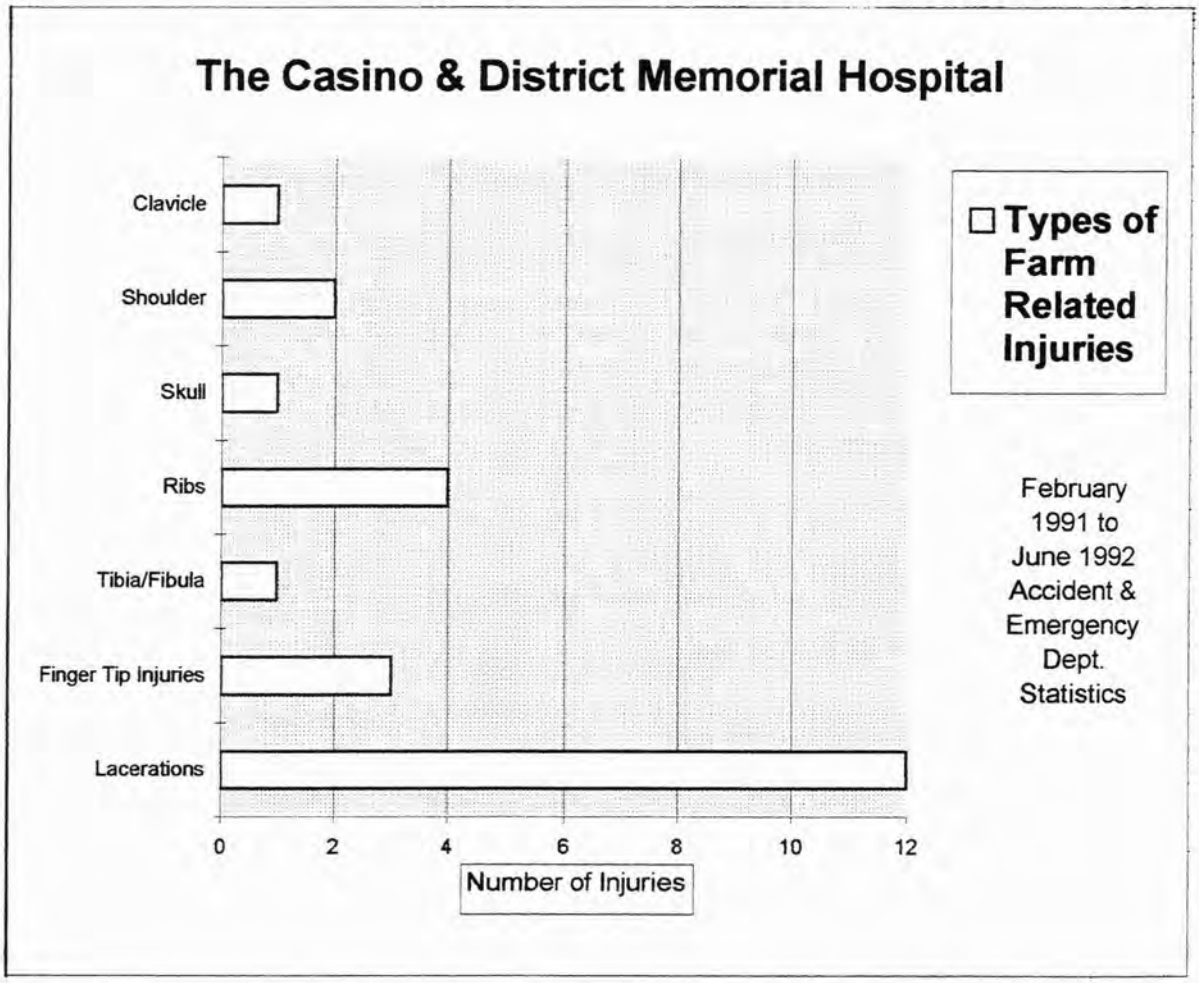
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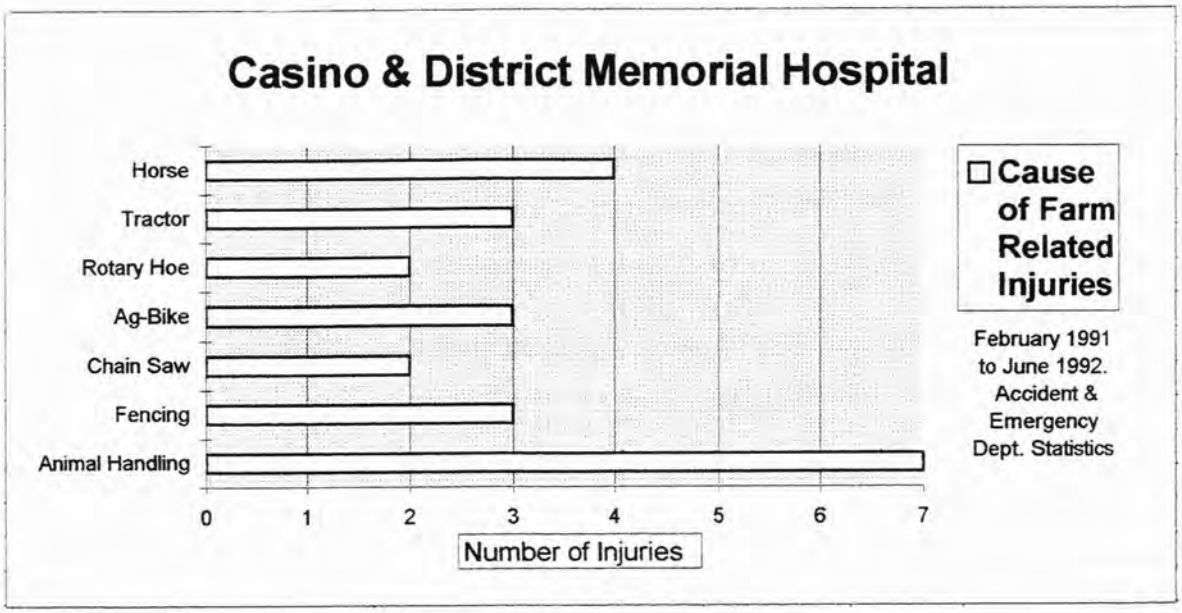
Agriculture is recognised as the third most hazardous of all industries in Australia. In a study of all work-related deaths occurring in the years 1982 to 1984, a total of 224 adults and 34 children died as a result of farm related injury (Harrison, Frommer, Rusk, Blyth, 1989). Studies of farm related injury in both Australia and overseas countries including Canada, the United States of America and the United Kingdom have identified child injury as being disproportionately high in terms of death and non fatal injury, a problem unique to the farming industry. Farming is the only industry where there is a lack of separation between the farm family home and the farm workplace, presenting a high risk environment to the farm family child and visitors to the farm due to the inquisitive nature of children. Young children are also frequently in the farm workplace due to the essential involvement of both parents in farming activities, particularly during busy times on the farm and also due to the lack of alternative, low cost childcare facilities.

Introduction

Farming is the only industry where children frequently play a significant involvement in farm work activities. The gradual introduction to farm work activities often progresses from quite an early age and is often regarded by traditional farming families as important in the development of farmers of the future. Farming is also the only industry where children younger than 15 years operate potentially dangerous machinery such as tractors. This is despite regulations which usually specify a minimum age of 16 to 18 years and specified training requirements.

The Occupational Health and Safety Acts in all Australian states specify that all workplaces must be safe for every person who enters. The farming industry is included, but due to its isolated and variable nature and lack of division between the farm family home and workplace has a largely been neglected until recently, in terms of farmers requiring occupational health and safety knowledge or compliance. One of the primary means of reducing the risk of injury in Australia and in a number of overseas countries is through implementation of safety education programmes. Education has been recognised by the farming community as the preferred means of reducing injury related to farming activities.


The Casino & District Memorial Hospital
Clavicle
Shoulder
Skull
Ribs
Tibia/Fibula
Finger Tip Injuries
Lacerations
0
2
4
6
8
10
12
Number of Injuries
Types of Farm Related Injuries
February 1991 to June 1992 Accident & Emergency Dept. Statistics


Casino & District Memorial Hospital
Horse
Tractor
Rotary Hoe
Ag-Bike
Chain Saw
Fencing
Animal Handling
0
1
2
3
4
5
6
7
Number of Injuries
Cause of Farm Related Injuries
February 1991 to June 1992. Accident & Emergency Dept. Statistics

Rationale

Adolescent groups have been targeted for a variety of health promotion/health education programmes due to their lifestyle and exposure to high risk activities both on and off farm. This programmme targets adolescents in both the rural areas as an injury prevention strategy. The programme particularly targets adolescents who live on or visit farms and are often involved in potentially hazardous farming activities, including the riding of all-terrain motorbikes (ATV's) or driving farm vehicles and tractors.

This programme is based upon the results of an evaluation of the effectiveness of a series of farm safety education field days which were piloted in North Coast state schools. Evaluation was carried out using a pre and post test method with an intervention and control group and showed a significant difference between students who had received the injury prevention intervention and students who had not been exposed to the strategy.

Aim

The overall aim of the programme is to reduce injury related to farming activities.
The objective for Years 5 and 6 is to raise awareness of national Farm Safety week and for increased personal safety on farms.

For years 7 to 10 students, the programme will be applied across the curriculum including English, Maths, Science, Design and Technology, Personal Development Health & Physical Education, Geography, Creative Art and Agriculture. This approach will allow for a much broader approach and will also reach a wider number of students and emphasise the importance of the programme.

The secondary programme will also be compatible with the Occupational Health and Safety Course requirements of students undertaking the NSW schools content endorsed course (CEC) for years 11 and 12. The aim of the programme for all levels is to be practical, centred on problem solving based learning. The educational materials will be in module form and can be reproduced for non commercial educational purposes, provided due acknowledgment is given (*Rural Ind. And Ag. Will be developed at a later date.)

Given the aim, introduction and background information of Farm Safety, teachers are asked to identify and provide activities relevant to their curriculum and that teachers can use in schools. Some examples are suggested (further on in the tables). This is important for all schools and the student/communication.

Programme resources

Each key learning area will have an A3 folded pamphlet detailing aim, syllabus content, statistical information and examples of activities. A Farm Safety kit including videos and suggestions for planning and developing a farm safety field day and other resources will also be available.

As part of the project to improve the management of farm safety, teachers offering the secondary school agriculture courses will be required to have completed the relevant train the trainer programmes as well as having specific expertise in the farm safety topic they are to demonstrate. Non teachers with training and special expertise may act as resource teachers for farm safety field days.

* The information should be word processed onto disk, **without** formatting using Times New Roman font in 12 point.

PROMOTING FARM SAFETY THROUGH EDUCATION IN SCHOOLS
Safety in the farm workplace - Kids talk farm safety stuff
Senior primary school level - Years 5 and 6

Aim: To reduce injury related to farming activities.

Design Brief: To develop and provide resources for teachers to utilise to promote injury prevention through awareness of risk factors relating to farming and similar risk factors in the urban environment.

Objectives:

Knowledge and Understanding

Students will know and understand -

* the importance of recognising individual and other's needs for safety on the farm
* farm and urban risk factors relating to assisting technology in rural and urban environments
* caring for equipment as well as the safety, health and well-being of everyone and the environment
* have learned first hand the impact of a farm related injury upon the farm family and the factors which contributed to the injury.

Skills

Students will -

* develop farm safety fact finding posters - a poster competition is proposed for State Agricultural shows with the final at the State Royal show - (suggested as a focus of a farm safety or injury prevention display or John Deere Ltd may have a suggestion).
* Carry out sound experiments for hearing conservation under supervision
* identify specific farm hazards on a computer programme

Values and Attitudes

* Students will recognise the need for reduced risk taking on the farm or around the urban home workshop and garden

Learning Outcomes

* visit a school farm or NSW Agriculture model or experimental farm
* A farm safety walkabout identifying risk factors on the farm -

Post Visit activities may be included in the following areas - Senior Primary - Years 5-6
Teaching Strategies

* Reflecting
* Evaluating resources
* Observing to explore and discover
* Learning safety procedures
* Evaluating chosen strategies and ideas

Resources

Video
Computer Game

ENGLISH	MATHS	SCIENCE	COMPUTERS
Essay to explore ideas on farm factors and possible solutions	- Measurement - Percentages - Graphing - interpreting graphs on the incidence of farm injury	- Hearing conservation - Sound experiments	- Computer game - Workcover - Hazard identification

VISUAL ARTS	PERSONAL DEVELOPMENT & HEALTH	MUSIC
- Poster competition Ag. Shows with final at RAS - Farm safety fact finding	- Recognising the particular hazards of specific environments	- Safety jungle

Injury prevention for farm and leisure activities
Secondary - Years 7-10
The course units are designed to be included in the following course subjects:

I. Design and Technology
II. Agriculture
III. Personal Development and Health

All components of each course subject are based upon safe working procedures. Teachers should be aware of the current Occupational Health and Safety regulations before undertaking to deliver the course/s.

Aim
To reduce the incidence of injury related to on farm activities and similar activities in the urban environment.

Design Brief
To develop and provide resources for teachers to utilise to promote injury prevention through awareness of risk activities related to farming and similar risk activities in the urban environment. Student design briefs being developed.

Objectives:

Knowledge
Students will develop knowledge and understanding about -

* safe working environments, habits and procedures
* a variety of on-farm and urban risk factors related to assistive technology in rural and urban environments
* have learned first hand the impact of farm related injuries upon the farm family and the factors which contribute to the injury

Skills
Students will develop

* skills in designing, making and evaluating a project which is designed to assist in safer farming
* designing a marketing programme to gain acceptance for the product

***NOTE**: The design project which meets a clearly defined safety need is eligible for entry into the Minister's Young Designer Awards*

Awareness
Students will develop

* awareness and skills for the safe operation of farm machinery and the risks associated with unguarded equipment

* basic skills for the care and safe operation of equipment including tractors, ag bikes, operation of grass cutting equipment and workshop power tools.

* awareness of chemical safety associated with farms and garden usage

* an awareness of personal protection including
    - electrical safety
    - Hearing conservation
    - Eye protection
    - Safe/protective clothing
    - Safe lifting techniques
* basic First Aid skills including CPR

Attitudes
Students will develop

* an appreciation of the implications of technology for society

* a sense of responsibility for the use of technology.

* An awareness of the impact of technology on the quality of life and the environment

* recognition for the need for reduced risk taking on the farm or around the urban home workshop and garden.

Activity
Make up First Aid Kit for farmers

Suggested Activities:

* Include development of skills related to the safe operation of basic farm machinery, equipment used in workshops and for leisure activities on farms and urban areas.

* Promotion of ideas for the development for safer use of equipment - the developed safety idea could be suitable for entry into the Young Designer Awards.

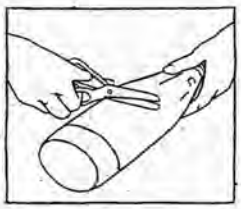
DESIGN & TECHNOLOGY (Elective)	AGRICULTURE (Elective)	PERSONAL DEV'MENT & HEALTH (Compulsory)
Agriculture & the environment - visit school farm or a NSW Agriculture experimental farm	**Ag. & the environment** - visit school farm or a NSW Ag. Experimental farm	**Ag. & the environment** - visit school farm or a NSW Ag. Experimental farm (or Parks and Gardens, Urban areas, tractors/grass cutting eq
Occ. H. & S. * Farm safety walkabout - hearing protection - eye protection * Video: Farming is a risky business	**Occ. H. & S.** * Farm safety walkabout - hearing protection - eye protection * Video: Farming is a risky business	**Occ, H. & S.** * Farm or Parks & Gardens - hearing protection - eye protection * Video: Farming is a risky business
Engineered systems - Assistive technology in farming incl. John Deere film on History of farm machinery	**Engineered systems -** Assistive technology in farming include. John Deere film on History of farm machinery - Profile on John Deere Ltd	**Engineered systems -** Assistive technology used on farms and urban areas include grass cutting equipment, Ride-on mowers Mowers/fuel and electric Garden edges/whipper snip
Personal protection equip: - design and function - safety - comfort - design marketing campaign for PPEq. Promotion * Young designer award entry for innovative ideas developed	**Safe use of tractors** - competency development - ROP's - machinery shielding - development of safety idea * Young designer award entry for innovative ideas developed	**Personal protection equip**: or safety idea * Young designer award entry for innovative ideas developed
Information/Communication design an improved idea on communication in isolated areas	**Grass cutting equip:** - slashers - ride on mowers - other mowers fuel/electric	**Animal handling safety** - general principles cattle other eg sheep/goats horses (include, Gloucester horse safety program)
First Aid - Basic CPR - Design a First Aid kit emphasis on: portability easy use acceptability by farmers * Young designers award entrant for suitable innovative design	**First Aid** - Basic CPR - First on the scene of a farm accident	**First Aid** - Basic CPR - First on the scene of a farm accident or workshop

DESIGN & TECHNOLOGY (Elective)	AGRICULTURE (Elective)	PERSONAL DEV'MENT & HEALTH (Compulsory)
Safe use of electricity * workshop safety Farm and garden chemical safety (based on NSW Farm Chem. Users course)	**Safe use of electricity** * workshop safety Farm chemical safety (Based on NSW Farm Chem. users course) - environmental factors - personal protection - handling and disposal * Chainsaw safety * Animal handling - cattle/yards and mustering - animal health issues	**Safe use of electricity** * workshop safety Garden chemical safety (Based on NSW Farm Chem users course) * All terrain bikes (ATV's) - Helmets - Risk taking behaviour

MAKING A RAIN GAUGE

YOU WILL NEED: 1 Large straight -sided plastic bottle
1 Pair sharp scissors
1 Ruler
Waterproof tape

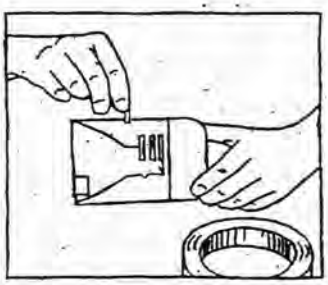
1. Cut off the top quarter of the large plastic bottle, using scissors.





2. Slide the top of the bottle upside down into the base of the bottle, to act as a funnel. Tape the edges together, as shown.

3. Cut tiny strips of sticky tape. Tape them to the side of the bottle about 1 cm apart, to act as a measuring scale.



YANCO BRIDGES THE GAP FOR ISOLATED SCHOOL STUDENTS

Isolated high school students from Peak Hill, Yoeval and Trundle NSW were recently brought together for the first time at Murrumbidgee College of Agriculture Yanco NSW, as part of the Western Region Access pilot programme in Rural Industries.

During the three day practical training session, students accessed College equipment and were assisted by Mr Cliff George of Peak Hill Central School, Mr Geoff Metcalf of Tullibigeal and Mr Ian Hardie of Murrumbidgee College. Students gained skills in tractor safety, maintenance and operation, use of farm motorbike and 4WD vehicles and safety in using farm chemicals.

The nine students from year 11 are not only gaining credit for studying rural industries as part of the Higher School Certificate, but at the completion of the course they will get recognition from Industry and accredited through TAFE and other vocational training institutions including Murrumbidgee College of Agriculture. Funded by the Australian Student Traineeship Foundation and the Department of School education the program links together Western region students by telephone, fax and modem.

Meeting twice a week by phone with Year 11 Rural Industries Coordinator and supervising teacher, Mr Geoff Metcalf of Tullibigeal NSW, students are required to do 80 hours of theoretical and practical skills including work placements of farms and at rural industries.

Mr Geoff Metcalf believes, "Due to the isolation of our schools there is limited access to training facilities. Yanco has made available excellent equipment and staff for students to gain practical skills including operating tractors and hooking up implements before they are placed on farms and in rural industries for work placement.

"With the course contributing to a 70% practical component students will have more opportunities to gain a job using farm machinery in parks and gardens and jobs requiring chemical use. The scope for job placement is not limited to agriculture, but provides a wider sphere of options," Mr Metcalf concluded.

With a major emphasis on farm safety, course subjects studied include agricultural industry in Australia, communication skills, farm chemicals, farm vehicles and farm maintenance with the option of completing two additional electives. Students currently studying the course are Joel Hutchens, Michael Lord, Matthew Plummer, Banje Sellers and Tim Stubbs of Peak Hill Central School; Henry Purcival and Danny Williams of Yeoval Central School and Phillip Kelly and Kent Walker of Trundle Central School.

In addition to school students gaining skills in the rural industry, Agriculture teachers in NSW are being assisted by the College to complete the National Farm Chemical User Training Course and Safe Tractor Operation and Maintenance Train the Trainer Course to gain the qualification to teach students practical and competency based skills.

Contact: Melinda Gambrill,
Development Officer,
NSW Agriculture
Ph (069) 530308
Fax (069) 530200



Back row: Geoff Metcalf, Henry Purcival Clive George, Kent Walker, Phillip Kelly Joel Hutchins, Danny williams, Trevor Maher and Paul Mitchel (farm assistants at MCA)
Middle row: Ian Hardie, Tim Stubbs, Michael Lord
Front row: Banje Sellers, Matt Plummer

DEPARTMENT OF EDUCATION NORTH WEST REGION

AGRICULTURE IN SCHOOLS

SUPPORT MATERIAL RESOURCE FOLDER 1995

FOR SALE

CONTENTS::

- **Contact teachers in other schools**
- **Professional association information**
- **Money**
- **Machinery**
- **Farm assistants**
- **Excursion information**
- **Competitions**
- **Farm Records and sample forms with Handbook of Financial management - section on agriculture**
- **Animal Welfare**

This material was compiled by:

- John Lee, Glen Innes High School
- Rowan Chandler, Uralla Central School
- Anne Milvain, Macintyre High School
- James White, Regional TAS Consultant

For more information and cost, contact:
James White,
Regional TAS Consultant
Armidale ERC
PO Box 96
ARMIDALE NSW 2350

UNE **SCHOOL OF RURAL SCIENCE**

The University of NEW ENGLAND

Two degrees are offered, B.Ag. and B.Rur.Sc. Both are scientifically-based and produce either generalists or specialists who are highly regarded by potential employers in agriculture, extension (private and public sectors), farm management consulting, teaching and lecturing, property management, and research (agricultural and many areas of applied biology), in Australia and overseas.

B.Ag. is a 3 year degree; holders of it are broadly trained and can immediately enter the advisory, management and commercial arms of agriculture, but with wide opportunities for future upgrading and/or specialisation.

B.Rur.Sc. is a 4 year degree which builds on B.Ag. by offering specialisation (eg. In Cotton, Beef, Wool, Soils, Meat, Crop Protection) in the 4th year, and the opportunity for Honours level training leading to the possibility of postgraduate study and a research career.

Being in a rural location, and having local access to University research farms, an Artificial Breeding Centre, more than a dozen Breed Societies, CSIRO, NSW Agriculture, Regional Veterinary laboratory, TAFE etc., as well as UNE's own departments of Ecosystems Management, Resource Engineering, Economics, the Agricultural Business Research Institute and the Animal Genetics and Breeding Unit, we are in a unique position to attack problems of whole farm operation and profitability within Sustainable Agricultural systems.

That's why we believe that for agriculture, we are

"THE FIRST IN THE COUNTRY"

NIMBIN CENTRAL SCHOOL

by Greg Reid

Agriculture at Nimbin is a Board Endorsed Course with two main thrusts:

1. Building student confidence through practical skills (ranging from rope knots to digital mapping).
2. Facilitating a paradigm shift from agriculture as a business of land exploitation to agriculture as commercially applied ecology.

The course includes several units not emphasised in the standard curriculum such as:

* Permaculture
* Small Engine Mechanics
* Water Flow and Storage Systems
* Agroforestry
* Whole Farm Planning
* Farm Accounting
* Farm Ecosystems

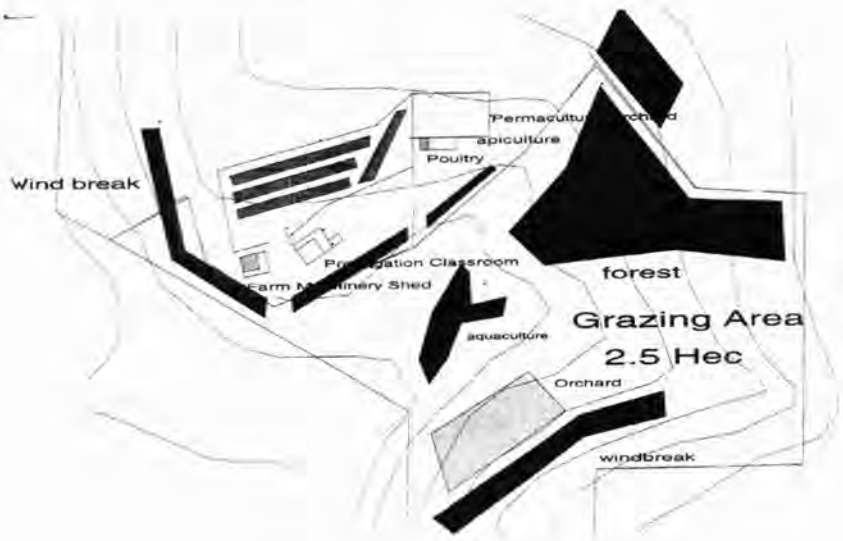
While offering new areas of skill development the course also functions as an introduction to HSC Agriculture in all the main syllabus areas including experimental design, marketing etc.

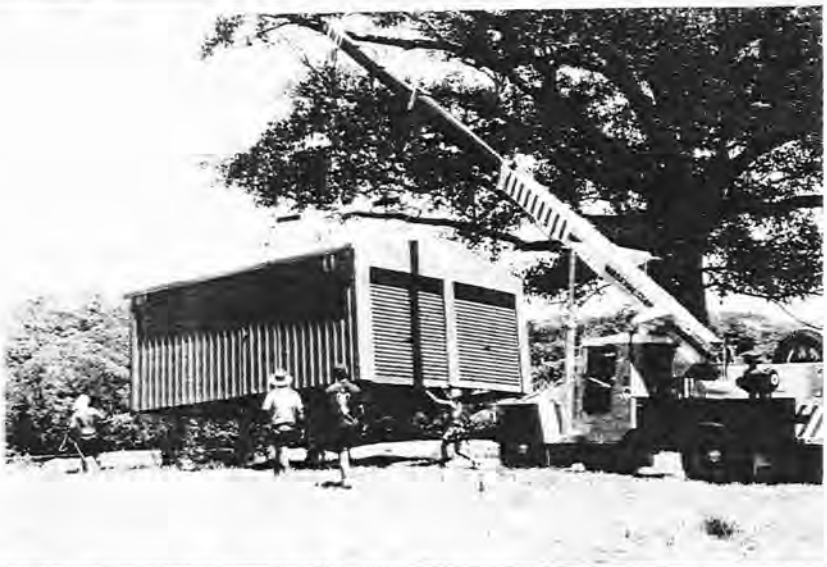
Agriculture was begun at Nimbin six years ago with a few hand tools and a commitment to organic methods. Today the school farm boasts a broad variety of activity areas:

- 500 sq.m. of vermin proof gardens with permanent water lines
- Permaculture orchard
- One hectare Agroforestry reserve
- Forage Tree Windbreak
- Aquaculture Dam (Silver Perch and Water Chestnut)
- Small Poultry Unit
- A small conventional orchard
- Bee Hives
- Worm Farm
- Hydroponics Unit
- Outdoor Classroom with 50 sq.m. of propagation space.
- 36 sq.m. Tool Shed
- Cattle Yards and two heifers

Much of these activities are still under development or being re-established. Our buildings, garden areas and orchards all had to be moved this year to make way for the new school. You can imagine the hassles this has created. The builders regularly cut the water lines and we still have no power. If it were not for the tireless efforts of the Ag. Assistant, Dan Wort and the General Assistant, Dick Hopkins, the school farm would have fallen to pieces. Things are still pretty chaotic but definitely coming together. Of course the Department has made no allowance for the extra time and effort this has required.

Farm Layout





Shifting the Shed to Re-establish Nimbin Central School Agriculture

POINTS OF INTEREST

Drought of Ages?



Using a hundred years of records, the average annual rainfall at Nimbin is 1700 mm with a standard deviation of 500 mm. In a random distribution (which includes El Nino cycles) a dry year of less than 1200 mm should occur on average once every 6.3 years. We are now in our fifth consecutive year of annual rainfall below 1200 mm. This event should occur once every 9986 years.

Computer Programmes in Use



- - **Standard Error Calculator**; a spreadsheet which requires only that the students enter their results in appropriate columns. The spread sheet automatically calculates averages, standard deviations, Standard Error, 95% significance and percentage difference between groups. This programme is workable on Claris Works or MS works. You can have it for the cost of a disk and postage.
- - **Sim Farm**; used to practice management and planning skills.
- - **Sim Earth**; used to reinforce the importance of diversity in ecosystems.
- - **Woodland Food Webs**; used to demonstrate dynamic equilibrium.
- - **Taxable Income Calculator**; a spreadsheet which requires students to enter a list of figures into appropriate columns (Assets, Expenses, Debt, Income). The programme automatically calculates after tax income. This is useful for comparing wage income to farm income.
- - **Quicken**; used to demonstrate a farm accounting package.
- - **Instant Survey Mapping**; used for digitised mapping and computerised land management. The programme creates interactive data bases with farm plans over a digitised aerial photograph. Any combination of transparent overlays can be selected and data bases can be sorted or queried to locate scattered information eg. Native fauna sightings. Apart from demonstrating the power of this tool to students this programme is highly valuable for storing school farm data eg. Water lines, planting dates and species, soil tests etc. which are easily lost with staff turnover.

RURAL TRAINING COUNCIL

Report by Bob Guest
Farrer Memorial Agricultural High School
CALALA, via TAMWORTH NSW

The Rural Training Council has met 3 times during 1995 - February, June and September. A considerable proportion of the time has been spent reviewing the functions of the Council in order to meet changing National and State policies and procedures for vocational education and training. A recent review of the national Industry Training Advisory bodies (ITAB's) conducted by the Australian National Training Authority (ANTA) listed the functions of the State ITAB's (Rural Training Council in our case) as those listed below.

1. To contribute to the development of the national strategic plan for training within their industry.
2. To develop, against the background of the national strategic plan for training within their industry, plans for the implementation of vocational and training within the state.
3. To provide advice to state training agencies on policy, planning, delivery and resource allocation issues, and the respective role of public and private providers.
4. To play a major role in accreditation and recognition processes in accordance with the national Framework for the Recognition of Training.
5. To work with public and private providers in the development of training programmes.
6. To provide policy advice to industry and government on the training needs of their industry.
7. To provide advice to relevant national ITAB's to assist them in carrying out their roles and functions

The current review of NSW TAFE under the Carr Government is also likely to bring changes with one possible scenario involving shifting some of the functions and perhaps staff from TAFE Industry Training Divisions to the ITAB's. DTEC will probably have these changes much clearer by the time this report appears in print. In the mean time the Rural Training council has been concerned with the development of a Rural Industry Training Profile and strategic plan for training for the rural sector. Priority for funding of training programmes depends on their importance as identified by the training profile.

Areas to have received recent attention form the training council include:-

- Amenity and Ornamental Horticulture

- National Rural Skills Traineeship - A recently privatised body ***Rural Nettforce*** is charged with the task of meeting government traineeship targets for 1995 and 1996. They are:
  - ⇒ For 1995 - 1000 (Nationally) comprising of: 200 rural traineeships, 7 piggery and 15 poultry traineeships for NSW.
  - ⇒ For 1996 - 450 definite, 50 probable and 30 possible rural traineeships, 120 Amenity Horticulture and 20 Piggery Traineeships for NSW.

  NOTE: Distance learning materials being developed for the traineeship could be very useful to members of the Association - particularly if you are operating some skills based units in your school programmes.

- Rural Industries Content Endorsed Course - the Train the Trainer programmes for agriculture teachers have been well received and are in heavy demand. The next intake will be in early 1996 so if interested you should make immediate approaches to your staff development officers.

- TASK - a project aimed at providing additional training opportunities for farmers in drought declared Rural Protection Board Areas.

- Wool Harvesting Training - this was previously conducted by the wool Corporation (which no longer exists) but new arrangements involving the Wool council are nearly completed.

Should you like further information on any of the matters mentioned above or other rural training issues please contact me at Farrer by Phone (067) 679211 or Fax (067) 679451.

VOCATIONAL COURSES IN SCHOOLS

by Mick Melino

Some 50 Agriculture teachers throughout NSW have been trained or are currently in training to deliver the New Board of Studies approved Rural Industries Course.

This course, together with many others including Hospitality, Retail, Metal Engineering, Office Skills, Furnishings, Building Construction and Electronics, has been designed as part of the new pathways direction to education. This has been brought about as a result of the dissatisfaction of the current HSC system and its value to many students.

Some 70% of Year 12 students do not continue onto university and have few options once they leave school.

As well, a large percentage of students currently in universities and colleges have not used their TER to gain positions. Many have entered as mature age students or on interview. There is a need in our schools to give senior students alternatives other than simply focusing on a high TER score which is beyond many students' ability. These courses are Dual Accredited, ie. they are accredited by the Board of Studies and the NSW Vocational Education Training Accreditation Board. This means they are recognised in industry and count towards further study at TAFE colleges and other colleges and universities.

Unlike Joint Secondary Schools TAFE courses, these courses will be run by the schools and will involve industry placement similar to work experience.

The State and Federal Governments have allocated some $38m towards this training as part of an industry reform agenda which aims to address:

- the level and relevance of skills held by Australian workers
- the flexibility and adaptability of the Australian workforce.

There are currently some 1800 teachers across the state already trained or in training to deliver these courses. The training for the latest Rural Industries courses has included:

- two days orientation - Sydney
- one week at Murrumbidgee Agricultural College
- one week at Waterloo Station in Narromine

This has also been a great opportunity to spend some time with fellow Agriculture teachers from a wide area of the State and share ideas. I would recommend the course to all Agriculture teachers as it is a very rewarding experience and an excellent opportunity to gain some new practical teaching ideas.

The following is a list of teachers who have completed the course and may be contacted to share ideas or help with establishing this new course in your school.

TEACHER NAME	SCHOOL	TOWN	PHONE	FAX
Frank Lever	Barellan Central School	Barellan	069 639202	069 639302
Tracy George	Bathurst High School	Bathurst	063 313755	063 322302
Terry Kirby	Bega High School	Bega	064 921800	064 923996
David Gell	Blayney High School	Blayney	063 682100	063 683351
Jenni Wilkins	Board of Studies	McMahons	925 8165	955 3557
Peter Robertson	Bombala High School	Bombala	064 583358	064 583866

TEACHER NAME	SCHOOL	TOWN	PHONE	FAX
Keith Larsson	Bonalbo Central School	Bonalbo	066 651205	066 651251
Peter Byan	Camden High School	Camden	046 559191	046 552438
Gary Barratt	Canobolas High School	Orange	063 621677	063 624481
David Kent	Chevalier College Bowral	Bowral	048 611488	048 621499
Goeffrey O'Connor	Chevalier College Bowral	Bowral	048 611488	048 621499
Peter Jones	Colo High School	Richmond	045 712011	045 713391
Kim Hopkins	Dubbo School of Distance Ed.	Dubbo	068 859666	068 859614
Jamie Thomas	Farrer Memorial Agricultural High	Tamworth	067 679211	067 679451
Wayne Warskitt	Farrer Memorial Agricultural High School	Tamworth	067 679211	067 679451
John Lee	Glen Innes High School	Glen Innes	067 321322	067 321972
Nicki Currey	Goodooga Central School	Goodooga	068 296257	068 296294
David Grady	Inverell High School	Inverell	067 223473	067 225829
Patrick McCann	James Sheanhan Catholic High	Orange	063 621422	063 620776
Peter Green	Junee High School	Junee	069 241666	069 241798
Judy Lawson	Lockhart Central School	Lockhart	069 205209	069 205635
Ian Taylor	McCarthy Catholic Senior High	Emu Plains	047 353211	047 356249
Helen Kleinbergs	Molong Central School	Molong	063 668224	063 668220
Tony Turner	Muirfield High School	North Rocks	8722244	8714106
Grant Taylor	Muswellbrook High School	Muswellbrook	065 431033	065 433927
Trevor Thompson	Orange High School	Orange	063 623364	063 613616
Greg Crowley	Orange High School	Orange	063 623364	063 613616
Colin McQueen	Picton High School	Picton	046 771242	046 771559
Elizabeth Ruis	Quakers Hill High School	Quakers Hill	8371533	8371747
Chris Barbary	Richmond River High School	North Lismore	066 213456	066 222928
Neil Belling	Riverina School	Wagga Wagga	069 314723	069 314360
Bruce Manktelow	Scone High School	Scone	065 451455	065 453269
Timo Gobius	St Francis de Sales Regional High School	Leeton	069 533622	069 533695
Adrian Harrison	St Gregory's College	Campbeltown	046 263477	046 281594

TEACHER NAME	SCHOOL	TOWN	PHONE	FAX
Helen Roberts	St John's park High School	St John's Park	6108035	8237827
John Dalaglish	St Patrick's College	Goulburn		
Paul Robey	St Paul's College	Walla Walla	060293323	060 292410
Geoff Melville	St Stanislaus College	Bathurst	063 314177	063 314481
Colin Dudley	The Scots School	Bathurst	063 312766	063 334795
Sybil Adams	Trangie Central School	Trangie	068 887578	068 887602
Robert Lynch	Trinity Catholic College	Lismore	066 218155	066 221914
Geoff Metcalf	Tullibigeal Central School	Tullibigeal	069 729105	069 729267
Alan Cooper	Ungarie Central School	Ungarie	069 759030	069 759157
Rowan Chandler	Uralla Central School	Uralla	067 784204	067 785090
Tony Barnett	Walcha Central School	Walcha	067 772777	067 771009
Alan Mitchell	Warialda High School	Warialda	067 291103	067 291760
Peter Tait	Wingham High School	Wingham	065 535488	065 570372
Stewart Grimmett	Woodenbong Central School	Woodenbong	066 351281	066 351488
Mick Melino	Woodlawn College	Lismore	066 212315	066 221655
Lisa O'Brien	Yanco Agricultural High School	Yanco	069 557306	069 557180
Damien Brookes	Yanco Agricultural High School	Yanco	069 557306	069 557180

LESSONS IN RECENT BOTULISM OUTBREAK

On a property near Gympie carrying 70 to 80 head of beef cattle, seven young cattle were lost with botulism recently. These were both steers and heifers which ranged from six months to two years. Veterinarian Dr Phillip Waugh of Bent Street Veterinary Surgery in Gympie said that although the owner was not aware of any old bones on the property, this source could not be ruled out.

"Another possible source of the botulism germ was the contamination of the low water supply possibly from migrating birds, or carcases of small animals," Dr Waugh said. If the weather becomes extremely dry, animals get a craving to chew bones in an effort to build up their phosphorus supply. Unfortunately, many of these bones may be contaminated with botulism which is in the same group of germs as black leg and tetanus, and is known as the clostridial disease. All of these diseases form spores which hibernate for many years and remain inactive. However, when they get inside the animal there is a lack of oxygen which causes them to germinate and product their deadly toxins. When the bones are chewed, the germ goes into the gut where the toxin is released and absorbed into the bloodstream from where it affects the nerves and muscles. The animal gets weak, it goes down and often sits on its breast bone looking depressed. They make feeble attempts to get up, but usually remain down. Then with most animals, death follows in a matter of days. Some cattle will show what is often regarded as the classical symptom of botulism, which is tongue paralysis," he said.

Back in the 1950's and 60's botulism was relatively common and known as coastal staggers, but with the widespread introduction of superphosphate, bone chewing was virtually eliminated. "Now, because the botulism bacteria is so widespread, people have to be aware of the possibility of its occurring and to seek veterinary advice on whether it is prudent to vaccinate." said Dr Waugh.

BEE GENE STUDY MAY AID MEDICINE & AGRICULTURE

(from University (of Qld.) News, September 6, 1995 page 3)

Research by a University scientist into the genetic behaviour of the honey bee could shed light on human medical conditions and benefit agricultural pest control. Dr Paul Ebert, a lecturer in the University's Biochemistry and Entomology departments, aims to identify the role of specific genes in controlling insect behaviour.

According to Dr Ebert, the bee is the ideal research tool for investigating behaviour which has implications for behavioural genetics of other animals, and for humans.

"Bees exhibit the simplicity of insect behaviour within a complex social organism. Honey bee societies are very structured with behaviour determined by sex, caste and age, providing multiple opportunities for comparison," he said.

"Human and bee brains are quite similar biochemically. It is, however, more difficult to study behavioural genetics in humans or other higher animals due to their more complex response to the environment."

Dr Ebert, who joined the University in May is continuing work he started as a researcher at the University of California. His work is funded by a $200,000 US national Science Foundation grant.

He has begun to examine biogenetic amine control of behaviour in the honey bee's central brain. He has already identified and assembled one of the world's largest collections of insect genes that potentially control behaviour and is beginning to map their sites of expression in the central nervous system of the bee.



His next step will be to combine gene expression and behavioural observation, and will attempt to modify bee behaviour with drugs developed for use in humans in order to document similarities and differences between the two nervous systems - work with medical implications.

"Biogenic amines ensure that we perceive, and respond appropriately to, our surroundings. Thus, disruptions to the biogenic amine signalling causes manic depression, schizophrenia, eating disorders, inappropriate aggression, addiction and learning problems in humans. Many of these conditions have been demonstrated to be under similar control in the bee," he said.

"Understanding the genes and brain circuits which underlie normal versus abnormal behaviour in the simple nervous systems of the bee, may help direct similar studies in more complex organisms, such as ourselves."

Dr Ebert's work also has potential agricultural ramifications, particularly for pest control. "The bee's genes that regulate brain activity are potent targets for pesticides. By characterising the products of these genes, we should be able to identify more effective pesticides which are also safer for agricultural workers to use," he said. "In the long term, this work would lead to more sophisticated biological control of agricultural pests - using insects to control insects. If we can alter the behaviour of 'beneficial' insects (such as parasitic wasps that lay eggs in, and thus destroy, their host) so that they specifically target our most serious agricultural pests, we will reduce our dependence on chemical control methods."

His work is being assisted by biochemistry post graduate student Ms Dora Aitken, and undergraduate students Ms Vicki Whitehall and Ms Jenny Roland.

In January, a former American colleague from the University of California will is it to collaborate with brain mapping.

NORTH COAST PESTICIDE SURVEY

WorkCover's 1995 pesticide survey on the NSW north coast found that some 9% of rural workers tested showed significant levels of exposure to organophosphate pesticides.

Organophosphate exposure is detected by testing for levels of the enzyme cholinesterase in the blood. Chronic exposure to low levels of organophosphate may be associated with flu-like symptoms.

When the cholinesterase level falls 40% below baseline values, symptoms such as headache, fatigue and blurred vision may be experienced. Severe organophosphate poisoning can cause respiratory depression and death.

All workers surveyed were asked about health symptoms associated with their work and their current or previous use of pesticides. 27% indicated that they had experienced some adverse health symptoms and 73% of those linked their symptoms with specific pesticides. More than half of these were organophosphates. Seven chemicals accounted for 67% of reported symptoms. The symptoms reported involved the nervous system (including headache, nausea and fatigue), skin, ears, nose and throat, respiratory system and gastro-intestinal system.

The survey was conducted by WorkCover's Occupational Medicine Branch under the supervision of Dr Robert Kenyon. It is hoped that a survey can be conducted on the north coast in November each year.

For further information on the north coast pesticide survey call Dr Robert Kenyon on (02) 370 5107

PRECAUTIONS WHEN USING PESTICIDES

- Always read the label on the pesticide container and follow any instructions
- Impervious gloves are recommended when mixing pesticide concentrates and spraying. Other personal protective equipment which may be required includes: a boiler suit, boots, washable hat and a respirator **(Requirements are on the label)**.
- Always wash your hands before eating or smoking
- Contaminated clothing should be washed separately from other clothing
- Select the lowest toxicity pesticide that is approved for the purpose
- Do not spray outdoors in high winds
- Do not allow pesticide to drift onto adjoining property
- Store pesticides in a separate room that is secure and lockable
- Keep pesticides in their original labelled containers
- Dispose of surplus pesticides at designated waste disposal facilities or collection sites
- Pesticide containers should be washed and rendered unusable prior to disposal or returned to the supplier
- Spills of pesticides must be contained, disposed of and the spill site decontaminated
- Seek medical advice immediately should pesticide poisoning be suspected
- If collapse occurs following the use of pesticides:
- send for expert help
- remove contaminated clothing and wash skin
- identify pesticide used

- be prepared to administer heart-lung resuscitation if necessary until expert help arrives.
- If using pesticides regularly you should arrange for health checks. WorkCover NSW can advise you how to contact a doctor who has been trained in the health monitoring of workers exposed to pesticides. For health checks phone (02) 370 5106.

For further information contact the WorkCover Pest Control Licensing Unit at 400 Kent Street, Sydney or phone (02 370 5127 or (02) 370 5069

GUIDELINES FOR USE OF PEST CONTROL AGENTS IN SCHOOLS

There is usually a number of different pesticides suitable for any given job. Some are less toxic than others. For further details on a summary of pesticides and their toxicity rating (including pesticide toxicity table) get a copy of ***Guidelines for use of pest control agents in schools***. Other information included in the booklet are:

- recommended practices and pesticide use
- safety precautions
- pest control services.

To order your copy phone:

(02) 370 5303

(From WorkCover News No 25 - Sep/Nov 1995

PESTICIDES

Nearly all farmers, at one stage or another, will use agricultural chemicals. While application of chemicals is an economic necessity for most farmers, using pesticides is a serious business. Yet, farm chemicals are rarely handled or stored correctly.

The main types of chemicals used on farms include machinery fuel, insecticides, herbicides and veterinary products for pest control.

Acute or chronic exposure to chemicals can occur when appropriate protective equipment and clothes are not worn, or as a result of an accident or spillage.

Absorption via the skin, breathing in or swallowing the chemical can result in a range of exposure symptoms depending on the chemical used.

Care must be taken when handling all chemicals or pesticides. The risk of exposure to chemicals is greatest when:

- mixing, loading or moving a concentrate;
- handling in enclosed spaces (silos, sheds, etc);
- spray drift is significant; and
- cleaning up spills.

It is critical to read the label, storage and emergency directions for all chemicals before they are used. Take careful note of Dangerous Goods class diamonds on labels, for example poison, flammable liquid, explosive, oxidising agent. Containers should be used which cannot be mistaken for those of food or drink.

When I was a boy of fourteen, my father was so ignorant I could hardly stand to have the old man around. But when I got to be twenty-one, I was astonished at how much he had learned in seven years Mark Twain

FEED THE WORLD!

MANAGING GLOBAL GENETIC RESOURCES

from "Search", Vol. 26, No. 6, July 1995 p. 180-182.

Throughout this century massive gains in agricultural production have been required to feed a rapidly multiplying global population. However, these gains have been achieved at the expense of the world's genetic diversity. For example, the number of crop species cultivated to any significant extent has been reduced to just 20. ***George Rothschild*** *argues that limited genetic variation may hinder our ability to produce improved crop varieties that can cope with the diverse stresses imposed by a changing environment, and outlines a number of international initiatives that are working to ensure that access to genetic resources is not jeopardised by questions of sovereignty and intellectual property rights.*

George Rothschild is the newly appointed Director of IRRI. This article was presented at the **People, Plants and Patents: Issues in managing Global Genetic Resources** ***forum organised by the Crawford Fund.***

The future existence of the human race is intimately linked with the continuing availability of adequate supplies of food, fibre and fuel wood that are provided through agriculture, fisheries and forestry. The crop, live stock and fisheries resources are the main sources of food, with crops being of particular significance as basic staples. Crop genetic resources are thus the main focus of the debate on global genetic resources and food security, although forestry and fisheries are also of very great importance.

There are estimated to be more than 500,000 species of plants on earth, of which about half have been named. Of these 500,000, and in the space of about 12,000 years, only 150 species have been cultivated, and only 20 of these to any significant extent. This number narrows down to just four when we consider the major food grains that provide 60% of the calorfic needs of the world's population.

Virtually all of these crops were initially developed by farmers and farming communities living in or near the centres of origin of the plants or the main areas of diversity. These farm varieties are termed "land races", and they form the basis of almost all modern varieties that now feed the world. 96% of the crops in the industrialised world come from developing countries, and Australia is no exception in this regard (although Australia, as one of the world's 12 "megacentres" of diversity, does have a rich and unique flora). In the next 30-40 years the world will have to produce 3 billion tonnes of food grains annually to feed 6 billion people in environments that are changing significantly. These changes include having less favourable (and even marginal) land, less water and labour, not to mention the unfolding scenario of climate change. A further concern is presented by the current decline of plateauing yields of our major food crops, particularly rice and wheat.

To produce enough food and other agricultural products to meet these constantly changing challenges it will be crucial to be able to produce improved crop varieties that can cope with these diverse stresses. The only way that improved plants can be developed is through their genetic make-up; in other words, having access to as many sources of genes as possible.

It is issues of access by different sections of the world community in developing and developed countries that lies at the heart of this debate, which in some quarters seems to generate more heat than light.

Until relatively recently, in historical terms, plant breeding was largely informal and in the hands of farmers, with a further contribution from private and

public sector plant breeding agencies. There was an informal system of germplasm exchange with little recognition of origin. I am not referring here to the rather blatant and sad "crops and robbers" episodes involving rubber, coffee and related crops during the colonial era. This still goes on but is now referred to as "bioprospecting".

This informal exchange system led to the development of many of the world's modern varieties of food grains, and the very great increase in the planting of these by farmers throughout the world. These increases have led to associated reductions in the planting of land races that have been developed for local conditions. For example, food grain production in India tripled during the "green revolution" of the 1950's - 1970's. This entailed growing about 10 modern varieties, where approximately 30,000 land races had been utilised beforehand.

Such reductions, together with the removal worldwide of more than 15 million hectares of forest annually, threaten to erode genetic resources on which all plant breeding for local, regional and international needs are based. While such concerns are legitimate, it is also not altogether true to say that all modern high-yielding varieties are genetically uniform and based on very limited genetic foundations. For example, one of the most successful modern wheat varieties produced by the International Wheat and Maize Improvement Centre (CIMMYT) contains the genes of 60 particularly good land races from a number of diverse environments.

INTERNATIONAL INTERVENTIONS

It has been recognised that the problem of eroding plant genetic resources can only be tackled by intervention on an international basis. The issue had its most significant airing at the United Nations Conference in Rio in 1992. From this emerged what is probably the most significant instrument to address these major issues: the Convention of Biological Diversity, which was signed by more than 150 nations. This Convention addresses the complex interaction of political, social, economic and legal issues involved in accessing, and conserving genetic resources, as well as biosafety (for potential problems that may arise through release of trangenic plant etc.). The main aims of the Convention are:

- to see that genetic resources are conserved through international agreement; and
- that the countries from which the resources are derived can be involved in research and have ready access to research products, and that the rights of those who developed them, particularly indigenous farming communities, are adequately recognised and protected.

As I noted earlier, more than 96% of all plant genetic resources used for food and agriculture originated in the developed world, which means that the debate on access had developed along North-South lines, with the latter holding the biodiversity in the form of wild relatives and land races and the former drawing on these to develop modern varieties and other plant products, including those derived from biotechnology.

The issue of access was further heightened by another recent international development, the successful completion of the GATT negotiations in late 1993, which requires its member nations to establish systems of intellectual property rights (IPR), including special reference to plant variety rights. This is, among other reasons, to ensure that each nation recognises its sovereign rights to its "own" genetic resources. In the case of crop plants with wide distributions and much movement of germplasm over nullennia, it is often difficult to assign sources of origin to different plant groups. The GATT IPR provisions are however, sufficiently flexible to develop legislation that is designed for their own particular purposes.

An additional international agency that has added a further complex ingredient to the plant genetic resources scene is the Union for the Protection of New Varieties of Plants (UPOV)

This aims to protect the rights of public and private sector plant breeders in terms of new varieties that they produce. The 1991 version of the Plant Variety Rights (PVR)) agreement for member nations indicates that farmers are liable for penalties if they save the seeds of crops protected by PVR. Such denial of access is, of course, highly controversial and illustrates some of the problems highlighted by opponents of IPR for biological resources. At this stage, the implications of this are not too widespread, as membership of UPOV is voluntary and only 24 countries (most developed nations) have joined so far.

The provision of the Convention of Biological Diversity will undoubtedly help overcome some of these problems, although there is still considerable unease among those developing countries providing plant genetic resources as to whether there will be a fair exchange with the developed world in terms of their access to improved products.

Probably the most useful development is the international Undertaking on Plant Genetic Resources, a multilateral framework for the conservation and utilisation of plant genetic resources at the local, regional and international levels. So far more than 100 nations have signed the Undertaking, which is being developed by the Commission for Plant Genetic Resources for the following purposes:

- to promote the conservation and sustainable use of plant

genetic resources for food and agriculture; and

- to ensure fair and equitable sharing of benefits from their use. These benefits include accessing genetic material, technology and information.

The Undertaking is to be harmonised with the Convention for Biological Diversity and other national, regional and international legal arrangements for the management of plant genetic resources. There has to date been little progress on linking the Undertaking with the UPOV agreement, which would be necessary to involve plant breeders from the private and public sector. To make the whole system work well it is crucially important to establish good linkages between the international centers, national institutions, non-government organisations and local seed corporations.

The Undertaking has provisions to support exploration and collection for land races of cultivated plants and their wild relatives, characterisation and evaluation, conservation and aspects of utilisation. Conservation is likely to be extended to *in situ* locations (in farmers' fields, involving originators of land races) and *ex situ* facilities (controlled conditions in germplasm banks). The Undertaking is also to assist with the funding of such activities as *in situ* conservation, and is linked with the World Information and Early Warning system on Plant Genetic Resources as well as the International Network of Genebank Collections.

GENEBANK COLLECTIONS

The collections are where the international centres, including the International Rice Research Institute (IRRI), play a major role. It has been estimated that there are around 4.5 million plant accessions being held in around 1200 institutions around the world, of which almost half are cereals. Of the germplasm in the banks, 43% has been developed by farmers, 41% by formal breeders and the balance of inaterial is wild relatives of the crop species. The international centres hold an estimated 40% of the unique food crop germplasm that is held in gene banks.

The value of these collections had already been dramatically demonstrated in two major "seeds of hope" initiatives in Cambodia and Rwanda. Both countries lost virtually all of their seed stocks of unique local land races of their major food staples through war, but all were replaced from the collections of international centres. Having said this, very little of the world's repository of germplasm has been duplicated: only about 6% worldwide, which is a matter of grave concern. The figure for Consultative Group (CG) Centres is significantly higher at 35%. The progress on plant genetic resources of the individual CG centres, are to be coordinated as a single system-wide activity to maximise the efficiency of their operations and their interactions with national plant genetic resources units.

Given the importance of the CG Centre collections of plant genetic resources to world food security, it is most appropriate that these are now held in trust for the global community by FAO, the formalities for this being completed in October of last year. It is hoped that this will help allay the fears of those who claimed that the genetic resources of the CG Centres would fall into the hands of the private sector or other bodies likely to impede ready access by farmers, particularly in the developing world.

The final and most ambitious development on the international front is the major multi-donor project entitled Global Plan of Action for Conservation and Sustainable Utilisation of Plant Genetic Resources. This plan will be presented at a major international forum in 1996, and will be developed on the basis of reports on the status of plant genetic resources in individual countries throughout the world. Again, the emphasis will be on developing countries as this is where the major diversity occurs. The plan will embrace many of the issues outlined above and will be associated with a specific fund that may operate on the same basis as some of the international development funds, with the intention of achieving a secure funding base (Probably using a UN-type formula).

PEOPLE, PLANTS AND PATENTS

It can be seen that the interrelations between people, plants and patents have become a highly complex and controversial area, with moral as well as political, social, environmental, economic and biological implications. No doubt there will arise an army of professionals in the area of intellectual property law who will benefit from trying to unravel all this complexity for the benefit of those seeking to utilise biodiversity for private gain or for humanity, or realistically for both. One hopes that all this will be kept in perspective in terms of the main aim, which is to conserve plant genetic resources for use in agriculture to ensure food security for present and future generations throughout the world. This applies equally to genetic resources in live-stock, fisheries and forestry. The incentives to get it right are in the long run have dire consequences for the world's long-term capacity to feed itself through sustainable agriculture and land management systems.

Recently, a man was reading one of the magazines in a doctor's waiting room when he turned to a fellow patient and remarked, "What do you know? Man has landed on the moon!"

Departmental Restructuring

(TAS Consultant report from James White)

We live in interesting times! Many of you will be aware of the changes taking place in the restructuring of the NSW Department of School Education. The following is a brief summary of what has happened so far:

- Regional Offices will be phased out by December 1996
- 40 District Offices will be established during Term 4 1995 and will be fully operational during 1996. Each District Office will have a District Superintendent who will "lead a multi disciplinary team of specialists to achieve system objectives and respond to school needs".

To explain the staffing of a District Office

The regional consultants are to be phased out and will not be replaced. Curriculum support at a District level is going to be provided in those areas where the need is apparent to support schools, ie. Literacy, Numeracy and PD/H/PE.

The technology consultant is each District **will not** be a teaching position. It is for a Public Service "Clerk". I encourage you all, in the future, to make sure you utilise the District Office to assist with your needs so that the best teaching and learning practices can continue in schools.

The need for participation in KLA Networks and the Agriculture Teachers Association is going to be more important as an avenue for keeping up with change and developing collegiality.

Excellent work has already been done by some association branches and a number of Ag. Teachers have been involved with TAS networks where they can benefit from the sharing of ideas and establishing contacts with teachers from other schools.

Profiles and Outcomes

Earlier this year, work on Profiles and Outcomes was put on hold pending the findings of a special review: "The Eltis Review into Outcomes and Profiles". This review now termed "The Eltis Report", made a number of recommendations regarding curriculum development and the place of outcomes in syllabuses.

It is recommended that the prime role of NSW syllabuses was describing curriculumit recommended that the prime role of NSW syllabuses was describing curriculum content. It also made a number of recommendations in relation to outcomes. In summary these related to:

- "defining outcomes as explicit statements of the knowledge, skills and understandings expected to be learned by students from NSW syllabuses and the teaching programmes developed from them.
- Relating outcomes to stages of schooling
- reducing the number of outcomes for syllabuses so that they are manageable
- investigating the possible development of generic outcomes for K-6
- the need to no longer incorporate National Profiles in syllabuses

- clarifying how outcomes will be used in
- support teachers when assessing achievement of outcomes."

The Board of Studies has not yet determined how the recommendation will be implemented.

the production of work samples to

Sustainable Agriculture

Much is being said in the forestry debate about Australia's forests and the logging industry. It's important as educators that we give a fair and balanced view to all students on the issues of logging and sustainability. There is an article in the S.M.H. October 26, 1995 "Balancing Logging and Forest Protection" which provides some good stimulus material for debate.

I hope to write an article for the next issue of BAAT on the "Demise of Rural Communities" which will consider some of

teaching and learning

the impacts of government restructuring, changes in legislation and the decline in rural employment of country NSW.

1. Proposed Organisation Structure and Staff Positions: NSW Dept. Of Ed. Oct. 95.
2. Eltis review into outcomes and profiles - B.O.S. Oct. 95

Finally, a sincere thanks to all teachers who have continued to be enthusiastic in their approach and take on new challenges. At a recent training and development course for Ag. Teachers, it was refreshing to hear Rowan Chandler speak so positively about the new Rural Industries VocEd course and how suitable it will be to many of our senior students. Other teachers doing the training agreed with Rowan, and commented on the value of the collegiality of the training courses.

James White

Reminder

DEAD LINE for Next Issue of BAAT March 31st 1996

This means there will be at least eight weeks of the new School Year (as well as the School Holidays!) in which to prepare an item such as:

- **An Interesting article from your School Agriculture + photographs**
- **A Project you might like to share**
- **A <u>humorous</u> Episode of Agricultural content (in lighter vain) or**
- **Any other interesting piece you found of value (with Copyright obtained thanks).**

CONTENT DEPENDS ON CONTRIBUTIONS!

KEY COMPETENCIES FOR AGRICULTURE PROJECT

John Lee - NSW AAT Consortium Representative
Glen Innes High School, Edward Street, GLEN INNES NSW 2370
Phone (067 32 1322 Fax (067) 32 1972

During 1993 Geoff Creek, Principal Murrumbidgee College of Agriculture formed a consortium to investigate the implementation of Key Competencies, as expressed in the Mayer Report, into Agricultural Education programmes.

To fund this programme Geoff applied for a DEET grant. As the wheels of bureaucracy grind slowly so this grant slowly bore fruit. A DEET grant to the total of $159,779 has recently been received to allow the implementation of the project.

The first phase required the appointment of a Project Officer. Rayleigh Searle has been appointed for a twelve month period to fill this position. Rayleigh officially started in this job on Monday 23rd October. Rayleigh will be based at Murrumbidgee College of Agriculture.

In order to give the Project Officer some direction it became necessary for the consortium representatives to meet. This initial meeting took place on 19th October.

The consortium consists of the following:-

- Murrumbidgee College of Agriculture
- Department of Employment Education and Training
- Rural Training Councils of NSW and Northern Territory
- NSW Association of Agriculture Teachers
- NSW and ACT government secondary schools
- Non-government secondary schools
- ACT and NSW TAFE
- Northern Territory Rural College

Various bodies representing agricultural educators from Year 10 in secondary schools to Diploma in vocational education and training for NSW, ACT and Northern Territory are represented on the consortium.

The scope of the project is to

* facilitate the integration of key competencies into agricultural curricula from secondary education Year 10 to vocational education Diploma
* facilitate the convergence of secondary and vocational education for young people intending to pursue career paths in Australian agriculture
* facilitate the professional development of teaching staff and curriculum developers to integrate key competencies into agricultural curricula.

The Manager administers,
the leader innovates.
The manager maintains,
the leader develops.
The manager relies on systems,
the leader relies on people.
The manager counts on controls,
the leader counts on trust.
The manager does things right,
the leader does the right thing
Fortune Magazine

Australia Remembers

In Flanders Fields

by John McRae

In Flanders fields the poppies grow
Between the crosses, row on row
That mark our place, and in the sky
The larks still bravely singing, fly
Scarce heard amid the guns below.
We are the dead. Short days ago
We lived, felt dawn, saw sunset glow,
Loved, and were loved, and now we lie
In Flanders fields.

Take up our quarrel with the foe;
To you from failing hands we throw
The torch: be yours to hold it high
If ye break faith with us who die
We shall not sleep, though poppies grow
In Flanders fields



John McRae was a Canadian medical officer who was buried at Wimereus in France. On each Armistice Day town officials and the British Consul sprinkle red poppies on his grave.

RURAL INDUSTRY TRAINEE ASSOC. INC.

c/- Tom Coulcher
Dept. Of Employment, Education and Training
Western NSW Area Office
GPO Box 993 ORANGE NSW 2800
Phone (063) 921600 Fax (063) 912699

PRESS RELEASE

RURAL INDUSTRY TRAINEE ASSOCIATION

"Australian industry is fully committed to getting people into jobs and training. Creating jobs for the unemployed and training for our future needs are key ingredients for a prosperous and just Australia. To assist in this process, Industry Training companies have been set up. I urge you to contact them to see how they can help with your business," said Mr Lindsay Fox AO. Chairman, NETT-FORCE in an open letter to Australian business people.

The National Employment and Training Task Force (NETTFORCE) is a Working Nation initiative set up to obtain a commitment from business and industry to increase the number of jobs available for unemployed people with an emphasis on entry level training commencements. The Rural Industry Trainee Association has been set up as the NSW Rural Industry Training Company to be an advisory service to assist employers in the Rural Industry;

- get the right employee,
- identify a trainee's skills,
- access the National Training Wage and employment subsidies,
- arrange access to training, and
- complete and register traineeship applications.

The NSW Rural Industry Trainee Association has been set up in the offices of the Department of Employment Education and Training, 71-75 Summer Street, Orange, NSW telephone (063) 912600.

The Directors of the national Rural Industry Trainee Association are;

* Mr Mike Hoy, representing the Rural Training Council of Australia,
* Mr James Ferguson, representing the National Farmers Federation,
* Mr Ian Cambridge, representing the AWU/FIME Amalgamated Union

Two further members represent commodity groups of the national Farmers Federation.

Mr Tom Coulcher has been appointed as the Traineeship Development and Promotion Officer on secondment from DEET. Mr Coulcher comes to this position from the position of Manager, Employer Services, having been involved with the promotion of Rural Traineeships in North West Queensland, and the Central West of NSW.

Mr Coulcher said, "The benefits ofgetting a rural trainee are, they learn your business your way, you have access to the National Training Wage and DEET financial assistance, you employ the person you want, of any age, and their training develops reliability and skills. Rural Traineeships first commenced in NSW during 1987 and have grown in stature within the rural industry at a steady rate. Over 800 rural employers have utilised the Rural Traineeship system over the past two years and an extra 500 are expected to participate during 1995," Mr Coulcher said.

To assist with the costs of employing a trainee farmers have access to the National Training Wage, which ranges from $125 to $270 per week depending on the length of time since the trainee left full time education and DEET financial assistance which is between $2,000 and $10,640. The level depends on the length of unemployment, whether the trainee is disadvantaged, age, level of secondary schooling the trainee has completed and the type and length of training. Mr Coulcher said the traineeship involves a combination of on-the-job training and experience and formal off-the-job training at a TAFE, Agricultural Training College or other training provider. The curriculum can be varied to suit the nature of the farm/station work.

Further information is available from your local CES, the Training Colleges, and the Rural Industry Trainee Association.

Guide for the National Rural Skills Traineeship, the Rural Traineeship (CST) and the Piggery Attendant Traineeship.

The Electives for the **National Rural Skills Traineeship** and the **Rural CST** are similar and include the following:

CORE MODULES
The Rural workplace
Personal Skills (Rural)
Rural Communications
Rural Teamwork
Occupational Health & Safety
Chemical Safety
First Aid
Rural Calculations

ELECTIVE MODULES
Farm Welding
Farm Structure Maintenance
Conventional Fencing
Cattle Handling
Milk Harvesting
Pastures
Irrigation (Flood/Surface)
Crop Operations
Perennial Horticulture Crop Estab.
Field Nursery Maintenance
Crop Harvesting (Mech)
Basic Chainsaw Operations
Sugar Cane Production
Stock Horse Riding
Mulesing
Motor Cycle Operations
Camping
Pasture Harvesting and Fodder Storage
Farm Tractor Operations
Farm Vehicle maintenance
Concreting
Farm Water Supplies
Livestock Breeding
Stock Horses
Soils and Fertilisers
Irrigation (Low Vol/Micro)
Pest Control
Budding and Grafting
Vegetable Harvesting (Hand)
Farm Computer Operations
Introduction To Sugar Cane
Bushcraft
Hydraulics
Aviation Awareness
Shed Hand Skills
Introduction to Handpiece Operation
Cotton Cultivation
Farm Vehicle Operations
Electric Fencing
Sheep Handling
Livestock Feeding
Working Dogs
Irrigation (Spray)
Cultivation
Perennial Horticulture Crops
Root Stock Production
Bushfire Safety
Farm Trees
Sugar Cane Planting
Rangeland Skills
Introduction to MIG Welding
Farm Trucks
Farm Butchery
Horse Shoeing
Farm Project
Poultry

This is not an exhaustive list - some modules are Nationally accredited and some are only NSW State accredited. Other modules are continually being accredited and developed. A number of viticulture modules will soon be accredited and added to this list. Generic ASF level 1 and ASF level 2 packages are not recognised within the Rural Industry. Some training providers will not have the capacity to deliver certain modules. Employers wishing to access specific modules may have to send their charges to training providers some distance from their domicile.

The Piggery Attendant Traineeship has the following modules:

COMPULSORY MODULES
The Piggery workplace
Personal and Communication Skills in the Piggery Workplace I
Piggery Workplace Safety
First Aid
Personal and Communication Skills in the Piggery Workplace II
Moving and Controlling Pigs
Feeding and Watering Pigs
Pig Accommodation and Hygiene
Weaner Care
Pig Health
Farrowing
Transporting Pigs

ELECTIVE MODULES
Mating
Grower-Finisher Care
Routine Piggery Maintenance
Piggery Pest Control
Chemicals and Biological Agents
Piggery Workplace Calculations
Piggery Mechanics - Pre-start Maintenance
Piggery Vehicle and Equipment Operations
Welding in the Piggery Workplace
Concreting in the Piggery Workplace
Computers in the Piggery Workplace
Bush Fire Safety
Piggery Project.

The Wine Operations Traineeship (Viticulture) is a Food Processing Industry Traineeship.

The Red Bend Catholic College at Forbes is also an accredited off-the-job training provider for Rural Traineeships.

Student accommodation is available at the Dept of Ag Colleges and possibly at Red Bend College, current costs are:

- Murrumbidgee Ag College Yanco $96 pw full board (4 to 7 nights) plus $2.50 per day Amenities fee.
- Tocal Ag College, $16 per night (trainees only).

Employers should check with Colleges regarding block release accommodation requirements.

- DTEC allowances per trainee are: $11 per day Accn Allowance and 0.08c per kilometre travel allowance (min 121 klm round trip).
- DEET allowances for the trainee include the Living Away From Home Allowance (LAFHA) of $39 per week to approved trainees.
- DEET allowances for the Employer include the On-the-Job Training Grant of $2000 and the Dis-advantaged Grant of
- and the Disadvantaged Grant of $1000 for trainees assessed as disadvantaged by the the CES. The Training for Aboriginals Programme (TAP) is available for selected placements, approval to be arranged by the CES.

Rural Skills Traineeships last for twelve months, thirteen weeks off-the-job training (minimum 400 hours) and thirty nine weeks On-the-job training and work experience.

Any person over 15 years of age is eligible to participate in the Rural Skills Traineeship. This includes family members where they have no equity in the property or where a student/master relationship can be identified. There is no minimal educational requirement for participation.

In some cases Recognition of Prior Learning may exempt some trainees form having to complete some modules. The training provider will assess each trainee individually.

Tom Coulcher
Traineeship Development and Promotion Officer
24th July 1995

Two stonecutters were asked what they were doing.

The first said, "I'm cutting this stone into blocks."

The second replied, "I'm on a team that's building a Cathedral."

AusBuy

WHY IS IT SO IMPORTANT TO BUY AUSTRALIAN OWNED?

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Enquiries to:
Harry Wallace, President.
AUSTRALIAN OWNED COMPANIES ASSOCIATION LIMITED

NAAE

Ninth Biennial Conference of the National Association of Agricultural Educators

"Issues in Australian Agricultural Education": A National Perspective

January 14-18, 1996

at

VICTORIAN COLLEGE OF AGRICULTURE AND HORTICULTURE
DOOKIE COLLEGE
Faculty of Agriculture, Forestry and Horticulture
The University of Melbourne

Conference Organizing Committee

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NINTH BIENNIAL CONFERENCE OF THE NATIONAL ASSOCIATION OF AGRICULTURAL EDUCATORS

About the 1996 National Conference

The theme of the conference is "Issues in Australian Agricultural Education: A National Perspective". In keeping with this theme the goals of the conference are:

1. to facilitate the professional development of teachers of agriculture and horticulture
2. to provide up-to-date information from business, education and research organisations on current issues in agriculture and horticulture
3. to provide a forum for the exchange of ideas on the impact of current and future directions in education
4. to increase the effectiveness of teachers of agriculture and horticulture across Australia.

The organising committee is planning a comprehensive programme with a variety of speakers from rural business research, education and support groups. The planning programme will include tours which should allow interstate delegates to experience the major agricultural and horticultural pursuits in the region and allow for appropriate social interaction.

THE VENUE

The Victorian College of Agriculture and Horticulture is a multi-sector, multi-campus, post-secondary institution for agriculture, horticulture and dairy technology. The College is affiliated with the University of Melbourne - Faculty of Agriculture, Forestry and Horticulture.

Dookie Campus is located between the cities of Shepparton and Benalla in Central Victoria, 200 km north of Melbourne. The campus buildings are situated at the foothills of Mount Major, on the fringe of the Goulburn Valley. The campus is in a mixed farming region with substantial dairying, fruit growing and grazing enterprises. The 2247 hectare farm includes broadacre cropping, lamb and beef enterprises, dairy, piggery, orchard and vineyard. Other campus facilities include a Post Office/general store, airstrip, pool, tennis, squash, gymnasium, licensed facility, ample parking, single or family room accommodation and fully equipped conference rooms.

REGISTRATION INFORMATION

The total conference package is for a four day period. Arrival on the afternoon of Sunday 14 January and departure after lunch of the afternoon of Thursday 19 January 1996

Registration includes:

a) Admission to all sessions
b) Single or family room accommodation
c) Use of all campus amenities for the duration of the conference
d) Transport for local industry tours
e) All meals including morning and afternoon tea and supper.

- Accompanying spouse not attending conference sessions or wine industry tour/evening meal $240
- Children 5-14 years $120
- Children 0-5 years Free
- (Where space is available accompanying spouse and children are welcome on bus trips at a small extra cost).
- Single day packages include admission to all sessions on that day, lunch, dinner, morning and afternoon tea. $55
- Single day package Tuesday 16th $110

TRAVEL

Qantas Airlines advise that "Advance Purchase Fares" offer the most attractive rates to Melbourne. Train is available from Melbourne to Shepparton.

For further information please contact
Neville Winch
VCAH - Dookie
DOOKIE COLLEGE 3647 or contact other members of the Committee.

Success seems to be largely a matter of hanging on after others have let go.
William Feather

NATIONAL ASSOCIATION OF AGRICULTURAL EDUCATORS

NSW Board of Studies
PO Box 460
NORTH SYDNEY NSW 2059

Dear Colleagues,

At this time I feel compelled to share my delight with you over the success of the national Professional Development Program (NPDP) project that has been undertaken by the National Association of Agricultural Educators (NAAE) and the Queensland Agricultural Teachers Association Inc (QATA). This Commonwealth Department of Employment Education and Training (DEET) funded project commenced in 1994 with a national survey of teachers of agriculture and will continue throughout 1996 with State-based professional development for teachers of agriculture.

The major outcome of this project, the publication *Agriculture - a perspective for Australian schools*, was launched at the exciting and successful Queensland Agricultural Teachers Association Inc (QATA) Conference, *Educating for Future Horizons*, which was held from September 25728, 1995 at the Koralbyn resort.

This publication is the most significant collaborative curriculum-related endeavour in the history of school-based agricultural education in Australia. It is a result of the concern shown by teachers of agriculture at the lack of representation of agriculture in any of the eight learning areas of the national Curriculum Statements and Profiles. It explores ways in which Agriculture can be used as a context to support the achievement of learning outcomes across three learning areas, namely Technology, Science and Studies of Society and Environment.

Many teachers of agriculture from across Australia contributed to the development of *Agriculture - a perspective for Australian school.* However, it would not have materialised without the dedicated effort of three Queenslanders to whom we owe a debt of gratitude, namely, Lee Williams (Department of Education, Qld), Paul Christensen (Board of Senior Secondary School Studies, Qld) and Paul Dillon (President of QATA, Gympie State High School, Qld). *Agriculture - a perspective for Australian schools* is available at no charge form the President of your state association.

The professional development package designed to support *Agriculture - a perspective for Australian schools* was trialled at the QATA Conference and will be launched at the Ninth Biennial Conference of the NAAE at Dookie College, Vic.from January 14-18, 1996. Key teacher representatives at the Ninth Biennial Conference will be expected to implement the professional development package for teachers of agriculture in each state as part of the NPDP Project for 1996.

Mandie Miller, President of the Victorian Agriculture and Horticulture Teachers Association, and her committee are busily putting together an exciting program for the Ninth Biennial Conference of the NAAE, the theme of which is i*ssues in Australian Agricultural Education: A National Perspective.*

Contact Neville Winch at Dookie College for more details and a registration form for the Ninth Biennial Conference of the NAAE (Tel 058 339272 or Fax 058 339201). I encourage you to apply now to your school for funding (or start saving!) to attend this important conference.

I look forward to seeing you at Dookie in January

Yours sincerely,

Jenni Wilkins
President of the NAAE
4/10/95

CHARLES STURT
UNIVERSITY

Boorooma Street Wagga Wagga NSW

Correspondence PO Box 588
Wagga Wagga NSW 2678 Australia

Telephone 069 33 2861
Facsimile 069 33 2868

FOOD SCIENCE AT CHARLES STURT UNIVERSITY

1995 saw the commencement of a new three year course in Food Science at Charles Sturt University, Wagga Wagga campus. The course leads to the degree of Bachelor of Applied Science (Food Science) and is aimed at the rapidly growing food processing industry in Australia. Agrifood represents Australia's largest industry. In Australia and New Zealand the respective governments are anticipating a doubling of processed food exports by the turn of the century. This will see excellent employment prospects in the food industry for some time to come.

The Charles Sturt University course places emphasis on the technology of food processing including food engineering, product development, quality assurance and the biotechnology of foods. These subjects naturally require a sound basis in science which is provided in the first year of the course. The University is aware, however, of the fact that many students undertaking the two unit food technology syllabus for the HSC may not be concurrently undertaking studies in chemistry or an appropriate level in mathematics. Because there are no prerequisite subjects required for entry into the Charles Sturt University Food Science course, first year science subjects are appropriately structured to allow for such a background. Nonetheless, success in first year science subjects is enhanced when students undertake bridging courses in chemistry and mathematics. These courses are offered by the University over the 1995/96 summer break.

Completion of the three year course at an appropriate level allows students to proceed, as an option, to a fourth honours year. In the honours year students may undertake more advanced subjects in food science and technology or a structured course in business studies together with an appropriate research project.

The course is also offered in the distance education mode. This is the only course in Food Science offered at undergraduate level by correspondence.

Charles Sturt University has excellent contacts with industry. Food processing industries in the Riverina are extremely diverse ranging from the production of dairy products to rice and other cereals, processed meats, pickled vegetables, dried tomatoes, wines and pet foods. The course requires students to undertake a period of industrial experience throughout their three years of study. Industry experience is to be supplemented by work in the University's own pilot plant. Part of the pilot plant activities will revolve around a commercial cheese producing factory which will use milk from the University's own dairy herd.

Employment prospects are broadly in the area of middle management and include such work as quality control and quality assurance, product development, food research and production management.

For further information contact Student Enquiries at Charles Sturt University, PO Box 588 Wagga Wagga, NSW 2678 or phone 069.332121.

A Report from Graeme Harris,

Farrer Memorial Agricultural High School, CALALA via TAMWORTH NSW 2340

A UNIQUE COURSE FOR STUDENTS ON RESEARCH IN AGRICULTURE.

On the 21st and 22nd August a unique course in agricultural research methods was conducted as a collaboration between Farrer Memorial Agricultural High School and the Tamworth Centre for Crop Improvement. This course was developed by Mr Graeme Harris, AST Gifted Education programmes at Farrer. The planned course outcomes were to:

1. Increase the awareness of the importance of agricultural research
2. Enhance understanding of the steps necessary to conducting a piece of research.
3. Facilitating the awareness of female students of a possible career in agricultural research (roughly 50% of applicants were female).
4. Provide the only specialist course in Agriculture research for students in NSW and also provide one of the very few activities available for students in Years 9 and 10 to enhance their learning outside of their home school.
5. Provide opportunities for students from isolated areas to broaden their horizons.
6. Promote the Tamworth Crop Improvement Centre through-out the North West and NSW through press exposure.
7. Enhance the links between Farrer Memorial Agricultural High and the Tamworth Crop Improvement Centre.

All secondary schools in North Western NSW were approached on the basis that students were nominated by their teachers with a maximum of 4 per school. The intake which resulted from a mail campaign to secondary schools in North West region was:

Armidale: Armidale HS 2, O'Connor Catholic High 2. *Binnaway:* Binnaway Central School 1. *Glen Innes:* Glen Innes High 2, St Josephs 2. *Gunnedah:* St Mary's 3 *Tamworth:* Tamworth High School 3, Rosary College 1, Farrer Memorial Agricultural High School 4, Carinya Christian School 2. *Quirindi:* Quirindi HS 2 *Walgett:* Walgett HS 2. **TOTAL 29:**

girls 14, boys 15

State Schools 19; Catholic 8

Other 2.

The course involved a series of activities with students participating in groups of various sizes for different activities. The activities included lectures on:

- Why does research occur
- Elements of good design
- Biometry

These were presented by staff from Farrer and the Tamworth Crop Improvement Center. Workshops were provided in Library searches - CD Rom etc and writing a piece of scientific literature.

Excursions took place to a farm research site and the students enjoyed a hay ride tour of Farrer farm. This occupied the first day and as most of the students stayed in dormitories of the boarding school, a group problem solving exercise was held in the evening followed by a movie. The following day started with an inspection of the dormitory (a new experience for most) and breakfast. The students then were taken to the research station and they elected to participate in 3 of 6 activities where they were placed with a real scientist for an hour. Topics studied included:

- entomology and insecticide resistance
- biological control of weeds
- new legume crops in rotations
- breeding new varieties of Durum (pasta) wheats, pastures and chickpeas

These activities were rated very highly as for many students this was their first chance to meet a real scientist and they all remarked on the passion with which the researchers viewed their work.

Following this the students returned to Farrer for a BBQ lunch and they then commenced discussion to determine what piece of individual research they would undertake.

It is planned for the students who participated in this programme to undertake their own SIRP (Student Initiated Research Project) which they will write up as a specific paper and present it at a symposium to be held at Farrer in 1996. A full evaluation of the course was conducted and a range of very favourable responses were obtained such as:

"thoroughly enjoyable - a serious course but great fun"

"interesting/educational/fun"

"A very enjoyable and fulfilling camp, something "I'll remember for a long time"

"very enjoyable time, interesting"

Thanks must go to the North West Region Gifted and Talented Committee for assisting with $400 funding towards operating this wonderful activity. **Owing to the success of this venture it is planned to operate a similar course in 1996 and make it available to a wider range of students.**

AGRICULTURE TEACHERS GET THEIR HANDS DIRTY

from Melinda Gambrill, Development Officer, NSW Agriculture
Phone (069) 530308

NSW high school teachers 'get their hands dirty' working with tractors and farm chemicals to gain the necessary skills and qualifications to teach agriculture students the practical and competency based Rural Skills Content Endorsed course at schools.



Geoff O'Connor of Chevalier College, Bowral, gaining skills in remote control hydrulics (connecting trailing implement to tractor) as part of the Safe Tractor Opperation course.

With the Department of School Education moving its way into providing vocational education training within the school system, twenty five agriculture teachers recently completed a five day National Farm Chemical User Training Course and Safe Tractor Operation and maintenance train the trainer course at Murrumbidgee College of Agriculture Yanco NSW from Monday 28th August to Friday 1st September 1995.

Chemical safety, precautions taken when using chemicals, reading labels, method of applications and the importance of legislation are just some of the areas covered during the Chemical course. During the tractor course teachers are shown how to hook up a three point linkage, servicing of machinery, driving and studying the hydraulic systems.

The courses bring together well experienced presenters from NSW Agriculture, TAFE NSW and Charles Sturt University. Presenters included Reg Kidd, Industry Specialist of TAFE Rural and Mining, John Hill, Tocal Agriculture College, David White and Ian Hardie, Murrumbidgee College of Agriculture, John Kent, Charles Sturt University, local pesticide Officers and other support staff from Murrumbidgee College. Reg Kidd of TAFE and presenter of the course believes, "traditionally the 2 and 3 Unit Agriculture course has been academically based, although it is a subject that a lot more students would like to do if it was more skills orientated into how to use machinery, put in crops and handle animals. I would hope to see that all agriculture teachers complete the course as it brings them up to date with current legislation and teaching methods. It also gives participants an opportunity to set up networks, share resources and meet a large range of people within the agriculture Industry and in their own teaching industry," Reg concluded.

Other course presenters, including Ian Hardie of Murrumbidgee College, were able to provide teachers with the opportunity to experience practical skills-based training using a variety of equipment as distinct from class room learning.

The Board of Studies and Department of school Education believes that there is a need to continue teaching training in this field as there is increasing emphasis on the identification of risks and hazards and how to minimise them. All teachers who have completed the courses will receive a Certificate that will enable them to train other people in safe chemical use.
Ms Nicki Currey of Goodooga Central school participated in the course and believes, "I had acknowledge of the use of chemicals and tractors and now after completing the courses I have practical application skills. The course has been really practical and I feel confident teaching senior students and emphasising safety aspects of the course."

"By teaching vocational education courses it allows students who may not be interested in going to University to study agriculture, to still learn the necessary practical skills that they will need to know when working in the field," Nicki concluded.

Nicki Currey of Goodooga Central School recently completed a five day course in Farm Chemical Training and Safe Tractor Operation at Murrumbidgee College of Agriculture Yanco NSW.



FARMING FOR THE FUTURE

WHAT YOU WANT IS WHAT YOU GET

Richard Stephens, Project Officer, Farming for the Future Ph (02) 228 6506

Farming for the Future is a new programme that enables farmers to decide what training in farm management they receive, as well as how and when they receive it.

This skills training programme is available to all farmers in NSW, and attracted over 10,000 participants in the 1994/95 year.

The **Farming for the Future** programme allows farmers to improve their technical, management, planning and/or conservation skills to enable more control over the direction of their farm and increase its long term viability.

What makes **Farming for the Future** different is that it:

- focuses on helping the farmers decide their own training needs and priorities
- assists farmers in gaining the skills and knowledge they want.
- Utilises the skills and experience of a variety of government and private agencies

HOW DOES IT WORK?

Farming for the Future employs workshop facilitators, economists, and property management planning advisers who are trained in running effective workshops for farmer groups.

The programme normally starts with a meeting arranged by a facilitator to help the group establish its learning needs. Then everyone would assist in designing workshops and bringing in specialists who can help the farmers acquire the skills they have identified as needed.

Typically these workshops would have a production, financial, conservation or personal planning focus. They might involve indoor and/or outdoor sessions, be field trips or excursions. Most importantly the group decides how, when and where they will be run. All aspects of the programme are completely voluntary.

WHAT IS AVAILABLE?

Some of the workshops already run include:

- How to produce a property plan
- Soil management
- Conservation for farm profitability
- Cash flow budgeting
- Enterprise and whole farm analysis
- Risk management
- Goal setting
- Estate and retirement planning
- Better communication and negotiation skills.

WHAT ARE THE BENEFITS?

Participants have indicated they have better ability and feel more in control of their farming business according to independent research conducted by Solutions Marketing and Research Company.

The research also discovered:

- high levels of satisfaction with the material presented
- perceptions that rural extension agencies are now working together with a more consistent approach
- Landcare groups are the major clients
- high levels of awareness of the programme among certain client groups.

WHAT DOES IT COST?

There is a basic charge of $30 per day per farm family for each workshop which covers morning and afternoon tea, workshop notes and the expertise of the presenters. Any additional materials are at cost price and farmers may be eligible for training grants through the Rural assistance Authority.

WHO AND WHY?

Managed by representatives from NSW Agriculture, Department of Land and Water Conservation, NSW National Parks and Wildlife Service and NSW Farmers Association, **Farming for the Future** aims to help farm families to:

* improve their awareness of services available to them
* improve their business management skills and economic viability
* understand different marketing avenues and opportunities
* ensure they can manage and enhance their property's natural resources, including conservation aspects, for long term profitability
* better understand their land's capability and develop appropriate management practices
* improve their ability to plan and manage risks in agriculture
* recognise and clarify personal goals

Farming for the Future is part of the national Property Management Planning campaign which is funded under the National Landcare Programme.

Quotes received from FFTF clients during independent evaluation by Solutions.

"The programme allows you to take another look at your farm from a different perspective and helps you get off the treadmill"

"Farming for the Future has taught things about our own properties and how to get the best from them in the long term that we had absolutely no idea about."

"Up until now you'd talk to people in the government departments and it always seemed that they were worlds apart. Since this Farming for the Future thing has taken off, they (NSW Agriculture, Department of Land and Water Conservation and the NSW National Parks and Wildlife Service) seem to have the same sense of purpose, better organised and more cooperative."

FFTF DESCRIPTIONS

Will your farm be productive and viable for future generations?
Farming for the Future can help ensure your farm's viability by improving your family's skills in production, financial, conservation and/or personal management.

Will your family farm be productive and viable into the future? Farming for the Future can help you improve your skills to get you there.

HOW?

Becoming involved in the programme is as easy as a phone call to your nearest NSW Agriculture, Department of Land and Water Conservation or National Parks and Wildlife Service office or by phoning John McKenzie, Programme Coordinator, **Farming for the Future** on (063) 913 591 or Richard Stephens, Project Officer, **Farming for the Future** on (02) 228 6506.

Man is so made that he can only find relaxation from one kind of labour by taking up another.



NSW AGRICULTURE COMPTETITION

John Killeen, Prairiewood High School, Locked Bag 46, SMITHFIELD NSW 2164.

The following list of acknowledgments was to be published with the Test Paper. Unfortunately, due to circumstances beyond our control, this page was not printed. We would like to thank the authors and publishers of the texts used and we apologise for this list not appearing with the test paper.

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A POINT OF VIEW

This article has been provided by the Public Land Users Alliance in their newsletter "Common Ground". The alliance is for ..."*anyone else who believes the democratic values of* ***freedom, equality and fraternity.*** *Land lockouts* ***take your freedom away;*** *vast areas of our beloved country will only be* ***accessible to vocal minority extremist groups,*** *and the lack of proper consultation disenfranchise us all. What the Government is proposing, egged on by the greedy greens, will divide this nation as no other issue has ever done.* ***Wilderness is no longer an issue just about the environment.*** *If you are concerned for the future of your recreation, for the future of our kids, for the future of rural livelihoods, and for the future of our country ...*"

It is published in view of current concerns about the creation of new areas of National Parks.....

"DID YOU KNOW?
Who are the winners and losers when State Forests and crown lands are confiscated for National Parks?

The winners, of course, would include city based greenies, foxes, and manufacturers of bushfire fighting equipment and boomgates. Obvious losers are recreational groups, local communities, and the endangered species who often suffer a huge increase in predation by feral animals. Residents of towns like Gloucester, Coolah or Bombala would know that we all suffer indirectly, as businesses close, jobs are lost, and more people are thrown into the crisis of rural unemployment. However, many readers may be unaware that there's often a direct cost to the NSW taxpayer as well.

Here's how it works.

Often the land currently administered by the Crown Land's Service contains revenue generating assets. For example, in the case of the planned new National Park at Eurobodalla, the land contains a caravan park, whose lease generates funds paid to Crown Lands. Those funds go to consolidated revenue, and are spent for the benefit of all NSW citizens. However when the land is transferred to the National Parks and Wildlife service revenue is paid to the Service itself. The Treasury, and indirectly all NSW residents, are the losers.

This explains many of the questions we're asked about the Government's 24 new National Parks. Half of the list are areas of no special environmental relevance, like Dharawal and Hervey Ranges. These have been selected to bulk up the list and keep the greenies happy. Many of the remaining areas scheduled for confiscation by the Environment Department or the NP & WS either have a solid income stream now, or will have in the future after the imposition of hefty entry or other fees. This includes areas with high visitor numbers like Jenolan Caves and Cape Byron. Remember that numbers of people visiting NSW National Parks have fallen by 4 million in the last few years. Recreational groups, tourists, and families have voted with their feet against NPWS anti-access policies.

In countries like New Zealand, Canada or the US, a humiliating collapse in visitation numbers of this magnitude would result in enquiries, reviews and probable sackings within the Department responsible. In NSW, where the greenies call the tune, and most of the media avoid any critical scrutiny of the NPWS, its not even an issue."

The Journal of the Public Land Users Alliance, Spring Edition, 1995

Direct your comments to
Public Land Users Alliance
PO Box 926
GLEBE
Fax (02) 666 5586

(.....We don't all march to the same drum! Edt.)

Don't be afraid to take big steps. You can't cross a chasm in two small jumps.
David Lloyd George

PRODUCT AND MARKETING EXERCISE

AIM: To compare 2 (or more) grades of bacon for the following:-

1. fat depth on eye muscle
2. size of eye muscle
3. percentage of fat in each grade and calculate which one represents the best value when buying, assuming that we don't eat the fat and rind.



METHOD:

1. Two varieties of bacon were purchased - Brand X Economy bacon priced at $5.90/kg and Brand X Prime bacon priced at $7.90/kg.
2. Two slices of bacon of each grade were analysed and the following measurements were taken:-
   (a.) fat depth on the eye muscle in millimetres
   (b.) area of eye muscle - calculated in cm^2 (trace area of eye muscle onto 1cm grid paper and count the number of squares that it covers).
3. Weigh the samples of each grade and record their mass
4. Carefully remove the fat from the meat on each sample with a scalpel. Weigh the fat and the meat from each sample of each grade and record.
5. Calculate the percentage fat and the percentage of meat in each grade of bacon
6. $\frac{\text{(weight of fat/meat X 100)}}{\text{weight of sample}}$
7. Based on the cost of the bacon and the percentage of fat and meat, calculate which type of bacon represents the best value for money. Show how you arrived at this answer.

RESULTS (Students design a suitable table).
CONCLUSION & QUESTIONS

YEAR 10 AGRICULTURE - BACON ASSESSMENT

Study the sample of bacon that you have been given and then carry out the instruction below.

1.Comment of the appeal of this slice of bacon.

---

2. Weigh and record the mass of your sample of bacon

---

3. With a scalpel, carefully remove the fat and rind (waste) form the bacon meat. Record the following:

a) mass of bacon meat = ------grams

b) mass of fat & rind = ------grams

c) % meat in sample = ------%

d) % fat (waste) in sample = -----%

4. Measure the following:-

a) depth of fat on eye muscle = -----mm

b) area of eye muscle = --------sq cm
(trace outline of eye muscle on cm grid paper, then count no. Of squares it covers).

5. This bacon is retailed at $5.90 per Kg. How much would 1Kg of edible meat cost, allowing for the waste?

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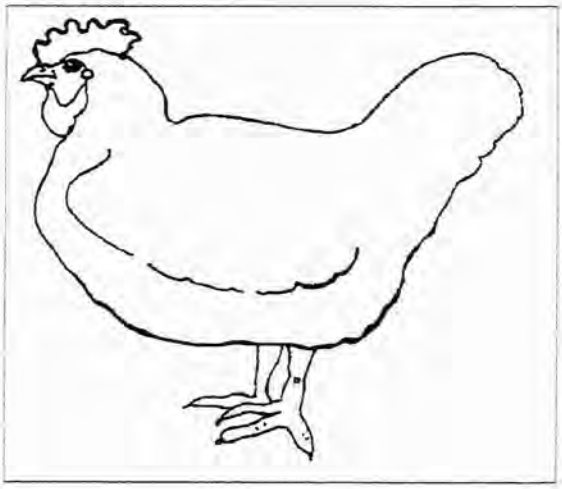
6. What suggestions would you make to:

a) the producer of the bacon ----------

---

b) the processor/wholesaler of the bacon -------

POULTRY RESOURCE



Kangaroo Press has re-released Rick Kemp's poultry book: "PURE BREED POULTRY RAISING"

[brown cover, ancona bantam on front cover (not the one illustrated above!)]

If your copy is now "dog eared" get a new copy!

BUSINESS ADVICE FOR RURAL AREAS

News from BARA in NSW

The Business Advice for Rural Areas (BARA) programme is a joint Federal and State initiative that is targeted at communities with rural base. It aims to expand, diversify or stabilise income opportunities in rural areas by assisting local entrepreneural capacity, fostering business talent and ideas and imporving individual and rural economic diversification.

In NSW, BARA projects have been established in a number of regions with the objective of *"assisting and supporting business people to retain and enhance the viability of businesses in country areas, in order to sustain and increase employment prospects and economic growth".*

There are some people who, if they don't know, you can't tell 'em.

Louis Armstrong

What Can BARA Do For You?

BARA facilitators can provide a wide range of services to clients, including:

- providing confidential and unbiased business counselling services;
- acting as a sounding board and referral agent for enterprise ideas;
- helping with marketing arrangements for agricultural product;
- identifying the most appropriate sources of assistance - both financial and non financial - from State and Federal Governments;
- sourcing new technologies in co-operation with NSW Agriculture;
- advising on the most appropriate agencies to access overseas markets;
- providing contacts to obtain markets and introductions; and
- helping to form industry networks as well as co-operatives and other business structures.

WHO TO CONTACT:

Mid North Coast
Maurice Smith
Mid North Coast Regional Development Board
68-70 Clarence Street (PO Box 947)
PORT MACQUARIE NSW 2444
Telephone (065) 841 330
Fax (065) 841 225

Murray
Ashley Power
Murray Rural & Business Advice
PO Box 500
DENILIQUIN NSW 2710
Telephone (065) 813 010
Fax (065) 813 205

New England
Shirley Lean
New England - North West Regional Development Board
175 Rusden Street (PO Box 1138)
ARMIDALE NSW 2350
Telephone (067) 713 284
Fax (067) 713 286

Northern Rivers
John Kable
Northern River Regional Development Board
PO Box 362
GRAFTON NSW 2460
Telephone (066) 283 021
Fax (066) 863 508

Orana
Jason Brien
Orana Regional Development Board
50 Wingewarra Street (PO Box 584)
DUBBO NSW 2830
Telephone (068) 842 611
Fax (068) 842 486

Riverina
Jennifer Fisher
Rivernina Regional Development Board
48 Fitzmaurice Street (PO Box 1156)
WAGGA WAGGA NSW 2650
Telephone (069) 216 422
Tax (069) 210 780

South East
John Dudley
South East Rural Business Development Project
39 Goldsmith Street (PO Box 930)
GOULBURN NSW 2580
Telephone (048) 218 000
Fax (048) 218 650

Wealthy people miss one of life's great thrills - making the last car payment.

A Summary of Responses to a Survey to Ascertain the Perspectives of Selected School Personnel Regarding Agriculture in NSW Secondary Schools

Prepared by N.R. Thomas, 557 Rockvale Road, Armidale NSW 2350

NOTE: You should obtain the Author's consent before reproducing this material.

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Agriculture teachers
Allocation of Administrative periods
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Regional Departmental assistance
TAFE

Editor's Note:
Space only allows a sample of Norm's work to be reproduced in BAAT. The Statistical information in print form occupies around 75 pages. It is also available from Norm on Computer Disk at a nominal cost. Readers should note that there is little analysis of the information but should you wish to persue this article further Norm's address is at the top of this page.

A literature review revealed little information which was specifically related to the administration of agriculture as a subject in NSW non-specialised government secondary schools.

To help overcome this lack of information and to provide basic data which could be used for future reference it was deemed advisable to obtain the perspectives of appropriate personnel in secondary schools.

This study pertains to the non-specialised government schools (both High and Central) offering Agriculture as a secondary school subject. Agricultural High Schools and non-government schools were excluded.

Department of School Education figures indicated that the number of non-specialised government schools which offered Agriculture in the curriculum for Year 10 and/or Year 12 in 1992 was 273. From this number of schools it was decided to communicate with personnel from 136 schools ie. Approximately 50%.

To implement this strategy, questionnaires were forwarded to a stratified random sample of schools. This method of sampling resulted in 17 Central Schools, 34 Metropolitan Region High Schools and 85 Country Region High Schools being invited to participate.

The appropriate personnel were considered to be the Principals, Head Teachers in charge of Agriculture, Agriculture Teachers and Career Advisers.

Questionnaires were prepared with a number of basic questions to each officer. Extension questions were added where it was considered that additional information was pertinent to their area of responsibility. To obtain collusion in answering, the questionnaires were rearranged for each category of personnel. Each officer was supplied with a separate return paid envelope.

Provision was made for the approval of Principals to permit the questionnaire to be released in the school. A large return paid envelope was provided to enable each school to return the completed questionnaires as a group. This would permit cross referencing within the school.

Draft questionnaires and information sheets were submitted for discussion to five school principals who were either still in charge of schools or recently retired. The questionnaires were also discussed by six practising Agriculture teachers, three Head Teachers and two Career Advisers. On the basis of their opinions the questionnaires and information sheets were amended.

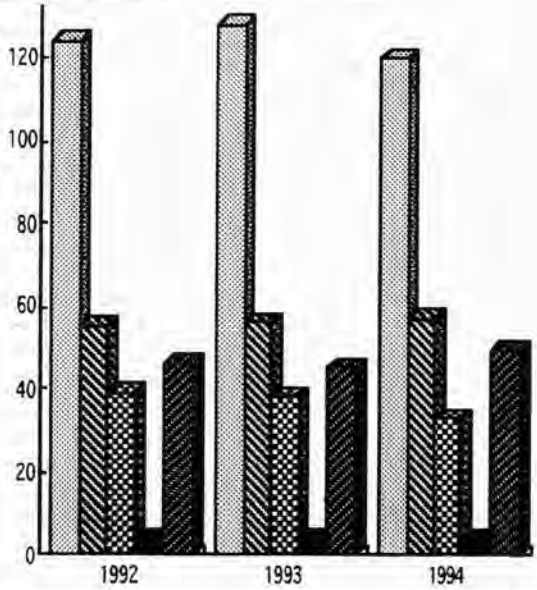
Questionnaires were forwarded to schools mid November 1993. Responses arrived during November and December 1993 and January and February 1994.

The following is a summary of the salient features of the responses for the benefit of respondents. Only a modicum of analysis is included.

AGRICULTURE NUMBERS

(4) Number of Schools offering Agriculture in Year 10

	1992	1993	1994
Country High Schools	124	128	120
Metropolitan High Schools	55	56	57
Central Schools	39	38	33
Agriculture High Schools	4	4	4
Non-government Schools	46	45	49
TOTAL	**268**	**271**	**263**

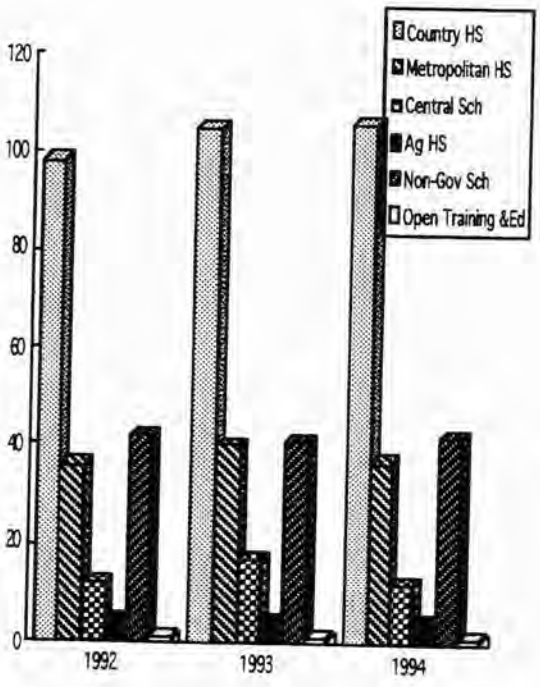


Number of Agriculture Students in Year 10

	1992	1993	1994
Country High Schools	3035	3026	2893
Metropolitan High Schools	1403	1793	1524
Central Schools	301	363	335
Agriculture High Schools	339	400	410
Non-government Schools	889	951	888
TOTAL	**5977**	**6533**	**6050**

(5) Number of Schools offering Agriculture in Year 12.

	1992	1993	1994
Country High Schools	98	105	106
Metropolitan High Schools	36	40	37
Central Schools	12	17	12
Agriculture High Schools	4	4	4
Non-government Schools	42	41	42
Open Training and Education	16	28	23
TOTAL	**193**	**208**	**202**



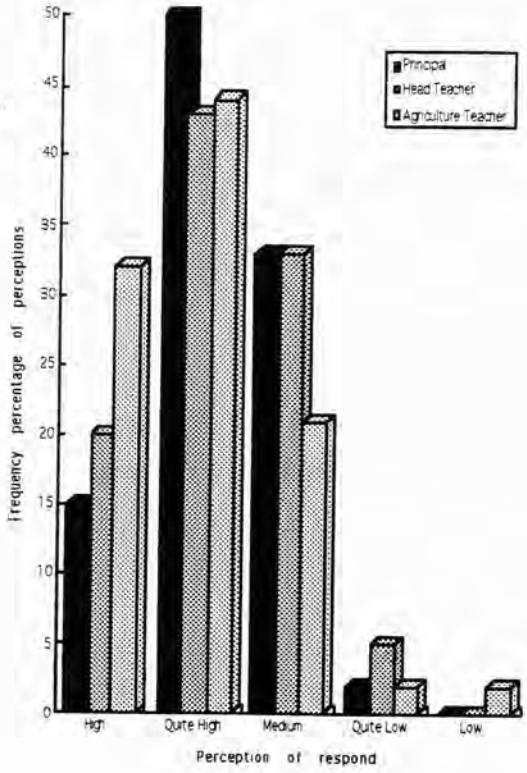
Number of Agriculture Students in Year 12.

	1992	1993	1994
Country High Schools	856	1062	941
Metropolitan High Schools	405	506	439
Central Schools	55	73	70
Agriculture High Schools	309	273	305
Non government Schools	604	826	755
Open Training and Education	16	28	23
TOTAL	**2245**	**2768**	**2533**

(15) Suitability of Junior Curriculum for the School

Percentage of responses

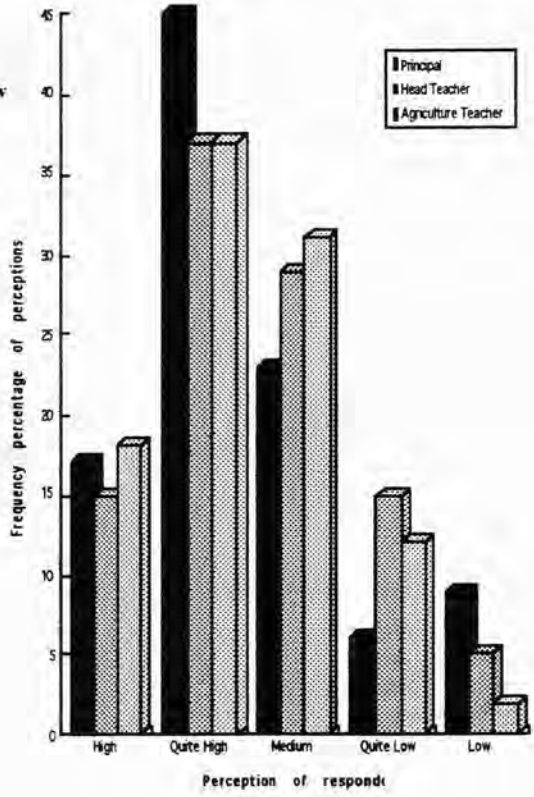
	High	Quite High	Medium	Quite Low	Low
Principal	15	50	33	2	0
Head Teacher	20	43	33	5	0
Ag Teacher	32	44	21	2	2



(16) Suitability of Senior Curriculum for the School

Percentage of responses

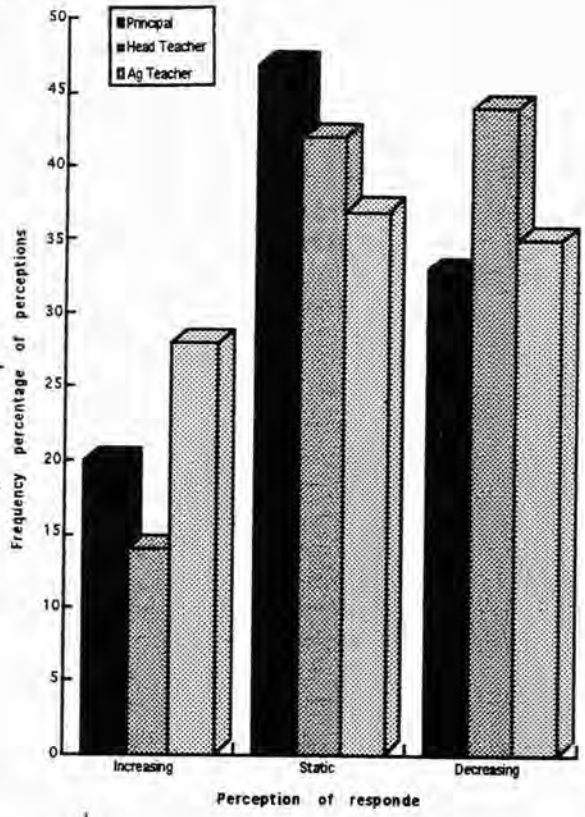
	High	Quite High	Medium	Quite Low	Low
Principal	17	45	23	6	9
Head Teacher	15	37	29	15	5
Ag Teacher	18	37	31	12	2



(17) Perceptions of the trend of the number of students electing Junior agriculture

Frequency percentage of perceptions

	Increasing	Static	Decreasing
Principal	20	47	33
Head Teacher	14	42	44
Ag Teacher	28	37	35



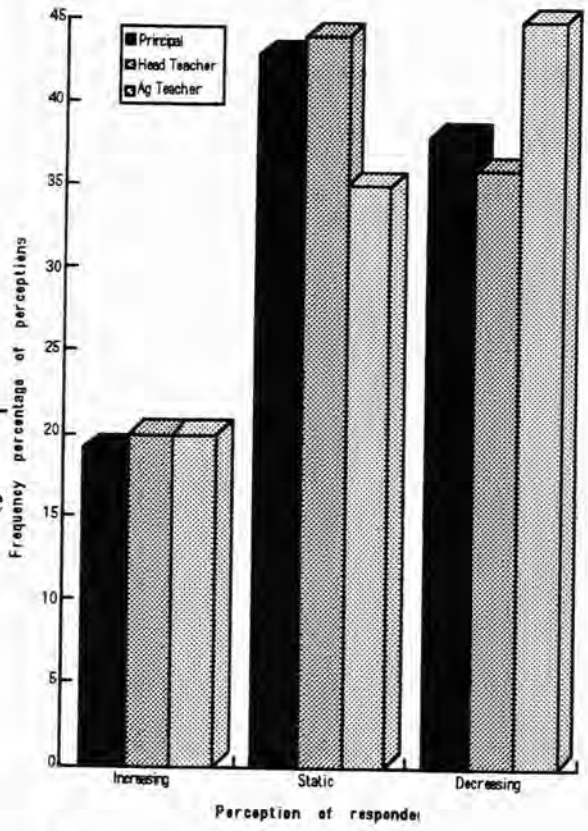
(18) Possible reasons, as perceived by Career Advisers, for students choosing Junior Agriculture.

Reason given	Frequency percentage of perception
Family involved in the Agriculture industry	37
Interest of students	26
Practical outdoor component of course	16
Desire a career associated with Agriculture	7
Teachers influence	5
Student's ability in that area	4
Friends doing Agriculture	2
Nothing else	2
Compulsory component of Design and Technology	1

(19) Perceptions of the trend of the number of students electing Senior agriculture.

Frequency percentage of perceptions

	Increasing	Static	Decreasing
Principal	19	43	38
Head Teacher	20	44	36
Ag Teacher	20	35	45



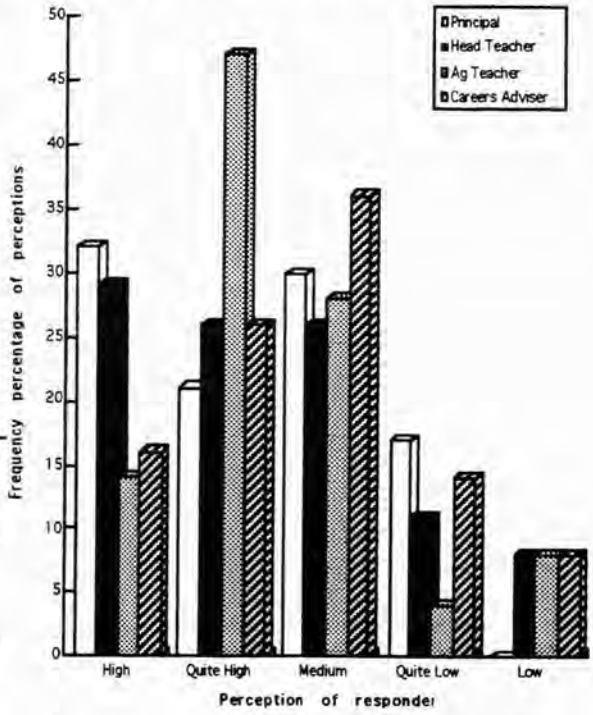
(20) Possible reasons, as perceived by Career Advisers, for students choosing Senior Agriculture

Reason given	Frequency percentage of perception
Desire careers associated with Agriculture	35
Rural family influence	19
Interest in Agriculture	19
Like the practical aspects	8
Enjoyed Junior Agriculture	7
Influence of teachers	5
Student's ability in that area	5
Complements other subjects	2

(25) Local community's perceptions about the value of Agriculture as a school subject

Percentage of responses

	High	Quite High	Medium	Quite Low	Low
Principal	32	21	30	17	0
Head Teacher	29	26	26	11	8
Ag Teacher	14	47	28	4	8
Careers Adviser	16	26	36	14	8



The local community's perception of the value of Agriculture as a school subject.

Value	Frequency percentage of perception
High	**16**
Quite High	**26**
Medium	**36**
Quite Low	**14**
Low	**8**



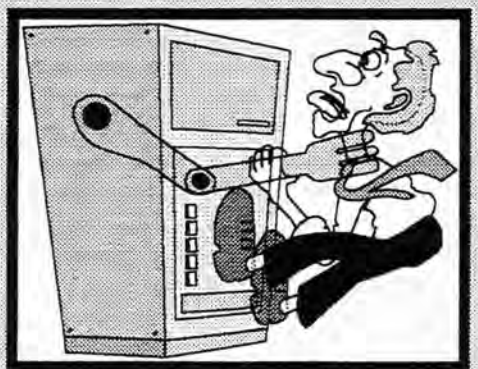
Read this!!!

Comments

High and Quite High Value	Because of the rural industry locally.
Medium	Study of Business studies, Japanese, mathematics, computers will get work for students when they finish school.
Quite Low	Agriculture has a lower profile in the community.
Low	There is not enough PR by Agriculture.

Thanks to Peter Jones, Colo High School for his idea in presenting Agriculture in Pamphlet form to "flog" the subject to students at Colo High. We were so impressed we have developed our own- a sample of which is enclosed.

Next BAAT dead line!!



31st March 1996

THE FOREST PRODUCTS ASSOCIATION
Harvesting our Forests with Care

NSW Forest Products Association, PO Box 903, DARLINGHURST NSW 2010

Commonwealth Deferred Forest Assessment
by Michael Taylor

EDITORS NOTE:
Michael Taylor is Assistant Director of the Forest Products Association. He has prepared this item for inclusion in BAAT. President Stewart refers to the need for students and the public to be well and accurately informed of legislative (and other) processes which have impact on rural communities. What follows is a condensation of Michael's item. Should you wish to have further information or discuss the issue, please contact the Association at the above address.



The Association is extremely concerned at the potential impact of the Commonwealth Deferred Forest Assessment (DFA) proposals on the forest industry on the mid-north coast of NSW, particularly when combined with the reductions in log availability proposed by the NSW Government. Whilst the NSW Government has guaranteed to provide allocated volumes up until the end of June 1996, the DFA process will significantly reduce the ability of State Forests to meet the log species and quality requirements of many mills. Sawmills in NSW have expended considerable resources in developing viable and growing markets for specific types and grades of sawn hardwood. Such markets are extremely sensitive to changes in species and quality and the inflexibility in logging scheduling resulting from the DFA proposal places market share at risk. Unfortunately, a log is not just a log to the hardwood sawmilling industry.

As part of the DFA process, the Commonwealth and NSW Government's have identified a number of compartments which can be used for timber harvesting pending the outcome of the DFA and without foreclosing any options for a comprehensive reserve system. As a result all other areas are, by default, included as part of the Deferred Forest Areas. It is thus logical that some of these would have undergone previous logging and we would assume that most of those compartments which have undergone previous logging would ultimately be made available for permanent timber harvesting. Any complaints that some of the DFA areas have been subject to previous harvesting are thus somewhat irrelevant.

The Draft DFA itself states (in relation to the proposed additional reserves under the NSW Government's forestry policy) *"These reductions will have significant impacts at both the commercial and community levels as mills reduce throughput, affecting both income and employment levels. These impacts may be increased in the longer term through the application of the Commonwealth's reserve criteria."*

No flora or fauna species are at threat under present management. The Commonwealth should therefore include multiple use (timber producing) State Forest as part of 15% in some regions where social and economic impact of 15% pre-1750 reserve criteria will be significant. Credit should also be given for forest types on private property so as to lessen impacts on the timber industry.

Pre-1750 forest cover is based upon a modelling of forest types within National Parks based upon currently mapped forest types within State Forest. This process has been totally discredited and should not be relied upon to make decisions which will cause severe economic and social hardship in rural NSW. There are many known examples of incorrect forest typing within State Forest which, when combined with the inaccuracies of modelling forest types in other forests such as National Parks, results in a completely unreliable modelling process. While such a technique has some potential, it has not yet been validated by field trials and thus is not suitable for adoption in such an important process as the DFA. The limited amount of field validation of the forest type modelling process trialled by NSW NPWS in the Grafton region of northern NSW showed the modelling to be largely unreliable. I trust this briefing will be sufficient to enable members of your Association to properly consider the impacts of the deferred Forest Assessment proposals. I would be happy to assist in providing further advice.

Just a note to again remind members that the cut-off date for the next issue of BAAT is 31st March 1996. *Your items are very welcome. As I said before:*

Contributions = Content

I wonder if we could have a report from a Private school in the New Year? Keep this request in mind.

A sincere thank you to all those who have contributed articles this year. There would be no BAAT without you.

Thank you to all those who have paid their Biennial fees. We have reprinted the Autumn BAAT three times now! and will not be able to do it again, so from now on there will be no "back copies" of the Summer (No 1) or Autumn (No 2) BAAT available.

Cheers,

The Editor

Wishing You and Yours a very Happy Christmas a safe, relaxing holiday and all the best for 1996

John Musgrave and family