"B.A.A.T."

BULLETIN OF THE N.S.W. ASSOCIATION OF AGRICULTURE TEACHERS

WINTER 1994

Profiles in AGRICULTURE

T.A.S.....SCIENCE.....H.S.I.E...????????

The Land

by Kate Sevier, Young

The land,
full of power and presence
and unending giving,
swirled in misty mornings,
cracked in parched pain,
ancient and fragile.

Its flora is damaged
and diminished.
Fauna flees to a few pockets
of precious reserves.
Urban webs of clawing population
scramble to dominate it.

It is spiritual.

Underneath the morass
of millions of meddling men
there is a soul;
so deep, but scarred.

We need to nurture
that which has nurtured us,
unthanking, sapping it dry.
Take care of it, respect it,
The land is our mother.

THE NEWLY ELECTED N.S.W.A.A.T. COMMITTEE

PRESIDENT: JOHN LEE- GLEN INNES HIGH SCHOOL	067	321322
SECRETARY: DEBORAH YORK- BARRABA CENTRAL	067	821104
AST.SECRETARY:LOUISA OUWENDYK- COURALLIE HIGH	067	522833
TREASURER: DAVID GRADY- INVERELL HIGH	067	223777
EDITOR BAAT: STUART HEMMINGS- FARRER AG. HIGH	067	679211

INCOMING PRESIDENTS REPORT

HELLO,

Just a few words from your new A.A.T. President. During the very successful January Bi-ennial conference the above new executive were elected. On behalf of the new executive I would like to thank Rod Francis and the previous executive for their efforts on behalf of the association and the gains they made for Agriculture teachers.

The January conference was voted a great success by all those who attended. There were more than 70 participants, more than at any conference for the past decade. I think a lot of success is due to the great organisational efforts put in by Don Tunningly and so on behalf of all those who attended- "thanks Don, for a job well done".

The conference produced a number of firsts and has pointed to a number of important developments that will affect us all through the next few years. Some of the more notable firsts were; the very good presentation from the North Coast and their enthusiasm to run the 1995 conference; buskers by the pool at midnight (at Farrer in Tamworth during the Country Music Festival), especially selected by Jenni Wilkins, and the refreshing sponsorship by Tooheys.

The new executive hope to be able to represent you, as Agriculture teachers, when-ever and where-ever we are able to. If you think there is anything that we can do to promote Agricultural Education, please feel free to contact any of the executive with your ideas/problems etc.
One of the things we would like to achieve is to increase communication between everyone involved in Agricultural Education. One way we see of doing this is via B.A.A.T. If you can help achieve greater communication via this journal, please contact our editor, Stuart Hemmings, at Farrer Agricultural High School. I am sure Stuart would appreciate any contributions, articles, letters to the editor, suggestions for articles, problems etc that may be of interest to other readers.

One of the other encouraging things to come out of the conference was the enthusiasm of a lot of participants to go home and establish/re-establish Area Agriculture Teachers groups. I hope this enthusiasm is still as strong and that we seethe development of groups throughout the State in the near future. (I believe that the Central Coast group has already organised their first meeting, well done!)

We, the executive, are looking forward to the challenges of the next two years in our efforts to represent you, the Agriculture Teachers of N.S.W.

I wish you a happy and prosperous year.

JOHN LEE

PRESIDENT.

GREETINGS FROM THE EDITOR

Welcome to 1993 and to the first edition of B.A.A.T. for 1993.

As the newly elected editor of B.A.A.T. I hope that I am able to supply material that will keep the N.S.W. Agriculture Teachers Association members informed of happenings in the teaching of Agriculture in the N.S.W School education system. Agriculture, particularly in the junior years, is in a time of change. The impact of Design and Technology has most certainly had a somewhat unsettling effect on teachers of Agriculture. The introduction of a number of new courses in the senior curriculum combined with a changing senior student population has also had an impact on many smaller subjects in a number of schools.

The impact of Global Budgeting has also meant a change in the workload of school farm managers, once again, the Agriculture teacher. However, teachers of agriculture historically, have continually encountered obstacles and have often been placed in difficult situations, due to the fact the subject is often not seen to fit the "norm". Historically, the agriculture teacher has been a flexible, hardworking professional who has had enough initiative to overcome these barriers, and through a belief in the subject and the positive outcomes for the students we teach, the subject still lives on. The willingness to adapt to the current changes and the need to be informed and work together as a team, and where necessary, use the Association as an important lobbying group, could not be more evident than at the Biennial Conference held in January 1993.

The conference, held at Farrer Agricultural High School in Tamworth in the final week of the summer vacation, had what was believed to be a record attendance. Some of the outcomes/proceedings of the conference have been included later in this issue but due to the high quality and quantity of activities scheduled by the organisers, space does not permit all of the material to be included. I urge those who were unable to attend the conference to use the list of participants included along with the program used for the conference, should they wish to obtain any resources or information that may assist them in their teaching or professional development. Congratulations to Don Tunningly from Gunnedah and his organising committee for an outstanding and informative conference, not to mention the social interaction.

("Work Hard, Play Hard" is a saying that comes to mind!)

I have endeavoured to send this first edition for the next biennial period to every school that has agriculture as part of its curriculum, regardless of financial membership. At the time of writing ,I am still awaiting an updated list of schools with candidates in the 1992 H.S.C. and S.C. courses. If you are aware of any schools implementing agriculture for the first time this year or of any school who may not have received this edition please contact me.

PLEASE BE INFORMED THAT THIS WILL BE THE ONLY EDITION ISSUED TO NON-FINANCIAL MEMBERS OF THE ASSOCIATION.

There will be at least 3 editions per year and also the possibility of some special publications (particularly in the design and technology area). So if you wish to receive these editions and become a contributing member of the N.S.W.A.A.T. you must fill out the membership form found later in this issue. Please urge others in your staff room or region to do likewise, since one of the main aims of the Association is to reach all teachers of Agriculture, for the benefit of our subject. The contact from teacher to teacher is often seen as one of the most beneficial forms of receiving important information. The Association and B.A.A.T. can assist in this respect.

I am sure you would agree that the success of a publication such as this, relies on having good information and resources that are applicable to all teachers. For this reason ,I ask you to co-operate in making this "***your***" bulletin by sending me any information or resources you may have and taking the time to send off the evaluation form at the end of the bulletin. The "fax" machine may be a quick and relatively cheap way to do this. Remember, someone in the state may just be after that worksheet, project, brief or local equipment sale you have or know about. Much of this edition is devoted to the conference and the all important, highly requested H.S.C. "suggested" answers, however, future editions will contain up to date reports eg. syllabus committee etc as well as a variety of resources that can be used in everyday teaching. Your support in letting me know "what you want" is requested and can assist in my research and planning for future editions.

I wish you happy reading (if you have the time!) and look forward to seeing your name on the mailing list for the next edition, or more importantly receiving any contribution you may have for future editions.

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1992 HIGHER SCHOOL CERTIFICATE AGRICULTURE

SUGGESTED/SAMPLE ANSWERS

The following answers will need to be read in conjunction with the 1992 2/3 Unit common paper, as copyright exists on the Board's examination paper. These answers are a guide only and where some answers are given it should be recognised that a variety of other possibilities exist, based on the student's chosen case study.

SECTION 1:

Q1.

(a) i. ii & iii. Any 2 inputs, outputs and processes as long as they were directly related to the chosen subsystem. N.B. outputs such as meat, carcasses, feathers, dairy products should not be accepted as these result from a manufacturing process.

iv. eg selected process "photosynthesis"

chloroplasts in the plant use water, carbon dioxide and sunlight to manufacture carbohydrates, oxygen and water. The carbohydrates are used as a source of energy to allow the plant to grow and reproduce.

(b) i. To maximise profit, or, to improve the genetic potential of the herd.

ii. may have 2 management procedures briefly described or 1 management practice described in detail.eg the farmer uses a minimum tillage system combined with a crop rotation program incorporating lucerne and long and short fallows. The combination of these practices leads to an increase in soil nitrogen levels along with increased soil moisture storage which is able to boost yields of following wheat crops as well as increasing protein levels and lowering fertiliser costs.

(c) i. eg. wheat cultivation, sowing, fertiliser application, post emergent spray, harvesting, transport to silo.

at least 5 procedures in order would score maximum marks, about 3 procedures 1/2/ marks

ii. Name of management procedure Eg. planting potatoes

must describe HOW the procedure is carried out Eg. seed potatoes are placed in a prepared seedbed, by hand, then covered and hilled up. Light watering can assist in germination.

iii. young plants must avoid frost- plants are ready for harvesting around first frost, therefore planting must occur early enough for the chosen variety to allow adequate tine for growth.

(d) i. gross margin/unit, profit, average outputs, yields, weight gain, quality. Any 2 listed or 1 with an explanation would receive full marks.

ii. whole farm budget including fixed costs and variable costs. should have brief explanation.

iii. money in bank, avoid overspending in any one season, fodder conservation, overdrafts, loans, supplementary incomes, diversification, contracts, portability of resources. Any one of these EXPLAINED.

(e) i. soil to plant: nutrient uptake by plant from soil
plant to animal: plants grazed by animals(provides nutrition)
Animal to soil: manure from animal to soil. Also compaction.
Management to soil: addition of lime to raise pH, application of fertilisers
Management to plant: grazing at appropriate time. application of fertiliser.
Management to animal: drenching, vaccination etc.
Animal to management: measure production data, Providing outputs milk and eggs.
Feedback eg. disease
ii. Name of Farming System: DAIRY.
eg milk production and milk quality measures such as butterfat % and protein levels. 3 measures listed or one measure really well explained in terms of comparing efficiencies with other production would gain maximum marks.

Q2.
(a) i. line or histogram accepted. Should be correct plot , fully labelled, to scale, show correct quantities, axes correct way. Each one missing may result in a loss of marks.
ii. mentioning the difference between A & B would gain 1/2/ marks and extra information such as shape of curves, the absolute differences, the similarities in months 1-2 etc. would gain rest of marks.
iii. Within the context of a TRIAL, any limiting factor eg genetics, soil variability, aspect, exposure etc but NOT different times/seasons or different fertilisers.
iv. answers must mention elimination of chance or inaccuracy (caused by small samples) "BIAS" alone or "more consistent results" or "better statistical analysis" would only expect 1/2 marks.
v. refer to both variation in production in different areas and the recommendations for farmers. More than just mentioning factors such as soil, climate etc.
vi. one of: Standard Deviation; Analysis of Variance; T-Tests; F-Tests; Variance; Range.

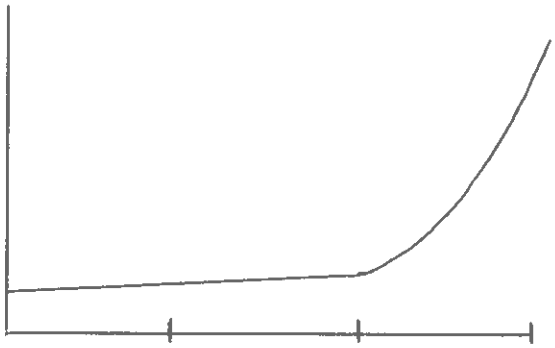
SECTION II.
Q1. (a) i. Because they produce toxins that are harmful to humans and animals.
ii. farming effluent and discharge from country towns.
iii. Treatment of effluent and recycling, higher soil O.M. levels to reduce leaching, better timings of fertiliser applications, reduce soil erosion by soil conservation practices.
iv. warm weather; lower water levels; nutrient rich rivers.
(b) i. *Rhizobium* bacteria in the roots of legumes and some free-living bacteria and blue green algae convert nitrogen in soil air to a form useable by plants.
ii. would need to explain what legumes are grown and how the nitrogen is used for animal feed or plant nutrition. eg including a phase of lucerne in a rotation of wheat in order to boost soil nitrogen and thereby reduce fertiliser costs and also increase grain protein.
iii. Ammonification; Nitrification; Denitrification.
(c) i. 1. eg. limited precipitation in summer causing reduced pasture availability.
2. eg. high summer temperatures reducing photosynthetic rate and hence growth rate in glass house flower crops.
ii. conserve moisture by improving soil water holding capacity through increased Organic matter.
eg. a need to provide adequate ventilation/cooling systems in designing any glasshouse system.

(d) i. Process A: 1. Carbon dioxide supply 2. water supply
Process B: 1. Age of plants 2. type of animal (ruminant/ monogastric)
ii. Better timing of grazing process when digestibility is higher. (must outline how the method improves)
iii. GROSS ENERGY - energy of faeces ---> DIGESTIBLE ENERGY - energy of methane and urine ----->
METABOLISABLE ENERGY - heat increment ------> NET ENERGY (used for maintenance and
production)
Q2. (a) i. soil compaction increases
ii. @ 10cm = 7mm/hr @ 25cm = 5mm/hr
iii. 1. less pore space 2. greater adhesive force with soil particles
iv. 1. less soil air; reduced diffusion of soil air. 2. structural problems
v. Reduced plant growth due to lack of oxygen to the plant roots and reduced ability for respiration; reduced soil microbial populations leading to reduction in nutrient cycling; soil erosion.
(b) i. Overcropping, monoculture, overgrazing, over cultivation, over-irrigating, reduced organic matter making sure to have a DESCRIPTION of the effect.
ii. ley farming, rotations, reduced cultivation, choice of stocking rate all WITH reason.
iii. Off farm: 1. Department of Ag. ; conservation and land management. 2. Machinery Co. Fertiliser Co.
On farm: 1. previous records, Paddock observations 2. Visual observations of soil samples.
(c) eg eggs
1&2. sorting/ grading/ weighing/ quality control/ packaging/storage/distribution etc.
ii. For any product chosen microbial spoilage can include fungal or bacterial infestations that change the nature of the product. Answer should emphasise the HOW.
iii. Any method which preserves or prevents spoilage of fresh product is applicable here. eg for beef may have washing of equipment and work areas, cold storage, protective dress for workers or other marketing regulatory requirements.
iv. Specific detail on HOW the method limits the action. Eg. prevent contact of microbes with carcass or cold temperatures not providing optimum temperatures for specific microbial growth and reproduction.

Q3. (a) i. 1. body weight 2. production status
ii. Lactating animals require higher levels of protein and energy in order to supply nutrients.
iii. animals per unit area eg. ewes/ ha
iv. 1. Sow improved pasture species 2. Improve soils through improving structure or O.M. levels
v. Production may be reduced per animal but production per hectare may increase up to a point
(b) i. Usually higher for intensive systems due to intensity of output.
ii. High energy values per feed unit costing more per unit of feed for intensive systems.
iii. Often supplied in feed or water for intensive with much higher control levels needed due to quick spread.
iv. Higher per animal in intensive due to high cost of housing/buildings.

(c) i. Legume: high suitability due to high protein and digestibility but low in fibre
Mature Grass: Not highly suitable due to low protein and digestibility
Crop stubble: Low digestibility and low protein hence not suitable- high fibre not balanced
ii. Bloat or enterotoxaemia due to lack of fibre and moisture.
(d) i. Hybrid vigour resulting in offspring with increased growth rates. Introduction of new genetic material previously lacking. New product.
ii. Introduction of genetic based disease or traits carried but not necessarily seen in phenotype. Eg spider syndrome in U.S. Suffolk sheep. Need for purebred lines.

Q4. (a) 1. Temperature- affects the fertility of rams by reducing viability and motility of sperm.
2. Daylength- affects the oestrus cycle of sheep and poultry.
(b) i. oestrogen
ii. Brings the animal on heat and makes the female receptive.
(c) i. Energy is needed to keep the animal alive and healthy without producing a product. (Homeostasis)
ii.



(d) i. As a plant matures the cellulose content increases and cell walls lignify and thicken.
ii. Young plants are high in protein and digestibility but low in dry matter.
iii. Sow pasture species that provide feed at other times of the year, conserve fodder during October-November, buy in feed from other or off-farm sources.
(e) i. Milk fever (Hypocalcaemia); Pregnancy Toxaemia.
ii. On set of lactation drains the body of calcium reserves thereby reducing blood calcium leading to the formation of symptoms. N.B. Must be PROCESSES.
iii. Extend the dry cow period and provide calcium supplements, legume hay or pasture.
(f) i. By trampling plants, compacting soils with hooves and overgrazing of pastures.
ii. Ensure that new pasture plants have sufficient root structure and leaf area to survive grazing, particularly initial grazing.

Q5. (a) i. As rainfall increases, so does the potential yield
ii. Plant growth depends on soil moisture which comes from rainfall; stored soil moisture usually at a maximum with high rainfall compared to lowest rates of evaporation. (effective rainfall= precipitation rate - evaporation rate)
iii. Limiting factors such as available soil water, sunlight, plant disease, nutrient availability and pest damage all contribute to reduced potential yield.

(b) i. Wheat yield following clover is 2t/ha greater than wheat yield following grass.
ii. 1. Wheat yields are higher after clover because the disease cycle may be broken.
2. Wheat yields are higher after clover due to the clover contributing nitrogen to the soil in its leguminous role.
iii. Inoculate legume seed with *Rhizobium sp.* bacteria, ensure a well prepared seedbed, adequate weed control.
iv. Named crop: TOMATO

PEST TYPE	PEST NAME	EFFECT OF PEST
Insect	Fruit fly	rotting of fruit
Weed	Potato weed	harbour leaf hopper insects
Micro-organism	Tomato Big Bud	Buds enlarged and deformed

v. Fruit fly eggs are laid into fruit, maggots hatch out eating fruit and causing rot.
vi. Before fruit fly infestation begins, destroy infested fruit by burninbg and spray crop to prevent infestation.
(c) i. Fruit fly resistance, decreased growth of laterals, frost tolerance, decreased fruit splitting.
ii. Fruit fly resistance means lower use of chemicals meaning a cheaper crop to grow and investigation of alternate control methods.

Q6.
(a) i. As units for sale increase, market price for top grade decreases and vice versa, except for Nov/Dec where price parallels production.
ii. Average grade: $15/unit Top grade: $30/unit
iii. Production peaks in October and remains high until December. Then production falls until Joly and increases until October.
iv. 1. When supply is low consumes will pay more for top grade.
2. Could include storage effects, seasonality of demand for product. eg. christmas
(b) i. 1. Producer is able to match production to market demand.
2. Does not have to store.
(c) Partial budgets or gross margins.
(d) Commodity A- Income - Variable costs
(8000+64000) - (3000+24000+3000) = 72000-30000 = $42000/100ha
Commodity B
55000 - (2000 + 2000 +4000) = 55000 - 26000 = $29000/100ha
Therefore commodity A is more profitable.
N.B. Bank interest, council rates and machinery are all fixed costs.
(e) 1. Reliability of market prices for commodity A.
2. Interest rates, availability of capital.
3. Alternative uses for the machinery.
(f) Plant Product: TOMATO
1. Fruit fly infestation 2. Sunburning 3. Fruit splitting 4. Fruit abnormalities
(g) i. INSECT Tomato Presence of maggots-rotting fruit
ii. Micro-organism Hay Mouldy smell
(h) INSECT: Disposal of infested fruit to stop life cycle. Locate and destroy alternative plant hosts. Spray at correct times.
MICRO-ORGANISM: Avoid baling moist hay, avoid weather damage to hay. If hay is wet do not stack until it has dried out.

THE WHO'S WHO OF THE AGRICULTURE SYLLABUS COMMITTEE

(COURTESY LISLE BROWN, JAMES RUSE A.H.S.)

The following list may be of interest to agriculture teachers throughout the state. I am sure that any comments you may have would be appreciated by the committee. Apart from that it's important to know who may be controlling what **YOU** teach in your classroom.

BOARD OF STUDIES

YEARS 7-12 AGRICULTURAL STUDIES SYLLABUS COMMITTEE

UNIVERSITIES IN NSW AND ACT

Dr J W Bowyer John	University of Sydney
Dr R Francis Rod	Charles Sturt University - Riverina
Mr R A van Gelder Ralph	University of New England
Mr A Tunstall Allan	Charles Sturt University, Wagga Wagga

NSW DEPARTMENT OF SCHOOL EDUCATION

Mr L H Brown	James Ruse Agricultural High School
Ms J Wilkins Jenny	Muirfield Technology High School

NSW TEACHERS FEDERATION

Mr G Creek Geof	Murrumbidgee College of Agriculture
Mr P Crick Peter	Singleton High School
Ms P Smith Pauline	Armidale TAFE
Mr R Swinden Russell	Henry Kendall High School

ASSOCIATION OF HEADS OF INDEPENDENT SCHOOLS OF AUSTRALIA

Mr D J Crofts David	The Scots School, Bathurst

INDEPENDENT TEACHERS ASSOCIATION

Mr P B Robey Paul	St Pauls College, Walla Walla

CATHOLIC EDUCATION COMMISSION, NSW

Mr G Clerke Geof	23 Iralba Avenue, Emu Plains, 2750

NSW DEPARTMENT OF TECHNICAL AND FURTHER EDUCATION

Mr P Batten Peter	Rural & Mining Indust. Specialist TAFE, Orange

JOINT COUNCIL OF NSW PROFESSIONAL TEACHERS ASSOCIATIONS

Mr J Lee John	Glen Innes High School

FEDERATION OF PARENTS AND CITIZENS ASSOCIATIONS OF NSW

Mr J Young John	Wallamore Road, Tamworth, 2340

NSW DEPARTMENT AGRICULTURE & FISHERIES

Mr W Moore Warwick	Division of Agricultural Services PO Box K220 - Haymarket NSW 2000

NSW FARMERS ASSOCIATION

Mrs V Sinderberry Vivien	C/-"Woodfield" PO Box 13 - Junee NSW 2663

BOARD OF STUDIES

Mr Bob Staples	Board Inspector Curriculum Branch
Mrs Colleen Taylor	Curriculum Branch

1993 BIENNIAL CONFERENCE
FARRER MEMORIAL AGRICULTURAL HIGH SCHOOL, 1993.

CONFERENCE OPENED BY:
MRS VIVIENNE SINDERBERRY
(N.S.W. FARMERS ASSOCIATION, EDUCATION COMMITTEE)

I have outlined the beginning of Mrs Sinderberry's opening remarks and have included in total the latter stages of her opening address, as it directly relates to our situation in schools.

Mrs Sinderberry has spent 20 years in school education and 10 years as a business partner in a farming enterprise. She highlighted the fact that she has particularly been involved in post- secondary education due to the rural industry being *"no longer able to survive without a skilled workforce"*
Mrs Sinderberry stated that the teaching profession is the "front line" in establishing awareness of agriculture in Australia and that "education will be its saviour". However, it should be noted that the entire N.S.W. community is a stakeholder in agriculture , as we are all consumers of food and fibre.
Mrs Sinderberry described some of the issues facing agriculture that will have implications for education and training as:

* Australian Ag. must maintain its competitive edge in a corrupt and subsidised world market.
* Farmers will have to move down the market chain to spread their risks.
* All facets of value adding will require trained staff who are not currently available.
* Better industry training in line with Quality assurance
* Farmers are facing an information overload (from production mentality through to greater productivity, quality management and sustainability).
* Farm owners average age is 57 years and 50% went to school between 1928 and 1936 and have never been back since!
* Surveys indicate that the literacy rate of the owner group is as low as 50% (yet we still use written material as the main information medium).
* Farmer's political strength has weakened to only 5% of the vote.
* Closer relationships with manufacturers (due to Value-Adding), requiring new concepts and new skills.

Mrs Sinderberry also took the view of agriculture being "big business, racing toward the 21st Century with the majority of its workforce untrained and unskilled." As agriculture teachers, she reminded us that " you as teachers have the awesome responsibility of being part of this change"

"No junior student should have to be burdened with the problems of our industry. Agriculture should and is being presented in a holistic way, which is much more interesting to the young. The dilemma is that at the same time we have an industry desperate for a skilled workforce. I don't believe that the schools can afford the luxury of this conceptual approach past Year 9.

Certainly in years 9 and 10 students have to be able to see specific vocations developing for themselves within the industry. The Joint Schools, TAFE and Industry Plan seems to have some of the answers. As this has just had one year of trial then I would urge you as an Agricultural Association to begin to push for this program to be broadened into Agriculture as soon as possible. It is important for young people to see and experience the exiting array of employment options within Agribusiness. So often the only job option presented to them is wool classing.

How many young people who are fed up with school by Year 10 are ever presented with the idea of becoming a Rural Apprentice in traditional agriculture, or horticulture, or fruit growing, or even the fishing industry? The apprenticeships are there for the taking and the TAFE and the Agricultural Colleges are well prepared for the training.

By the way- How much influence does your Association seek to exert over the bureaucrats in Sydney who make policy about agriculture's role in the school??

There are farming communities in N.S.W. who happily boast of the "school" farm. Towns where people are so proud of the involvement that they have with the teachers and the students. Real success stories of teacher/community involvement in Agriculture.

And a word of congratulations must go to the teachers of agriculture in city high schools. I have heard of garden plots in some pretty amazing places- trying to teach about a viable industry which is as geographically remote as the North Pole. The plus side is that those teachers don't have to answer to a rural community.

Sadly, there are far too many rural communities which don't want to know the "school" farm exists, and communities that are totally negative in their attitudes to the "ag" teacher.

This is a matter which has come out in the open. Where does the loyalty of the Agricultural teacher lie? Is it to the children, the teaching profession or to agriculture itself?

If agriculture is to be given the importance that it deserves then the teacher of agriculture has to be responsible to the community. I am continually disturbed that all too many agriculture teachers have so little professional standing within the agricultural community. The extension officer employed by the Department of Agriculture is mostly "God" in the community. The agriculture teacher employed by the Department of Education is seldom consulted, is sometimes a figure of derision and at best is ignored by the community. Both are professional positions with the identical degree!

As teachers of agriculture you have the professional responsibility to promote your profession to the community. The outdated attitude that formal training is unimportant has to be changed. All educators within agriculture have to preach the gospel- we've all got to go out and sell the concept of training.

School field days; presenting innovative ideas; having the school included in crop inspections and paddock walks; organising working holidays on farms, dairies, trawlers etc for city agriculture students; organising marketing seminars at night in conjunction with the farming organisations and agricultural consultants; gathering farmers in to help with those dreadful school projects when there are 15 students and 5 pieces of equipment and 4 of those are broken; preparing cattle for the Royal Show; trees on farms and landcare projects etc etc.

To have credibility in the community you as teachers have to make your niche in agriculture part and parcel of what is going on in the community. And the initiative to break down the barrier is going to have to come from you. Every farmer can and does tell horrendous tales about past experiences when the son/daughter took Ag at school.

Eight years ago my own son who was attending an Agricultural High School, was advised not to take agriculture in Years 11 and 12, as it would limit his university options. The subliminal message was- agriculture was "mickey mouse". He has since graduated from Sydney University with an Ag Economics Degree. Only very recently I heard a consultant talk to a group of Year 11 students and the same bit of advice was forthcoming-don't do agriculture. Only you can fix this!

Eighteen months ago I was in a large country town and brought together the TAFE teachers and the Agriculture teachers from the 5 high schools. It astounded me that they had never met before-each worked in isolation. Then they told me how difficult it was to get to in-service courses! Heaven help us- everything they needed was right there in the community.

How often do you as educationalists evaluate the work you present in the schools? Evaluations ensure the work that you present to your clients who are of course the agriculture students. The ONLY real evaluation is improved performance and understanding of your students and the rural community to which you have a responsibility.

Promotion of your profession and agriculture. Where does your loyalty lie?

Let me say again- everyone in N.S.W. is a stakeholder in agriculture. It's a wonderful, exiting industry!

As a farmer I am challenged by the future and I am proud of what the N.S.W. Farmers' association is doing for the industry.

As an educationalist in agriculture I wish you a productive three days of discussion and workshops and have much pleasure in opening this conference."

(anyone who would like a copy of the entire address please contact me at Farrer and I can forward a copy)

NSWAAT Conference 1993

PROGRAMME

Sunday, 24th January . . .

6.00- 8.00 pm **REGISTRATION**

Monday, 25th January . . .

8.00- 8.30 am **REGISTRATION**

9.00- 9.30 am **OFFICIAL WELCOME**
Mr. Frank Fisher, Assistant Director General North West Region

CONFERENCE OPENING
Mrs. Vivienne Sinderberry, Chairperson NSW Farmers Assn. Education Cmtee.

9.30-10.00 am **RURAL TRAINING**
Mr. Richard McEvoy, Executive Officer, Rural Training Council of NSW

10.00-11.00 am **DESIGN & TECHNOLOGY PANEL**
Mr. Jim White, Mr. Neil Puddy, Mr. Murray Paterson, Mr. Stuart Hemmings

11.00-11.30 am **MORNING TEA**

11.30-12.30 pm **WORKSHOP 1 . . . One to be selected . . .**

Farm Safety
Dr. Lyn Clarke,

Post Compulsory School Level Training in Agriculture
Mr. Jeff Creek, Principal Murrumbidgee Agriculture College

Computers in Agriculture
Pam Ringwood, Department of Agriculture

12.30- 1.30 pm **LUNCH**

1.30- 4.30 pm **PRACTICAL WORKSHOP, Session 1 . . .**
Rotation of each session - one hour duration

1. **Plants in Agriculture**
   Dr. Ray Hare, NSW- Agriculture
2. **Worms and Worm Counts**
   Mr. Tony Lysle, Mr Ian Barger, CSIRO
3. **Steer Preparation**
   Mr. Col McGilchrist, Mr David Grady

6.00 pm **DINNER**

7.00 pm **BI-ANNUAL GENERAL MEETING NSW AGRICULTURE TEACHERS ASSN.**

PROGRAMME

Tuesday, 26th January . . .

9.00- 9.30 am **SYLLABUS COMMITTEE PANEL**

9.30-10.00 am **MAINTAINING AGRICULTURE IN SCHOOLS**
Mr. N. Thomas, Life Member NSW Assn. of Agriculture Teachers

10.00-11.00 am **WORKSHOP II . . . One to be selected . . .**

Design Briefs
Design and Technology Panel

Strategies in Maintaining Agriculture in Schools
Mr. N. Thomas

Syllabus Inputs
Syllabus Committee, Mr. Lisle Brown, Chairman Agric. Syllabus Committee

12.00- 1.00 pm **WORKSHOP III . . .**

Design Briefs in Agriculture D & T
Design and Technology Panel

Agriculture Budget in the Global Budget
Mr. Keith Eldridge, Dept. School Education

HSC Marking
Dr. Rod Francis, Senior Lecturer, Sturt Uni.

1.00 pm **LUNCH**

2.00- 5.30 pm **PRACTICAL WORKSHOP, Session 2**
Rotation over 3 hours

Soils Pracs.
Incitec Ltd. Staff

Landcare
Miss Susan Gaynor

Animal Measurement and Handling
Mr. Ross Anderson, Accredited Scanner 001 and Breedplan Field Officer

7.00 pm **BARBECUE**

PROGRAMME

Wednesday, 27th January . . .

9.00-10.00 am **SENIOR AND JUNIOR ASSESSMENT INDICATORS**
Mrs Peter Crick, H.T. Agriculture, Singleton High

10.00-11.00 am **"THIS IS HOW I DO IT" SESSION**

11.00 am **MORNING TEA**

11.30-12.30 pm **GREENING AUSTRALIA**
Mr. David Curtis

12.30 pm **EVALUATION — LUNCH**

Wednesday Afternoon . . .

INDUSTRY VISITS AS REQUIRED
KILLARA FEED LOTS
T-W-G TAMWORTH

ACKNOWLEDGEMENTS

N.S.W. FARMERS ASSOCIATION
KILLARA FEED LOTS
T-W-G TAMWORTH
COLLINS BROS., TAMWORTH
HOWARD AUSTRALIA
C.S.L.
AG.-MEDIA MELBOURNE
STATE BANK N.S.W.
TOOHEYS
NEMINGHA HOTEL

1993 BIENNIAL CONFERENCE PARTICIPANTS.

The following people attended the 1993 conference, held at Farrer Agricultural High School from January 24 to January 27, 1993. You may wish to contact one of these people in your area, should you require any further information about the conference, which has not been included in this edition of B.A.A.T.

NAME	SCHOOL
Ian Baird	Murrumburrah
George Liddell	Tweed River
Lisle Brown	James Ruse
Andy Brooker	Corrimal
John Lee	Glen Innes
Peter Crick	Singleton
David Croft	Scotts
William Marshall	Scotts
Nigel Cox	Singleton
Darren Smith	St. Gregory
Rowland Clark	Canberra Grammar
Geoff O'Connor	Chevalier College
John Musgrove	Kadina
Jim Harley	Kadina
Keith Larson	Bonalbo
Malcom Clarke	Coonamble
Peter Hood	Narrabri
Robert Forsbery	Umina
David Grady	Inverell
Peter Matus	Delroy
Rod Francis	Sturt University
Patrick McCann	J.Sheahan
Neil Puddy	Woolgoolga
Mark Doyle	Kooringal
Geoff Clarke	Caroline Chis.
Norm Thomas	Armidale
David Gell	Blayney
Al McMillian	Wagga
Greg Mathews	Cessnock
Scott Hollingsworth	McCarthur Girls
Rohan Chandler	Uralla
Tony Barnett	Walcha
Ivan Johnson	Ulladulla
Bill Hazlett	Walcha
Doug Reid	Woodenbong
Leo Baker	St.Pauls Dubbo
Lindsay Cartwright	Morrisset
Ian Alexander	Yanco
Alan Thomas	Armidale
G. Melville	St.Stanasclause
Ian Marriot	Casino
Col & Lorna McGilchrist	Quirindi
Tony Butler	Tumut
Colin McEntyre	Coffs Harbour
Jayne Hoffman	Alstonville
Mandy Statham	West Wylong
Mick Melino	St.Johns Woodlawn
Graham Wilson	Mudgee
David Buckley	Elderslie
Hans Muller	Nepean
Kerri Argent	Bowraville
Carolyn Barker	Mt.View Cessnock
Caroline Coskerie	Freshwater
Gail Roberts	James Ruse
Jenni Wilkins	Muirfield
Louis Ouwendyk	Courallie
Bronwyn Nielsen	Kinross Wolaroi
Vivienne Sinderberry	NSW Farmers
Susie Gaynor	Landcare
Stuart Grimmett	Woodenbong
Ivan Gant	Merriwa
Brian Friend	Wauchope
Geoff Creek	Murrumbidgee Ag.Col
Natalie Martin	Dubbo South
Bob Guest	Farrer M.A.H.S.
Stuart Hemmings	Farrer M.A.H.S.
Don Tunningley	Gunnedah
Jim White	Guyra
Kevin Moss	St. Pats. Goulburn
Rick Buckley	St. Pats. Goulburn
David Worsley	Forbes
Jamie Ramsay	Bonalbo
Keith Brown	Peel Technology
Laurie Raper	Peel Technology
John Wall	Rosary College
Peter Laffan	Barraba
Debbie York	Barraba

NSW ASSOCIATION OF AGRICULTURE TEACHERS
BIENNIAL GENERAL MEETING

Venue Farrer Memorial Agriculture High School, Tamworth NSW

Date 25th January, 1993

Meeting opened 7:15pm

Apologies Apologies received from
Donna Hirst - Morisset High
Peter Laffan - Barraba Central
Trevor Sewell
Robyn Roberts - Duval High
Ivan Cant - Merriwa High
Bob Forsythe - Kooringal High
Peter Green - Junee High
Graham Harris - Farrer Ag High

Presidents report to come

Treasurer's report NSW current balances (Dec 92)

1. 3 unit publications	$2,731.30
2. J. A. Sutherland account	$ 341.26
3. NSWAAT Memorial Fund (Mullavey)	$2,534.00
4. XXX Soc. cheque account	$9,175.36

Minutes of Previous Biennial General Meeting at Murrumbidgee College, Yanco

Motion : The minutes issued were a true and accurate record of proceedings at the Yanco Conference 1991 with correction to Life Membership Fees to read Honorary Life Membership cost $0.
Moved: David Croft Seconded: Jeff Clarke CARRIED

Rod Francis declared all positions vacant

Election of office bearers:

Peter Crick called for the position of President

President John Lee nominated by N Thomas, seconded by R Guest and was duly elected

Secretary Deborah York nominated by D Tunningley, seconded by R Chandler and was duly elected

Assistant Secretary Louise Ouwendyk nominated by D York, seconded by T Barnett and was duly elected

Treasurer David Grady nominated by R Guest, seconded by T Barnett and was duly elected

BAAT editor Stuart Hemmings nominated by J Wilkins, seconded by T Barnett

Conference venue 1995:

The North Coast Region is to host the 1995 Biennial Conference with George Liddell to organise matters.

Further information pertaining to this shall be published in BAAT.

Matters arising from the minutes:

1. Item 5 on Incorporation

Proposal for Incorporation to go ahead in line with the requirement by law regarding Incorporation of associations.

Motion: That the executive be empowered to adjust the constitution of AAT in line with the model rules for associations to achieve Incorporation and pay appropriate fees for incorporation and liability insurance where necessary.

Moved R Chandler, Seconded J Lee Carried

2. J. A. Sutherland account

Discussion of award

Motion: A sum of $400 be transferred into the J. A. Sutherland Account a an investigation be conducted as to what the constitution is about
Moved P Crick, Seconded S Hollingsworth Carried

3. Election of Representative of Ag Syllabus Committee

John Lee nominated by R. Francis, seconded by G Liddell. John Lee accepted nomination. Carried *(letter sent to board xx/2/93)*

4. Fee structure

Lengthy discussions as to what the fees should be and

Motion: The fees should be collected biennially and those joining in the second year only pay half the required amount.
Moved R Chandler, Seconded R Guest Carried

Fee Structure be $40 per individual
$ 60 per corporative body
$ 20 per student
$ 0 for Honorary Life Members

Moved P Crick, Seconded P Matus Carried

5. Awarding of J.A. Sutherland award

Rod Francis clarified that it was set up for awarding to a person associated with our NSWAAT who has had a significant impact on education in NSW.

Rowan Chandler addressed the meeting and explained his letter to the executive nominating the late Ian Parberry for the award. Rod Francis accepted the nomination.

a) Motion: That the J.A. Sutherland award be presented to the late Mr Ian Parberry's wife on his behalf and that the meeting vote upon I. Parberry receiving this award.
Moved R. Chandler, Seconded N. Thomas Carried unanimously

b) Motion: Any nominations for the award be placed in writing to the executive 30 days prior to the Biennial Conference and that the executive be empowered to make the decision on who is to receive the award.
Moved R. Francis, Seconded R. Chandler Carried unanimously

6. BAAT publication

Motion: An Honorarian of $100 per issue be paid to the editor of BAAT at the discretion of the executive
Moved R. Guest, Seconded R. Chandler Carried

7. Rural Training Council

Discussion ensued about one of us joining the Council.
Motion: The NSWAAT contacts the Rural Training Council requesting them as to whether a nominated member of our association be permitted to attend their council meetings. Also that the non- recoverable costs be covered by the NSWAAT. (in view of the amount of funds we have)
Moved K. Argent, Seconded N. Thomas Carried

8. Syllabus Committee

Motion: That the association through our Syllabus Committee Representative request formal support for post compulsory vocational training at the Agriculture Syllabi Committee with regard to all agriculture students not suited to or interested in 2 unit agriculture.
Moved K Argent, Seconded T Barrett. Motion LOST

Matter discussed by Rod Francis - Rural studies courses available as non HSC subjects for students

- OES (other endorsed studies) available

9. Publicity

Motion: That this association express its concern to the relevant authorities at the deteriorating position of agriculture in schools in particular the lack of involvement of agriculture in DAT in schools.
Moved I Alexander, Seconded C McGilchrist Carried (letter sent XX/2/93)

10. BAAT general business

Stuart Hemmings (editor) requests that interested people see him as to what is considered a suitable number of issues to be published. Also to direct any content ideas to Stuart and let him know if anything is happening. Fax no at Farrer 067-679451

11. HSC marking

Discussion - J Wilkins commented that until recently there has been very few applicants for HSC marking

- be prepared to add extra information about yourself when applying was advice by R Francis

- application forms are sent to school libraries and will also be incorporated in BAAT

Motion: That this association requests that the Board of Studies adopt a more concise and appropriate application format for markers of agriculture at the HSC and that only qualified HSC agriculture teachers do the marking.

Moved R Forsbery, Seconded I Marriott Carried

12. National conference

Jenny Wilkins attended the National Agriculture Association Conference in S.A. She is now involved in organising the next one and requested some assistance and any suggestions for suitable venues. Anyone with ideas to see her about it.

Also J Wilkins informed the meeting that the Technology Conference for Agriculture educators will be held in Cairns on 22-25 June, 1993. She has all the appropriate information and pamphlets for those interested.

13. Joint Council of Teachers Professional Association at Rozelle

Discussion about the validity of our remaining with them and contracting BAAT to them.

Motion: That our executive decide our future course of action with the Joint Council.

Moved R Guest, Seconded S. Hemmings Carried

14. DAT Concerns

Motion: That the Executive of NSWAAT encourage all regions to set up an active and affiliated sub-branch of the Association to represent the interests of ag teachers in that region and to provide a feedback to the NSWAAT as to regional policies as they affect ag teachers.

Moved P Crick, Seconded N Thomas Carried

15. Rural Training Council

Motion: If we get Rural Training acceptance that nominations for the representative position be placed through BAAT of persons for that position.

Moved R Guest, Seconded S Hollingsworth Carried

16. Issue One of BAAT

Motion: That a copy of BAAT, Issue 1 be sent to all schools teaching agriculture and that the executive decide who else to include on the mailing list (eg. uni's etc)

Moved D Buckley, Seconded G Roberts Carried

17. BAAT and 3Unit Projects

Motion: that the executive investigate the possibility of publishing some selected 3U ag projects in BAAT.

Moved G Wilson, Seconded J Clarke Carried

18. Design Briefs

Motion: That the Executive investigate the possibility of publishing design briefs.

Moved J Wilkins, Seconded I Bishop Carried

Meeting closed at 9:30 pm

NSW AGRICULTURE TEACHERS BIENNIAL CONFERENCE

26 JANUARY 1993

MAINTAINING AGRICULTURE IN SCHOOLS

Even the title of this session sounds defensive. It gives the idea that we are fighting a rearguard action. In some schools this would be true - in others far off the mark.

Agriculture as a subject within the school reflects the understanding of its importance by the administrators. Without administrative support the most dedicated agriculture teacher may become disheartened.

School Administrators are continually under pressure to include some new policy or subject. There is a finite amount of time available and space has to be made for the "new learning". Because of this and the fact that in policy making school Agriculture is poorly represented, agriculture as a subject is often severely curtailed.

Consider your own experiences. Often "the hierarchy" has perceived Agriculture simply as being far lower ability groups, training to become farm labourers, useful to raise money for school funds, or as a subject suited only to rural locations. Perhaps we are guilty of allowing these misconceptions to become so firmly established.

The answer is to go out and market the subject. We have a product which is undeniably first rate. Let us look at its attributes:

1. Of immense interest to at least half of the students.

2. Very useful to other teachers to provide concrete examples eg in mathematics, computer use, Australian history, economics, technology, art, language, etc.

3. Syllabi adaptable to any or all regions. Urban areas often fail to realise the value of various forms of agriculture which apply to towns and cities.

4. The subject is non-sexist, multicultural and suited to all levels of ability.

5. Allows for active personal development by providing group activities, leadership roles and appreciation of individual abilities.

6. Many of the so called "new innovations" in areas, such as Design and Technology, have been integral parts of Agriculture teaching for decades.

7. Dedicated teachers who see the importance of the subject to the future life of the students - regardless of occupation.

The market place has students needing to be educationally equipped for life. Parents realise that their children should be holistically educated. Agriculture is one subject which would help to attain this.

Clearly there is a lack of communication. Yesterday Vivian Sinderberry (NSW Farmers Assoc) and Richard McEvoy (Rural Training) both illustrated their talks with examples of this.

The reasons why there has not been adequate communication are many and varied. Which shot gun pellet actually killed the rabbit is immaterial - the results is the same!

Let us amend the situation and actively promote agriculture. If each teacher does his/her best then progress will be made and the students, community and environment benefit.

Norm Thomas

STRATEGIES WHICH MAY BE USED IN LINE WITH MAINTAINING QUALITY EDUCATION

(A) PERSONAL

(1) Be motivated yourself.
(2) Strengthen areas of knowledge where there is a need to do so. This includes keeping up to date with subject matter and administration.
(3) Develop a variety of teaching strategies.
(4) Keep a diary and compare work completed at given intervals of time eg monthly.
(5) Be prepared to improve your own professional qualification.

(B) SCHOOL

(1) Constantly show how the board approach of agriculture is of value to students regardless of their career option.
(2) Insist that you get fair representation, as an area of education, within the school.
(3) Ensure that teachers of other subjects who take an Agriculture class to fill their teaching load, do the work with the same zeal that you display.
(4) Make sure that students and other teachers helping you receive full credit for their work.

(C) COMMUNITY

(1) Involve parents and community members in your activities.
(2) Give regular reports of activities to parent groups associated with the school.
(3) Encourage local media to give your school activities adequate coverage.
(4) Align yourself with the local agricultural associations eg NSW Farmers, Show Societies, etc

(D) GENERAL

No doubt your work is already time consuming and at times the results are not quite as you had envisaged. Encouragement and new ideas can come from intercollegiate meetings. Attendance at these may be formally on days located or informally as occurs at stock competitions, field days or mixed school excursions.

Your NSW Agricultural Teacher s Association organises a biennial conference which is well worth while attending. The Association also has a publication called BAAT which is a useful professional publication.

Design and Technology IN CONTEXT

Authors: Jenni Wilkins, Muirfield Technology High School, Peter Thompson, Bossley Park High School, Jacqueline Dawson, Baulkham Hills High School, Robyne Trotter, Gosford High School, Tony Williams, Catholic University.

Editor: Dr John Williams, University of Newcastle.

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- **Design and Technology in Context** covers the 10 prescribed contexts of the syllabus. Each context includes historical background, resources, domains and human impacts. Students are encouraged to investigate a range of technologies within each context. Each context makes particular reference to the uses of computer technology.
- Problems and briefs are included for each context and are structured to provide starting points for the student's own design projects.

CONTENTS

1. Agriculture
History, Resources, Domains, Human Impacts, Computers, Problems/Briefs
2. Built Environment
History, Resources, Domains, Human Impacts, Computers, Problems/Briefs
3. Clothing and Accessories
History, Resources, Domains, Human Impacts, Computers, Problems/Briefs
4. Engineered Systems
History, Resources, Domains, Human Impacts, Computers, Problems/Briefs
5. Food
History, Resources, Domains, Human Impacts, Computers, Problems/Briefs
6. Health and Welfare
History, Resources, Domains, Human Impacts, Computers, Problems/Briefs
7. Information and Communication
History, Resources, Domains, Human Impacts, Computers, Problems/Briefs
8. Leisure and Lifestyle
History, Resources, Domains, Human Impacts, Computers, Problems/Briefs
9. Manufacturing
History, Resources, Domains, Human Impacts, Computers, Problems/Briefs
10. Transport and Distribution
History, Resources, Domains, Human Impacts, Computers, Problems/Briefs

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In Support of a Proposal to confer posthumously the *J A Sutherland* Medal upon Ian Parbery

29 January 1993

Only after some 24/25 years as both an agriculture teacher and as a trainer of agriculture teachers was I able to see a glimmer of significance in the history of agricultural education, especially in Australia – about who or what had gone before me, or even why we were teaching what we *were* teaching!

I learned three very humbling truths –

1. There was nothing new under the sun – all the wonderful and exciting things we were doing in Agriculture in the 50s, 60s and 70s were *not* new, They had all been done before, from as far back as 1860 in NSW.

2. There were some people who, by their scholarship, imagination, ability to survive both the physical environments in which they worked and the indifference of those who employed them; by their commitment to their pupils and their teaching genius, lifted agricultural education from obscure 'object lessons' into a dynamic upon which human endeavour throughout the world was focused.

3. That with all my enthusiasm for and experiences in teaching agriculture, I was virtually sitting on the shoulders of giants in agricultural education, who had gone before me and made the whole task so comparatively easy for me.

I would name those giants as *John Halstead, Peter Board, Frank McMullen, Ernie Breakwell, Bill Hindmarsh, Clarrie James and Alan Sutherland* – and I dare say that many of these names are a mystery to most of you – but that doesn't make them any less giants in agricultural education, nor does it lessen by one jot, *what you/we owe them.*

To that list tonight, we acknowledge the addition of the remarkable *Ian H Parbery.*

Never *before* the beginning of our secondary education system (1911) and never *till* 1934, was the preparation of professionally competent, imaginative and enthusiastic teachers of agriculture a Departmental priority. Even *then*, it became the prerogative of the Armidale Teacher's College (thanks to the positive influence of D.H.Drummond) through one Clarrie James and, two years later, in 1936, by a young hopeful extrovert by the name of James Alan Sutherland.

Some will know that in 1939 Clarrie became the pioneer Principal of Farrer and that "Sutho" or "JAS", after spending 5 years in the RAAF in WWII and a year at Lismore H.S., spent a further 27 years at A.T.C. (a total of 31 years) training agriculture teachers.

It is this Alan Sutherland – lecturer extraordinary, artist, author of international repute – who is remembered and honoured by this award.

"Parb" was one of the products of the Sutherland Stable who, graduating as a 2-year trained teacher of agriculture at the end of 1957, became both the pride and envy of his mentor. In fact, he outshone "Sutho" in intellectual brilliance, in teaching experience – 12 years in 3 state schools, during which time he completed his BA by external studies – in lecturing skills, in attention to the needs of his students, in support and encouragement of his lecturer colleagues, and in the international recognition he gained for his research in soil algae, the microflora. of (leaf) phyllospheres and in the taxonomic studies of the Melioline Fungi.

A Teacher's Certificate, Bachelor of Arts, Bachelor of Letters (now Master of Letters) with Special merit, Master of Arts with Honours and Doctor of Philosophy, were his formal credits – but only for the Teacher's Certificate did he have the privilege of studying full-time. The rest were completed, without study leave, by external study, in addition to his heavy teaching and lecturing loads. At the time of his death in 1990, at just over 51 years of age, he had been training teachers of agriculture (and science) continuously for 20 years.

He walked on the international stage of research scientists – he was drafted by the Australian Vice-Chancellor's Committee to go to Indonesia on two occasions to teach science lecturers how to teach and to initiate research projects there in plant protection.

But he never lost the common touch – for 6 years he co-ordinated and taught the Field Research Technicians Certificate through TAFE – as a spare time venture; and for 4 years he taught human physiology, biochemistry, microbiology and immunology to Nurse Educators through ACAE.

Even his closest friends didn't know the extent of his publications Apart from 3 research theses, he co-authored 4 reference books in plant protection and microbiology. He wrote 7 papers and co-authored another for international scientific journals; and he delivered invited papers to 7 international scientific conferences ion Australia, in Scotland and in the Netherlands – and ....

As a matter of some interest to this gathering, he was the *foundation* President of the NSW Agriculture Teachers' Association, 1973 and 1974. No doubt the Association will hold a copy of his C.V. for anyone to peruse – the details go far beyond anything I can outline here.

I speak as his lecturing colleague and one of his numerous friends. A more brilliant man I have never worked with or met. Though we went to the same school, trained in the same college and shared one school in our teaching (from which his wife Fran came) we never met until he joined Alan Sutherland and me at A.T.C. in 1971 – and for 19 years we shared an unforgettable friendship.

He was crusty, often abrupt and singularly intolerant of fools, especially educated fools. He was incorruptible and would not tolerate anything that smacked of hypocrisy. But he was also a team man – and with him on the teacher-training team at the ACEA, we pioneered exciting and effective new ways of teaching teachers – and *his* teaching became something of a legend.

But he was a sensitive man – and always somewhat bemused that anyone should think he had any special abilities – who never allowed ambition, his beloved research, or even his employing institution, which did its best to ignore him (it took 18 years for its representatives to begrudgingly promote him to Senior Lecturer!), to influence or detract from his attention to his pupils, students and colleagues.

Parb was *never* a traditional or career academic – he was always the most professional of teachers.

I congratulate you on your decision to honour him, albeit posthumously, as one who from 1958 to 1990 was one of the remarkables, one of the genuine ones – the most recent giant in the history of agricultural education in NSW.

Dr. J. D. Greenacre,
University of New England.
1.7.93.

Plant Production Systems
Plant Breeding **Dr Ray Hare**

Introduction

1. The place of plant breeding in society.

a) All agricultural crop species, many pasture, horticultural and forestry species have been genetically improved by the work of plant breeders from ancient times to the present.

b) The well being of the human community is dependent on the work of plant breeders for food, clothing, shelter, medicines etc.

2. Vocational opportunities for plant breeders in Australia

a) Australian agriculture needs Australian plant breeders to remain productive.

b) Many of today's plant breeders will retire over the next ten to fifteen years. This is the time required to fully train to postgraduate level and provide a new plant breeder with basic field experience.

c) Some of today's agriculture/science students especially those of a high calibre should be encouraged to consider a career in plant breeding.

d) Agricultural research funding bodies and providers are concerned by the lack of good students taking up tertiary training particularly in plant breeding. A lack of opportunities for conventional plant breeders both in the public and private sectors in Australia coupled with the promotion of molecular genetics as "the way of the future" and greater employment opportunities in the "molecular" field, has seen those students with an interest in plant genetics move away from classic plant improvement. While Australia needs scientists trained in both areas, a good balance in the numbers is required. Career opportunities must be enhanced through the provision of studentships and research fellowships, the attachment of research students to research projects, and the maintenance of long-term funding to effective plant breeding programs. The continued viability of modern, effective and commercially applicable plant breeding programs within Australia is dependent in part, on existing staff remaining abreast of new developments and the availability of new well trained recruits.

e) An interesting plant breeding component in the HSC course should stimulate good students to at least consider a career in plant breeding.

3. Modern developments in plant breeding

a) Plant breeding, being a multi-disciplinary endeavour, benefits from scientific and technical advances in many diverse fields.

i) molecular genetics

- DNA markers for gene location
- gene cloning
- genetic transformation leading to transgenic species
- alteration of gene function/activity
- see abstract attached for more detail

ii) statistical mathematics

- use of computers for analysis of new complex statistical field designs
- application of new statistical mathematics to the analysis of data

iii) biochemistry

- greater understanding of biochemical processes especially at the gene function level. eg. gene specific protein products.

iv) analytical instrumentation

- advanced technologies applied to analytical instrumentation eg. near infrared analysis of grain components.
- high performance liquid chromatography.
- rapid accurate and cost effective analysis of small samples of plant materials essential for effective selection.
- direct down loading of digital data from instruments to computers for statistical analysis.
- use of computers for data management, book keeping, experimental designs, field book preparation and barcode label printing/reading.

v) plant physiology

- genetics of physiological processes eg. osmo-regulation as a mechanism of drought tolerance.

vi) plant pathology

- genetics of host; pathogen interactions.

4. Role of plant breeder in the plant production system.

Plant breeders interact with the plant production system at two levels.

i) Maintenance of current productivity

- crop growing environment is dynamic (eg. fertility changes, disease pathogens acquire new virulences.
- considerable breeding effort required to maintain present production levels (eg. 50% of total).

ii) Increasing productivity over present levels.

- increasing yield per unit area.
- increasing adaptation of crop species for production in new areas (eg. maturity, drought tolerance, nutrient uptake efficiency, expanded disease resistance.
- changing process quality to meet new market requirements. (eg. wheat - pan bread, flat bread, steam bread, noodles, starch/gluten manufacture, biscuits, pasta).

5. Reproductive Biology

A good knowledge of the reproductive biology of a species is essential before designing a plant breeding system. The genetic structure of the breeding populations and final cultivar is dictated by the reproductive biology.

Reproductive systems

A. Self pollination

a) cleistogamy - pollination within an unopened flower eg. barley, soyabeans.

B. Open - pollination

a) self incompatibility eg. apples
- sporophytic
- gametophytic

b) dioecy
- male/female flowers on different plants eg. kiwifruit

c) separated male/female flowers on same plant eg. maize, pumpkins.

d) protandry
- anthers mature before ovule

e) protogyny
- ovules mature before anthers

f) genetic/cytoplasmic male sterility

g) inbreeding depression eg. lucerne.

6. Self Pollination

Breeding systems, involving self pollinated species, include

a) initial hybridization ie. F_1

eg. A x B or

(A x B) x C or

(A x B) x (C x D) etc

b) a number of selfing generations

- as a consequence of selfing, the degree of homozygosity increases (on average, F_2 = 50%, F_6 = 97%).

c) selection for desired characters imposed during the selfing generations.

d) resulting cultivar - pure line
- mixture of pure lines

ie. true breeding homozygous genotype/s.

Breeding systems include

1. pedigree

2. bulk

3. modified pedigree (combination of pedigree and bulk stages)

4. backcrossing

- see diagrams for details.

7. Cross (Open) - pollination

Breeding systems for cross-pollinated species involve the manipulation of a population of interbreeding plants. Selection imposed on this population leads to the accumulation (ie. increased gene frequency) of genes for desirable characteristics, while maintaining a broad heterozygous genetic base (background).

Breeding systems include variants of recurrent selection procedures. A simple recurrent selection protocol is illustrated in the diagram. Cultivars derived from this breeding procedure constitute genetically improved populations which are called

"Synthetic Varieties". Used in the development of lucerne, sugar beet and Maize (third world).

8. Hybrid Cultivars

Hybrid cultivars provide a number of benefits:

a) ulitize heterosis (hybrid vigour).

b) offer a uniform crop - height, maturity, synchronization of flowering.

c) ensures that the farmer purchases fresh seed each year.

d) biological protection of hybrid cultivar - other breeders cannot duplicate the hybrid without access to the parent inbred lines.

Hybrids can be made by manual pollination procedures but this is very expensive for the mass production of F_1 hybrid seed (eg. manual detasselling of maize).

More economical production systems utilize cytoplasmic male sterility (CMS). See diagrams for details of CMS procedures.

9. Preservation of Genetic Variability

The future improvement of genetic improvement of plants is completely dependent on the availability of genetic diversity (e. new genes). There is a paramount need to maintain genetic variability for all plant species, including those we don't currently use. Genetic diversity can be preserved by:

a) placing a diverse range of genotypes in long-term storage (low temperature, low humidity). Storage centres need to be located in politically stable countries. A network of germplasm banks are located around the world for many agriculturally significant species. Australia has a good network which interacts with the international collections. Entries in these collections are available to all bonafide people at no charge eg. Australian Winter Cereals Collection, Tamworth.

The AWCC holds about 26,000 wheats, 8000 barleys, 3000 oats, and related wild species.

Collections can be divided into working and base. Working units provide a day to day service while base units remain a reserve collection against loss in the working collections. Entries are duplicated in several collections

b) A series of conservation parks - National Parks.

A vast range of species can be protected in dynamic ecological environments. Interdependencies on other species can be maintained. The resources of such parks remain available for future exploration and use. Parks should cover many varied environments in order to preserve representative groups of plant species.

10. Use of Wild Species in Breeding

The greatest proportion of the genetic variability of genus resides in the wold related species. Periodically breeders must tap this variability for new genes to improve the useful crop species. For example, the wild wheat *Triticum dicoccoides* is a source of new disease resistance genes and protein content and composition genes.

Dicoccoides can be directly crossed with durum wheat followed by the direct selection of "wild" genes in subsequent populations.

More complex procedures are required for interspecific hybridizations:

- embryo rescue - excise embryo from seed and grown on artificial media.
- chromosome doubling through chemical treatment - colchicine.

11. Genetic Uniformity

Genetic uniformity leads to genetic vulnerability. Large areas of genetical uniform crop can result in catastrophic losses due to pest or disease epidemics. If a crop cultivar or cultivars are uniformly protected by a common disease resistance (ie. one gene), the acquisition by a pathogen of a corresponding virulence for that resistance could lead to a massive build up of disease provided environmental factors are conducive to the disease. The outbreak of the southern corn leaf blight in 1970 caused an estimated loss of 15% in the US. The entire US hybrid corn crop was produced using the T-cytoplasm in the CMS system. The pathogen (Bipolaris maydis) acquired an appropriate virulence for the T-cytoplasm making all hybrid corn vulnerable. Now a different and resistant CMS system is used.

Plant breeders need to guard against genetic uniformity and provide growers with a range of resistant cultivars. Farmers are encouraged to grow cultivars carrying different resistance genes (ie. genetic diversity on farm).

For enquiries
Kay Hare
Agricultural Research Centre,
RMB 944 Calala Lane,
Tamworth 2340. NSW
ph 067641463
fax 067679370

" BITS AND PIECES "

OTHER COURSES FOR AG. STUDENTS.

Not all students are suited to 2 Unit agriculture. Alternative courses may meet this need!
The N.S.W.A.A.T. is requesting support from all Agriculture teachers across the State to create a central register of agriculture related Other Endorsed Courses (O.E.C.).
Updated lists of the O.E.C. Courses received at the central register, will be published in B.A.A.T.
Agriculture teachers can obtain a copy of any of the courses of interest to them from the central register for the cost of photocopying and postage.

PLEASE HELP CREATE THIS REGISTER!

Send a copy of any courses you may have to:

Mr Alan Thomas
Armidale High School
Armidale N.S.W. 2350.

Please add a cover sheet with each course with the following summary:

1. Course Name.
2. Year Level of Students.
3. Brief Overview Of The Course.

(Did you know in the N.W. Region courses are already running in Beef Cattle, Farm Management, Rural Studies, Ag Business Management, with a number of other junior and senior courses already written? Why re-invent the wheel?)
Ed.

INTERESTED IN A BOARD ENDORSED COURSE FOR SENIOR STUDENTS?

A few years ago, a group of teachers formed a team to construct an alternative course for senior students, who may not have been interested in the present 2 unit course. The course was named **RURAL STUDIES** and has been all but completed. It is a core and options type course, which has been devised to suit a variety of schools' interests/resources. I am quietly confident that should the course be finished in the near future, it may gain quick approval from the Minister. Mr Neil Meirendorf, who began developing the course, is currently the Board Of Studies Liaison Officer in the N.W. Region. He has expressed interest in the course being completed and is prepared to make it a **priority** for 1993. However, he needs the assistance of Ag teachers. If you would be interested in writing some or one of the final lobes of the course he would like to hear from you! As stated, the course is almost complete and a little work from a few teachers can help bring the course to fruition. I'm sure those who originally put in the time with Neil doing the bulk of the work would be pleased to see a final product that may benefit a number of schools in the state. Please contact Neil or myself if you are interested or have any questions. (I have a draft copy of the course to date should you be interested)
Ed.

SUSTAINABLE AG. RESOURCES.

The State Pollution Control Board is about to release an updated wall poster which lists the names and addresses of some 100 organisations to use as contacts/resources for environmental education issues. The best part is that it also contains a central topic index and is easy to use! **The ideal thing for a science or ag staff room!** You may like to contact them for a copy at **157 Liverpool St, Sydney Ph. 02 265 8888.**

QUOTABLE QUOTE.

During a presentation at the Biennial Conference, Lisle Brown categorically stated
" There is something in the wind but I am not sure what it is "
We believe he was referring to matters of the syllabus committee, however, after some of the nightly get-togethers at the conference, we're not certain.

more "bits and pieces".....

AN AGRICULTURAL DICTIONARY?

Christopher Morgan from U.N.E.'s Orange Agricultural College has sent me a copy of a **dictionary** they have developed for use by their own students. It contains around 67 pages of common ag terms **and** a weights and measures section at the end. The dictionary is a useful reference book and would be handy for at least the school library. The cost of the publication is **$7.50 per copy plus $1.50 postage and handling.**(Orders of 30 or more are reduced by .50 cents per copy)

If interested you can obtain from:
Agrimart Bookshop
UNE- Orange Agricultural College
P.O. Box 883
Orange 2800.

LIFE MEMBER SEEKS ASSISTANCE.

Mr Norm Thomas, now a retired ag/sci teacher is currently studying a Masters degree in the area of Government Policies and their effects on Secondary Agricultural Education. Norm is seeking the assistance of all ag teachers who are willing to assist in his research to contact him. He is appreciative of those who can assist, no matter how small it may be, and says without grass roots assistance it can't be done! Norm can be contacted by fax via his supervisor Dr John Spencer (Attn. N. Thomas) on 067 733363. Norm's address is as follows should you have any archives, publications, books etc you may be able to send him.

"Minimbah"
Rockvale Road
Armidale 2350
Ph. 067 724791.

CATTLE HANDLING VIDEO

I have included in the edition a flier and order form for a video that may be of interest. The video covers rope splicing and knot techniques through to breaking, leading and show preparation of cattle. It is presented by Bruce Urquhart, formerly of Tocal and is an **ideal resource** for students of Agriculture and Design and Technology (make your own halter?) Please check price before ordering, although expensive many have found it worth the price.

PLANT BREEDING NOTES

Those who attended the conference at Farrer, were interested in obtaining a copy of notes from the session presented by Dr Ray Hare from the Tamworth Dept of Ag Research Station. Ray has since given me a copy of notes and diagrams used in his presentation, however these were too lengthy to include, in total, in this edition. If you would like a copy made, please contact me and I can arrange to send any parts to you.

FARMLABS GOING CHEAP! $$$$$$

Incitec were involved with the Biennial Conference. I have included a flier in this edition offering a **substantial discount** on the Farmlab kits, introduced a number of years ago. I believe that there is not a great shortage in supply at present and should you require a Farmlab and have any difficulty obtaining the special price, just mention you are purchasing as a result of the offer made at the conference in Tamworth held in the end of January 1993, not that I expect there will be any major problem. (seem to recall them being around $400, a few years ago?)

more "bits and pieces".....

DESIGN AND TECHNOLOGY TEXTBOOKS!!!

One of the members of our association, Jenni Wilkins, from Muirfield Technology High School in Sydney, has had some involvement in the writing of a new series of textbooks for the teaching of Design and Technology. I have included in this edition a flier for the "**Design and Technology in Context**" edition, which specifically has a section on Agriculture produced by Jenni. Perhaps you could obtain a copy from McMillan or your local text supplier, should you wish to investigate this Australian developed D&T text.

SENIOR AGRICULTURE SYLLABUS TO BE REVIEWED.....

News has it that a team has been selected to review the senior syllabus, in line with the Pathways document and the National Statement on Technology. The new syllabus may be introduced as early as Year 11 in 1994. I am sure you will read something more "official" later.

*NATIONAL CONFERENCE FOR AGRICULTURE TEACHERS**********

Yes another conference, this time closer to home! N.S.W. has been chosen to host the **1994 National Conference for Agriculture Teachers.** At the last conference held in South Australia, JENNI WILKINS, was chosen as the one with the enormous task of running the next conference, to be held in the last week of the vacation in January 1994. Jen has requested ***HELP*** from anyone who may be able to assist or offer suitable suggestions for course content or a suitable venue. More detail will be provided later but if you can give Jenni any initial assistance or would like to help in the organisation or planning items of national interest please contact her at Muirfield High School, Barclay Rd., North Rocks 2151 (Ph. 02 8722244 or Fax 02 8714106) By the way, keep the dates free, it would be great to have a good representation of "Blues" at this event, which I believe may be held on the North Coast.

ADVERTISING$$$$$$

If you have any local commercial businesses in your area who may be interested in advertising their products or teaching resources in our journal please ask them to contact me for further details. While we like to provide information to our readers on anything that may be of use in agriculture, your powers of persuasion as ag teachers, may assist us in **offsetting the cost** of publication of this journal which is of long term interest to us all! ED.

*A FIRST FOR THE J.A. SUTHERLAND AWARD*************

The 1993 Biennial conference saw the first J.A. Sutherland award presented to the Late Ian Parberry, affectionately known as "Parbs" to his many friends and colleagues in Agricultural Education. The award, itself named after a figurehead in Agricultural Education, is to be bestowed upon a person who has had a significant input into the subject of Agriculture. Ian, was a true indicator to the type of person such an award is presented to. For this reason, I have included a copy of the presentation speech, delivered by Dr Spencer from U.N.E., at the 1993 conference. The award was a proud and moving moment for Ian Parberry's wife and daughter who were present at the conference to receive the award on Ian's behalf. They were very honoured that the N.S.W.A.A.T. had chosen Ian as the inaugural winner of the J.A. Sutherland award. Nomination forms for future awards will be included in B.A.A.T.

TECHNOLOGY CONFERENCE FOR AGRICULTURE EDUCATORS, IN CAIRNS!!

Anyone who would like to learn a little more on Agricultural Technology and who likes the scenery around Cairns may be interested to hear of the conference to be held from the **22nd to 25th of June** this year. At the time of writing I am endeavouring to include a registration form. If this is unavailable or you require more information, please contact Jenni Wilkins at Muirfield High School on 02 8722244.

USING PIGS ON THE SCHOOL FARM

Resume

1. Educational Value
2. Major Problems
3. TRHS Proceedure
4. Piggery Design and Material Required
5. Outline Management Proceedures
6. References

Educational Value

1 Pupals have a natural interest in pigs
2 Demonstrates intensive management
3Practical work - rations
- mixing of feeds
-animal behaviour
-farrowing procedure
-growth studies
-inputs/outputs
-costs/returns
-systems

4 Demonstration of - A.I.
-induced births [both these will require training and veterinary help]

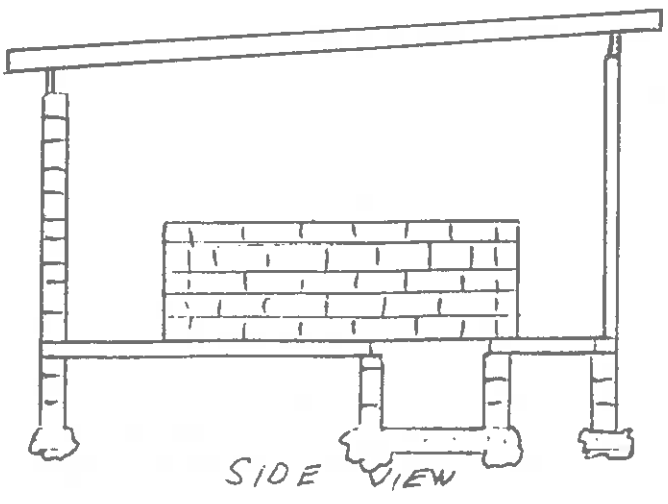
PROBLEMS

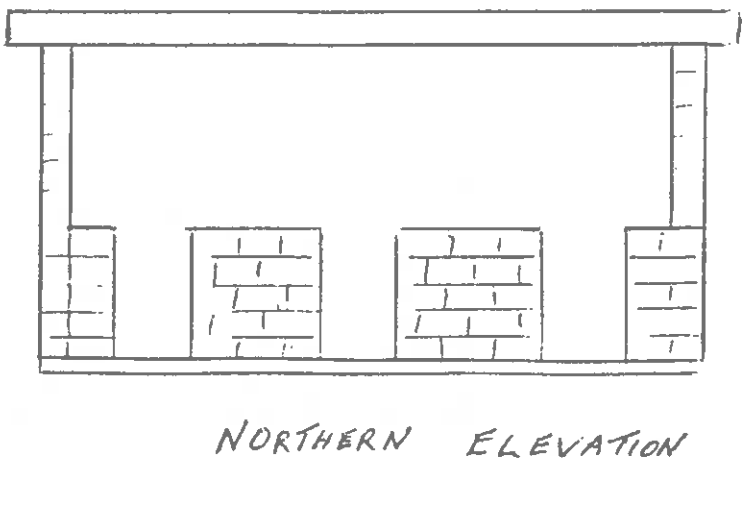
1 Pigs require daily feeding
2 Cost of setting up sheds and facilities
3 Transport of stock to abattoirs
4 Arrangements for sale
5 Removal of effluent
6 Remating of sow

PROCEDURE AT TWEED RIVER HIGH

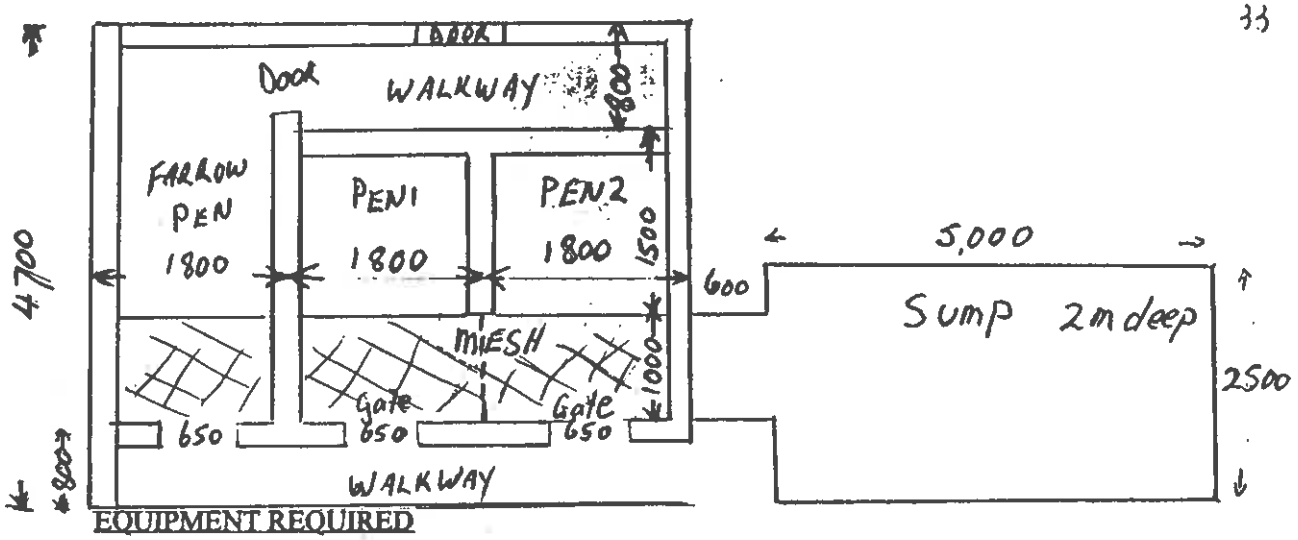
1 Shed designed by Rural Technology Class
2 Shed built and financed by local Lions Club
3 Sows are purchased annually as a pregnant backfattener usually in Febuary to give birth in April. Backfatter sold at weaning [4-6 weeks] and all pigs sold by November [at 100 kg]
This system reduces the need for feeding over the summer vacation. Students are generally available to feed pigs during weekends and other vocations.
4 Effluent is pumped out of sump 2-3 times we borrow a sludge pump from the local hire company.

PIGGERY DESIGN





FLOOR PLAN



EQUIPMENT REQUIRED

1 A farrowing pen
2 Feed hoppers for each pen
3Registed brand [apply to local Pasture Protection Board]
4 Automatic watering system
5 Needles and syringe
6 Pliers for removal of tails and eye teeth
7 Source of ready mix feed or materials to mix you own feed

COMMENTS ON MANAGEMENT

1 Sow management

Sow is kept in a separate pen with a outside run, fed 2kg mixed with water , daily.
Start increasing feed from the 100th day of pregnancy to a maximum of 4kg, replace a handful of feed with bran over the last 10 days.

2 FARROWING

.Move sow to farrowing pen on the 110 day ofgestation, wash prior to moving
Signs of farrowing -swollen vulva
-bed or nest making
-increase in respiration and pulse rate at rest
-tail twitching
-udder becomes firm and swollen
-sow enjoys massage of udder
-sow lies onside to deliver, restless, milk can be squeed from teat as birth commences. An average of 20 minutes between piglets, assistance with birth maybe required if period lengthens. Seek vetinarian assistance with use of oxytocin and penicellen.

Farrowing pen should be sterilise,contain a heat lamp, waterers for sow and piglets, creep feeder and straw.

Post farrowing -attendance at birth is essencial for piglets survival, ensure all piglets suckle.
-leave umbilical cord to wither naturally
-inject piglets with iron solution with in 2 days
-removal of canine teeth and tail is optional

Sow feeding - nil on day of birth
- increase on demand over 10 days to 3kg plus 454g per piglet

Weaning - between 4-6 weeks
- take sow from piglets leaving piglets in home pen for a week
- sodium bentonite on floor at weaning ,helps piglets to adjust to solid food with out bowl upsets.

Growers are feed adlib untill liveweight is 50kg then feed is restricted to;
-50kg pigs 1.8/day
-60kg pigs 2kg/day
-70kg pigs 3kg/day maintain till slaughter

Marketing - pigs must be tattoo branded with your regested brand if sent to an abattoirs
Remember it is illegal to feed household waste to pigs
Removal of effluent- this is an excellent fertilizer if you can pump it on to pasture.

G. LIDDELL TWEED RIVER HIGH

LANDCARE EDUCATION RESOURCES

As Seen at Conference!

ORDER FORM

Costs of these resources (5) are as listed:

Landcare for Kids kits		(inc. WA Tchrs Guide)	-$10
Landcare. In your Hands	*	(complete/bound)	-$20
		(science/bound)	-$10
		(science/loose-leaf)	-$10
		(social studies/bound)	-$10
		(social studies/loose-leaf)	-$10
Landcare. On your Farm	*	(complete bound)	-$20
		(loose-leaf)	-$10
All TEXT ONLY disks			-$5



Copies of the following are free:
1, 2, 3, 4

I would like to receive the following:

NO. COPIES	TEXT NAME/NO.	BOUND/LOOSE-LEAF	COST

TOTAL: _____

Please send NO money at this stage, invoices will be issued.



Name: _____

Postal address: _____

_____ Postcode: _____

Account: _____ Order No: _____

Send to:
COMMUNITY LANDCARE BRANCH
DEPARTMENT OF AGRICULTURE
3 BARON-HAY COURT SOUTH PERTH WA 6151
Tel: (09) 368 3831 Fax: (09) 368 3751

DEPARTMENT OF AGRICULTURE
WESTERN AUSTRALIA

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- Yr 12 Environmental Economics
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- Farming for the Future
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Please return to CaLM by 17/12/92 for your complete package

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Jacqui Keats
Room 204
GPO Box 39
Sydney 2001
OR
FAX:
02–228 6377

School _____
Contact Person _____
Computer disk required for SOILOSS ☑

☐ 3.5 DOS ☐ 5.25 DOS ☐ 3.5 Mac

McMASTER EGG COUNTING TECHNIQUE - Sheep and Goats

1. Weigh out 2 grams of fresh faeces into a 60 mil jar. 4 " for cattle on bigger slide.
2. Add 10-15 mls of water, store in refrigerator (4°) for several hours (to soften the faeces).
3. Using a special bit on electric drill (minimum 2000 rpm) mix thoroughly.
4. Make up to 60 mls with saturated salt solution. spec. gravity of 1.2.
5. Using a sieved pipette, stir the sample (not in circular motion) before allowing the material to flow into the pipette - transfer to McMaster slide. Verandah facing away - fill chamber from right to left.
6. Allow two to three minutes for eggs to float up before counting.
7. Count all eggs inside the frosted area and multiply by 100 for eggs per gram (magnification 30-50).
8. If chamber has a centre line multiply by 200 if more than 10 eggs seen in first half of the slide.

McMaster slide - chamber measurements
16 mm x 12.5 mm x 1.5 mm deep = 0.3 cc
60 ml sample - counted 1/200th (2 grams)
Therefore epg = eggs counted x 100

If a smaller factor is required count more chambers
2 chambers - 1 egg = 50 epg
3 chambers - 1 egg = 25 epg

Slides should be cleaned in detergent at regular intervals. Clean slides are easier to fill.

2-3000 eggs/gram - A Problem exists
<500 " " " - No Need to Drench
(100 " " ") for cattle

FAECAL CULTURE

Method of culture - Faecal culture is most commonly resorted to for the demonstration of the infective larvae of the gastro-intestional nematodes.

Step 1 - Take pellets of freshly passed faeces and crumble - add a little Vermiculite to separate out the crumbled faeces and take up excess moisture.

Step 2 - Take a clean glass jar and 1/3 fill with the crumbled mixture.

Step 3 - Very lightly tap the top of the mixture level - (take care not to compress the mixture no more than 2 mm), wipe off any faeces above the top of the mixture.

Step 4 - Add sufficient water to damp slightly, but not enough to render sodden - Do not let the culture dry out, there should be condensation in the jar to allow the larvae to migrate up out of the faeces.

Step 5 - Cover the jar with a LOOSE fitting screw cap - tight cap will cause fermentation.

Step 6 - Incubate at 25-27°C for 7 days.

Step 7 - Remove from incubator, tighten lid, allow to stand for 30 minutes - wash larvae off into clean container ready for differentiation.

If a culture is made from a small faecal egg count, it may need to be inverted to collect larvae.

INVERSION
Fill culture bottle with tempered water, place petri dish over the top of bottle and invert - keep at least 2mm of water in the petri dish around mouth of bottle, leave stand for 1 hour.

FAECAL EGG COUNT SLIDES

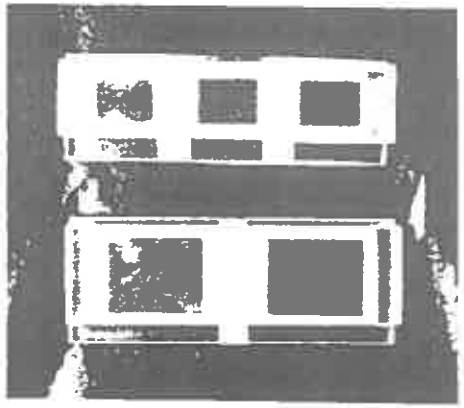
Basic material – Plate Glass
Suitable for use in conjunction with McMaster Technique

'A' Small Animal Type — e.g. sheep & goats

3 Chamber each 0.3ml divided into 2 × 0.15ml vol.

'B' Large Animal Type — e.g. cattle, buffalo, camel

2 Chamber each 1.0ml.



Available from:

R.J. LEWIS
160 Donnelly Street, Armidale 2350 N.S.W.
Phone (067) 72 3514

$33.00 each

CATTLE HANDLING VIDEO

Agricultural Consultants Sanders & Associates of Mayfield have produced an informative and stimulating 3-hour video on the handling of cattle from paddock to the show or sale ring.

Basic information is demonstrated on the handling of cattle from the paddock right through to the parade on show day-showing the initial handling procedures and the equipment used.

The video is presented by Bruce Urquhart, former deputy principal at Tocal Agricultural College, Paterson, beef cattle consultant and well known cattle judge.

The five-part presentation lends itself to easy inclusion in agriculture and/or design and technology programmes.

156 MAITLAND ROAD, P.O. BOX 325 MAYFIELD 2304

PART 1 Equipment & its uses (30 mins)

- types of rope
- tying of knots
- how to make a halter
- splicing rope

PART 2 A Quiet and Effective Method (40 mins)

- effective cattle control
- quietly moving cattle
- handling cattle on day 1 to day 3
- use of nose grips
- teaching cattle to lead

PART 3 Further Handling and Alternative Methods (38 mins)

- use of donkey or other bull to break in
- grooming
- safe methods of tying up

PART 4 Spit and Polish (50 mins)

- How to clean and groom show animals
- washing, coat care, grooming
- nose ringing and equipment
- tattooing and stud identification
- equipment requirements
- throwing a bull with a long rope

PART 5 Final Training and Show Day (19 mins)

- final training for show
- leading
- use of show cane
- how to position your animal
- facing the judge



(B.A.A.T. 1/07/92)

AVAILABLE FROM:
SANDERS & ASSOCIATES Pty Limited, Agricultural Consultants
156 Maitland Road, P O Box 325, MAYFIELD NSW 2304

PLEASE SUPPLY:

CONTACT NAME .....

SCHOOL .....

ADDRESS .....

.....POST CODE.....

My cheque [ ] [ ] order form [ ] [ ] enclosed for $139.50 covers the full cost of the 5-part "Handling of Cattle" Video, packaging and postage.

Department of Primary Industries

QDPI PUBLICATIONS
GPO Box 46
Brisbane Qld 4001
Australia

USER

Chris Jacobsen

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LANDCARE
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GLEN INNES 2370

Understanding Soil Ecosystems Relationships (*USER*) is an information package that explores and clearly explains the principles of sustainable land use.

The package answers questions such as how farming practices affect soil structure, water availability and nutrient levels. The package discusses the effects of tillage and herbicides on these, and outlines the principles of soil protection and the usefulness of organisms.

The *USER* package includes 48 topic sheets which cover:

- Soil properties
- Soil water
- Nutrition
- Soil organisms
- Weed control
- Soil protection.

The topic sheets are presented in a loose-leaf folder, and can be purchased and used as a complete set, or as individual themes.

Two videos (one being a series of slide stories), three audio tapes, a poster and 12 overhead projector transparencies complete the package and make *USER* an ideal classroom resource. Again, these materials can be purchased with the set, or individually.

USER presents complex concepts, simply expressed in a beautifully finished and comprehensive package. *USER* is a valuable resource material for teachers, study leaders and community groups.



ISBN 0 7242 4987 7
ISSN 0727-6273
Weights
Kit: 1,870 g
Individual themes 120 g each
Videos: 500 g
Audio cassettes: 230 g

ORDER FORM (please see details on reverse)

9/92

USER

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Note. Prices quoted are $Australian. Remittance ($A) must accompany this order. Cheques are payable to Queensland Department of Primary Industries.

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.....
.....**Postcode:** .....

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Department of Primary Industries
GPO Box 46, Brisbane 4001, Australia
Telephone: (07) 239 3100
Facsimile: (07) 239 3760

(Prices are subject to change without notice)

1995 AGRICULTURE CONFERENCE

21ST-25TH JANUARY

FOR THE FIRST TIME TO BE HELD ON THE FAR NORTH COAST.

WHERE? LAKE AINSWORTH.

WHERE'S THAT? LAKE AINSWORTH IS LOCATED AT LENNOX HEADS ,WHICH IS 15 MINUTES FROM BYRON BAY AND 10 MINUTES FROM BALLINA.

THE CONFERENCE WILL BE HELD AT THE FITNESS CAMP ON THE BEACH FRONT NEXT TO A FRESHWATER LAKE.

IF YOU HAVE ANY SUGGESTIONS FOR THE CONFERENCE FORMAT OR DISCUSSIONS PLEASE SEND TO:-

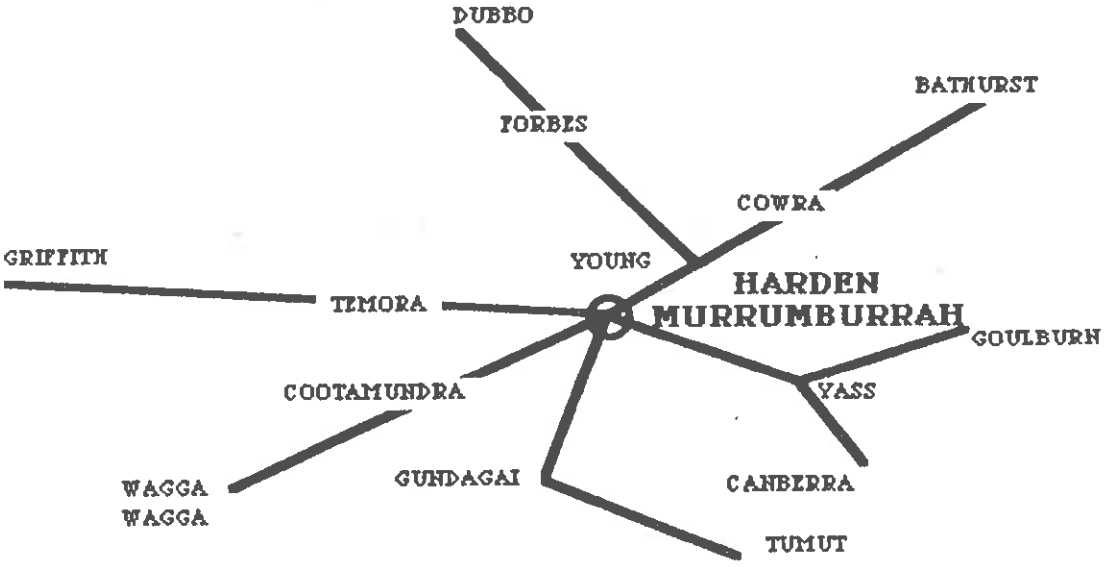
GEORGE LIDDELL
C/- TWEED RIVER HIGH
FAX 075 249501
PH. 075 243007
AFT. HRS 075 3055

SUGGESTIONS._____

_____

_____

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EDUCATIONAL VALUE FOR SCHOOLS

Student Workshops to be arranged for local and visiting School Students. Activities may include tree planting races, environmental problem solving activities (Tournament of the Trees), exhibitions and demonstrations, specialist speakers, Commercial Computer Expo (Land Management Related) and Educational Computer Expo (with student competitions), Wood Products and Schools Wood Technics Competition. (Food on Sale)

Bring a busload of students!
CONTACT Ian Baird (063) 86 2755
before 22nd October 1993

Site Bookings

Phone (063) 86 2755
Fax (063) 86 3048

SITES WILL HAVE ACCESS TO POWER.

FURTHER INFORMATION

Treefest Co-ordinator
MARK EVERETT (063) 86 2755
(063) 86 2156

Field Days Convenors
TOM KEMP (063) 86 2755
(063) 86 2106(AH)
IRENE STOCKS (063) 86 2682(AH)

MURRUMBURRAH HIGH SCHOOL
CENTRE OF EXCELLENCE IN PRACTICAL AGRICULTURE
SMITH STREET HARDEN. 2587

MURRUMBURRAH HIGH SCHOOL

CENTRE OF EXCELLENCE IN PRACTICAL AGRICULTURE

FIELD DAYS

incorporating

2nd National

TREEFEST

29th and 30th OCTOBER 1993

Murrumburrah High School

1993 FIELD DAYS

presents

2nd National

TREEFEST

WHAT IS THE TREEFEST CONCEPT?

The TREEFEST serves to provide a benchmark of the tree establishment industry's progress across Australia and a showcase of the latest techniques and technology at its disposal. It is this progress, that when applied, gives landholders and Landcare agents a leading edge in the fight to reverse land degradation.

The first National TREEFEST was held on 19 March, 1992, "The Hill" Kentucky, NSW. The second National TREEFEST was granted to the Murrumburrah High School Field Days in conjunction with Harden Landcare.

MURRUMBURRAH HIGH SCHOOL
FIFTH ANNUAL FIELD DAYS
1993

with Student Workshops - Friday,
Commercial Exhibits - Saturday,
OCTOBER 29 & 30.



Murrumburrah High School, the smallest High School in N.S.W. is a Centre of Excellence in Practical Agriculture. Situated in Harden, "The Centre of the Best Wheat Growing Area in Australia", the school's farm runs on 13 hectares.

The National TREEFEST will be held in conjunction with the 5th Annual School Field Days. The past Field Days attract in excess of 2,000 people who see a wide range of agricultural and general exhibits focusing on a "Sustainable Future in Agriculture". The combination of the National TREEFEST and the Murrumburrah High School Field Days expects a crowd of 10,000 plus.

Harden-Murrumburrah Landcare Group was formed in 1989 and is one of 360 groups in NSW. The 95 members formed the group with an aim of addressing land degradation emphasizing the problems of soil erosion, soil structure decline, tree dieback, rising water tables, dryland salinity and weed control in the Harden Shire. The group holds regular monthly meetings covering a variety of topics. Examples include: Wagga Research Institute - Lime How Much, How Often; Property Planner Dept. of CaLM - Farm Planning; ACRES - Remote Sensing; and CSIRO - Agricultural Research and Future Farming.

TREEFEST Activities

* Practical demonstrations of many types of machinery and equipment.
* State of the art equipment to see and buy.
* Displays and demonstrations from Landcare groups, Department of Agriculture, Fisheries, Forestry Commission, CaLM, Greening Australia, Landcare Australia and many other exhibitors.
* Speakers presenting interesting and informative talks on tree related subjects including Seedlings, seeds, nursery and potting systems.
* Tree planters, direct seeders, sprays and spraying devices, tree fencing specialists.
* Alternative farming methods. Biodynamic and organic farming

Field Days Activities

* Commercial Exhibits
* Animals
* Technology Exhibition
* New Products
* LANDCARE Demonstrations
* Displays
* Information & Advice
* New Ideas, Trends
* Support Services
* Entertainment
* Delicious Fresh Food
* Agricultural Seminars

RESOURCES!!!

"Watches" - where to find out more:

SALTWATCH

Monitoring water for salinity. Students collect water samples. Schools are supplied with curriculum package, computer disc, EC meter. Students type results into a computer and then EC readings are mapped. Developed by the Victorian Department of Conservation and Environment and adapted for NSW schools by Riverina Field Studies Centre.

Contact:- Mr R Mead, Riverina Field Studies Centre PO Box S146 South Wagga NSW 2650. Fax 069 31 4184

SLUGWATCH

Monitoring water for the "slug" of phosphorous which moves into waterways following runoff on fertilised crop land. Manual was developed by the WA Office of Catchment Management. This was a small scale local program developed in WA, but it has lots of potential for other catchments and school groups where phosphate pollution of waterways is a concern.

Contact Carolyn Suitzer WA Office of Catchment Management.

WORMWATCH

Sampling and identifying worms per unit volume of soil. Developed by the CSIRO Double Helix education program. Curriculum support package and schools program developed by Landcare Education South Australia.

Contact: Chris Bayly Environmental Education and Landcare Schools and Curriculum Unit, 91 Gawler St, Adelaide SA 5000.

WATERTABLE WATCH

In regions where groundwater has risen dangerously close to the land surface, auger holes are dug and lined with plastic pipe. A wooden pole is placed in the hole. At the bottom of the pole is a float, at the top is a flag. In between, the pole is painted in three colours: red at the bottom, orange in the middle and green at the top. Rising groundwater can easily be monitored. The equipment can be designed and made in technology classes.

Contact: Geoff McFarland (057) 62 2923

WEED WATCH

Some South Australian Landcare Groups have involved schools in a program of weed identification and weed control. These schools may be able to help with ideas or suggestions for developing a local program.

Contact: Chris Bayly Environmental Education and Landcare Schools and Curriculum Unit, 91 Gawler St Adelaide SA 5000

FROGWATCH

Frogs are sensitive environmental indicators. The Frogwatch program is an action research program involving kids in identifying frogs and compiling distribution maps. Participants in the program use Keylink electronic mail to keep in touch. Scientific support is provided by CSIRO.

Contact:- Vicki Lawry, NSW Department of Schools Education, Curriculum and Education Programs, Private Bag 3 Ryde NSW 2112.

PASTURE WATCH

The NOAAH Satellite can monitor pasture health. Queensland rural school students set up monitoring plots and record changes in pasture. Their results are correlated with results obtained from the satellite images. Students "ground truthing" is used to refine satellite pasture watch.

Contact: - Melva Hobson, Education Officer, Queensland.DPIE Miers Road, Indooroopilly, Queensland 4168.

STREAMWATCH

A very popular program of water quality monitoring developed by the NSW Sydney Illawarra and Blue Mountains Water Board. Participation is limited to schools in this area. NSW Department of Water Resources can also offer advice about water quality monitoring for schools.

Contact: If you live in the Sydney, Illawarra and Blue Mountains District - Education Resources Officer, Sydney, Illawarra and Blue Mountains Water Board PO Box A53 Sydney South 2000

Elsewhere in NSW - Public Relations Officer, NSW Department of Water Resources, PO Box 3720 Parramatta 2150

RIBBONS OF BLUE & RIBBONS OF GREEN

Ribbons of Blue is a popular community program developed with a strong education component to restore waterways.

Ribbons of Green is a similar project based on roadside vegetation reserves - involving the whole community in recognising the value of the plants and animals preserved in road reserves.

Students are involved in monitoring species, in weed control, in collecting seeds, and restoring native wildlife.

Contact: Susie Graham, Education Officer, WA Department of Agriculture, Community Landcare Branch 3 Baron Hay Court, South Perth WA 6151

Thanks are due to Terry White of the Victorian Department of Conservation, Forests and lands for advice about Victorian and West Australian programs, and to Chris Bayly of the South Australian Department of Education for advice about programs running in SA.

EVALUATION / QUESTIONNAIRE

*YOUR ASSISTANCE IN COMPLETING THIS EVALUATION AND QUESTIONNAIRE WOULD BE APPRECIATED AND WILL ASSIST IN THE PLANNING AND DEVELOPMENT OF FUTURE ISSUES.
*ANY ADDITIONAL COMMENTS ARE WELCOMED AND YOU ARE REQUESTED TO SEND ANY INFORMATION, WORKSHEETS AND RESOURCES THAT YOU FEEL WORK WELL FOR YOU AND THAT OTHERS MAY BENEFIT FROM.
*FEEL FREE TO BE ANONYMOUS IF YOU WISH.
*PLEASE RATE THIS ISSUE OF B.A.A.T. IN TERMS OF THE CONTRIBUTION YOU FEEL THE ARTICLES MAY HAVE TOWARD YOUR TEACHING, AWARENESS &/OR PROFESSIONAL DEVELOPMENT.
(placing a ***tick*** in the box next to the article is all that is required)

ARTICLE OR SECTION	VERY VALUABLE	OF SOME VALUE	VERY LITTLE VALUE
presidents report			
editors report (letters to editor in future??)			
syllabus committee report			
H.S.C. Suggested answers			
Biennial conference :general information/opening address			
:maintaining agriculture			
:plant breeding notes			
:minutes of meeting			
:egg count technique			
Order forms/fliers/general resources			
"Bits and Pieces" of information			

PLEASE LIST IN THE SPACE BELOW ANY **GENERAL COMMENTS** YOU HAVE CONCERNING **THIS ISSUE** OF B.A.A.T.

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WHAT TYPE OF INFORMATION OR CONTENT **WOULD BENEFIT YOU MOST** IN FUTURE EDITIONS OF B.A.A.T.?

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PLEASE TAKE A MINUTE TO FILL THIS OUT AND MAIL TO :

S.HEMMINGS (B.A.A.T. EDITOR)
FARRER M.A.H.S.
CALALA VIA TAMWORTH 2340

OR WHY NOT ***FAX STRAIGHT AWAY*** TO FARRER ON **067 679451**
ANY MATERIAL YOU MAY HAVE FOR INCLUSION CAN BE SENT OR FAXED TO THE ME AT FARRER AT ANY TIME!!
LET'S MAKE THE INFORMATION FLOW GOOD FOR N.S.W. AGRICULTURE TEACHERS!! ITS **YOUR** JOURNAL!

NAME AND SCHOOL: (optional) _____

MEMBERSHIP OF THE N.S.W.A.A.T.

WHY ME ?

Agriculture teachers have traditionally been very interested in maintaining contact with others in their teaching area. While much of this is done socially or in casual conversation at Shows, tremendous benefits in information flow can come from an association of many members. The access to a professional journal such as B.A.A.T. can benefit a large number of teachers. This publication as a result of an initiative of the newly elected executive, is being sent to all teachers of Agriculture in the state, regardless of membership status.

THIS WILL BE THE ONLY EDITION THAT WILL BE SENT IN THIS MANNER!!

FUTURE EDITIONS WILL ONLY BE SENT TO FINANCIAL MEMBERS OF N.S.W.A.A.T.

The Association also produces special publications from time to time and offers discounts on these publications to members who support their association and hence the production of these.

THE BIGGER PICTURE!!

We are all aware that associations play an important role in the future of the subject we represent. The association by virtue of being a representative body for agriculture teachers in N.S.W., also has access to representation on a number of committees involved in planning, development and implementation of many policies that may effect our subject or agricultural education in general. Much of this is done behind the scenes by the executive on the basis of membership feelings. For example, the retention of the name "agriculture" for a subject name was successfully done by the past executive after much negotiation with those intending to make the change. The inclusion of members on the syllabus committees is another area where your views can be represented. Simply the greater the number of members, the more input and the more negotiating power the association has in these both trivial and very important matters.

WHAT DO I DO??

Every Ag teacher in the state, both in state and private schools, is urged to join their professional association. In addition pleas urge others in your staffroom, regional office or area to also become members. The more exposure the association has the more rewarding it will be for us all.
The current executive has decided to continue to authorise the Joint Council of N.S.W. Professional Teachers Associations to collect and process the membership fees for our association. Please note the Joint Council now has a new address, to which you are asked to forward your fees with your subscription payment. The sooner you do this, the better. Joint council will be asked to continually provide us with a list of financial members (sometimes takes a little time) and only those on the list will receive the next issue of B.A.A.T. in Term 2.

SO PHOTOCOPY FOR ALL IN YOUR STAFF AND AREA , FILL OUT THE FORM INCLUDED AND SEND IMMEDIATELY

TO THE ADDRESS BELOW WITH YOUR SUBSCRIPTION.
REMEMBER ITS YOUR ASSOCIATION, PLEASE SUPPORT IT.

APPLICATION FOR MEMBERSHIP TO THE N.S.W.A.A.T.

NAME:_____

SCHOOL:_____

SCHOOL ADDRESS:_____

_____

POST CODE: _____

SCHOOL PHONE:_____

SCHOOL FAX: _____

MAILING ADDRESS: leave blank if same as above.

_____

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** Government School Non-Government School (Please Circle)

I ENCLOSE PAYMENT OF **$40.00** BEING THE SUBSCRIPTION FOR THE NEXT BI-ENNIAL PERIOD AS A FULL INDIVIDUAL MEMBER OF THE N.S.W.A.A.T.

OR

WE ENCLOSE PAYMENT OF **$60.00** BEING THE SUBSCRIPTION FOR THE NEXT BI-ENNIAL PERIOD AS A CORPORATE BODY MEMBER OF THE N.S.W.A.A.T.

OR

I ENCLOSE PAYMENT OF **$20.00** BEING THE SUBSCRIPTION FOR THE NEXT BI-ENNIAL PERIOD AS A STUDENT MEMBER OF THE N.S.W.A.A.T.

NOTE: THE BI-ENNIAL PERIOD ABOVE WILL CEASE AT THE JANUARY 1995 A.G.M. TO BE HELD AT THE NEXT BIENNIAL CONFERENCE. i.e. membership covers 2 years from 1993-1995.

Full membership from new members wishing to join in the second year of the biennium will be charged a pro-rata fee of $20.00.

PLEASE FORWARD YOUR COMPLETED FORM ABOVE **ALONG WITH YOUR FEE** TO:

JOINT COUNCIL
AGRICULTURE
P.O. BOX 577,
LEICHARDT 2040.