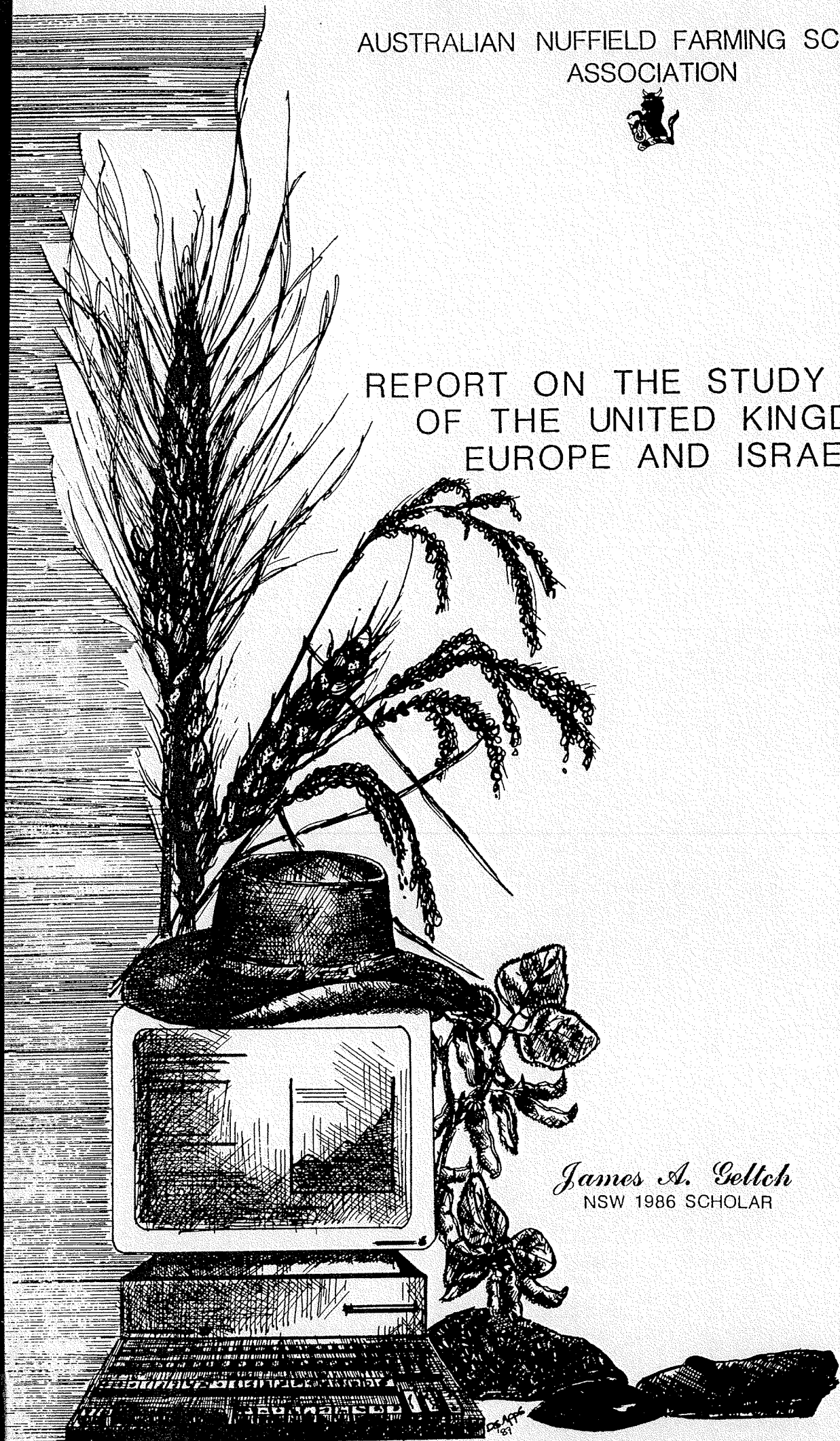


AUSTRALIAN NUFFIELD FARMING SCHOLARS  
ASSOCIATION



REPORT ON THE STUDY TOUR  
OF THE UNITED KINGDOM,  
EUROPE AND ISRAEL.



*James A. Gellch*  
NSW 1986 SCHOLAR

NATIONAL SPONSOR - QANTAS AIRWAYS

AUSTRALIAN NUFFIELD FARMING SCHOLARS ASSOCIATION

REPORT ON A STUDY TOUR OF THE UNITED KINGDOM, EUROPE AND  
ISRAEL (13TH JANUARY TO THE 15TH JUNE, 1986)

SUBJECTS STUDIED:-

- 1) Computer based crop management and how this technology is being utilised by European farmers.
- 2) Farmer education and in particular the infrastructure required to better utilise the short course concept.
- 3) State-of-the-art crop production focusing on high yielding wheat production.
- 4) The Common Agricultural Policy in Europe and its implications for Australian agriculture.
- 5) Irrigation techniques as applied to agriculture in Israel.
- 6) Farm Business Management.

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ACKNOWLEDGEMENTS

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## ACKNOWLEDGEMENTS

There were so many people and organisations who helped make my trip enjoyable and beneficial that it is impossible to mention them all. Apart from my sponsors (previous page) I would like to pass on my appreciation and thanks to a few people and organisations that are special.

### In Australia:

The Management Council of the Australian Nuffield Farming Scholars' Association and in particular the Chairman, Mr George Wilson, for making the award possible and help in the smooth running of my trip.

My referees John Sykes and Graham Blight.

My brother, Greg Geltch, for the time and enormous effort he put into managing my property way beyond what was expected of him and to the detriment of his own operation.

The NSW Department of Agriculture, and in particular the Minister, Mr Jack Hallam, and the Director General, Mr George Knowles, for their help in organising my Israel trip.

### In Europe and Israel:

The Milk Marketing Board of England for their generous assistance in supplying one of their vehicles for my use throughout the UK and Europe. The use of this car was a major factor in making the scholarship so successful.

Agriculture Development and Advisory Services for their introduction in British agriculture and then the supply of personnel to guide us through the various regions of the UK.

The National Farmers' Union for their guidance and hospitality.

The Worshipful Company of Farmers for their scholarship award and the opportunity to attend the Farm Business Management Course at Wye College. My thanks also to Mr Michael Chevely, Secretary of the Company for his help and guidance.

The British Nuffield Farming Scholarship Trust, and Chairman, Mr Charles Wharton for their help and in particular access to the directory of British scholars.

My farmer hosts, Dan and Sandy Cherrington for their help and hospitality and the opportunity to get away from it all in Devon.

A very special thank you to the Director of the British Nuffield Farming Scholarship Trust, Captain John Stewart, and Mrs Stewart for their help to me personally, and to all scholars. They both went beyond the call of duty in making

my visit so rewarding and pleasant.

The Israel Ministry of Agriculture and the many personnel within that department who made my visit to their country one of the highlights of my scholarship.

To all the other people who took me into their homes and shared their knowledge with me, I thank you.

Finally to my wife and sons, Helen, Mark, Paul, Neil and David, I pay a special tribute for the many sacrifices they had to make for my scholarship to be a success. I am eternally grateful

## S U M M A R Y

- 1) Crop Management Systems- I support the initiation of the CSIRO and the NSW Department of Agriculture to implement crop management systems that include all facets of farm management ie physical and financial. Such a system will be computer based and introduced at three levels to cater for the varying degrees of sophistication of a farmer's management.

I believe that as a priority, the interim measure of establishing a data base of current crop information and technical advice is necessary. This could be accessed by the farmer through the advisory service or the farmer's own facilities.

- 2) Farmer Education- because of the great need for further education by farmers a system should be put in place that will cater for their requirements. This system should take education to farmers in their own environment and rely on people who are credible to the farmer. It should have the ability to determine, and meet, farmers' needs.
- 3) Crop Production- I believe we can improve our crop production by the **greater** use of break crops, better timing of nitrogen, more precision in chemical application, and awareness of plant growth stages. The current on-farm limiting factor to increased wheat yields is crop lodging. Straw length and strength could be improved to decrease lodging.

Precision fertiliser application is possible with air assisted distribution systems.

- 4) Common Agricultural Policy- the CAP is here to stay, but there will be an emphasis towards welfare orientated support for agriculture.
- 5) Irrigation Technology in Israel- although we have a lot to learn from Israel in terms of technology and equipment to implement this technology, the main message from my visit was in the area of marketing.

I believe that if we are to tap the undoubted market potential for our produce in the northern hemisphere, then we can learn a lot from the Israeli methods. They are well organised on a national basis to supply and present quality produce to the market, at the appropriate time.

- 6) Farm Business Management- because farmers in Australia have over the last few years, spent most of their time in closing the technological gap, less attention has been given to developing corresponding management skills. I believe there is a great requirement to upgrade the management skills of farmers in the areas of financial control, planning, marketing, people management and time management.

## GLOSSARY OF ABBREVIATIONS

NSW	.....	New South Wales
CSIRO	.....	Commonwealth Scientific and Industrial Research Organisation
MCA	.....	Murrumbidgee College of Agriculture
EC	.....	European Community
CAP	.....	Common Agricultural Policy
UK	.....	United Kingdom
MAFF	.....	Ministry of Agriculture Food and Fisheries
ADAS	.....	Agriculture Development and Advisory Service
NFU	.....	National Farmers' Union
ATB	.....	Agricultural Training Board
ICI	.....	Imperial Chemical Company
PGR	.....	Plant Growth Regulator



## COMPUTER BASED CROP MANAGEMENT

### BACKGROUND

My interest in this subject stems from two sources. Firstly my use of computers as an on-farm management tool. Secondly my involvement as a co-operating farmer in the SIRAGCROP programme. SIRAGCROP is a co-operative venture between the CSIRO and the NSW Department of Agriculture "to improve the profitability and long term stability of irrigated agriculture in S-E Australia by increasing crop yield and water use efficiency through the use of computer based management models".

Before my study tour, I had been involved in the development of SIRAGCROP for two years, using the model to schedule irrigation of wheat and soybeans. Whilst, at the time, the programme was limited to irrigation scheduling, it was envisaged that the disease and nitrogen components would be developed during 1987 and 1988 (respectively), with general farmer use being phased in during the following year.

My study aimed to evaluate the relative progress of computer based crop management in Europe and its acceptance by farmers.

### OBSERVATIONS

From my experience in the UK it was evident that there are basically three levels of expert systems. An expert system is a high level computer programme with varying degrees of interaction and artificial intelligence. I have developed these following definitions as a simple way of explaining a complex subject.

- 1) the "simple expert system" - these programmes have an information base from which recommendations are made. They do not have the capacity to explain how the recommendations are derived. It is up to the user to interpret how he should use the advice.

In Europe, they are best illustrated by the disease warning and nitrogen timing programmes for winter cereals run by ADAS and commercial companies.

In Australia there are numerous examples of this type of programme. SIRAGCROP in its initial stages would fall into this category. Other examples include the Victorian RUSCON which estimates the benefits of spraying to control stripe rust (called RUSTMAN in NSW), and programmes for feed rations, irrigation scheduling etc.

- 2) the "semi-expert system" - allows some dialogue between the model and the user, and the model is able in a limited way to justify its decisions.

There are perhaps two major programmes of this type in

Europe. They are ICI's N-SURE for the timing and amount for each application of nitrogen, and COMPUTA-CROP's disease control model based on the Dutch programme EPIPRE.

The only example I could quote in Australia would be the original SIRATAC cotton pest management system for northern NSW. The latest version would probably fit into the next category of the true expert system.

- 3) the "true expert system" - is one where the model has artificial intelligence and is able to interact with the user, adjust its information base from its experience and justify its decisions. These are based on the 5th generation of knowledge-based software.

The only real example I studied in the UK was one developed by ICI called WHEAT COUNSELLOR. It should be noted that the Dutch have a comprehensive crop management package called COMAK and the Germans also have a programme that would be classified as a true expert system.

In Australia, SIRATAC and SIRAGCROP are moving towards this level.

#### A Closer Look at WHEAT COUNSELLOR:

WHEAT COUNSELLOR is a true expert system which was undergoing the crucial stage of field testing by farmers in the spring of 1986. In constructing WHEAT COUNSELLOR, ICI have devised a means of putting an enormous information base on the desks of end-users in remote locations via the micro computer - at the cost of a local phone call. The system is carried by a videotext service that not only provides COUNSELLOR but also a range of information on product compatibility and marketing tools.

The farmer wondering whether to spray his crop is faced with a series of very complex decisions. There are many different diseases that can affect wheat, depending on climatic conditions, soil type, variety etc., and there are numerous chemicals available to treat the crop with varying degrees of efficiency.

So not only do the characteristics of the disease and chemicals need to be known, but the model must calculate whether the treatment is cost effective.

"HUMAN EXPERTS WITH THE REQUISITE KNOWLEDGE ARE VERY SCARCE AND THE RESULT IS THAT FARMERS TEND TO ASSUME THAT TREATMENT IS NECESSARILY A GOOD IDEA AND GO AHEAD AND SPRAY, REGARDLESS OF THE FACT THAT THEY MAY BE LOSING MONEY BY DOING SO" (quoted from the Expert System User, April 1986). The cost/benefit component. This is central to crop modelling - it allows us to maximum profits rather than production.

COUNSELLOR'S decisions are based on a large amount of

general and farm specific data, including field size, soil type, drainage, local weather, disease patterns etc. This information changes little from year to year so COUNSELLOR has the facility to store this information and recall it when required. With this centralised information, it is relatively easy to update for new products as they come onto the market, and as human experts improve their techniques.

A consultation starts with identification of the user, on the farm, and the field under consideration. COUNSELLOR checks its data base and only asks questions to which it does not already have the answer.

It then asks the farmer to fill in current information such as plant density, fertiliser rates, growth stages etc.

COUNSELLOR then reports on the likelihood of a large number of detailed justification for the disbeliever, breaking down the separate factors that have been used to calculate the risk of each disease.

Example would show:

Risk of mildew becoming severe ..... 0.88

Due to:

Risk of source ..... 0.65

Risk of spore dispersal ..... 0.10

Variety susceptibility ..... 0.30

Others ..... 0.05

Next, COUNSELLOR proposes treatments for each of the stages of the growing season, listing chemicals with their calculated degree of efficiency. Finally, a cost/benefit analysis can be shown, taking into account the value of the crop and giving the value of the extra yield compared to the cost of the treatment.

#### APPLICATION OF COMPUTER MODELLING IN EUROPE

I was surprised at the relatively low level of computer application in the UK considering the apparent high level of sophistication in their farming. Out of 269,000 agricultural holdings only 18,200 (6.76%) had computers. Of these, approximately 6,000 (2.25%) were actually being utilised by farmers, the balance were being used in bureau work (8,500) or not being used at all. A large proportion of the computers actually utilised, were in intensive livestock production e.g., dairying, which made the numbers, on arable farms, even less significant.

Of this small number of farmers an even smaller number were using a videotext information base that would normally be associated with a true expert system. There are approximately 2,000 - 2,200 farmers subscribing to the two major information bases (ICI's *agviser* and Telecom's Farmlink) with only approximately 100 active users.

I.C.I. have realised that not all farmers will be utilising this high level of technology so they have introduced their information transfer system (called AGVISER) at three levels:-

Agviser Level 1: here a TV and keyboard are necessary (printer optional) and information supplied includes weather, market reports, disease warnings, mailbox facility and ADAS data base.

Agviser Level 2: the farmer requires his own micro-computer to run a farm management programme that includes both physical and financial recording. Level 1 can also be accessed as well as specialist programmes.

Agviser Level 3: this is the most advanced level of computer software which produces knowledge-based information programmes. Farmers use a central computer to answer questions, give reminders, offer advice and aid decisions. COUNSELLOR is the first model using these techniques and will be the forerunner of a totally integrated package.

To return to the original aim of the evaluation, i.e. at what stage is modelling in Australia, it would be fair to say that the Europeans are more advanced in the sophisticated modelling programmes such as the ICI's COUNSELLOR programme. With the release of the latest SIRATAC model and the direction that SIRAGCROP is taking we will not be far behind and actually are in the fortunate position of learning from the inevitable mistakes that the pioneers will make. This will mean a major saving in the large amount of time that it takes to develop these packages and they should reach the end user much quicker than anticipated. This will be expedited by the recent trip to Europe of Dr Maarten Stapper (CSIRO) where he investigated the resources required to get our system on stream.

At the other end of the market, i.e. the recommendation type packages, where most of the activity will be in the immediate future, Australia is at least on level terms in the availability and use of these programmes.

#### APPLICATION OF COMPUTER MODELLING IN AUSTRALIA

I fully support the recent recommendations for the development and implementation of SIRAGCROP along the lines of the ICI AGVISER system (Stapper M., Smith R., and Colomb R. "1986 Framework for Implementation and Commercialization of Siragcrop" et al 1986).

These recommendations suggest that a videotext link be the heart of the system which farmers can enter at a level that best suits their needs and level of learning.

On entry, the farmer can obtain information (such as market information, simple financial advice, current and historical weather data, product information (Agfact), and

access other data bases and use it as a communication medium.

At the next stage, on-farm recording would occur and planning for the crop or financial year would be implemented. This is where field data would be entered into the model for future reference e.g., soil type, field size etc.

The third stage would be the tactical decision making phase where day to day management decisions occur. These will change according to weather conditions, predicted market prices etc. This level is the "true expert system" that has the ability to interact with the farmer, learn from its experiences and justify its decisions.

In my opinion the priorities should lie in developing a model for rice that the majority of farmers can identify with and see a benefit from. It is important to have the agricultural industry involved in development of the programme so that eventually it can be financially self-supporting.

With current budgetary restrictions on all public sector spending and the inevitable decline in support services, I feel an interim measure is necessary. It should be a matter of priority that information which farmers rely on for daily decision making be made available on a data base. This information includes the type of agronomic detail that is continually changing e.g., fertilizer rates and timing, weed control etc.

## FARMER EDUCATION

### BACKGROUND

My interest in Farmer Education stems mainly from:

- \* my desire to continually improve my farming skills and management through education, and
- \* being a member of the Murrumbidgee College of Agriculture Advisory Council. Although this council is primarily involved with courses for young people, it also has a role in the formulation of policy for the College's recently completed Farmer Education Centre.

The Farmer Education Centre (sometimes called the Short Course centre) was built with Government funds as a commitment to adult education. The MCA campus was selected as it already ran a small short course programme. At the same time as the Centre was built, office facilities were constructed on the site for Advisory Staff.

We now have the enviable situation of the Research, Advisory and Education facilities of the Department of Agriculture being together, including a resource centre specifically designed for farmer education. There are enormous advantages in having these sections together. The benefits accrue to all concerned, particularly to farmers attending short courses at Yanco.

Whilst a large audience of farmers attend short courses at the Farmer Education Centre, it is apparent that not all farmers have taken the opportunity to make use of the centre.

I believe there are two reasons why farmers are not taking full advantage of the Centre.

Firstly, there are limited resources available in terms of teaching staff, facilities etc. This situation will not improve in the near future, particularly in the light of the budgetary restrictions currently being placed on all government institutions. This means there is a physical constraint on how much the Centre can achieve.

Secondly, there appears to be a barrier preventing farmers from attending. This barrier may be caused by:

- farmers failing to appreciate the spin-offs of better education;
- farmers being reluctant to attend courses at an institution normally run by people that have not earned the respect of the farmer;
- farmers being unaware of their ability to learn.

These reasons may reflect the farmers' relatively low

level of education (in Denmark young farmers have to reach a certain level of education before they will be lent money to buy farmland).

So in 1985 we had the situation at the Yanco Agricultural Institute (the combination of Research, Advisory and Education) where we had some magnificent facilities and some excellent teaching staff, which were not fully effective in reaching their audience.

In that year, Mr Jeff Armstrong, a lecturer at the College, returned from a visit to Europe and presented his report to the College Council. In that report he outlined a visit he made to the Agricultural Training Board in England that had similar goals to those of the Yanco Agricultural Institute. As I felt that the system operating in the UK had possibilities for working at Yanco, I undertook a study of the Training Board.

#### OBSERVATIONS

The Agricultural Training Board (ATB) is one of many Training Boards in the UK set up to meet the training needs of their respective industries. The ATB is administered by the Ministry of Agriculture Food and Fisheries (MAFF) and is funded by the government (7.75 million pounds) and by farmers (1 million pounds). The government is moving towards greater cost recovery by increasing the farmers' contribution each year. It was interesting to note that farmers were actually paid to attend training sessions in the formative years - such was the government's view on the importance of upgrading skills standards in agriculture.

The ATB administrative headquarters are in London with a Training Centre more centrally located at the Royal Agricultural Showgrounds at Stoneleigh in Warwickshire.

The ATB was initially set up for craft or skills training and while this is still the major area of its work, management training is an increasing area of its activities. Any training at the centre is restricted to management type training i.e., financial, labour, time, stress etc. as opposed to on-farm skills training.

The ATB is currently reaching approximately 20% of the farming population with a very small staff of twelve at the National Training Centre (nine are involved in teaching and three as support staff). The philosophy of the Board is to attach itself to current infrastructure and not to develop another bureaucracy. It generally takes 2 - 2.5 days of preparation to run a one day training course.

The primary aim of the ATB is to make adult people in farming more effective by training. This training is carried out in farming areas by experienced farmers, or people in the service industries who the farmer can relate to. These instructors are paid by the ATB after they are trained at Stoneleigh. In this way the Board can keep control of the

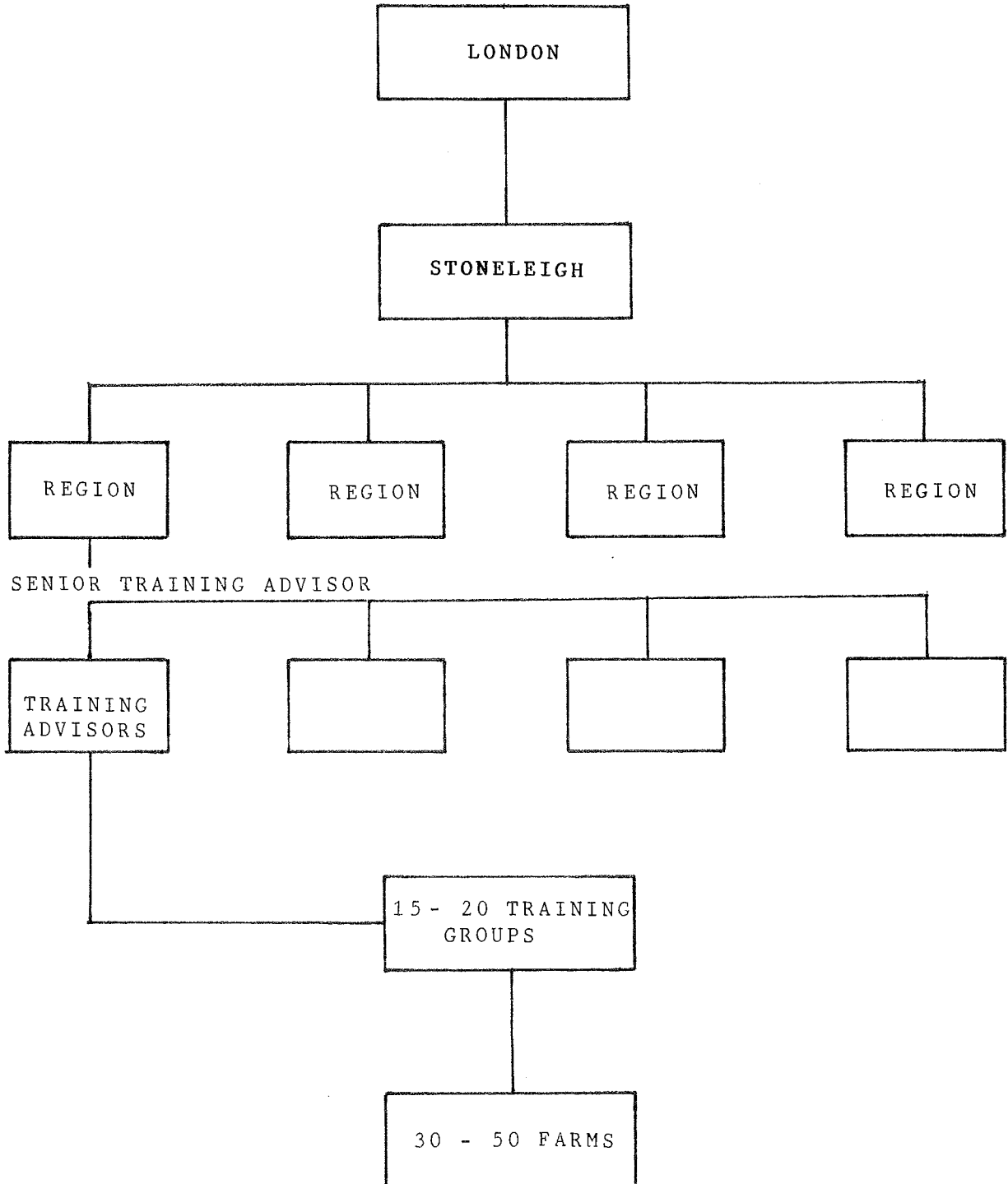
overall standard of the programme. The role of the ATB is one of support rather than one of imposing its own will.

The day to day organisation of the preparation and presentation of the courses is carried out by a Group Training Organiser who is normally a local farmer or farmer's wife (women have a large part to play at the grassroot level). They are paid on a time basis and are also trained in the skills of identifying training needs and organising a training programme. Organiser training is also carried out at Stoneleigh, with extra in-field training under the direction of locally placed Training Advisors. Figure One summarizes the structure of the ATB.



Figure One

THE STRUCTURE OF THE AGRICULTURAL TRAINING BOARD



Within each training group there are a number of farms e.g., Wragby, Lincolnshire Training Group has 34 farms with 120 potential participants.

There are 15 - 20 Training Groups within each of the four regions that make up the UK. Four Training Advisors, supervised by a Senior Training Advisor, service each region which are, in turn, serviced by the National training Centre at Stoneleigh.

It is sometimes difficult to identify the training needs of farmers as farmers may be reluctant to share their experiences or to show their perceived inadequacies. Consequently, the Group Training Organiser has an essential role in determining what are the training needs for a particular area.

Some key points in developing a Training Group are:

- identifying key people in the area. This gives the group an identity and a reference point;
- set up a meeting;
- make sure the person who will be the key figure (chairman or organiser) is credible;
- point out the costs to the farmers, and that they will be running the group themselves;
- ATB will be there to service and back up the group;
- membership should be as comprehensive as possible;
- groups should already have some form of social contact;
- training needs analysis should be carried out by individual visits to the employer;
- training should be done in the farmers' own environment, usually a pub, hall or house;
- try to raise the standard slowly, do not expect great strides in adoption and learning overnight;
- instruction must be practical, NOT by demonstration;
- instructor training is imperative and should be ongoing;
- the origin of the instructors is irrelevant, provided they have style and can impart the message. In the U.K. instructors from the armed services and commercial enterprises are used.
- evaluation of courses is important and Organisers are trained in post-course evaluation.

This system seemed to me to be a way of reaching a much broader cross-section of the farming community. The farmer is instructed on topics he requires, not something that a bureaucrat thought was a

good idea, in surroundings he is familiar with.

#### APPLICATION

On my return to Australia the rural crisis had degenerated even further. It seemed, from my own gut feeling, as well as from surveys and other people's comments, that some form of financial management training was necessary. Consequently, I wrote a submission to my local farmer organisation, The Ricegrowers' Association, outlining some of the ways I felt that farmers could improve their financial record keeping and analysis. These ideas were generated to a large degree from my visit to the U.K. and my experience with the ATB.

Consequently, the Ricegrowers' Association and the NSW Department of Agriculture have initiated a programme to assist ricegrowers in developing their skills in Farm Financial Management. A description of that programme which shows how the ATB concept can perhaps be adapted to Australian conditions, is in Appendix 1.

## CROP PRODUCTION IN THE UNITED KINGDOM AND EUROPE

### BACKGROUND

The period I spent in Europe and the U.K. corresponded with the production of winter crops (January to June). I did see some sowing of summer crops in France, mainly sunflowers and soybean. The bulk of my time was spent in the U.K. with two periods spent in Europe in March and May.

Although winter wheat is by far the most favoured winter crop (see table below), protein crops are becoming more significant, particularly in recent years as wheat prices have fallen and support for protein crops remains high. The short summer growing season means that there is little scope for summer cropping, except in southern France, Italy and Spain.

TABLE 1 - WINTER CROP AREAS IN U.K.

Wheat	2 million ha (winter wheat 90% of area)
Barley	2 million ha (winter barley 60% of area)
Oats	100,000 ha

It was disturbing to note the huge increase in sunflower and soybean production, and the potential for further expansion, in southern Europe. I saw soybeans being grown on a trial basis on the 45th parallel in France, equivalent to Hobart. Whilst Europe is not self sufficient in protein crops, the increasing production and the substantial support from the Common Agricultural Policy in promoting self sufficiency does not bode well for these crops in Australia. The drive for self sufficiency in protein crops also manifests itself in northern Europe with the swing to pea and bean crops. The returns from these crops are fast approaching wheat, particularly in marginal areas and second and third year crops. This must reduce the potential for export and consequently also reduce returns.

On the following pages, I have put together a production plan for winter wheat in the U.K., with notes on its relevance to southern NSW. It should be noted that there is a significant difference in climatic conditions between the two regions, particularly the temperature differential of winter and spring, and the subsequent explosive growth in early spring.

### OBSERVATIONS

Climate: severe winters mean that winter cereals have a short spring growing season as opposed to the long spring growing season in Australia. This is an important point when making any comparisons between the merits of the respective agriculture.

Soils: the typical European soil profile has a loamy, friable topsoil of varying depths and high levels of organic matter, overlaying chalk that allows excellent drainage. The soils have good water holding characteristics and are easily worked in most conditions. This is in contrast to our soils, particularly in the

irrigation areas.

Rotations: there is a far greater use of "break crops" in the rotation in Europe. They play an important part in breaking disease and pest cycles of the major enterprise.

There is a far greater variety of break crops e.g., in cereals. Some of the options are oilseed rape, peas, beans, grass and sugarbeet. In the vegetable areas, cereals are used as the break crop. As can be seen from these examples, legumes play only a minor role in rotations and on stock farms i.e., dairy and sheep, legumes are non-existent in the pastures.

Wheat Varieties: there is a wide range of winter wheat varieties. They are short strawed and are generally of low grain quality. In Britain, the emphasis has been on yield at the expense of quality and disease resistance. As the margins for wheat fall, these two criteria become more important as the differential between milling wheat and feed wheat is large (>\$20/tonne) and the cost of disease control is very high (\$160/ha).

In a contracting market there is no doubt that Australia has pursued the correct policy of emphasising quality and disease resistance in our breeding programmes. All the same, it was most frustrating to see crops that had very high yield potential in Europe, that were no better than our own on irrigation, with the exception that they were short strawed.

Seeding Rates: are very high compared to our rates, 150 - 200kg/ha compared to 100 - 120kg/ha on irrigation. Research has found that the main shoot gives higher grain numbers and grain weight than the tillers. Therefore, the objective is to have 175 - 250 plants/m<sup>2</sup> producing 475 - 550 ears/m<sup>2</sup> to achieve a 10 tonne/ha crop.

Nitrogen Fertilizer Rates: depends on soil type, history and crop potential but are generally between 200 - 250kg/ha of Nitrogen for high yielding crops, all applied in the spring. Nitram has been the main source but as Urea has become cheaper and spreading equipment more precise it has become very popular.

Nitrogen Fertilizer Timing: depends on quantity of the fertilizer but in all cases none at planting. The first application of about 40kg/ha of N will occur at mid-tillering with the remainder at stem elongation. Sometimes this later application is split between stem elongation and second node, visible. Milling wheats are sometimes given a late application at late stem extension but before booting to increase protein (50kg/ha extra N adds 0.6% protein).

As the majority of fertiliser is applied at stem elongation, a lot of work is being done to determine the most effective time within this growth stage. Formation of the terminal spikelet on the developing ear signals the start of rapid stem extension. The first node is now just detectable and the fertiliser should have been applied 7 - 10 days before this stage i.e., when the first node is approximately 1 - 2cm from the crown, just below the soil surface. This stage is difficult to identify in the field, with microscopic inspection the only accurate method. Farmers and advisors are being trained to apply these techniques of identification to commercial

crops.

Disease Control: the advent of high yielding, dwarfed varieties and the use of Plant Growth Regulators (PGR) has meant a micro-climate more conducive to the development and spread of disease. Consequently, there is a wide range of chemicals available and spraying occurs at regular intervals. The application of PGR's and foliar nitrogen is combined with a fungicide spray.

Plant Growth Regulators: even with the advent of dwarfed varieties, the use of PGR's is still universal in high yielding winter wheats and winter barley. Chlormequat is still the favoured chemical in wheat and applied at mid-tillering and stem elongation in a split dose. Ethephon may be used during node development to shorten the inter-node in high yielding varieties that are susceptible to lodging. Ethephon is used in barley in preference to chlormequat.

PGR's are being tried on oilseed rape to overcome lodging. The benefits have not entirely been quantified. This does, however, highlight the approach in Europe in an environment which is conducive to plant growth and subsequent lodging. European farmers are much more prepared to control plant growth in the interim while the breeding programme catches up with shorter strawed varieties.

Because it is imperative that the farmer can identify the various growth stages of his crops, there is a lot of emphasis placed on crop growth stages by educational institutions and advisory services.

Machinery: the most impressive advancement was in the area of fertiliser spreaders. Over 50% of all spreaders would be the air assisted spreaders that use the same principle as air-seeders. The fertiliser is delivered to distribution heads placed at regular intervals along a boom. Their accuracy over a wide range of fertilisers of varying quality is unsurpassed.

The need for frequent spray operations has meant that the technology of spraying techniques has advanced markedly in the last few years. Of particular interest in Israel was the air assisted boom spray. A long sock carried pressurised air from a fan to the nozzles where it helped in getting chemical into dense swards e.g., cotton.

Also of interest was the vertical side knife for harvesting lodged and tangled crops. It was used on oilseed rape and for badly lodged crops of cereals.

#### APPLICATION

I believe that Australian farmers should be using break crops in their rotations a lot more to control disease and pests. We now have a much larger range of crops to choose from, although most of these crops need a deal of improvement to make them viable alternates.

For irrigation areas with the potential to achieve high yields for cereals, the biggest limiting factor is still straw length and thickness. Until the short, thick strawed varieties are available, winter cereals will always be a marginal crop on irrigation. It is

essential that the breeding program treats this aspect with the utmost priority.

In the area of fertiliser application, there is a lot of scope to improve the timing of fertiliser for all crops. This is an area receiving high priority in the rice industry as correct timing is as important as the amount.

The quality of chemical application in Australia leaves a lot to be desired when compared with Europe. It is an area that is of increasing importance with the increased use and cost of chemicals.

I believe there is some scope for the use of PGR's, particularly where crops have high yield potential e.g., in irrigation or high rainfall areas. Their use will fill "the gap" until breeding programmes can give farmers the varieties that can express their full potential in the absence of lodging.

Plant growth stage identification should play a major role in any agronomy training as almost all management decisions after plant establishment revolve around knowing the stage of plant growth.

Generally speaking, I was impressed with the range of machinery the European farmers had, but the construction of the majority of the equipment was far too light to survive the rugged conditions that our machinery is exposed to. By far the most impressive machine was the air assisted fertiliser spreader that will have a great benefit on areas where precise rates of fertiliser are used over large areas.

## THE EUROPEAN COMMUNITY AND THE COMMON AGRICULTURAL POLICY

### BACKGROUND

The Nuffield Scholarship entailed a visit to Brussels to examine aspects of the Common Agricultural Policy (CAP) and to talk to people who initiate and implement policy. This was preceded by a briefing session at Wye College under the direction of Mr Ian Reid of the Centre for European Agricultural Studies.

The CAP was also discussed informally with numerous agropolicitians and farmers who were vitally concerned with the CAP. All this gives a Scholar the opportunity to form a view on this complex subject.

### OBSERVATIONS

The majority of Australian farmers would hold the view that European farmers are living in clover because of the support they receive for their products, and that we are the last bastion of the free enterprise, non-subsidised farmer.

Neither statement is true. The majority of Australian agriculture is supported in one way or another to differing levels. It is inevitable and necessary for any country's economy that there be support for various industries in varying degrees. The question is HOW MUCH SUPPORT.

It is worth reflecting on the original objectives of the Common Agricultural Policy as spelt out in the Treaty of Rome in 1957:

1. to increase agricultural productivity;
2. to ensure a fair standard of living for the agricultural community, particularly by increasing the individual earnings of people engaged in agriculture;
3. to stabilize markets;
4. to assure reliable supplies;
5. to ensure reasonable consumer prices.

The CAP has been spectacularly successful in achieving its objectives, except possibly with respect to the last objective.

Various people have attacked the excesses of the CAP. The response by most farmers was "We are only doing what the politicians and people wanted." To me their response is understandable - they have only done their job too well.

It must be understood that the original aim of the Europeans was to have a united Europe in all aspects i.e., diplomatic, financial, militarily etc. It has only been with agriculture that the unity has reached the level that was originally conceived. The CAP now consumes 75% of the European Communities (EC) budget. So it is fair



to assume that agriculture is the integral part in European unity.

All European farmers are not rolling in clover. It is estimated that approximately 10% of French and British farmers are technically bankrupt. Land values do not reflect the unsupported earning capacity of the land. This is an inevitability of long term industry support as the large returns for agricultural products are capitalised into land values and equipment. In some situations such as Welsh hillfarming or grain farming in the South of England, the small farmer is battling to survive because his scale of operation does not allow him to support the rising level of costs.

The following table highlights this problem as well as showing how the larger farmer, on good soils, is making excellent returns.

Margins for Winter Wheat	Average Yield Under 100 ha	High Yield Over 200 ha
Yield (tonnes/ha)	6.75	8.5
Output (\$/ha)	1320	1670
Variable Costs (\$/ha)	450	450
Gross Margin (\$/ha)	870	1220
Total Fixed Costs (\$/ha)	1000	850
Net Profit (\$/ha)	-130	370

These figures show the problem of the smaller farmer who is in a marginal area in terms of soil and climate. The disparity would be greater (GM of \$1010/ha compared to \$500/ha in the example) if the small farmer was below average yield (5.0 t/ha) and the larger farmer was growing milling wheat.

The small and marginal farmer is given extra support over and above the "average" farmer, but even this extra support is becoming insufficient.

#### THE OPPOSING FORCES IN CAP REFORM

There is no doubt that the winds of change are moving through the CAP, which is best illustrated by the introduction of milk quotas and arguments on how over production of cereals can be wound back.

Basic reform of the CAP is being opposed by the farming community generally, for the very good reason that they want their level of income maintained at real levels. On the other hand there is a mixture of interested parties who want to make major reforms to the current policy.

The farmers arguments are:

1. We are achieving the objectives of the CAP, why should we be punished.
2. The CAP is a small burden on taxpayers and national budgets. The total cost of CAP represents only 2.5% of total spending on food, although this conveniently forgets the hidden costs to the taxpayer of CAP. Just over half the EC's budget is financed by a small Value Added Tax (VAT) of 1.4% on all goods and services, the balance coming from levies and duties on imported agricultural products and manufactured goods.

The hidden costs to the community are highlighted by the Bureau of Agricultural Economics study on the "Agricultural Policies in the European Community". BAE (1985) "Agricultural Policies in the European Community", Bureau of Agricultural Economics Canberra.

3. It would be aesthetically disastrous to the countryside to force people out of agriculture.

Farmers still have enormous political clout. Just ask the French Agricultural Minister who spent six hours bailed up in a pigsty by irate farmers. This influence varies from country to country e.g., British farmers exercise decreasing influence over their politicians because they are such a minority (2.7% of employed population) while Italian farmers represent 12.1% of the employed population and consequently are a significant voting force.

The opposing arguments are:

This bloc is represented by politicians, the treasuries, environmentalists, taxpayers and other people who feel the excesses of the CAP are detrimental.

1. Pressure on the CAP budget for maintenance of the status quo (over 10% of the budget goes towards the cost of storing surpluses) and the general belt tightening by all countries, means that each country is scrutinising its contribution and strong pressure is being applied by treasuries to reduce expenditure on the CAP.

France has joined West Germany and Britain as nett contributors to the budget for the first time. This is significant given that it is easy to push for increases and accede to your farmers' concerns when it does not cost anything.

2. The environmental issues that are being highlighted include:
  - straw burning and the subsequent air pollution. Because the growing season for cereals is so long (10 months) there is great pressure to remove the residual straw after harvest to prepare for the following crop. The cheapest and most convenient way is by burning, but because smoke is so visible it arouses enormous anti-farmer feeling and has led to

stringent limitations on straw burning. Most people concede that public pressure will lead to an eventual total ban.

- the large amount of nitrogen used in Europe in agricultural production has led to nitrates pollution of the underground water reservoirs. There is no doubt that levels have increased, the question being asked - is it detrimental?
  - the pollution of streams and waterways by the effluent from dairies and piggeries has increased dramatically in recent years in association with an increase in the number of intensive livestock operations. Farmers maintain that the people causing the problem are in a small minority and that this problem can be overcome.
  - the removal of trees and hedgegrows to accommodate larger machinery and make more land available. To the environmentalist and general population this is the most obvious change in the countryside. Given the affinity that all people have for the countryside it is the most emotional. Farmers are responding to the problem by planting up and becoming more aware of the problem.
3. Mass media coverage of the CAP has led to a greater public awareness of the excesses of the CAP. This awareness has led to greater public pressure against the CAP.

Politicians are now coming out of the cold and publically denouncing the agricultural policies of the Community. The Conservative MP, Sir Richard Body, talked of the "mischief of the CAP" and called for a major change in agricultural policy in an address commemorating the repeal of the Corn Laws.

So what is, and what will be, the result of the pressures being applied to the CAP?

Any changes proposed by the European Commission, are approved by the Council of Ministers and finally ratified by the domestic Parliaments. Therefore, it is extremely difficult for any major change in policy to be implemented, particularly if it is contentious in some countries.

Consequently, I see change coming very slowly and rather by accident than design. This was highlighted with the decision on reducing milk production. Quotas were introduced as the last minute solution to a problem no one could come to terms with. Although the problem of cereal over production is being addressed at the moment, only minor changes are being promoted that will not make any drastic difference to production. I envisage that quotas will also be introduced in cereals because a consensus will not arise.

So, although there are pressures being applied within the Community to halt over production by one means or another, I see this taking a long time to achieve.

Farmers' incomes will be maintained, although the contribution by the CAP will decrease, with the difference being made up by

national "top-up". This is already occurring as illustrated by the West German government's increased support to their farmers to take account of an unfavourable exchange rate movement.

#### RAMIFICATIONS FOR AUSTRALIA

The EC has stated that it will reduce surpluses to manageable levels in 3 years. This will mean greater pressure on export markets. The question is - where will they dispose of the surpluses, and when?

Of concern is the entry of Spain and Portugal to the Community, as they have climates that are similiar to a large part of southern Australia. Contrary to my earlier impressions, Spain has a well coordinated, effective policy. In the long term it will be a major threat, particularly once the support it receives feeds into improvement in infrastructure and management techniques. For example, sunflower production is expected to double in the next 5 years.

Generally speaking, the short term will be difficult as the EC tries to off-load its surpluses onto world markets. In tandem, will be a winding back of production, so that although access may not improve, the EC will not be competing on world markets with subsidised products, after the period of disposal.

## IRRIGATION TECHNOLOGY IN ISRAEL

### BACKGROUND

I was able to take the opportunity to visit Israel after the NSW Minister of Agriculture, Mr Jack Hallam, arranged an introduction to the Israeli Ministry of Agriculture. Israel was an important addition to my itinerary as it is regarded as being at the forefront of irrigation technology.

I visited Israel in May, 1986 and was accompanied by three other Nuffield scholars. I shall give an outline of my itinerary and the impressions I gained.

### OBSERVATIONS

#### Day 1

We were welcomed at the Ministry of Agriculture by the Public Relations Officer, Ms Pnina Friedlander, and introduced to the Director of Irrigation and Soil Field Service, Mr Moshe Boaz. He, along with three of his officers, briefed us on the following points:

1. Structure of Agriculture - divided into three types:
  - (i) Moshav or Co-Operative where members live and work separately in a settlement but purchase and sell together. There are 100 - 200 families per Moshav and they account for 40% of agricultural production and 3.7% of the population.
  - (ii) Kibbutz where members live and work together in a voluntary democratic community. They account for 40% of production and 2.8% of the population. There is a significant part of the kibbutzim income derived from secondary industry, generally associated with agriculture e.g., manufacture of drippers, sprinklers, filters, etc.
  - (iii) Private farms that account for 20% of production and up to half are Arabic. There are some private company farms.
2. Marketing - the domestic market is subsidised and production regulated for most commodities with the exception of all but a few vegetables and fruit.

Despite support for export marketing being dropped 7 - 8 years ago, production and earnings are increasing. Vegetables, fruit, flowers and cotton are some of the major export products. Tunnel houses are becoming popular as they allow production out of season. A result is improved quality and increased production.

There is a national export marketing organisation called

AGREXCO, with the brand name "Carmel", that has a terminal at Ben-Gurion airport and sea terminals at Ashdod and Haifa. The brand name for export oranges is Jaffa.

There is considerable disquiet amongst producers towards Agrexco as they believe that they are not getting a fair return for their produce (only 10% of the final return for oranges). However, compared to Australia, I believe that the concept is generally working to their advantage.

3. Advisory Services - Israel is divided into 10 regions, with 2 sub-regions per region. The service is divided into:

- (i) administration
- (ii) extension services handling communication, staff training and farmer education.
- (iii) two field service departments made up of crop specialists and specialists in irrigation, machinery, plant protection and farm management.

4. Research - the major irrigation research is carried out at the Volcani Institute with field experiments conducted by advisory and research. Researchers, advisors and farmers have an equal say in the formulation and direction of research.

5. Agro-Political Organisations - their role is to liaise and bargain with government, to advise farmers on financial matters and participate on marketing boards. Regional Centres deal with local problems such as marketing and processing of products.

This involvement, by the agro-political organisations, in the production side of agriculture, as well as the politics, is an important difference from Australia. Our producer organisations should play a role in supporting their members in advice on technical matters.

6. Salinity - this is becoming an increasing problem as water is continually re-used (chlorides are increasing 2mg/litre/year). This is accentuating the swing to drip irrigation as it allows chlorides in the soil to be leached away from the root zone by the "onion effect". With drip irrigation there is not the damage to foliage that may occur with spray.

Drip irrigation is allowing water with salt levels of 3,500 ppm to be used on melons and tomatoes and up to 6,000 ppm for cotton. This compares with salt levels of approximately 350 ppm in the Murrumbidgee River at Narrandera.

#### Day 2 and 3

Private tours to Jerusalem, Dead Sea, Jericho, Nazareth,

Tiberias and Sea of Galilee.

#### Day 4

Travelled north from Tel-Aviv to the Hefer valley on the coastal strip accompanied by the local advisory officer. He services 30 moshavim and 7 kibbutzim in the valley that produce oranges, cotton, vegetables and flowers on predominately sandy soils.

We visited an orange packing complex and animal feed centre at a co-operative settlement. Even though the grading and packaging of the oranges is fully automated to supply processing and export oranges, there is also hand sorting of export oranges to maintain a top standard.

At the animal feed centre, grain is stored, milled and blended with hay and ensilage for the co-operative members. Citrus pulp from the processing plant is ensiled with straw for blending for a dairy ration. Are we getting enough value from pulp in Australia?

We visited a packaging plant for flowers in the industrial centre of the valley. This plant receives flowers from the smaller growers for packaging or acts as a delivery point for larger growers. From here the flowers are sent to the Agrexco terminal for export.

Roses, carnations, protea, ruscus are some of the flowers grown under glass or plastic. We visited a rose farm where the roses are grown under plastic and in rockwool (hydroponics). The rockwool and dripper lines are enclosed in plastic and the drippers supply full fertigation as well as controlling pH and chloride levels. Carbon dioxide is injected into the plastic house to control photosynthesis.

The farmer grades and packs his own roses between November and Mother's Day for export to the Netherlands.

We visited a feedlot dairy where cows are on concrete and under a steel roof shed with no sides for their entire life, in a climate very similiar to Australia. The farmer travels in to the co-operative feed centre daily to receive the ration for the cows. The production figures are outstanding, with average production in 1985 being 9,340 litres per cow per annum.

#### Day 5

Travelled south to the Gaza Strip and Kibbutz Yad Mordekhay where we saw cotton and maize under drip. We were accompanied by representatives of Netafim and Agridev.

An interesting concept is the "compact root zone" - cotton is planted late to inhibit development of the taproot and water is only supplied to the top 50cm. This means the plant will develop a compact root zone that has much less above ground growth but has an increased cotton yield with a

shorter growing season i.e., greater water efficiency yield.

We then travelled to Be'er Sheva and the Kibbutz Hazerim in the Negev desert where Netafim have one of their three factories for the production of irrigation equipment. After a tour of the factory we inspected an avocado plantation being grown in saline soil, but protected by the "onion effect".

Later in the day we visited Kibbutz Mishmar Ha Negev where vegetables and flowers are a major part of the cropping programme. They also have the most modern dairy in Israel with 600 cows milked on a fully automated and computer controlled system. The only human input is the putting on of the milking cups.

We had the opportunity to sleep overnight and sample life on a kibbutzim.

#### DAY 6

We were taken on a visit to the Ruppon Institute north of Tel Aviv. The Institute is a vocational training centre for the kibbutz and moshav settlement. With the swift development of industry over the last few years, to the stage where it produces more than half the output of the kibbutzim and moshavim, it has become necessary to emphasise management and economic problems in the curriculum.

The fact that it can adapt so quickly to a changing environment is an outstanding feature of Israeli agriculture.

We then visited Kibbutz Tel Yishaq to inspect an experiment on avocado trees to determine at what level chloride became a limiting factor in yield when nitrogen is added to neutralise the chloride. Increasing salinity in irrigation water has encouraged this research with crops being compared to find the most tolerant. In this experiment three rates of chloride (110, 170 and 230 mg. per litre) and three rates of nitrogen (30, 50 and 70 mg. per litre) are used to determine whether the nitrate ions will neutralise the chloride ions at high chloride levels. At this stage it appears that although the number of fruit is reduced, individual fruit size is increased so that the nett return is greater.

Here I saw the ceramic cup extractor, an instrument used to measure the contents of the water solution in the soil. It works on the same principle as the tensiometer, the soil solution passes through a ceramic cup into a vacuum in a glass container. This can then be extracted and the solution tested in the field for salinity levels, nitrogen levels etc. or sent to a laboratory for further analysis.

Later in the day we visited Kibbutz Shefayim and saw an irrigation management package in operation. This program controls the whole operation of a 500ha arable farm with four wells and irrigated by sprinkler and drip. It determines



water use, opens and closes valves, changes watering schedules according to water supply and weather etc.

The major problem with such a sophisticated system is the filtration of the irrigation water. Consequently, they have developed some excellent filtering devices.

In Israel where labour is limited and the scale of crops is large, this type of automation is essential. In Australia we have not reached the same degree of sophistication and we do not have the same limitations, so I see little application for this type of technology with the exception of some isolated cases.

#### Day 7

Highlight of this day was the visit to the Agrexco terminal at Ben-Gurion airport, where we saw the arrival, quality inspection, packaging, loading and storage of produce for export.

It was very impressive to see the national approach to marketing with supply and quality co-ordinated. Approximately 25% is shipped by air, but because of the cost of air transport, the trend is to improve shelf life so produce can travel by sea and so increase returns to growers.

An outstanding feature was the quality control. Farmers have a system of quality control that is checked at the departure terminal and again at the arrival point before being sold. This way, only the products that consumers want arrive and at a supply rate that keeps returns at an acceptable level.

Growers receive their proceeds by a pool payment about two weeks after sale. Cost to the grower is between 4.5% and 5% of the CAF price.

The Director of the Dairy Cattle Division spent some time outlining feeding strategies for feedlot dairy cows. Of particular interest was the extensive use of citrus pulp in rations.

The Netafim company gave us a tour of Kibbutz Maggal north east of Tel Aviv. This kibbutz has a factory for irrigation equipment as well as diverse cropping programme including bananas, avocado, cotton, vegetables etc.

We also had the opportunity to see what Arab farmers living close by had achieved. They were extensively using tunnel houses and drip technology to achieve some extraordinary yields of vegetables e.g., 200 t/ha/year of cucumbers.

#### Day 8

This was highlighted by a visit to the Volcani Institute and discussion on the future direction of irrigation

technology.

We finalised our Israel trip with a visit to Kibbutz Giv'at Brenner south of Tel Aviv where we saw "Network Solver" demonstrated. This programme gives many options on the hydraulic design of a pressurised irrigation system. It was developed on the kibbutz and is being sold on a commercial basis. I believe that this type of decision making process is enhanced immeasurably by the use of computers that allows multiple options to be examined quickly.

#### APPLICATION

It is apparent that the irrigation technology used in Israel has a large part to play in Australia, particularly in the area of intensive agriculture. This technology is already being applied here to some extent, but I suspect we have yet to see the full extent of these irrigation practices in the areas it is most suited for.

It is essential that the type of programmes such as "Network Solver" be available to Australian farmers so that the many options on design criteria can be examined and the most economic design be selected.

I predict that the use of tunnel houses will increase dramatically in the next few years for out of season production of fruit and vegetables, as well as other uses such as livestock housing.

I suggest that citrus pulp has a role to play, particularly in dryland areas surrounding irrigation where citrus is processed. It seems good value to ensile a waste product that has similiar qualities to grain.

The Ceramic Cup Extractor has a role to play in irrigation areas, particularly in determining nitrogen requirements in a growing crop.

One of the reasons that Israeli Agriculture is so successful is that they have been able to adapt to changing circumstances so quickly. This is due largely to the close rapport between research, advisory and farmers that keeps research projects meaningful so that they invariably play an immediate role in increasing productivity.

It is a lesson that all concerned in agriculture in Australia can learn.

Undoubtedly the most important lesson to me was the way that Israeli agriculture is organised. The national co-ordinated approach means that not only can they put a consistent quality product on the market but they can go a long way towards having some control over that market.

I accept the criticism of many farmers who commented

that they were not getting their just returns from the marketing organisations. This will be inevitable as the organisation grows and becomes bureaucratic. Grower control and input from the grassroot growers are essential in keeping the executive in check and making sure that growers get full benefit.

In Australia, unless we are a major corporation, we can never hope to achieve equity in marketing by ourselves. We have to work together to achieve our just reward.

## FARM BUSINESS MANAGEMENT

### BACKGROUND

I was extremely fortunate to, as a part of my scholarship, attend an Advanced Farm Business Management Course run by the Worshipful Company of Farmers (WCF) at Wye College, the agricultural faculty of London University, Kent. This was the 36th course organised by the Company and run by the Department of Agricultural Economics at the University.

THE WORSHIPFUL COMPANY OF FARMERS - Whilst the connection between agriculture and the City of London is long standing, the origin of the Company of Farmers is comparatively recent, having grown out of the organisation of the Red Cross Agricultural Fund of 1939 - 46. The Company received the Grant of Livery in 1952 and is 80th in the list of City Companies (trade guilds e.g., goldsmith, locksmith etc).

Mindful of its aims and objectives, the Company decided in 1962 to initiate Advanced Courses in Farm Business Management. At that time the knowledge and financial resources of the Company were inadequate to launch a scheme alone, so help was sought from friends including the Trustees of the Nuffield Foundation. Their response was immediate and enabled the court to approach Wye College, University of London.

The first course, made up of nine members was held at Folkestone in early 1963 under the direction of Mr Ian Reid. From then on the course became an annual event and doubled in size. Demand for places continued to grow and in 1969 it was decided to run an additional course in Northumberland. Experience, however, proved the advantages of having one location and from then on two courses were held at Folkestone each winter up until 1975. During this period the courses became firmly established and gained their unique place in British agriculture. Horizons were widened and places were found for those with backgrounds ancillary to farming including banking, land agency and marketing. Farmers from the E.E.C. were also invited to attend, along with an Australian and New Zealand Nuffield Scholar on an alternating basis since 1984.

This latter move was one of the factors that inspired the Company to participate further in the industry's forward thinking and to the creation of the Centre for European Agricultural Studies at Wye. Since 1976 the Centre has become the home of the courses now held under the direction of Mr Peter Newbound. Each lasts three weeks and whilst a charge is made, nearly 75% of the overall cost is met by donations from the Company and members of earlier courses, along with grants from the Ernest Cook Trust, the Clan Trust and the MacRoberts Trusts.

Over the years, some 500 persons have attended from throughout the UK and Europe, Australia and New Zealand.

Friendships have often become permanent with many courses holding regular reunions.

COURSE OBJECTIVES - The course is concerned with Management. Management means not only determining the objectives of a business and guiding it towards those objectives, but also seeing and thinking about the business against a changing social and economic background. The decline in economic activity virtually throughout all industries has significantly underlined the important role that Management has to play in adapting to changing conditions. New methods of management will enable survival under difficult changing conditions. Some examples of change are:

- \* in Agricultural policy affecting specific producers (such as milk);
- \* increasing awareness of environmental issues;
- \* the public "image" of agriculture;
- \* increasing dietary and nutritional awareness.

During the course emphasis is placed on concepts underlying the various contributions which can be made to Management by economics, sociology, history, psychology, mathematics and the natural sciences. These may help Management to see its role in a new light and think afresh.

The course also provides necessary information, concepts and skills for use by Management. The practice of Management is concerned with taking both decisions and actions, and must therefore, be considered as follows:

1. Identifying and exploring opportunities and problems;
2. Formulating alternative course of action to exploit opportunities or solve problems;
3. Evaluating these alternative courses of action;
4. Choosing and implementing one of these alternatives.

Equally important is the opportunity during the course to discuss not only matters of technical importance, but also values and attitude towards social and personal responsibilities which inevitably affect all these decisions and actions.

COURSE OUTLINE - The course sets out to describe and integrate the following:

Business Planning - uses techniques of analysis and evaluation which can help in making decisions. Emphasis is placed on the setting of objectives and the development of alternative courses of action as a preliminary to planning.

Management Accounting and Finance - is the collection and use of relevant data essential for operational decisions, for controlling the performance of the business, for dealing with the problems of organisational form and tax planning.

Marketing and Policy - deals with the internal and external factors which affect planning and operation of marketing of farm products. Techniques such as market research and advertising are considered.

Human Relations - examines the behaviour, thinking and values of people acting individually and collectively, and the problems of obtaining industrial understanding and co-operation. It is thus concerned with communication and motivation.

General Environment - A discussion of the various aspects of the economic and social environment, within which the agricultural industry operates.

#### OBSERVATIONS

Aside from the course content this was an excellent opportunity to meet and to get to know intimately a diverse cross section of managers involved in all facets of agriculture. These introductions were invaluable as contacts for later visits.

The quality of the lecturing staff and guest speakers was excellent and they were obviously selected to add to, and provoke, discussion along different lines of thought.

The format was different to what I had experienced in the past in that there was a lot of group involvement in the analysis of certain subjects. The syndicate work in the marketing and labour relations exercise was new and invigorating, a great learning concept.

The area that I personally found most stimulating and thought provoking was Human Relations in Business. This is an area that has been neglected in management in the past, but was shown to have a great impact on the success of any business.

The agricultural policy area was an invaluable insight into the machinations of the Common Agricultural Policy (CAP) and subsequent discussions with the course participants both in lectures and socially, gave me a much better appreciation of the problems the Europeans face in coming to grips with the surpluses they have produced.

All in all, a tremendous introduction to European and particularly British agriculture that left me in a much better position to look at my business objectively and re-assess my priorities.

## APPLICATION

Because of the large distances involved and the relatively small number of managers in Australia it would be foolish to suggest that such a diverse and long course as the one at Wye could be run on an annual basis in Australia. I believe that there is a great need to improve management skills in Australia. It is hence imperative that an attempt is made to present the contents of such a course. This could be done in a sequential course or in a format that a manager could afford the opportunity to attend over a period of time.

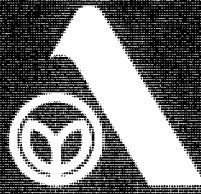
Of course some of the subjects are already being covered in short courses, particularly in the area of business planning, management accounting and finance, although I believe there is scope for this type of training at a level for the larger property managers.

The areas I see great need for improving our skills is in the area of marketing and human relations. I would envisage that a course could be run on one or more of these subjects at separate times over a year or number of years and managers can opt to attend the course of their choice when it best suits their workload. The final goal, however, should be an attempt to improve their overall management skills.

APPENDIX







INFORMATION FROM  
DEPARTMENT OF AGRICULTURE  
NEW SOUTH WALES

# FARM FINANCIAL MANAGEMENT WORKSHOP PROGRAM FOR RICEGROWERS

INFORMATION SHEET

Sheet One: EXPLANATION OF THE PROGRAM

## SUMMARY

The Department of Agriculture in association with the Rice Growers' Association is implementing a program to assist rice growers in developing their skills in farm financial management. The particular skills involve keeping accurate records of the financial transactions of the farm, and being able to use these records to predict when money will enter and exit the farm business and for what reasons.

The program is based on two, seven-hour workshop sessions held at convenient locations for small groups of farmers and their families. Each workshop will be based on a package of materials developed for the program, with the package being presented to the group by a farmer who has attended a training workshop.

In this manner it is hoped to reach about forty groups of 10 to 20 people per group in the rice growing areas. After completing the two workshops, the groups may wish to develop the program further and tackle more complicated farm financial management skills. Whilst the program is initially being developed for rice growers, the experience and materials generated by the program will be readily adaptable to other sections of the farming community.

A series of Information Sheets will be published throughout the program as a basis for informing, recording and reporting for all interested people.

A more comprehensive explanation of the program follows.

## BACKGROUND

In mid 1986 the Rice Growers' Association held a series of seminars at which its members heard details of the worsening economic climate. It was emphasized at these seminars that growers should improve their financial management skills. In response to the seminars action was taken by growers;

- in Coleambally, a farming family, Doug and Marg Sutherland, organized and presented a workshop on record keeping and budgets for other growers.
- in Wakool, the Dept of Agriculture was asked to present a series of workshops on record keeping and budgeting.
- Jim Geltch, a farmer from Whitton, put a submission to the Finance sub-committee of the RGA. In it he suggested that the industry tackle the problem by organising farmers who keep a good set of books to help groups of other farmers set up their books in workshop sessions.

The RGA accepted the submission and asked Farmer Education Services of the Department of Agriculture based at the Murrumbidgee College of Agriculture to assist growers in implementing Mr Geltch's plan.

The Dept of Ag. was able to respond quickly to this request as it had been working towards a similar program as evidenced by;

- one of The Department's major Corporate Aims is the committment to assisting farmers in increasing their financial management skills.
- earlier discussions with irrigation farmers had revealed that they felt that their financial management skills were in need of improvement.
- a survey of bankers and accountants by the Department revealed that few farmers kept adequate financial records.
- the Farmer Education Service, in conjunction with Regional Economists, College Farm Business Management lecturers and District Agronomists, had held several successful Record Keeping workshops around the region.
- the Department had assisted at the Coleambally workshop and was also assisting a group at Yamma to organize a similar event.

Terry Davis, Lecturer at the Murrumbidgee College of Agriculture, will co-ordinate the program.

## THE PLAN

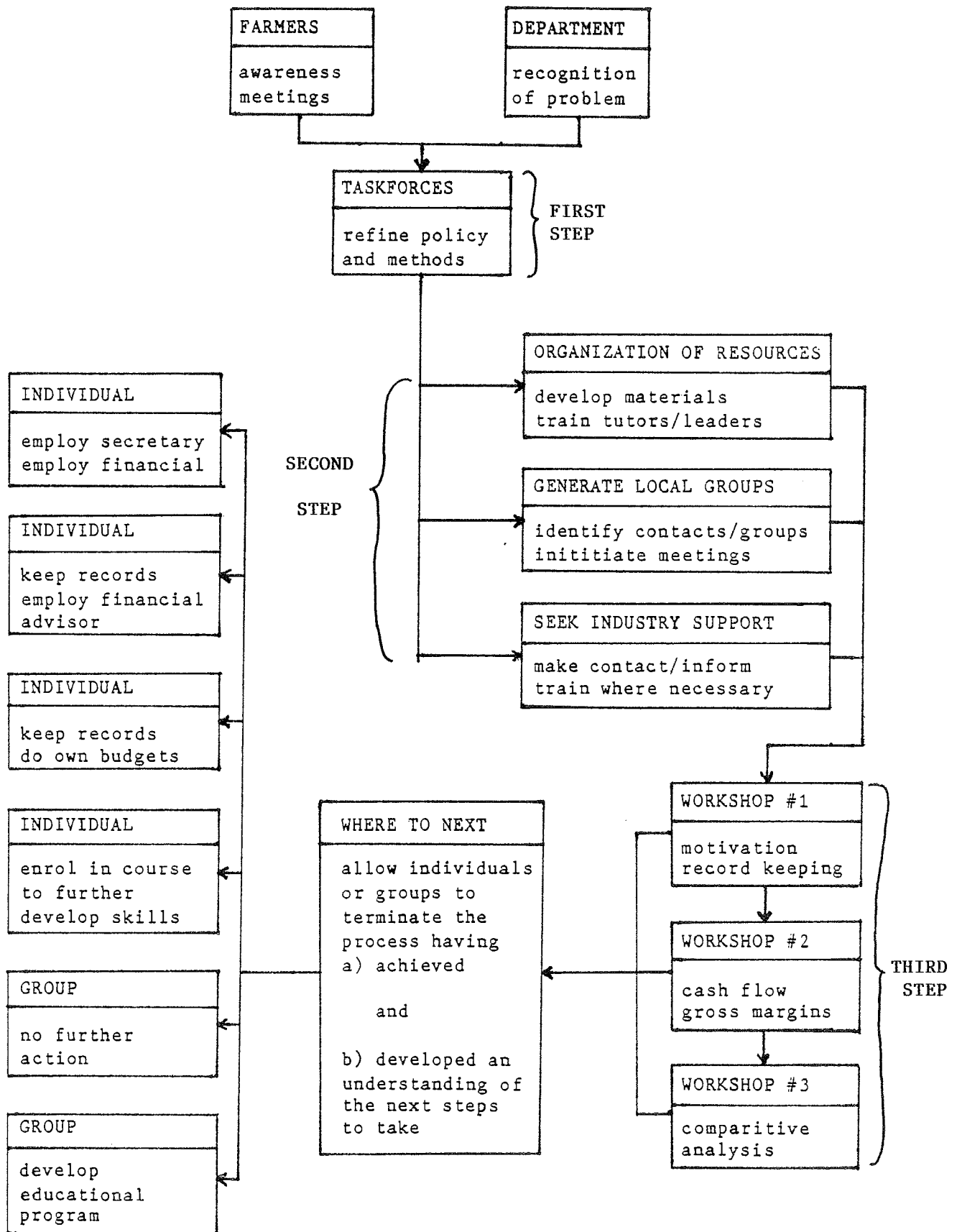
The program is based on the philosophy that farmers are seeking to improve their situation via acquiring new skills/knowledge and will be most receptive if:

- the learning program is locally initiated.
- the activities are held locally.
- the activities are of short duration and held at a time suitable to the farmer.
- the tutors are not outsiders.
- farm women are involved to a greater extent.
- the activities start with basic principles and practices.
- the individual is able to acquire more skills at follow-up activities.

The diagram on page three may help you to understand the various steps in the plan.

The first step has been to form and use two "taskforce" groups (one North and one South) to guide the program in its application to the local areas. The southern taskforce decided to use the existing rice discussion groups as a basis for the financial workshops. It was decided to ask the District Agronomists to briefly discuss the program with group members and assist in identifying individuals who would act as the tutor for the group. Training courses for the tutors will be held at Deniliquin.

PATHWAY OF ACTIVITIES



(4)

The Northern taskforce decided to establish new groups for the workshops. Farmers from the taskforce have contacted 27 other farmers who have agreed to act as tutors. Some rice discussion groups may also want to participate, principally those in the western areas of Warrawidgee and Wah Wah.

The second step has several parts. Firstly, a Package Designer is to be engaged to put together the materials which will form the basis of the workshops. This person should have an expertise in educational approaches to the presentation of materials. The package will be tested in a workshop situation and any necessary changes made before presentation to the tutors.

At the same time as the package is being put together, all tutors will be contacted and meetings held to discuss their role in the program. These meetings should ensure that all tutors are fully aware of what is expected from them and that they are willing to accept the role. Training workshops will be held in early 1987 where the Record Keeping package of materials will be presented to the tutors. These workshops will be similar to the "Record Keeping" workshops that the tutors will present to their local groups, but will also provide training in workshop presentation. Each tutor will be given the kit of educational materials and a 'manual' on workshop presentation.

The final part of the second step of the program will be an explanation of the program to bankers, accountants and other interested bodies. It is hoped that their support for the program can be enlisted and a contact list established to help tutors in organizing their workshops.

The third step will involve each tutor inviting farmers from the local area to attend the workshop on Record Keeping, organizing a suitable time and venue, and conducting the workshop.

After the Record Keeping workshops have been conducted, the Budgeting tutor training workshops will be held. Following this, the tutors will organize workshops on this theme.

The program as it is currently planned will finish on completion of the second workshop. However some groups may wish to continue with other topics in a self directed manner. Additional groups may form to run the Financial Management workshops. If these ongoing activities occur, the program can be viewed as an ongoing process.

If you have any comments or questions on the program, please contact Terry Davis or David Stent at;

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30/10/86