Autumn 1996 Edition No 4

NSW Association of Agriculture Teachers

Bulletin of the NSW Association of Agriculture Teachers

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Some thoughts from the Editor

AGRICULTURE - A Perspective for Australian Schools

With their Summer BAAT No 3 members will recall receiving a green covered booklet called "Agriculture a perspective for Australian Schools" - the result of work by the National Association of Agricultural Educators. This publication is somewhat of a milestone in education in Australia. Jenni Wilkins (page 51) provides an insight into the history and rationale of this publication.

NSW Agriculture Staffing

Reductions in NSW Agriculture staffing must give concern. At a time when producers are told to work smarter it seems the resources they need to do just that, are being reduced. On the other hand it is reassuring to read that the new boss of the CSIRO says "Rural research, like rural industry, is fundamental to Australia's future." Try to obtain a copy of their new book - "Looking after our Land".

Papaya Fruit Fly

It is pleasing to read of innovative research of Australian origin. The article on page 52 shows a break-through in the Papaya Fruit Fly scare. Let us hope we don't need a similar "break through" to deal with an Australian outbreak of "Mad Cow". I've included a short article which originally appeared in the Sydney Morning Herald on page 53 for members information on B.S.E.

Networking

Readers are encouraged to look at James White's article (page 63) on Networking and Collegial groups. There are times when teachers experience the frustration and feeling of isolation in Agriculture Teaching. I recommend you read this item and plan how colleagues nearby may meet, share and support each other.

Contributions

Thanks again to those who have taken the time to contribute items to this edition. I am very grateful for your support.

I look forward to receiving more material, particularly on **"How to Sell Agriculture in Your School"** before our next dead-line which is 21st June 1996.

Cheers,

John Musgrave

THE PRESIDENT WRITES

Autumn 1996 Edition No 4

FIRST REPORT FOR 1996

'day. Welcome to an exciting year for Agriculture Teachers.

Our Association continues to encourage professionalism. I challenge you to take your subject out into your community. The Sydney Teacher's group and other country teacher's involvement in the Sydney Royal Easter Exhibition is to be commended

At the National Ag. Teacher's Conference it was great to see teachers working in industry, with the Department of Ag., other schools and TAFE - all working to promote the teaching of Agriculture. We need to promote the importance of our subject in educating our communities to meet the challenges of using technology and in developing the concept of "Paddock to Plate". I know when the chips are down Agriculture Teachers have the ability to maintain a homely atmosphere in the schools and have excellent motivation skills.

BAAT

John Musgrave has created an excellent, professional document in our BAAT magazine. Comments from readers and contributors are very positive. If you know of someone wanting to advertise Technology associated with Agriculture, give them the opportunity to use BAAT.

For the next edition of BAAT we need items on how you sell Agriculture in your school.

I know there will be a diversity of ideas but the simplest is often the most productive. If BAAT is to continue to be a useful resource, the 'fee structure' of the Association will need revising and careful consideration. Discussion at network meetings would be appreciated.

Agriculture at Our School

Well done Mick Melino, St John's College, Woodlawn on his supplement "Agriculture at my School", in this issue (page 41-44). We need more schools' input for the next two BAAT's for this year. What about it folks? Does anyone run deer, emu or any other more unusual stock or acquatic species?

The National Ag. Teachers Conference at Dookie College

The National Ag. Teachers Conference at Dookie College was an excellent event and congratulations to the organisers; Neville Winch and his team. Thanks to Mick Melino (St John's, Woodlawn), Peter Jones (Colo High), Ian Grath (Pendle Sydney), John Lee (Glen Innes), Bruce Dymock (Orange), Lynda Betlswork (Penrith) and other Colleges and TAFE for their involvement in the Conference. However, it is still disappointing that attendance should be so low. The energy that a State and National Conference creates deserves to be conveyed to more teachers

The 1997 Biennial Ag. Teachers Conference at Berry Sport and Recreation Centre on the picturesque South Coast offers another chance for families to be involved. Please check your calendar for January 27th to 30th. Details pages 58 to 59 .

CONGRATULATIONS!

Congratulations to the Sydney Branch of the NSW Ag. Teachers Association. I'm sure David Buckley and his team will solve any problems you may have through their meetings.

It would be great if we could share some activities of the Sydney Branch in the next issue!

Congratulations to Phil Hurst, Hawkesbury on the work he is doing on the Animal Ethics Committee, (page 32). At present a review is being conducted so if you are able to sight this document Phil would appreciate your positive points of view.

Congratulations to those teachers involved in developing the new junior syllabus. The first draft should be available at our next State Conference.

State Wide Competition

We are looking forward to seeing all schools which teach Ag. being involved in the state wide Ag. Competition later this year, as well as in shows and steer competitions. Farm Fest is holding a section for school steers this year (24th June) for the first time.

Have you contacted your local Member or your NSW Farmer's Representative in asking for TASK Funding?

TASK (*a project aimed at providing additional training opportunities for farmers in drought declared Rural Protection Board areas*) funding is available for a variety of courses, (associated with drought in 1995). At present we have a Chemical Users course tied up. Anyone interested in running this course should contact Graeme Matthews of Bellingen Shire Council. He is an excellent organiser. Perhaps your farm assistant could attend!!!

Farm Safety

"Farm Safety across the Curriculum" kit is gradually developing. We thank supporters and teachers of Woodenbong Central School who have contributed units in this kit and the tireless work of Jan Mills as co-ordinator is much appreciated. Kits should be available towards the end of the year. Why not highlight Farm Safety at your school in Farm Safety Week (Week 1, Term 3) with competitions between Ag groups. Statistics show that we can make people aware and save lives. Organise an activity with your network

AGRICULTURE A Perspective for Australian Schools

Early in term 2 or maybe Term 3 we hope that teachers who attended the National Agriculture Teachers Conference will be able to bring Ag. Teachers together in their regions to discuss the introduction and uses of this National Ag. Teachers Perspective document and the resources that may help in teaching Agriculture. Research on this document is enormous and worthy of your acceptance and use in preparing programmes

AGRICULTURE - A DYNAMIC SUBJECT

Time permitting I would like to be able to contact you as a teacher in Agriculture and discuss with you your concerns in the place where you teach. Agriculture is a subject in its own right. A worthy aim is to enable students to realise the dynamic nature of our subject.

Best of luck,
Stewart

PS. Thanks to those who have shared their kind thoughts with my wife Susan and myself in the loss of our first daughter Melissa.

As I survey the fruits of my toil
and review the goals I have lost,
and won, I value the many
gained treasures my way have come

The Gould League of NSW
Project Environment 1995

Project Environment, in conjunction with the Gould League of NSW has been a competition open to students since 1978, projecting a diversity of talents in creative writing, musical composition, research, art and media presentation within the boundaries of an annual theme of the environment. Students in 1995 were asked to base their entries on the theme, "Green Corridors". Needless to say, the thousands of submissions received by the Gould League were very *green* and expressed young peoples' growing awareness of the complexity and vulnerability of our environment.

Megan Luckie, a Year 12 student at Kadina High on the North Coast, won the senior secondary creative writing section of the Gould League/Sydney Morning Heralds Project Environment award two years in a row, winning $200. After years of writing for pleasure and entering a few competitions Megan has gained her critical success. Inspiration for *Subsidiary Momentum* was easily drawn from the area where she vividly describes animal and plant life in the rainforest around Lismore. Megan says:

"I have always been interested in the environment, and I've found poetry to be an effective way of expressing the importance of it. It has a quality that is able to capture that extra something found in nature."



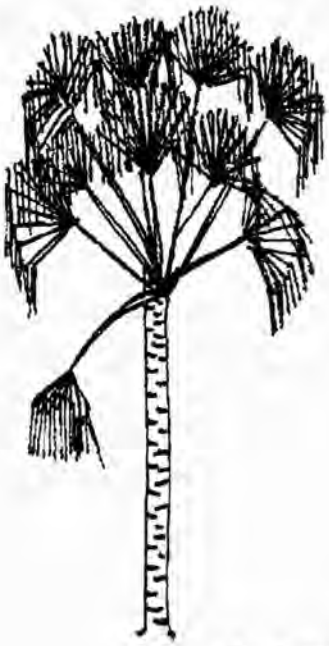




SUBSIDIARY MOMENTUM

Light dances through sweeping windows
of cool, damp trees supporting the sky.
The fragrant radiance filters down through the canopy
receding to a secret hush below.
A stray shaft of sunlight
strikes the forest floor,
gathers on a blossoming fern,
mirrors the twinkling blue of babbling brooks.
Tree upon tree
march beside the spritely flow of the broadening stream,
embracing the nimble fluid,
sending pulses up through their roots.
Deep inside the green glass kingdom
a vibrant flock of scarlet birds
partner the crisp winds,
wheeling round tangled vines
in an ecstatic formation through the galleries.
A spirited bird flits between the passage ways
and soars to the tree tops,
singing its song on the cycle of the seasons.





Bursting away from the canopy
it views the trees from above ...
they reach across to one another to clothe the world
and meet the sky.
Within their connecting arms
orchids offer sweet nectar to seeking butterflies.
Slender fingers of sunlight venture through the leafy patchwork
glimmering on fine thread-work spread across strong boughs.
Silky frogs pause for insects entangled in the sleek web.
There is a minute munching of caterpillars
and the silent sucking of plant bugs.
Amidst the green links
ferns creep, lichens encrust,
centipedes and scorpions lurk.
A lizard curls in the cover of a hollow nut ...
the remnants of a plant whose fruits ripened
and overflowed over the ground, like great masses of white flour.



Bush rats devour the dry kernel
leaving the empty shell.
A snake glides beneath
gnarled and twisted roots and stems,
sending ants scurrying as they create networks of nests.
Nervous tracks of a bush kangaroo
shift among the giant trunks and follow the energies of the running river,
swaying as the sweet water does to meet the searching earth.
Each creature leaving its mark wherever they go.
More scars abound causing fractures in the land,
bushland broken.



Nature's emissaries, with fierce persuasion and fluent tongues,
keep working together to coax new life to be flexible and strong.
to overcome fancies which are taken that vaguely sap life away ...
leaving rifts in the system.
With voices clear as morning these creatures gently pass on
a song that echoes the winding river and a beauty from within.
Melodies calling to the trees to join and reconnect
and create the corridors denser to shelter from the searing sun
and furious fears of winter.
A flash of scarlet flickers between the sparkling green
carrying a gleam of sunlight it provides a seed to cling to the earth.
Warmth and vivacity raise the sky.
Dreams of youth and a promise to grow old.



Megan Luckie - Kadina High School, Goonellabah 1995.

BOARD OF STUDIES
NEW SOUTH WALES

HIGHER SCHOOL CERTIFICATE EXAMINATION
1995

AGRICULTURE

2/3/ UNIT (COMMON)

SECTION I

(20 Marks)

Question 1

Name ONE farm product you have studied

Answer ALL parts in Question 1 about the product.

Name of farm product .....

(a) (I) *List FOUR inputs needed to produce the farm product.*

1. **Must be input for production mentioned**
2. **eg money, fuel, labour,**
3. **management, fertilisers.**
4. **Can be capital input ie. Land**

4

(ii) *Describe TWO processes that can add value to the farm product.*

1. **Must relate to product. If list only 2 → 1 mark**
2. **OR if good description for one plus the other listed 2 marks.**

2

(b) Figure 1 shows interactions, including feedback, between the farm, market, and consumer.

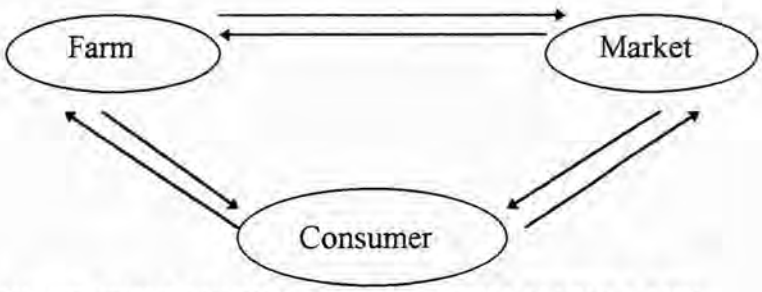


Fig 1 MODEL OF INTERACTIONS BETWEEN FARM, MARKET AND CONSUMER

State ONE example of feedback from:

(I) *market to farm:* **price, visual appraisal, colour, quantity demanded**

1

(ii) *consumer to farm:* **demand, survey, price, quality, taste**

1

(iii) *consumer to market:* **demand, buyer resistance to price, demand** — **1**

(iv) *Choose ONE of the feedback examples above and describe how this off-farm information could be used to improve decision-making on the farm:* **alternative markets, marbling fat, milk protein. Must relate to the farm product selected.** — **2**

(c) Market specifications are a guide to what processors, manufacturers, or consumers will accept.

(i)) State ONE market specification for your product. State why it is important for the market.

1 mark - stating eg. pesticide residue levels, quota
1 mark - why it is important eg. safety/health, maintain supply — **2**

(ii)) Describe ONE management decision a farmer could make to help the farm product meet the stated specification.

Link to market specification eg. spray only at critical times or add N fertilisers to boost protein. — **2**

Question 2

(a) Outline an improvement in agricultural production that has resulted from scientific experimentation.

1 x Naming a significant improvement eg. hybrid wheat, hydroponics
1 x Outlining this (describe) improvement
1 x Linking to improved production eg. Yields, quality — **3**

(b) Describe a problem that has resulted from the application of scientific knowledge to an agricultural production system.

1 x Reference to a problem eg. cane toad, resistance, salinity
1 x Description of how it affects an agricultural system — **2**

(c) Explain how land-management practices used since European settlement have accelerated erosion.

2 x Listing a range of practices eg. Overcultivation, tree clearing, overgrazing, barefallowing, compaction.
2 x Stating how these practices have accelerated erosion eg. breakdown in soil structure - particles free to move with wind or water — **4**

(d) As a result of severe drought through large parts of Australia, production in many areas has been severely affected. Suggest TWO changes that drought has on:

(i) rural communities:

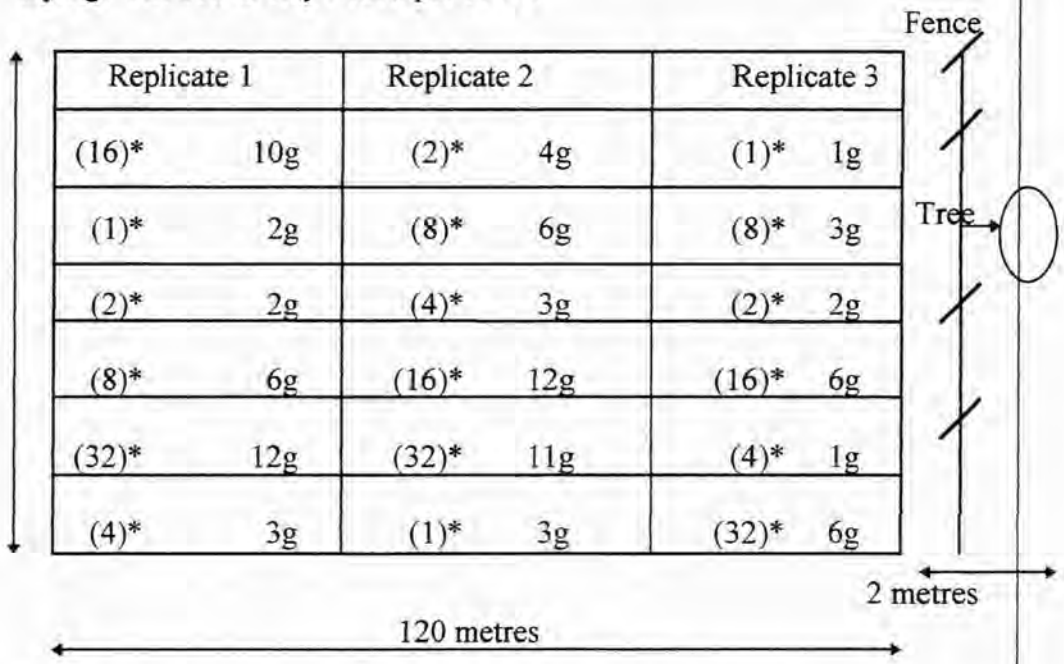
1. **eg. lower incomes, fewer sales, business closing down**
2. **Must refer to the community not individual farms** — **2**

(ii) urban communities;

1. **Higher prices, reduced availability of fresh produce**
2. **Poorer quality produce + farm aid programme** **2**

Question 3

Many herbicides leave residues in the soil that break down with time. A safe interval needs to be left between applying the herbicide and sowing any crop. This interval is called *plant-back period.* Following the use of a new herbicide, a field experiment was conducted to determine the plant-back period for wheat. Six plant-back periods were compared (1, 2, 4, 8, 16, and 32 weeks) in any experiment with three replicates. The plants were sown in each plot on the same day, harvested six weeks later, dried, and weighed. The field plan showing the layout of plots eg given in Figure 2. Also shown on the plan are the weights of the plants after drying. The soil is clay with a pH of 7.4.



Replicate 1	Replicate 2	Replicate 3
(16)* 10g	(2)* 4g	(1)* 1g
(1)* 2g	(8)* 6g	(8)* 3g
(2)* 2g	(4)* 3g	(2)* 2g
(8)* 6g	(16)* 12g	(16)* 6g
(32)* 12g	(32)* 11g	(4)* 1g
(4)* 3g	(1)* 3g	(32)* 6g

* Numbers in brackets ( ) refer to the plant-back period.

Fig. 2 FIELD PLAN OF PLANT-BACK-PERIOD EXPERIMENT WITH DRY-PLANT WEIGHTS

(a) Table 1 below shows the dry-plant-weight results from the experiment. Complete the table by calculating the treatment means for the plant-back periods for 2 and 16 weeks.

Table 1. DRY-PLANT WEIGHT IN GRAMS FOR SIX PLANT-BACK PERIODS.

Replicate	Plant-back period (weeks)					
	1	2	4	8	16	32
1	2	2	3	6	10	12
2	3	4	3	6	12	11
3	1	2	1	3	6	6
Mean	2.0	**2.7**	2.3	5.0	**9.3**	9.7

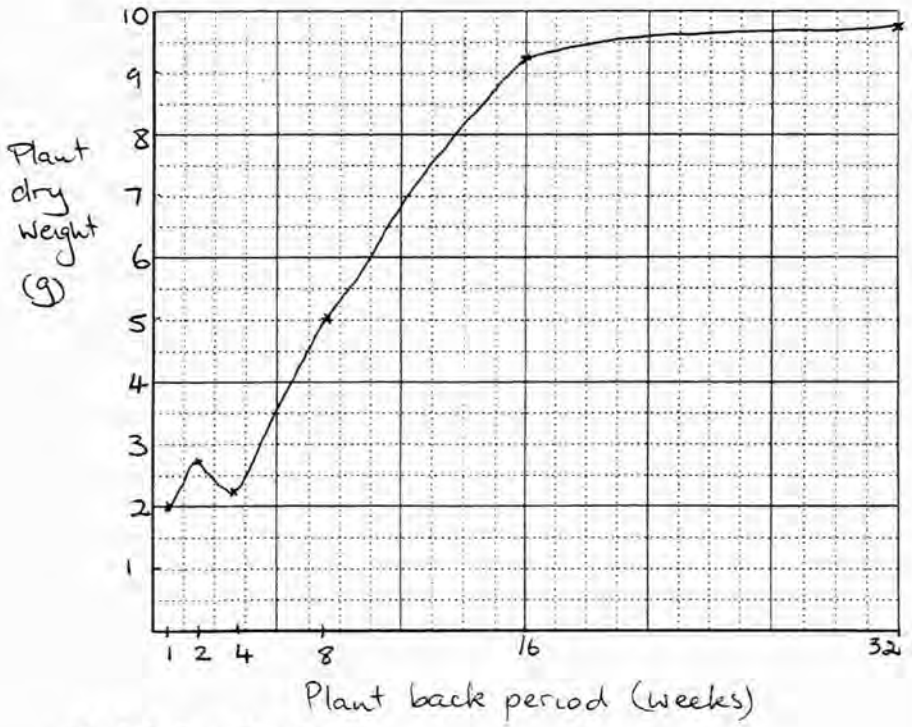
2

(b) *Inspect the result and field plan (Figure 2) and draw conclusions about sources of variability in the paddock where the experiment was conducted.*

1 x Source of variability eg. tree, fence, weeds/pests outside fence.

1 x Explaining the effect or describing eg moisture, shade, nutrients, wind **2**

(c) *Draw a graph on the axes below relating dry-plant weight to plant-back period.*



1 x labels and units
1 x Orientation of s/y axis
1 x Scale
1 x Curve **4**

(d) *Explain the need for randomization and replication in experiments like this.*

Randomization to reduce bias; Replication to increase readings allowing statistical analysis, increasing accuracy of results. **2**

(e) *What recommendations would you make to farmers on the basis of this experiment?*

Resting period (plant back) of at least 16 weeks before sowing wheat, explanation of why eg. higher yields, higher plant dry weight etc. **2**

BOARD OF STUDIES
NEW SOUTH WALES

HIGHER SCHOOL CERTIFICATE EXAMINATION

1995

AGRICULTURE

2/3/UNIT (COMMON)

SECTION II

(45 Marks)

Question 4

(a) The following growth curves were obtained from prime-lamb flocks



KEY
—·— Flock 1 average
—— Regional average
- - - - Flock 2 average

FIG. 3. GROWTH CURVES FOR PRIME LAMBS.

(i) *From Figure 3, state the difference in weight between the regional-average lambs and lambs from Flock 1 at nine weeks of age.*

2.5 kg Will accept range 2.4 2.6 kg. Will also accept without units. **1**

(ii) *Lambs from Flock 2 performed well below the regional average. Give TWO possible reasons for this.*

1. **Breed, Sex, Disease, Nutrition**
2. **Environment (eg. Climate, or (more specific) temperature)** **2**

(iii) *Describe TWO management strategies that could increase growth rates of farm animals*

1. **1 for strategy, 2 for description. If Nutrition discussed for both, then candidate must discuss different aspects of Nutrition.** **3**
2. **Must relate strategy to growth rates.** **3**

(b) *Compare the carcass composition of young animals with mature animals*

Changing levels of bone, muscle and fat percentages as animal matures. 1 mark for each tissue type discussed. **3**

(c) (i) *Describe how micro-organisms provide an interaction between the atmosphere and legume plants.*

Naming of Rhizobia bacteria or N fixing bacteria = 1 mark. Taking N from atmosphere = 1 mark. Available N mark for further use = 1 mark **3**

(ii) *Outline a management strategy that could affect the interaction described in part (c) (I) above.*

Strategies such as inoculation, lime pelleting or changing pH, addition of Mo, or any strategy that affects microbial activity. **2**

(d) *Describe the changes in soil characteristics that can occur with the retention of crop residues.*

Need to describe 2 changes = 4 marks. List 4 changes = 2 marks. Need to note what kind of change occurs eg: increases. Changes that occur include, ↑ nutrient availability, ↑ drainage, ↓ H^2O availability, ↑aeration, ↑ structure, ↓erosion. **4**

(e) (i) *Describe how ONE farming practice has led to soil erosion*

Name practice = 1 mark. Such as cultivation, tree removal. Describe how = 1 mark; removal, fallowing. **2**

(ii) *Describe how ONE farming practice has led to soil salination.*

Name practice = 1 mark. Describe how = 1 mark. Such as tree removal, XS in irrigation, removal of vegetation, XS fertilizer use. **2**

(iii) *Describe management practices that can reduce salination of soil.*

Can describe how the practice causes reduction, or how management practice is carried out. Naming = 1 mark. Describe = 2 marks. **3**

(f) *State TWO management practices that could improve soil structure*

(i) ↑O.M. Add gypsum

(ii) ↓ cultivation or change cultivation regime **2**

Question 5

(a) The long-term trend in the average grain-protein content of Australian wheat is shown in Figure 4

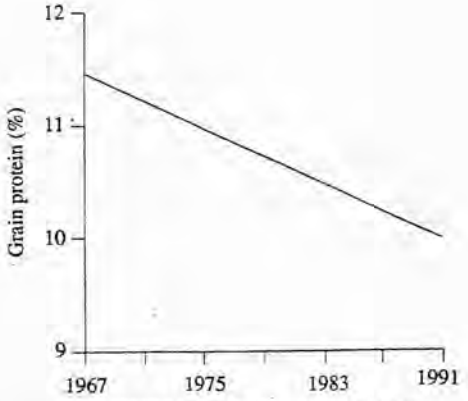


FIG. 4. TRENDS IN GRAIN PROTEIN OVER TIME.

(i) Which changing soil factor could account for the trend in Figure 4?

Decrease in the amount of nitrogen — 1

(ii) List TWO farm practices that could be used to help increase grain protein.

1. Add nitrogen fertilizer
2. Growing legumes — 2

(iii) List THREE implications for sustainability of grain production in Australia if the trend in Figure 4 continues.

1. Decrease in farm income
2. Decrease in market demand
3. Farmers getting out of wheat production — 3

(b) Phosphorus is commonly deficient in Australian soils.

(i) List THREE ways farmers might learn whether their crops or pastures would respond to phosphorus fertilizer.

1. Leaf or tissue analysis
2,. Asking the local agronomist
3. Performing a trial — 3

(ii) *Discuss how the use of superphosphate and poor farm management have contributed to degradation of river-water quality.*

Superphosphate leaches into river systems causing increased algal growth and decreasing oxygen levels. Poor farm management causes increased erosion. This leads to clouding of water and changes in water temperature once washed into the river. — 4

(c) *Outline the importance of timing in the performance of TWO farm operations. Use examples from a farm or industry that you have studied.*

(i) Lambing - Joining of ewes needs to be done so that lambs are born during the most favourable spring conditions.

(ii) Harvesting needs to be performed when protein levels are highest. **4**

(d) *Suppose a major overseas market has just banned the use of a particular fungicide. The fungicide is the only chemical that effectively controls a significant disease in the Australian plant industry.*

(i) Explain TWO ways in which this ban would be a threat to Australian farmers.

1. Decrease in sales overseas

2. Spread of the disease **2**

(ii) How might the industry respond to this situation in the longer term?

- **Research other methods of control**
- **Switch to alternative production areas**
- **Develop alternative markets.** **3**

(e) *(i) Name ONE hormone that regulates animal reproduction.*

FSH **1**

(ii) Describe the role of the hormone named in part (e) (i) above.

FSH stimulates the development of follicles in the ovaries. It also influences sperm production in males. **3**

(iii) Name ONE management strategy that regulates animal behaviour by manipulating hormone levels in the animal.

Removing the testes. **1**

(iv) Describe how the management strategy in part (e) (iii) regulates animal behaviour by manipulating hormone levels in the animals.

The removal of testes leads to a decrease in the production of testosterone. This causes animals to be easier to handle, less aggressive and less likely to be damaged by bruising due to a decrease in fighting. **3**

Question 6

(a) *A farmer carried out a trial using varying nitrogen levels on two maize crops. In the previous year, one crop had maize grown in the paddock, the other crop had a legume (soybeans). Figure 5 shows the results.*

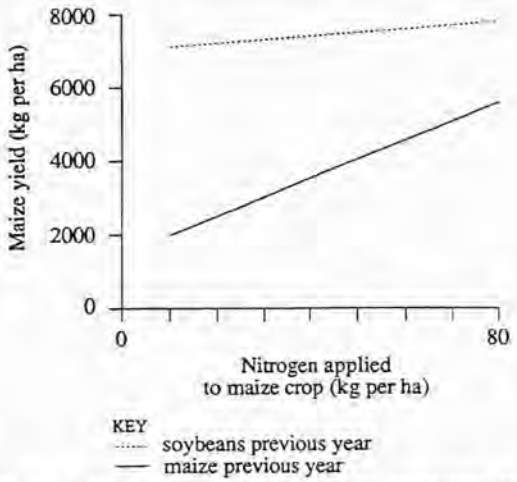


FIG. 5. THE YIELD RESPONSE TO NITROGEN OF MAIZE FOLLOWING EITHER MAIZE OR SOYBEANS.

Draw Two conclusions about the way soybeans affect maize yield.

(i) **Growing soybeans → Yield = 1 mark**
Growing soybeans → N in soil → yield = 2 — 2

(ii) **Growing soybeans breaks disease cycle = 1 mark**
Growing soybeans breaks disease cycle yield = 2

* **Add. of N boosts yield of maize/maize but has little effect when soybean/maize = 2**

* **Soybeans add N to soil = 1** — 2

(b) *Chemicals are widely used in agriculture to control weeds, pests, and diseases.*

(i) *What <u>potential hazards</u> should be noted before using any chemical?*

Toxicity, Resistance, Pollution, Non-Target origin. At least 2 and in different categories. Simple list = 1 mark — 2

(ii) *Using chemicals can be a costly business. Show how a gross-margin analysis could be used to decide whether the chemical should or should not be used.*

G. M formula = 1 mark must be expressed in the answer or mentioned profitability. Explain how chemical is a variable cost and its effect on profitability - good explanation = 2 marks of G.M. shows relative profitability by chemical and not using the chemical = 2 marks. Poor explanation = 1 mark. — 3

(c) *In any plant-production system, management practices are used to overcome pests and diseases. Name a plant-production system and a pest or disease of the plants.*

Plant-production system	
Disease or pest	Includes weeds

0

For the stated plant system and the pest or disease:

(i) *State a management practice that is planned to overcome the pest or disease;*

Must be a practice (process) eg Crop rotation **1**

(ii) Describe how the management practice affects the interaction between the pest or disease, the host, and the environment.

OK to look at one side of triangle only! Good description = 2 marks. eg. Pest will not come in contact with the host and therefore die leaving environment pest free. Brief description + 1 mark **2**

(d) *In most situations, farmers are moving away from individual practices to control pests and diseases, towards integrated pest management (IPM). Describe an IPM program in a plant or animal industry you know about.*

* **Name of program not essential but link to an industry essential**
* **At least 3 specific man practices well described**
* **Simple list of IPM techniques ie. Cultural, Biological, Chemical, Genetic = 2 marks** **4**

(e) *Breeding programs are often developed to improve quality or quantity of plant products. Name a plant product.*

Name of <u>plant</u> product

0

Describe an example of such a program and outline the key outcomes in terms of quality and quantity.

A sexual reproduction NOT acceptable!
Acceptable: Crossbreeding, Inbreeding, Line breeding, Heterosis etc. Well described = 2. Link to outcomes = 2 marks ie. quality - eg protein content, disease resistance quantity - yield/plant 1 ha etc. **4**

(f) *An agronomist advised a cereal grower to reduce cultivation and retain crop residues. As a result, the farmer found many more earthworms in the soil.*

(I) Give THREE reasons for the increased earthworm population.

1. ↑moisture in soil an↑ aeration
2. ↑ seed supply/nutrients and ↑death rate
3. Less distance to eco systems important soil structure — **3**

(ii) Outline THREE benefits of encouraging earthworms in the soil.

1. ↑ aeration/infiltration/nutrient cycling
2. Improved structure (peds) 10.M decomposition
3. Drainage - erosion reduced — **3**

(iii) Name ONE management practice, other than retaining crop residues and reducing cultivation, that would improve the physical or chemical properties of the soil.

eg. Add fertilizers/green manuring/legumes — **1**

(g) *Describe how ruminant animals are able to digest low-quality roughage and convert it to high-grade protein products.*

Ref. to microbial population (bacteria/fungi/protozea = 1 mk
*** Ref. to use of urea, amount etc in conjunction with cellulose is acceptable. Look for the links between parts in the answers.** — **3**

QUESTION 7

(a)

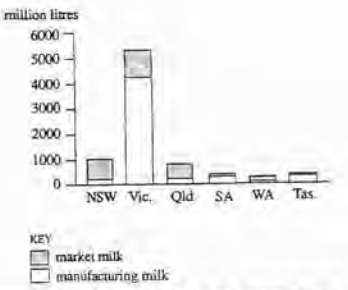


FIG. 6 MILK PRODUCTION IN AUSTRALIA BY STATE AND MARKET TYPES.

(I) From Figure 6, name two States where the production of manufacturing milk is more than half of the total production

Vic, Tas, SA — **1**

(ii) Figure 6 shows that Victoria produces more than any other State. List FOUR factors that explain such regional patterns of agricultural development.

1 factor = 0. 2 factors = 1 mk, 3 factors = 1 mk. 4 factors = 2 mks. One word (eg "climate") is sufficient.
"Climate" not counted if "rainfall" etc given.
"Technology" not correct eg. topography, climate, govt. subsidies, population centres, irrigation scheme. — **2**

(b) *Choose ONE industry that you have studied.*

Name of industry	0

Explain why it is carried out in its existing location.
1 mk for any number of factors, 1 mk for linking a factor to location. 2 mk eg, cotton grows in Upper Western NSW due to suitable soil type (fertile, deep, black soils) and climatic conditions. 1 mk suitable rainfall. **2**

(c) *Traditionally, most farmers have aimed at increasing farm outputs. From an industry you have studied, name an animal product.*

Name of animal product

(i) *Describe TWO management strategies that could contribute to an increase in output of the named animal product.*

1. **List 1 = 0, List 2 = 1. List + phrase = 1 mk each eg. Select pork breeds over bacon breeds = 1 mk**
2. **Lot feeding / Increase stock numbers = 1 mk** **2**

(ii) *Explain how knowledge of the market can assist the manager to relate management strategies to better marketing.*
Must show specific knowledge of the product in box for 1 mk and relate mgt to a relevant strategy for 2 mks eg. for reef "Awareness for consumer preference for lean beef may encourage farmer to use European breeds in a breeding plan". **2**

(iii) *List TWO sources of market information that farmers use to achieve the best price for their product.*

(I) **1 mk each for a source eg 1 mk for "Stock and Station".** **1**

(2) **Agent" but not "market prices". answer must be specific eg. "Agent" = 0** **1**

(d) *For any agricultural product, the level of government intervention can affect farm production. Name an agricultural product that you have studied.*

Name of industry	0

Describe how the level of government intervention can affect farm production.
1 mk for each naming or description of a govt intervention **1**
1 extra mk for linking intervention to production. eg. "The NSW Dairy Corporation has been able to secure year round supply" = 2 mks. One intervention well linked to production = 3 mks eg. "Milk quotas will encourage farmers to produce a minimum volume of milk each month". **3**

(e) (i) *Name an animal OR plant production system you have studied*

Name of animal or plant production system	0

Name FOUR management practices in the calendar of operations of the production system.

1. 1 mark for each mgt practice - must be relevant to the
2. stated production system eg. for "wool" - earing, 3. crutching, mulesing, marking, joining, weaning,
4. drenching. 4

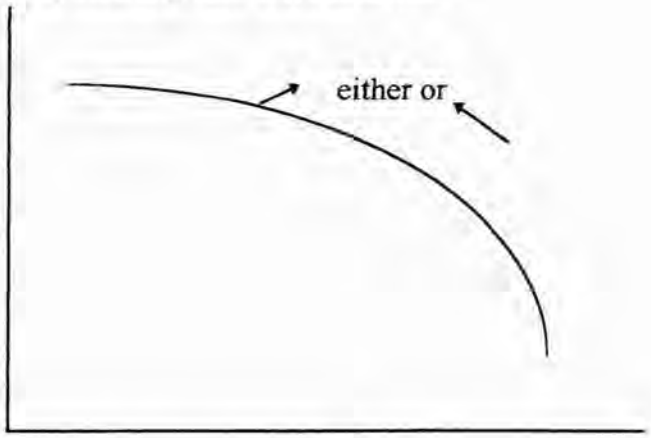
(ii) *Describe how ONE positive and ONE negative climatic feature affects the agricultural production system in part (e) (i).*

Positive 1mk for any description of a climatic feature - must have adjective or phrase - eg. "adequate rainfall" rather than "rain". 1

Negative Further 1 mk for describing how an agricultural production system is affected eg. "High winds can cause lodging in oats". 1

(f) *You are asked to present a talk on the effects of stocking-rate on animal production.*

(I) *Draw and label a graph on the axes below to show the effects of stocking-rate on production.*



1 mk for "SR" on X axis
1 mk for "Productivity" on Y axis
1 mk for correct shaped curve 3

(ii) *Explain the shape of the graph you have drawn*

1 km for incomplete description of <u>their</u> curve eg. "Productivity initially increases with increasing SR" 2 mks - full description of all aspects of their curve
3 mks - for explanation of shape of curve eg. where students mention "competition" or "pasture utilisation". 3

(iii) *Describe the information a farmer might need to decide the stocking-rate on a particular farm.*

1 mk for each factor. eg. Pasture production, season, average live wt of cattle, typical regional DSEs. 3

BOARD OF STUDIES
NEW SOUTH WALES

HIGHER SCHOOL CERTIFICATE EXAMINATION

1995

AGRICULTURE
2/3/UNIT (COMMON)

SECTION III
(Marks)

Question 8

(a) *(i)* *Describe the photosynthetic process*
3 marks for mentioning all inputs and outputs
2 marks for more detailed expn eg. light and dark reactions **5**

(ii) *Explain how the photosynthetic rate of a crop could be significantly increased in a controlled environment such as a glasshouse.*
1 mark for each limiting factor that can be optimised in a glasshouse OR 1 mark for naming a limiting factor PLUS 2 marks for explaining how it improves PHS. **3**

(b) *Explain how each of the following factors affects plant productivity.*

(i) *Pruning*
2 marks for explanation of how pruning affects production. 1 for basic explanation 2 for detailed explanation. **2**

(ii) *Photoperiod*
1 mark for relating photoperiod to timing of some me event eg. flowering. 2nd mark for better explanation or example. **2**

(iii) *Plant density*
1 mark for linking density to competition for resources. 2nd mark for explaining effect of density on vegetative and/or grain yield. **2**

(c) *Describe the mechanism of water uptake in plants*
1 mark each for mention of transpiration pull, osmosis and capillarity. 1 mark if mentioned root trains and nothing else. **3**

(d) *Outline how plant hormones can be used to manipulate plant production.*

1 mk for naming each relevant way in which hormones can be used to manipulate production eg. root initiation, abscission, onset of flowering , fruit ripening, denanting
OR
1 mark for mentioning a specific hormone and 2 for describing how it can be used to manipulate plant growth. **3**

(e) *Describe techniques and technologies used in genetic improvement of plants*

A mark was awarded for naming any technique or technology used in the genetic improvement of plants. Commonly added examples included genetic engineering, selective breeding, cross breeding, hybridisation, wide crosses, tissue culture, budding and grafting.
Marks were then allocated for describing the techniques and for explaining how it resulted in new genotypes being created or its role in rapidly increasing the population of these new genotypes. One mark was awarded for each clear point which described or explained the technique/technology. **3**

Question 9 Animal Production

An experiment was carried out to investigate the rates of growth in broilers. In the experiment, one group's dietary intake was unrestricted; the other groups dietary intake was restricted for 7 days early in its growth.

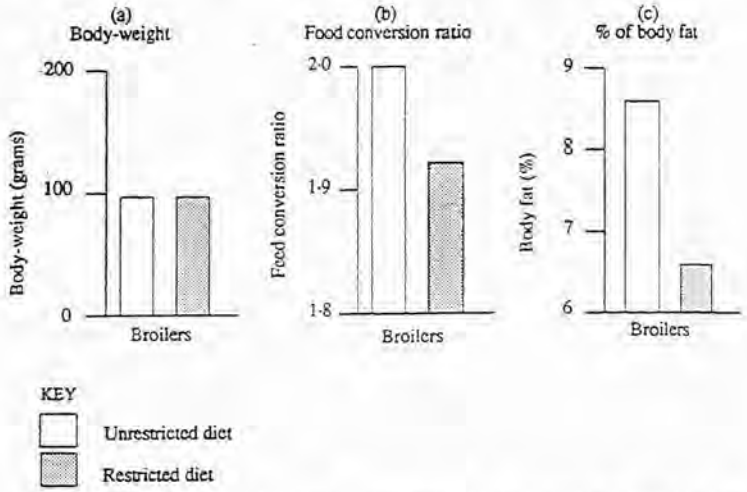


FIG. 7. A COMPARISON OF EARLY FEED RESTRICTION AND UNRESTRICTED FEEDING ON THE PERFORMANCE OF BROILERS.

(a) *What conclusions can be drawn for Figures 7(a), 7(b), and 7(c)?*

1 mark for correctly interpreting each histogram (ie restricted group had higher FCR and body fat% but same weight) PLUS 1 mark for a comment indicating that the restructured group was better overall. **4**

(b) *Describe a recently developed technology that has increased productivity in animal-production systems.*

1 for naming a technology (almost anything due to wording in syllabus)
1 for description of technology
1 for explanation of how it increases productivity. **3**

(c) (I) *Name a management practice associated with disease control in animals.*

1 mark eg. vaccination **1**

(ii) *Describe either ONE advantage or ONE disadvantage of the management practice in part (I).*

1 mark for identifying an advantage or disadvantage
1 mark for further explanation **2**

(d) (I) *Why it is important to know the metabolizable energy values of feeds when formulating rations?*

1 mark for implying that knowledge of one value is necessary to ensure correct feeding
2nd mark for a good explanation **2**

(ii) *Describe how different conditions of animals such as age, pregnancy, and production affect their metabolizable energy requirements.*

1 mark each for describing the effect of at least TWO conditions
3rd and 4th marks for good explanations of above. **4**

(e) *Using an example, describe how genetic manipulation can be used to improve animal-production systems.*

1 for naming a suitable genetic manipulation
2 for description
1 for showing how production went up
OR
1 for description
2 for very good explanation of production increase **4**

(f) *Describe the role of micro-organisms in utilizing the high-fibre diets of ruminants. Make specific reference to vitamin synthesis and amino-acid synthesis.*

<u>Digestion of Cellulose</u>
Mark awarded for mention of rumen, names of microbial groups (bacteria protozoa + fungi), VFA's, absorption of these into bloodstream for use as an energy source, link to AA synthesis
<u>Digestion of Protein</u>
Marks awarded for mentioning sequence of protein aa's for absorption. Mention of "up grading" of low quality protein and down grading of high quality protein.

NPN **Marks awarded for mention of urea + sequence of → urea → Nhz → microbial protein aa's for absorption**
Vitamin Synthesis Marks awarded for mentioning that microbes synthesis VH.B Marks also awarded for comparisons with monogastrics (protein + vitamin needs), symbiosis (microbes role in by-pass protein), inefficiency of ruminant system, bloat, acidosis. * 1 mark for each relevant point!

QUESTION 10 Land Management

The management of Australian soils requires an integrated approach in order to overcome the serious soil degradation that has taken place over the last two hundred years.

(a) *List FOUR types of soil degradation.*

1 type = 0 marks, 2 types = 1 wind + water erosion, soil acidification
4 types = 2 marks nutrient depletion, salinity, structured decline 2

(b) *Choose ONE of the soil degradation problems from part (a).*

Soil degradation problem	**Soil erosion**

0

Answer the following questions about the problem you have chosen.

(I) *Describe the farming practices that have led to the problem.*

2 described = 2 marks, 2 or more practices listed = 1, 1 well described = 2. 1 practice listed = 0. Over cultivation → soil peds are destroyed by machinery erosion . Over clearing - removal of trees leaves soil susceptible to wind and water. 2

(ii) *Explain in detail the processes that have led to the problem*

3 processes explained = 3: 3 processes listed = 2 points for linkage to problem = 2
1e. Over cultivation leads to soil structural decline, peds are destroyed, soil can be easily washed or blown away ie. erosion. = 3
Overclearing particularly on steep slopes allows soil to be exposed to agents of erosion = 2 5

(iii) Evaluate current practices used to alleviate the problem.

Practices 2 well described = 4
Evaluation or consequence of practice = 2
*** Tree planting on slopes leads to soil being held in position preventing further erosion especially at head of gullies if fenced off - works well as water is slowed - can be soggy. Minimum tillage techniques means that fallow is minimised therefore bare soil minimised less chance of water/wind erosion - very effective way- many farmers now use the technique.** 6

(c) *Discuss the suitability of current land use in an area you have studied. In your answer, refer to land-capability assessment.*

Description of current land use = 1 mark
Stating class = 1 mark
Qualify/describe class = 1 mark
Suitability/matching land use = 2 marks

*** Land in this area is very diverse: It has fertile river valley flats + class 1 land which is being suitably used for intensive horticulture. Moderately sloping fertile land = class 2, used for vegetable cropping. There is also class 3 + 4 land currently not suitable being used for vegetable cropping and heavy grazing**

5

(d) *Describe the role of programs such as Total Catchment Management and Land Care as means of improving the sustainable use of land and water.*

Community based = 2
OR Education = 2 → **Must be there to score 20**
Definition of catchment = 2
Definition of Sustainable = 2
Sources of funding = 2

2 marks **2 marks**

ROLE Aim/Action	STRATEGY Consequence	PROBLEM Overcome
Advise	Plant trees	Rehabilitate stream
Educate	Contour plough	Reduce erosion
Assess	Clean up waterways	Reduce pollution
Promote	Dune care	Encourage wildlife
Change	Conserve/tillage	Reduce water wastage
Facilitate	Drip irrigation	
Set guidelines		
Demonstrate		
Assist/help		

Link 3 of these = 3 marks

20

SECTION IV

(15 Marks)

Question 11

(a) *Describe the similarities and differences in the anatomy and physiology of ruminants and monagastrics.*

1 mark each for listing an anatomical or physiological similarity/difference up to a total of 4 marks
eg: similarities: Abomasum - true stomach
Digestive Pathway (common areas)
differences: Naming all parts of Ruminant stomach

Similar marks were awarded for stating differences/similarities as well as explaining them.
eg: naming four parts of the ruminant stomach, explaining the association with rumen fauna and flora as well as comparing the similarities with the monogastricpyloric stomach and relative abilities to digest cellulose.

An additional mark was allocated to answers which identified a definite understanding of one physiological aspect
eg: *Rumination (explained)
***volumes of saliva and function relative to imenog or ruminant (explained).**

7

(b) *Discuss how these differences affect:*

- *dietary requirements*
- *food-conversion rates*
- *ration formulation*
- *feeding-management.*

2 marks were awarded for each part; following are examples of acceptable answers.
DIETARY REQUIREMENTS:
1 mark for identifying a need (nutritional), eg:
*** ruminants need cellulose included in their ration**
*** monogastrics require energy dense ration/compared to ruminants. 1 mark for explaining the nutritional need**
FOOD CONVERSION RATES:
1 mark for statements such as Monogastrics have a food conversion ratio of ~ 3:1; compare to ruminants ~ 9:1 or other such statements. 1 mark for an explanation of the manipulation or relevance of F.C.R. in view of digestion processes.

RATION FORMULATION:

1 mark for stating how a ration is formulated to supply each type of animal (relevant to digestive system) or stating special items included in a ration eg: meatmeal

2 marks for Monogastrics are fed concentrates ↑ Protein; ↑ energy; ↓ cellulose. Ruminants need more cellulose + reason why.

FEEDING MANAGEMENT:

1 mark for eg. stating fate of bypass protein

*** time frame for ration change in ruminant** **8**

QUESTION 12

For thousands of years, farmers have cultivated soil as a part of crop-production systems. Mechanisation and more intensive production have led to an increase in the amount of cultivation during this century. The trend today is to use less cultivation.

(a) *Outline the main reasons for cultivation.*

2 marks - 2 reasons minimum fully explained

½ mark each for listing a reason ½ mark additional for relating/explaining

eg. * prepare a seed bed to allow ↑ germination

*** breakdown soils compacted by animal trampling**

***turnover + kill weeds to ↓ competition in the crop** **2**

(b) *Discuss the long-term effects of cultivation on soils, and explain why many farmers are now cultivating less.*

- **2 long-term effects required (minimum)**
- **½ mark for listing each + further mark for explanation/discussion = 1½ per example to a max of 2 egs. (3 marks)**
- **soil structure decline - continual breaking of soil peds into finer + finer units**
- **erosion - constant breakdown and removal of plant cover leaving bare earth to be blown/washed away**
- **1 mark for explaining a reason why farmers cultivate less eg. this cultivation OM so reduces the need for acidifying chemicals/ the cost of many passes with machinery has become prohibitive - reduced till is cheaper as well as environmentally better**
- **additional 1 mark for either - more well explained consequences of cultivation OR more than 1 explanation of why to cultivate less.**

5

(c) *Discuss the technology that now enables crops to be grown successfully with little or no cultivation.*

- **2 technologies (minimum) well explained ½ mark for a mention and 2 marks max for explanation = total 5 marks**
- **1 technology only despite its brilliant explanation is 4 marks maximum**
- **a comprehensive listing of many technologies is 2 marks maximum**
- **examples - minimum/no-till egs machines - direct drill, aerial**
  - chemical till
  - hydroponics as an alternative to cultivation

5

(d) Comment on the sustainability of crop-production systems that use little or no cultivation.

Any 3 useful comments related to crop (3 marks) production systems and sustainability

- **can be one idea with several examples. eg. erosion is more sustainable as there is more area available for plant growing for a long time and the environmental impact of run-off + silt is reduced = 2 marks**
- **can be different ideas**
  - financial sustainability of the farm
  - socially sustainable in the community/ for the future
  - environmentally sustainable in the ecosystem

They can't just rehash ideas already mentioned without linking to the idea of "sustainable system" . ie. simply saying "erosion is undesirable" again is not worth a mark.

Ideally they should demonstrate through their answer that they know what sustainable means!

3

QUESTION 13

In any enterprise, the timing of operations is important.

(a) Explain, using examples, why the timing of operations is important in a calendar of operations for a plant enterprise.

- **Plant enterprise operation - an activity performed. Minimum of 5 examples of plant operations (5 x 1 = 5 marks).**
- **These include cultivation, sowing, plant management, irrigation, pruning, weeding, fertilisers, herbicide/insecticides, harvesting (any 5)**

Explanation of 4/5 of the above plant operation. Why it is important in a calendar of operations. eg:

<u>Sowing</u> - done at a certain time of the year because soil temperature, soil moisture is at the correct level - depends on type of crop chosen.

Irrigation required to supplement water supply or in times of drought because plant needs water for photosynthesis to take place. Pruning to encourage new growth and deliver better yield.
Pruning - to encourage new growth and deliver better yield
Weeding - to destroy plants not required or ones that are harmful. They could be using up the water and nutrients of the soil **Herbicides/insecticides** to secure disease free and healthy crop/plant.
Harvesting done at correct time so that the moisture content, maturity, protein levels, and ripeness all are at a optimum level. Availability of harvesting equipment 4/5 allocated for explanation of why the operation is done and is important.
total of 9/10 marks. 9

(b) *Outline how the farm manager schedules plant-enterprise operations for the supply of primary products to the processor and/or the market.*

Outline at least two farm manager schedules How the farm manager schedules plant enterprise operations for the supply of primary products to the processor and/or the market.

- **Two plant enterprise operations well explained would receive 2 x 3 = 6 marks. eg. supply and demand with explanation would receive 3 marks**
- **If a comprehensive listing of plant enterprise operation is named, a maximum of 4 marks. (no explanation given).**

eg. Availability of transport
Availability of equipment
Supply of labour
Export 6

QUESTION 14

Traditionally, technological innovations (including biotechnology) have focused on production aspects relating to yield. Recently, there has been a shift in emphasis away from production towards marketing. Technology and management is now aimed at improving the quality of products, product specification, objective measurement, post-harvest handling, and value adding.

Using examples:

(a) describe some technological and management innovations that aim at improving the quality and marketing of agricultural products;

Part (a) was assessed according to the following scheme:

(I) a maximum of 3 marks for naming at least three innovations (management or technological or both).

Examples

Technological	-	**breeding (AI, ET) cattle**
	-	**breeding (fibre thickness)**
	-	**equipment (ultrasound scanners sheep)**
		(protein, moisture content)
Management	-	**CALM**
	-	**market oriented feedlots**
	-	**video assessment**
	-	**abattoir assessment**

(ii) For each innovation a maximum of 2 marks up to a cumulative total of 5 marks if the candidate described the link between the innovation and the quality/ marketing aspect, for example - marbled beef for the Japanese market, CALM for providing a stress-free environment for cattle sales, segregation of wheat varieties for overseas markets. **8**

(b) Explain how changing community attitudes and consumer preferences bring about marketing innovations.

Part (b) was assessed according to the following scheme:

(i) a maximum of 4 marks for naming at least four consumer attitudes or preferences and

(ii) A maximum of 3 marks for linking attitudes/preferences to the marketing innovation.

Examples include:

- **Saturated fats vs unsaturated fats**
- **Low fat or fat-free foods**
- **Organic or chemical free produce**
- **White meat vs red meat**
- **Dietary dysfunctions**
- **Trends toward fast food, pre-cooked food**
- **Fresh and blemish free fruit and vegetables**

Examples of marketing innovations include:

- **Calcium in dairy products**
- **Iron in red meat**
- **Flavoured milks**
- **Beef short cuts**
- **Bananas in "pyjamas"**
- **Milk from contented cows**
- **Recipe leaflets**

7

Some Perceptions of Agricultural Education from ABC Landline - 10th December 1995 with Pip Courtney

If asked, most Australians would say those who live on the land are resourceful, stoic and hard working. That's the image many of us hold dear anyway.

As far as high school students are concerned though, while they might admire the qualities of the "busy image" they are underwhelmed by the industry he or she works in. These days Agriculture as both a business and an occupation turns many students off. To many it represents environment problems, poor returns, job insecurity because of climatic disasters and isolation. This perception is translating into falling enrolments, and its got some people worried .....

WE HAVE AN IMAGE PROBLEM

Students tell us that they don't see a career for themselves in our industry by declining to register for our courses and causing the slide in the TER scores. Investors are careful not to invest their money in rural enterprises. In general, Agriculture and Agricultural scientists are regarded as the bad guys in terms of degradation of the environment. They are seen to be raping the land.

I don't think we've done a good enough job as a profession in Agriculture to portray a positive image. Australia's Institute of Agricultural Science wants to turn this around. Its aim is nothing less than a Renaissance in the Agricultural Industry. It's calling for the development of a comprehensive national campaign to inspire two to three thousand extra students to study agriculture in the next 10 to 15 years. That Marketeers need to be brought in, to convince Australian teens that Agriculture is a thriving, dynamic industry offering a host of challenging and rewarding careers indicates just how poorly the industry is perceived. It's regarded by many in our society in my opinion as a peasant occupation.

I think young people are taking notice of that and saying, "Wow, why should I go into this industry when all I see on the television for instance is skulls of dead cattle!"

We're in danger of passing on to those who inherit our industries, an industry consigned to the intellectual scrap heap because those who have the greatest capacity for the vision, have not showed leadership and faced up to the realities of our predicament.

THE PREDICAMENT IS THIS

Enrolments in Agriculture at TAAF and University level are falling in 1993 and 1994. The number of farm managers with Tertiary qualifications dropped by 2%. Many of the old guard who have made a living from the land without formal qualifications don't think it's a problem. But Agriculture is a much more complicated game than it was a generation ago. As one agronomist pointed out; farming has become more professional and complex and farmers can no longer rely on hard work alone for success.

The Institute of Agricultural Science says people used to say farmers had to get big or get out. Now it says farmers have to get smart or get lost.

This industry that's coming up to the next century will be a very sophisticated, very demanding, and a very challenging industry to manage, so we really need some very smart

people to capitalise on the Asia - Pacific connection. The old guard might not like hearing it but a Tasmanian study found farmers where at least one of the Managers has a post High School qualification in Agriculture were more profitable than where managers did not proceed beyond high school- $34,000 more profitable.

ABARE says Tertiary educated farmers make twice the "off farm" income than their high school educated neighbours and a Canadian group study says farmers with formal Agricultural qualification say their education developed their ability to source, analyse and put into practice new technologies and farm methods.

The Institute says if 80% of the 120,000 farmers who don't have any Agricultural training beyond year 10, gained it, farm profits would increase by 1.6 billion dollars.

So it is vital if we want an export industry (and our external debt shows, we obviously do) and we are good producers of food but we're not great value adders; that we are going to need that education and training to add that value.

We are going to have to get better, get smarter and more competitive and if we don't then we're going to continue to decline.

HOW CAN WE CHANGE THE IMAGE OF AGRICULTURE AND INCREASE AGRICULTURAL EDUCATION ENROLMENT?

At the Melbourne Conference, delegates agreed that when the average Australian heard about Agriculture, they probably didn't hear about the third of farmers who return better than $200,000 and $400,000 per year.

Those who don't leave the city to see how productive our farmers are, are bombarded with more of our propaganda on drought and rural social problems and, tough though it may be, we must recognise the detrimental effects these pictures of poverty and constant battles with the elements have on our ability to portray an image of a dynamic, socially and environmentally responsible, profitable industry.

As long as people see Agriculture associated with areas where there are declining small towns, closing hospitals and high petrol prices, you're not going to get people to work in rural areas when they hear that's what rural areas are like.

This negative view is not confined to urban areas. Recent bad experiences with low commodity prices and drought have seen rural families who have traditionally provided many of the agriculture students advising their children to avoid the industry.

I think some of them are making a decision based on the past and how their families feel about agriculture at the present, rather than trying to look ahead and see what might be there in the future.

All this despite all the job opportunities that exist now. We have more jobs than graduates to fill and for an industry that's not meant to be doing too well I think that's remarkable. There is a real demand for top graduates out there in a whole range of Agricultural areas.

Several initiatives designed to encourage Agriculture in a respected and highly competent industry were suggested. I believe promotion is very important. I think students are influenced by success and when they see success they want if for themselves. I think their interest is stimulated by appropriate role models and advocates. I think students know what they want for themselves and if promotion matches that, I think that's the way to go.

For those unconvinced for an image overhaul one New Zealand delegate had this to say:
"We had a look at people's perceptions and were a bit staggered to find that people who are most trustworthy and who are doing most for other people are pharmacists, the health professionals, and local police. Often we

found that scientists and Agricultural Scientists were listed just above used car salesmen." And I suspect that its the same in Australia.

Delegates thought Schools' Careers Advisers were not aware of the wide range of careers available in Agriculture. It was not uncommon to find students told by high school teachers they were too bright to study Agriculture. Students need to be told of the changes in careers, of chances which are exciting and changing because of high technology. Students were not being made aware of business/management skills in Agriculture. Agriculture hasn't been good at focusing on individual needs. Some delegates were critical of Agricultural studies designed to suit the establishment not the students.

WHAT WENT ON IN THE FACULTY OF AGRICULTURE AT THE UNIVERSITY OF TASMANIA?

Numbers were so low by the late 80's they were in danger of closing. Could the faculty be saved? A review was commissioned. They found too few students fragmented in approach and there was no collaboration with TAFE and other Rural industries. The review led to a new approach:

- more relevant
- more accessible
- more flexibility
- more courses
- capital investment
- lots of links to TAFE and Universities

As a result of these new policies were being instigated, student activity increased 185% in three years: from 15 post graduates to 45 at present and more importantly, those people are working on industry - focused projects.

"The best environmentalists are actually Agricultural scientists - people trained in how to manage the land."

There has not been a learning culture in our industry let alone a life long learning culture. We want everybody in the Agriculture industry to be studying - leading to a job plus formal training. We need people with good manual skills as well.

Nigel Monteith says the industry should be big enough to admit the major limiting factor for growth and profitability is an under educated workforce. If 16% of the industry has post grade 10 qualifications compared to 51% of the total labour force, the industry has failed to communicate an exciting view of the future. Monteith is convinced that if we don't come to grips with Agricultural Education and the Agricultural Industries image, we will fall behind other OECD countries early next century.

CHANGING THE PERCEPTION OF AGRICULTURE

Agriculture is more than subsistance Farming. We must start at the school by "Being a Champion for the Cause" of life-long learning in Agriculture!

If you're going to tell people the truth, be funny or they'll kill you!

Billy Wilder

PENRITH SHOW 1996

It just gets bigger each year! With the 12 schools that participated this year and the accompanying livestock, our pavilion was bulging at the seams.

Penrith is a three day show: Friday, Saturday, Sunday. We have a schools' pavilion where schools compete against each other rather than against well established studs. Each school has an area of approximately 3m x 4m in which to erect a static display. A shield is awarded to the winner and ribbons to other place getters. As well, each school may choose a maximum of five categories from a possible list of 26. The categories ranged from potted plants to honey, pasture/crop samples, sheep, goats, cattle and poultry. Points are awarded for 1st, 2nd and 3rd prizes in each category and the school with the highest points wins the shield with other place getters receiving ribbons.

A number of other activities also formed part of the show.

POULTRY JUDGING COMPETITION:

Section 1 - Welsummers
Section 2 - Minorcas
There were six birds in each section. Students were required to place the birds in order of 1st to 6th and answer three questions about the breed.

PARADERS COMP:

Section 1 Juniors Years 7-9
Section 2 Seniors Years 10-12. Beef cattle of varying age and breed were used as we had about 80 students entering this competition.

CALF COMPETITION:

The Department of Correctional Services (Emu Plains Prison Farm) donated Angus x Frisian calves to 10 schools during 1995. These calves were raised and prepared for the show. Millmaster Feeds provided Calfpab and calf pellets at subsidised prices to schools with a donated calf.

The 12 schools that participated were:
Bossley Park High
Caroline Chisholm Catholic
Cranebrook High
Dunheved High
Elderslie High
Elizabeth Macarthur High
Erskine Park High
Menai High
Nepean High
Plumpton High
Prairiewood High
Richmond High

RESULTS:

STATIC DISPLAY:

1st Nepean High
2nd Elderslie High
3rd Erskine Park High

CATEGORIES:

1st Richmond High
2nd Plumpton High
3rd Bossley park High

POULTRY JUDGING

Section 1 - 1st Kirsty Morely, Elizabeth Macarthur High
Section 2 - 1st Alan Kemp, Elizabeth Macarthur High.

PARADERS COMP:

1st in Juniors and reserve champion - Michael Leich Dunheved High
1st in Seniors and champion parader - Cathryn Evans Caroline Chisholm Catholic High.

CALF COMPETITION:

1st Caroline Chisholm Catholic High with their heifer "Kahlua".

All participants had a great time during the show. A big thank you to Gordon Moxon and his colleagues at the Penrith AH and I Society for looking after us so well.

We would welcome schools from outside the Sydney area to participate in the Penrith Show for 1997. I'm sure a billeting system could be worked out. Expressions of interest can be made to me (Tracey Watson) at Bossley Park High, Phone (02) 823 1003 or Fax (02) 823 7835.

FRIZZLE BANTAMS FOR GENETICS STUDIES

By Ian Crabb - Queanbeyan High School

Tired of using red, roan and white calves to explain inheritance? Haven't got enough land to run a herd of Shorthorn cattle anyway? Well, there is another farm animal which exhibits all three genotypes as three different phenotypes.

The Frizzle is unique among fowls due to its curled feathers. Frizzles appear as mutant sports from time to time in various breeds. The bantam variety has a long history dating back to the Japanese Emperors who kept bantams in their palace gardens. They are readily available in Australia whereas, the large fowl Frizzle is quite rare.

The homozygous Frizzle (FF) has thin wispy feathers where the feather tip curls back towards the head and the edges of the feather curls in towards the centre. These birds will be referred to as Wispies in this article. The heterozygous Frizzle (Ff) has broad feathers with the tip curled back towards the head. These are the exhibition type Frizzles. The Japanese call them Peony fowls due to their resemblance to the petals of a Chrysanthemum flower. Normal fowls (ff) have feathers which point towards the tail and follow the contours of the body.

The gene is an incomplete dominant where the F1 resembles neither of the homozygous parents. Roan cattle by contrast are co-dominant as they resemble both parents due to the presence of both red and white hairs.

POSSIBLE CROSSES

PARENTS		OFFSPRING
Wispy (ff) x Wispy (ff)	=	All Wispy (FF)
Wispy (FF) x Frizzle (Ff)	=	1 Wispy (FF) : 1 Frizzle (Ff)
Frizzle (Ff) x Frizzle (Ff)	=	1 Wispy (FF) : 2 Frizzles (Ff) : 1 Normal (ff)
Frizzle (Ff) x Normal (ff)	=	1 Frizzle (Ff) : 1 Normal (ff)
Wispy (FF) x Normal (ff)	=	ALL Frizzles (Ff)
Normal (ff) x Normal (ff)	=	ALL Normal (ff)

A Mastery Skills Test exists for Frizzle fowl genetics. The different phenotypes can be identified at 1 to 2 weeks after hatching.

Some advantages of using Frizzle bantams to study inheritance include:

a) Bantams need less space and food than large fowls
b) Short generation interval
c) High reproductive rate
d) Results determined soon after hatching
e) Easily handled by students
f) Frizzles cannot fly, a low (1m) fence can separate groups in a shed
g) Most Agricultural and Poultry Club Shows provide Frizzles classes.
h) Ready market for either exhibition stock ($20 - $30) or as pets ($5 - 10) depending on quality.

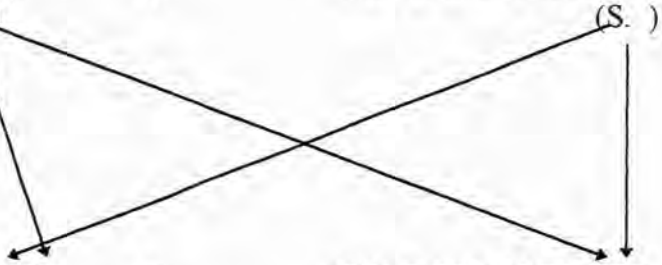
All of the usual poultry husbandry applies. Nutrition, reproduction, growth and development, housing and pests and diseases can also be studied.

SEX-LINKAGE

The second aspect of genetics which can be studied is sex linkage using colours. Only two colours exist in fowls, these being Silver (S) which is dominant, and Gold (s) which is recessive. There are many pattern variations within each colour. The colour genes are carried on the sex (X) chromosomes. Males have (XX) while females are (XY).

The Sex-Linked Cross:

PARENTS GOLD MALE (XX) (ss) x SILVER FEMALE (XY) (S.)



OFFSPRING SILVER MALES (XX) (Ss) x GOLD FEMALES (XY) (s .)

Suitable colours are Red (gold) male with Columbian (silver) female. This can be achieved with breeds such as Rhode Island Red males and Light Sussex females.

"FARM SAFETY SOLUTIONS"
A RESOURCE KIT FOR FARMERS
AN "IDEA BANK" FOR IMPROVING SAFETY ON THE FARM.

AVAILABLE NOW through your nearest FARMSAFE ACTION GROUP or your nearest Commonwealth Rehabilitation Unit

This project has been sponsored by the Commonwealth Rehabilitation Service and endorsed by Farmsafe Australia.

Farmers take advantage of the opportunity to get some free advice and information on how to improve safety on your farm

"Farm Safety Solutions" is available to other organisations for $75.

This resource has been developed to try and help reduce the high number of injuries that occur on the Australian farm.

For more information contact: Jill Dyson, Occupational Therapist
Commonwealth Rehabilitation Service PO Box 1233
TAMWORTH NSW 2340
Phone (067) 668 555 Fax (067) 668 061

NSW Schools Animal Care and Ethics Committee (SACEC)

What is it?
Who are they?
What do they do?

Phil Hurst SACEC Executive Officer
and NSWAAT Representative

The Committee

The Schools Animal Care and Ethics Committee was formed in 1990 to oversee the implementation of the Animal Research Act (1985) in NSW schools. All Government schools, all Catholic Education Commission Schools and many Independent schools are accredited through the SACEC to use animals for educational purposes. The make up of the Committee is controlled by the Animal Research Act (1985).

The Animal Research Act (1985) - Regulations(1995) states:

Constitution and procedure for ethics committee for school-based establishments

1. An ethics committee for a school-based establishment must have at least 4 members
2. At least one of the members of the committee must be a person who fulfils the requirements of section 13 (5) of the Act (independence and no involvement with animal research)
3. Each member of the committee must be a person who fulfils the requirements of one or more of the following paragraphs, and between them the members must fulfil all of the requirements of those paragraphs:
   a) a person actively involved in animal use for teaching;
   b) a person with identified experience and expertise in the husbandry and management of animal species used for teaching;
   c) a person with no direct involvement with animal use for teaching;
   d) a person with approved qualifications in veterinary science or with qualifications and experience to provide comparable expertise;
   e) a person with a demonstrable commitment to and established experience in, furthering the welfare of animals, who is not associated in an official capacity with the school or any other accredited research establishment other than in the person's capacity as a member of such a committee.
4. If the committee has more than 7 members, at least 2 of the members must be persons who fulfil the requirements of subclause (3) (e)
5. The committee must be of such a composition and size as will ensure that the variety and volume of animal research to be considered by it can be adequately examined.

At present the members of the committee are:

Mr Jim Scott	Chief Education Officer, Science Department of School Education	Dr George Arzey	Senior Veterinary Officer Elizabeth Macarthur Institute
Mr Phil Hurst	Agriculture Teacher Hawkesbury High School	Ms Karen Stiles	Australian and New Zealand Federation of Animal Societies
Mrs Mathilde Kearny-Kibble	Board of Directors Animal Welfare League	Mr Duncan McInnes	NSW Parents Council Inc.
Mr Eamonn Murphy	Education Officer Student Welfare Program Catholic Education Commission	Ms Rosemary Hafner	Science Inspector Board of Studies
Mr John Kleinig	Association of Independent Schools	Ms Jenni Wilkins	TAS Curriculum Officer Board of Studies

Roles of the Committee

- SACEC has to monitor and **support** the implementation of the Animal Research Act (1985) in schools. This is the purpose of the school visits, which have been increased to around 12 a year, and the Survey to randomly selected schools.

- To inform teachers of their obligations under the Animal Research Act (1985). This is done by the publication of "Animals in Schools -Animal welfare guidelines for teachers (1991)" (this is at present under review) and the development of a two hour teacher course package for inservices.

- To update schools on best practice /case studies /amendments to the **Animals in Schools** booklet. This will be done through articles in this BAAT and School Education News from time to time about the use of animals in schools for teaching and related issues.

- To investigate and report on allegations of animal abuse in terms of the Animal Research Act (1985). District Superintendents will conduct investigations as needed.

- To assess applications to undertake Animal Experiments not on the approved list or in category 3 on the list. These are discussed at committee level.

School Visits

Most Agriculture teachers dread the school visit, but of the 4 school visits I have been involved in, I have been impressed with them all. The committee is keen to change the perceived impression from that of punitive to one of providing support, and conduct their visits in a way that enhances this policy.
The purpose of the committee's visits to schools is to:

I. assess the extent to which schools are responding to the requirements of :
   - the **Animal Research Act** (1985);
   - the various memoranda on **Use of animals in schools**
   - **Animals in Schools: Animal welfare guidelines for teachers** document issued September 1991.

II. provide support and guidance to schools using animals

III. assist the Committee to develop appropriate strategies to monitor the proper use of animals in NSW schools.

The visit usually comprises three parts:

1. Initial discussion between the Principal, key staff and Committee members on the general requirements of the Animal Research Act (1985) and how the school is responding to its responsibilities in the use of animals (half an hour).

2. A site visit to the facilities where animals are housed and used in teaching programs, and the records kept of these activities. Observation of the current animals in the school (one hour).

3. Preliminary summation of findings of the Committee to the Principal and suggestions offered to maximise educational benefits to students and welfare benefits to animals.

The Committee is working on having informal gatherings for Principals, Animal Welfare Officers, Head Teachers of Science and Agriculture teachers to discuss the role of SACEC and issues which may arise. These meetings will be in a central location after school with light refreshments provided.

The following checklist is provided to schools 2 weeks in advance to help prepare for a SACEC visit:

SCHOOL VISIT - CHECKLIST

1. Number and type of live animals used in schools

2. Alternative strategies being used? (instead of live animals)?

3. Which teachers are using live animals? Do they have the appropriate competence and skills?

4. Methods of disposal of animals.

5. Nature of records kept.

6. Activities outside the approved list.

7. Housing of animals
   - (i) space
   - (ii) ventilation
   - (iii) lighting
   - (iv) temperature control
   - (v) hazard containment
   - (vi) cleaning equipment
   - (vii) food storage
   - (viii) waste disposal
   - (ix) general storage
   - (x) security
   - (xi) noise

8. Monitoring/care of animals
   - (i) physical conditions
   - (ii) demeanour
   - (iii) exercise of animals
   - (iv) cleaning
   - (v) bedding
   - (vi) pest and vermin control
   - (vii) feeding
   - (viii) water
   - (ix) identification
   - (x) cages, pens, compounds
   - (xi) environment enrichment
   - (xii) transportation of animals
   - (xiii) husbandry
   - (xiv) person responsible (within and outside school hours)

9. Acquisition of animals
   - (i) licensed animal supplier
   - (ii) farm animals
   - (iii) free living animals
   - (iv) other: please specify

10. School breeding programs
    - (i) purpose
    - (ii) species
    - (iii) disposal of surplus animals
    - (iv) records

The one thing to keep in mind is that everything that is done with animals in your school, should be able to be linked to **EDUCATIONAL OBJECTIVES**.

Suggested Educational Objectives (Extract from "Animals in Schools" booklet)
The following list is given to teachers as a guide to valid educational objectives designed to build on the partnership between humans and animals in the pursuit of learning whereby neither suffers and both may gain from the experience. Obviously there will be other objectives set by the teacher which will be more specific to the lesson at hand in which case these objectives may be useful as a yardstick for comparing the desirability of using live animals rather than other teaching aids.

To develop in students a sensitivity to and awareness of the needs of animals through positive experiences gained in circumstances where high quality animal care is provided.

To teach respect for all life through the use of humane methods of scientific inquiry into the natural characteristics of animals.

To use the students' natural affinity for and curiosity about animals to build sound powers of observation and understanding of the world around them.
To teach students their moral and ethical responsibilities towards animals.

To develop in students skills and attainment of knowledge necessary to care for animals.

Conclusion

In the short time I have been on this Committee I have found that it is very keen to reinforce its primary role as one of support and guidance. One example of the support we can offer was shown on one of our school visits where the Agriculture teacher had been trying to obtain funds to upgrade the perimeter security fence of the school farm without success. We saw the problem, talked to the Principal and the materials were ordered within a few days and the upgrading commenced.

RURAL TRAINING COUNCIL

Report by Bob Guest

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

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

The current review of NSW TAFE under the Carr Government is also likely to bring changes with one possible scenario involving shifting some of the functions and perhaps staff from TAFE Industry Training Divisions to the ITAB's. DTEC will probably have these changes much clearer by the time this report appears in print.

In the meantime the Rural Training Council has been concerned with the development of a Rural Industry Training Profile and strategic plan for training for the rural sector. Priority for funding of training programmes depends on their importance as identified by the training profile.

Areas to have received recent attention from the training council include:

- Amenity and Ornamental Horticulture
- National Rural Skills Traineeships - A recently privatised body Rural Nettforce is charged with the task of meeting government Traineeship targets for 1995 and 1996. They are:-

  For 1995- 1000 Traineeships (Nationally) comprising of: 200 rural Traineeships, 7 piggery and 15 poultry Traineeships for NSW.

  For 1996 - 450 definite, 50 probable and 30 possible rural Traineeships, 120 Amenity Horticulture and 20 Piggery Traineeships for NSW.

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

- Rural Industries Content Endorsed Course - The Train the Trainer programmes for agriculture teachers have been well received and are in heavy demand. The next intake will be in early 1996 so if interested you should make immediate approaches to your staff development officers.
- TASK - a project aimed at providing additional training opportunities for farmers in drought declared Rural Protection Board Areas.
- Wool Harvesting Training - this was previously conducted by the Wool Corporation (which no longer exists) but new arrangements involving the Wool Council are nearly completed.

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

YANCO STUDENTS WIN SHEDHAND COMPETITION

Melinda Gambrill, Development Officer,
NSW Agriculture Phone (069) 530308 and Fax (069) 530200

For the first time, a team of five students from Murrumbidgee College of Agriculture Yanco NSW entered and won the TAFE shedhand skills competition which was held recently at Orange NSW. Sponsored by Lyco and held in conjunction with the Australian National Field Days at Orange, the competition was open to any TAFE student studying woolclassing. In a two hour shearing run the students are judged on how well they performed shedhand duties and how well they work together as a team. Representing the Leeton TAFE, members of the winning team are currently studying Woolclassing as part of the Certificate in Agriculture course at Yanco. Team members include Rebecca Anderson of Darriman Vic, Margaret Mansfield of Adaminaby NSW, Wendy Finch of Gulgong NSW, Sally Taylor of Broken Hill NSW and Scott Hall of Forbes NSW.

From Left: Wendy Finch, Margaret Mansfield, Sally Taylor, Rebecca Anderson, Scott Hall.



Training and guidance in the necessary skills required to compete in shedhand competitions, were provided by TAFE staff including Tim Carroll, Paul Conlan and Mal Henman from Leeton. The event attracted fifty participants, including 10 groups of five teams, from TAFE College's through NSW with representatives from Murrumbidgee College of Agriculture (Leeton team), Tocal College, Bathurst, Orange, Forbes, Parkes and Cowra.



Back Row from Left: Mal Henman of TAFE, John Bendeich of MCA, Tim Carroll of TAFE, Peter Witschi (General Manager Bus. Services) of NSW Agriculture.
Front row from Left: Wendy Winch, Rebecca Anderson, Sally Taylor, Margaret Mansfield, Scott Hall.

Wendy Finch of Gulgong NSW, winning team member, grew up on a sheep property with the knowledge and experience of working in shearing shed and believes, "Although I have had a lot of experience working in sheds, I really enjoyed the atmosphere of the competition and being part of a really motivated team. We practised working as a team in other sheds prior to the competition and it really paid off. While I'm at college I'd like to enter in other team events and by completing the woolclassing course and gaining experience from Orange we should continue to do well," Wendy concluded.

As part of the Certificate in Agriculture course, students are required to complete modules from the woolclassing certificate. They receive competency based training in a range of skills required by shedhands and woolpressers so they can perform these skills when preparing wool for sale in the shearing shed.

Mr Tom Geltch, Chairman of the Murrumbidgee College of Agriculture Advisory Council believes, "Murrumbidgee graduates are in great demand because of the wide range of skills they get at College. The success is yet another example of how valuable our College courses are."

Each member of the winning team will receive a clock trophy that was donated by the Australian National Field Day Committee and the Team name will be placed on the Bob Eastoe (former Sheep and Wool Officer for NSW Agriculture) Memorial Shedhand Trophy. Second placing was awarded to the Tocal team closely followed by Bathurst and Orange teams.

ROYDEN DAIRY TOURS



For the past five years David McKay has been conducting tours at his dairy farm, catering for children from Primary through to Year 12. Teachers have found the visits particularly useful to students in Years 10, 11 and 12 who are studying Agriculture or Geography. David has received a lot of positive feedback from teachers about the 'hands on' approach that he takes with students, and the learning benefits received.

The Royden Dairy Farm is above average in size with 130 milkers on 800 acres of land. It is an attractive and interesting farm. The tour takes the form of a talk about dairy farming (with plenty of time for question and answer), viewing of the cows being milked, following through the process of the milk handling on the farm. Visual aids are used in conjunction with the lecture and tour time is around one and a half hours. David is able to make up a program to suit almost any curriculum that you may request. Detailed student notes are available.

The Bathurst area has a vast diversity of agricultural pursuits and many other educational attractions are available. The Bathurst Visitors Centre will supply further information if required and may be reached by calling (063) 321 444. Our tour could be combined with another of your choice in the Bathurst area, which is only a three hour drive by coach from Sydney.

ROYDEN DAIRY TOURS - The genuine article

- A real dairy (not a tourist resort) viewed in operation.
- Student notes & informative lectures provided; Q&A.
- Ideal *case study* - Geography & Ag.
- Courses may be tailored to suit.
- A Friendly environment, free refreshments.
- 3 price ranges. All ages. 5 yrs in tourism.
- Only 3 hours from Sydney by coach.



Plenty of other features in the BATHURST AREA to compliment your visit.
- Come and get your feet dirty.

Contact myself - David McKay for a booking and further information on...
(063) 32 4385 (office) or 019 455 470 (direct). I'd love to hear from you.

FIND THE WORD

ORGANIC FARMING 1

C X S Q Q F E E C O C W M F Q Y X P X S M
H O L T Z W L R E O I H L A R O O H P L O
T O M Z N I N M U V M D D O T I R Y Z A I
R V R P V E N K A T N P K S S T X C Z C S
Z C I I O C M R O E C Y A O O Y E O W I T
O X N O S S I E G I T U N N C M H R U M U
U G Q U W E T Y L E E I R K I U U D C E R
Y P M K T A X S T E N W G T E O S X Z H E
P U Q Y L O Z U B G A A S S S D N M C C Z
H O C I N A G R O B Q S N X E Z J Q T M C
E S A E S I D X K C R T L P Y H P L V W P
N O I T A T O R W V V E R X R A C N B C T
B G K P R L J C L Y X S O H K H S L Q J Q
M A N U R E S Y S T N E I R T U N Q U O Q
F X C Y V A C Z E D I V E R S I T Y Q M W

CLUES

1. ..... gardening is about raising flowers, herbs, vegetables and shrubs using techniques and methods that cause no potential ..... risk to humans or to birds and insects in the garden environment.
2. All possible ..... are returned to the soil.
3. Our garden is our sanctuary and a large sign should be erected in it which states, :No toxic ..... allowed!"
4. ..... is important in both the range of plants and trees grown and in the biological life that is often unseen, both above the ground and beneath the ground.
5. Organic growing emphasises fostering a high state of soil fertility by the addition of ..... , green ..... , other plant wastes, ... , and mineral fertilisers.
6. The ..... soil with its incredible array of biological life will make ..... available for plant nutrition, and help to protect plants against invasive ..... organisms.
7. A good healthy soil capable of producing strong, vigorous plants that are more resistant to attack by pest and disease must have:
   (a) an ample supply of organic ..... to provide structure to the soil, food for micro organisms, moisture absorption and on decomposition, nutrients for the plant.
   (b) an adequate supply of inorganic ..... required to sustain plant growth.
8. There are 16 to 24 elements that are required for plant and animal nutrition.
9. Plant roots require ..... and ....., therefore build a soil that has high organic matter levels.
10. Decomposition of organic matter will result in .....
11. Humus will provide the soil that has a crumbly friable ..... that is easy to work and provides an ideal environment for earthworms and other organisms.
12. A wide variety of species and interplant herbs to assist with any benefits that ..... planting may provide.
13. During the main growing season ..... incessantly.
14. Practice a ... that ensures that garden beds are planted with a legume and a green manure crop every few years to supply nitrogen and organic matter.
15. Prevent the buildup of disease by avoiding planting the same ..... in the same place each year.

St John's College Woodlawn

A Brief History

St John's College came into existence in 1930 as a result of a gift of 300 acres of prime agricultural land donated by the late Miss Margaret Buckley of Lismore. (She was a distant relative of one of our members - Mr Rick Buckley of St Patrick's College, Goulburn). The Bishop of Lismore at the time, Bishop Carroll, entrusted the Building and Staffing of the College to the Marist Fathers (Catholic Priests) who still run the College today. There has always been a strong emphasis in the teaching of Agriculture as can be seen from some of the following Historical extracts. Mrs Buckley wrote the following regarding the use of her property saying: "The land was to be used to make Catholic gentlemen out of Catholic farmers' sons."

Bishop Carroll wrote in his opening address in 1931 regarding the aims of the College: "The College will enable young men to add lustre to the Catholic name in the learned professions of Law, Arts, Sciences, the Priesthood and in Commercial and Agricultural careers."

"The land was to be used to make Catholic gentlemen out ofCatholic farmers' sons."

In addition to this, St John's College has another special reason for its existence. With more than 300 acres of first class land available, it aims to become a great training ground for scientific and practical farmers: "No farmer of today can refuse to face the fact that science and its application are fast revolutionising the methods whereby the earth has hitherto been induced to yield its fruits. No thoughtful farmer can deny the fulfilment of a long felt and wildly extended want in the establishment of a Catholic College with such a practical purpose."



Northern Rivers Hereford Youth Group Competition Lismore, March 1996. Years 8, 9 and 10

A Brief Outline of Agricultural Education over the past 65 Years

1931-1944

The original course included the following subjects: Christian Doctrine, English, Maths, Science, Business Principles, Farm Management, Chemistry, Botany, Theoretical and Practical Agriculture. During these years the College ran as an Agricultural College. However, there were many difficulties because of the Depression and World War II, and it ceased to run as such in 1944.

The farm consisted of a Registered Jersey Stud, A Piggery Stud with Berkshire and Tamworth breeds and a poultry shed and extensive vegetable and cropping areas. The College was virtually self sufficient, providing most of the food for staff and students.

The College acquired quality stock for both its Dairy and Piggery. A bull 'Richmond Astronomer' was purchased from Hawkesbury Agricultural College. Quality pigs were acquired from Wollongbar Agricultural Research Station. Considerable success was achieved at Shows with both the Dairy Cattle and the Pigs. A 90 Tonne concrete silo which still exists today, was used for fodder conservation. It was quite an impressive structure for its time.

After 1944

Agriculture was not taught as a subject until 1953. However, the Brothers continued to run the farm and supply produce for the College. At this time there were three dairy farms run by the College.

In 1972 Agriculture again lapsed as a subject due to staffing difficulty. The Dairies were closed down as pasteurisation prevented consumption of raw milk by students and the farms were no longer viable.

St John's College, Woodlawn

1982

In 1982 Agriculture was introduced and the farms were turned to Beef Cattle. The College had acquired up to 500 acres over the years. In 1990 two farms were sold as the cost of staff and returns from these farms became no longer viable. 200 acres of the original farm still remains today.

In 1985 the Northern Rivers Hereford Society donated some Stud cattle to the College and a Stud was established.

The Current Situation

The College farm is managed by the Agriculture teacher who lives in the original farm house. The remaining 80 hectares can all be used for teaching purposes. There is a commercial herd consisting of 60 Hereford cows and a small Hereford Stud - 10 cows. A cross-breeding program has been introduced using Bos Indicus bulls.

A classroom (which is situated next to aabout eight hectares of rich alluvial soil where most of the teaching occurs),was built eight years ago some 200 metres from the main College buildings. This area has been developed since the classroom was built and includes many facilities including a small piggery with the capacity to grow out 20 weaners; a poultry shed with the capacity for 80 birds at one time; a set of sheep yards (12 Suffolk ewes and 1 ram) and a set of cattle yards. There are also extensive vegetable and crop growing areas although most of this area is prone to flooding.

Other facilities include Rudweigh cattle scales, shearing stand, hand operated rotary tiller cattle clippers and a computer plus access to the Network. The classroom is also well set up and is ideally situated to run both practical and theory lessons from

Classes

The current enrolment is 360 boys from years 7 to 12. Falling numbers over the last five years has seen weekly boarders and day students enrolled over the past two years which is a change from the traditional 'all boarding' situation which existed for many years

Year 8 - Design and Technology
2 periods/week of 50 minutes.

Year 9 x 20 students - 7 periods
2 week cycle

Year 10 x 20 students
7 periods/2 week cycle

Year 12 x 6 - 2 Unit Agriculture.

Weekly boarders and day students now enrolled

Because of the small numbers in Year 11 and 12 over the past few years, it has become increasingly difficult to run a senior class, hence no Agriculture in Year 11 1996. Numbers in the Junior school are increasing so hopefully things may improve.

There is one Agriculture Teacher assisted by one Ag Assistant working 20 hours per week (4 days) who does not work on holidays but will come in to check stock if required.

YEAR 8:
Students are introduced to Agriculture via a variety of topics including Vegetable Production, Poultry Production, Livestock Breeds, Horticulture and Farm Machinery and Safety. 50% of the Course is practical and students are involved in as many practical activities as possible including handling poultry and sheep, vegetable growing, tractor driving and horse riding.

YEAR 9:
Topics covered include: History of Agriculture, the Agricultural Environment, Plant Production, Animal Production, Plant Production, Animal Husbandry.

YEAR 10
Topics include: Systems Agriculture, Farm Management, Farm Machinery, Microbes and Invertebrates, Plant Production and Animal Production II.

Years 9 and 10 are involved in all practical areas including activities in cattle, pigs, sheep, poultry, crop and vegetable production, machinery, fencing and horticulture. Many students are very keen in showing cattle and are involved with the Hereford Stud as well as leading steers in local shows.

YEAR 11/12
2 Unit Agriculture Major Enterprises studied are the Dairy Industry and Maize, Product study - Milk

Dairy Heifer Show, Lismore 1996



St John's College, Woodlawn

Help from Parents

With the increasing number of local students attending the College, great support has been provided by parents in this area. Many students have been able to bring in their own steers and prepare them for competitions after school and on weekends.

A parent donated three Registered Poll Hereford cows and calves. Another parent who owns a dairy farm, loaned the College six dairy heifers which Year 9 students prepared for a junior dairy heifer show in early March this year. This help has enabled students to gain experience and interest in a variety of Agricultural industries.

1st Prize In Under 380kg Class At 1995 North Coast National Show, Lismore

Last year we had considerable success taking a 1st place at the North Coast National, Lismore in the under 380kg class and 3rd place in the carcase competition.

This year boys are preparing six steers for Beef Week in Casino.

Major Project

Year 10 students carry out a major project during Terms 2 and 3. Projects include raising poultry, pigs, steers - to growing a variety of crops and vegetables. Students carry out a detailed study of their chosen project and are given marks for their practical work, written report and oral presentation.

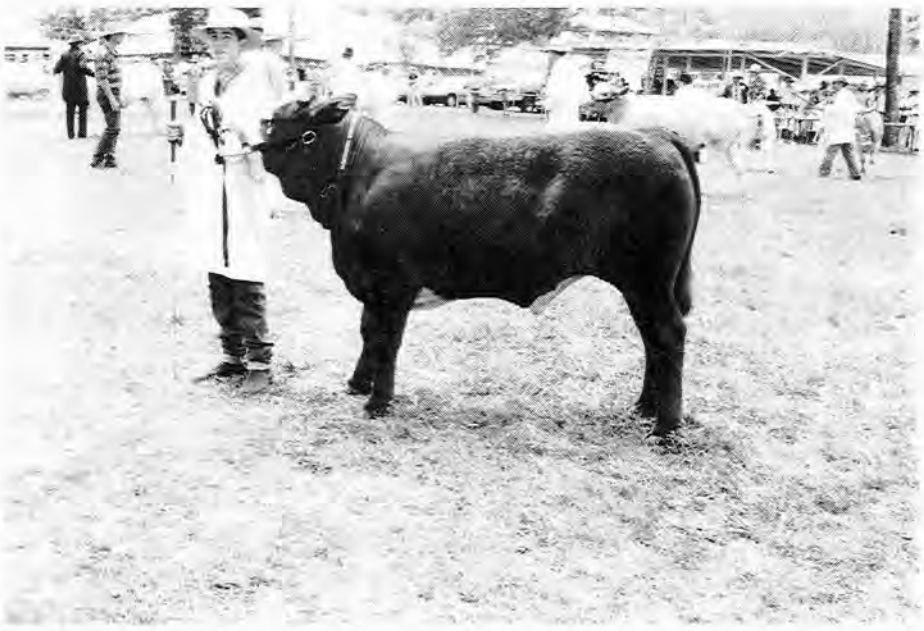
A major excursion is organised each year including an overnight stay usually with parents and old boys if possible.

Last year we went to Ag Quip and visited Rangers Valley Feedlot at Glen Innes.

This year we plan to go to Goondiwindi and the Agricultural Show at Toowoomba.

As well as this major excursion there are also many local trips to a variety of industries within our area. For those keen students who don't seem to be satisfied with just the class time Agriculture, there are opportunities to join the farm group on Saturday mornings to help with general farm work,: fencing, stock work, tractor work etc. For their efforts they are provided with a BBQ lunch which just goes to show, boys in Boarding School will do anything for a decent feed! I am not sure, if we are still making "Catholic gentlemen from Catholic farmers' sons". However, I am sure Miss Margaret Buckley would be pleased with the enthusiasm and interest which is still being shown by many students at St John's College, Woodlawn.

Mick Melino



North Coast National Show - 1st prise in under 380kg Class

A Usefull Video for Sale

"Sustainable Productivity in Agriculture"

Produced by Incitec - lasts 28 minutes

COVERS:

Early Agricultural History
Acidification
Salinity
Soil Structure Decline
Nutrient Depletion

COST: $25 includes postage and handlling

Make cheque payable to NSWAAT
Send to: Mick Melino
PO Box 6
LISMORE NSW 2480

St John's College, Woodlawn



Above: Show ribbons 1995

Below: Year 10 Vegetable Production



Below: 3rd Carcase Competition - North Coast National Show. November 1995

Report From The Northern Star November 1995

Students of St John's College at Woodlawn have been encouraged with good results in the first year many of them have been preparing and exhibiting cattle. The students from Years 7 to 10 this year prepared seven animals including five led steers, and performed exceptionally well.

At Casino, Simon Furhmann was first and Aaron Watson second with steers in the under 400kg class.

At Lismore, Aaron was first in the under 380kg class with a Limousin-Bradford cross steer, while Ben Gould was second in the under 500kg carcase class. The College also received a prize for the highest placed steer presented by a school, ahead of five other local schools including Woodenbong Central, which has won this award for a number of years.

In Hereford stud cattle judging, George Evans was first with a bull in the under 12 months class. St John's has been running a small Hereford stud herd with cattle donated by local breeders about 10 years ago. The College also runs a commercial herd on an 82 ha property it owns.

Below: Year 12 Major Project



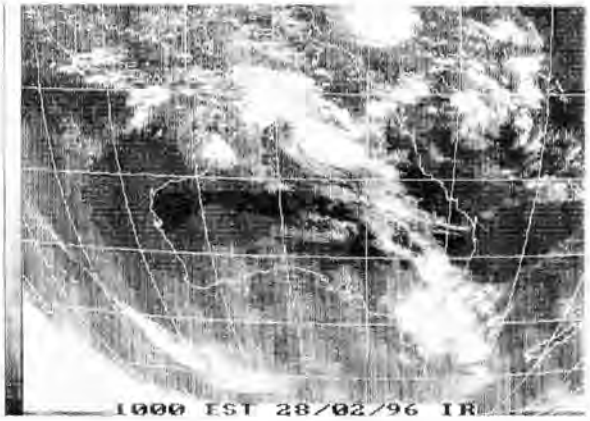


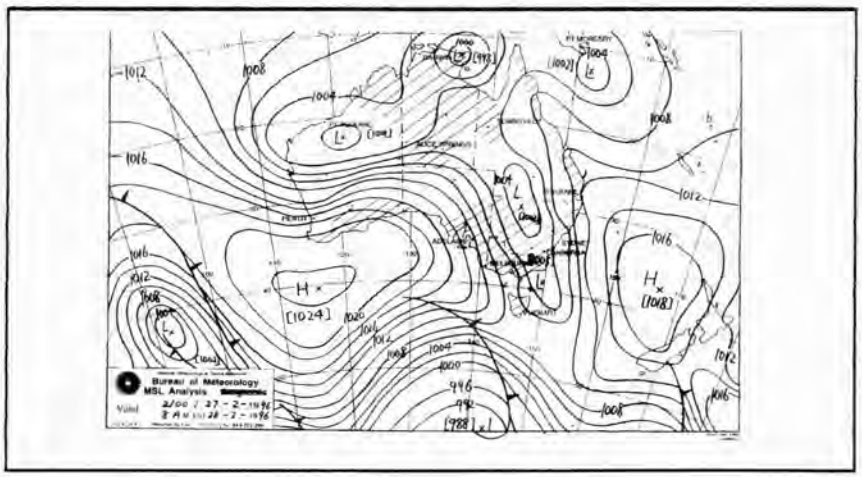
FOR YOUR INFORMATION
WEATHER DETAILS

from John Lee, Glen Innes High School, PO Box 405, GLEN INNES NSW 2370

The following information can be obtained by Poll Faxing 019 725 252 (Read Fax Machine's instructions on how to Poll Fax). Cost is approximately $0.55/minute. John originally got the number from Elders but doesn't know how. He doesn't think there are any restrictions about using it. He hasn't had any problems.

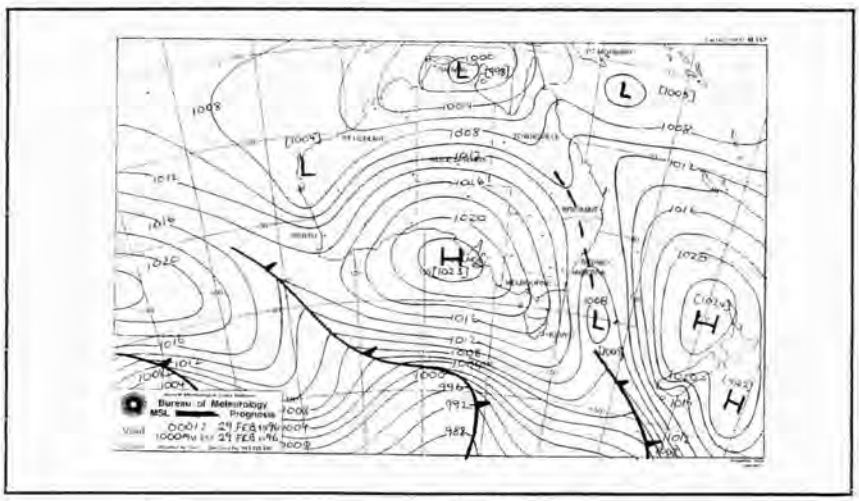
"Todays" Satellite Photo





"Todays" Synoptic Chart

"Tomorrows" Predicted Weather Chart



POSITION VACANT

RESIDENTIAL AGRICULTURE TEACHER

Farrer Memorial Agricultural High School has a vacancy for a part-time casual (0.5) Agriculture Teacher from the beginning of Term 2.

The position, which is available for the rest of 1996 at least, requires someone prepared to live in residence in the boarding school and supervise students on a rostered basis. Free board and lodging and a monetary allowance will apply.

Prospects for additional casual work within the school are good and additional casual residential duties may also be available.

For further information contact Bob Guest, Head Teacher Agriculture Phone (067) 607 211 (work) or (067) 607 118 after hours.

NOTE FROM EDITOR. Unfortunately our dead-line for BAAT was 31st March so we were unable to advertise the above vacancy before this time.

SUSTAINABLE FARMING

Beginning March 7th 1996 "The Land" begins a series of articles on Farm Sustainability. The first was written by Dr Tim Flannery. A brief summary of the project is provided.

The four articles each year will be sourced from prominent people with acknowledged expertise in the subject area concerned. Farm sustainability has become something of an overworked phrase. Farmers themselves know only too well that our traditional agricultural systems in Australia have left - or are continuing to leave - a legacy of resource-related problems for later generations to confront. The scale of the problems is vast. At last month's Outlook conference, a session on Future Directions for Australian Agriculture heard that an estimated 62% of broadacre and dairy farmers perceived that their properties were suffering from significant land degradation.

In the first article Tim Flannery traces the origins of our problems and looks at some of the ecological and social effects.

BUREAU OF RESOURCE SCIENCES

The Bureau of Resource Sciences is part of the Department of Primary Industries and Energy. It was established in October 1992 and was formed from the Bureau of Rural Resources and the resource assessment branches of the former Bureau of Mineral Resources, Its role is to support the sustainable development of Australia's agricultural, mineral, petroleum, forestry and fishing industries by providing scientific and technical advice to government, industry and the community.

The Bureau of Resource Sciences produces *Resource Sciences Interface* to inform the wider Australian community of analyses and trends in national and international scientific research that affect Australia's resources.

SOME SUBJECTS COVERED IN PAST EDITIONS ARE:

Number One 1993	(4)	Managing Introduced Pests. The dual path-control of harvest by Peter O'Brien
	(12)	From Genes to Jeans Biotechnology and the future for Australian agriculture by James Walcott
	(24)	Monitoring Residues in Livestock Products. A summary of recent animal product testing by Norman Blackman
Number Two 1993	(22)	Pest Risk Analysis. Assessment of risks in plant quarantine by Muni Chandrashekar
Number Three 1994	(14)	Animal Welfare. How science can help us by David Adams
	(26)	Managing Risk on Farms by David White
Number Four 1994	(4)	Methane from Australian Livestock. Implications for the greenhouse effect by Mark Howden and Robert Munro
Number Five 1995	(11)	Risk Analysis in Animal Quarantine. How safe are our imports? by Mike Nunn
	(17)	Australian Forest Profiles. Improving knowledge of our forests by Roger Hnatulk

TO RECEIVE PUBLICATIONS!

Resource Sciences Interface is published three times a year. If you would like to be added to the mailing list, please contact the address below. Copies of individual issues are also available on request.

ENQUIRIES MAY BE ADDRESSED TO:

Corporate Communications Section
Bureau of Resource Sciences
PO Box E11
Queen Victoria Terrace
PARKES ACT 2600
Telephone: (06) 272 4012 Fax: (06) 272 5050

A HISTORY OF "THE GREEN BOOK!" Otherwise known as "AGRICULTURE - A perspective for Australian Schools" which was posted to all members along with BAAT Edition No 3.

This information provided by:
Jenni Wilkins
Board of Studies
PO Box 460
NORTH SYDNEY
NSW 2059



1993

⇒ Widespread concern expressed by teachers of agriculture at the representation of agriculture within the nationally derived curriculum statements and profiles

⇒ Concern expressed by all State associations of teachers of Agriculture to the Curriculum and Assessment Committee (CURASS) of the Australian Education Council (AEC), the national council of Ministers of Education

⇒ CURASS recognised the multi-disciplinary nature of agriculture and the difficulty associated with restricting agriculture to a single learning area

⇒ The Queensland Agricultural Teacher Association Inc. (QUTA) and the National Association of Agricultural Education (NAAE) applied for National Professional Development Program (NPDP) funding from the Commonwealth Department of Employment, Education and Training (DEET).

1994

- An NPDP funded national survey of persons and institutions with an interest in agricultural education was conducted
- Report on analysis of survey prepared by Assoc Prof. Rod Francis
- National forum in Brisbane of specialist staff from each state endorsed the major finding of the survey that agriculture, as a context for learning, is located in the strands of three learning areas viz. Technology, Science and Studies of Society and Environment

1995

- Development, publication and distribution of the document *Agriculture - a perspective for Australian schools* by the NAAE and QATA
- Development, trial and evaluation of professional development package to support the document *Agriculture - a perspective for Australian schools - "The Green Book!"*

1996

- Launch of the professional development package at the NAAE Biennial Conference at Dookie college, Victoria on January 14-18, 1996. Attenders at this conference deliver the "package" at state- based inservice courses which will be run throughout this year. These courses will place the "green book" in the NSW context. Part of the "package" delivered at these courses will include effective teaching and learning material relevant to teachers of Agriculture.

TIME FLIES FOR FRUIT FLIES

(University News, March 13, 1996)

University researchers with assistance from the Queensland Department of Primary Industries (QDPI) have devised a genetic-based test which cuts identification time of damaging papaya fruit fly larvae from 30 days to 36 hours.

Primary researcher Mr Leon Scott from the University's Co-operative Research Centre (CRC) for Tropical Pest management, the Entomology Department's Dr David Yeates and Mr David Schlipalius and the Biochemistry Department's Dr Paul Ebert took just under a month to devise the test.

Assistance was received from the QDPI's Agricultural Biotechnology Centre and the CSIRO's Division of Entomology in Canberra.

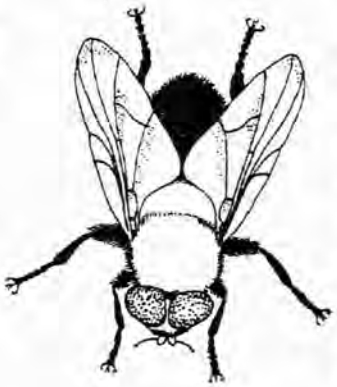
"Previously, suspected papaya fruit fly larvae had to be grown in the laboratory before identification could take place. This took around 30 days and required experts to identify the fly species based on their shape and colour patterns," Dr Yeates said.

"This test means researchers can quickly analyse larval samples sent through the post by farmers and confirm the presence of papaya fruit fly within 36 to 48 hours. The test is being further refined to allow identification within one day.

"Using this test, reserachers will now have an extra 30 days up their sleeve to develop eradication strategies."

Mr Scott said the test's development was possible because of the extensive genetic data already collected on native fruit flies by the CRC's Identities Laboratory in conjunction with the Fruit Fly Research Centre at the University of Sydney. "We have developed a large bank of genetic information on the five or six species of native fruit fly categorised as serious pests. This makes it easier for us to quickly detect the presence of the introduced papaya fruit fly in a mixed sample," Mr Scott said.

"The technique involves first making a kind of 'maggot milkshake' by putting the mixed larval sample into a glorified blend. We then extract a DNA sample and make millions of copies of a particular portion. A very specific enzyme is used to detect a tiny portion of the DNA characteristic of papaya fruit fly, thereby distinguishing it from the native varieties."



In October last year, an outbreak of papaya fruit fly caused considerable damage to fruit crops in Queensland's north and threatened around $18 million in experts. In early November, a $40 million eradication program began in Mareeba as part of a State and Federal government plan to wipe out the pest within five years.

After locking her keys in the car and trying unsuccessfully to force a window open, my friend resorted to calling the NRMA. Using a flat piece of metal about the size of a ruler, the mechanic effortlessly opened the door. My friend was most impressed with the speed in which the young man was able to enter her car and asked if there was a handbag sized model of his gadget available. "Yeah," said the mechanic with a grin, "It's called a key!"

BEEF CRISIS: BRITAIN COUNTS THE COST

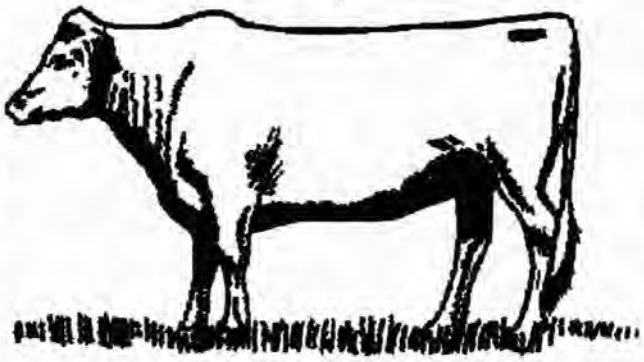
THE PRION MYSTERY
KILLER PROTEIN WITH NO FACE

by Laurie Garrett. the Sydney Morning Herald, Wednesday, March 27, 1996

Los Angeles, Tuesday: The agent responsible for Britain's mad cow disease is part of a family of disease-causing substances so unlike other known infectious organisms that scientists for years doubted their existence.

Even now, experts say they are not clear how the agents, called prions, are transmitted, how they multiply, or even how they cause disease - though new research is starting to offer tantalising clues.

Unlike viruses, bacteria and parasites - the other known agents of infection - the culprit in mad cow disease contains no genetic material.



Scientists say prions are simply proteins - which is why Dr Stanley Prusiner of the University of California, San Fransico, dubbed the disease-causing agent with a linguistic mix of (*protein* and *virion* (or virus) when he first isolated it in 1982.

Until bovine spongiform encephalopathy (BSE) appeared in British beef in 1986, the mere mention of the "prion hypothesis" more often than not elicited scorn among scientists. Dr Prusiner and other researchers in the field faced constant battles for funding to study the mysterious agents.

But the BSE crisis in Britain, in which the health authorities have linked 12 cases of mad cow illness - eight lethal - to exposure to prion-contaminated beef, has drawn worldwide interest. The scare has resulted in international boycotts of British beef and reconsideration of animal feeding practices around the world. Prion disease has been controversial, primarily because the conventional wisdom among scientists until the mid 1980's was that infectious agents could not exist without DNA or RNA. This slowed research for decades, and many of the most crucial questions regarding human risks remain unanswered.

As early as the 1960's British researcher J. Griffith of Bedford College, London, proposed that a disease common in sheep, called scrapie, was caused by a transmissible protein that could somehow replicate itself inside bovine brains, causing demented behaviour and death in the animals.

At about the same time, the prominent American researcher Dr Carleton Gajdusek, found that the disease known as kuru was passed from person to person among cannibals in New Guinea when they ate human brains.

There is a time for doing - and a time for doing nothing. Don't underestimate the value of verandah sitting. It is a simple gift you can give to yourself and share with others.

At the Biennial General Meeting of the NAAE at Dookie in January, I was elected as President and in that role asked to represent the Association on the Board of Directors of the Technology Education Federation of Australia Ltd (TEFA). I thought it would be useful to publish the TEFA Guidelines for Development grants. I'm sure some of our members would be successful in attracting some funding! And Teacher awards. I know some of our members deserve recognition in this area.

Regards,

Jenni Wilkins

Board of Studies

1996 TEFA DEVELOPMENT GRANTS

CALL FOR SUBMISSIONS

As part of TEFA's National Professional Development Program funding, monies have been allocated to support a range of projects on a submission basis. Details of the projects to be considered are given below. All relate to the support and implementation of the Technology statement and Profiles from Years 1 to 12. A total of $150,000 has been allocated for these projects.

Submissions will be considered from individual teachers, schools, TEFA members and/or affiliated professional associations and other groups that have an interest in supporting technology education in schools.

Successful projects must commit the grant funds by October 31, 1996. A written report and details of expenditure of funds will also be required by December 2, 1996. For projects that develop reproducible materials a master copy is to be provided along with copyright release to TEFA.

Submissions are to be sent to:
TEFA
C/- Educational Programs
King Edward Street
PENGUIN TAS 7316

For further information contact Barry Hardy on Phone 044 371 750 or Fax 044 371 566.

SUBMISSION GUIDELINES

Submissions must not exceed FIVE pages and should include the following:

- Project title
- Project description
- Project goals (and how they relate to goals listed below)
- Project timeline
- Participants
- Details of funding requirements
- Expected outcomes (including strategies for sharing of outcomes)
- A supporting statement from Principal, Supervisor and/or professional association (for submissions from individuals only)
- An evaluation strategy

Submissions will be judged on the following criteria:

- Degree of support for the promotion of Technology Education
- Meeting the goals listed below
- Innovation
- Quality of outcomes
- Cost effectiveness
- If appropriate, support of national Technology Education Month (September 1996) Priority will be given to projects which involve the development of technology teaching/learning resources.

AREAS TO BE FUNDED:

The purpose of this element of the TEFA NPDP Program is to support and encourage the development and publication by teachers of curriculum resources consistent with the Technology Statement and Profiles. Such resources could cover both discipline specific and/or integrated curriculum models. Support could be in the from of teacher release, secretariat support and publication.

Submissions must meet one or more of the following goals:

- enhance the professional culture of Technology teachers (K-12) and encourage technology teacher organisations to take a higher profile in teacher professional development
- promote the activities of TEFA, TEFA member associations and/or affiliates
- provide professional associations with up-dates and relevant information regarding activities
- assist teachers, across all levels of education, in the use of the Technology Statement and Profiles
- provide resources to university partners for use within technology teacher education graduate and post-graduate studies
- promote discussion of key issues regarding technology education eg. Gender inclusiveness, students with special needs, cross curriculum issues, appropriate technology, development education
- product innovative curriculum resources
- encourage cooperation and collaboration between disciplines within technology curriculum
- address the needs of isolated school communities throughout Australia
- promote understandings and links with industry and the broader community
- support technology education networks.

POSSIBLE PROJECT OUTCOMES:

- the development of curriculum materials and resources and/or support for research projects. For example:
  - mapping technology education curriculum in each state/territory and in teacher education
  - activities to support development education
  - technology education in primary school
  - networking of primary educators
- video
- journal articles
- the development of teacher resource material in electronic form.

NATIONAL TECHNOLOGY EDUCATION MONTH 1996
TEFA TEACHER AWARDS

ENTRY GUIDELINES

Please read carefully the following points:

- the entry must be consistent with the direction and development promoted in *A statement on technology for Australian schools* and *Technology - a curriculum profile for Australian schools;*
- the entry must have been implemented in the classroom or in the case of teachers in training, developed ready for implementation;
- you may submit a joint entry with your teaching partner or development group;
- the entry must be endorsed by the school Principal, or equivalent, that it is substantially the work of the entrant/s;
- the entrant must be a member of a teacher professional association. Professional associations for the purposes of these awards are those whose major purpose is the professional development of their members.
- Special Award recipients will be asked to provide a journal article for later publication in TEFA affiliate association publications.
- The decision of the judging panel is final and no correspondence will be entered into.

JUDGING CRITERIA

Judges will appraise all entries against the following criteria.

Your entry should:

- be consistent with the technology statement and profile or State and Territory variations;
- be engaging for students;
- promote active learning;
- be clear in defining learning outcomes;
- support equity/equal opportunity;
- demonstrate a vision for technology education;
- support appropriate technology
- extend the field of learning of technology education.

INFORMATION FOR APPLICANTS

- Please note the following points:
- Complete the entry from and attach it to your entry. Your entry may also include up to ten (10) A4 pages of specific detail. This should be typed, single sided, no smaller than 12 point and could include photographs;
- Entrants are to include a postcard size colour photograph of themselves. For Special Award recipients, unable to attend the presentation session, an OHT will be made from the photograph and be projected to an audience during a telephone link between yourself and the award presenter. Recipients will be contacted to make arrangements for the timing of the telephone link;
- Once entries have closed the judges will determine if additional support information is required;
- Entries which meet the entry criteria will receive a certificate of participation;
- Please send completed entries to:
  Barry Hardy
  TEFA Project Officer
  C/- Educational Programs
  King Edward Street
  PENGUIN TAS 7316
- **to arrive by last mail on Friday 9th August 1996;**
- a receipt of entry confirmation will be sent to you by return mail.

NATIONAL TECHNOLOGY EDUCATION MONTH 1996
TEFA TEACHER AWARDS ENTRY FORM

Title of your entry: .....

Name/s of entrant/s: .....

Place of employment: .....

Address: .....

.....

.....

Phone: work: .....

home: .....

Fax: work: .....

home: .....

Email: .....

- To which Band/s of *A statement on technology for Australian schools* does your entry relate?

  .....

- Using *Technology - a curriculum profile for Australian schools* what outcomes do you expect your entry to give students the opportunity to achieve? Please indicate Strand/s and Level/s.

  .....

  .....

- What vision for technology education does your entry support?

  .....

  .....

- How does your entry reflect the Design, Make and Appraise process?

  .....

  .....

Professional association (full name): .....

I/we declare this entry is substantially my/our own work and I/we accept the judges decision with regard to awards as final.

Signed: ..... Date: .....

I endorse this entry that to the best of my knowledge it is substantially the original work of the entrant/s.

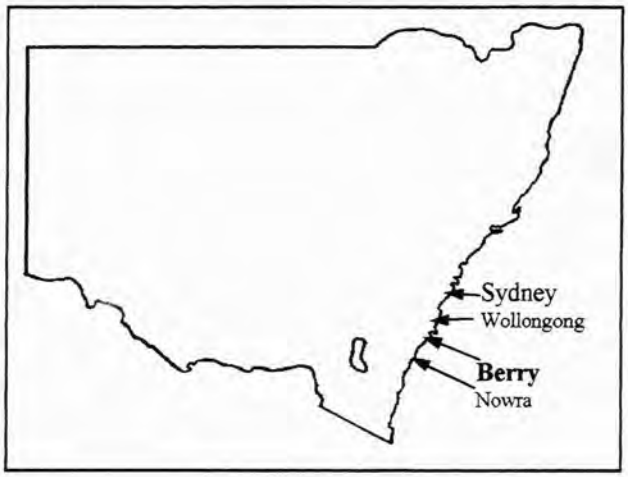
Signed: ..... Date: .....

Position: .....

1997 AGRICULTURE TEACHERS BIENNIAL CONFERENCE

27th to 30th January 1997

AT BERRY SPORT and RECREATION CENTRE on the picturesque South Coast



FACILITIES INCLUDE:

- **Heated Pool and Indoor Spa**
- **Netball, Tennis and Basketball Courts**
- **Volley Ball**
- **B.B.Q. areas**

ACTIVITIES INCLUDE

- **Archery, bike riding, canoeing, abseiling, climbing**
- **The beach is about 10 km away**
- **Nowra for shopping is about 20 km south.**

ACCOMMODATION:

- **Rooms for 2-3-4 or larger.**
- **Four cabins for families.**

Present costing is about $130 for four nights with meals.

\+ **Special Conference Dinner extra**

\+ **Course Fee around the $150 mark.**

We expect to have transport available for families IF needed.

FORWORD YOUR BOOKINGS TO:

Phil Armour

C/- Yass High School YASS 2582

Phone: (062) 261 711 Fax: (062) 263 174

BOOK NOW BEFORE PLACES ARE FILLED.

Please send responses and conference suggestions to:

Trevor Sewell
Moruya High School
Albert St
MORUYA NSW 2537
Phone (044) 742 155
Fax (044) 743 782

Craig O'Brien
Moss Vale High Hight School
Narellan Road
MOSS VALE NSW 2577
Phone ((048) 681 717
Fax (048) 682 787

1997 AGRICULTURE TEACHERS BIENNIAL CONFERENCE

PROPOSED CONFERENCE PROGRAM:

Monday:

Internet workshops. Afternoon

Tuesday:

Lectures, Guests.
Syllabus.
Alternative Courses
Association meeting
BBQ, wine tasting. "Taste of the South coast"

Wednesday:

Region bus tour
Conference Dinner at Coolangatta Winery

Thursday:

Workshops and Farm tour - Manildra Farms
Lecture/Workshop/Ag towards 2000/Computers/D & T

There will be a Registration Fee of approximately $150 to assist in defraying Conference expenses. We are endeavouring to get significant sponsorship, which can help reduce this cost. We would anticipate that your school T & D monies could help here.

Holiday on the Picturesque South Coast, by Yourself, with a Friend or with the Family.

Discover the secrets of the Shoalhaven Area.

If you want to stay at the Sport and Recreation Centre, book early.

Cost $135 per person for accommodation and meals.

The Conference Dinner at the Coolangatta Winery will cost an additional $25 per person. Come and enjoy the friendship, the food, the climate, the venue, the South Coast

Next Planning Meeting will be held at Berry on Sunday 21st April. We would appreciate any ideas by then if possible Our primary aim is to present a challenging and meaningful program of activities for Agriculture Teachers Please read, consider and respond as soon as possible.

BOOKING: Please complete and return to

Mr Phil Armour, Yass High School, YASS NSW 2582
Phone: (062) 261 711 FAX: (062) 263 174

NAME _____

SCHOOL: _____

CONTACT NUMBERS _____ FAX _____

NUMBER OF "BEDS" REQUIRED: _____

CHEQUE INCLUDED: $ .00

Please indicate which Workshops you would be interested in participating in - if they finally run. Some of these could become lectures/seminars

Bookings must be received by June 30th to confirm arrangements with Venue management. Please return all details to Phil Armour.

WORKSHOPS:

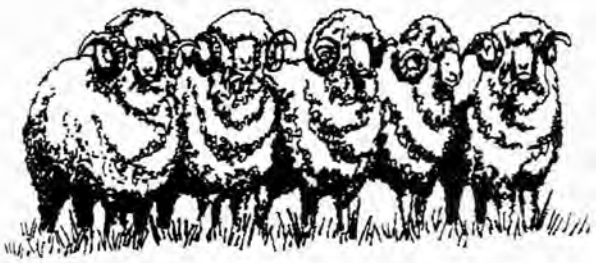
- Internet
- Alternative "Agriculture" Courses
- Bar-b-Que and "Taste of South coast"
- Regional bus Tour
- Conference Dinner
- Manildra Farms
- HSC Marking
- Junior Syllabus
- 3 Unit Projects
- Marketing and Product Specification
- Design and Technology
- A.I. Technology and Cattle Breeds
- CSIRO
- More to be announced

VALUE ADDING AND NETWORKING CONSOLIDATES RIVERINA INDUSTRY

(SEE PAGE 62 OF SPRING 1995 NO 3 BAAT FOR CONTACT ADDRESSES FOR BARA)

The Riverina Region of NSW covers a diverse range of agricultural enterprises which form the basis of the region's economy.

The role of the BARA (Business Advice for Rural Areas programme) Facilitator, therefore, is to assist in the development of these industries through encouraging value-adding and by bringing together participants in the production chain, from growers to processors and markets.



One example is a lamb producer group which is taking on a bigger role in determining the price received for its product.

In the traditional saleyard auction system, producers must accept a price which is dictated by the lowest common denominator.

These inefficiencies will be overcome by streamlining the marketing process, and offering a consistent supply of superior, value-added product. By wholesaling premium meat, in a packaged, branded form to a targeted market, the group anticipates it will be in a position to command a better return to lamb producers. Thus, producers of the best quality lamb will be paid the most money.

With assistance from Jennifer Fisher, BARA Facilitator for the Riverina, the group has been able to start surveying potential markets, conduct product trials and draw up specifications and protocols for project participants.

Both domestic and, eventually, international markets will be targeted.

PROJECTS COMBINE TO HELP STRUCTURE EMERGING EMU INDUSTRY

Emerging rural industries entering the world of product processing and marketing are being assisted by BARA facilitators in NSW.

One such industry, emu farming, has enjoyed assistance from BARA in the Orana, Riverina and South-East regions as it moves from farm development and breeding stocks to the field of marketing.

There are currently some 140 emu farms in NSW (some having started as early as 1988-89). Following models established in Western Australia up to a decade ago, the farms were

based on a minimum of 50ha and 50 breeding pairs of birds, with the principal aim of growers being to supply further breeding stock to people entering the industry.

By late 1994, however, it was recognised that breeding numbers would soon outstrip demand, and serious consideration would have to be given to the next stage of the industry's development. Growers approached BARA facilitators to gauge the levels and type of assistance available to successfully enter the product processing and marketing phase. From this level of inquiry, the three NSW project Facilitators agreed that a combined approach was required to ensure the industry was given the same advice and assistance in all parts of the State.

Over the past year, the BARA projects have liaised closely exchanging information about the industry and market trends. This has resulted in co-ordination of data being given by advisers individually as well as enabling them to work together on major industry projects.



Paramount among the latter has been the development of first-stage grower networks through special search conferences and focus meetings. These vehicles have been employed to ensure the growers themselves make decisions on their collective involvement in the future of the industry at the level they find most comfortable.

Riverina growers received NIES assistance to stage a two-day grower forum at which the possible establishment of a processing facility and marketing organisation operated and controlled by grower members was canvassed. The resultant group is advanced in data research and collection and development of a business plane.

Utilising the outcomes of this forum, the three BARA project facilitators combined their resources, and those of the Emu Producers Association of NSW (EPAN), to stage a operative approach to the future needs of the industry, established a steering committee to further study their sector, work in liaison with Riverina network and share industry developments.

The facilitators, Jenny Fisher (Riverina), Jason Brien (Orano) and John Dudley (South East) agreed that there was much to be gained from "marrying" expertise in local activities for the benefit of an emerging industry on a State-wide basis.

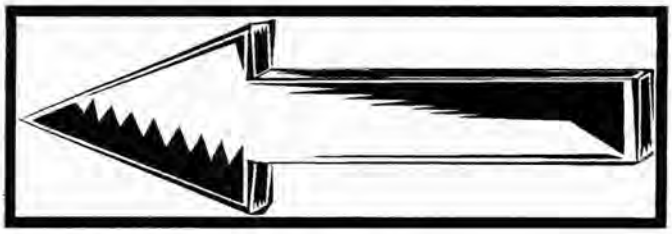
As part of the programme, the facilitators have developed an industry dossier through discussions, not only with EPAN and growers, but with the National Parks and Wildlife Service (which sets standards and issues farm licences), the NSW Meat Industry Authority (in charge of abattoir and processing facilities) Australian Quarantine Inspection Service (product inspection and export controls) and private market outlets. Data obtained has been passed on to the producer networks to assist them in their endeavours to create an industry of high standards.

President of EPAN, Andrew Brougham praised the help given his association and the industry by BARA. "We certainly could not have made the progress we have to date without the liaison, facilitation and overall interest shown by the people form BARA." He said.

(Contact addresses for BARA on page 62 last BAAT No 3 1995)

Oh, the difference between nearly right and exactly right!

ATTENTION. AGRICULTURE CO-ORDINATOR:



NSW INDEPENDENT TRIAL EXAMS 1996 AGRICULTURE

For the third successive time we are providing an HSC Trial Exam in **2 Unit Agriculture** this year as a **Black Line Master.** For the first time we are also producing a **3 Unit Agriculture Trial HSC Exam** (75 min paper with marking schemes) **and a Year 11 Preliminary Course Exam in Agriculture** (2 hour paper with marking schemes - to be released later in Term 3).

The success of our original exam papers, with suggested answer/marking schemes, is unprecedented. In previous years, each Trial exam offered has been ordered by 85-95% of NSW schools attempting that subject in the HSC, with 98% if NSW matriculation high schools ordering at least one Independent Trial paper last year! In 1995 our Agriculture Trial exam was ordered by 210 schools (more than the number attempting the subject in the HSC).

The 20 contributors to the Agriculture Trial Exam '96' include teachers from Private and State High Schools. The contributors are renowned for their expertise and experience, both as syllabus contributors and composers of HSC marking schemes. Originality of all question material is guaranteed. Co-ordinator of the Agriculture Trial Exams is Lisle Brown - Head Teacher at James Ruse Ag. High School.

SUGGESTED ANSWERS/MARKING SCHEMES for ALL Sections further enhance the desirability of these exams to any senior Agriculture teacher.

SECURITY is ensured as the exam is distributed as a 'no name' paper, with space for the school letterhead on the cover page of each Black Line Master. All student responses to each Section are made on the question paper, guaranteeing that each paper is 'off the streets' for the few weeks of Trial exams. There is a space at the top of every page for the student name/number.

DELIVERY DATES and **COST** will be:

- HSC Trials - Tuesday July 30, 1996 (Term 3 - Week 3) This date is consistent with normal Trial timetables. **$25 for 2 Unit Paper** (single copy as Black Line Master to be used in your school only) and **$18 for the 3 Unit Paper**.
- Year 11 Preliminary Exam - Tuesday August 27, 1996 (Term 3 - Week 7). **$18.**

All exams will be dispatched by "Express Post' addressed to the school Deputy Principal.

The 'NSW Independent Trial Exams - Agriculture, '96' may be used either as:

- Your 1996 Trial paper
- As a 'blended' Trial with your own resources
- As a revision paper ie. You can 'cut and paste' and copy it at will.

AGRICULTURE ORDER FORM

SCHOOL .....

CONTACT TEACHER .....

(We already have your postal address)

Please supply a single copy as Black Line Master of the following 'Independent Exam -"96" with Suggested Answers/Marking Schemes. (Please tick appropriate Box).

HSC TRIAL (delivery date: Tues July 30, 1996 (Term 3 - Week 3) **2 Unit Ag** ☐ (@ $25) **3 Unit Ag** ☐ (@ $18)

Year 11 Preliminary Exam: (delivery date: Tues Aug 27, 1996 (Term 3 - Week 7) 2 Unit Ag ☐ (@ $18)

Please **POST** order to NSW Independent Trial Exam, PO Box 14, KURRAJONG NSW 2758 or **FAX** order to (045) 677 633 or **PHONE** order to Freecall (1800) 812 795 or (045) 677 651

* Invoice will be included with delivery - postage/freight is extra at cost).

DEVELOPING NETWORKS

(Information from James White - T & D Co-ordinator, Armidale District.)

The new District structure for the Department of School Education is keen to support existing networks and establish new ones. It is essential for Agriculture teachers to belong to their Association as well as participate in local networks. The value in networks depends upon the input of the participants. Successful networks meet regularly, share ideas, swap resources and have opportunity for professional input.

In the Armidale District a network of Agriculture teachers who are teaching the Rural Industries course has been established. A development day was organised for the teachers and students from Walcha, Farrer, Warialda, Glen Innes and Uralla to meet at Uralla and work together.

During the day the teachers and students participated in a number of learning situations required in the new course. It was a great opportunity for teachers and students to work with their peers and to share ideas.

The following activities were covered.

- Graeme Harris (Farrer) did Farm Chemical User's demonstration
- John Lee (Glen Innes) did cattle handling
- Tony Barnett (Walcha) did farm vehicles (motor bikes and ATV's)
- Allen Mitchell (Warialda) Farm Tractor safety and operation

The network was organised by Rowan Chandler (Uralla Central) who would be glad to talk to teachers. The concept was conceived over the campfire and a Toohey's at "Waterloo", Narromine when the teachers involved were being trained.

The training and development coordinator in each District will assist you with continuing your network or to establish new ones. Please try to get together as the experience can be of great value to all involved.

The following material is adapted from an article by Helen Adie "Establishing effective collegial groups" in the Practising Administrator.

Networks are an effective mechanism to allow professionals to meet regularly and to provide mutual support through the sharing of knowledge, respect, advice and experiences. Heather Adie explains how.

Many teachers experience a feeling of professional isolation. This can apply especially to Agriculture teachers who are in some sense 'on their own' with no other person filling a similar role.

RESOURCES

Orange Agricultural College
The University of Sydney

Dr Mary Jane Mahony
Head: Postgraduate and Professional Studies

PO Box 883 Orange NSW 2800
Phone (063) 635 526 (BH)
Fax (063) 635 590
Email: MaryJane.Mahony
@ oac.usyd.edu.au

The Murray-Darling Freshwater Research Centre

Mike Copland
Technology Transfer
Development Officer

AGRICULTURE VICTORIA
Institute of Sustainable Irrigated Agriculture
Tatura Centre. Ferguson Road.
TATURA VIC 3616
Ph (058) 335 264
Fax: (058) 335 299

Liz Gardiner
Co-ordinator Education Strategy
Agriculture in the Classroom Program

A network is a group of teachers who meet on a regular basis to learn together and to support one another in their ongoing professional development. Such groups can be for specific reasons eg. for support, for learning and sharing experiences, for problem-solving, for planning and, at times, for lobbying and influencing others.

Networks are like collegial groups.
In a collegial group, people take the time to really get to know colleagues and make a commitment to assisting each other over a period of time, whatever the tasks may be. This constitutes a stronger commitment to the people than to the task at hand. Also, tasks may be individualised ones and may be different for every member, so that combining to achieve a group task may occur somewhat infrequently.

It is essential that your network establish a regular time and place to meet, so that members can note these details into diaries for the whole year and can plan other commitments around these dates.

It may be interesting to rotate meeting venues by meeting at members' schools in turn. This has a two-fold advantage for all members, in that he/she could host the group and at the same time share particular facets of his/her school organisation on site.

Getting Underway
During this time each member gets a chance to have the focus of the meeting on him/her for a short period of time. For example, one member may want the group to brainstorm some suggestions for a problem that has come up, another may float an idea for action and ask for responses, another may want to try out an activity or behaviour, or share a resource or experience with other members. To establish this focus time, each member requests a definite amount of time for their topic/purpose.

For example, one member may say ... "I would like five minutes to float an idea about .... " or "Can I have ten minutes to share an article I've read and hear the views of others?"

Key Focus Time
This is the time when a particular learning mode segment is conducted. These learning modes really enable your group to get things done and have members feel they have learnt something new or gained some good ideas by the end of every professional support meeting.

There are four basic learning modes that successful collegial groups have used in the past. Again, become familiar with these modes, select one to try for a few meetings and then evaluate and adapt if needed.

1. **The Teaching/Learning Mode**
   Using this mode, members learn from one another ..an 'each one teach one' model.
2. **The Problem Solving Mode**
   Professional problems that members have been experiencing become the focus in this mode. One member volunteers to describe a particular problem or concern and asks for help from the group.
3. **The Practice Mode**
   In this mode, members are encouraged to practise methods or behaviours they are trying to learn or change, with the option of getting useful feedback from colleagues.
4. **The Action Project Mode**
   In this mode, the group may decide to effect change through action focused on a specific area within their organisation or community. Such action may include conducting workshops to build awareness or skills, writing reports for presentation to decision-making bodies or submissions to influence policy makers.

James White
T & D Coordinator
Armidale District Office

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Phone (068) 421099 Fax (068) 422267 A.H. (068) 422089
HORSE RIDING Linda Davis **AGRICULTURE** Terry McGoldrick



Next BAAT dead line!! 21st June 1996

If your item is not in by the Shortest Day - IT'S TOO LATE!

ODE TO HORACE

No more when evening falls, no more
Will Horace seek the friendly straw,
And stretch, replete, upon the same,
His ample, many-ribboned frame.

No more, wide-eyed, will eager man
Cluster, at Shows, about his pen;
The shades have fallen. Death has beckoned
The son of Wollongbar the Second.

For nine full years he graced this ground,
A royal pig, a pig renowned,
For seven years the palm he bore
From every other blinking boar.

And even when his eyes were dim
No other boar could bear with him.
No other boar in all Lismore
While Horace was, could hope to score.

Let lesser pigs now proudly go
"Highly commended" at the Show.
The shade of Harace ranges free
And bolts the fruits of Aready.

L.J.C
Supplied by Mick Melino,
St John's College, Woodlawn

Oh no. Not you Babe!