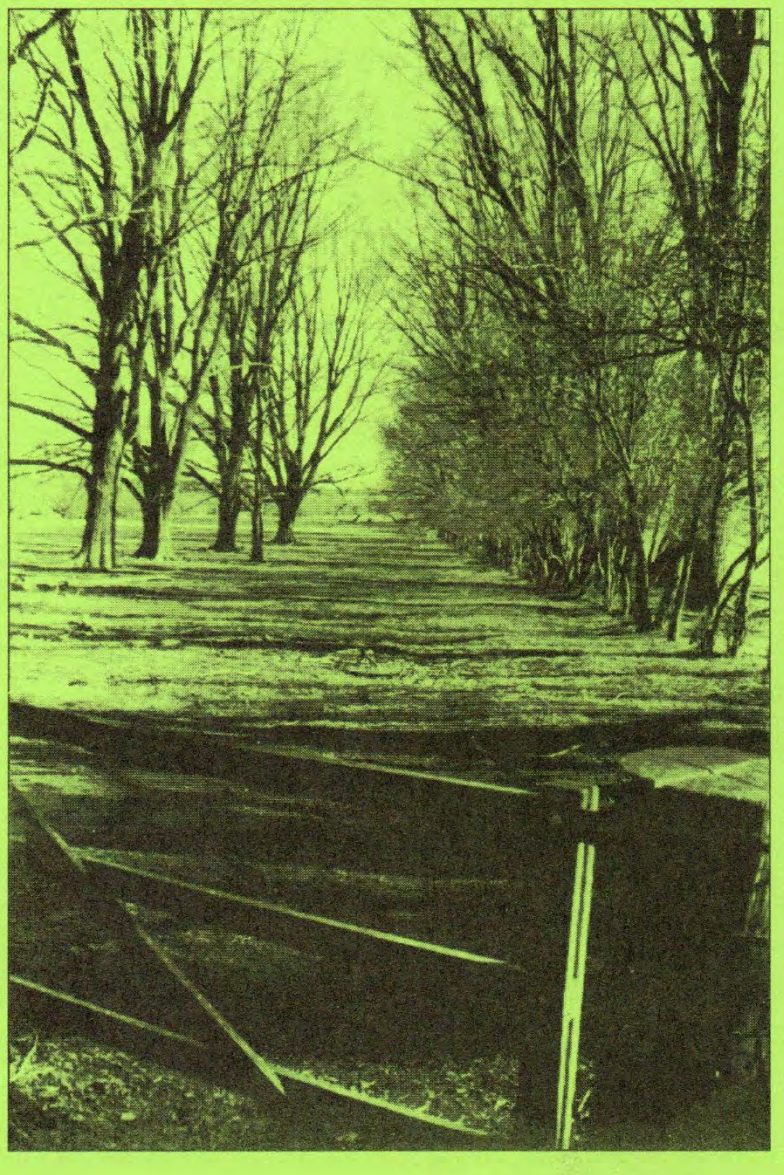
Winter 1998 BAAT Edition Number 10

NSW Association of Agriculture Teachers Inc.

Bulletin of the NSW Association of Agriculture Teachers

BAAT



inside....

Sydney Royal '98 Report
Mulwaree/Murray High Schools
HSC Sample Answers
Practical Activities

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1999 Biennial Ag. Conference - Orange
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Front Cover - Farm - Oldbury Road - SUTTON FOREST

editorial

Welcome to the second edition of BAAT for 1998 (#10).

There has been a great deal happening in Secondary (Agriculture) Education in the past few months, from the first Sydney Royal at Homebush, through to the evaluation of options for the future of 2/3 Unit Agriculture, Rural Technology and Sheep Husbandry, and Wool Technology. In relation to the senior courses, the chosen option is to be implemented in January 2000. There will be lots happening in the Board of Studies and schools in the next 18 months.

The keen workers in the Central Tablelands are very well advanced in their organisation of **our** Biennial Conference in January 1999 at Orange Agricultural College. To help them out, let's not leave it to the last few days to decide to go!! In addition to our future conference, Sue Hope has presented a report on the 1999 National Conference on The Sunshine Coast.

The first of what we hope will be a number of Farm Chemical Users Courses was conducted at Yass High School in late May. Agriculture teachers and Farm Assistants will need to participate in these courses in future to obtain their five year certificates to meet OH&S requirements. It was pleasing to see the course fully subscribed and voted a success.

News from Tocal, Murrumbidgee College, Murray High School and Mulwaree High School provides the latest information on what is happening and the student reports on the new venue for the Sydney Royal Easter Show at Homebush make for interesting reading.

The information on school machinery safety is particularly important as the full force of the OH&S regulations comes into effect from 10 July 1998. The Act also covers chemicals and equipment used in any department of a school and Workcover officers can enter schools to ensure the regulations and requirements of the Act are being observed.

With the Trial HSC examinations looming, it is also to be hoped that the suggested answers to the 1998 HSC 2/3 Unit Agriculture paper will be of use to teachers as well as the other resources in this edition of BAAT.

Anyone wishing to contribute to the next edition will find their items gratefully received. We look forward to more practicals, test items, articles about schools and any material of interest being forwarded to us for the Spring edition. The better the input from *you*, the better the Publication.

Craig O'Brien Moss Vale High School PO Box 137 MOSS VALE NSW 2577	Russell Firth Vincentia High School Wool Road VINCENTIA NSW 2540	Ross Irvin Lake Illawarra High School Reddall Parade LAKE ILLAWARRA NSW 2528	David Kent Chevalier College Moss Vale Road BOWRAL NSW 2576	Don Selway Frensham Waverley Parade MITTAGONG NSW 2575
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PRESIDENT'S REPORT

I hope everybody has had a great Easter. No doubt many schools have had successes at the Sydney Royal Show. Many thanks to all the Agriculture teachers who spend hours of their own time preparing stock for local and Royal shows. Agriculture teachers exhibit dedication and enthusiasm, which enable many students in NSW to participate in events which they would normally be unable to attend.

At the political level regarding *Securing their Future*, project teams and consultation teams have been established to evaluate 2 Unit and 3 Unit Agriculture. Sheree Bourke and Brigitte Herman are representing the Agriculture association in relation to Design and Technology. Concerning subjects Agriculture, Rural Technology, Sheep Husbandry and Wool Technology, a meeting was placed in the middle of the Easter break. I expressed the Association's dismay regarding this meeting in the school holidays. Association members have commitments in their holidays which politicians seem unaware of. At this stage I don't know if Agriculture will be a single or differentiated course.

The Association has expressed our views to the Shadow Minister for Education and Training, Mr Stephen O'Doherty. I believe that the deletion of 3 Unit Agriculture now in its present form will disadvantage many smaller schools. If the proposed standard course runs it means that talented and outstanding academic students will not be able to study subjects of their choice at the highest level. Whilst two differentiated courses may be available to all schools, the majority of schools will not have the resources or staffing flexibility to run the proposed courses. Once again smaller outer metropolitan schools and country schools will be disadvantaged. The Association has continually stressed the importance of equity for all participants in the education arena.

Our next biennial conference in January 1999 is shaping up very nicely. The Central Highlands Association has put a great deal of effort into organising the program. The Conference dinner is to be held at the Highland Heritage Estate. All Agriculture teachers should now start asking their Professional Development committees to set aside funds for the next conference.

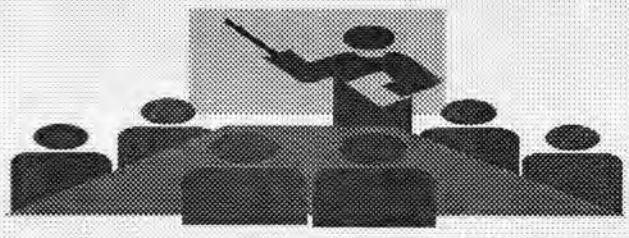
Hopefully in Term 2, all Association members will receive a National Wool Project booklet. I have had enquiries regarding the booklet and have received information that it should be available soon.

Both Sydney Branch and the National Association have requested that the State Association look into setting up a website on the Internet. Whilst the executive think it is a good idea there are concerns regarding benefits and costs of the proposed website. I wonder if enough Agriculture teachers have immediate access to the Internet. The cost to set up the website can range between $540 - $1000. However, to put BAAT on to the website it could cost $20 a page. Is this too expensive and can the association afford these types of costs? Who puts the information on the website? Would the State Association and National Association benefit from a website? If you have any thoughts and ideas on the proposal please let me know ASAP. Fax (02) 4822 1437.

Late last year our Association received funding from the Professional Associations Support Training and Development Directorate to run a course on Farm Chemicals. We used certified Rural Industry Agriculture trainers to instruct our colleagues. The course was run at Yass High School. Participants gained a Farm Chemical User Certificate. The Association believes that the safe use of farm chemicals by students, teachers and farm assistants is extremely important. If the course is successful the Association will try to push for more courses of this nature to be run throughout NSW by Rural Industry trained Agriculture teachers.

Sue Hope

TENTH BIENNIAL CONFERENCE REPORT
HYATT REGENCY COOLUM, QUEENSLAND



The Tenth Biennial Conference was held in January at the Hyatt Regency Coolum in Queensland. The venue was outstanding. A world-class golf course, seven swimming pools, beach and marvellous catering provided the background to a well-organised conference.

Speakers included Barbara Lepani who spoke on *Schools For The Future*, Michele Williams who broached the area of *Technology For Teachers in the Classroom* and Dr Susan Groundwater Smith who discussed *Professional Workplace Learning*.

Kerry Cochrane, former rural ABC broadcaster and lecturer in Management Communication from the Orange Agricultural College, presented an outstanding address on learning profiles and learning styles. The information Kerry provided could be very useful in the classroom.

All students and teachers have a preferred thinking style, ie. concrete and convergent. There is no doubt that teachers also have a preferred teaching style. However, the Agriculture teacher's classroom is made up of many students with different learning styles. Styles could consist of the student who learns by feeling, reviewing and watching, thinking or doing. Where do teachers fit into the learning styles? How many times does the teacher who is considered to be the thinker have difficulty in teaching the student who learns with his or her senses, feelings and instinct? ie. the abstract student. Most academics are idea builders. Any student who shows a different learning style can be difficult to teach.

An idea for 'senior agriculture' is for both the teacher and student to identify ones own learning style. Kerry Cochrane took Agriculture teachers through a modified "Kolb" learning style inventory. It was simple to use and I am sure senior students would enjoy completing their own learning profile.

Teachers can gain an overview of the preferred thinking style of their class members. Study hints and teacher communication styles can be addressed to meet individual students' needs. I have the Kolb learning style inventory and the study hints for different learning styles if teachers would like a copy.

Chris Regan from the Northern Territory presented an interesting discussion about Agriculture teaching in the Territory. Chris teaches at Humpty Doo. Senior Agriculture students who study a similar course to Rural Studies grow "Tender Meat Buffalo". Buffalo are caught and brought onto the school farm where students handle, feed and manage them for about 12 months. Buffaloes can be very dangerous and the first rule students are taught, is not to turn their back on a buffalo. Students grow the buffalo to over 300 kilograms and then sell the meat as 'tender buff meat'.

Sue

RESOURCES



Accent Hydroponics - has stores in NSW and sell systems which would be suitable for schools. Fax (07) 3219 0188 Vegi-Plus hydroponic system for schools comes with 1 kg of nutrients, pump, tank, and irrigation gullies, stand and a perlite seed raising mix. 1 Kilo of nutrients makes up 800 litres of solution. Cost of one kilo of nutrients is $20.

Multi Media Software - sells CD Roms. CD Roms include Climex $225, LucID Insects to Order $50, and Diagnosis 2.1 for crop protection $185. Fax +61 07 3365 1855.

Land Care Queensland - have some outstanding books and resource material, which are very cheap. For a catalogue Fax (07) 3896 9625.

Department of Primary Industries - provides a catalogue of many different books that could be valuable for agriculture teachers. Fax (07) 3239 6509.

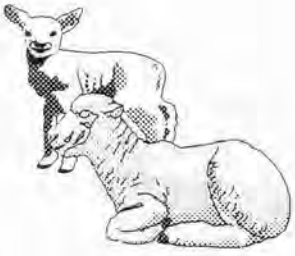
Natural Resource Management Education Catalogue - has a variety of resources such as guides on Land Care, Catchment Issues and Saltwatch. Fax (07) 38969625.

SUFFOLK & POLL DORSET
FLOCK RAMS

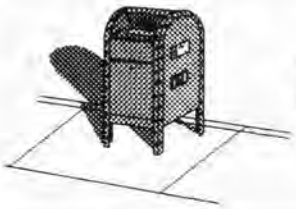


FOR SALE

$150



Contact : Jemima Finlayson
BH (02) 4868 1717 AH (02) 4883 4197



LETTER TO "NSW FARMERS"

N.S.W. ASSOCIATION of AGRICULTURE TEACHERS

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7 May 1998

President
Mr Ian Donges
NSW Farmers
1 Bligh Street
SYDNEY NSW 2000

Dear Mr Donges,

I am writing on behalf of the NSW Association of Agriculture Teachers. We represent Agriculture teachers throughout NSW, country and city, government and non-government sectors. Our specific concern at the moment is how the proposed changes to the structuring of the Year 11 and 12 curriculum for the HSC are seriously disadvantaging country schools, one school towns and any small school (600 to 700 students or fewer) whether metropolitan or country.

The paper originally prepared by Professor Barry McGaw, *Securing their Future* was a green paper. Later modifications after some consultation led to a white paper. The direction of changes now being formulated and the *consultations* taking place mean that 3 Unit courses will be dropped totally. They may say that Maths is being retained to deny this, but most subjects will no longer have the provision for a challenging addition for serious and interested students to show talent and skill. The proposal is to incorporate some of the *old* 3 Unit into a 2 Unit course. This will mean the course becomes too difficult for the lower ability students, but not sufficiently challenging to be a true test for the brighter students.

Another proposal was to have a 2 Unit Standard course for the main stream and a 2 Unit Advanced course for the brighter or academically inclined. Many schools would be unable to run or offer both courses. Many country students will be disadvantaged because there will be limited choice at their school and no alternative school to go to. This may force parents to make decisions to send students to private schools or students to select courses which are not real choices.

We all have to take options in life that are not first choice, but it does seem strange in a time of supposed progress, equality and equity that we are moving to restrict access to courses. Is this economic rationalism? Is it a hidden agenda to encourage the drift to private schools? Once again country parents and students will be disadvantaged by proposed changes that appear to have less impact upon larger centres and Sydney.

Our Association would appeal for support in resisting this drift to the city thinking. The country does not matter mentally. The decision for the majority that denies the same options for country children, who unfortunately are the minority again.

We would ask your Association to seriously examine the proposals by the Department of Education and Training and the Government to restructure the HSC and the Year 11 and 12 as they see it, to make the courses more rigorous.

Schools cannot afford the staffing allocation to run Agriculture and Rural Studies at the same time. They cannot run two separate 2 Unit courses. The existing 2 Unit course with an additional third Unit selected by the more academic or challenging students does cater for a wide range of needs. The proposed changes narrow down the chances of schools genuinely meeting the needs of a wide range of students. In our country and smaller schools there are already constraints of inbuilt restrictions. The new, proposed structures will add to any constraints or disadvantages that schools may have.

I have enclosed our original submission to the Board of Studies, the Minister and other authorities. We sent representatives to discuss the issues with the Board. The results emerging clearly infer that the decisions had been made and that any view to retain the existing structures was ignored. We are not the only association that feels this way.

We would very much appreciate your support in trying to get the Board and the Minister to seriously address the issues affecting country schools and smaller schools where there is little option of moving or accessing an alternative school.

Our perception is that once again the country residents are being marginalised and the voice of experience from the country is being conveniently ignored. We would hope that you may be able to add some weight to the message we have been trying to convey.

Yours faithfully,

Trevor J. Sewell
Secretary
NSW Association of Agriculture Teachers



The Ag. Teacher's Creed



(Note : Ag Teacher's Creed was adopted by the National Vocational Agriculture Teachers' Association, Inc. and Remains a part of the approved literature of the organisation.)

I am a teacher of vocational Agriculture by choice and not by chance.

I believe in America; I dedicate my life to its development and the advancement of its people

I will strive to set before my students, by my deeds and actions, the highest standards of citizenship for the community, state and nation.

I will endeavour to develop professionally through study, travel and exploration.

I will not knowingly wrong my fellow teacher. I will defend him as far as honesty will permit.

I will work for the advancement of vocational Agriculture and I will defend it in my community, state and nation.

I realise that I am a part of the public school system. I will work in harmony with school authorities and other teachers of the school.

My love for people will spur me on to impart something from my life that will help make for each of my students a full and happy future.

Ken Boston on Vocs

23 MARCH 1998

Summary of speech delivered by Dr Ken Boston
Friday, 13 March 1998

Concerns of Director General about VET in Schools

1. Industry criticism of quality and experience of teachers and facilities in schools
2. Relevance of VET programmes in schools to national frameworks
3. Very few programmes beyond AQF Level 1
4. Drop out rates particularly Year 12 from BET
5. In general students who include VET perform below norm in HSC
6. 11% HSC students with VET get TER (UAS)
7. Pathways to training and employment not clear - Local?!
8. Assumed in many cases VET is for non academic students.

His Future Direction

With the implementation of the NSW HSC reforms which supports VET it is appropriate for all students and accessible to all. So the push in NSW is to have a comprehensive, integrated VET strategy valued by industry and of benefit to students:

DET will reposition government schools and TAFE in partnership to provide VET. It will provide access to school VET students to specialist VET facilities including OTEN. There will be a conscious breaking down of structural and other barriers, particularly school and TAFE.

Agenda

Curriculum

1. Phase out current school delivered and JSST courses and replace with new programs from appropriate industry areas based on Australian Quality Framework (AQF) outcomes or training packages when these are available.

2. No longer require BOS accreditation but include them in HSC if they meet AQF criteria, and comply with Australian Recognition Framework (ARF) requirements including delivery against a defined scope by registered training providers.

3. Develop curriculum support materials.

Delivery

1. Improve access for students to quality facilities (TAFE for school programs)
2. Develop networks across schools and TAFE
3. Reinforce TAFE's role as the major provider of VET for school students, in schools, TAFE and workplace.

Teaching

1. Sharply reduce emphasis on retraining ("Teachers in Business Program") teachers and focus on programs for existing vocational school teachers, including industry placements.
2. Phase in use of TAFE teachers in schools (100 each year on sessional basis).
3. Introduction of pre service education for VET teachers by universities, TAFE and recruit for teachers consistent with the priorities of the NSW Strategic VET Plan.

Pathways

1. Planned pathways into apprenticeships and traineeships
2. Guaranteed pathways into post school TAFE course
3. Targets for AQF qualifications/certificates and levels 1, 2 and 3
4. Strengthening local and regional programs with particular employers/industries.

If you wish to have a full copy of Dr Ken Boston's speech please contact your district Voced Officer or Craig O'Brien at Moss Vale High School.

COTTON AUSTRALIA

AGRICULTURE offers exciting opportunities

NSW Agriculture's Colleges offer a range of courses in the food and fibre industries

- Full time residential courses
- Part time courses (traineeships and apprenticeships)
- Home study courses
- Short courses

New Courses

- National Diploma and Advanced Diploma in Rural Business Management
- Viticulture and Food Processing Certificates
- Certificate in Rural Skills (Aboriginal Communities)
- Landcare Certificate

Agricultural College courses are for:

- School leavers
- Land holders
- People working on farms
- New entrants to agriculture
- Aboriginal communities
- Food and fibre producers

NSW Agriculture



FOR FURTHER INFORMATION

Murrumbidgee College of Agriculture
Yanco NSW 2703
Ph (02) 69512700

C B Alexander Agricultural College
Tocal,
Paterson NSW 2421
Ph 1800 025520

News From Tocal

C B Alexander
Agricultural College
Tocal,
Paterson NSW 2421
Ph 1800 025520

Tocal has enrolled a number of students in the National Rural Business Management Program. This course if flexible and allows people to learn at their own pace. Many students have received Recognition of Prior Learning (RPL) for previous work experience and study and this has meant they have gained a substantial amount of credit towards a qualification.

RECENT

INITIATIVES

Tocal now has a full-time version of its popular Certificate in Landcare. This course is ideal for those interested in the natural environment. It covers topics such as wildlife on farms, regeneration of natural habitat, working with Landcare groups and many other areas. This course is also available by home study and is very popular with farmers and those involved in all forms of landcare.

Full-time Students

Students have had a great start to 1998, with the following activities being examples of their achievements so far :

- Students were involved in presenting farm education talks to hundreds of school students at Newcastle Show. They also assisted as stewards in the cattle rings., paraded Tocal steers and dairy cattle and were part of a parade celebrating the centenary of the show.
- They also showed College cattle at Gresford and worked at the RAS for studs showing at the new Homebush site.
- A number of social and sporting activities have been organised including indoor cricket and soccer, rugby union and a social function following the College's Certificate Day on 27 March.
- More than 120 students graduated on the day from a range of full-time and part-time courses.

Employment

Most 1997 graduates had a number of positions to choose from. Some are working on horse or cattle properties in the Hunter. Others are on large stations in Western NSW or QLD. One student is working on Auvergne Station on the Western Australia / Northern Territory border. A few have gone on to University to gain a degree with some credits for their time at Tocal. Others have positions with agricultural businesses and hope to work their way up management positions. There seem to be a number of well paid jobs on cropping properties in the north-west with many employers contacting the college looking for graduates.

And Murrumbidgee

MURRUMBIDGEE COLLEGE OF AGRICULTURE - Involvement in Part-time Traineeships

In 1998/99 there are a number of part-time Traineeships being piloted around the state in NSW Government Schools. Pilot projects cover a range of industry areas. Murrumbidgee College of Agriculture (MCA), located in the MIA near Leeton, is currently involved in a number of pilots in Viticulture and Rural Skills.

There are basically two types of part-time Traineeships available for senior school students in NSW Government schools :

1. Students may undertake a traineeship involving a contract of training and part-time paid employment for up to 20 hours per week while they are studying for their HSC.
2. Students may study vocational education courses as part of their HSC that can provide credit transfer into a traineeship which they can take up on leaving school.

Currently at MCA there are two Viticulture pilots being run under the second of the two Traineeship options. One is being run at Cowra High School, the other at Griffith High School. One day per week students are visited by staff from MCA and instructed in sills from various viticulture modules. The majority of instruction is hands on activities, where students are taken to various vineyards to carry out practical skills. On completion of the pilot, students will have completed several viticulture modules allowing them credit transfer into existing National viticulture Traineeships. Viticulture training also counts towards the students' HSC.

Murrumbidgee
College of
Agriculture
Yanco NSW 2703
Ph (02) 6951 2700

MCA is also involved in running four rural skills pilots, two of which involve students in part-time paid employment. These students will complete a full rural traineeship during the duration of the pilot and receive a Certificate II - Rural Skills. This is a nationally recognized qualification.

Other students are completing modules similar to Viticulture, which will give them direct credit transfer into established Traineeships. As much of the content of rural skills is already delivered in the schools' curriculum, MCA has negotiated with the schools involved, so that the students receive recognition of prior learning for some outcomes. Hence, students will complete all the off-the-job requirements of a rural traineeship during the term of the pilot. Students will be issued with a statement of attainment for completed modules.

David McCarron
Education Officer
Murrumbidgee College of Agriculture

Mulwaree High School Endeavour to Achieve

McDermott Drive
GOULBURN 2580
Ph (02) 4821 4499
Fax (02) 4822 1432

Principal : Mr R. J. Way, M.Ed.Admin,B.Sc.,Dip.Ed., Grad.Dip.Ed.Stud (School Admin.)
Teachers - Gary Stone and Beth Hamilton

Mulwaree High School is located on the northern side of Goulburn and caters for approximately 700 students. The school farm consists of 20ha, of which 8ha are set aside for wetlands, agroforestry and conservation projects with Science and Geography. Agriculture has been operating in the school for approximately three and a half years.

POULTRY

The school currently keeps 8 layers in a free range system year round. Fifty, one day old chicks are raised twice a year by Years 7 and 8 Design and Technology students and are more closely monitored by Year 10 students. At 10 weeks of age these chicks are also given free range of the farm until sold.

SHEEP

In the past, the school has purchased fat lambs on a yearly basis. Trials are conducted to compare grazing to feedlot and weight gain versus cost. This year we intend to establish a sheep stud. The stud will consist of one of the following three breeds Texel, Poll Dorset or Southdown. It is expected that this will enhance our breeding and showing programmes.



CATTLE

The school operates a Belted Galloway stud with moderate success at shows. This year was our first real show team season with six shows on our calendar. Ribbons were won at every show including Grand Champion Female at Crookwell show won by Mulwaree High Gavina. Two members of the Mulwaree

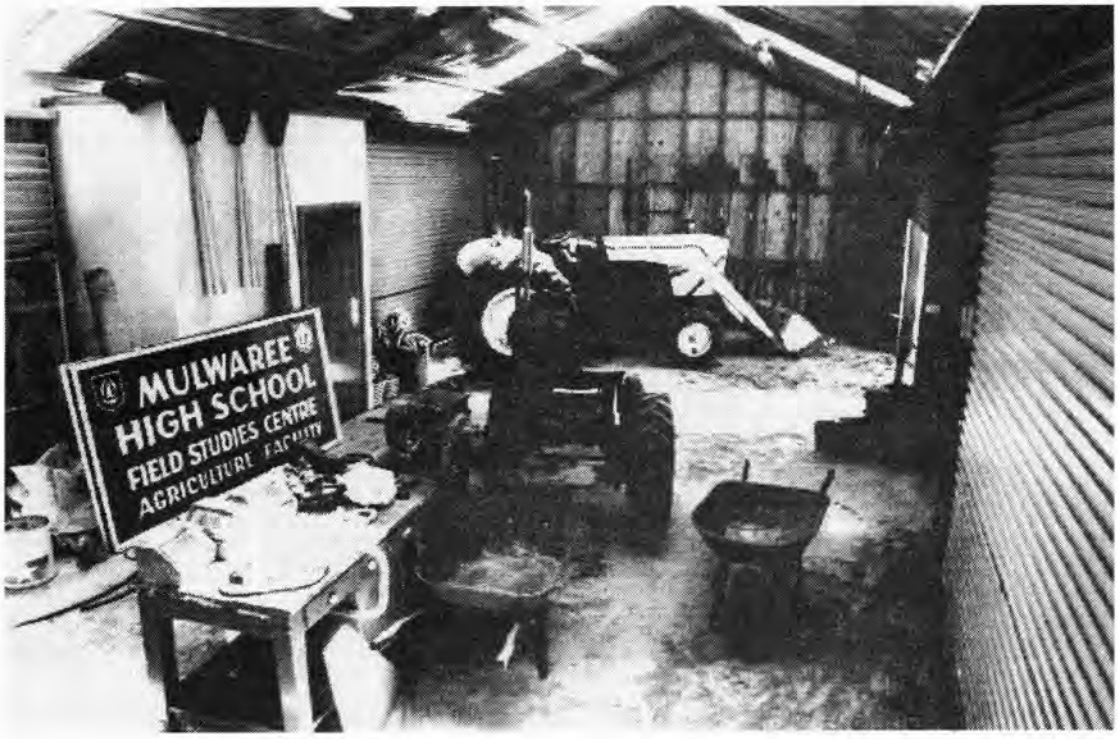
show team won the district final Junior Judging competition and went on to represent the district at the Sydney Royal. Team members were also very successful in the Junior Parading competitions. This year has seen the stud downsized from 8 to 4 breeding females to make room for the sheep stud.

Four cross bred steers were also shown with varying success, the best achievement so far being Supreme Commercial Exhibit at Goulburn show. Their final show is Moss Vale Hoof and Hook competition in May.

The school also operates vegetable gardens, fruit trees, various crop trials, agroforestry and grows a turnip crop on which to graze sheep every year. The NSW Police Academy works with the school, allowing us to cut hay from their river flats annually and donates equipment such as that used in Hydroponics. Wesfarmers - Dalgety are also running pasture trials at the school in conjunction with the students.

The Science Department is currently setting up a bandicoot breeding programme at the farm. They also monitor the wetlands and conservation areas.

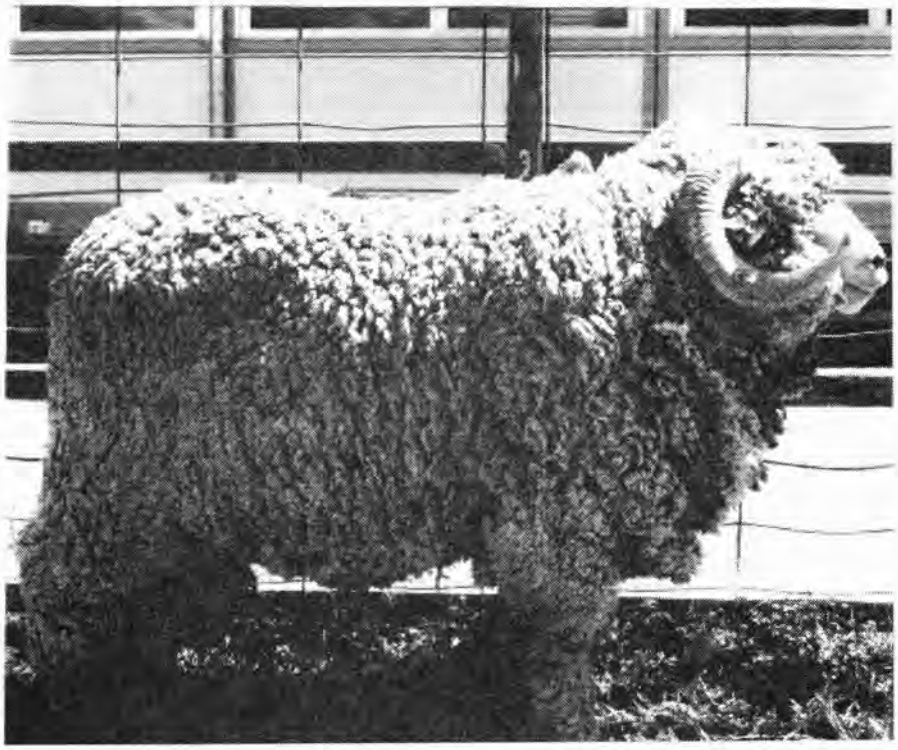
Mulwaree High Agriculture may be young but it has a very bright future.



Agriculture at MURRAY HIGH SCHOOL

Kaitlers Road
LAVINGTON 2641
Ph (060) 254711
Fax (060) 251367

Staff : Ewen McPhee Rick Hanna Maurice Woodman



Murray High School (circa 1976) is situated in the suburb of Lavington, city of Albury, in Southern NSW. The city is surrounded by a rich agricultural area based mainly on diversified farming encompassing the rolling hills between Albury and Holbrook and out onto the Riverina Plains. The school has an enrolment of 1030 students and Agriculture is taught to Year 8 for three periods in a ten-week block and as an elective through Years 9 to 12. Horticulture is also offered to Years 11 and 12 as a one-unit course. At any one time, about 130 or 10% of the students are studying Agriculture. The physical facilities at the school are a credit to the school and the Agriculture teachers who developed the site over the past 20 years. Excellent yards for handling sheep and cattle, adequate shedding including a new and partly constructed sheep shed, a hot house and shade house area and excellent fencing are additional to the normal Agriculture Shed facilities. Most of the small area at the school has centralised automatic watering points. An additional area of land only two kilometres away is in constant use as the sheep flock is rotated through the pastures and some land out of town is utilised.

The main enterprise has changed and developed over time from South Suffolk fat lambs to a flock of 50 Superfine Merinos, based solely on selected animals from the "Hillcreston" stud at Bigga, NSW. The Picker family have maintained a close interest in the development of the project where the main aim has been to select rams on micron and size, in an attempt to get some volume into the fleeces whilst maintaining a 15 to 17 micron range. One two-tooth ram was recently tested at 13 micron while the average ram count would be 14.5 micron with the ewe flock at 16.5. Income is derived from annual sales of selected rams and, of course, the superfine wool. To date, some small progress has been made in achieving our aim. The showing of cattle and sheep play an integral role in the courses of Year 10 and 9 students respectively. To this end a number of local schools have developed The Albury School's Sheep Show Competition where, through the generosity of local breeders, suitable short wool sheep are on loan to the school for a three-week period with groups of students being responsible for their preparation and handling to show standard. Local judges give of their time to judge the students in two categories - handling and preparation. We find that this is an extremely valuable exercise in teaching and learning. Likewise, the older students prepare heifers or bulls for the local show - once again with the support of the local farming community.



COTTON AUSTRALIA



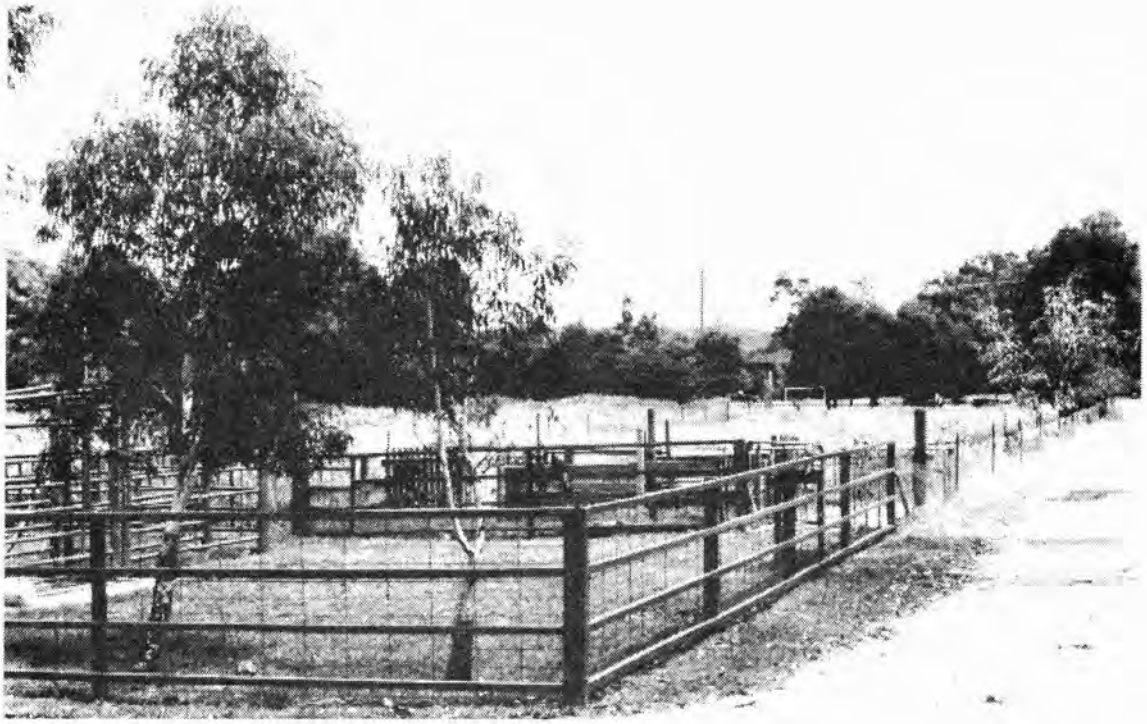
Some of the younger students have been involved in a project to rear two AFS bull calves. These calves were donated by Riverina Artificial Breeders of Table Top, having been additional to the establishment!!!. The calves have now been weaned and are doing well.



A small orchard, an area for vegetable gardens plus the hot house/shade house areas are ideally set up for horticultural experiences. Four thousand trees have been propagated for Landcare groups with the students involved from seed collection to planting out. Seed raising and various other activities are carried out from time to time. The hot house is currently undergoing a $740 refurbishment. A computer operated watering system, based on a six-channel timer and solenoids is also undergoing maintenance.



The school is extremely fortunate to have a wonderful network of farmers and local businesses that are willing to support our agriculture students with on farm visits and activities as well as very meaningful excursion opportunities.





Biennial Conference 1999

Association of Agricultural Teachers Biennial Conference Orange, NSW 18th to 21st January 1999



Conference Program

18th January - Registration from 2 pm

19th January - Lectures, Workshops

20th January - Farm Tours

21st January - Lectures and Workshops concludes 2 pm

Forward your bookings to;

Patrick McCann

c/- James Sheahan Catholic High School

PO Box 146 ORANGE 2800

Phone 0263 621422 Fax 0263 620776

See You There

1999 CONFERENCE

A limited number of Family rooms are available - please contact Patrick McCann if you require this style of accommodation - as they are limited in numbers, first in will be given this option - prices can be given on inquiries.

As we need to try and accommodate all participants - please nominate a time of arrival so we can personally meet and welcome you.

Workshop Selections -

Please find below a list of possible workshops. Based on registrations response some workshops may require multiple presentations and others may be deleted.

1. B. Ward (Dept. of Ag)	HSC on Line
2. Prof G. Scollary (CSU)	Wine Industry in NSW
3. I. Hardy (MCA)	Viticulture in schools
4. S. Johnson (OAC)	Assessing meat quality
5. D. Kennedy (Veterinarian)	Johnes' Disease
6. P. Kingsley-Millar (Protea Farm)	Establishing and marketing proteas
7. J. Kennard (Green Machine)	DNA extraction techniques
8. G. Pasfield (Rockwell Aust)	Precision Farming
9. R. Brooke (Dept of Ag)	Animal Welfare Issues
10. J. Scott (Dept of Ed and Training)	Animal Welfare Issues in schools
11. W. McPherson (MCA)	Aboriginal Rural Training Program
12. D. McCarron (MCA)	Flexible training for rural industries
13. M. Logan (Board of Cotton Aust)	Marketing cotton
14. G. Donovan (Farmer)	Irrigation Issues into next millenium

Complete Preference Form on attached Flier

"FARM CHEMICAL USERS COURSES"

President :	Secretary :	Treasurer :	BAAT Editor :
Sue Hope	Trevor Sewell	Phil Amour	Craig O'Brien
Goulburn High School	Moruya High School	Yass High School	Moss Vale High School
Phone: (02) 4821 4022	Phone (02) 4474 2155	Phone : (02) 6226 1711	Phone : (02) 4868 1717
Fax : (02) 4822 1437	Fax : (02) 4474 3782	Fax : (02) 6226 3174	Fax : (02) 4868 2787

Ms Janet Gardner
Professional Teachers' Association Support
Training and Development Directorate
Block L 3a Smalls Road (Private Bag 3)
RYDE NSW 2112

Dear Janet

The NSW Association of Agriculture Teachers ran a very successful Farm Chemical Users Certificate Course on the 29 May. Chemical safety in schools is becoming an issue particularly in the area of Occupational Health and Safety. It is essential that both teachers and farm assistants participate in this type of course to broaden their knowledge in the area of chemical safety.

There is no doubt that in the next 3-4 years all users of chemicals such as teachers and farm assistants will need to have a 'Farm Chemical Users Certificate' which is valid for 5 years, to purchase chemicals such as pesticides and herbicides.

Last year the Association wrote to the Hon J. J. Aquilina, Minister for Education and Training and Minister Assisting the Premier for Youth Affairs concerning Farm Chemicals and Farm Tractor Safety. (RML 97/9125). The Association would like to make recommendations regarding the course 'Farm Chemical Users Certificate'.

The NSW Association of Agriculture Teachers proposes that a number of 'Farm Chemical Users Certificate Courses' be run in different areas of NSW. One course could be run per term. An organisation such as the Professional Associations Support Training and Development Directorate would need to give a $1,000 grant for each course. It would be hoped that $500 comes from non-association members.

I would suggest that the executive of the association be heavily involved in the coordination of the 'Farm Chemical Users Certificate Course' to maintain professionalism, consistency and organisation at a high level.

Each course would cost $1500 to run. The maximum number of participants would not exceed 20. The course is run over 1 day. This can only be done with teachers and farm assistants completing the pre-reading prior to the day.

The NSW Association of Agriculture Teachers is committed to the improvement of farm, student, teacher and chemical safety. The professional association is most happy to organise and run the 'Farm Chemical User Course' with the aid of financial support from the Training and Development Directorate.

Yours sincerely,

Susan Hope
President of the NSW Association of Agriculture Teachers

COMMENTS / EVALUATION

Yass High School Farm Chemical User Course 29 May 1998

- 90% of the total participants found the course well organised and professionally run.
- Participants containing teachers and farm assistants found the course to be worthwhile and extremely informative. One farm assistant pointed out that the course was long overdue. Farm assistants and teachers enjoyed the interaction and collegiality that took place at the course.
- Many teachers found the course useful and thought provoking and suggested that the activities concerning 'boom spray calibrations' and label, eg. Roundup worksheets, could be used in the classroom with senior and junior Agriculture students.
- The Farm Chemical User Course Certificate will become a necessity in the next 3-4 years for any Agriculture teacher and farm assistant who purchases chemical such as insecticides or herbicides.
- The course will become an essential feature of the OH & S area.
- Teachers gained two comprehensive work books which could be used in the classroom as a resource. More work will no doubt be done in the safe use of chemicals in the classroom and on the farm as a result of this course.
- Much more time will have to be given for pre-reading. There is a two week delay in the ordering of books. (Built in factor when ordering.) There needs to be an additional week given for pre-reading.
- 80% of participants found the calibration of boom sprays to be enjoyable. 20% of farm assistants found this area to be poorly done. It has been suggested that one boom spray be used as a demonstration for calibration and then the second boom spray be used by teachers and farm assistants to calibrate water and chemical usage.
- Overall the course was outstanding. It was pleasing to note that five farm assistants attended the course.
- Three teachers missed out as their applications were late and the course was full with 20 applicants. All applicants attended the course.
- Teachers and farm assistants travelled from areas such as Wagga, Moruya, ACT, Boorowa, Parkes, West Wyalong and Orange.
- There is no doubt that the course is in demand and as one farm assistant commented, "It should be compulsory".

RECOMMENDATIONS / DISCUSSIONS

- Chemical Safety in schools is becoming an issue particularly in the area of OH & S. It is essential that both teaches and farm assistants participate in this type of course to broaden their knowledge in the area of chemical safety.

- There is no doubt that in the next 3-4 years all farmers, and users of chemicals such as teachers and farm assistants will need to have a "Farm Chemical User Certificate" which is valid for five years, to purchase chemicals such as pesticides, herbicides and perhaps veterinary products such as drenches.

- Environmental awareness is an issue and is certainly addressed in this course in depth.

- Teachers and Farm Assistants travelled long distances in Southern and Western NSW to participate in the course. All participants paid their own travelling expenses and casual fees.

- Association members were not charged for the course. Non-association members paid $65 per head which covered the purchase of work book and meals.

- There is a demand for the course. In years to come there probably will be a larger demand because of the necessity of holding a certificate to purchase chemicals.

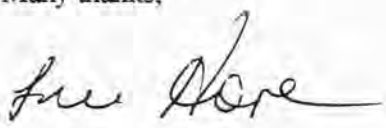
- The NSW Association of Agriculture Teachers is very keen to run more courses in different areas of NSW, ie. North Coast, Gosford area, Tamworth.

- I would suggest that the executive of the Association be heavily involved in the coordination of the course to maintain professionalism, consistency and organisation at a high level. Each course would cost $1500 to run. The maximum number of participants would not exceed 20. The minimum number would be 15. An organisation such as Professional Associations Support Training and Development Directorate would need to give a $1,000 grant for each course. It would be hoped that $500 would come from non-association members. Either non-association members pay $65 OR all teachers and farm assistants contribute $50 to the payment of the course. (Please keep in mind that many schools have to pay $180-200 for casuals.)
  The course is run over ONE day. This can only be done with teachers and farm assistants completing the pre-reading. (This section is lengthy = 200 pages.)

- Because the courses are run in different areas a casual will be required for the :
  i) Lecturer ($180 - 200) and
  ii) Course organiser ($180 - 200)
  A course organiser might not be a necessity but if the course is run at different schools, then rooms, meals and boom sprays need to be obtained.

- The 'Farm Chemical User Course' is very important in terms of chemical safety and OH & S requirements.
  The NSW Association of Agriculture Teachers is committed to the improvement of farm, student, teacher and chemical safety. The professional association is most happy to organise and run the 'Farm Chemical User Course' with the aid of financial support from the Training and Development Directorate.

Many thanks,



Sue Hope (President NSW Agriculture Teachers' Association)

1998 SYDNEY ROYAL

Students' Views

Look Out, Here We Come !!

"Excuse me ladies this pavilion isn't ready to be seen yet."

"We're a bit too busy to comment, sorry."

These were the most common words to be heard on the day before the grand opening of the New Homebush Bay Royal Easter Show.

Amidst all the noises and smells of heavy machinery there was still, as ever, the atmosphere and warmth that accompanies a large number of people coming together to display and hopefully sell their wares.

Many people doubted how completed the ground would be by 9 am the following morning. Yet sure enough, men, women, animals and anybody willing to work around the clock did exactly that. I couldn't believe the progress that had been made when I arrived the next morning. No machinery, just lovely, clean and wide open spaces.

The pavilions and exhibitions were beautifully presented and easily accessed. Even though only 12 hours previously many exhibits were just being assembled.

Russell Jones, a "98 Show" staff member, summed it up perfectly when he said, "The layout is terrific."

Transport at this year's Royal Easter Show was a major issue. With only 25% of the proposed car parking facilities in use, there was a large demand for public transport. But, no problem. The newly built, large and modern train station made public transport run smoothly and efficiently, with a man at every door waiting to answer any questions about the new facility that you may have. The Station was only about 100m away from the entrance to the grounds and this made train travel quick and safe.

Certain pavilions stood out amongst the others the large District Exhibitions Dome being quite the most impressive. As ever the District exhibits were intricate and creative with the Central District Exhibit being aptly named "LOOK OUT, HERE WE COME!!"

The only thing that this showground was missing out on was the side shows that accompanied the small, narrow alley ways of the previous Showground. Although anything it lacked in one area it seemed to make up for in others. But as the spokesperson for the first showing of the cattle expressed.

"We can only expect bigger and better things from the Sydney shows to come."

Sarah Murray
Chevalier College





1998 brought the dawning of the new era for the Sydney Royal Easter Show. After one hundred and fifteen years at Moore Park, the Show changed its venue to the Homebush Bay Olympic Park.

In 1988, when Sydney was launching its first bid for the 1996 Olympic Games, it made an offer to the Royal Agricultural Society (RAS) - the organising committee behind the Sydney Royal Easter Show - that should it win its bid for the Olympics, then the RAS could move the venue of the Royal Easter Show to the Olympic site. At the time, the RAS was facing massive costs in the rewiring of the current buildings at Moore Park and so there was a unanimous vote in the council to accept SOCOG's offer. However, the bid for the 1996 Olympic Games was turned down by IOC but Sydney reapplied in 1992 and won the right to host the games.

The RAS was told the first show was to be held in 1999, 15 months before the Olympics. This was the plan until, in 1997, Fox Studios placed an offer on the purchase of Moore Park. This offer was plainly "too good to refuse" and the venue change was made sooner than expected. The first show at the new venue was now to be held in 1998.

By the time the Royal Easter Show was ready to make the move, the majority of the construction of the Homebush site was completed. However, within two and a half months of the opening there was still a small goods factory on the current cattle parading areas. Yet by March 3, the factory had been knocked down and the areas prepared for the upcoming show.

There are many improvements which have been made and advantages for Homebush over Moore Park. One of these many improvements has been in the cattle showing area. The arena in which the cattle are paraded is now completely covered, which is an advantage for the paraders AND the cattle as it keeps both more comfortable being out of the sun. The audience has also increased in numbers as it is now under shelter.

As for cattle accommodation, who could ask for more? The huge spacious cattle pavilions will be used as media centres for the 2000 Olympics. In the meantime they are being enjoyed by many types of cattle. The large, open-ended buildings create greater airflow and the temperature is changed every 15 seconds by an architecturaliy designed ventilation system consisting of large canvas structures looking like massive ice cream cones that have been cut off at the base and hung from the ceiling. The cattle also have more room in these new pavilions and being more spaced out, do not get as hot and uncomfortable.

However, nothing comes that easily. There are always "a few teething problems". Cattle minders complained about the lack of water pressure in the hoses and an oversight by designers which meant that the only power available was located at the side of the sheds. So there was a myriad of extension leads to the centres of the sheds. Despite these little problems, most are confident that after the Show when everything settles down, the facilities will approach perfection.

Although the new venue does not have the atmosphere of Moore Park - with its little alleyways and lovely old buildings - people ae not concerned. The Easter Show draws record crowds each year and it will gain atmosphere the longer it stays at Homebush. It's not going anywhere just yet. The RAS have a 99 year lease on the site and will then have the option of renewing for a further 99 years. But as Kevin Everett, a member of the RAS council put it, "The buildings will outlive their usefulness, as did Moore Park. In the next 115 years it might be time for another change".

Lauren McDonald
Jordie Williamson
Chevalier College

This year, the first Royal Easter Show held at Olympic Park took place under the shadow of the cranes surrounding the half-built Olympic stadium adjacent to the showground.

Nearly the entire site of the show will be utilised for the Olympic games - the main arena will become the venue for baseball and softball games, the indoor sports centres hold the poultry and sheep exhibitions and the cattle sheds will become the media centre, and it is clear that these structures have been designed with the 2000 games in mind. The main arena is surrounded by stands on one side, whilst the other is terraced with grass and will be closed off during competition. The indoor sports centre has change rooms, and upstairs galleries for spectators which are used as the judging areas during showtime.



The cattle sheds have many taps of all varieties, so all types of hoses can be used, but this makes it difficult to move hoses around, and the taps themselves, to be less conspicuous, are close to the ground - but too close to be able to fill a bucket from them. The other major difference between the new sheds and those at Moore Park is the drainage. The new sheds do not have the large canal-like drains of the previous location and so all the manure must be transported manually away from the sheds. Despite these problems, though, representatives of *The Land* newspaper reported that the cattle paraders were very pleased with the new and better ventilated premises.

Major changes have also, of necessity, been made to the way people travel to and from the Showground. Only 25% of the total parking spaces for the site are available for use due to construction work, and even up to the year of the Olympics, half the car park area will still be unavailable for the Show. Because of the new and very efficient public transport arrangements in place for the Olympics, this is not so much a problem for visitors to the Show as for the exhibitors, many of whom transport their goods in trucks or trailers. The horse exhibitors, for example, were unable to park the large horse trailers in the showground and had to unload the horses, then park the trailers as far afield as Randwick before returning to the Show by public transport.

Other small changes have been made to the structure of the Show through the structures which contain it. The District Exhibits are no longer housed in the same hall as the flower displays; instead the flowers have their own exhibition building sponsored by Westpac, and the District Exhibits are located in the Dome alongside the purveyors of such horticultural goods as quandongs, cheese, soy and wattle seeds. The dimensions of the District Exhibits has also changed slightly, and whilst they are roughly the same in surface area as they were in Moore Park, the new exhibiting spaces are wider, but not as high.

In the midst of changes to the physical layout of the Show, we asked many people if they thought the atmosphere had changed from crowded and historic Moore Park: and the answer was almost universally "yes - but for the better".

Lucy Miller
Chevalier

"The Big Move - People's Impression of the New Homebush Site"



As Sydney moves towards 2000, big changes have occurred. One of these is the "Sydney Royal Easter Show" moving from historic Moore Park to the new Homebush site.

The general atmosphere of the showground on the Thursday before Grand Opening was one of chaos and nervous energy. They were still building showbag stands and rides. There was scaffolding and ladders everywhere. Everyone was so disorganised compared to last year. We found it very difficult to contact and talk to the same people that we had talked to last year.

Our main aim this year was to get kids', and the people associated with the kids, thoughts and opinions of the move. We invited High Schools kids from places like Umina who were involved with cattle showing. They all commented on the bigger and better facilities for their cattle, "It's great", "Heaps better"; and how it was more spread out. The cows had more space between them, more air flow - less smell. We were fortunate enough to be able to check out one or two of the sleeping quarters for exhibitors. These were two storey wooden boxes basically with beds up the top and gear down the bottom. Very basic and noisy (cows mooing at 3 am!).

Because of the bigger pavilions, there were more schools there, meaning more and greater competition.

We also talked to some of the kids' supervisors about the move and most of them said, "It will get better". They agree on the better facilities, but there were a few minor problems that they had to fix, which made their schedule even tighter. "There was something about Moore Park. I guess it was the fact that it was lived in. It will take at least ten years to get fully organised." The Moore Park site was more historic with the original buildings and arena.

Fran Murray, the director of goats, pigs and alpacas for school students, said that this year they were a bit down on entrants but she believes that it will pick up over the next few years. Apart from minor problems like pens with no gates and a few other things, she says that the new site is a lot better and has room for expansion. Whilst talking to her, we met a man who told us some quite amusing stories on the problems that had occurred, like putting drains up hill from the wash stands, and different plug sizes next to each other, and tie up rings in a doorway of the busy area. Not to mention the drama builders went through to tunnel drains away from the endangered frogs that live on the site.

We went and saw Sajhan Kuaper, the director of the sheep showing. She told us that the move to Homebush was great. They didn't have any problems whatsoever. The facilities are great and there was room for a better showing arena. Instead of a long skinny arena like at Moore Park, they now have a big area in which people can sit right around.

After finishing up with the animal pavilions we had a look around the parklands, rides and showbags. We found that each pavilion and stand was in a category. At Moore Park things were more scattered whereas Homebush everything had its set area, eg. showbags, rides. Because of the age of Homebush, there are very few established trees and the lack of shade made it quite hot.

For most, the move to Homebush was for the better facilities and room wise. It will take a few years to eliminate the minor problems, that has to be expected, but the show will just get greater and greater. As Moore Park had a great history and feel about it that is missed, so too, will one day Homebush one day have the same.

Crystal Price, Carolyn White
Moss Vale High School


BRAIDWOOD CENTRAL SCHOOL
WELLINGTON
HIGH SCHOOL
ABBOTSLEIGH
BILLABONG HIGH SCHOOL
CULCAIRN N.S.W.
UMINA HIGH SCHOOL



EUCALYPTUS PROPAGATION

INTRODUCTION

This article is reproduced from a leaflet entitled "Eucalyptus Propagation on a Small Scale", by David Kleinlg and John Doran, available from the CSIRO. Permission to republish it is appreciated, and the fine work of the CSIRO in the improvement of living in Australia is acknowledged.

The recommendations are based on the experience of officers of the Division of Forest Research, CSIRO, in producing small numbers of seedlings for research. The techniques described are not the only ones possible, and would be modified for producing large numbers of plants.

SEED AND SEED STORAGE

Most commercial eucalypt seedlots are sold, stored and sown as a mixture of viable seeds and chaff (mainly unfertilized ovules), which are difficult to separate in many species. The main features are the very small seed size of most species, the high proportion of chaff (from 5:1 to 30:1 by weight), and the similarity in size, shape and colour of the chaff and viable seeds of some species. The average number of viable seeds per gram of seed and chaff varies greatly with species and is in the range of seven to 4,000.

Eucalypt seeds are relatively easy to store. The mature seeds of most species remain viable for a decade or more when stored at a moisture content below 10% in sealed containers at room temperature. In dry climates, air drying of the seeds during extraction will give a satisfactory seed moisture content for storage (8-10%). In humid climates, however, air drying of the seed may leave the moisture content undesirably high for storage, although this can be partly offset by storage at lower temperature (1-4°C). Long-term maintenance of viability is better assured if seeds at a moisture content of less than 10% are refrigerated in sealed containers at 1-4°C. This treatment is essential for the successful storage of seed of *Eucalyptus deglupta* and *E. microtheca.*

CONDITIONS FOR GERMINATION

Temperature, Moisture and Light

Most eucalypt seeds germinate over a wide range of temperatures, generally 10-30°C. The optimum temperature for germination of most species is close to a constant 25°C, with some tropical species tending to have a higher optimum temperature and some temperate species a lower optimum. High humidity around the germinating seeds is essential, and they should be exposed to a period of light each day.

Stratification

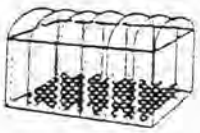
The seeds of most eucalypt species geminate readily without preliminary stratification treatment when given appropriate conditions of temperature, moisture and light. However, seeds of species from high altitudes commonly require cold, moist stratification to break their dormancy. To stratify, sow the seeds in the moist substrate in the germination container (as described below), cover the container with a lid or a plastic sheet to minimise drying, and place in a refrigerated environment at 1-4°C. Check occasionally to see that the substrate remains moist.

Three weeks of stratification is essential to break the dormancy of seeds of *E. perriniana* and will also ensure more rapid and even germination of seed of *E. amygdalina, E. dives, E. nitens, E. pauciflora, E. regnans* and *E. stellulata.* Four weeks of stratification is essential for the germination of seeds of *E. glaucescens* and *E. pauciflora spp. niphophila;* six weeks is required by *E. hybeanensis, E. mitchelliana* and *E. pauciflora spp. debeuzevillel,* while *E. delegatensis* requires 6-10 weeks, depending on seed source. On subsequent transfer to warmer temperatures germination should commence within 3-5 days.

RAISING SEEDLINGS

A two-stage approach is recommended. This involves sowing a quantity of seed in a germination container, and then transplanting individual seedlings from this container into separate pots for growing on to the planting-out stage. Usually eucalypti grown in pots will transplant much more successfully to the field than seedlings taken as bare-rooted plants from a nursery bed.

Sowing



The time for this depends on local conditions, particularly on the optimum time for planting-out. For example, in Canberra sowing in the glasshouse in May allows the production of vigorous stock for planting-out in September-October after the last of the severe frosts and well before the hot, dry summer.

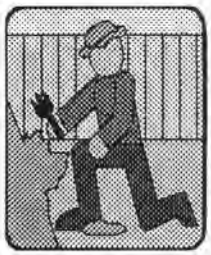
Choose a germination container of convenient size and depth. Plastic pots 7.5 cm in diameter are suitable for germinating 20-30 seedlings, and plastic trays 14 x 8 cm for 50-60 seedlings.

Suitable sowing mixes include 2:1 vermiculite and parlayed, or 1:1:1:1 coarse sand, peat moss, vermiculite and parlayed. If these materials are not readily available, a 1:1 mix of sand and loamy soil, or even a medium grade sand, will suffice. Heat sterilisation of all mixes is desirable. Nutrients are necessary once the cotyledons of the seedlings have developed, and can be provided by a slow-release fertilizer such as "Osmocote" or "Magamp" in the mix, or by regular weekly application of a liquid fertilizer such as "Aquasol". Suitable rates are given in the section on transplanting.

The sowing mix should be watered before sowing and the seeds sprinkled sparsely and evenly over the surface. Care is necessary to avoid sowing too densely, as this will result in unsatisfactory spindly seedlings. The smaller eucalypt seeds do not need to be covered, but larger seeds should be covered with a layer of the sowing mixture no thicker than the diameter of the seed.

Germination trays should be kept in a warm (20-25°C) shaded area (50-80% shade). A glasshouse is preferable but a sheltered shadehouse or verandah can be used. The trays should be watered at frequent intervals with a fine spray, so that the sowing mix is kept moist but not saturated. If "damping-off", the rotting of seedlings by soil fungi attacking at soil level is suspected (most common soon after germination),spray with an appropriate fungicide such as "Benlate" or "Captan".

Transplanting



The most convenient stage for transplanting is about 5-7 weeks after sowing, when the seedlings have 1-2 pairs of leaves above the cotyledons.

Containers of many types and sizes are suitable for transplanting eucalypti. For example, black polythene bags, 10 cm diameter and 14 cm deep (about 1.5 litres) are adequate for raising plants to 25-30 cm in height and are readily available. Other containers in common use include polythene tubes, plastic pots and peat pots of varying capacities.

A potting mix of adequate water-holding capacity, while still allowing good drainage, is essential for optimum plant development.

Two such mixes that are suitable are :

a) 1:1:1 coarse sand, sandy loam and peat moss OR 1:1 coarse sand, coco peat;
b) 1:1:1:1 coarse sand, peat moss, vermiculite and parlayed. Nutrients can be conveniently provided by the inclusion of "Osmocote" or "Magamp" in the mix at the rate of 1.75 g/Ol), or by the regular application of a liquid fertilizer such as "Aquasol". If fertilizers are not readily available, the inclusion of well-decayed animal manure in a mix with coarse river sand, and sandy loam in the proportions 1:2:3 , is recommended.

The technique for transplanting into the separate containers is :

a) fill the containers with potting mix and water thoroughly;
b) take each container and prepare a hole in the mix with a "dibbler" (a pointed tool like a pencil). This hole should be about 1-2 cm in diameter and 2-3 cm deep;
c) using the dibbler, carefully prise a group of seedlings out of the sowing container and detach an individual seedling. Handle the seedling by its leaves only and avoid squeezing the stem. Roots are frequently quite long and should be pruned back to a length of 2-3 cm. Care must be taken to prevent the root system folding upwards as it is placed in the hole. Hold the seedling at the side of the hole so that the topmost roots are a few millimetres below the soil surface and gently firm the soil around the root system with the dibbler;
d) water gently after transplanting to ensure complete soil contact with the roots.





TENDING AFTER TRANSPLANTING

Initially plants should be kept in a shaded, weatherproof environment. Damage from heavy rain, wind, hail and frost can be very severe. Frost damage is less likely if the plants are on benches rather than at ground level. A permanent shadehouse is desirable, though temporary, portable covers of "sarlon" shade-cloth, hessian or similar material can be quite adequate. The need for shade after the first 2-3 weeks will depend on climate and season. Too much shade should be avoided, as it promotes the development of weak, spindly seedlings.

The potting mix must be kept moist, but not saturated, and never allowed to dry out. Before planting out, the seedlings should be "hardened off" by reducing the watering slightly and increasing the exposure.

Pathogenic fungi, insects and other injurious agencies can cause problems. The treatment of damping-off has already been described. Leaf diseases, including mildews and moulds, can also spread quickly; treatment with "Benlate" spray or dusting with sulphur powder often provides satisfactory control. Obviously it is better to prevent fungal problems by adequate ventilation, heat sterilisation of the potting mixes and good hygiene rather than to attempt often-too-late control with fungicides. Pyrethrum-derived sprays and dusting powders, which are not toxic to man, have been found most useful in controlling a number of insect pests, particularly aphids.

About 2-3 months after transplanting, seedlings should be 25-30 cm tall and ready for planting in the field.

PROPAGATION FOR THE HOME GARDENER

The propagation of Eucalypti from seed is quite easy if the seed is reasonably fresh, it is keeping the seedlings going that is the tricky part. For those who do not want to go to too much trouble, and do not care if they lose a few seedlings (after all, who wants more than a few plants of a species of large gum trees), this method is recommended:

1. Sow seed only between April and June - send for seed now.
2. Prepare small plastic pots or tubes, crocked at the bottom, with 2 cm of clean, washed, coarse sand over a sandy loam soil in the bottom of the pot.
3. Sprinkle about 10 seeds on the top of each pot and cover lightly with more sand or fine gravel.
4. Water by dunking the tube up to halfway in a container of water. Water will seep up to the top, moistening the seed.
5. Keep the tubes in a bright spot, but with no direct sun. Keep, say, the tubes for one species together in a plastic ice-cream container and keep this on a window-sill - inside, away from the wind.
6. As seedlings shoot up, prick out all except the most vigorous one.
7. Pot on to large pots when the seedling is half as high as the depth of the tube, or pot as described elsewhere in this issue.
8. So you failed - try again. There are hundreds of fine seeds in each packet. After a few trials you will find the method that suits your conditions best, and then you will have plenty of plants.
9. The main cause of failure is fungal attack from the water, or because the sand around the seedling gets too wet. Try watering the pot with boiling water before you sow the seed, boiling the water before you sow the seed, boiling the water and allowing to cool before watering, keeping the surface of the sand drier, or give the surface a little direct sun for an hour a day.
10. In the early stages vigorous growth is desirable, so that a little foliage fertilizer may help when the seedlings get a few centimetres high.
11. A deep pot or tube is essential to keep that tap-root straight down and not twisted, so plant out before the height of the plant equals the depth of your large pot.

POLL HEREFORD WEBSITE



As we discussed, the Poll Hereford Society is keen to develop its Website with material suitable for school purposes.

The material would mostly consist of generic information regarding beef cattle, nutrition, research materials from the Society's technical officer, growth rates, breed types, as well as history of breeds, showing techniques, show results. It should provide a site for students and schools to advertise the achievements of their Ag. pupils, cattle results and the like.

It is envisaged that a week be set aside for students to talk by E-mail to a prominent stud breeder, or nutritionist, vet and have them solve problems. A section of research ideas for 3 Unit Agriculture - school research experiments - is to be included.

Some schools have indicated a For Sale section for their stud cattle is also of value. There will also be a form of recognition Australia and statewide for the achievements of young cattle breeders perhaps through submissions outlining the person's or school's achievements.

I would like to contact all state Ag. Teachers' organisations and would be grateful if you could supply the names of the teachers, organisations and fax numbers.

If you feel this venture is beneficial to teachers and students of Agriculture would you send a letter expressing your thoughts to :
Mr John Kauter
Australian Poll Hereford Society
ARMIDALE NSW 2350

John is co-ordinating the project for the society. A letter supporting the concept would go a long way towards its implementation. If you have additional suggestions, would you fax them to me at Comboyne Public School on (02) 6550 4002.

Regards

John Olds

Poll Hereford Society are putting in a lot of money to 'get this off the ground'. Any additional suggestions, let me know ASAP. I think it is a great idea.

Sue Hope

Rare and Minority Breeds Association

Modern agriculture is dominated by cross breds and hybrids in commercial animal production. Because of this, many purebreeds of livestock are becoming increasingly rare and in some cases extinct. The Australian Rare & Minority Breeds Association is attempting to preserve these purebreeds and thus safeguard the gene pool.

Schools may be able to lend a hand in the preservation of some rare breeds. Not all of us have the space on our school farm for the larger animals, but most of us could find space for poultry. Instead of having just the commercial layers why not run a comparison between these and a purebred? At the same time you could be helping to regenerate numbers of a rare breed.

The Association is more than willing to provide information. They can be contacted as indicated below. Membership is $25 per year (July to June). Members receive a newsletter every two months. Membership can be organised through Ian Mullins.

Ian Mullins Federal Secretary ARMBA PO Box 14 Elphinstone Vic 3448 Ph / Fax 03 5473 3491	Poultry Convenor Megg Miller RMB 2115 Nagambie Vic 3608 Fax 03 5794 7285	Sheep Convenor Stephen Davies Ph 08 9572 1074

Horse Convenor Brian Coulton Ph 02 6383 6232 email : bchook@clubworld.net.au	Cattle Convenor Chris Smith Ph 03 5968 5616 email : chriss@internet.com.au	Pigs Convenor BobClark Ph 03 5681 6274

The Victorian Branch has a Website :

http://people.enternet.com.au/ cherylh/index.htm

RARE AND MINORITY BREEDS OF MAMMALS

CATTLE

RED POLL
LINCOLN RED
AFRICANDER
ENGLISH LONGHORN
WHITE PARK
BRITISH WHITE
WHITE GALLOWAY
WATUSI
TEXAN LONGHORN
DEXTER
PINZGAUER
RED SINDHI
KIMBERLEY SHORTHORN
DEVON HORNED
SUSSEX
WELSH BLACK
HIGHLAND

HORSES

ENGLISH SPOTTED PONY
EXMOOR
LIPPIZANER
SCHLESWIG KALTBLUT
TIMOR
IRISH DRAUGHT
PERCHERON
SHIRE
SUFFOK
BELGIAN
CASPIAN
CLEVELAND BAY
DARTMOOR
FALABELLA
FJORD
HIGHLAND
MORGAN
PERUVIAN PASO
ANDALUSIAN
AUSTRALIAN DRAUGHT
CONNEMARA
HACKNEY
HAFFLINGER
NEW FOREST
WALER

Note : This list has been compiled from figures researched in 1997 and is not complete.

SHEEP

SOUTHDOWN ©
HORNED POLWARTH
SHROPSHIRE
DORSET DOWN
WILTSHIRE HORN
CHEVIOT
ENGLISH LEICESTER
LINCOLN
HAMPSHIRE DOWN
RYELAND
SOUTH SUFFOLK (R)
DORSET HORN (R)
ROMNEY MARSH (R)

C = Critical (500 ewes or fewer)
R = Rare (between 500 and 1500 ewes)

Note : The status of the little known Australian Breeds have yet to be investigated (with the exception of the Horned Polwarth)

PIGS

BERKSHIRE
DUROC
HAMPSHIRE
LARGE BLACK
TAMWORTH
WELSH
WESSEX SADDLEBACK

Note : This list has been compiled from figures researched in 1997 and is not complete.

The above lists await the finalization of a census. Some breeds may be numerically strong, but concerns are expressed as the infusion of other breeds may be altering genotype. Many of the more recently introduced breeds might well qualify for inclusion on the list - the question is : Did they contribute to Australia's livestock history or are they just beginning to contribute?

AUSTRALIAN RARE & MINORITY BREEDS ASSOCIATION INC (ARMBA)

(PO Box 14, Elphinstone, Victoria 3448)

CLASSIFICATION OF PUREBRED POULTRY IN AUSTRALIA

This classification has been compiled following a comprehensive study of Royal Show Schedules, major show entries, the 1995 *Year Book*, the *Poultry Breeders Directory*, classifieds in state rural newspapers and anecdotal information. It is by no means fixed and we look forward to altering the status of particular breeds as more information comes to light. The lists have been compiled by Megg Miller, The National Poultry Committee Convenor. Additional information and discoveries of stock from breeds not included will be gratefully received. These can be sent to Megg Miller, RMB 2115, Nagambie, 3608. Or Ph 03 5794 7256.

FOWL

Critical

Ancona
Aseel
Barbu d'Anvers (other than quail, lavender, black)
Barbu d' watermeal
Brahma (undergoing recreation
Cochin(undergoing recreation)
Faverolles (other than salmon)
Hamburgh (pencilled)
Houdan
Indian Game (other than dark or jubilee)
Jersey Giants (undergoing recreation)
Langshan(Croad)
Leghorn (rosecomb, cuckoo, exchequer, crele)
Malay Game
Marans (extinct?)
Minorca (except black)
Plymouth Rock (varieties other than dark, light)
Spanish
Sussex(varieties other than light, speckled)

Rare

Andulasian
Australian Game
Barbu d' Anvers (quail, lavender, black)
Barbu d' Uccle (millefleur, porcelaine)
Campine
Dorking
Faverolles (Salmon)
Hamburgh (gold spangled)
Langshan, Chinese (blue, white)
Leghorn (pile, buff, duckwing)
Modern Game (standard)
Pekin (varieties other than those listed in vulnerable and stable)
Polish
Rhode Island (white)
Rosecomb (other than black)
Sebright
Silkie (other than black, white)
Sussex (speckled)
Transylvanian Naked Neck
Wyandotte (minor colours)

Vulnerable

Araucana
Barnevelder (doubled laced)
Frizzle
Hamburgh (black, silver spangled)
Indian Game (jubilee)
Japanese
Leghorn (brown, black, blue)
New Hampshire
Orpington (blue, black)
Pekin (birchin, cuckoo, mottled)
Plymouth Rock (light barred)
Welsummer
Wyandotte (partridge, pencilled, columbian)

Stable

Australorp
Ancona (single comb)
Indian Game (dark)
Langshan (Chinese, black)
Leghorn (white)
Minorca (black)
Modern Game (bantam)
Old English Game (popular varieties)
Orpington (buff)
Pekin (black, blue, buff, white)
Plymouth Rock (dark barred)
Rhode Island (red)
Rosecomb (black)
Silkie (black, white)
Sussex (light)
Wyandotte (white, laced)

TURKEYS

Critical

Black
Royal Palm
Slate
White (Other than commercial)

Rare

Bourbon Red

Vulnerable

Bronze

GEESE

Critical

African (probably extinct)
Chinese (white)
Crested Roman
Pilgrim
Pomeranian
Sebastapol

Rare

Toulouse

Vulnerable

Chinese (brown)
Embden
Indian Runner (varieties other than white or fawn & white)
Orpington (buff)
Saxony
Welsh Harlequin

Rare

Campbell (white)
Cayuga
Muscovy (varieties other than white or black & white)
Silver Appleyard
Blue Swedish

Vulnerable

Indian Runner (white or fawn & white)
Muscovy (black)
Rouen

Stable

Campbell (khaki)
Muscovy (white or black & white)
Pekin

DUCKS

Critical

Aylesbury
Black East Indian
Campbell (dark)
Crested

Breeds yet to be categorised

Elizabeth Duck
Old English Game
Australian Pit Game

RATINGS:

Critical - Fewer than 200 purebred breeding females or fewer than 3 distinct strains **Rare** - 200 - 500 purebred breeding females and more than 3 distinct strains
Vulnerable - 500-1000 purebred breeding females **Stable** - above 1000 purebred breeding females

STATE FORESTS OF NSW

FOREST STUDIES CENTRES

There are three Forest Studies Centres :
Bateman's Bay
Sydney
Newcastle

Agriculture teachers can utilise this free service offered by State Forests Education Officers, to assist all qualified teachers to further understand this area of natural resource management and the timber industry.

Programs can be tailored to suit your students' abilities and topics you wish to cover. This service operates as a school visit; we can take the forest to the classroom or preferably, you and your students can make a trip to our forests.

A brief list of topics we can cover are : harvesting, regeneration, wildlife management, silviculture, water quality, soil management, fire management, climate, apiculture in State forests, feral animals, bush tucker, forest products, forestry research and, if you are willing to travel, softwood plantations.

We also offer teacher inservicing through an overnight bus trip. There is an **Agriculture Teachers bus trip** organised for September 11-12. This is a free service; you are only required to organise your own relief for the Friday. This inservice will concentrate on the main issues of Forestry in NSW.

If you would like any further information on any of our services please contact me on :
(02) 4472 6211 or fax **(02) 4472 3791**.

Hope to hear from you soon,

Helen Roberts
Education Officer
South Coast Region

To book your place on this bus trip, see attached flier

FREE Bus Trip for Teachers

Forest Management - What is it?

There is a South Coast bus trip inservice for interested Agriculture teachers to find out more about forest management and State Forests of NSW. The information provided on these trips is relevant to all teachers and subject areas.

Forests are a great place to be. With the help of foresters and other State Forest staff these trips allow teachers to see many different parts of the forest including a timber harvesting operation, a log dump and numerous regeneration sites of various ages within the forest. The trip allows experiences in various forest areas and includes spotlighting in the evening.

Forest management is a complex science. Through these trips teachers will have the opportunity to discover the range of issues and constraints that foresters must consider in managing a State forest.

Where : South Coast Region Batemans Bay area
When : Friday, 11 and Saturday 12 September 1998.
Travel : Minibus - pickup point in Batemans Bay.
Accommodation: Camping in the forest. All camping equipment will be provided, except for bed rolls and sleeping bags.
Meals : All food and drink requirements will be included from lunch on Friday to lunch on Saturday.
Cost : no cost involved.

IMPORTANT THINGS TO KNOW

- Fill in and return the fax on the back of this flier to book your seat on the bus trip.
- Within 5 days you will be sent a fax confirming your seat on the bus.
- You will be faxed an agenda and details of what to bring at least 2 weeks before the trip.
- SOUTH COAST - The trips depart at 9.00am on the Friday from Batemans Bay and returns by 2pm on the Saturday.
- There are a limited number of seats available on this trip. The first people to respond will be accepted.
- For further questions contact Helen Roberts (South Coast) 02 4472 6211 or Vivienne Seedsman (Head Office) 02 9980 4295 as soon as possible.

School Machinery Safety



Tractors

Excavators





Front End Loaders

I refer to memorandum 97/061 (057) regarding responsibilities and legislation relating to the operation of tractors, excavators and front end loaders.

In addition to the Acts and Regulations referred to in the memorandum, principals, supervisors, and employees using machinery must comply with the *Occupational Health and Safety (Certificates of Competency) Regulation* 1996.

The Regulation restricts the operation of specified scheduled plant to persons 17 years of age and over, when undertaking recognised training, and to persons 18 years and over who hold a Certificate of Competency for such plant.

Categories of scheduled plant covered by the Regulation include loadshifting equipment operation, scaffolding work, rigging and dogging work, crane and hoist operation, pressure equipment operation and forklift truck operation. Loadshifting equipment includes excavators, front end loaders, front end loader backhoe and front end loaders of the skid steer type.

A copy of the Regulation has been made available to the district staff welfare office or alternatively schools may obtain a copy direct from any WorkCover office.

For further information please contact your district staff welfare officer.

Paul Irving
General Manager of Personnel
5 January 1998

AGRICULTURE .... At a Distance

Recently at a workshop held in Sydney the Distance Education teachers of Agriculture met to review materials being produced for Stage 5 Agriculture by Learning Materials Production Centre, Open Training and Education Network (OTEN) - Distance Education









Distance Education Agriculture teachers who attended the workshop included:

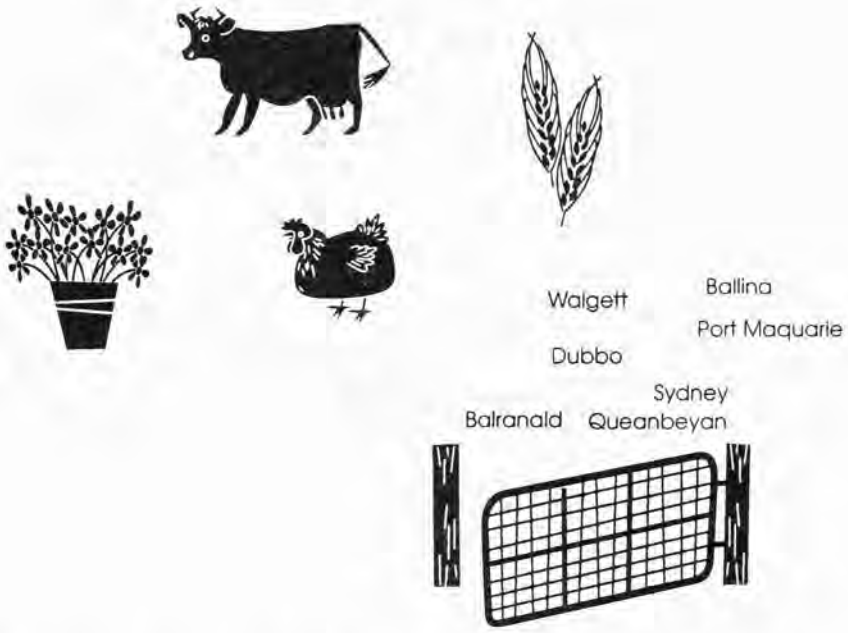
- Richard White – Balranald Distance Education Centre
- Di Skelton – Karabar Distance Education Centre in Queanbeyan
- Maria Kersaitis – Southern Cross Distance Education Centre in Ballina
- Peter Bray and Matt Manny – Dubbo School of Distance Education
- Paul Owens – Port Macquarie Distance Education Centre
- Chris Bowling – Sydney Secondary Distance Education Centre
- Rosie Stern – Open Learning Program at OTEN.

At present, materials to support distance education students based on the new Stage 5 Agriculture Syllabus are in various stages of production.

Materials developers working on Stage 5 Agriculture include:

- Peter Miller – De La Salle, Kingsgrove – dairy
- Scott Hollingsworth and Toni Carroll – Coffs Harbour High School – potatoes
- Alistair Thompson – Rural and Mining, Open Training and Education Network – wool
- Mark Parry – Learning Materials Production Centre – beef
- Julie Robinson – Learning Materials Production Centre – wheat.

A number of student reference booklets have been produced with general guidelines in : *Communication in Agriculture; Machinery and Equipment; Climate and Weather; Pests, Weeds, and Diseases;* and *Natural Resources.*



The Learning Materials Production Centre, located in Sydney, produces a large range of learning materials for K–12 students studying by distance education. This includes 2 Unit Agriculture course materials. These materials are available for sale to classroom teachers.

For more information contact Julie Robinson
Phone (02) 9715 8262
Fax (02) 9715 8270
Email julie.robinson@lmpc.edu.au

PRACTICALS

THANK YOU TO

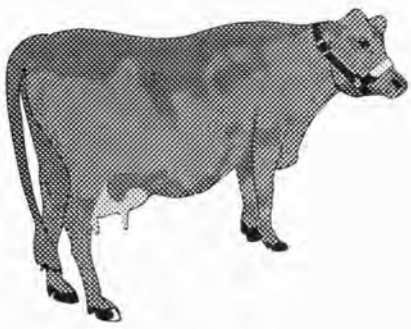
PETER JONES

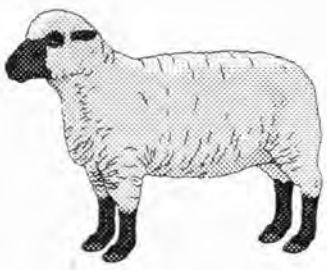
AT

COLO HIGH SCHOOL

(Currently at Mount Druitt High School)

for supplying practicals





POSSIBLE PRACS AND ACTIVITIES LINKED TO THE PRELIMINARY 2 UNIT AG. SYLLABUS

UNIT OF STUDY	SUB SECTION	PRAC. REF. NUMBER	DESCRIPTION OF ACTIVITY / PRAC.	DUPLICATED WITH PRAC.
AG. OVERVIEW	A	1	Systems studies of inputs, outputs, processes and boundaries based on school farm enterprises.	
"	A	2	Drawing models of flow based on school farm enterprises.	19
"	B	3	Collecting climatic data from the school farm and then graphing it	
"	B	4	Analysing data already collected on the local area	
"	B	5	Analysing data showing trends in agricultural production	
"	B	6	Perform a weed or plant collection from the local area.	
	B	7	Perform a farm walk looking for significant plants.	11
"	C	8	Study soil degradation on the school and in the local area	
	D	9	Learn to safely use agricultural machinery	
"	D	10	Visit local aboriginal elders	
Ag. Plants	A	11	Perform a farm walk	7
"	A	12	Legume / medic identification	
"	A	13	Legume nodulation	
"	A	14	Fruit development observation	
"	A	15	Monocats and Dicots clarification	
"	B	16	Wilting pumpkins	
"	C	17	Graphing effective rainfall	
"	C	18	Measuring / monitoring local weather	
"	D	19	Drawing flow diagrams	2
"	E	20	Comparing texture and structure of different soil profiles.	
"	E	21	Growing plants in "soils" with different nutrient deficiencies.	
"	E	22	Describing different fertiliser kept on the school school farm including their nutrient content	
"	E	23	Performing pH tests on soils	
"	E	24	Testing for soil nutrients.	
"	E	25	Describing variations down a soil profile	
"	F	26	Comparing the water retention of mulches on soils	
"	F	27	Varying the sowing rate of plants	
"	F	28	Performing an orchard walk looking for pests and disease.	
"	F	29	Comparing cultivated soil profiles as against non cultivated.	
"	F	30	Performing budding / grafting or other asexual plant propagation techniques	
"	G	31	Growing a plant from seed to harvest.	

POSSIBLE PRACS AND ACTIVITIES LINKED TO THE PRELIMINARY 2 UNIT AG. SYLLABUS

A UNIT OF STUDY	B SUB SECTION	C PRAC. REF NUMBER	D DESCRIPTION OF ACTIVITY / PRAC.	E DUPLICATED WITH PRAC.
Animals	A	32	Produce a map showing animal enterprise types and locations based on information from the local area.	
"	B	33	Manage animals for a production period.	
"	B	34	Develop a calender of operations for animals that are to be managed.	
"	B	35	Measure the isotherms in a poultry brooding system.	
"	B	36	Measure the growth rate of animals.	
"	C	38	Dissection of a sheep's reproductive tract.	
"	D	39	Measure the development of animals (compare sex, breed) over time.	
Marketing and Social	A	40	Perform gross margin analysis for school farm enterprises.	
"	A	41	Collect items from rural publications showing the influence of a farmers way of life land its influence on farm operations.	
"	B	42	Analyse the quality of agricultural products.	
"	B	43	Visit places of sale of animal products.	
"	B	44	Visit speciality retail shops.	
"	B	45	Have expert retailers demonstrate at school (butchers).	
"	C	46	Research the role of technology animal production.	
Experimental Design	A	47	Visit trial that have been set up in the local area.	
"	A	48	Perform biometrical experiments.	
Farm Case Study	A	49	Visit a range of agricultural enterprises in the local area.	
"	A	50	Draw systems diagrams based on information from a farm.	
"	B	51	Collect and graph climatic data from a farm.	
"	B	52	Calculate effective rainfall for a farm.	
"	C	53	Perform soil tests on a soil profile taken from the farm.	
"	D	54	Construct plant management time line based on	
"	D	55	Perform a plant disease inspection of a crop.	
"	E	56	Construct an animal management time line based on farm information.	
"	E	57	Construct charts showing different animal diseases and their control based on farm information.	
"	F	58	Perform a farm walk looking for soil degradation and management steps in place to control it.	

3 UNIT AGRICULTURE PROJECT MARKING SCALE

Criteria	Name of Student Max. Marks Allocated
Title - clearly stated	5
Synopsis - outline experiment - conclusion of experiment - recommendations for further experiments on this topic	10
Acknowledgments	5
Table of Contents	5
Introduction and Background - nature of problem stated - background information listed - aim of experiment listed	10
Literature Review	15
Experimental Procedure - how it was set up - what measurements are to be taken - biometrical analysis of results that will happen	15
Presentation of Data - table(s) of data - graphs of data - photos - biometrical analysis of data	10
Discussion of Results - compare all results - relate results to the aim - explanation of odd results	10
Conclusion - reject or accept the Null hypothesis - conclusion reached from the experiment - recommendations based on the experiment - suggestions based of further research	10
Bibliography	5
Total Mark Allocated	100

Internal Parasites of Sheep

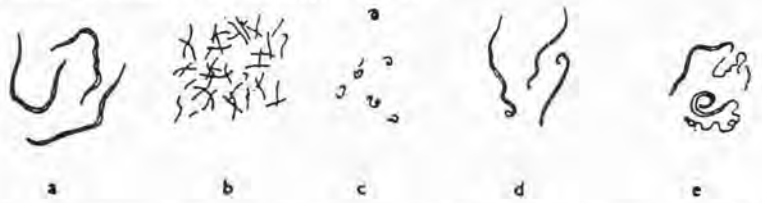
What are internal parasites?
Write down a definition of the term 'internal parasite.'

There are several groups of internal parasites which affect sheep.

1. ROUNDWORMS

Description

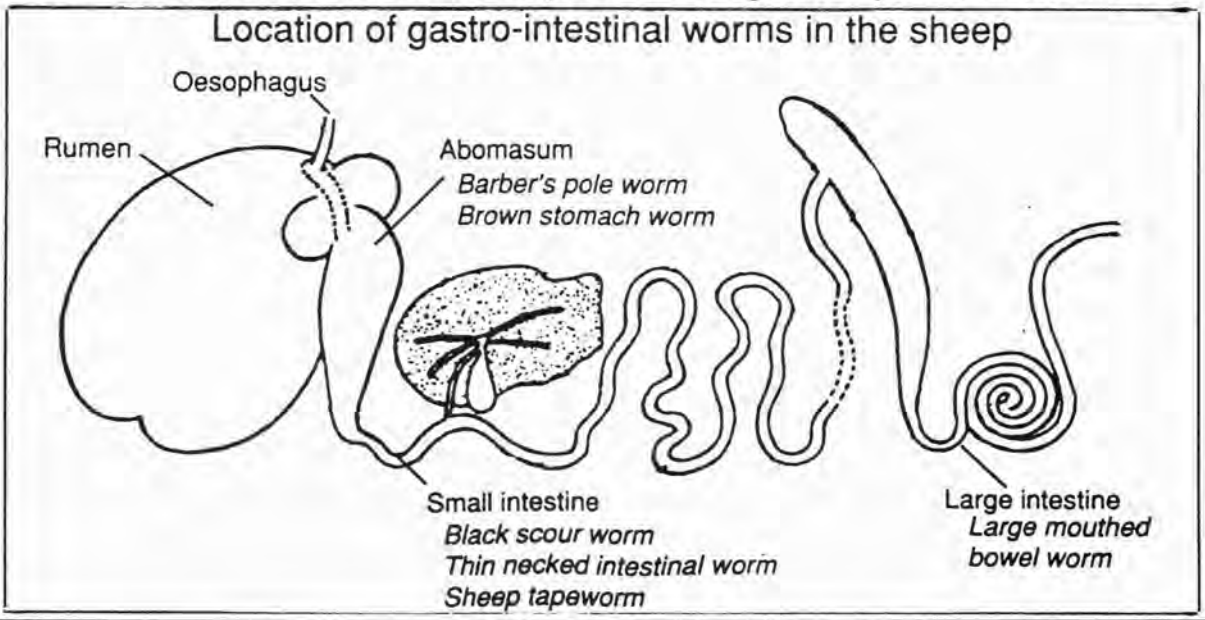
These are small, cylindrical shaped worms which live in various parts of the digestive system of sheep (and most other animal). A number of different types of roundworms affect sheep. Some of them are shown below.



Some common roundworms of sheep (approx. natural size)

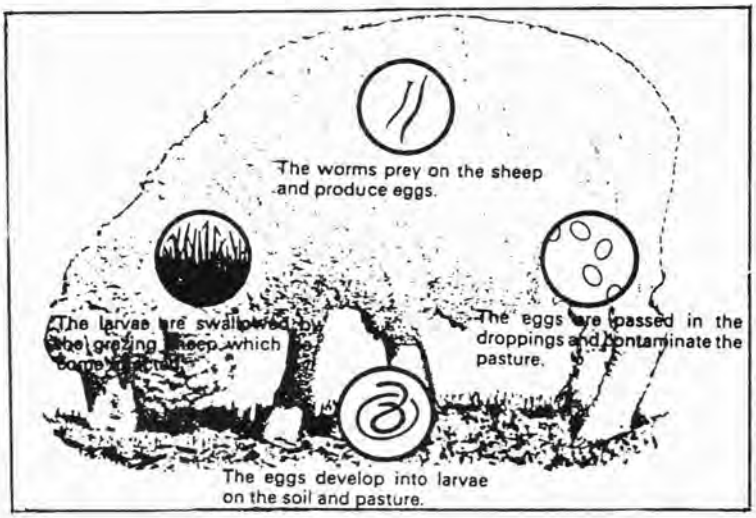
(a) Barber's pole worm (b) Black scour worm (c) Hairworm
(d) Nodule worm (e) Whipworm

These, and other worms, live indifferent parts of the digestive system, as shown below.



Life Cycle and Control

Study the diagram of the life cycle of sheep roundworms below.



Explain how the worms pass from one sheep to another.

Once inside the sheep the worms absorb nutrients from the digestive system. Large populations of worms can use up significant amounts of nutrients that the sheep would otherwise use itself. What effects is this likely to have on the sheep?

Which type of sheep are likely to be worst affected? Why?

List the management practices that farmers should carry out to reduce the damage caused by roundworms.

_____

_____

_____

_____

_____

Outline any problems that may arise from the use of drenches to control worms.

_____

_____

_____

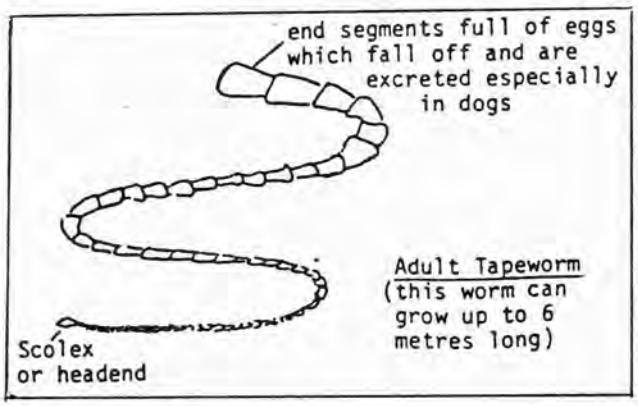
_____

_____

_____

2. TAPEWORMS

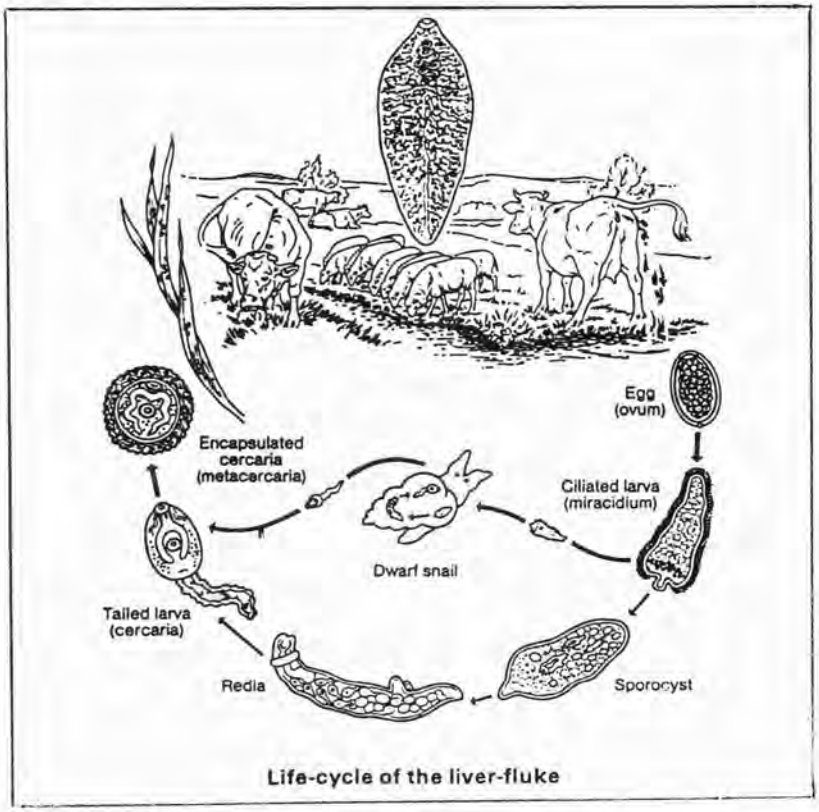
Tapeworms belong to a group of animals called flatworms or **platyhelminths.** They live in the intestines of many animals, including sheep, where they absorb nutrients for their own use. Adult sheep are rarely affected by tapeworms, although lambs may suffer weight loss if large numbers are present.



Tapeworms are also controlled by _____

3. LIVERFLUKE

Liverfluke are small flatworms which live in the livers of sheep and cattle. They are unusual in that they must spend part of their life cycle in a certain type of freshwater snail. Hence they are only a problem in wet climates where these snails can survive. Study the diagram of the liverfluke life cycle below.



Life-cycle of the liver-fluke

Find out how liverfluke damage sheep and what the effects of this damage are.

Suggest how liverflukes can be controlled.

ESTABLISHING A PASTURE FOR BEEF CATTLE

In Southern Australia most farmers grow improved pastures to provide feed for their beef cattle. Pastures provide the cheapest form of nutrition for cattle.

A good pasture provides the cattle with adequate **energy** and **protein** to allow them to grow well. Farmers generally like to plant **grasses** and **legumes** together in their pastures. The basic reason for this is:

* The grasses provide a good supply of _____ but are relatively low in _____, especially when they start to mature.

* The legumes are high in _____ and _____. However they may cause a disease called _____ when grazed as a pure stand.

A pasture that is commonly grown around the Camden district is a mixture of _____, _____ and _____.

AIM: To establish a pasture that is suitable for cattle in the Camden district.

STEPS IN ESTABLISHING A PASTURE

1. Select the pasture species you wish to plant (see above).
2. Prepare the soil. Explain what has been done to prepare the paddock for planting.

_____

_____

_____

_____

_____

3. Measure the dimensions of the paddock and calculate it's area

Length = _____ metres Width = _____ metres

Area = X square metres (m^2)

= square metres

Area = $\frac{\text{_____}}{10{,}000}$ hectares (ha) **Note: 1 ha = 10,000 m^2**

= ha

4. Find out the amount of seed that should be sown per hectare (the sowing rate) and calculate the amount of seed needed to plant the paddock.

Species	Seeding Rate Kg/ha
White Clover	2 Kg/ha
Red Clover	3 Kg/ha
Perennial Ryegrass	15 Kg/ha

To calculate the amount of seed required use the following formula

Amount of seed required (Kg) = seeding rate (Kg per hectare) X area of paddock (hectares)

Amount of White clover required

= x Kg
= Kg
= x 1,000 grams **Note: there are 1,000 grams in a kilogram**
= grams

Amount Red Clover required =

Amount Perennial Ryegrass required =

Weigh out the required amounts of the tree seed types

5. Find out the type of fertiliser that needs to be applied, the rate at which it should be applied and calculate how much is needed for the paddock in exactly the same way as you did for the pasture seeds.

Fertiliser type _____

Nutrients it supplies _____

Rate per hectare _____ Kg

Amount required for paddock = x Kg
= Kg

Weigh out this amount of fertiliser.

6. **Inoculate** and **lime pellet** the legume seeds. You will learn more about this later.

7. Mix the seeds thoroughly and spread them evenly over the paddock using a fertiliser spreader.

8. Spread the fertiliser evenly over the paddock.

9. Cover the seed by dragging a piece of mesh over the paddock a couple of times.

Test Yourself Activity

Choose words from the box below and match them to the descriptions which follow.

drenching	**castration**	**ear marking**	**vaccination**
mulesing	**crutching**	**roundworms**	**shearing**
tail docking	**larva**	**ruminants**	**liver fluke**
jetting	**dipping**	**drafting**	**external parasites**
ram			
mouthing	**internal parasites**	**foot paring**	**wether**
fleece	**crossbred**	**prime lamb**	**ewe**

1. _____ The wool from a sheep.

2. _____ Sheep are given a needle which prevents certain diseases later in their life.

3. _____ Separating sheep into groups by running them through a long pen (race) and a set of drafting gates.

4. _____ Removing the wool from around the tail and back legs of a sheep in order to prevent flystrike.

5. _____ Putting a chemical down the throat of a sheep to help control internal parasites.

6. _____ Spraying or bathing sheep in a chemical which controls external parasites.

7. _____ A castrated male sheep.

8. _____ The result of mating two pure breeds of sheep (eg Border Leicester X Merino).

9. _____ Removing the testes of a male sheep.

10. _____ Placing a registered mark in the ear of a sheep to signify that it belongs to a particular farm.

11. _____ Trimming the hooves of sheep to help prevent footrot.

12. _____ A small animal (eg. sheep blowfly) which lives and feeds on the outside of an animals body.

13. _____ Removing the tail of a sheep.

14. _____ Cutting a patch of skin from around the breech region of a sheep in order to help prevent flystrike.

15. _____ Checking the age of a sheep by observing it's teeth.

16. _____ A young sheep that is 4-5 months old and is at a suitable weight for slaughter.

17. _____ A female sheep.

18. _____ Removing the wool from a sheep (usually done annually).

19. _____ Worms that live inside the bodies of larger animals.

20. _____ The stage in the life cycle of the sheep blowfly which damages the sheep.

21. _____ Internal parasites that are basically cylindrical in shape.

22. _____ The name given to animals which have four digestive chambers (stomachs) in their digestive system.

23. _____ Spraying a chemical insecticide along a sheep's back and around its tail in order to help prevent flystrike.

24. _____ A sheep parasite that spends part of it's life cycle inside a freshwater snail.



Fig. 10.9
Castration



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