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NSW Association of Agriculture Teachers Inc.

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B.A.A.T.



Bulletin of the NSW Association of Agriculture Teachers Incorporated

Editorial

Welcome to the final BAAT for the year 2000. I have had great pleasure in compiling this magazine since taking over in 1999.

As teachers we have achieved a great amount of work over the last two years. With the introduction of the new Senior Syllabus and the writing of the new program, I am sure that we will all deserve this break.

Inside this edition we show some great examples on HSC – Assessment ideas and the Biennial Conference details. Enjoy your reading!!!

I would like to thank all those teachers who have provided information and useful resources and a special thank you to Anne Clark.

I wish Sydney all the very best for their coming Conference and all the readers a

Very merry Christmas and a great new year.

Karen Damic
BAAT Editor

$$$ Treasurers Report $$$

With the introduction of GST, we are currently in a situation where we have to absorb the effects of price increases. I sat down the other day to do some calculations and at present calculating on a membership of 200, it costs us;

$9 per edition of BAAT (including Postage)
$2 per person insurance
$5 per person Australian Agriculture Teachers
$6.80 per person Joint Council

This is before we take out additional postage of receipts, gifts for HSC students and other stationary costs.

As you can probably calculate, our current membership fee does not cover our costs, particularly if we plan to send out 3 editions of BAAT as we did in 1999. Whilst we are still in a reasonably sound situation it is important we consider this for next year as I have not taken into account GST. At present, we are the cheapest association with some subjects, eg geography, nearer to $100 per year.

- As at Nov 11th we currently have $4820.22 in the bank
- income for 2000 is $4171.62
- expenditure for 2000 is $7458.37
- we are currently working with a deficit of $3286.75

The change in membership costs will be discussed at the biennial conference during the AGM and we encourage people to come and be a part of this discussion.

Angela McCann

PRESIDENTS REPORT.

Welcome to the final edition of BAAT for the Year 2000.

I hope that every one is starting to come to grips with the new Stage 6 Agriculture Syllabus. The Association has with the help of a number of teachers been running Programming and assessment workshops in a number of areas in the state. Thanks must go to the following teachers who acted as contact points and organisers for these workshops.

John Lee from Glen Innes High School,
Phil Armour from Yass High School.
Peter Napier from Orange High School and
Alan McMillian from Wagga Wagga High School
A workshop was also held in Sydney.

I am in the process of finalising the details of the material that was developed and this will be made available to members of the association.

Thanks must also go to the organisers of the Agriculture Competition Tony Reddan and John Killeen. The Agriculture competition takes a large amount of time and effort to organise and countless people gave up many many hours in the organisation of the competition.

The Sydney Branch of the Association is in the process of organising the next biennial conference which is being held at University of Western Sydney Hawesbury in from January 14th to 17th 2001. The theme of the conference is 'AgSmart' and a range of speakers workshops and tours have been organised. I am sure it will be a very enjoyable and rewarding conference. Details of the conference should have been received in the mail in early November and are in this edition of BAAT. If you require any information you can get in contact with Sheree Bourke 02 95430431 or Brigette Herrman 0428 969 563.

At the marking of the HSC examination this year I was involved in marking the 3 Unit projects, something that I had never had the chance to participate in before. During the marking, it became quite clear that a number of teachers have problems understanding exactly what is required in the project. With the project now being, part of the 2 Unit course and as such more students having the opportunity to do a project, the senior examiners Cheryl Thornthwiate from Galston High School and Arthur Kelly from Camden High School decided to write a number of comments and suggestions to help all teachers prepare their students better when doing the project. This letter was sent to all our members in mid November as well as a copy appearing in this edition of BAAT. If your students are doing the projects and you are not sure exactly what is required, I am sure Cheryl and Arthur would only be to pleased to give you a bit of advice and help.

There were however some outstanding projects for which both the students and their teachers should be congratulated. The student who presented what was deemed to be the best project will receive the Charles Mulavey Memorial award presented by the NSW Association of Agriculture Teachers, in recognition of this outstanding achievement early in the new year, with the top 2 Unit candidate also receiving this award.

Over the past 6 months a number of teachers have been involved in a Curriculum Corporation Project involved in the development of a Training Package Resources for VET in School Primary Industries Project. This project is developing a central register of contacts and resources to help in the implementation of the Primary Industries course. This resource I feel will become an invaluable resource for all Primary Industries teachers when it is finished early in 2001. When it becomes available, I will publicise where it can be obtained, to all our members.

As an Association I must apologise to all our members for the fact that in 2000 you have only received 2 editions of BAAT with the first edition only coming out at the end of term 3. Our editor Karen Damic has done an outstanding job under some difficult circumstances this year. As you all are aware, the editor of BAAT has a very difficult and time consuming job, which has to be fitted around normal teaching and personal matters. It must be remembered that BAAT is only as good as the submissions it receives. It does puzzle me that the few people that have complained to me this year, and these complaints are well justified, about only receiving the first BAAT in term 3, could not find the time to send some material to Karen to be included in BAAT, but want the information that other teachers have so generously provided to be included in BAAT.

Thanks must go to the Sponsors of our Association, McGraw Hill Australia, Cotton Australia, University of Western Sydney, Hawesbury and NSW Agriculture. As you, maybe aware members of our association receive a discount of 10% on purchase through McGraw Hill, when ordering mark your order Attention Natalie Muir and mention you are a member of the NSWAAT.

Many teachers give up large amounts of their own time for their students and for the Association, often at times without the due recognition and accolades they deserve. The association is calling for nominations for the J A Sutherland award the most prestigious award that can be bestowed upon an Agriculture teacher in NSW. An outline for the award and the nomination details are found in this edition of BAAT.

This will be my last Presidents report as the current executive finish their two-year appointments at the conference in January. To the new incoming executive I wish you the best of luck in the challenging but also fulfilling role.

All the best for Christmas and New Year, I look forward to catching up with at the Conference, which I am sure will be an outstanding success.

Patrick McCann

NOMINATIONS FOR THE J.A SUTHERLAND AWARD

For excellence / contribution to Agricultural Education in NSW Secondary schools

The criteria for the awarding of the J. A. Sutherland Award are as follows:-

i. The Alan Sutherland Memorial Award be presented to an Agriculture teacher judged to have made a significant contribution to the teaching of Agriculture;

ii. The recipient be a secondary school teacher who is a member of the NSW Association of Agriculture Teachers;

iii. The award be judged by a committee comprising the executive of four and two members nominated by the committee;

iv. Nominations for the award be made by any member or group of members in writing at least three months prior to the Biennial Conference;

v. Nominations or a summary of nominations to be included in the Association Newsletter prior to the Biennial Conference;

vi. The judging committee reserves the right not to make an award in any Biennial; the award takes the form of -

a) a perpetual trophy inscribed with the name and year of the recipient, an
b) a personal award to the recipient;

vii. in the event of the Biennial conference not being funded, the award be made and the members advised in the next edition of BAAT.

A significant contribution should include -

- *a work or event from which many benefit*

OR

- *an outstanding worker*

OR

- *an innovation*

Please send nominations to
Patrick McCann
St Joseph's College
Mark Street HUNTERS HILL 2110

Include name of the member nominating the teacher for the award plus the name of the member who is seconding the nomination.

2 Unit Agriculture

FARM PRODUCT STUDY ASSESSMENT TASK

DATE DUE -

For a selected product complete the following questions;

1. FARM AS A BUSINESS
   a. Draw a diagram to represent where the farm sits in relation to the wider agribusiness sector.
   b. Describe the following market strategies;
      i. Vertical integration
      ii. Contract selling
      iii. Direct marketing
      iv. Cooperatives
      v. Marketing boards
   c. Discuss how governments may intervene in agricultural production and marketing.
   d. Draw a marketing chain to show how the farm and market interact.

2. MARKETING YOUR PRODUCT
   a. Describe the quality criteria for your product.
   b. Why is product specification important to marketing your product?
   c. Describe the processing of your product for a raw commodity to the product that the consumer purchases.
   d. Discuss advertising and promotion in relation to your chosen product.
   e. How can your product be value added?

3. DECISION MAKING PROCESS AND MANAGEMENT STRATEGIES
   a. How is the performance of your product measured?
   b. What on farm decisions may be made from the performance measures?
   c. Describe how the following financial factors have an impact on farmers;
      i. irregular nature of income
      ii. high expenditure on inputs
      iii. dynamic nature of markets
      iv. interest rates
      v. risk management
   d. What problems may a farmer experience in trying to meet market specifications?

4. AGRICULTURAL TECHNOLOGY
   a. What impact can research and technology have on agricultural production and marketing?

Year 12 Assessment Tasks
2 Unit Agriculture, 2000 - 2001

		Task 1	Task 2	Task 3	Task 4	Task 5
		Date - Term 4	Date - Term 2	Date - Term 2	Date - Term 3	Date - Term 3
		H1.1, H2.1, H2.2	H3.1, H3.2, H3.3, H3.4,	H1.1, H2.1, H2.2, H3.4, H4.1, H5.1	H3.4, H4.1, H5.1	H1.1, H2.1, H2.2, H3.4, H4.1, H5.1, H3.1, H3.2, H3.3
Componants (Syllabus)	**Weighting (Syllabus)**	**Plant/ Animal Research**	**Farm/ Product Study**	**Half Yearly**	**Elective/ Research Presentation**	**Trial Exam**
Plant/Animal Production	45%	15%		15%		15%
Farm/Product Study	25%		20%			5%
Elective 1	15%			5%	10%	
Elective 2	15%				10%	5%
Project	30%			5%	20%	5%
Marks	**100%**	**15%**	**20%**	**20%**	**20%**	**25%**

2 Unit Agriculture

TASK	Farm Product Study
WEIGHTING	20%
DATE	Term 2, Year 12
OUTCOMES	H3.1, H3.2, H3.3, H3.4
PROGRAM TITLE	Farm/Product Study
CONTENT FOCUS	The farm product is the main purpose behind all agricultural production. It is important that you have a good understanding of an agricultural product including its growth and development and factors that affect production.
TASK	For a selected product complete the following questions 1. Farm as a business a. Draw a diagram to represent where the farm sits in relation to the wiser agribusiness sector b. Describe the following market strategies i. Vertical integration ii. Contract selling iii. Direct marketing iv. Cooperatives v. Marketing boards c. Discuss how governments may intervene in agricultural production and marketing d. Draw a marketing chain to show how the farm and market interact 2. Marketing your product a. Describe the quality criteria for your product b. Why is product specification important to marketing your product? c. Describe the processing of your product from a raw commodity to the product that the consumer purchases d. Discuss advertising and promotion in relation to your chosen product. e. How can your product be value added? 3. Decision making process and management strategies a. How is the performance of your product measured? b. What on-farm decisions may be made from the performance measures? c. Describe how the following financial factors have an impact on farmers; i. irregular nature of income ii. high expenditure on inputs iii. dynamic nature of markets iv. interest rates v. risk management d. What problems may a farmer experience in trying to meet market specifications? 4. Agricultural technology a. What impact can research and technology have on agricultural production and marketing?
MARKING CRITERIA	Marks will be awarded according to the attached criteria.

2 Unit Agriculture
Farm Product Study Marking Scheme

Student Name _____

Date Submitted _____

Outcome	0	1	2	3	4	5	SCORE
1 FARM AS A BUSINESS a. Draw a diagram to represent where the farm sits in the wider agribusiness sector.	No diagram	Brief diagram	Adequate diagram	Detailed diagram			/3
b. Describe the following market strategies; i. vertical integration	No Description	Brief description	Well Described				/2
ii. contract selling	No Description	Brief description	Well Described				/2
iii. direct marketing	No Description	Brief description	Well Described				/2
iv. cooperatives	No Description	Brief description	Well Described				/2
v. marketing boards	No Description	Brief description	Well Described				/2
c. Discuss how governments may intervene in agricultural production and marketing	No discussion	Brief discussion	Good discussion	Excellent discussion			/3
d. Draw a marketing chain to show how the farm and market interact	No marketing chain	Basic marketing chain	Adequate marketing chain	Good marketing chain	Detailed marketing chain	Very detailed marketing chain	/5
2 MARKETING YOUR PRODUCT a. Describe the quality criteria for your product	Absent	Brief description	Good description				/2
b. Why is product specification important to marketing your product?	Absent	Basic reasons	Relevant reasons				/2
c. Describe the processing of your product from a raw commodity to the product that the consumer purchases	Absent	Basic Steps	Adequate steps	Brief description	Detailed description	Very detailed description of processing	/5
d. Discuss advertising and promotion in relation to your chosen product	Absent	Basic discussion	Good discussion				/2
e. How can your product be value added?	Absent	Basic description	Adequate description	Good description	Detailed description	Very detailed and relevant	/5
3. DESCISION MAKING PROCESS AND MANAGEMENT STRATEGIES a. How is the performance of your product measured?	Absent	Adequate examples	Excellent examples				/2
b. what on-farm decisions may be made from the performance measures?	Absent	Adequate suggestions	Excellent suggestions				/2
c. Describe how the following financial factors have an impact on farmers; i. irregular nature of income	Absent	Adequate description	Good description				/2
ii. high expenditure on inputs	Absent	Adequate description	Good description				/2
iii. dynamic nature of markets	Absent	Adequate description	Good description				/2
iv. interest rates	Absent	Adequate description	Good description				/2
v. risk management	Absent	Adequate description	Good description				/2
d. what problems may a farmer experience in trying to meet market specifications	Absent	Adequate suggestions	Good suggestions				/2
4. AGRICULTURAL TECHNOLOGY a. what impact can research and technology have on agricultural production and marketing?	Absent	Adequate description	Good description				/2
						TOTAL	/50

COMMENTS:

_____

_____

_____

TEACHERS SIGNATURE

2 Unit Agriculture

TASK	Practical Research and Report
WEIGHTING	15%
DATE	Term 4, Year 11
OUTCOMES	H1.1, H2.1, H2.2
PROGRAM TITLE	Plant and Animal Production
CONTENT FOCUS	Weeds are a major issue in plant production. They account for large amounts of money and time in trying to control the adverse effects of weed infestation. In order to control weeds correctly farmers need to know the physical and chemical effects of weeds on the crop they are trying to grow. In order to provide an ideal environment for plant growth and development farmers need to be aware of the effects of planting densities and competition on plant growth. This enables the farmer to provide adequate nutrition, water and sunlight for optimum production. When using chemical control farmers need to be aware of the growth and development stages of plants and weeds. An integrated pest management approach is needed to ideally control pests and diseases while maintaining the environment.
TASK	Report on the following; 1a. Describe the term allelopathy 1b. Describe the term interference 1c. Discuss the effect of allelopathy on plant production 1d. Discuss the effect of interference on plant production 2. Carry out an allelopathy practical and write up a report to assess the effect of allelopathy on seed germination 3. Carry out a plant density trial and report on your findings 4. Describe the impact of weeds on plant production 5. Research one weed and describe an integrated pest management approach to control the effects of this weed.
MARKING CRITERIA	Marks will be awarded according to the attached criteria.

2 Unit Agriculture

PRACTICAL RESEARCH AND REPORT ASSESSMENT TASK

DATE DUE -

Complete the following activities and present in a report.

1. Describe the terms allelopathy and interference and discuss their effect on plant production.

2. Carry out the allelopathy practical and write up a full practical report.

3. Carry out the planting density practical and write up a full practical report.

4. Describe the impact of weeds on plant production.

5. Research one weed and describe its control including integrated pest management approaches.

Allellopathy Practical Procedure

1. Collect a sample of weed that you wish to test.
2. Crush using a morter and pestle and a little water.
3. Remove the large debris and keep the liquid as this will become your water to use on your seeds.
4. Collect 10 petri dishes.
5. In each petri dish place a layer of cotton wool and 10 agricultural seeds.
6. Water 5 of the petri dishes with tap water and the other 5 with the weed liquid.
7. Water every 2 days with the appropriate liquid.
8. After 5 and 7 days record the germination rate of your seeds.
9. Repeat for two other weeds.

Planting density practical

1. Collect 6 pots to grow your plants in.
2. In each pot place potting mix.
3. Calculate the area of the pot.
4. Using the same plant variety that you used in the above practical, Calculate the correct sowing rate for your pot.
5. Plant three of your pots at the correct sowing rate.
6. For the other, three pots double the sowing rate.
7. Water well and regularly.
8. Observe your plants as they grow and record and abnormalities.
9. Every two weeks record the height of your plants.

2 Unit Agriculture
Practical Research and Report Marking Scheme

Student Name _____

Date Submitted _____

Outcome	0	1	2	3	4	SCORE
1a. Describe allelopathy	No Description	Brief description	Well Described			/2
b. Describe interference	No Description	Brief description	Well Described			/2
c. Discuss the effect of allelopathy	No discussion	Brief discussion	Good discussion	Excellent discussion		/3
d. Discuss the effect of interference	No discussion	Brief discussion	Good discussion	Excellent discussion		/3
2. Allelopathy Practical Report a. Aim	Absent	Little relevance to practical	Very relevant			/2
b. Background research	Absent	Very basic research	Adequate research	Well researched	Detailed research	/4
c. Method	Absent	Basic Steps	Good set out of steps	Excellent set out of steps		/3
d. Results	Absent	Basic	Good	Relevant but poorly set out	Relevant and well presented	/4
e. Discussion of results	Absent	Basic discussion but no graph	Basic discussion with graph	Very good discussion without graph	Very good discussion with supporting graph	/4
f. Conclusion	Absent	Failed to link research with aim	Well linked and relevant			/2
3. Planting density Report a. Aim	Absent	Little relevance to practical	Very relevant			/2
b. Background research	Absent	Very basic research	Adequate research	Well researched	Detailed research	/4
c. Method	Absent	Basic Steps	Good set out of steps	Excellent set out of steps		/3
d. Results	Absent	Basic	Good	Relevant but poorly set out	Relevant and well presented	/4
e. Discussion of results	Absent	Basic discussion but no graph	Basic discussion with graph	Very good discussion without graph	Very good discussion with supporting graph	/4
f. Conclusion	Absent	Failed to link research with aim	Well linked and relevant			/2
4. Describe the impact of weeds	Absent	Brief description	Adequate description	Good description	Excellent description	/4
5a. Research one weed	Absent	Poor attempt	Adequate attempt	Good attempt	Excellent attempt	/4
5b. Describe an integrated pest management approach to your weed	Absent	Poor description	Adequate description	Good description	Excellent description	/4
						TOTAL /60

TEACHERS SIGNATURE:

2 Unit Agriculture

PROJECT/ELECTIVE ASSESSMENT TASK

DATE DUE -

You are to present an oral report to the class on your project or one elective that you have studied. As well as the oral report you are to present a written report outlining your oral presentation. The written report should be no more than 5 pages. Your oral presentation is to go for 3 to 5 minutes.

1. PROJECT
   You are to describe how your research has been set up to satisfy correct experimental design requirements. You should include your experiment set up, your collection of results, how you plan to analyse your results as well as the ethics you need to consider when carrying out research.

2. AGRIBUSINESS
   Critically evaluate the marketing options for a particular product. You should also include alternative selling systems.

3. ANIMAL MANAGEMENT
   Discuss the advantages and disadvantages of management practices associated with disease control. Include animal welfare issues, environmental protection, chemical resistance in target organisms and human safety.

4. HORTICULTURE
   Describe how factors such as quarantine and market proximity affect production and post-production strategies for horticultural products.

5. INNOVSTION AND DIVERSIFICATION
   Discuss the techniques that may be used to market an alternative agricultural product, include niche marketing.

6. PLANT MANAGEMENT
   Describe how plant hormones may be used in plant production. Include herbicides, inducing or inhibiting fruit set, cuttings, tissue culture, inhibiting stem elongation and ripening.

7. SUSTAINABLE LAND AND RESOURCE MANAGEMENT
   For one type of soil degradation, discuss the current recommended procedures to alleviate the problem and evaluate its success and failures.

2 Unit Agriculture

TASK	Project/ Electives Oral Report
WEIGHTING	20%
DATE	Term 3, Year 12
OUTCOMES	H3.4, H4.1, H5.1
PROGRAM TITLE	Projects/ Electives
CONTENT FOCUS	
TASK	You are to present an oral report to the class on your project or one elective that you have studied. As well as an oral report you are to present a written report outlining your oral presentation. The written report should be no more than 5 pages. Your oral presentation should be 3-5 minutes. 1. PROJECT You are to describe how your research has been set up to satisfy correct experimental design. You should include your experiment set up, collection of results, how you plan to analyse your results as well as the ethics you need to consider when carrying out research. 2. AGRIBUSINESS Critically evaluate the marketing options for a particular product. You should also include alternative selling systems. 3. ANIMAL MANAGEMENT Discuss the advantages and disadvantages of management practices associated with disease control. Include animal welfare issues, environmental protection, chemical resistance in target organisms and human safety. 4. HORTICULTURE Describe how factors such as quarantine and market proximity affect production and postproduction strategies for horticultural products. 5. INNOVATION AND DIVERSIFICATION Discuss the techniques that may be used to market an alternative agricultural product, including niche marketing. 6. PLANT MANAGEMENT Describe how plant hormones may be used in plant production. Include herbicides, inducing or inhibiting fruit set, cuttings, tissue culture, inhibiting stem elongation and ripening. 7. SUSTAINABLE LAND AND RESOURCE MANAGEMENT For one type of soil degradation, discuss the recommended procedures to alleviate the problem and evaluate its successes and failures.
MARKING CRITERIA	Marks will be awarded according to the following criteria; **ORAL REPORT -** a. Presentation - /5 0 - No attempt at the oral presentation 1 - Poor presentation 2 - Adequate presentation 3 - Good presentation 4 - Very good presentation 5 - Excellent presentation b. Structure - /5 0 - No attempt at the oral presentation 1 - Poor presentation 2 - Adequate presentation 3 - Good presentation 4 - Very good presentation 5 - Excellent presentation

	WRITTEN REPORT - a. Relevance - /4 0 - No relevance 1 - Vaguely relevant 2 - Basic relevance 3 - Good relevance 4 - Very relevant b. Research - /4 0 - No research 1 - Basic research 2 - Adequate research 3 - Good research 4 - Excellent research c. Presentation - /2 0 - Poorly presented work 1 - Good presentation 2 - Very well presented - show structure, easily understood

Title: Farm/Product Study **Time Allocation: 30 Hours**

Outcomes:
A student:

H3.1 assesses the general business principles and decision-making processes involved in sustainable farm management and marketing of farm products
H3.2 critically assesses the marketing of a plant OR animal product
H3.3 critically examines the technologies and technological innovations employed in the production and marketing of agricultural products
H3.4 evaluates the management of the processes in agricultural systems.

Students learn about:	Students learn to:	Outcome No:	Strategies and activities:
• the farm as a business – the place of the farm in the wider agribusiness sector		H3.1	Identify the characteristics of the region in which the product is grown. Identify the infrastructure present in the region including service centres, road, rail, air and sea transport systems. Understand how these will impact on the nature of services available to the farmers and the access to markets. Identify the services utilised in the production of the farm product, eg. Banks, agents, extension officers, etc. Explain the role of specialist services such as NSW Agriculture, DLWC, and other government and non-government agencies in the farm production cycle. Identify the nature of and destination of farm spending, both for production and social purposes
– the range of			Have a basic understanding of the range of marketing strategies

Students learn about:	Students learn to:	Outcome No:	Strategies and activities:
marketing strategies, for example vertical integration, contract selling, direct marketing, cooperatives, marketing boards, available to producers	• schedule the timing of operations in a production cycle • assess the quality of the product of a plant or animal system		for the product. Know and understand in detail at least one marketing strategy for the farm product.
– the interaction between the farm and the market			Identify the involvement between the farm and the market and vice versa, eg. Agents and the promotion of product, contractors, transporters, storage of product, quarantine and hygiene. Understand that product specification will determine the price received, demand for the product, premiums for above-quality (and penalty for sub-quality). Market feedback will impact on product specification.
– ways in which governments can intervene in aspects of agricultural production and marketing			Understand that governments impact on production and marketing through: - Levies, bounties, subsidies, tariffs, rebates, quotas, taxes - Quarantine and health regulations - Establishment and maintenance of quality criteria - Establishment of marketing boards, eg. MLA, AWB, Dairy Corporation, Fruit & Vegetable Growers - Environmental controls, eg. NSW Ag, DLWC, EPA, NPWS, RLPB. - Regulations regarding animal welfare and ethics, genetically modified foods and organic produce - Regulations regarding stock transportation, pest, disease and vermin control, health control (tail tags and use of growth hormones), stock registration and certification

Students learn about:	Students learn to:	Outcome No:	Strategies and activities:
-- the role of advertising and promotion in the marketing of the product	• evaluate marketing information, such as a sales report, for a product • calculate a gross margin for an enterprise	H3.3	Identify the mediums available for advertising and promotion. Eg. TV, newspaper, radio, internet. billboards, in-store promotions, letterbox drops, cinema, sponsorship, etc. Identify agencies responsible for marketing and promotion. Examine a case study of a promotional campaign for your farm product. Study the evolution of product marketing over time in response to changing consumer preferences. Understand that value-adding aims at diversifying the range of consumer products.
-- the nature and potential for value adding on the product			Identify the range of materials available for your chosen farm product. Understand that potential for value-adding exists in packaging and presentation, and in the alteration of the raw product into a form that is more appealing to the consumer. Eg. Time-savers, flavour enhancers, etc.
• decision-making processes and management strategies			Draw up a calendar of operations for the specified product, identifying the timing of each operation. Explain the impact of environmental influences, marketing opportunities, pests and diseases, supply of raw materials and transportation on the timing of the operations.
-- assessment of the performance of systems and decision-making based on			Identify the stages of the production cycle and monitor the quantity and quality aspects throughout. Key management decisions must be understood and problems identified and corrected as an ongoing process. Asses the quality of the product and make a comparative analysis based on district, state and national averages. Conduct tests to ascertain shortcomings in the production

Students learn about:	Students learn to:	Outcome No:	Strategies and activities:
			- Provision of infrastructure and utilities, eg. Roads, rail, marketplaces, development applications
• the marketing of a specific farm product			
– the quality criteria for the product			Identify a range of market specifications for the chosen farm product. Appreciate the price differential for different quality products.
		H3.2	Understand the techniques used to determine the quality criteria. Determine who is responsible for establishing product specification guidelines and the role of funding of government and non-government marketing organisations. Understand the need for monitoring quality in the marketplace. Appreciate the necessity for withholding periods, specific product handling, packaging and transportation.
		H3.4	
– the importance of product specification in the marketing of the product	• interpret supply and demand information for the product.		Describe the role of product specification in determining price, market demand and consistency in the marketplace. Describe niche marketing and its implications in the marketplace. Describe the role of organic products, genetically modified foods, and hormones for growth and development in our society.
– the processes involved in turning the raw agricultural commodity into various forms to satisfy consumer demand	• determine the marketing chain for a particular product		Draw a flow diagram of the product pathway, including feedback, to show the processes involved and the maintenance of standards. Explain how niche products evolve. Explain the role of research and development in the development of better farm products. Explain the role of government body's in R&D Understand the role of R&D on the marketing of products.

Students learn about:	Students learn to:	Outcome No:	Strategies and activities:
measurements of quality and quantity			process, eg. Soil test, leaf tissue analysis, effect of pest and disease, etc. Identify assessment criteria for the chosen product. Understand the importance of the product to the Australian economy.
– the financial pressures that have an impact on farmers, including the irregular nature of income, high expenditure on inputs, the dynamic nature of markets and interest rates, risk management			Have an appreciation of the effect of bank interest rates, overdrafts and lower commodity returns over time with reference to input cost (cost-price squeeze) on the generally depressed nature of the rural economy. Identify sources of finance outside the mainstram lending institutions, eg. PIBA, Elders, etc. Explain the seasonal nature of production and the resultant intermittent periods of income. Understand that farm product diversification is a tool used to moderate income fluctuations. Identify all inputs to production and the associated costs, over time. Relate this to commodity prices over the same period. Understand the disparity in prices of goods and services between urban and rural communities, eg. Freight costs. Understand that changing consumer preferences reflect in market demand and therefore the price paid for farm products, eg. Chicken, lamb and pork in preference for beef. Understand that high risk ventures, such as farming, attract high interest rates from lenders. Understand that the farmer has many tools available to manage risk, eg. On-farm storage, farm planning and budgeting (including gross margins), buyer and seller cooperatives, diversification of production, irrigation, etc.
– the problems that may occur in meeting market specifications			Understand that market specifications may be compromised by many factors such as climatic influence, pests and diseases, transport and storage conditions, managerial skills, changes in consumer preferences, etc.

Students learn about:	Students learn to:	Outcome No:	Strategies and activities:
• agricultural technology – the impact that scientific research and associated technology has had on agricultural production and marketing.			Identify a range of scientific research conducted on the specified product to improve production levels (quality and quantity). Describe the role of R&D in the processing of the product. Describe the role of advertising and promotion in the marketing process. Describe the role of genetic manipulation and modification in the production of the product, efficiencies of mechanisation, and improvements in inputs.

Assessment

Farm Product Study Report Trial HSC Examination

IS YOUR SCHOOL INTERESTED IN CATTLE SHOWING?

- The 8th Central Coast Schools' cattle show, to be held on Thursday, 6th September. An easy one hour drive from Sydney, Newcastle or The Hunter Valley.



- The program for the day includes:
  - a junior judging competition
  - a handlers competition, and
  - the judging of the four ' live' cattle classes

- Free transport to Woy Woy abattoirs can then be arranged for the cattle wishing to be entered in the "Carcase Judging Competion" on Tuesday 11th September.

- The competition is open only to schools, and therefore has an emphasis towards learning and participation

- It is an ideal opportunity to catch up with other Agriculture teachers/old mates, etc.... and soak up some good old Central Coast hospitaality. See you there!

- For further information or an entry form, please phone or fax one of the committee at the following schools:
  - Megan Chandler (Narara Valley High) Fountains Rd Narara
  - Ashley Unger (Wyong High)
  - Grant Jackson (Gosford High)

Entries and cheques to be returned to Megan Chandler;
FAX: 43 283609

Comments from Research Project Marking Team

The marking of the 3 Unit Agriculture projects has been the responsibility of the same two Senior Markers and a core of 10 markers, together with a few "itinerants", for the past three years. Now that the opportunity to present a research project will be available to many more students we thought it opportune to communicate to teachers some of the pitfalls and common errors that we see when marking the projects. Our aim is to improve the quality of the projects and to enhance the learning of the students who attempt them. Therefore, please accept the comments that follow in the spirit with which they are written. We realise that supervising research projects is a difficult task, especially with students who lack self-motivation or always know what is best! We are not trying to be critical – rather to give some pointers, which will improve the projects that your students submit and thus increase their marks.

1. Originality of The Project

The project must be the student's own original work. Students must collect their own data and analyse it in a meaningful manner. They may access "2nd hand data" (eg. farmers records, government statistics) and analyse them in an attempt to answer some question or questions relating to that data. If they do so they must acknowledge this fact.

Candidates may collaborate on a large-scale research project and may obtain advice and assistance from professional research centres. They **must** acknowledge any assistance received and submit their own original research report. Collaborative report writing is not permitted
Students should also attempt to validate their research with regard to its relationship to practical situations and agricultural significance.

2. Identification of Schools, Candidates, Teachers and Helpers.

Students must not name themselves, fellow candidates, teachers or helpers by name or in photographs. Teachers should carefully check that this rule is adhered to. Markers should not be able to identify the school from which the project originated.

3. Superfluous Material.

Computer disks, copies of letters and other irrelevant material which are not part of the written report should not accompany the candidates report. It may be pertinent to include some such items in the project log.

4. Literature Review.

This section of the report should summarise the current state of knowledge about the topic in question. Candidates should attempt to integrate information from a variety of sources, referencing them within the report. A simple summary of each article they have accessed is not a literature review. Students should also be wary of over using promotional material in their literature review.

5. Results.

Research results should be presented in appropriate tables and graphs where possible. Tables should summarise the raw data (include it in an appendix). When drawing graphs, candidates should recognise that the mean value of a number of replicates should be calculated and these figures used to construct the graphs. Many students try to graph the results for each replicate in a trial, after resulting in pages of inappropriate graphs being presented. Graphs should be appropriately labelled and scaled and have an appropriate title.

Simple 2 dimensional graphs are usually more appropriate than computer generated 3 dimensional ones. Candidates should also be wary of using scales, which aim to accentuate small differences between experimental data.

6. Statistical Analysis.

Appropriate tests of the significance of differences between treatment means should be attempted. Many students get outside assistance with this (which is fine, and to be encouraged) but fail to show an understanding of the purpose of such testing. Many also attempt to draw conclusions that are not supported by the statistical analysis.

7. Length of The Report.

The report should be between 3000 and 5000 words. A significant number of students submit reports which are far in excess of this. Often, such reports are "padded" with irrelevant material, especially in the literature review.

8. The Project Journal.

The journal or "process diary" is intended to be a record of how the project was developed. It should include a record of the student's thoughts, actions and plans. Teachers should regularly check the journal and write appropriate comments in order to guide the student in the conduct of his/her research and the compilation of the research report. The best journals are generally those written in a suitable booklet (eg. small exercise book). They document fully the students progress through the project – from selection of a suitable topic right through to writing the final report. Teacher generated proformas (usually in the form of an out dated project log) are not appropriate.

9. Conclusion and Recommendations.

In this section students should draw together the findings of their research. They should also make practical recommendations that might arise form their work. Any limitations of their trial should be outlined, along with further work, which may shed light on the problem under investigation.

Where relevant, some economic analysis (eg gross margin analysis) of the experimental findings adds weight to the report.

10. Certification of Project.

Students, their teacher and the School Principal must sign a declaration that the submitted project is the original work of the student. It is in your interest, and that of your school, to be very sure that the project is the original work of the student. This is best done through the use of the project journal in

which you should make regular entries. In cases where it is obvious that the student has not done the work (and we do see some) you should complete the standard non-certification form which is available from your principal.

Teachers must familiarise themselves, and their students, with the project rules. These are available in the ACE manual, copies of, which are available in your school.

A valuable resource is available "on-line" through The Board of Studies HSC On Line site. The article guides students through the processes involved in selecting a topic to research, developing a project journal, conducting legitimate research, handing the data and making relevant conclusions from it. Every student who aims to complete a research project should have access to this resource.

Another excellent resource is a book titled "Pathways to Research," written by Bruce Hayliar and Tony Veal and published by Heinemann in 1996. It covers the processes of qualitative research particularly well.

Arthur Kelly and Cheryl Thornthwaite
Senior Markers
Research Projects

H.S.C. ASSESSMENT - AGRICULTURE

ELECTIVE 2

ANIMAL MANAGEMENT

Your mark for this assessment task will contribute 15% of your total assessment mark for the H.S.C.

This assessment task will address Outcomes H3.4, H4.1, H5.1

This task will contribute to 15% of your final H.S.C. assessment mark.

Section 1: (50% of marks)

Genetic Engineering and Associated Genetic Technologies

Question 1. (20 marks) Genetic engineering has created considerable community debate.

Develop an argument to support the use of genetically modified organisms in Australian agriculture.

or

Develop an argument to support the banning the use of genetically modified organisms in Australian agriculture.

(Either argument should be based on information relating to animals and animal production.)
[This argument should be between 500words and 600 words.]

Question 2. (20 marks) "Dolly" the sheep and "Gene" the calf are both examples of cloning.

A. (5 marks) What is cloning?

B. (5 marks) How does cloning differ from genetic engineering?

C. (5 marks) What future do you see for cloning for animal production in Australian agriculture.

D. (5 marks) 'Selective breeding can be regarded as a form of genetic engineering.' Discuss this statement.

Section 2: (50% of marks)

Estimated Breeding Values (E.B.V's) are a tool that is becoming more readily available to breeders of most cattle breeds. E.B.V's may be used, when selecting breeding stock, to enable the farmer to select genetically superior animals. Judicious selection of breeding stock by farmers may lead to impacts on –

reproductive efficiency
product quality
individual breeding programs
animal adaptability

within their breeding herd.
Use the information that is provided, relating to E.B.V's, to answer the following questions.

Question 1.(20 marks) Imagine you are a beef producer, selecting a bull from the list supplied to –

a) produce supermarket steers.
b) produce cattle for the Japanese B3 market.
c) produce heifers for herd replacement and sale as breeders.
d) produce bulls with high fertility that are mid/early maturing.

Identify the bull you would select for each purpose and justify your reasons for selecting each bull.

Question 2. (20 marks) If steers are valued at $1.45/kg L.W. and heifers are valued at $1.27/kg L.W. at 400 days of age how much more valuable is the calf drop from –

T.C. STOCKMAN 2164

compared to

GLENOCH MEGAFORCE

Assume each bull sires 22 steers and 23 heifers.
{Hint – read the section "USING EBVS FOR MAKING COMPARISONS BETWEEN ANIMALS" before you start}

UNDERSTANDING ESTIMATED BREEDING VALUES (EBVS)

Estimated Breeding Values (EBVs) are predictions of an animal's genetic merit, based on available performance data on the individual and its relatives.

In the calculation of EBVs the performance of individual animals within a contemporary group is directly compared to the average of other animals in that group. A contemporary group consists of animals of the same sex and age class within a herd, run under the same management conditions and treated equally. Indirect comparisons are made between animals reared in different contemporary groups, through the use of pedigree links between the groups.

With the widespread use of artificial breeding and trading of genetics among seedstock herds an extensive network of pedigree links has been established throughout the Angus breed. These pedigree links enable the adjustment for environmental differences between herds, years and management groups. This allows comparisons between animals from totally different environments and management conditions.

EBVs are expressed in the units of measurement for each particular trait. They are shown as +ive or -ive differences from the breed base. For example, a bull with an EBV of +50 kg for 600-Day Wt is estimated to have genetic merit 50 kg above the breed base of 0 kg. Since the breed base is set to a historical benchmark, the average EBVs of animals in each year drop has changed over time as a result of genetic progress within the breed.

While EBVs provide the best basis for the comparison of the genetic merit of animals reared in different environments and management conditions, they can only be used to compare animals within the same breed. The EBVs for different breeds have different bases and are subject to different rates of change over time. **Consequently, Angus GROUP BREEDPLAN EBVs cannot be validly compared with EBVs of any other breed.**

The absolute value if any EBV is not critical, but rather the differences in EBVs between animals. Particular animals should be viewed as being "above breed average" for a particular trait only if their EBVs are better than the average EBVs of all animals born in their year drop. A useful "benchmark" is the average EBVs for calves born in 1998 (i.e. "T" drop), shown below.

EBVs are published for a range of traits covering fertility, calving ease, maternal performance, growth and carcase merit. When using EBVs to assist in selection decisions it is important to achieve a balance between the different groups of traits and to place emphasis on those traits that are important to your herd, your markets, and your environment. One of the advantages of having a comprehensive range of EBVs is that you can avoid extremes in particular traits and select for animals with balanced overall performance.

EBVs are provided for the following traits:

Calving Ease Traits
- Gestation Length
- Calving Ease (DIR)
- Calving Ease (DTRS)
- Birth Weight

Fertility Traits
- Days to Calving
- Scrotal Size

Growth Traits
- 200-Day Weight
- 400-Day Weight
- 600-Day Weight

Maternal Traits
- Milk
- Mature Cow Weight

Carcase Traits
- Eye Muscle Area
- Rump Fat
- Rib Fat
- Retail Beef Yield %
- Intra-muscular Fat % (Marbling)

Further details on each of the EBVs are listed in the following pages.

AUTUMN 2000 ANGUS GROUP BREEDPLAN ~ AVERAGE EBVs FOR 1998 BORN CALVES

	Calving Ease Direct	Calving Ease Dtrs	Gest Lgth (days)	Birth Wt (kg)	200-Day Wt (kg)	400-Day Wt (kg)	600-Day Wt (kg)	Mature Cow Wt (kg)	Milk (kg)	Scrotal Size (cm)	Days to Calving	Carcase Wt (kg)	EMA (sq cm)	Rib Fat (mm)	Rump Fat (mm)	Retail Beef Yield%	Intra-Muscular Fat%
EBV	-0.4	-0.1	-1.0	+3.9	+26	+48	+63	+62	+7	-0.8	-0.8	+28	-0.6	-0.2	-0.1	-0.1	0.0

CALVING EASE TRAITS

Calving ease is an important economic trait because of its impact on calf and heifer mortality, labour and veterinary expenses at calving time, and subsequent re-breeding performance of heifers.

EBVs for calving ease are calculated from calving ease scores, birth weight data and gestation length information provided by breeders. Due to the many non-genetic influences on calving ease the trait has a low heritability.

Usually only proven bulls or cows with several progeny recorded have EBVs for calving ease with sufficient accuracy to be reported. Two Calving Ease EBVs are provided – Calving Ease (DIR) and Calving Ease (DTRS).

Calving Ease (DIR) EBVs

Calving Ease (DIR) EBVs are estimates of genetic differences among animals in the ability of their calves from 2 year old heifers to be born unassisted. The EBVs are reported as differences in the percentage unassisted calvings.

Higher, more +ive, Calving Ease (DIR) EBVs are more favorable. For example, a bull with an EBV of +2.0 % would be expected to produce fewer difficult calvings from 2 year old heifers than a bull with an EBV of –2.0 %.

Calving Ease (DTRS) EBVs

Calving Ease (DTRS) EBVs are estimates of genetic differences among animals in the ability of their 2 year old daughters to calve without assistance. The EBVs are reported as differences in the percentage unassisted calvings.

Higher, more +ive, Calving Ease (DTRS) EBVs are more favorable. For example, a bull with an EBV of +2.0 % would be expected to produce 2 year old daughters that have less calving problems than the daughters of a bull with an EBV of –2.0 %.

Gestation Length EBVs

Gestation Length EBVs are estimates of genetic differences among animals in the number of days from the date of conception until the calf birth date.

These EBVs are calculated from the joining and birth date records for calves got by AI. The analysis accounts for differences in the "maternal" effect of dams on the gestation length.

Shorter gestation lengths are usually associated with lighter birth weights, easier calving and improved cow re-breeding performance. Calves born with a shorter gestation length are often heavier at weaning due to more days of growth compared to their contemporaries.

Lower, or more -ive, Gestation Length EBVs are generally more favorable. For example, a bull with an EBV of –2.0 days would be expected to produce calves that are born earlier, with easier calving, than a bull with an EBV of +2.0 days.

Birth Wt EBVs

Birth Wt EBVs are estimates of genetic differences between animals in kg of calf birth weight.

Calf birth weight is the biggest contributing factor causing calving difficulty in heifers. While low Birth Wt EBVs are favored for calving ease they are also often associated with lower growth potential. Consequently, birth weight and growth need to be carefully balanced. Fortunately, animals do exist with moderate Birth Wt EBVs and above average EBVs for later growth.

Small, or moderate, Birth Wt EBVs are more favourable. For example, a bull with an EBV of +2.0 kg would be expected to produce lighter calves at birth than a bull with an EBV of + 6.0 kg, with a lower risk of a difficult calving if joined to heifers.

FERTILITY TRAITS

Fertility is a critical component influencing the profitability of a breeding herd. EBVs are provided for two fertility traits - Days to Calving and Scrotal Size. These traits contribute important information to assist in making breeding decisions to maintain herd fertility.

Days to Calving EBVs

Days to Calving (DC) EBVs are estimates of genetic differences among in female fertility, expressed as the number of days from the start of the joining period until subsequent calving.

Variation in DC records is mainly due to differences in the time taken for females to conceive after the commencement of the joining period. Females with shorter DC EBVs tend to commence cycling earlier after calving and conceive earlier in the joining period. They also tend to attain puberty at a younger age as heifers.

DC EBVs for bulls are based on the performance of their daughters and female relatives. Differences in scrotal size among bulls can also contribute to variation in DC EBVs.

Lower, or more -ive, Days to Calving EBVs are more favorable. For example, a bull with an EBV of –3.0 days would be expected to produce daughters that conceive earlier in the joining period, and subsequently calve earlier, than the daughters of a bull with an EBV of +3.0 days.

Scrotal Size EBVs

Scrotal Size EBVs are estimates of the genetic differences among animals in scrotal circumference at 400 days of age.

Increased scrotal size is associated with increased semen production in bulls, and earlier age at puberty of bull and heifer progeny.

Scrotal size also has a favorable relationship with Days to Calving, such that bulls with larger EBVs tend to have daughters with shorter Days to Calving intervals.

Larger, or more +ive, Scrotal Size EBVs are more favorable. For example, a bull with an EBV of +4.0 cm would be expected to produce sons with larger scrotal size at yearling age and daughters that reach puberty earlier, than the progeny of a bull with an EBV of –4.0 cm.

GROWTH TRAITS

EBVs are provided for three growth traits: 200-Day Wt, 400-Day Wt and 600-Day Wt.

In general, higher growth rates will lead to higher profitability. However, in most situations an optimum point will be reached where less emphasis should be placed on further increases in growth. One of the consequences of continued selection for increased growth EBVs is an associated increase in body size at all ages, together with increases in herd feed requirements.

Growth EBVs are calculated from weight data submitted by breeders, adjusted to relevant age classes prior to analysis.

200-Day Wt EBVs

200-Day Wt EBVs are estimates of the genetic differences among animals in weight at 200 days of age. This is a measure of an animal's early growth to weaning. It is an important trait for breeders turning off animals as vealers or weaners.

Larger, more +ive, 200-Day Wt EBVs are generally more favorable. For example, a bull with an EBV of +30 kg would be expected to produce heavier calves at 200 days of age (or weaning) compared to a bull with an EBV of +5 kg.

400-Day Wt EBVs

400-Day Wt EBVs are estimates of the genetic differences among animals in weight at 400 days of age. This is an important trait for breeders turning off animals as yearlings.

Larger, more +ive, 400-Day Wt EBVs are generally more favorable. For example, a bull with an EBV of +50 kg would be expected to produce heavier calves at 400 days of age compared to a bull with an EBV of +30 kg.

600-Day Wt EBVs

600-Day Wt EBVs are estimates of the genetic differences among animals in live-weight at 600 days of age. This is an important trait for breeders targeting the production of animals suited for heavy weight grass finished or grain fed markets.

Larger, more +ive, 600-Day Wt EBVs are generally more favorable. For example, a bull with an EBV of +70 kg would be expected to produce heavier progeny at 600 days of age than a bull with an EBV of +40 kg.

MATERNAL TRAITS

EBVs are provided for 2 maternal traits – milk production and mature cow weight.

Differences in calf growth are influenced by a combination of the genetic potential for growth among the calves and the genetic differences in maternal ability of their dams. The differences in maternal ability can largely be attributed to variation in milk production of the dams.

GROUP BREEDPLAN separates the growth and maternal components of 200-Day Wt and 400-Day Wt records to produce EBVs for milk production. A bull's Milk EBVs are based on the growth performance of his daughter's calves.

Mature cow weight EBV's provide useful information to assist breeders in matching cow size to the environment.

Milk EBVs

Milk EBVs are estimates of the genetic differences among animals in milk production potential, expressed through variation in calf growth performance.

A bull with a Milk EBV of +10 would be expected to sire daughters with higher milk production than a bull with Milk EBV of +2 kg. This higher milk production should be reflected through higher weaning weights among the daughter's calves. There is a considerable time lag before a bull obtains a reasonable accuracy for its Milk EBVs due to the time taken before growth performance data is available from his daughter's calves. If a bull is to be used as a terminal sire with no daughters kept as female replacements then his Milk EBVs can generally be disregarded.

The optimum level of milk production potential in beef cows is dependent upon the production system and environment in which the cows are run. Selection for increased milk production might be warranted when cows are run under good nutritional conditions and calves are sold as weaners or vealers. However, not all environments will support higher milking cows.

Larger, more +ive, OR moderate, 200-Day Milk EBVs can be more favorable, depending on the environment.

Mature Cow Wt EBVs

Mature Cow Weight EBVs are estimates of the genetic differences among animals in cow weight at 5 years of age.

Mature cow weight EBVs for sires are based weights recorded on their daughters (following the weaning of their calves), plus consideration of overseas genetic information and the genetic relationships known to exist between cow weight and earlier growth performance.

While moderation in cow weight is desirable for reducing herd feed costs, it is also often associated with lower overall growth potential. Consequently, mature cow weight and early growth performance need to be carefully balanced to optimise total herd productivity.

Sires with above average EBVs for 400-Day Wt. or 600-Day Wt. will also tend to have above average mature cow weight EBVs. However, following the analysis of weight records on their daughters, some sires have been identified that tend to have smaller (or larger) mature weights relative to that predicted from their early growth performance.

Smaller, or moderate Mature Cow Weight EBVs are generally more favorable. For example, a bull with an EBV of -50kg would be expected to produce daughters with lighter mature weights and lower feed requirements than a bull with an EBV of -80kg.

CARCASE TRAITS

Angus GROUP BREEDPLAN carcase EBVs are based on ultrasound scan data taken on live animals and abattoir carcase measurements taken on animals following slaughter. EBVs are calculated for carcase weight, eye muscle area, rib and rump fat cover, percentage retail beef yield, and intra-muscular fat percentage (marbling).

These EBVs can be used, together with visual assessment for muscularity and maturity type, to assist in breeding cattle for specific market requirements.

Carcase Weight EBVs

Carcase weight EBVs are estimates of the genetic differences among animals in hot standard carcase weight at 650 days of age.

They are calculated from abattoir carcase weight records and known genetic associations with growth traits. Animals with high 400 and 600 Day Wt EBVs will also tend to have high carcase weight EBVs.

Larger, more +ive, Carcase Weight EBVs are more favorable. For example, a bull with an EBV of +40kg would be expected to produce progeny with heavier carcases at 650 days of age than a bull with an EBV of +20 kg.

Eye Muscle Area (EMA) EBVs

EMA EBVs are estimates of the genetic differences among animals in eye muscle area (cm2) at the 12/13th rib site on a 300kg carcase. EMA has a positive relationship with retail beef yield.

Larger, more +ive, EMA EBVs are generally more favorable. For example, a bull with an EBV of +2.0 cm2 would be expected to produce progeny with a greater degree of muscle expression and higher retail beef yield at any particular carcase weight, than a bull with an EBV of -2.0 cm2.

Rib Fat EBVs

Rib Fat EBVs are estimates of the genetic differences among animals in fat depth (mm) at the 12/13th rib site, on a 300kg carcase.

Fat depth has a negative relationship with retail beef yield. The use of Rib Fat EBVs depends on your goals relating to the "finishing ability" of your animals. Breeders aiming to breed leaner, higher yielding cattle may select for lower fat EBVs, whilst a breeder aiming to improve the "finishing ability" of their animals at a young age may choose a bull with higher fat EBVs to ensure meeting market demands for fat cover.

Analyses of the Angus database indicate a general tendency for animals with positive fat EBVs to have shorter days to calving intervals. Consequently, breeders should be cautious about applying intense selection for lower Fat EBVs in situations where female replacements are kept.

More positive (+ive), OR more negative (-ive), Rib Fat EBVs may be more favorable, depending on your breeding goals. For example, a bull with an EBV of -1.0 mm would be expected to produce leaner, higher yielding carcases than a bull with an EBV of +1.0 mm

Rump Fat EBVs

Rump Fat EBVs are estimates of genetic differences among animals in fat depth at the P8 rump site on a standard 300kg carcase.

There is a strong positive genetic relationship between rump fat and rib fat. Animals with extreme (high or low) Rib Fat EBVs also tend to have extreme Rump Fat EBVs. Differences between Rib and Rump Fat EBVs for individual animals may indicate differences in carcase fat distribution.

More positive (+ive), OR more negative (-ive), Rump Fat EBVs may be more favorable, depending on your breeding goals. For example, a bull with an EBV of -1.0 mm would be expected to produce leaner, higher yielding carcases than a bull with an EBV of +1.0 mm

Retail Beef Yield % (RBY%) EBVs

RBY% EBVs are estimates of genetic differences among animals in percentage retail beef yield in a 300kg carcase, with 2-3 mm fat trim, adjusted to 85% chemical lean. Variation in RBY% EBVs is determined largely from differences in ultrasound fat and EMA measurements between animals and a small negative relationship with growth and carcase weight EBVs.

Larger, more +ive, RBY % Index values are more favourable. For example, a bull with an EBV of +1.0 % would be expected to produce calves with higher yielding carcases at any particular carcase weight than the calves sired by a bull with an EBV of -1.0 %.

Intra-muscular Fat % (IMF%) EBVs

IMF% EBVs are estimates of genetic differences among animals in percentage intra-muscular fat (marbling) in a 300kg carcase

For markets where marbling is important (e.g. Japanese B2 B3 market, high quality domestic hotel/restaurant and specialist butcher trade) differences in IMF% can contribute significantly to carcase value.

Differences in IMF% EBVs are calculated from information obtained from overseas genetic evaluations of marbling, together with IMF% and/or marble score data obtained from animals in structured progeny test programs. In addition, genetic relationships found to exist with ultrasound scan fat depth measurements also contribute to IMF% EBVs.

Depending on your market targets, positive IMF% EBVs may be more favorable. For example, a bull with an EBV of -1.0% would be expected to produce calves with higher average marble score at any particular carcase weight than a bull with an EBV of -1.0%.

USING EBVS FOR MAKING COMPARISONS BETWEEN ANIMALS

When using EBVs to assist in selection decisions it is important to remember that only half the EBV differences between animals are expressed in their progeny.

For example, when comparing the expected difference in the 400-Day weights of calves from two bulls, you need to consider half the difference in EBVs between the bulls multiplied by the expected number of calves to be obtained during the normal life of a bull in your herd.

Example:	*400-day Wt. EBV*
BULL A	+40 kg
BULL B	+20 kg

Expected difference in 400 day weight:
½ x (40 kg - 20 kg) = 10 kg per calf

Total gain over 3 years of use, with 25 calves per year:
25 calves x 3 years x 10kg = 750kg

(plus further benefits from the future improved performance of daughter's calves)

This simple calculation can be a useful guide to assist in determining the potential extra revenue you can expect from using a bull with superior growth EBVs. Similar calculations can be made for determining the expected effect on progeny performance of differences in other EBVs.

In selecting bulls for use in your herd it is often helpful to compare their EBV figures relative to the whole drop of bulls for sale. During 2000 many of the bulls for sale will come from the 98' calf crop.

The table on page 8 lists the EBV percentile bands for the 1998 born calves, for each of the traits included in the Autumn 2000 Angus GROUP BREEDPLAN analysis. This table provides a guide to the relative ranking of any animal compared with the total 1998calf crop.

For example, a bull with a 600-Day Wt EBV of +90 kg, and a Birth Wt EBV of +5.0 kg is in the highest 5% of the breed for 600-Day Wt and in the highest 25% of the breed for Birth Wt, compared to all recorded calves born in 1998. A bull with a Days to Calving EBV of –3.5 days would be in the lowest (most favorable) 5% of the breed for that trait.

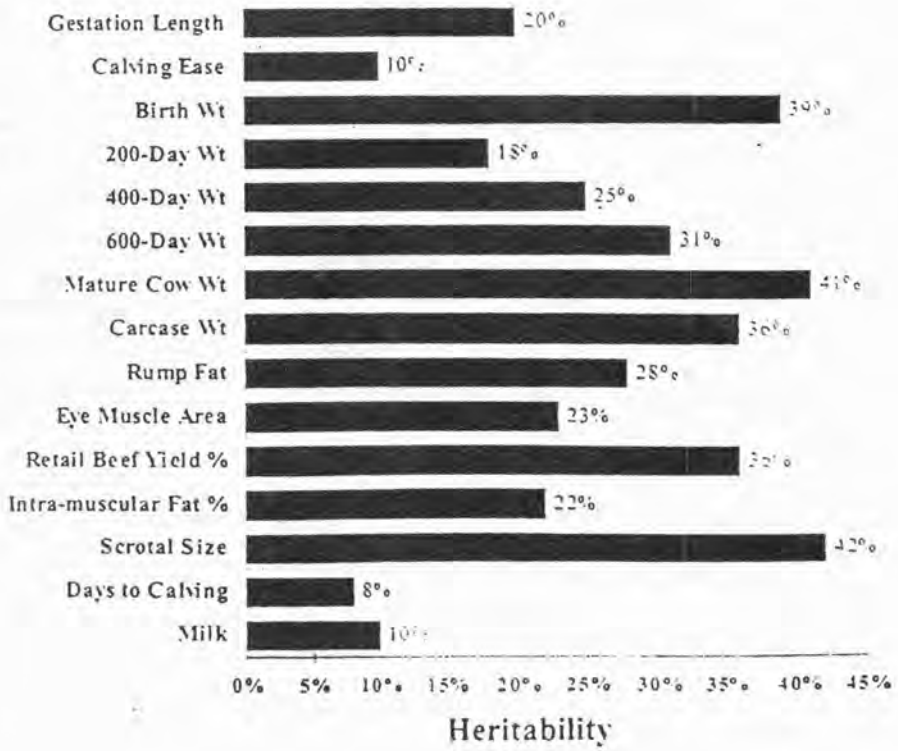
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Heritabilities of traits in Angus GROUP BREEDPLAN

Only part of the variation that we observe among animals is due to genetic differences. The majority of the variation is generally due to non-genetic factors such as differences in environment and nutrition.

The degree to which genetic differences influence performance varies from trait to trait. This is explained by differences in the "heritability" of the traits. Growth and carcase traits tend to have moderate to high heritabilities (i.e. 20 to 40%), whilst female fertility and calving ease have low heritabilities (10% or lower).

GROUP BREEDPLAN takes into account the different degrees of heritability of various traits, and the known genetic relationships between the traits.

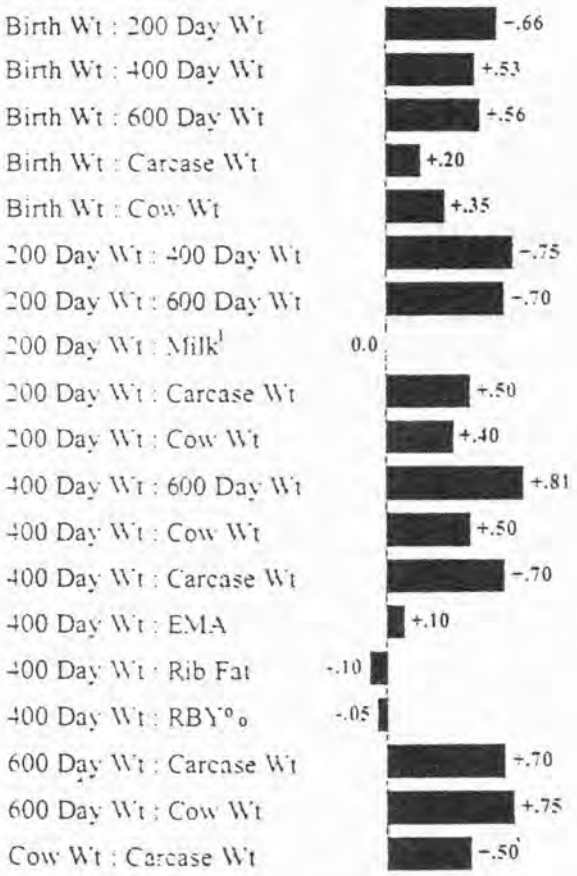

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Genetic Relationships Between Traits

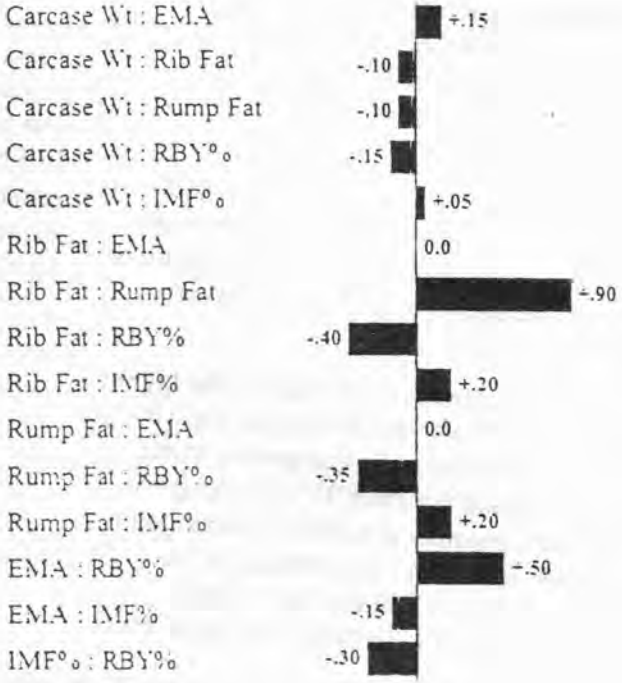
Angus GROUP BREEDPLAN uses a multi-trait analysis procedure that takes into account known genetic and non-genetic relationships (correlations) between the various growth, carcase and fertility traits. These correlations have been calculated from the Angus database by researchers at the Animal Genetics and Breeding Unit, University of New England, Armidale. In some cases additional research data has been used to estimate the correlations. These relationships are regularly re-estimated as additional performance data and research results are obtained.

The following graphs illustrate some of the key genetic correlations currently built into the Angus GROUP BREEDPLAN analysis. Additional non-genetic (environmental) correlations are also used to assist in the calculation of Estimated Breeding Values for each trait.

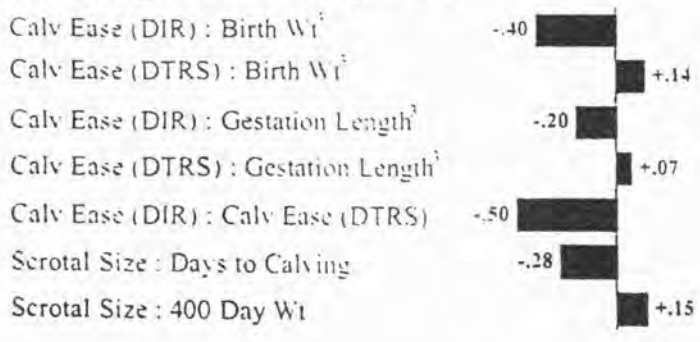
(a) Growth traits



(b) Carcase Traits[2]



(c) Calving Ease & Fertility Traits



Notes:

1. Milk is considered to be genetically independent of all other traits.
2. Additional genetic correlations exist between 300 kg adjusted carcase traits and underlying heifer and bull ultrasound scan traits.
3. Additional genetic correlations exist between Calving Ease traits and underlying maternal traits for Birth Weight and Gestation Length.

UNDERSTANDING ACCURACIES

The "accuracy" associated with an EBV gives an indication of its reliability, and the likely extent of its possible change as more information becomes available. EBVs are based on the available information at the time of the GROUP BREEDPLAN analysis. As more data becomes available on an animal (or its progeny, or relatives) then the accuracy of its EBVs for particular traits will increase.

For example, a bull at two years of age might have EBVs based on his own performance and the performance of his siblings, parents and other relatives. As the bull is used, and his progeny recorded, more information is available about his likely genetic merit. As a result, his EBVs may change and the accuracies will increase.

Accuracies are influenced by the heritabilities of traits and the genetic associations existing between them. For lowly heritable traits, more information is required to achieve a similar accuracy to that of highly heritable traits.

Accuracies are expressed as percentages. The higher the percentage, the greater the chance that the EBV is a close estimate of the animal's true genetic merit, and the less likelihood that the EBV will change as more information becomes available. Even though an EBV with a low accuracy may change in the future, it is still the best estimate of an animal's genetic merit for that trait. Generally, as more information becomes available, an EBV is just as likely to increase in value as it is to decrease.

Where an individual performance record is available on an animal for a particular trait then its EBV for that trait must have an accuracy of at least 20% before it will be reported. Where no individual performance is available, the EBV must have an accuracy of at least 50% for growth and carcase traits, and at least 35% for calving ease, milk and days to calving EBVs, to be reported.

The maximum likely change to EBVs at different accuracy levels is indicated by the standard error associated with different accuracies. The size of the standard errors decrease as the accuracies increase. Statistically, there is a 66% chance that an animals true breeding value will be within 1 standard error of its EBV, and a 96% chance that it will be within 2 standard errors of its EBV. Table 1 shows the confidence ranges associated with different accuracy levels for various traits.

For example, a 400-Day Wt. EBV with an accuracy of 90% will have a standard error of ± 7 kg. If an animal's EBV is +30 then, with the addition of further information (e.g. progeny or sibling records), the EBV would be expected to still fall within the range of +23 kg to +37 kg (i.e. 30 ± 7 kg) 67% of the time; and, within the range of +16 kg to +44 kg (i.e. 30 ± 14 kg) 96% of the time.

Table 1. Confidence ranges[1] (standard errors) for EBVs at different levels of accuracy

Trait	Accuracy										
	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	99%
Calving Ease (%)[2]	4.8	4.7	4.5	4.2	4.0	3.7	3.3	2.7	2.4	1.7	0.8
Gestation Length (days)	2.1	2	1.9	1.8	1.7	1.6	1.4	1.3	1	0.7	0.3
Birth Wt. (kg)	2.1	2	1.9	1.8	1.7	1.6	1.4	1.3	1	0.7	0.3
200 Day Wt. (kg)	8	8	8	7	7	6	6	5	4	3	1
400 Day Wt. (kg)	14	13	12	12	11	10	9	8	7	5	2
600 Day Wt. (kg)	17	16	16	15	14	13	12	10	9	6	3
Mature Cow Wt. (kg)	26	25	24	23	21	20	18	16	13	9	4
Milk (kg)	6	6	6	5	5	5	4	4	3	2	1
Scrotal Size (cm)	1.1	1.1	1	1	0.9	0.9	0.8	0.7	0.6	0.4	0.2
Days to Calving	5.5	5.3	5.1	4.8	4.5	4.2	3.8	3.3	2.8	2	0.9
Carcase Wt. (kg)	12	12	11	11	10	9	9	7	6	4	2
Eye Muscle Area (sq. cm)	2.4	2.4	2.3	2.1	2	1.9	1.7	1.5	1.2	0.9	0.4
Rib & Rump Fat (mm)	1.6	1.6	1.5	1.4	1.3	1.2	1.1	1	0.8	0.6	0.3
Retail Beef Yield %	1.1	1.1	1	1	0.9	0.8	0.8	0.7	0.6	0.4	0.2
IMF% (Marbling)	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.3	0.1

[1] Statistically, there is a 66% chance that an animals true breeding value will be within 1 standard error of its EBV, and a 96% chance that it will be within 2 standard errors of its EBV.

[2] Assuming an average of 90% calving ease among 2 year old heifers, and an EBV of 0. Standard errors for Calving Ease EBVs will vary for different incidence levels and different EBV levels.

N.S.W. Association of Agriculture Teachers Inc

Biennial Conference

January 14th-17th 2001

University of Western Sydney Hawkesbury

Dear Colleague,

You are cordially invited to join with your teaching colleagues and participate in what will be one of the most educational and socially stimulating activities that you can claim off your tax for some time.

Attached is information concerning the Year 2001 Biennial Conference of the N.S.W. Association of Agriculture Teachers. The conference this year is being organised by the Sydney Branch of the Association. The Conference is being held at the University if Western Sydney - Hawkesbury Campus during the Christmas Holidays from Sunday 14th January to Wednesday 17th January 2001.

The theme for the conference is 'AgSmart' and a range of speakers, workshops and tours have been organised to enrich the mind and challenge your current thinking. The proposed conference program is attached.

It should be noted that GST has not been charged as the Sydney Branch of the NSW Association of Agriculture Teachers is not registered to collect it.

If you are interested in attending this conference please follow the steps listed below:

1. Copy the registration form (front & back) as only one form is to be used per delegate.
2. Enter all required information.
3. Please make cheques payable to: Sydney Branch of the NSW Association of Agriculture Teachers (ABN: 56-243-243-622) Write your cheque for either **$100 deposit** or **full payment.**
4. Forward both registration and cheque to:

   NSW AAT Biennial Conference
   33 Gough Street
   Emu Plains 2750 **By the 15th December 2000**

The only method of payment accepted is a cheque. The Association does not have the ability to accept credit card details

As places are limited in some activities, prompt notification of your attendance is the only way of guaranteeing your place.

Those delegates who only pay a deposit will need to pay the balance on registration at the conference.

Registration forms received **after** the **15th December** will be charged a **$50 late fee.**

Delegates wishing to attend, but fail to notify the organising committee before Monday 8th January 2001, will jeopardise their placement on tours, accommodation and the conference dinner.

For more details please contact:

Sheree Bourke	(Phone)	(02) 9543 0431
	(Fax)	(02) 9543 4805
	email	shereebourke@yahoo.com
Brigitte Herrmann	(Phone)	0428 969 563
	(Fax)	(02) 9627 1552
	email	brigitte@zipworld.com.au

We hope we see you at the conference

Organising Committee if the NSW Biennial Conference 2001

N.S.W. Association of Agriculture Teachers Inc.

Biennial Conference

January 14th-17th 2001

University of Western Sydney Hawkesbury

Sunday 14th January 2001 *Registration from 1pm (after lunch)*

1. Registration K7
2. Sunday tours

There will be 2 tours. Delegates will need to choose one. Each will have 2 stops of approximately 40-minutes duration. Both tours have minimal travel and maximum learning.

Tour 1 Stop 1. *Moxey's Dairy.*
One of the most modern dairies in NSW with innovative calf holding and cow feeding facilities.

Stop 2. *Innovative citrus production and marketing.*
How to grow citrus and sell the lot from the farm gate. A very clever production and market oriented farmer.

Tour 2 Stop 1. *Hydroponic lettuce and herb production at Glossodia.*
Come and see a self-taught farmer who has survived the school of hard knocks. (Count the lettuce correctly and you might receive a prize).

Stop 2. *The new way to produce mushrooms - the Dutch method.*
Come and see these "fun guys" popping out of compost. Explore production problems and trends. Consider the role of technology in production.
** Extra Bonus for tour 2 - A stop on the Terrace to get a few snaps of the Hawkesbury panorama

3. Official Opening

This will be at the BAR in Stable Square. The theme of the evening is a "Formal Beach Party". So dust off your black tie and board shorts/ or sarong and join in the fun. (Remember the next day is an early start!)

Monday 15th January 2001 *Buses leave at 5am*

1. A very early start for teachers in the holiday mode however for those at the Fish and Fruit and Vegetable markets, a normal day. A guided tour of both these markets plus a hearty breakfast for those keen to see part of the marketing chain.

NSW Agriculture

CASE

2. The Cotton Store has a large number of resources and useful information for teachers and will share some of these as they take us through what they have to offer.

3. What better way to relax than a Harbour Cruise around beautiful Sydney Harbour? The 3-hour cruise will pick all passengers up at Darling Harbour and drop off at Meadowbank for the bus trip back to UWS-Hawkesbury Campus.

4. A Sponsor's Bazaar will be held in the Dinning Room, which will prove a useful source of information.

Tuesday 16th January 2001 *Workshops commence at 8.30am*

1. Guest speakers will pass on a wealth of knowledge, current developments and recent research.

2. AGM

3. After lunch, a choice of workshops that suits your interests and needs, offering practical advice and skills updating.

After all, we are here to learn!

4. Conference Dinner at UWS- Hawkesbury Dining Room. Lovely 3 course meal and some very interesting speakers.

At the conference dinner the J.A. Sutherland award will be presented to one of the members of the NSW Association of Agriculture teachers to recognise their significant contribution to the teaching of Agriculture.

Wednesday 17th January 2001 *Forum commences at 8.30am*

1. Education Forum – the latest happenings in the courses that we are most interested in.

2. "Making it happen" - Plenary session
Agriculture Teachers - Educating the Future

3. Lunch, then home.

NSW Agriculture

CASE

N.S.W. Association of Agriculture Teachers Inc.

Biennial Conference

January 14th-17th 2001

University of Western Sydney Hawkesbury

REGISTRATION FORM

Please return this form with full payment by December 15th 2000 to: (Late fee for payments after this date)

NSW AAT Biennial Conference
33 Gough Street
Emu Plains 2750

Please make cheques payable to: Sydney Branch of the NSW Association of Agriculture Teachers

ABN 56-243-243-622

Please note: GST is not applicable for this event as the Association is not registered to collect it.

Personal Details

Title: _____ Family Name: _____

Given Name: _____ Preferred Name: _____

Occupation/Position: _____

Organisation: _____

Postal Address (for school holidays): _____

_____ Town/Suburb: _____

State: _____ Postcode: _____

Phone Wk: _____ Home: _____

Fax: _____ E-mail: _____

Special Requirements (please note any special dietary, medical or other requirements)_____

_____

Committee Use Only:

Date received _____ Receipt issued_____

Payment received: Deposit $100

Full payment

Other _____

Registration *Please select the appropriate option for yourself and partner/families.*

PART A: DELEGATE COSTINGS			
Option 1	**Cost**	**Number of people attending**	**Total Cost**
❖ **Conference package with accommodation** Includes: Single room, all meals, all tours, Beach Party, Conference Dinner	$380	X [ ]	=
Option 2			
❖ **Conference package without accommodation** Includes: Lunch, Morning & Afternoon tea, all tours, Beach Party, Conference Dinner	$230	X [ ]	=
Option 3 ***(Choose the day(s) you wish to attend)***			
❖ **One Day package**			
Sunday			
• Local farm Tour + Beach Party	$35	X [ ]	=
Monday			
• Market Tours, Cotton Store, Harbour Cruise	$130	X [ ]	=
Tuesday			
• Workshops, Conference Dinner	$65 (with dinner)	X [ ]	=
	OR $25 (without dinner	X [ ]	=
Wednesday			
• Workshops	$25	X [ ]	=
Registration Fee ***(Choose one option)***			
Current Members of NSW Association of Agriculture Teachers	**NIL**		**NIL**
Membership of NSW Association of Agriculture Teachers 2000- 2001	$70	X [ ]	
Non-members of NSW Association of Agriculture Teachers	$70	X [ ]	=
University students (must have ID)	$35	X [ ]	=
		TOTAL COST for DELEGATE	

PART B: SOCIAL EVENTS FOR PARTNERS/ FAMILY	(NO CHILD CONCESSIONS)		
Sunday			
• Local farm Tour + Beach Party	$35 per person	X [ ]	=
Monday			
• Market Tours, Cotton Store, Harbour Cruise	$130 per person	X [ ]	=
• Harbour cruise only (make your own way there)	$55 per person	X [ ]	=
Tuesday			
• Conference Dinner	$40 per person	X [ ]	=
		TOTAL COST for PARTNERS/ FAMILY	
		TOTAL COST for CONFERENCE	
		Less Deposit Paid	
		Balance	

Please note: *No family accommodation is available on campus. See local tourism brochures for family/ other accommodation options.*

NSW Association of Agriculture Teachers Inc

ABN Number 81 639 285 642

President	Treasurer	Secretary	Editor BAAT
Patrick McCann St Josephs HUNTERS HILL 2110 02 98161044 (W) 02 98796804 (F) 02 98171212 (H) pamccann@bigpond.com.au	Angela McCann St Ignatius College, Riverview LANE COVE 2066 02 98828222 (P) 02 98828588 (F) 02 98171212 (H) pamccann@bigpond.com.au	Peter Napier Orange High School ORANGE 2800 02 63623444 (W) 02 63613616 (F) 02 63626295 (H)	Karen Damic Bathurst High School BATHURST 2795 02 63313755 (P) 02 63322302 (F) 02 63373093 (H)

Mr Nevin Holland
Vice Chairman
NSW Farmers Egg Producers

Dear Nevin
Re our recent discussions of the three egg production videos that you have allowed me to view, namely -

'Egg Shell Quality Problems; Causes & Solutions'; produced May 1999

The Australian Egg Industry; produced July 2000 and

'Scrambled Messages' produced by south west videos of Young.

All three videos are excellent and would provide invaluable teaching materials in school Agriculture. The first two on the production side of a high technology, intensive animal industry.

The third video 'Scrambled Messages' provides a very objective picture on why the modern well managed battery caged systems can be both a humane system for the birds plus be economical for the egg producer.

Australian Agriculture can at times be exposed to emotive, unbalanced attacks from certain interest groups employing sensational 'media grabs'. I feel sure many of our school pupils have viewed unfavourable media reports on 'battery cage' production. This video 'Scrambled Messages' will provide our pupils with a counter view and challenge their attitudes and discernment when reflecting on controversial issues in Agriculture.

I understand your organisation is willing to place all three videos onto one video and make this video available to secondary schools FREE OF CHARGE provided schools are motivated to fax the return order sheet (provided early in 2001 in BAAT).

Nevin, on behalf of members of the NSW Teachers of Agriculture plus other teachers who may take advantage of this generous offer our sincere thanks to you and the NSW Farmers Egg Producers.

Yours sincerely
Peter Napier
Secretary