



# Australian Nuffield Farming Scholars Association

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***Report of the Study Tour to the  
United Kingdom and Europe***

***By Terry Hehir  
1994 Victorian Nuffield Farming Scholar***

***SUBJECT:  
Impact of GATT: Implications of Environmental  
Pressures on Intensive Dairyfarming.***

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# *An International Scholarship for Australian Farmers*

The Nuffield Farming Scholarship Scheme has been established in the United Kingdom, Australia, New Zealand, Canada, Zimbabwe and France for almost 50 years.

Each country has its own independent Association responsible for funding, selection and administration.

The United Kingdom remains the focal point of the Scheme, with the United Kingdom Nuffield Farming Scholarship Trust providing an overall secretarial / liaison service.

Since 1950, more than 700 Nuffield Farming Scholars from the participating countries have criss-crossed the world studying a range of agricultural, trade, political and cultural issues.

Each country awards two or more scholarships annually and as a general rule, scholars from all countries assemble in the United Kingdom in February each year for approximately six weeks of group study before pursuing their individual programmes in the United Kingdom and / or other countries.

The interchange of scholars between countries is facilitated, costs are reduced and the standards of study enhanced by the Association and individual scholars in each country accepting an obligation to assist visiting scholars with itineraries, introductions, travel arrangements and accommodation.

This "Nuffield Network" has become a potent force within the overall scholarship scheme and it is constantly re-enforced through the holding of a World Conference in one of the participating countries every three years.

These conferences are usually attended by over 150 former scholars at their own expense. They are concerned with the maintenance and improvement of the scholarship scheme and at the same time they provide an opportunity for former scholars to further expand and increase their knowledge of farming and related issues.

## **The Scholarship**

The scholarships are awarded annually by the Australian Nuffield Farming Scholars Association to enable established farmers to travel to the United Kingdom and other countries for the purpose of increasing their knowledge of practical farming and the broader issues of agricultural production.

## **Obligations**

Scholars are required to devote the whole of their time to a programme

approved by the Australian Management Council; to resume residence in Australia upon completion of the scholarship; to submit a written report to the Association covering the study programme completed under the award; and to communicate details of their newly-acquired knowledge and experience to other Australian farmers.

## **Eligibility**

The scholarships are open to Australian citizens of either sex who are engaged in farming of any kind in their own right or as managers, and who intend to continue farming in Australia. The preferred age is between 28 and 40 years, although outstanding applicants outside of these age limits may be considered.

## **Tenure and Location**

The scholarships are tenable for four months. Initially a minimum of six weeks must be spent in the United Kingdom; a group orientation study with the Award winners from other countries is undertaken during this period. Scholars are then able to pursue their individual study programmes.

The United Kingdom Farming Scholarship Trust, the national Farmers Union and the Ministry of Agriculture provide generous support and assist in the development and execution of these programmes. Should successful applicants have farming interests which are not practised in the United Kingdom, they are permitted to complete their study programmes in the country or countries best suited to their pursuits.

## **Application Procedure**

The Australian Nuffield Farming Scholars Association allocate a scholarship to each of the States and the Northern Territory once every three years in rotation.

Applications are invited by advertisements in the daily press from February to May; final selection takes place in August; and the scholars are expected to arrive in the United Kingdom in February of the following year.

## **Further information is available from:**

The Secretary  
The Australian Nuffield Farming Scholars Association  
Royal Agricultural Society of Victoria  
Royal Showgrounds, Epsom Road  
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## Acknowledgements

### AUSTRALIA

There are many people who supported Pauline and myself through the whole Nuffield Scholarship process, but first I wish to pay tribute to Pauline for being an outstanding support to me. She was Mum and Dad to our three children Naomi 13, Brendan 7 and Angela 2, and the ultimate responsibility for our 500 cow dairy farm rested on her shoulders. I can report that 2 months travelling abroad under the umbrella of Nuffield has imbued her with the Nuffield spirit.

Our farm management team of Peter Stock, Mick Stock and Damian Daniel did a superb job with some guidance from Stuart Brown from Farmanco Consulting.

My gratitude to Dr. Bob Elliott, Colborn-Dawes Australia Pty. Limited, Mr. David Thomas, M & S Accounting Services Pty. Ltd., and Mr. Durham Prewett, Lecturer VCAH Dookie, for tendering supportive statements in the selection process.

I thank the selection committee of Nuffield for having the confidence to award me a Nuffield Scholarship.

### SPONSORS

■ Qantas is a magnificent supporter of Nuffield. Qantas travel consultant Moira Costello exhibited tremendous patience and diligence whilst setting up the travel arrangements for myself and later my family.

I made 22 flights without a hitch.

■ Rural Finance Corporation - RFC

■ Buckland Foundation

These sponsors showed an interest in my study and were strongly represented at a Nuffield field day held at my property at Kyabram on December 16th 1994. 350 people attended this event.

### UNITED KINGDOM

I may have been awarded my Nuffield in Australia but the UK experience makes you a Nuffield. Andrew and Sylvia Bailey, Dorset are the supreme farmer hosts. Andrew's enthusiasm for Nuffield and life generally, his knowledge and contacts helped satisfy my insatiable desire not to waste my Nuffield. The hospitality and friendship of Andrew, Sylvia and their boys epitomises the Nuffield way.

David and Annette Butler, East Sussex, must have thought that they gained an extra family member at times. Jim Harrison put the icing on my Nuffield cake. He wrangled an invitation for me to join the 300 Cow Club's trip to Ireland. This privilege provided me with another very select network through which I acquired insight, friendship and hospitality. Mr. Gordon Newman is an institution in UK Dairyfarming, and a longtime "friend of Nuffield". His generosity in terms of time, sharing of knowledge, and goodwill enriched my Nuffield. Mr. Steven Bullock's efforts in helping us prepare for Nuffield and his subsequent organisation must also be acknowledged.

### USA

■ Dr. Alan Bell and wife Gay, Cornell University New York - an expatriate Aussie who scheduled five hectic days with his colleagues and surrounding farmers.

■ Dr. Steve Francen, Washington State University, Seattle.

■ Dave Grusenmeyer, Washington State University Extension Officer.

■ Dr. Don Bath, University of California.

■ Mr. Bill Ule, Modesto.

■ Professor Tal Huber, University of Arizona.

■ Dr. Ueli Zaugg, Zaugg Dairy Nutrition, Arizona.

All of these people helped organise my visit to their area, gave generously of their time and used their influence to procure valuable appointments for me. Incredibly the Nuffield tie unlocks doors in the USA too. There are many other people with whom I stayed. There were thirty in fact, in five countries, and they all embellished my Nuffield jigsaw.

My fellow Scholars, Peter Cooper (Australia), Don Sissons (Canada), Jean-Baptiste Menetrier (France), Alistair Polson, Noel Schrider, Jenni Vernon (New Zealand) and Helen Lock (Zimbabwe).

### Objective

My initial objective was to gain an insight into the management techniques required to manage a relatively intensive dairy-farm operation with emphasis on factors which affect the longer term sustainability - issues such as effluent disposal and use, information transfer and the public perception of farm production methods. Thankfully, the terms of the Nuffield Scholarship are

flexible and I also focused heavily on the policy settings which determine the direction and thus the opportunities in Agriculture.

### Program

My period of study extended to five months. The initial six week program which included an intensive program in Brussels and France, was invaluable in unfurling the intricate web of regulation which controls European agriculture. In this period the eight scholars from different countries were able to experience an exposure to travel, different cultures and an incredibly diverse array of industries at all levels. We cannot under-estimate the amount of learning from each other in this period.

This program paved the way for an experience which just kept getting better as time progressed. There were times when I thought I had reached the zenith of program expectation and achievement only to have those high points continually overtaken.

My European program was dissected by an intensive 6 week tour of the United States with a strong emphasis on learning from the academics at Universities in six states.

The undoubted highlights of Nuffield for me were the opportunities to be a guest and live with indigenous families (I stayed with 30 families) and to have regular "one on one" interaction with the most respected researchers and farm operators our global industry has to offer. The Royal Show is the ultimate activity to end a magnificent chapter of learning and experiences.

### Introduction

I suggest that the Scholars of 1994 travelled in a year which ushered exceptional change into global agriculture.

Although the GATT agreement was warmly (and perhaps cynically) greeted in Australia it has had a severe effect on the psyche of European, and to a lesser extent, American agriculturalists.

One of the icons of British Agriculture, the Milk Marketing Board, (MMB), was disbanded in '94 which plunged its large industry into unprecedented uncertainty. In addition the "notorious" Bovine Somatotrophin (growth hormone), BST, had just been approved for use in America's dairy herd by President Clinton.

1994 was a year when the Socialists consolidated their powerbase in elections for the European parliament - ominously at a time when the European taxpayer has just begun to understand the extent of his direct financial transfer to agriculture. Why is he only now beginning to understand? It's because payments are now more direct and not concealed behind consumer prices.

The Eastern European phenomenon can now be viewed with more clarity and put into perspective with the effluxion of time, and as the "pioneer" venturers into this region to reassess the state of affairs.

The constant exposure to history in Europe gave me a new perspective of time. One can only have astonished respect for the achievements of civilisations from past centuries when you see and feel the material evidence of their ingenuity and initiative. This respect turns to awe when tangible evidence of civilisations dating to 4000 BC is presented in impressive authentic structures which still stand such as Stonehenge.

In this report I have avoided dwelling on the history or implementation details of the Common Agricultural Policy (CAP). This has been expertly documented by previous Scholars anyway.

The Macro policy settings which dictate the terms of Agriculture globally have been subject to major recent change through GATT. I have attempted to develop thoughts on how this and other major influences will affect the way we produce and trade into the future.

### GATT

The implications of GATT (General Agreement on Tariff and Trade) dominate European Agriculture. The Uruguay round of GATT had been completed immediately prior to the arrival of the 1994 Scholars in UK. As a result every organisation associated with Agriculture and most astute farmers were focusing on the implications of GATT.

The overwhelming sentiment which prevails is that Europeans were the GATT losers, the Americans were winners and that Australians and New Zealanders the major beneficiaries.

From an Australian perspective it is pleasing that the European Community recognises that the Uruguay decisions are irrevocable and that they have no choice but to abide by them.

EC officials in Brussels acknowledge that the traditional methods of delaying indefinitely or blocking unpalatable decisions can not be applied to the undertakings given under GATT. The fact that there are relatively low commodity stocks gives some optimism for successful implementation.

The strategy adopted by the EC of applying production disincentives so that in effect a producer must produce less to receive the premium price will allow the EC to escape the severe cuts which apply to subsidies on production.

I firmly believe that the factor most likely to concrete existing reform and to drive future reform is the TRANSPARENCY of support measures to European Agriculture.

The subsidies previously camouflaged behind high consumer prices are now increasingly being paid as direct cash benefits to the producer. This is having an irritating effect on the tax-payer - even in Continental countries such as France where the producer has traditionally enjoyed the sympathy of the urban population.

The Media gives loud coverage to the fact that

- the minority of farmers are being paid millions of pounds in some form of subsidy. (e.g. In UK 2% of farmers farm 26% of the area and produce 43% of the Gross Margin output.)
- Schemes where
  - farmers receive up to £250/acre to "set aside" their land (inevitably the poorer land is set aside and inputs increased on good land which increases yields).
  - Farmers are paid to pull hedges down and to plant others of the same type on the same farm.

Consequently there is growing Government resistance to compensation payments/production disincentives. The Eurocrats are determined and convinced that they can achieve the required 36% cuts to agriculture expenditure over the six years to 2001. This will be applied commodity by commodity and will in fact be more savage than 36% for many commodities.

The EC is striving to meet its obligations in order to be able to export freely after 1996 (without subsidies). As a result those European countries which have been at the fore-front of reform with lean, more efficient industries, have potential to gain.

For the intensive industries such as the pig and poultry industries the reforms cannot be implemented quickly enough. They expect their inputs to diminish in price considerably without a corresponding drop in prices for produce.

Intensive industries expect the price they pay for cereal grain to drop by up to 50%.

Will production output fall in EC? This question remains unanswered. There is a divergence of views with some suggesting that production will fall without subsidies. The contrary view is that if farmers can shake off the straight jacket of regulation, a leaner, more efficient market orientated agricultural sector will develop. Such an industry which exported a surplus to domestic requirement would be a legitimate competitor in International markets.

It must be recognised that Europe has some of the world's greatest natural agricultural resources such as superb soils and climate. It will therefore maintain a monolithic presence in the production and trade of agricultural produce. However, despite this, tariff reduction for agriculture is a one-way street and a 'price policy' for agricultural products is finished - even on the admission of the French.

The emerging generation of European legislators have no personal experience of hunger from war, unlike their predecessors. This threat of war and hunger has underpinned the food subsidy platform in the past and with the removal of Cold War barriers this concern has been further diluted.

There is good reason for optimism in those Australian Industries which are efficient by world benchmarking standards. The greatest benefit will be from the reduction of corrupt pricing in the market place. Access to EC markets will be hard earned - there are many countries competing for the access. The Tiger economies of Asia are as firmly in the sights of European exporters as they are in our country.

The message for me is that whilst there are rapidly expanding opportunities for our agricultural products, GATT is not a Rainbow pot of gold. Professionalism in marketing and integrity of product will need to be continually enhanced.

Our competitors will continue to be supported by decoupled payments by way of Research, extension, infrastructure and inspection services etc. It is therefore critically important that our Governments recognise this fact and that industries maintain pressure to gain relief from costs such as labour and fuel taxes which are a direct result of Government policy settings.

The aforementioned may seem like indulgent postulating, but my experience of Brussels clearly signalled that our industries must be supported by informed and sympathetic Governments if we are to fully achieve the enormous potential which our natural advantages confer on us.

## Eastern Europe

Eastern Europe is the sleeping giant of Global Agriculture. Despite excellent soils and climate many of these countries are not perceived to be a production threat for many years. The infrastructure required for modern business has not been put in place. Companies venturing into the more recently liberated countries are constantly thwarted by lack of transport facilities, poor communication and electricity services and by inherent corruption.

Decades of Socialism have devastated the work ethic in these populations. The indigenous workforce often frustrates efforts to introduce modern practise by failing to understand even the basic tenets of private enterprise. Respect for ownership is lacking to the extent that breeding livestock will be slaughtered overtly to feed a family and removable building pieces and machinery frequently disappear "on loan".

Sociologists and other analysts suggest that free enterprise will be driven initially by corrupt Mafia style operators before it evolves to the extent that we know it. These operators have an ability to impose some discipline and can use the corruption and "vodka currency" to their advantage.

There is less risk with investments in countries such as Poland, Czechoslovakia and East Germany where pockets of expertise exist. Quite a number of ambitious and dynamic operators from UK recognise the potential in these countries and are participating in joint venture arrangements. Such arrangements will expedite the unlocking of the vast potential of these areas however the lack of infrastructure and processing capacity and know-how shall restrict these developments.

Privatisation in Bulgaria means that the huge farming operations which existed under communism (the average size farm was 13,000 Hectares) have been fragmented. Original inhabitants who were dispossessed by communism can claim their land back by providing proof of ownership. Consequently there are 1.7 million claimants to land plots averaging 4 hectares. The claimants invariably have no farming skill and the land is barely manageable without defined boundaries. Output is falling and unless ownership is addressed quickly, and production increases, the greatest threat is the desperation of hungry people.

Agriculture needs to take large steps forward in Eastern Europe just to satisfy the nutritional requirement of its population of 400 million people.

## Environment

Environmental factors impact heavily on every aspect of farming in Europe, especially so in the Netherlands and Britain - (the British seem to obey the rules better than other EC members). Environmental pressures have accelerated to the point where more dairy farmers fail financially because of enforced pollution controls than from the cost squeeze.

The emerging issues which farmers are now forced to address are water, pollution, nitrates in water. Pesticide residues in water and soil, soil erosion and the destruction of ecologically important sites.

One of the achievements of the UK farmer lobby has been to bring the environmental debate into focus as a whole community problem i.e. not exclusive to farmers.

The unlikely alliance of farmers and environmentalists is convenient for both groups to win support for various schemes. Approved effluent works on farm attract a grant of 50% of capital cost. Farmers can now choose to withdraw agricultural land for 20 years and receive £275 per hectare annually (indexed for inflation), to produce woodland for "natural" habitat.

Despite these alliances "Greenies" are not overly altruistic and consequently a comprehensive legal framework is developing rapidly to impact on threats to the environment from intensive agriculture particularly.

The extremity of regulation applies in the Netherlands where every Dutch farmer must now have an environmental plan for his farm. His expected water and energy use is calculated by formula and any excess use is penalised. Holland has been a net importer of minerals to the point where mineral saturated soils and water have forced the implementation of a mineral book this year.

The imports of minerals to a farm via feeds and fertilizers are recorded, as is the output through livestock and produce e.g. milk, eggs. When the balance exceeds an allowable acreage limit the farmer must either pay to have manure taken off farm (and show a receipt) or pay severe financial penalties.

on an increasing scale. It costs \$18 per wet tonne to have effluent removed in winter.

The impact on Dutch farming includes:-

- Massive manure injection machinery to comply with laws which preclude spreading effluent onto paddocks.
- All manure pits must be covered to prevent escape to the atmosphere. Dutch farmers are blamed for the acid rain which is claimed to effect natural selection in woodlands and forest.
- 10% of all manure is dried and exported as fertilizer.

It concerns all European farm representative groups that benchmarks for acceptable mineral levels are likely to become more stringent with stricter standards being recommended by the World Health Authority. Producers believe that stricter nitrate standards have no substantive base and are the result of crusading zealots.

It is apparent that environmental activists are passionate about their beliefs and have the effect of the "tail wagging the dog" in having Government enact legislation before research demonstrates the facts. Television has been the most powerful factor in conditioning the environmental conviction of the population.

Environmental pressure on agriculture is a global phenomenon. Extreme pressure is coming onto Canadian and American producers to reduce all forms of pollution. Government advisers and industry spokesmen agree pollution and competition for water will cause a farm cost spiral and precipitate the relocation or restructuring of industries. Professor David Beede from Florida University suggests that the huge dairy industry in Florida will be forced to relocate unless farmers can control the pollution which is claimed to be detrimental to the Everglades.

A European's perception of a level playing field includes a belief that other countries with which they compete for trade should adhere to the same standards pertaining to environmental protection.

Australian farmers must recognise that any perceived abuse of the environment will be increasingly seized upon by our International competitors for marketing advantage.

It will be to our peril if we believe, in this era of internationalism, that our relative isolation and vastness will allow us to adopt a singular approach.

## **Dairy**

Well managed dairy farming businesses in Europe appear to be extremely profitable. The milk quota system and associated subsidies have underpinned a system which generates relatively large cash flow surpluses for dairy farming enterprises. European dairy farmers receive 100% - 150% more for their litre of milk than Victorian dairyfarmers, yet when all costs associated with the function of the business, and capital and imputed labour costs are applied, very few achieve a profit. Farmers are generally prepared to accept this high cash flow - low capital return situation because they want to farm. There are many instances when a son is locked into maintaining a property because of a perception of dishonour should he sell a long held family asset.

In countries where quota exchange has been freed up, the efficiency gains are patently obvious. In countries where quota is still landlocked their industries have generally not adopted technology which scale of operation permits. As a consequence you see labour intensive, low hygiene farms exist with owners dabbling in other farming and non-farming activities. This results from a deliberate policy of some member countries in the European Union to maintain rural community populations. I believe a huge price for this policy will be extracted when market reality inevitability touches these communities. Conversely, good opportunities will open up for those with the business acumen and technical ability to apply when rationalization is forced. It is interesting to observe that whilst there has been a degree of success in maintaining rural populations in numbers, this does not appear to translate into modern services and facilities. I attribute this to low productivity and consequently lower area wealth. The best illustration of this situation is Ireland where 15% of the population is involved in agriculture compared to 2.2% in UK and 6% in Europe.

Sociologists might say the Irish have it right - time will tell!

The emerging UK dairy industry of the nineties is far removed from the stereotype of the European dairyfarmer. The Deregulation policies of successive conservative governments have given mobility to quota. We now see smaller farms being integrated into larger modern units with appropriate technology and management skills.

Aggressive, forward thinking UK farmers are positioning themselves into financially and environmentally sustainable farm operations whilst there is buoyancy in their industry. They accept that there will be product price

reductions in the longer term and are seeking to grasp the efficiency gains now. Like other intensive industries the dairy industry contemplates cheaper cereal grain prices and cost reductions in other inputs as the GATT reforms take effect.

There is an intriguing debate emerging in the UK industry (which is nearly as large in size as Australia and New Zealand combined) on the high margin per litre versus the lower margin high input/output system. There are a myriad of variations between the extremities of each system and I draw clear parallels with patterns emerging in our own industry. Significantly, farmers with low input high margin systems seemed focused on profit, compared to high input operators who invariably wanted to discuss production and a perceived future need to be large scale operators.

It is imperative that UK dairy farming does make on-farm efficiency gains to compensate for the manufacturing/ processing side of the industry which I believe lags behind its fellow EC member states.

The demise of the Milk Marketing Board (MMB) in Britain dominated discussions within this industry in 1994. Previously the MMB acquired all milk and on-sold it to processors at a range of prices depending on end use. This monopoly control and regulation has stifled innovation and competition resulting in the farmgate price for milk in UK being well below that on the continent.

When open competition for milk supply was allowed (as in Australia) it is interesting to note that a vast majority of dairyfarmers opted to continue to contract supply to Milk Marque, a hybrid of MMB. Milk Marque's competitors all used its (unknown then) price as the benchmark for contracts. Milk Marque will on-sell the milk as MMB did previously. The support for Milk Marque can probably be attributed to the lack of farmer owned co-operative manufacturing options.

The formation of groups of farmers to collectively market their milk to processors under contract arose from the deregulation of milk supply. It appears that these groups met with limited success. There are such groups existing in Holland which negotiate long term contracts (10 years) with processors for their supplier members.

These groups offer a guarantee of product integrity i.e. milk supplied under the contract has been produced by members who undertake to observe nominated environmental and quality standards. An emerging trend is for buyers of all produce, milk included, to be able to traceback and check whether the method of production is compatible with what the consumer expects and demands. Supermarket bosses insist that this trend is gaining momentum and will become the standard. Supermarkets DO have the power to stipulate the way food is produced by virtue of their buying power.

It will be instructive to observe how the already developed UK industry, which has evolved without a co-operative manufacturing base, adjusts to a market place where the processors are not driven by maximising returns to the primary producer. The Australian dairy industry is currently grappling with the funding dilemma of providing manufacturing capacity for the upsurge in milk supply.

The Dutch and Danish manufacturing co-operatives have been exposed to internal competition for raw milk supply and have developed an acute market awareness. There is remarkable versatility and flexibility within these companies to change product mix and to be sensitive to market change. Nevertheless it came as a shock to witness milk being processed under conditions which health authorities here would not tolerate.

Dutch marketers believe that the removal of subsidies will not impact on the price received by their farmers for milk. Continental dairy manufacturers seem to have a flair for developing almost exotic and unique recipes for dairy product manufacture and suggest that this diversity of product and dedication to satisfying customer requirement will maintain the price premium.

The Dutch manufacturing industry has incredible demands on it to maintain farm incomes in the face of projected production reductions to meet EC obligations. It is predicted that milk production will need to be slashed by 25% and farmer numbers by 50% by the year 2010 if Holland is to meet the environmental standards imposed by Brussels. Such a scenario will push these countries to be the value-adding innovators of the global industry.

It seems incongruous that against this trend of product diversity, the demand for organically derived produce has declined. Supermarket figures show that price resistance has occurred. This applies across the range of organic products and is also attributed to the consumers desire to procure unblemished produce, which can be very difficult without the aid of chemicals - especially with vegetables and fruit. Paradoxically, genetically engineered plants and laboratory developed biological control of pests and disease may prove to be the panacea for producers of organically grown food.

## **Technical**

I was exposed to an enormous amount of technological information over the 5 months of study. I have listed a fraction of this information below which relates to dairy.

Moorepark Research Centre in Ireland has technology which can determine and differentiate the grass and clover dry matter intake of open grazed cows by a small sample of manure. These cows are fed a known amount of concentrate and a capsule 2" long which contains Arkane markers. The successful adaptation of this highly accurate research tool will revolutionise pasture based research.

Moorepark has developed revolutionary milk harvesting technology which defies conventional practice in the milk industry. On my return home I imported and installed this equipment. Other Australian farmers are now replacing modern plant with this Irish machinery.

Moorepark has also developed an automatic cow identification system which sets new standards in accuracy of milk flow (plus or minus .5%) and provides a 50ml representative sample. It requires two wires to the PC and is equipped with a voice synthesizer.

Ultrasound pregnancy diagnosis, by trained technicians without veterinary qualification, is commonplace on modern commercial dairy farms in Europe and USA. It is applied from day 24 after service.

MOET Research centre in Newcastle upon Tyne is this year ('95) marketing bulls on the basis of sibling testing (their litter sister's production). This is effectively reducing the interval of generation in genetic improvement.

MOET is also marketing bulls for the first time with a conversion efficiency index for feed to milk. They have measured differences of 20% between groups of daughters of different bulls. There has been no correlation with size of animal.

Gene transfer work to control Mastitis has resulted in higher somatic cell count cows with little or no clinical mastitis.

Robot milking achieves 90% effective milking in ideal conditions without human intervention. 60% of cows being milked is more usual.

Research at Moorepark, Ireland, Bridgets in UK, and Cornell University, New York, indicates that a Prostaglandin injection in synchronised cows given at 8 days increases the chance of conception compared to the standard 5 - 6 days.

Maize grown in England for silage has doubled each year since 1990. Some commercial croppers are growing it under plastic to achieve early establishment.

The Dutch cow feeding regime for dietary protein has been driven by production. Under this system optimum production is achieved by providing excess nitrogen which is ultimately wasted. They will now be driven by satisfying the mineral book, which means a bank of new nutritional wisdom is being assembled.

There seems universal acceptance amongst academics that high producing herds derive more by-pass protein from well made hay than well-made silage and thus more litres of milk.

The Dutch are regarded as the supreme silage makers of Europe. They are consciously compromising regrowth and energy density to obtain higher by-pass protein by harvesting at 250cm height instead of 150 - 200cms. They aim for 50% dry matter.

At Lelystad they have determined that the amount of Nitrogen (N) in ground-water from clover dominant pastures is equivalent to 300 kg/N applied as fertilizer.

Rye grass is being replaced in dairy plantings in Washington State by a Tall Fescue with unprecedented characteristics for this species. It has advantages in palatability, water logging, heat tolerance, salt and acidity tolerance, root system, rust resistance and D.M. yield. Protein levels are similar.

Inter-mammary infusions of antibiotic for clinical mastitis are a thing of the past on some high producing USA feedlots. Injections of oxytocin are the preferred treatment to flush/cleanse the udder of all milk.

The manipulation of positive and negative ions in a cow's body via the diet (DCAD) has eliminated metabolic diseases in herds which successfully apply this feeding technology. Nutritionists believe that DCAD is the biggest advance in diet control since total mixed rations (TMR).

## **BST Bovine Somatotrophin, Growth Hormone**

The dairy industry in the USA is bitterly divided over the use of BST, a

naturally occurring hormone which can now be synthetically produced. Its use was authorised by President Clinton a few months prior to my visit. Many states nevertheless have banned its use and many farmer co-operatives where farm herd size is small, reflect their members wishes by refusing to pick up milk where BST is injected into cows on a regular basis (12 - 14 days) to enhance production.

Farmers who use BST claim milk production responses of up to 15% from 8% more feed. Analysts calculate a 20% return on all costs associated with BST use. One large farm visited claimed additional profit of \$500,000 from BST.

There has never been such rapid uptake of new technology as has occurred with BST. The more aggressive farmers in non BST states are frustrated and angry that they cannot partake of the profits which they see their counterparts from other states enjoying. A 9% increase in the milk produced in Florida is directly attributed to the use of BST.

Surprisingly, milk advertised in supermarkets as "BST free" at a price premium met with buyer resistance. Public anti BST rallies have been poorly attended.

It is unknown whether consumer resistance will swell, or whether BST will reduce the longevity of dairy cows as its critics forecast. An impact on fertility is already occurring as farmers using BST are extending the open period on lactating animals before breeding.

A seeming absurdity of BST is that scientists researching methods of treating the waste generated by intensive industries regard BST as "environmentally friendly" The BST-treated animal utilizes minerals and other feedstuffs more efficiently. Ultimately this factor could prove the thin edge of the wedge in a Europe which is currently bordering on hysteria over BST.

Despite considerable reservations about the profitable application of BST to our Victorian dairy industry in its present state, I firmly believe that its use should be monitored closely and our options kept open. Some would say its use is as inevitable as Artificial Insemination.

## **Farmer Advocacy / Education / Image**

In the UK the peak body representing farmers is the National Farmers Union (NFU). The NFU claims a membership of 80% with local branches ranging from 150 - 300 members being manned by permanent staff. A major function of these salaried staff members is to help farmers complete the countless forms which the European bureaucracy imposes on its farmers. A major component of farm income depends on the successful completion of subsidy forms.

There is concern that whilst the structural process ensures that NFU policy does reflect the view of the majority of its members, the larger farmers who produce the bulk of the output are not adequately represented. The NFU efforts to balance the interests of its constituents has resulted in small break-away groups forming to represent specific interests. The fact is that the interests of large and small operators are not always compatible - as in Australia.

The greatest difficulty for farmer organisations in Europe is upholding the image of farmers in the face of TRANSPARENT subsidies from tax-payers. The NFU is proactive in building bridges with lobby groups where antagonism previously prevailed. Communication and alliances with groups such as animal rights, environmental, consumer, bird protection and Friends of the Earth, assist the effectiveness of the farm lobby.

There is a decline overseas in the number of students from urban backgrounds applying for tertiary courses in agriculture. This is attributed to an increasing perception of farming as a dirty pollutant of the environment. Universities have responded by elevating the status of environmental studies in agricultural courses. The upshot of this development is that graduates with impeccable "green" credentials cannot gain employment. At this point, business is giving precedence to graduates with productivity skills and business acumen. Business training is destined to be incorporated to a larger degree into the more highly ranked agricultural courses.

It is E.C. policy that all 3 year tertiary agricultural courses have at least one year in a foreign country.

Students as young as twelve years old begin specialising/streaming into agricultural studies in Holland which is a fair indication of the commitment to agricultural professionalism in that country.

## **USA**

Many of my observations and thoughts have been incorporated into other

areas of this report.

The USA leg of my Scholarship was dedicated to dairy-farming issues, in particular those relating to the management of large herds.

My image of dairying in USA was dominated by the large scale feed-lot situation. It came as some surprise to know that Wisconsin, which was the largest dairy State until recently, has a herd size average of 60 cows. There are 33,000 Dairy-farmers in Wisconsin (8,000 in Victoria). The price/cost squeeze is hurting US farmers. The milk price has barely moved in the last ten years, resulting in shrinking margins forcing farmers to live off accumulated fat. As a consequence plant/equipment renewal is lagging in small scale operations.

I noted typical sixty to eighty cow farmers with super high producing cows, outstanding nutrition advice and feed mixing facilities proceed to wheelbarrow or shovel the prepared feed in front of the cow.

Just prior to my arrival in Wisconsin a dairy company had just informed 200 suppliers that it would not receive their milk from the following month. This company was sourcing cheaper milk from 1,000 miles away in New Mexico.

Hot southern States such as New Mexico and Arizona are where massive growth is occurring in the USA dairy industry.

Operations in these areas can gain some relief from the intrusion of population. The climate means that housing consists of a light-weight shade area for 200 cow groups in the middle of a six acre paddock with a narrow concrete strip for feeding down beside one fence. Typically a modern 25 - 40 parallel dairy will work shifts for 20 - 22 hours a day with Espanic labour. These milkers generally have an empathy with animals and will work for \$7 to \$8 per hour for up to 60 hours per week. One weeks annual leave is usual.

Expertise in nutrition is supplied on contract. Nutritionists prosper or wither on the performance of the herds for which they prepare rations.

To see such relatively low cost dairy-farming on this scale was a sobering experience. Feed security in this 5" rainfall area is met by underground water supplies. My reaction was that if we have to compete internationally against this farming system long term we need to do it better. I don't believe that we can do it better on concrete - they have too many advantages. It may seem like a "motherhood" statement, but optimising the cheapest form of feed inputs - especially grass, is our best chance of preserving profitable returns.

One common denominator in every agricultural pursuit wherever I travelled was that COSTS FOLLOW PRICE MOVEMENTS. This reality must provide tremendous opportunity for profit for business men who refuse to let complacency with comfortable margins jeopardise the bigger profit which ruthlessness and application of modern technology can provide. In other words they don't wait until they are squeezed before they move.

A very special two weeks of my Nuffield was spent with a group of 30 of my dairy-farming peers and wives who undertook a Study Tour to coincide with my tour.

This group accessed the best information available in the US on the management of large, high-producing herds. Issues of fertility, herd health, milking systems, software, nutrition, environmental factors and labour management were addressed in Universities and on farm.

A good blend of recreational activity with long-time friends and wives in a foreign country, in the middle of my Nuffield, was invigorating to say the least. The inspiration and initial arrangements for this tour can be directly attributed to interest aroused by my selection as a Nuffield Scholar.

### **Alternative Industries**

At every turn on my trip I tried to be alert for industries outside the mainstream. Most of those listed below were well established but nevertheless they aroused my interest.

In France goats milk was being processed into cheese with natural flavours. The source of the flavour was as basic as chestnut leaves.

Free range turkeys are providing a valuable supplement to some farm incomes.

A surprising number of farmers have introduced broiler sheds to their farms - a feature of this is low labour input.

Natural fibre is making a return after being decimated by synthetics. The EC has huge subsidies for flax growing to stimulate production and encourage manufacturing capacity. The subsidy for sowing flax is so great that it doesn't matter financially to the farmer if the crop fails. Flax is riding on the wave of "Natural Is Best".

Energy crops for ethanol production are attracting considerable research funding and surprising uptake by farmers on set aside land especially.

Naturally flavoured yoghurt and buttermilk being produced on dairyfarms has proven to be profitable for some. This is the "natural" extension of cottage cheese, ice-cream and clotted cream production.

The white/pink veal industries are flourishing. These create the extremely high prices received for bobby calves in Europe. Relaxed trade barriers may be the spur this industry needs to flourish in Australia.

The provision of farm labour and management on a contract basis by companies and individuals which specialise, is far more common than in Australia. I think that there is more scope for this in our industries.

The next four observations occur as a result of a society which has more leisure and prefers other people to "do it for me".

Ready Meals is the big growth area, packaged, ready to heat, with a vast and exotic range to choose from.

The demand for Pet Food is rapidly increasing. There are farmers capitalising on this demand which has margins far higher than those for human food.

Dried and fresh flowers is a booming industry. Lack of space with high density housing and two income families who require convenience is fuelling this demand. Genetic tricks are providing novelty plants which give marketing advantage.

Farm Tourism is certainly not new. I was intrigued by a successful farm tourism project where native flora e.g. bluebells were nurtured/enhanced and "sold" to the paying public as a natural place of serenity and beauty.

### **Summary**

The Uruguay round of GATT has set the scene for a transformation of the world trading arena. The Common Agricultural Policy is protected under GATT for the first time and EC farmers are responding to price signals - albeit under "Big Brother" farm visits and satellite imagery. It is imperative now that the WORLD TRADE ORGANISATION remains vigilant and ensures compliance with GATT agreements.

Eastern Europe will have to receive assistance from the rest of Europe - otherwise their suffering and hardship will stimulate large scale migration to Western Europe. Probably the biggest threat from Eastern Europe will be discounted primary produce to procure hard currency. The big opportunities in European agricultural are in the form of joint ventures into the former Soviet Bloc countries.

My study has demonstrated to me that the divisions between the different agricultural industries of the world will become less apparent and that this era of "internationalism" will bring environmental awareness, and impact more quickly than Australian farmers can contemplate. Our primary industries must not allow environment protection legislation to be enacted until research justifies such legislation is appropriate in our country. The temptation will be there for Governments to appease countries who import Australian produce by applying regulations developed for other circumstances. It is therefore imperative that every research project in our agricultural industries be structured to consider environmental related issues.

The effect of internationalism will increasingly affect the way we market our Agricultural products. It will not be enough to simply produce a quality product as sophisticated consumers begin to enquire about the integrity of production systems. If our competitors provide product identification right back to the producer to obtain premium markets we will be pressured to conform. Is our environmental and animal rights conscience so pure that we can afford to ignore this? I think not.

Australian primary producers cannot afford to become complacent, even virtuous, as a large part of the world faces the rigorous rationalisation process which we have undertaken since the formation of CAP. The breakneck speed of scientific development in areas such as communications, transport and genetic engineering means that to maintain and fully capitalize on our lower cost productions systems we need to identify and adopt new technology at least as fast as our competitors. New generation Australian farmers will, in my opinion, demand greater emphasis on business management in agriculture courses and expect opportunities to study international advancements in technology.

The Nuffield Scholars Association has been an outstanding vehicle to facilitate this information transfer. The international respect for Nuffield, the network of scholars, contacts and inspiration, confer an unmatched privilege on Nuffield Scholars. Nuffield provides a valuable support to agriculture and the need for this type of support is escalating.

I was advised by an earlier Nuffield at the time of announcement that my Nuffield Scholarship constituted "an opportunity of a lifetime and a lifetime sentence". I appreciated the opportunity - and now I relish the "sentence".

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