



School of Rural Science and Agriculture



# Feedlot Management

## ANPR 440/540

### Study Guide



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# Introduction

Welcome to Feedlot Management ANPR 440/540. Please ensure that you read this Unit Outline and Study Guide thoroughly as it contains information that is essential for you to understand if you are to complete the Unit successfully.

This unit is designed to provide students with the latest research and commercial information to enable them to implement best practice feedlot management techniques. The primary aspects of feedlot management are covered:

- feedbunk management
- animal health and welfare
- principles of feedyard management
- quality assurance
- shipping and receiving cattle
- handling and processing of feedlot cattle
- feedlot waste management practices

The course will cover feeding and health, with topics such as: feeds and feeding; feedmill operation; feed handling; feedbunk management; feed delivery and water trough management. Disease and health programs will be covered including the association of health and welfare; feeding related health problems; respiratory diseases; other health problems; pen riding and management of sick cattle; sampling procedures; processing and handling. Meat quality issues will also be addressed. The course aims to provide an overview of leading management practices that will achieve cost effective production of a consistent, high quality product.

You will learn the latest research results from the Cooperative Research Centre (CRC) for Beef Quality program relating to the key areas of:

- Animal health and welfare
- Breeding and genetics
- Growth and nutrition
- Feedlot waste management
- Meat science

The knowledge gained from this subject should reinforce your existing practical knowledge and experience. You should gain a much broader understanding of the “why” aspects to go with your existing knowledge and understanding of the “how” procedures. This offers potential for more informed, strategic decision making.

Feedlot Management 440 is a fourth year University subject providing a lot of the strategic background of how animal processes work; how feed is utilised; how different components of animals grow and develop, such as bone, muscle and fat; how diseases operate and are overcome and prevented; factors that influence meat quality and so on. Understanding how the key stages of breeding, feeding, health, waste management and meat quality work and how they can be manipulated, are key elements of this subject. Everything learnt will have a practical application. The subject can also be studied at a postgraduate level (Feedlot Management 540 or ANPR 540).

# Personnel

Lectures have been produced by various people, recognised for their expertise in specific areas. The area of feedlot management encompasses vast and diverse topics, for which no one person exists to provide the latest and best information. The University of New England and Beef CRC have drawn upon the resources of numerous people to contribute to the lecture notes for this course. They are all recognised leaders in their particular field.

## Unit Coordinator

Contact details: Dr Darryl Savage  
School of Rural Science and Agriculture  
University of New England  
ARMIDALE NSW 2351  
Ph: 02 6773 3623  
Fax: 02 6773 3922  
Email: [Darryl.Savage@une.edu.au](mailto:Darryl.Savage@une.edu.au)

Do not hesitate to contact me to discuss any aspect of your progress in the Unit. However, as you progress through the semester, enquiries relating to your understanding of the content of a specific module are better directed to the lecturer responsible for that module, as indicated in the timetable and the section on unit objectives and personnel.

With this information, you will have received a CD with all of the lectures notes. You will receive a printed and bound version of these lecture notes at the start of September.

We wish you well with the course and hope you enjoy it, and learn from it.

*Darryl Savage*

Module	Resource Person
<b>Cattle Health and Welfare</b>	<p><b>Dr Darryl Savage</b>  School of Rural Science and Agriculture  UNE ARMIDALE NSW 2351  Ph: 02 6773 3623 • Fax: 02 6773 3922  Darryl.Savage@une.edu.au</p>
<b>Animal Breeding and Genetics</b>	<p><b>Mr Wayne Upton</b>  Animal Genetics and Breeding Unit  UNE ARMIDALE NSW 2351  Ph: 02 6773 3141 • Fax: 02 6773 3266  wupton@metz.une.edu.au</p> <p><b>Dr Robert Herd</b>  Beef Centre  NSW Department of Primary Industries  UNE ARMIDALE NSW 2351  Ph: 02 6770 1808 • Fax: 02 6770 1830  Robert.herd@agric.nsw.gov.au</p>
<b>Growth and Nutrition</b>	<p><b>Dr Darryl Savage</b>  School of Rural Science and Agriculture  UNE ARMIDALE NSW 2351  Ph: 02 6773 3623 • Fax: 02 6773 3922  Darryl.Savage@une.edu.au</p>
<b>Feedlot Waste Management</b>	<p><b>Dr Janelle Wilkes</b>  School of Natural Resource Management  UNE ARMIDALE NSW 2351  Ph: 02 6773 2025 • Fax: 02 6773 3084  jwilkes2@pobox.une.edu.au</p>
<b>Meat Science</b>	<p><b>Professor John Thompson</b>  School of Rural Science and Agriculture  UNE ARMIDALE NSW 2351  Ph: 02 6773 2228 • Fax: 02 6773 2246  jthomps@metz.une.edu.au</p>

# Unit objectives

This unit consists of 39 lectures and is designed to provide:

- knowledge of the key elements of feedlot management.
- an understanding of how and why the various components of feedlot operation interlink and combine to achieve an efficient breeding, feeding and environmentally sound system.
- the latest research and commercial information to enable students to implement best practice feedlot management techniques.
- an overview of leading management practices which will achieve cost effective production of a consistent high quality product.
- reinforce your existing practical knowledge and experience, making you significantly more valuable to your employer/operation. You will have a much broader understanding of the “why” aspects to go with your existing knowledge and understanding of the “how” procedures. This leads to more informed, strategic decision making.
- understanding of how each of the key stages of breeding, production and processing work and how they can be manipulated.
- detailed information of how key management practices can be more efficiently implemented to achieve better efficiencies.
- employees with the latest research information relating to meat quality and the processing of beef cattle in Australia. Employers will have somebody working for them who is better informed leading to smarter decision making.

# Unit content

The unit comprises 39 lectures in 7 sections and a 4-day residential school.

1. Introduction - Overview of the Australian Lotfeeding Industry
2. The relationship between health and welfare in beef cattle feedlots
3. Feeding related health problems - The digestive tract
4. Respiratory diseases
5. Other health problems
6. Pen riding, management of sick cattle and sampling procedures
7. Processing and handling
8. Adapting cattle to the feedlot
9. BREEDPLAN and the bull buyer
10. Genetic variation in feedlot performance - breeds and crosses
11. Matching genetics to feeding programs and markets
12. Selecting cattle for feed efficiency
13. Breeding objectives
14. Progeny tests and data analysis

15. Principles of cattle growth and development of carcass components
16. Effect of nutrition on growth and carcass composition
17. Nutrition of feedlot cattle
18. Feed conversion and the cost of grain
19. Why do we need feed efficiency EBVs?
20. Operational procedures
21. Feed inventory, feed and ration quality control
22. Feed storage
23. Feedbunk management
24. Ration mixing
25. Feedmill operation, feed handling and processing
26. Transporting, handling and processing feedlot cattle
27. Quality assurance
28. Feedlot waste management
29. Selecting a site for a feedlot
30. Feedlot layout
31. Manure collection, storage and spreading dust control
32. Dust control
33. Minimising feedlot odours
34. Safe use of feedlot manure and effluent
35. Environmental monitoring and its use in the production system
36. Effect of grainfeeding on yield and meat quality
37. Optimising meat quality - pre- and post-slaughter effects
38. Carcass measurements and the AUSMEAT description and trading language
39. Specifications and grading systems: Japan, USA, Korea and Australia

## Residential school 2007

There will be a Residential School held in Armidale between 16 and 19 September 2007. **Attendance is compulsory.** Details concerning accommodation will be provided in material sent from the Teaching and Learning Centre of the University, closer to these dates.

The Residential School for this unit concentrates on practical understanding and application of the information provided in lectures. The residential school will cover the theory and practice of feedlot management, including a full day at Rangers Valley Feedlot, Glen Innes (25,000 head capacity). Bunk management and health management are addressed with on-farm/feedlot examples. The residential school is a highlight of this subject and is always highly evaluated by students.

## 2007 Residential school timetable

Day	Date	Time	Resource Person	Activity	Location
Sun	16 <sup>th</sup> September	9am	<i>DS</i>	Welcome and introduction	Wright Lecture Theatre
				"Expectations session"	Wright Lecture Theatre
		10.30am	<i>DS</i>	Growth and Nutrition	Wright Lecture Theatre
		12.30pm		LUNCH	
		2pm	<i>DS</i>	Library research session	Dixon library
		5pm		Preparation of seminars in teams	
Mon	17 <sup>th</sup> September	8am	<i>RH</i>	Feed efficiency	Wright Lecture Theatre
		9am	<i>JT</i>	Meat Science	Wright Lecture Theatre
		11am	<i>WU</i>	Breeding and genetics	Wright Lecture Theatre
		4.30pm	<i>JW</i>	Waste Management	Wright Lecture Theatre
		6pm		Preparation of seminars in teams	
Tues	18 <sup>th</sup> September	7am		Depart for Rangers Valley Feedlot	Rangers Valley Feedlot
			<i>GM</i>	Operational overview	Rangers Valley Feedlot
			<i>KS</i>	Cattle Health and Welfare	Rangers Valley Feedlot
			<i>JMc</i>	Feeding Management	Rangers Valley Feedlot
		5.30pm		Depart Rangers Valley Feedlot	Return to UNE approx. 7pm
Wed	19 <sup>th</sup> September	9am	<i>DS, JW</i>	Team seminar presentations	Wright Lecture Theatre
		12noon	<i>Guest Speaker</i>	TBA	Wright Lecture Theatre
		1pm	<i>DS</i>	Marks for seminar and quizzes	Wright Lecture Theatre
		1.30pm		Finish	

*This program may be changed depending on availability of resources*

### KEY

*GM* – Graham Mabbott; *JMc* – Joe McGrath; *WU* - Wayne Upton; *RH* – Robert Herd

*JT* - John Thompson; *JW* - Janelle Wilkes; *KS* - Kev Sullivan; *DS* - Darryl Savage

# Unit assessment

Students will be required to complete one assignment of approximately 3,000 words, a series of six short quizzes and a team seminar (conducted at the residential school) and one examination.

Assessment Task	Description	% of final mark		Date Due
		ANPR 440	ANPR 550	
Assignment (Topic to be selected from list)	Approx. 3,000 words	30	30	Res school (16 <sup>th</sup> Sept)
Residential school quizzes	short quizzes	10	10	Res school
Residential school team seminar	seminar	20	20	Res school
Final Exam (November exam period)	3 hours	40	40	November
<b>Total</b>		<b>100</b>	<b>100</b>	

## Withdrawing without incurring HECS fees

If you withdraw from the unit within 1 month of commencement you will not incur HECS fees, nor will you incur any academic penalty, ie your withdrawal won't appear on your academic record. This provides you with time to decide whether you want to continue before you will be liable for a HECS fee. Remember, this course is only offered externally, so we don't actually have lectures. Try to cover (read) four lectures per week.

## Details of assignment (30%)

Students are required to complete one assignment of approximately 3,000 words. The topics for the assignments are listed below. Choose the topic that most interests you or that will benefit you or your operation the most. The assignment is due at UNE on the first day of the residential school (Sunday 16<sup>th</sup> September).

Your assignment must be received by the external assignments section of the Teaching and Learning Centre at UNE by the due date. You can post or email your assignments to the Teaching and Learning Centre as described in the enclosed information. ***Please note, assignments will not be accepted by sending (post or email) them directly to the unit coordinators or module contacts, as they must be registered through the Teaching and Learning Centre.***

## List of assignment topics

### ***Topic 1 – Cattle health and welfare***

Discuss the importance of Bovine Respiratory Disease to the Australian feedlot industry. Describe the mechanisms of action and how it can be managed.

### ***Topic 2 – Breeding and genetics***

List and discuss how and why BREEDPLAN is a useful tool for the feedlot industry. Detail the benefits using market examples.

### ***Topic 3 – Growth and nutrition***

Discuss the affect of nutritional regime/pathway during the backgrounding phase and the feedlot phase on animal growth, carcass composition and eating quality.

### ***Topic 4 – Feedlot waste management***

There has been much media attention given to climate change due to increases in greenhouse gases recently. Within a feedlot system, discuss where losses of greenhouse gases occur and how feedlot management could be changed to reduce these losses.

### ***Topic 5 – Meat science and technology***

Discuss how grain feeding and pre-slaughter management influence meat eating quality. What are best practice guidelines to ensure optimal product quality?

## General guideline for assignments

Refer to the University of New England's Style Guide, (available on the UNE website) for specific guidelines for referencing, layout and writing assignments. The following is suggested:

Title:	Topic of your choice
Introduction:	States the objective and defines the scope of the essay
Discussion:	The main body of the work, gives the background, discusses the issue and suggests solutions or options. Conflicting opinions or results should be discussed and resolved if possible.
Conclusion:	A concise summary of the topic
References:	List references that are cited in the body of the essay <i>Refer to the UNE's Style Guide.</i>

Figures and tables should be used where appropriate. The heading for a table should be above, and the caption for a figure below it.

Before you commence work on an assignment it may be worth having a discussion with the lecturer concerned. They will direct you towards specific references and ensure that you are both interpreting the question in the same way.

### ***Please read the following paragraphs! They are most important for your assignment preparation!***

The assignment is designed to develop your skills in searching and interpreting the literature relating to a defined topic or problem. The literature is then to be used to produce a logical and well structured report which reviews evidence for and against any proposition or hypothesis that you may be developing. However, in the end it is expected that you will form and express your own conclusion to each issue that arises in the assignment.

References are vitally important in scientific writing, both to acknowledge original work in the area and to provide scientific evidence for your arguments or assumptions. If possible try to refer to the original papers or people who made findings rather than relying on other reviews or articles. To use a summary from a review can risk relying upon someone else's interpretation of the results and its implications which may not apply to your particular problem. Also do not rely heavily on extension material. For extension publications, the results have often been simplified and some interactions which may apply to your particular problem have been ignored.

The task is for you to develop skills in interpreting experimental results, not to simply repeat the conclusion that others have reached. It is quite permissible to use a previous review or extension material to gain an overview of the topic and to identify critical areas of conflict or particular interest. However, we do expect you to go to the original scientific papers. Remember to acknowledge the work of others in your assignment. If ideas and results are not your own, you must cite the source in the body of your writing and list a reference for it at the end of your assignment. Marks will be deducted if it is clear that you are using unacknowledged material. Avoid making statements that are not supported by factual evidence.

In the past, some students have copied word-for-word out of lecture notes, or merely paraphrased lecture notes (and in some instances submitted work of other students). This practice is not acceptable and achieves nothing towards you gaining an understanding of the key areas of this subject. Be clear - you cannot submit an assignment that has been submitted for another subject, even if you wrote it. You must do original work for this subject. The above unacceptable practices do not demonstrate your ability to research, report and understand a topic. They only reflect your ability to summarise and copy. The entire point of doing the assignments is to provide an opportunity for people to learn how to research a topic, write a report of university standard and demonstrate an understanding of the topic area.

Remember – the people marking the assignments wrote the lecture notes and will easily recognise their own work if it has been copied. There is no problem quoting scientific references, as long as they are acknowledged correctly. I am spelling this out as we have had students not conform in the past. The most important thing is to demonstrate that you have researched the topic and that you understand the key issues involved. To achieve this you will learn and broaden your knowledge and understanding in the process. **If you are caught submitting someone else's essay or re-submitting all or part of an essay written for another subject, you will be failed immediately.** We treat this very seriously.

## **Marking policy for written assignments**

Factors that will be taken into account in marking the essay include:

- Submission on time (5% per day deducted for late assignments for 10 days, after which no mark will be awarded).
- Presentation (legibility, spacing, use of headings, sub-headings, paragraphs, figures, tables, margins and indenting).
- Structure and flow of ideas.
- Clarity of expression.
- Spelling, grammar and English expression.
- Quality and scope of literature cited.
- Innovative thinking.
- Ability to identify and summarise key issues.
- Extent and soundness of conclusions drawn.

# Assessment criteria for written assignments

## ANPR440/540 Assignment marking sheet

Student Name: ..... Assignment: .....

Area assessed	Comments
Submission on time	
Presentation (legibility; spacing; margins and indenting; pagination; correct use of figures, tables etc.).	
Structure and flow of ideas (use of headings, good sentence and paragraph construction, clear flow of ideas through the essay).	
Clarity of expression, grammar, adequacy of English expression.	
Adequacy of content relative to the topic set.	
Use of data to support arguments.	
Ability to identify and summarise key issues.	
Extent and soundness of conclusions drawn.	
Quality and scope of literature/references cited.	
Correct use of citations and references	
<b>Overall Mark</b>	

## Details of residential school quizzes (10%)

To maximize the benefit of the residential school, a five minute, multiple-choice quiz will be undertaken by each student at the beginning of each module. Therefore, there will be five quizzes at the residential school;

- |                             |           |             |
|-----------------------------|-----------|-------------|
| • Meat Science              | 5 minutes | 5 questions |
| • Waste Management          | 5 minutes | 5 questions |
| • Cattle Health and Welfare | 5 minutes | 5 questions |
| • Breeding and Genetics     | 5 minutes | 5 questions |
| • Nutrition and Growth      | 5 minutes | 5 questions |

The total value of all five quizzes is 10% toward your final assessment for the unit. The content of the quizzes will be based on the material presented in the lecture notes (and CD).

## Details of residential school seminars (20%)

An important part of the educational experience at university is to develop skills in working with teams. In addition to this, team-based case studies have been shown to improve the engagement of students and the educational outcomes. As we only have 4 days together for the entire semester, it is important that we maximize this opportunity. The primary aims of the team seminars are:

- To improve your understanding of feedlot management issues
- Develop and demonstrate your skills in a team environment
- Receive constructive feedback from fellow students and lecturers
- Improve the enjoyment and interaction at the residential school

On the first day of the residential school you will be allocated to a small team (approximately 5 people) and a case study topic. Each team will be required to prepare a seminar of 20 minutes duration (15 minutes talking + 5 minutes questions). There is no requirement for all team members to deliver the seminar. Thus, the team may select one or two team members to present on behalf of the team. For teams that require presentation aids, they may be provided. All preparation for the seminar will be conducted at the residential school in your allocated team. Seminars will be marked by lecturers and fellow students. The marks and feedback will be available to you at the end of the residential school. Every person will be asked to score each of their team members for their contribution to the seminar preparation. These scores will be handled confidentially.

Assessment of the seminars will be based on the following criteria:

1. Introduction to the importance of the case study issue to the Feedlot industry
2. Evidence and quality of research to support statements/argument.
3. Demonstration of understanding of key issues relating to the case study.
4. Depth and extent of recommendations and conclusions.

## **Details of final examination (40%)**

Many students live in remote areas and in locations far away from Armidale. The University does not expect you to incur the cost of traveling to Armidale to sit a three hour exam. You can sit the exam in a location approved by the University, in closer proximity to you. UNE has approximately 13,000 external students, so you may be surprised to know how many are studying at UNE from your region. You will receive the relevant information relating to exams as November approaches. You can also obtain copies of previous year's exams on the UNE website. These are a good guide for your exam preparation, however the exam questions do change each year.

The exam will be on a date to be advised during the exam period in November. It is worth 40% of the overall assessment and will cover the lectures and residential school. You must have attended the full residential school program to be eligible to sit the final exam.