The information contained in this publication is based on knowledge and understanding at the time of writing (2016). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up-to-date and to check currency of the information with the appropriate officer of NSW Department of Primary Industries or the user’s independent adviser.

Recognising that some of the information in this document is provided by third parties, the State of New South Wales, the author and the publisher take no responsibility for the accuracy, currency, reliability and correctness of any information included in the document provided by third parties.

©The State of New South Wales
NSW Department of Primary Industries 2016.

This publication is copyright. Except as permitted under the Copyright Act 1968 (Commonwealth), no part of the publication may be reproduced by any process, electronic or otherwise, without the specific written permission of the copyright owner. Neither may information be stored electronically in any form whatever without such permission.
# Table of Contents

- Who to contact ............................................. 4
- Welcome ................................................... 5
- Introduction to the course .............................. 6
- Subject guides ............................................. 10
- Assessment grading ........................................ 10
- About due dates........................................... 10
- Course policies ............................................ 11
- Course requirements and competencies .............. 12
- Course structure ........................................... 16
- Subject details ............................................. 17
  - Core subjects ......................................... 17
  - Livestock stream ..................................... 27
  - Crop and pasture stream ............................ 37
  - People and business skill set ....................... 45
  - Organics skill set ................................... 53
- Other learning activities .............................. 61
- Library resources ....................................... 61
- Other sources of information ......................... 62
Who to contact

Course Coordinator
Michael Ison
Phone: 02 4939 8814
Email: michael.ison@dpi.nsw.gov.au

Contact Michael for inquiries about the qualification and for help with assessment tasks.

Course Secretary
Kim Griffiths
Phone 02 4939 8881
Email: kim.griffiths@dpi.nsw.gov.au

Contact Kim for inquiries about payment of fees.

Other contacts
Emma Oke
Education Officer
Phone: 02 4939 8928
Email: emma.oke@dpi.nsw.gov.au

Natacha Hes
E-learning Officer
Phone: 02 4939 8910
Email: natacha.hes@dpi.nsw.gov.au

Lecturers:
Sally Friis Email: sally.friis@dpi.nsw.gov.au
Mia Mackay Email: mia.mackay@dpi.nsw.gov.au
Nathan Friis Email: nathan.friis@dpi.nsw.gov.au

Mailing address:
Tocal College
CB Alexander Campus
815 Tocal Road
PATERSON NSW 2421
AUSTRALIA

Fax: 02 4938 5549

Website: www.tocal.nsw.edu.au
Welcome

Welcome to the course. Your course leads to a Diploma of Agriculture and is part of NSW Department of Primary Industries’ Online Courses, one of the most successful rural adult education programs in Australia.

The Online Course Program has evolved from the external courses in Farm Management and Farm Office Management offered to landholders since 1970 and over 12,000 people have enrolled in these courses in that time. Since 1981 the management of the External Courses has been located at the Tocal Agricultural Centre at Paterson in the Hunter Valley north of Maitland and in 2012, the Diploma of Agriculture was first transferred entirely online.

This online Diploma of Agriculture meets the requirements of the national Rural Production Training Package that was endorsed in 2011.

There are other ways of achieving a diploma or other qualifications in Agriculture, but completing the course online is the method described in this handbook.

We are confident you will find the course a most rewarding experience and well worth the time and effort you will need to spend on it.

Please note that email and telephone support is available to enrolled students, but that intensive or frequent one-to-one tuition cannot be provided in this online course. If you have any doubts about your ability to complete the course by online study with limited support, please phone the course coordinator to discuss your situation. If you decide to withdraw within three weeks of receiving your first study materials, a full refund will be available when the materials are returned in good condition.

The staff at Tocal wish you well in the course. We hope you study hard, enjoy it and achieve what you want from it. Call if you would like help or further information (contacts and phone numbers on page 4).
Introduction to the course

Course aims
The course aims to give you the knowledge, skills and attitudes you need to achieve the following:

• assess the condition and suitability of a land resource as a holistic system for agricultural production
• draw up plans for managing the natural resources of a particular land system for sustainable production
• demonstrate management and business skills for agricultural enterprises
• work effectively with stakeholders, who may be your family, clients, community groups or government agencies
• understand the legal and policy framework for managing agricultural enterprises

How the course works
The course comprises a number of written assignments, maps and plans that you will develop for a farming enterprise of your choice. You will submit assessment tasks for each subject via the online learner management system, Moodle. Assessment tasks will be assessed by a Tocal staff member with expertise in the subjects and when the required number of tasks is completed you will be deemed competent in that subject and unit. You will pay for each subject as you go and most students prefer to complete one subject at a time.

Most material—readings, videos, discussions and links—will be presented online and you maybe expected to contribute to online discussions and forums from time to time. You will be supported as you engage with this method of learning. Online materials are available for all subjects and the majority of subjects have hard copies and essential references supplied as part of your course fees.

Online learning
This course is offered online, and we would prefer that you undertake the course entirely online. We have developed this approach because online learning provides a flexible way for you to interact with the latest subject material, work with your property and at your pace. At the same time it opens up a wide range of resources available on the internet that we can refer to and update regularly to remain current.

Background to the course
This course leads to a national Diploma of Agriculture. It is based on the success of Tocal College and NSW Agriculture’s wide range of agricultural courses that have been revised and developed for over 25 years to ensure they meet the needs of our clients.

Adult learners have different needs and characteristics than adolescents or children. These characteristics include:

• adults are very selective about what they learn
• they have limited time and have many other activities to take their time and energy apart from learning
• adult learning should be done in a non-threatening environment
• adult learning has to be relevant to the needs of the learner.
Taking these issues into account, the College has developed the Diploma of Agriculture. This course is based on identified competencies, following widespread industry consultation.

The course is also based on the principles of problem-based and interactive learning. In other words, we do not believe that competent land managers need to be experts on every area of land management. Instead, they need to have a thorough knowledge of their particular environment and the principles involved in land and enterprise management. But more importantly, they need to have a mindset and understanding of the issues involved in the stewardship of land and principles of sustainable land use that leads to a successful farm business.

Tocal Diploma of Agriculture as a pathway to UNE degree
The Diploma of Agriculture can also lead directly to the Bachelor of Agrifood Systems at UNE. This pathway is slightly different to what is outlined in this handbook and so your study plan will be negotiated with the course coordinator.

You work from a practical vocational base at Tocal and after doing Diploma and Advanced Diplomas, you move through to a highly regarded Bachelor of Agrifood Systems at UNE. Your studies at Tocal College when completed mean you are already halfway to your degree.

You can major in either crop production or livestock production at Tocal, and study either full-time or part-time. This course is available fully online, supported by RPL, and there is a wide range of resources written and produced for you at Tocal College.

The course consists of a series of subjects in which you will learn new management skills and develop practical plans that can be directly applied to managing a farm business. You upload your assessment tasks for feedback from lecturers with extensive industry and educational experience.

We’ve designed the Tocal component of the course to be completed over two years. You either enrol at both Tocal and UNE in an integrated study program, or after completing the Tocal course, articulate directly to the UNE Degree program.

More information is available on our website and the UNE Degree pathway handbook.

Questions that may arise
You may have a number of questions about how the course works. Most of the details will be revealed as you work your way through this handbook. Some questions that may occur to you are answered below.

Is this the course for you?
You may be wondering if this course is the most suitable for your needs. An explanation may help you decide:

The course is designed for landholders, farmers and those wishing to get into farming. The course approaches the study of agriculture at the management level. You need to be able to make management and planning decisions about land, its resources and enterprises. To do this you need access to a commercial-sized property or farm, and, even though you may not be the owner, you will be making decisions that are practical and would be capable of being implemented on the farm.
If you are already employed in agriculture or have experience in agriculture or agribusiness, you may be able to take advantage of Recognition of Prior Learning (RPL), described below.

Do you need to own land to complete the course?
Ideally yes, but not necessarily. You will definitely need access to some agricultural enterprises to complete most subjects.

Each subject asks you to complete a series of assessment tasks, which meet national competencies. You will be learning how to make management decisions on the land’s natural resources, infrastructure, enterprises and business policies. The assessment tasks explore your decision-making skills. If you have difficulty accessing suitable land or enterprises for your studies, contact the course coordinator who may be able to put you in touch with a suitable farm in your area.

Is the course full-time or part-time?
The course is designed to be completed on a part-time, external basis. Studying part-time is not always easy. Often it has to fit in with work and family commitments and it can be hard to find the time to give it a fair go. That’s why we are as flexible as possible with the course requirements. We have designed the course so that you should be able to complete the course in eighteen months.

If you find it difficult to submit assignments in a reasonable time, you need to contact the course supervisor to arrange an extension or deferment. We know what it’s like and we will help if we can.

External study is a great way to learn. You can study at your own pace, without a lot of travel to education institutions.

How can your existing skills and experience be recognised?
Completing the course-work is just one way of achieving the Diploma of Agriculture. The award we offer is from a National Training Package. The training package enables you to gain qualifications from skills or experience you may already have. This is described as Recognition of Prior Learning or RPL.

You can gain RPL for what you have already achieved through life or work experience, by formal coursework at other recognised institutions or by attending workshops and training activities. This is best done by consulting fully with your course coordinator, who can also arrange for you to be assessed. Before you do this, study carefully the competencies listed on page 13-16 of this handbook, and select the ones you think you may be able to have recognised.

The competencies described in this book apply to diploma-level studies only, but you may be able to gain a qualification at Certificate III, Certificate IV or Advanced Diploma level by skills recognition (only). Discuss this option with the course coordinator and read the Recognition of Prior Learning Handbook on the web at www.tocal.nsw.edu.au/courses/Skills-recognition-services.
What are competencies?
A National Training Package sets standards for assessment and describes ways of measuring and recognising an individual’s competence.

In each sector there are units of competence that relate to different workplace functions. These are linked to levels of the Australian Qualifications Framework (AQF).

This means that training pathways for all sectors of agriculture are similar and reflect workplace expectations for the whole of Australia.

For any qualification you need to achieve a basic number of competencies in different areas. Completing the required competencies by course-work is just one way of gaining a qualification.

Fees
Each subject has a standard fee as of 1 January 2016 of $475 per unit of competency. An up-front enrolment fee of $950 will entitle you to the first two subjects. This fee changes from time to time, so you will need to check on the website for the current fees. Most elect to ‘pay as you go’ and when you do you will be charged the price that applies to that subject at the time of enrolment.

There is a fee that applies to RPL that depends on whether you supply all necessary documentation for a ‘desk audit’ or whether you undertake assessment at your place of work (or home). We can let you know what these fees are on application.

When to enrol
As from 2016, the Diploma will be open for ongoing enrolment so you can enrol online at any time. Please note enrolment processing times and access to online learning mean that it can take some time before you are able to begin. Phone and face-to-face credit card payments can take up to five (5) working days to be processed and receive access to online courses. Online credit card payments can take up to two (2) working days to be processed and receive access to online courses. We try to make the course as flexible as possible, so if you want to complete the course sooner, that’s fine. You can vary your studies to suit your work and personal commitments and the time you have available.

Short courses
Tocal College also conducts a wide range of short courses, many of which will be suitable and appropriate for your studies. They will give you a ‘head start’ to many of the subjects and you can also add skills over and above what is needed for the formal course-work. Each year a short course brochure is available from the college with a timetable of courses. This is also available on the web at www.tocal.nsw.edu.au/courses/list. Most short courses are held on weekends.
Subject guides

You will already have noted that all assessment is via assignments that you prepare at home and submit online for marking.

Subject guides are available to download from each of the online subjects.

All subjects are available online and this is the preferred method of engaging with the course. On enrolment you will be given instructions on how to access the online learning resources.

*Included at the end of each online subject is an Evaluation form that you must complete and submit. It is most important that both the evaluation and the declaration are completed.*

Assessment grading

Assessments will be graded with reference to the learning outcomes and competencies for the subject, as follows:

- **Not yet competent** you have not yet met the assessment criteria at a basic level or not completed the required work. (You will be given a 0 in the online subject.)

- **Competent** you have met the assessment criteria at the required level. The grading you receive for each subject will be shown on an academic transcript issued on completion of the course or if you elect to withdraw without graduating. (You will be given a 1 in the online subject.)

- **Resubmission** – subject lecturer may ask you to resubmit work if details are incorrect or if relevant information is missing. In this situation you will be asked to resubmit assessment tasks.

About due dates...

As an independent learner we believe you are able to discipline yourself to complete your studies. However, you need to send in your assignments at least every two months. You can draw up your own timetable to achieve this, and we will monitor your progress.

If you have trouble meeting this time commitment, you need to let us know. If you don’t meet your own schedule of studies, your study results will be placed in an ‘inactive’ file and you will need to negotiate with the Coordinator to resume your studies.
Course policies

For information on refunds, appeals regarding assessment, privacy protection, student support and grievances, please see the website:


Online course refund policy
Refunds are available under the following conditions;
1. If within 21 days of enrolment in a subject/course, the subject/course does not meet your expectations, you are eligible for a refund of the fee paid less an administration charge of $75.

2. After 21 days and up to 12 weeks from enrolment, you are eligible for a 30% refund of the fee paid if you withdraw from the subject/course.

3. Written application based on special circumstances can be made to the Principal of Tocal College.

Referencing
A referencing style is a set of rules outlining how to acknowledge the ideas and work of others in a standardised way.

Referencing is an important part of academic writing. It is essential that you use a consistent style in your assessment tasks and research as you progress through your studies at Tocal College.

Different institutions follow different rules for referencing, but one style tends to be recommended by many institutions. This is what is known as the Harvard referencing system.

Here’s an example of how to reference a book in your reference list:

Buchanan, RA 2009 Restoring natural areas in Australia, NSW Industry & Investment, Tocal College.

Not only is it important that you cite any references you use at the end of an assignment, but you must acknowledge any in-text quotes you use. For example:

Buchanan 2009, p.72 notes that soil health is vitally important for the health of the ecosystem.

An alternative is to use footnotes for in-text referencing.

In any course you undertake at Tocal College you should follow the Harvard referencing style to acknowledge any resources such as books, journal articles, reports, case studies, legitimate web pages etc that you use. The following website is a guide to how to use the referencing system in every possible circumstance:

Course requirements and competencies

AHC50110: Diploma of Agriculture

Qualification notes
The Diploma of Agriculture reflects the role of personnel working on farms and stations who manage enterprise production units and employees and sole operators of agribusinesses who provide crop production advice and services to production enterprises.

Entry requirements
There are no entry requirements for this qualification.

Qualification pathways

Pathways into the qualification
This qualification may be accessed by direct entry.

Job roles
Job roles and titles vary across different industry sectors. Possible job titles relevant to this qualification include:
- Farm production manager
- Production unit manager
- Agronomist
- Station/property manager.

Packaging Rules
Completion of ten (10) elective units.

Elective units
- a minimum of five (5) units must come from elective group A
- a minimum of three (3) units must come from elective groups A or B
- a maximum of two (2) units may be selected from units aligned to Certificate IV, Diploma or Advanced Diploma in AHC10 or from any other currently endorsed Training Package or accredited course. Selected units must be relevant to job outcomes in agriculture.
ELECTIVE UNITS GROUP A

**Agribusiness**
AHCAGB501A Develop climate risk management strategies
AHCAGB505A Develop a whole farm plan

**Business**
AHCBUS501A Manage staff
AHCBUS506A Develop and review a business plan
AHCBUS507A Monitor and review business performance

**Broadacre cropping**
AHCBAC501A Manage agricultural crop production
AHCBAC502A Manage forage conservation
AHCBAC503A Manage integrated crop and pasture production
AHCBAC504A Plan and manage a stored grain program
AHCBAC505A Plan and manage long-term weed, pest and/or disease control in crops
AHCBAC506A Manage the harvest of crops
AHCBAC507A Develop production plans for crops

**Livestock**
AHCLSK501A Manage livestock production
AHCLSK502A Arrange marketing of livestock
AHCLSK503A Develop and implement a breeding strategy
AHCLSK504A Develop livestock health and welfare strategies
AHCLSK505A Develop production plans for livestock

**Occupational health and safety**
AHCOSH501A Manage Occupational Health and Safety (OHS) processes

**Organic production**
AHCORG501A Develop an organic management plan
AHCORG502A Prepare the enterprise for organic certification

**Soils and media**
AHCOSL501A Monitor and manage soils for production
ELECTIVE UNITS GROUP B

**Agribusiness**
- AHCAGB502A Plan and manage infrastructure requirements
- AHCAGB503A Plan and monitor production processes
- AHCAGB504A Plan production for the whole land/farm based business
- BSBWOR501B Manage personal work priorities and professional development

**Business**
- AHCBUS502A Market products and services
- AHCBUS503A Negotiate and monitor contracts
- AHCBUS504A Prepare estimates, quotes and tenders
- AHCBUS505A Develop a marketing plan
- AHCBUS508A Prepare and monitor budgets and financial reports
- BSBFIM501A Manage budgets and financial plans
- BSBHRM506A Manage recruitment selection and induction processes
- BSBRES401A Analyse and present research information
- BSBRSK501A Manage risk
- TLIL1907C Implement and monitor transport logistics
- TLIR207C Source goods/services and evaluate contractors
- TLIR307C Negotiate a contract

**Chemicals**
- AHCCHM401A Minimise risks in the use of chemicals
- AHCCHM501A Develop and manage a chemical use strategy

**Deer**
- AHCDER401A Handle, store and grade deer velvet
- AHCDER501A Comply with deer industry national velvet accreditation requirements
- AHCDER502A Harvest deer velvet

**Drainage**
- AHCDRG501A Design drainage systems

**Livestock**
- AHCLSK506A Design livestock effluent systems

**Machinery operation and maintenance**
- AHCMOM501A Manage machinery and equipment
- AHCMOM502A Implement a machinery management system
Merchandising and sales
AHCMER501A Develop a sales strategy for rural products

Natural area restoration
AHCNAR506A Develop and implement sustainable land use strategies

Organic production
AHCOR401A Manage biodynamic production
AHCOR402A Manage organic livestock production
AHCOR403A Manage organic soil improvement

Shearing
AHCSHG405A Arrange employment for shearing operations

Water
AHCWAT502A Manage water systems

Work
AHCWRK501A Plan, implement and review a quality assurance program
AHCWRK502A Collect and manage data
AHCWRK504A Assess new industry developments
AHCWRK505A Manage trial and/or research material
AHCWRK509A Provide specialist advice to clients
AHCWRK511A Develop workplace policy and procedures for sustainability
## Course structure

### CORE SUBJECTS

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Lecturer</th>
<th>Group</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop a whole farm plan</td>
<td>Sally Friis</td>
<td>A</td>
<td>AHCAGBS505A Develop a whole farm plan</td>
</tr>
<tr>
<td>Manage Soils</td>
<td>Nathan Friis</td>
<td>A</td>
<td>AHCSOL501A Monitor and manage soils for production</td>
</tr>
<tr>
<td>Manage climate risk</td>
<td>Michael Ison</td>
<td>A</td>
<td>AHCAGBS501A Develop climate risk management strategies</td>
</tr>
<tr>
<td>Maintain farm safety</td>
<td>Nathan Friis</td>
<td>C</td>
<td>AHCOPHS401A Maintain occupational health and safety processes</td>
</tr>
<tr>
<td>Manage the farm business</td>
<td>Michael Ison</td>
<td>A</td>
<td>GROUP A AHCBUS506A Develop and review a business plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GROUP A AHCBUS507A Monitor and review business performance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GROUP B AHCBUS508A Prepare and monitor budgets and financial reports</td>
<td></td>
</tr>
</tbody>
</table>

### ELECTIVE SUBJECTS

#### Livestock stream

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Lecturer</th>
<th>Code</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop a livestock production plan</td>
<td>Emma Oke</td>
<td>AHCLSK505A</td>
<td>Develop production plans for livestock</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AHCLSK501A</td>
<td>Manage livestock production</td>
</tr>
<tr>
<td>Develop a livestock breeding strategy</td>
<td>Mia Mackay</td>
<td>AHCLSK503A</td>
<td>Develop and implement a breeding strategy</td>
</tr>
<tr>
<td>Arrange marketing of livestock</td>
<td>Michael Ison</td>
<td>AHCLSK502A</td>
<td>Arrange marketing of livestock</td>
</tr>
<tr>
<td>Develop livestock health and welfare strategies</td>
<td>Mia Mackay</td>
<td>AHCLSK504A</td>
<td>Develop livestock health and welfare strategies</td>
</tr>
<tr>
<td>Feed Livestock</td>
<td>Michael Ison</td>
<td>AHCLSK402A</td>
<td>Develop livestock feeding plans</td>
</tr>
</tbody>
</table>

#### Crop and pasture stream

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Lecturer</th>
<th>Code</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop a crop production plan</td>
<td>Michael Ison</td>
<td>AHCBA501A</td>
<td>Manage agricultural crop production</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AHCBA507A</td>
<td>Develop production plans for crops</td>
</tr>
<tr>
<td>Manage crops and pastures</td>
<td>Michael Ison</td>
<td>AHCBA503A</td>
<td>AHCBA505A Plan and manage long term weed, pest and/or disease control in crops</td>
</tr>
<tr>
<td>Weeds in crops and pastures</td>
<td>Michael Ison</td>
<td>AHCBA502A</td>
<td>Manage forage conservation</td>
</tr>
<tr>
<td>Forage conservation</td>
<td>Michael Ison</td>
<td>AHCBA502A</td>
<td>AHCBA503A Manage forage conservation</td>
</tr>
</tbody>
</table>

### ALTERNATIVE ELECTIVE SUBJECTS

#### People and Business skill set

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Code</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan and manage infrastructure</td>
<td>AHCAGBS502A</td>
<td>Plan and manage infrastructure requirements</td>
</tr>
<tr>
<td>Manage staff</td>
<td>AHCBUS501A</td>
<td>Manage staff</td>
</tr>
<tr>
<td>Market agricultural products and services</td>
<td>AHCBUS502A</td>
<td>AHCBUS505A Develop a marketing plan</td>
</tr>
<tr>
<td></td>
<td>AHCBUS505A</td>
<td>Market products and services</td>
</tr>
<tr>
<td>Report on field day</td>
<td>AHCWRK503A</td>
<td>Prepare reports</td>
</tr>
</tbody>
</table>

#### Organics skill set

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Code</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop an organic management plan</td>
<td>AHCOR501A</td>
<td>AHCOR502A Develop an organic management plan</td>
</tr>
<tr>
<td>Prepare the enterprise for organic certification</td>
<td>AHCOR502A</td>
<td>AHCOR504A Prepare the enterprise for organic certification</td>
</tr>
<tr>
<td>Manage organic livestock production</td>
<td>AHCOR502A</td>
<td>AHCOR402A Manage organic livestock production</td>
</tr>
<tr>
<td>Manage organic soils</td>
<td>AHCOR403A</td>
<td>AHCOR402A Manage organic soil improvement</td>
</tr>
</tbody>
</table>
Subject details

Core subjects

Develop a whole farm plan

Content
This subject follows a process that encourages assessment of natural resources, producing a farm map with overlays of natural and imposed features, as you work towards producing your ‘ideal plan’. You will produce your farm plan as a series of assignments and overlays produced on an aerial photograph (either digital or hard copy) of your property. Your farm plan will be complete by the end of the course, as the other core and elective subjects you choose will feed into your plan.

Topics
- Obtain and prepare an aerial photograph of your property
- Develop your vision for the farm in consultation with other stakeholders.
- Describe the features and management of the farm as a series of overlays for your farm map and aerial photo.
- Describe your goals, priorities and costings for your ideal property plan.
- Complete your ‘Ideal Plan’ and produce an overlay of your plan.

Learning outcomes
At the end of this subject, you will be able to:
1. Determine directions for the business
   - set the direction of the farm business by identifying goals and values of the people involved
   - conduct a SWOT analysis for the business
   - develop strategies to address the SWOT

2. Audit the natural resources of the property
   - identify physical features of the soils
   - map soil types
   - determine land capability
   - map natural features and infrastructure
   - assess native vegetation

3. Monitor legal requirements
   - be aware of relevant Acts
   - address legal requirements
4. Develop management strategies for managing natural resources
   • develop a property improvement plan with costs and priorities
   • develop plans to repair land degradation
   • develop strategies to address issues that are important to the property
   • develop plans to address pest problems, financial risk and other hazards

5. Review the whole farm plan
   • review plans and revise them to meet changing circumstances

Resources provided
Archer, C & Brouwer, D (2004) Tocal Code of Land Use Practice, NSW Department of Primary Industries, Tocal
Spearpoint, J (2006) Striking the Balance: a family’s quest for a sustainable future in agriculture, Tocal College, Paterson

This subject fulfils the requirements of the Group A competency AHCAGB505A Develop a whole farm plan.
Manage soils

Content
This subject covers the process of monitoring and managing soils in an agricultural or horticultural enterprise. The topics will cover how to interpret soil tests for developing management or production plans, soil improvement programs, soil monitoring and enables you to document a soil management plan.

The main reasons managing soil health is important are:
- as a means of keeping agriculture productive, profitable and sustainable
- the soil performs an important role known as ‘ecosystem services’ which includes filtering water, overcoming and neutralising pollutants, cycling organic matter and providing vital habitat for that web of life of which we are a part.

Topics
- What is soil?
- Look at the land. What you will see?
- Describing, classifying and testing soil
- Improving soil fertility
- Soil organic matter, animals, organisms and soil carbon
- Managing risks to soil health
- Managing for healthy soil
- Your farm plan and its soils

Learning outcomes
At the end of this subject, you will be able to:
1. Research information about soils
   - obtain information about soils from various sources
   - analyse information about soils for relevance
   - research soil properties
   - conduct soil tests or send for analysis

2. Apply information from soil testing
   - interpret soil test results
   - adjust production and property plans

3. Develop soil amendment strategies
   - identify soil features capable of amendment
   - identify suitable soil remedies
   - suitable remedies are purchased and costed
4. Monitor soil amendment strategies
   - record soil management activities
   - test to monitor the performance of soil amendments
   - modify the farm plan and record changes

Resources provided
Brouwer, D, Jenkins, A (2011) *AgGuide - Managing for healthy soils*, NSW Agriculture, Paterson
Brouwer, D (2006) *AgGuide - Fertiliser Essentials*, NSW Department of Primary Industries, Tocal

This subject fulfils the requirements of the Group A competency *AHCSOL501A Monitor and manage soils.*
Manage climate risk

Content
This subject describes how to develop a climate risk management strategy for an agricultural, horticultural or land management enterprise. You will research, analyse and interpret weather, climate and enterprise data, prepare risk management strategies and integrate these at a business management level.

Topics
- Introduction to weather and climate
- How climate impacts on your farm enterprises
- Collecting and analysing weather and climate data
- Identifying climate and weather risks
- Preparing your farm for climate variability

Learning outcomes
At the end of this subject, you will be able to
1. Survey climate and enterprise data
   - obtain historical climate data and interpret from a range of sources
   - identify weather and climate risk factors
   - collect information on normal and significant climate events and their impact on natural and rural systems
   - detail current and historical property and enterprise situation according to enterprise guidelines
   - review short and long term enterprise goals
   - source climate and enterprise data and present and update according to enterprise requirements

2. Identify and analyse climate risks and opportunities.
   - analyse forecasted chances of seasonal climate
   - identify climate risks and opportunities
   - determine impact on production of different weather and climate risk factors according to enterprise requirements
   - identify and develop qualitative and quantitative risk and opportunity factors
   - evaluate the importance of climate variability and significant climate events
   - outline a range of different climate variability risks and opportunities according to enterprise requirements
   - identify contingency options for enterprises and the business
3. Prepare climate risk management strategies
   - analyse climate variability and seasonal climate forecasts
   - address insurance and major climate risk factors in strategies
   - prepare financial outcomes for all strategies according to enterprise guidelines
   - predict impacts on the environment, property value and equity for the preferred strategies
   - review preferred production, enterprise or alternative strategies, and select options according to enterprise requirements
   - present a planned strategy to cope with variable climate and climate risk management in a format according to enterprise guidelines

Resources provided

This subject fulfils the requirements of the Group A competency *AHCAGB501A Develop climate risk management strategies*
Maintain farm safety

Content
This subject defines the standard required to develop OHS policies and procedures for your farm and its enterprises. It will help you establish arrangements to ensure the involvement of all employees in the management of OHS.

Topics
- Ensuring that all workers and stakeholder are adequately informed about the OHS policies and procedures
- Providing opportunity for all workers and stakeholders to have input into OHS processes by participating in risk assessment, reporting of incidents and development of procedures to reduce or eliminate risks.
- Auditing the workplace and keeping good records of hazards and risks, and the strategies developed to address these
- Having an emergency response plan
- Providing workplace induction and ongoing training to improve safety outcomes
- Monitoring workplace safety over time to ensure that standards are continuously improving.

Learning outcomes
At the end of this subject, you will be able to:
1. Provide information about occupational health and safety
   - clearly explain relevant provisions of OHS legislation and Codes of Practice to the work group.
   - provide information on enterprise OHS policies, procedures and programs to the work group.
   - provide information about identified hazards and the outcomes of risk assessment and control procedures to the work group.

2. Facilitate the participation of workers in OHS observance and decision-making
   - implement and monitor procedures for consultation over OHS issues to ensure that all members of the work group have the opportunity to contribute.
   - describe how workers report OHS hazards, risks are assessed and action taken to control risks
   - deal with and resolve any issues raised through consultation
   - promptly communicate the outcomes of consultation over OHS issues to the work group.
3. Implement procedures for identifying hazards and assessing and controlling risks
   • identify and report existing and potential hazards so that adequate risk assessment and effective
     control measures are implemented.
   • implement work procedures to control OHS risks
   • identify and report inadequacies in existing risk control measures
   • identify and report inadequacies in allocation of resources to ensure safe work practice
   • monitor existing risk control measures and report results regularly.

4. Implement workplace procedures for dealing with emergencies and hazardous events
   • implement workplace procedures for dealing with OHS emergencies.
   • report OHS emergencies
   • implement control measures to prevent recurrence and minimise risk of emergencies and hazardous
     events

5. Implement and monitor enterprise procedures for providing OHS training
   • identify OHS induction and training needs.
   • arrange for identified OHS training in both on and off-the-job training programs.

6. Implement and monitor enterprise procedures for maintaining occupational health and safety records
   • complete OHS records for work area accurately and legibly.
   • use information from OHS records identify hazards and monitor risk control procedures within work
     area.

Resources provided
Australian Centre for Agricultural Health and Safety web site – www.aghealth.org.au
SMARTtrain OHS Risk Management of Farm.
WorkCover NSW web site – www.workcover.nsw.gov.au

This subject fulfils the requirements for the competency AHCOHS401A Maintain Occupational Health
and Safety (OHS) processes
Manage the farm business

Content
This subject takes you step by step through the process of developing a business plan for a farm, starting by identifying the stakeholders who will be involved in the planning process and the specialists who will be consulted during the development of the plan.

You then proceed to describe the key aspects of the farm business, beginning with a description of the property and its resources, its enterprises and products, its methods of marketing, its past financial performance and current loan commitments.

The planning process then continues with an analysis of the strengths and weaknesses of the business, and the opportunities and threats it is facing in the future (this is called a SWOT analysis). Based on the SWOT analysis you develop a vision and goals for the future that will guide your detailed plans for the key areas of the farm business. These areas comprise production, marketing, finance, people and resources.

Once you have developed and documented your detailed plans for these key areas of the farm business you then choose performance indicators that will help you to measure progress against your plans, vision and goals.

Topics
- Getting started
- Basic considerations
- Business plan step 1 – where are we now?
- Business plan step 2 – where do we want to be?
- Business plan step 3 – how do we get there?
- Monitor and review business performance

Learning outcomes
At the end of this subject, you will be able to:
1. Determine scope
   - determine the scope of the business plan and associated systems
   - access accurate information for business plan development
   - incorporate trends and seasonal variations into the business plan
   - account for strategic goals, targets and directions of the enterprise in the development of the business plan
   - account for strategic goals targets and directions
   - comply with legal obligations in developing the business plan

2. Prepare business plan
   - identify indicators of operational performance
   - develop operational goals and targets to meet the enterprise strategic plan
   - identify supply chains and incorporate into the business plan
   - identify risk management needs
   - incorporate trial systems to test budgetary impact and operational potential prior to full
3. Document and review business plan
   - include financial and operational systems in the business plan
   - incorporate resource considerations into the business plan
   - document the business plan
   - monitor performance against the business plan to identify strengths, weaknesses and areas for improvement. Make recommendations to improve the business plan and associated systems

4. Evaluate commercial performance
   - gather and analyse data relating to enterprise performance to identify historical and current performance.
   - review and analyse operational structures are reviewed and analysed to determine the suitability of organisational processes to enterprise objectives.
   - evaluate enterprise strengths and weaknesses to determine current and future capacities.
   - evaluate enterprise objectives to identify variations and scope for future development.

5. Allocate and co-ordinate business resources
   - identify and communicate roles and responsibilities of personnel.
   - identify and cost resource requirements for enterprise using standard financial analysis techniques.
   - calculate the costs of ensuring sustainability of enterprise operations and factor these into business planning for the enterprise.

6. Identify performance requirements
   - develop performance indicators that are realistic within available timeframes and resources.
   - identify and minimise factors inhibiting performance.
   - monitor and assess market conditions based on relevant data and assumptions.
   - prepare strategies and programs for sustainability of operations and incorporate these into enterprise procedures.

7. Review business performance
   - review enterprise operations regularly to identify opportunities for improvements in performance.
   - monitor the impact of natural conditions on the enterprise to assess sustainability of resource use.
   - compare costs and estimates with resource allocation.
   - review operational plans to determine schedule of activities.

Resources provided
Walsh, B (2010) *AgGuide - How to write a business plan and review farm performance*, Industry & Investment NSW, Tocal

This subject fulfils the requirements of the Group A competencies AHCBUS506A Develop and review a business plan and AHCBUS507A Monitor and review business performance, and the Group B competency AHCBUS508A Prepare and monitor budgets and reports
Livestock stream

Develop a livestock production plan

Content
You will be asked to provide a detailed description of the livestock enterprise, the land and its facilities as an introduction to the livestock stream of electives.

This subject covers the process of developing production plans for livestock. You will need to determine the feasibility of a livestock enterprise, identify what determines livestock profitability, establish livestock production targets, prepare a production plan, and review production plans. Developing production plans for livestock requires knowledge of livestock husbandry, production and management practices, financial analysis, sustainable land use principles and practices, environmental controls and codes of practice applicable to the enterprise, and whole farm planning processes.

Topics
- Plan for production and livestock needs
- Determine feasibility of livestock enterprise
- Seek information on innovations for existing or potential enterprises and farm activities
- Establish livestock production targets, calendar of operations and budgets
- Implement, monitor and evaluate livestock production plans

NB You must have access to a breeding unit (40 plus) of beef cows or its equivalent in other livestock to undertake this subject.

Learning outcomes:
At the end of this module, learners will be able to:
1. Determine the feasibility of a livestock enterprise
   - assess the farm for its suitability for a range of livestock species.
   - assess potential livestock enterprises for their market potential and gross margin returns.
   - identify the resource requirements.
   - identify production risks and strategies to address them.
   - select livestock species and breeds.
2. Identify and define what determines livestock profitability
   - define production objectives.
   - establish strategies for herd/flock sourcing and improvement, and determine a breeding program.
   - determine feed requirements for each age/sex/category of herds/flock
   - determine a feeding strategy including grazing management for each livestock category.
   - develop a health management program to manage/prevent disease.
   - establish environmental controls as required.
3. Establish livestock production targets and prepare production plan
   - define performance indicators for the livestock enterprise.
   - develop and set product quality specifications and production targets.
• establish a livestock cash flow budget.
• prepare a production plan and a calendar of operations for the enterprise.

4. Review production plans to determine input and service requirements
• plan and arrange transportation and marketing
• establish schedules for the purchase of inputs and services used in production.
• establish a physical and financial record keeping system for analysing livestock production performance.
• review the production plan.

5. Plan for production
• assess the capability of land resources for grazing and stock.
• assess the suitability and sustainability of water resources.
• establish livestock production targets for each enterprise
• establish short and long term livestock production targets that take breeding for herd/flock improvement into consideration.
• select breeds and breeding programs based on the production targets and the marketing requirements for the enterprise.
• select and design production facilities in a way that deals sensitively with waste products.
• establish environmental controls in the production plan.
• identify OHS hazards, assess risks, and incorporate controls into the production plan.
• prepare a plan that documents the decisions taken, the assessments made, the targets established, and any specific issues that relate to environmental and OHS risks.
• develop a plan that includes the type, format, frequency and detail of any reporting required by both manager(s) and operators.

6. Plan for livestock needs
• determine feed requirements for each age/sex category of herds and/or flock
• determine a feeding plan for each livestock category based on a cost benefit analysis.
• devise a health strategy to prevent and control disease in each herd and/or flock on the basis of a cost benefit analysis.
• prepare schedules for purchasing the products and services used in livestock production.
• determine livestock production, harvesting, handling and transportation methods from a cost benefit analysis.
• prepare a livestock production plan that incorporates the calendar of operations for each enterprise production cycle, and any specific animal welfare issues.

7. Seek information on innovations for existing or potential enterprises and farm activities
• identify and access sources of information on innovations
• assess information on innovations to determine whether or not such innovations could be used in the present enterprise, or in a potential enterprise.
• amend prepared production plans to include innovations suitable for the enterprise

8. Test and adopt relevant innovations
• consult any people who may be involved in implementing the innovation or in planning for it, and discuss the change with them.
• test innovations on the farm to determine whether or not they are suitable, and whether they may be readily adapted to suit the circumstances of the business.
• identify and assess any OHS hazards or environmental risks and take responsible action
• decide about whether or not to adopt the innovation, including environmental and OHS considerations.

9. Implement, monitor and evaluate livestock production plans
• implement production plans and monitor according to the calendar of operations.
• site, erect and/or install production facilities in a way that deals sensitively with identified waste products.
• evaluate livestock growth/maturity or production according to the planned targets and the marketing requirements.
• monitor flock/herd health and parasite and control disease outbreaks quickly and effectively.
• assess and monitor feed supplies, pasture or range condition and species composition
• monitor stocking rates and vary to maintain optimum pasture and livestock health.
• identify, monitor and manage environmental impacts and OHS hazards relating to livestock.
• analyse physical and financial records to assess production performance, and to provide information for taxation purposes.
• evaluate the production performance for sustainability and profitability, and to use in reviewing and revising production plans.

10. Comply with legal requirements and regulations
• obtain information about the legal requirements and regulations that affect farm land ownership/possession and livestock production
• determine record keeping requirements, and put in place procedures to ensure compliance with the range of applicable regulations.
• obtain permits from the relevant authorities for the transport and movement of livestock and equipment.

Resources provided
Laffan, J (2009) *AgGuide - Getting started in beef*, NSW DPI, Tocal College
Laffan, J (2009) *AgGuide - Managing and marketing beef*, NSW DPI, Tocal College
If you are studying a livestock production system other than beef, alternative resources will be provided.

This subject fulfils the requirements of the Group A competencies *AHCLSK505A Develop production plans for livestock* and *AHCLSK501A Manage livestock production*.
Develop a livestock breeding strategy

Content
This subject covers the work required to develop and implement a livestock breeding program and defines the standard required to develop a breeding objective. It covers the selection strategies for livestock; use of industry programs to benchmark and identify sources of genetic material. It allows you to monitor progress in a breeding program.

Topics
- Describe and assess your breeding program
- Selecting and culling program
- Monitoring the breeding program
- Evaluating the breeding program

Learning outcomes
At the end of this subject, you will be able to:
1. Assess breeding requirements
   - assess and clarify breeding requirements according to enterprise objectives.
   - organise resources to support breeding requirements.
   - select breeding options to meet enterprise objectives.
   - assess the economic feasibility of the breeding objectives.

2. Select livestock for breeding
   - determine the selection criteria for selecting livestock based on heritabilities and economic returns of selection for traits.
   - establish culling and replacement practices.
   - consider the rate of genetic gain in determining herd or flock structure.
   - source genetic material to achieve genetic gain within the herd or flock
   - check selected livestock to ensure condition and welfare.

3. Monitor breeding program
   - monitor the breeding program for efficiency and effectiveness.
   - make any changes necessary to achieve breeding aims.
   - maintain a safe workplace and environmentally responsible practices.
   - comply with relevant legislative requirements associated with livestock production.

4. Evaluate breeding program
   - review the breeding program
   - evaluate the performance of facilities, resources and equipment.
   - evaluate the effectiveness of selection criteria.
   - document relevant information to inform future practice.
Resources provided
Laffan, J (2009) AgGuide Getting started in beef, NSW DPI, Tocal College
Laffan, J (2009) AgGuide Managing and marketing beef, NSW DPI, Tocal College
If you are studying a livestock production system other than beef, alternative resources will be provided.

This subject fulfils the requirements of the Group A competency AHCLSK503A Develop and implement a breeding strategy
Arrange marketing of livestock

Content
This subject covers the process of arranging for the marketing of livestock and associated products and defines the standard required to: identify appropriate markets and sales opportunities; calculate cost of production and target sale price; ensure that the product meets legislative and industry requirements for fitness for sale; select selling method and negotiate with brokers, sellers and agents; arrange transport/delivery.

Topics
- Introduction and principles
- Determining what animals to sell, when to sell and how to prepare for the sale
- Arranging transport, sale, payments and records of sales
- Record and review sales for future planning

Learning outcomes.
At the end of this subject, you will be able to:
1. Determine sales characteristics and demand
   - identify potential purchasers and their purchasing requirements
   - observe current and recent sales to monitor market trends and patterns.
   - monitor and review regulations to ensure quality assurance and fitness for sale.
   - determine your ability to deliver a product to meet market demand.

2. Sell product and arrange transport
   - research sale logistics and incorporate into marketing strategy.
   - consult sale outlets about market prospects and preferred sale method.
   - complete transport arrangements in time for sale; prepare and organise facilities and animals
   - complete negotiations with agents, brokers and buyers.
   - arrange payments.

3. Assess sales performance
   - obtain and analyse sales data against marketing plan and enterprise requirements.
   - analyse strengths and weaknesses of performance.
   - review sales strategies are reviewed
   - record data for future reference according to enterprise, industry and legislative requirements.

Resources provided
Laffan, J (2009) AgGuide - Getting started in beef, NSW DPI, Tocal College
Laffan, J (2009) AgGuide - Managing and marketing beef, NSW DPI, Tocal College
If you are studying a livestock production system other than beef, alternative resources will be provided.

This subject fulfils the requirements of the Group A competency AHCLSK502A Arrange marketing of livestock
Develop livestock health and welfare strategies

Content
This subject covers the knowledge and actions you need to design and implement preventative health treatment and programs for livestock and defines the standard required to identify common livestock diseases.

Topics
- Prepare a health strategy for livestock
- Implementing a livestock treatment program
- Prepare a livestock welfare strategy
- Monitor your livestock health and welfare strategy

Learning outcomes
At the end of this subject, you will be able to:

1. Determine health strategy for livestock
   - monitor livestock condition and identify risks to health and welfare.
   - implement a program of monitoring parasites and diseases.
   - document preventative health strategies in a livestock health plan.
   - integrate treatments based on veterinary medicines with other parasite and disease control strategies, if applicable.
   - plan a treatment program, to meet livestock health requirements, legislative and enterprise requirements.
   - identify and organise facilities and equipment required to implement a health strategy.
   - brief staff on details of treatment programs, schedules and Occupational Health and Safety (OHS) issues.

2. Implement treatment program
   - diagnose livestock condition according to symptoms and signs following veterinary guidelines.
   - refer complex problems or signs of disease for specialist advice and treatment.
   - plan and administer treatment according to veterinary guidelines and animal welfare codes of practice.
   - carry out control measures to prevent the spread of communicable diseases.
   - implement procedures for reporting notifiable diseases according to legislative requirements.

3. Manage livestock welfare
   - integrate an animal welfare code of practice into the production plan.
   - continually monitor livestock for access to feed and water and health status.
   - treat and monitor, or euthanase, injured or sick animals.
   - ensure animals are provided with adequate shade and shelter.
   - document and record welfare issues according to industry standards, legislative and enterprise requirements.
4. Monitor health strategy
   - comply with withholding periods for veterinary medicines according to manufacturer’s instructions.
   - monitor livestock post-treatment for evidence of treatment effectiveness and any further health problems.
   - review the animal health plan.
   - comply with travel and quarantine restrictions
   - store health supplies according to manufacturer’s recommendations and enterprise requirements.
   - data is documented and accurate records are maintained according to industry standards, legislative and enterprise requirements.

Resources provided
Laffan, J (2009) AgGuide - Getting started in beef, NSW DPI, Tocal College
Laffan, J (2009) AgGuide - Managing and marketing beef, NSW DPI, Tocal College
If you are studying a livestock production system other than beef, alternative resources will be provided.

This subject fulfils the requirements of the Group A competency AHCLSK504A Develop livestock health and welfare strategies.
Feed livestock

Content
This subject covers the process of learning about the livestock production system you are engaged in or would like to develop on your farm. This subject help you to match the nutritional demands of the animals with feed supply, assess the feed available to stock from pasture and their likely performance, determine an effective and sustainable grazing management strategy, identify pasture shortfalls and supplementary feeding alternatives, determine suitable feed conservation methods or fodder sources and document this information in a livestock feeding plan.

Topics
- Define your livestock production system
- Understand the nutritional demands of livestock
- Assess feed availability
- Effective grazing strategies
- Pasture shortfalls, fodder conservation and supplementary feeding
- The feeding plan

Learning outcomes
At the end of this subject, you will be able to:

1. Determine nutritional requirements for livestock
   - nutritional value of pasture and feedstuffs is determined.
   - livestock production status is identified and assessed according to enterprise requirements.
   - essential requirements for livestock nutrition are determined according to assessed livestock condition.

2. Assess pasture feed
   - grazing management strategy is determined to ensure the sustainable stocking capacity of pasture.
   - pasture is monitored for quantity and quality to ensure continual and consistent supply of nutrients to livestock.
   - pasture intake is monitored and assessed according to identified nutritional requirements of livestock.

3. Determine supplementary feeding program
   - economic basis to supplementary feeding is determined according to enterprise requirements.
   - types of supplementary feed are identified and determined for all classes of livestock.
   - supplementary feeding program is determined to fill the pasture shortfall for predicted pasture growth.
4. Develop livestock feeding plan
   - feeding plan is developed and reviewed to ensure it remains responsive to changing conditions.
   - suitable feed conservation methods or fodder sources are identified and carried out in preparation for abnormal conditions.
   - a system of feeding is selected that supplies the appropriate amount of feed to the herd/flock to meet condition and growth needs, and that meets production requirements of the business.
   - a feed budget is prepared according to the selected system of feeding.
   - data is documented for continual assessment and effective management planning.

Resources provided
Laffan, J (2009) AgGuide - Getting started in beef, NSW DPI, Tocal College
Laffan, J (2009) AgGuide - Managing and marketing beef, NSW DPI, Tocal College
If you are studying a livestock production system other than beef, alternative resources will be provided.

This subject fulfils the requirements of the Group C competency AHCLSK401A Develop feeding plans for a production system
Crop and pasture stream

Develop crop production plans

Content

You will be asked to provide a detailed description of the cropping (and/or pasture) enterprise, the land and its facilities as an introduction to the cropping stream of electives.

This subject covers the work required to plan agricultural crop production. It applies skills and knowledge to agricultural crop establishment, growth and harvesting plans. You will investigate the factors that determine crop yield; markets and prices for a crop; gross margins; disease and pest management.

Topics

- Assess and choose suitable crop species and cultivars
- Produce targets for crops
- Produce paddock plans and a crop establishment schedule
- Design a fertiliser program for crops
- Develop a weed control program
- Plan the harvest
- Maintain records and review your production plan

Learning outcomes.

At the end of this subject, you will be able to:

1. Select crop species and variety
   - assess and select crop types and varieties for their market potential and gross margin returns
   - select cultural practices and rotations for disease and pest management, available machinery, and sustainability of resources.
   - identify risks to production and address these.
   - identify environmental risks and develop strategies to overcome these.

2. Determine yield potential for a crop
   - source benchmark yields to assist in setting target yields.
   - use past production records to determine what affects crop yield.
   - where appropriate, use models for calculating water use efficiency.
   - establish quality specifications and target yields

3. Prepare individual paddock plans and a whole farm crop production plan
   - assess paddocks for their nutrient, pest and disease status, water reserves, tillage requirements, and other factors before selecting crop variety.
   - use records of chemical use are used, as appropriate, to assist planning to reduce chemical resistance.
   - plan and select the crop variety; paddock preparation, planting, fertilising and other treatments.
   - choose the best timing of planting, and prepare a calendar of operations.
   - develop a cash flow budget for the farm-cropping program.
4. Review production plan
   - plan harvesting/transportation/marketing operations.
   - plan and check machinery and equipment for the crop production cycle.
   - identify labour requirements for the crop production cycle.
   - identify seed, fertiliser, pest and disease treatments.
   - establish physical and financial records for crop performance, including records of chemical use.
   - review and, if needed, amend the production plan.

5. Develop an agricultural crop establishment program
   - establish production targets for each crop type that meet marketing and enterprise objectives.
   - select varieties that are suited to soil, climate, seasonal conditions and marketing goals.
   - determine irrigation schedules, where required.
   - assess the nutrient needs of the crop to develop a fertiliser program.
   - identify the budgetary constrains.
   - develop a crop establishment program to meet production targets and enterprise objectives.

6. Develop agricultural crop maintenance plans
   - plan strategic grazing to reduce or eradicate weed infestation where appropriate.
   - determine fertiliser applications and rates for the crop
   - monitor soil moisture levels and adjust watering schedule if appropriate.
   - minimise waste and soil degradation according to environmental standards.

7. Develop agricultural crop harvesting plans
   - determine the long term trends in weed, pest and disease incidence and implement control measures.
   - monitor soil structure and erosion are monitored and necessary change to cultural practices if necessary.
   - check and maintain irrigation and drainage systems.
   - monitor grazing management to ensure crop production levels.
   - monitor crop maturity is monitored and undertake harvesting.

8. Review production levels
   - monitor crop yields against forecast production levels.
   - evaluate grazing and cropping programs are evaluated for efficiency and effectiveness, and document these for future best practice.
   - evaluate production performance.
   - maintain physical and financial records of production for analysis.

Resources provided
If you are studying a cropping system other than wheat, other resources will be suggested.

---

This subject fulfils the requirements of the Group A competencies AHCBA507A Develop production plans for crops and AHCBA501A Manage agricultural crop production.
Manage crops and pastures

Content
This subject covers the area of growing, managing and utilising of pastures and crops in an integrated way. Often the pastures and crops will be grown for crop products but also for livestock production. Managing livestock, crops and pastures requires high levels of skills and knowledge of these systems.

Topics
- Principles of pasture and forage crop production
- Assess your current pasture and crop management
- Pasture and crop programs
- Implement and monitor pasture and crop management
- Record and review production

Learning outcomes.
At the end of this subject, you will be able to:
1. Develop a pasture and crop program
   - establish production targets for each crop and pasture.
   - select plant varieties suited to soil, climate, seasonal conditions and markets.
   - determine irrigation schedules, where required.
   - assess nutrient requirements and choose a fertiliser program.
   - identify and maintain budgetary constraints
   - develop a pasture and crop program to meet production targets and enterprise objectives.

2. Implement a pasture and crop management program
   - implement and monitor a pasture and crop program.
   - use strategic grazing to reduce or weed infestation where planned.
   - determine fertiliser applications and rates appropriate to crop/pasture.
   - apply crop and pasture nutrients to assure yield and sustainability of pasture.
   - monitor soil moisture and a watering schedule.
   - minimise waste and soil degradation.

3. Monitor crop/pasture growth and fodder production
   - determine long term trends in weed, pest and disease and change control measures if necessary.
   - monitor soil structure and erosion and make any necessary changes to cultural practices, grazing management and drainage.
   - check and maintain irrigation and drainage systems regularly.
   - monitor grazing management for high pasture and livestock production levels.
   - identify any feed surpluses and defined
   - monitor crop/pasture maturity is monitored and undertake harvesting.
4. Review production levels
   - monitor and evaluate pasture and crop yields.
   - evaluate and document grazing and cropping programs.
   - evaluate and document performance of each enterprise and revise management program.
   - maintain physical and financial records of production and evaluation of performance.

Resources provided
Laffan, J 1999, Cropping systems for sustainable Wheat production, NSW Agriculture, Tocal
Brouwer, D (ed) 2010 Pasture species for NSW, NSW DPI Tocal
Lattimore et al 2010 Pasture varieties used in NSW, NSW DPI Orange
NSW Department of Primary Industries website: http://www.dpi.nsw.gov.au/agriculture
If you are studying a cropping system other than wheat, other resources will be suggested.

This subject fulfils the requirements of the Group A competency AHCBAC503A Manage integrated crop and pasture production.
Manage weeds in crops and pastures

Content
This subject covers the process of assessing pest and land management information and developing a plan for the management of the pests. The pests under study for this subject will be plant species—weeds. You will select management options for the target weed species and negotiate strategies with stakeholders in the affected area. You will need to know the relevant legislation and regulations, pest control methods and techniques, social and environmental issues, land use processes, plant identification and weed biology.

Topics
- Define the weed problem in a landscape
- Understand weeds and their growth
- Manage a weed problem
- Chemical and non-chemical control methods
- Develop an action plan for weed management.

Learning outcomes.
At the end of this subject, you will be able to:
1. Source information for input to weed control planning
   - identify and access records to use for weed control planning.
   - gather information from other enterprises within the district.
   - access information on the crop(s) planned for, or under production.
   - gather information on the local geography, soil and climatic conditions.
   - consider the environmental implications of pesticide/herbicide use, alternative methods and non-chemical preventative methods.

2. Determine long-term weed control strategies
   - gather and analyse information for suitable methods of weed control.
   - consider the impacts of these methods of control.
   - determine the strategies for weed control are determined that integrate the most suitable control methods.
   - establish environmental controls and include in the plan.
   - identify OHS hazards and assess risks.

3. Provide input to other planning processes
   - collect information on other planning to inform the weed control planning process.
   - communicate this information verbally and/or in writing.

4. Determine scheduling and key responsibilities
   - determine scheduling for weed control taking into account seasonal, geographic and resourcing factors.
   - determine key responsibilities for specific work.
• determine what record keeping requirements are put in place to ensure compliance with regulations.
• document the plan, including scheduling and key responsibilities.

5. Monitor and adjust weed control strategies
• evaluate the effectiveness of the weed control strategies at key points, and make any necessary adjustments.
• identify, monitor and assess environmental impacts and OHS hazards.
• modify the strategy as and when necessary.

6. Evaluate weed control strategies and record results
• analyse data and observations against the original plan.
• recommend future strategies based on the analysis of the data.
• prepare a report that includes:
  - any difficulties or issues faced
  - the methods used for treatment
  - impacts on environmental and OHS
  - any recommendations for future work
  - results
  - costs
  - and any available data analysis.

Resources provided
Bayley, D & Brouwer, D 2013 Managing Weeds NSW DPI, Tocal
NSW Department of Primary Industries website: http://www.dpi.nsw.gov.au/agriculture

This subject fulfils the requirements of the Group A competency AHCBA505A Plan and manage long-term weed, pest and/or disease control in crops.
Manage pastures and forage crops for livestock

Content
This subject has a focus on the TopForage Silage farmer short course conducted by NSW DPI. It is designed to provide you with the skills and knowledge to increase the feed value of silage by 1 MJ and reduce the storage and feedout losses by 20% through the development of your own silage making management plan.

You will learn how to manage agricultural crops and pastures for forage conservation. To do this you will apply skills and knowledge to maximise pasture and crop production for forage crops and how to conserve forage of high quality while minimising losses in making, storage and feed out.

This will involve strategies to assess cost benefits of conservation, conservation methods, selecting suitable machinery and overseeing the harvesting and storage.

This subject also covers the effective conservation of pastures and forage crops to enable optimum stocking rates and efficient use of pasture and crop resources for animal production.

This subject is a broad framework based on pasture and crop management principles for a wide range of agricultural enterprises. In each assessment task you will need to choose specific examples relevant to your own enterprise.

Topics
- Plan to conserve pastures and forage crops
- Prepare paddocks for forage conservation
- Oversee forage harvesting operation
- Complete conservation

Learning outcomes
At the end of this subject, you will be able to:
1. Plan for forage conservation
   - determine the resource needs and end use requirements of forage conservation in the farm production system.
   - define forage conservation options and cost benefit
   - select appropriate paddocks for forage conservation with regard to species selection and target growth stage.
   - select appropriate forage conservation machinery, equipment and personal protective equipment in accordance with manufacturer’s specified Occupational Health and Safety (OHS) requirements and industry practice.
   - ensure safe access to paddocks for harvesting and transport machinery.
   - plan and prepare storage facility/system for selected forage conservation method.
   - identify and minimise potential environmental impacts of forage conservation activities.
   - negotiate contracts and costs including crop inputs, machinery, harvest area and storage sites where applicable.
• communicate details of work activities with workers and/or contractors where applicable.

2. Prepare paddocks for forage conservation
• identify need for fertiliser, irrigation, weed control and grazing or slashing before closing paddock to stock at appropriate time.
• identify optimum time for harvest of key species.
• monitor and control weeds, pests and diseases.

3. Oversee forage harvesting operations
• establish dry matter targets for the selected method of forage conservation.
• monitor seasonal and current weather conditions to determine optimum time for harvest and to ensure quality.
• assess condition and dry matter content of the crop throughout the harvesting operation.
• select harvesting and conditioning machinery based on weather conditions and forage drying targets.
• ensure that harvesting activities are conducted in a safe, controlled and efficient manner.
• ensure that baling, wrapping, compacting, sealing and/or storage of forage is in accordance with storage plan.
• ensure that forage is safely loaded, transported and stored in accordance with OHS and quality requirements and to minimise spoilage and the risk of combustion.

4. Complete operation
• complete records in accordance with quality assurance requirements and industry practice.
• ensure waste and debris is disposed of to minimise environmental impact.
• ensure that machinery and ancillary equipment is cleaned and serviced in accordance with manufacturer’s specified OHS requirements and industry practice.
• conduct quality checks on stored forage.
• monitor and minimise environmental impacts of forage conservation activities including concentration of nutrients at field out areas and effluent run-off.

Resources provided
Brouwer, D (1992) Pastures NSW Department of Primary Industries
Griffiths,N 2011 Successful silage: Farmer short course workbook
Griffiths,N 2011 Pastures: Hunter, Manning and Metropolitan NSW DPI

This subject fulfils the requirements of the Group A competency AHCBCAC502A Manage forage conservation.
People and business skill set

Plan and manage infrastructure

Content

This subject develops the skills and knowledge required to plan and determine the infrastructure requirements of a rural or agribusiness enterprise, obtain or build the required infrastructure, manage infrastructure on an ongoing basis, and keep records that can be used to report on and review the infrastructure of the business. Throughout all of these processes emphasis is placed on work health and safety (WHS), sustainable production practices and care of the environment.

The subject aligns to the Unit of Competency AHCAGB502A Plan and Manage Infrastructure Requirements which is a component of the Bachelor of Agrifood Systems at the University of New England, Armidale. The unit also can form part of a Diploma or Advanced Diploma of Agriculture, a Diploma or Advanced Diploma of Agribusiness Management and other related national qualifications.

Topics

There are four topics in this subject.

- Determine infrastructure requirements
- Obtain or build infrastructure
- Manage infrastructure
- Keep records and manage information.

Learning outcomes.

At the end of this subject, you will be able to:

1. Determine infrastructure requirements
   - You will understand the term ‘infrastructure’ and how the planning for new or improved infrastructure sits within the wider context of the business and property plan as well as the organisational, regulatory and compliance context. You will learn how to take stock of existing infrastructure as the starting point from which to identify and determine future infrastructure needs.

2. Obtain, prepare or build infrastructure
   - You will learn how to evaluate various options or alternative approaches to upgrading a particular piece of infrastructure, including the important aspect of budgets and analysis of costs and benefits and then look briefly at managing installation or construction, including risk management.

3. Manage infrastructure
   - You will learn about scheduling the maintenance of infrastructure, responding effectively to breakdowns and unplanned maintenance, and the timely replacement of infrastructure items according to a schedule or needs and available finance.

4. Record and manage information
   - You will learn how to keep the records required to maintain farm infrastructure in good working condition and replace plant and machinery according to agreed schedules and budgets.
Resources provided
Resources are included in the online subject and relate to each assessment task

This subject fulfils the requirements of the Group B competency *AHCBUS502A Plan and manage infrastructure requirements.*
Manage staff

Content
This subject covers the work required to manage staff, especially in relation to a rural enterprise. It applies skills and knowledge to recruiting, inducting, communicating and training employees. There is an emphasis in the course on following legislation and complying with OHS requirement.

The Manage staff subject focuses on how a farm business can develop a positive workplace culture that is characterised by vision, values and effective communication.

Topics
- Introduction and principles
- Attracting and engaging people
- Negotiating working arrangements
- Building sound and productive working relationships
- Creating and implementing polices and procedures.

Learning outcomes.
At the end of this subject, you will be able to:
1. Prepare task descriptions and person specifications
   - identify and describe tasks along with the range of conditions.
   - determine the most appropriate employment arrangements based on employer and employee needs, and responsibilities and rights.
   - prepare the person specifications are prepared with due regard to legislation, codes and national standards.

2. Manage workforce performance
   - design an induction program for each employee.
   - establish terms of engagement for consultants and contractors.
   - conduct induction programs for new appointees and establish appropriate records.
   - design strategies for communicating with workers.
   - identify processes for the terminating non-performing staff.

3. Support workforce training programs
   - design and implement strategies to identify skill and knowledge gaps and address these gaps.
   - provide on-the-job training for worker performance and to ensure safety and fairness in the workplace.
   - identify and source off-the-job training as appropriate.

4. Manage administrative support
   - implement processes and procedures for the administration of staff records.
   - establish and monitor industrial relations; adhere to awards, negotiate enterprise agreements and/or contracts of employment, and resolve disputes and conflicts

5. Implement OHS priorities and procedures
   - develop and communicate safety policies.
• design safe work practices for the enterprise.
• communicate and enforce safe work practices among all members of the workforce.
• involve all members of staff in hazard identification and risk assessment for OHS.
• induct new staff into the workplace OHS system.

Resources provided
Ison, M & Bell C (2011) Working with people in Agriculture, NSW DPI, Tocal

This subject fulfils the requirements of the Group A competency AHCBUS501A Manage staff.
Market agricultural products and services

Content
This subject of study takes you step by step through the process of exploring the concepts of marketing chains and value-adding, followed by consideration of how to undertake market research, analyse market trends and identify key factors that affect the market performance and outlook for particular rural products or services.

You will then learn how to identify and record the key market specifications and quality indicators for a chosen product or service and the factors that determine price premiums and penalties.

This is followed by how to develop a comprehensive marketing plan for a chosen agricultural product or service. Your marketing plan will include market research, market specifications, selling methods and promotional strategies. You will complete this process by learning how to monitor and evaluate your progress and success in marketing.

Topics
- Getting started
- Basic considerations
- Market specifics and quality focus
- Selling unbranded products
- Price risk management
- Marketing branded or niche products
- The marketing plan – putting it all together

Learning outcomes
At the end of this subject, you will be able to:
1. Evaluate commercial information
   - research and analyse relevant information to identify market trends.
   - identify and evaluate competing products to determine strengths and weaknesses of your own products.
   - present collated information to provide clear and concise information.
   - conduct market analysis using established techniques in accordance with available budget and the need for external assistance.

2. Identify marketing requirements
   - create promotional materials that enhance the product and commercial presentation.
   - record and communicate priorities, responsibilities, timelines and budgets to appropriate colleagues.
3. Determine promotional strategies
   - prepare and record detailed plans for promotional activities.
   - outline in the promotional plan are objectives, level of exposure to be achieved and available markets.
   - strategies take account of feedback from staff, time management and scheduling issues, and resource constraints.
   - establish marketing objectives based on new and retained business consistent with product and operational business plans.

4. Organise implementation
   - establish criteria to measure impact and success of promotional activities.
   - make adjustments to the promotional strategy promptly to ensure consistency of promotion.
   - define and establish distribution channels

5. Analyse market information
   - identify markets for new or existing products or services and analyse their potential for entry or development
   - analyse past trends to determine market variability and risks
   - monitor the market environment to ensure information is current and reliable
   - identify legal, ethical and environmental constraints of the market and their effect on the enterprise
   - adopt a product mix that suits market requirements and price advantage

6. Develop a marketing plan
   - assess alternative strategies and techniques to identify marketing targets and methods
   - base marketing strategies on reliable market data, conditions and trends
   - incorporate advice from suitable marketing professionals
   - develop a measurable, cost-effective marketing plan that includes an analysis of market research and business plan objectives

7. Implement marketing activities
   - schedule marketing activities within appropriate timeframes
   - develop measurable performance targets that meet business plan objectives
   - organise distribution channels and ensure product information is accurate and readily available
   - implement marketing activities within budget, legal, ethical and enterprise requirements and constraints

8. Evaluate marketing performance
   - monitor product, pricing and distribution in relation to market changes, objectives and enterprise requirements
   - identify areas of positive performance and act to remedy areas of poor performance
   - compare market results against targets
   - make a record of evaluation of marketing performance to assist ongoing analysis

Resources provided

This subject fulfils the requirements of the Group B competency AHCBUS505A Develop a marketing plan and the Group B competency AHCBUS502A Market products and services
Report on a field day

Content
This subject comprises a comprehensive report on a field day, workshop, seminar or conference. It requires the ability to research material, evaluate information, produce a document, and deliver an oral presentation. Preparing reports requires knowledge of information and research sources, report structure and presentation, and public presentation techniques and approaches.

Topics
- Define your audience
- Setting out a report using relevant headings
- Determining the topic of the report
- Collecting and organising information
- Writing in appropriate language for a particular audience
- Delivering a report to an audience

Learning outcomes
At the end of this subject, you will be able to:
1. Research material
   - identify and describe the topic of the report
   - determine sources of information.
   - collect information appropriate to the task and organise it according to enterprise standards.

2. Evaluate information
   - collect information that is relevant and sufficient to provide a full report.
   - where information is unclear or difficult to understand, seek clarification and assistance.
   - where available information is inadequate, obtain additional information.
   - assess information for its validity and reliability, and organise it into a suitable form to aid decision-making.
   - base conclusions on reasoned argument and appropriate evidence.

3. Produce a document
   - use language applicable to the task and audience.
   - organise the document logically, structure and balance it according to purpose, audience and context.
   - format and present the document according to business and enterprise standards.
   - ensure conclusions reached reflect the stated objectives of the report.
   - complete the preparation within the specific timeframe.

4. Deliver an oral presentation
   - use language applicable to the task and audience
   - organise the presentation logically; structure and balance it according to purpose, audience and context.
   - use concise and well presented support materials.
   - deliver the oral presentation within a specific time.
Deliver an oral presentation
You will use your report to record a presentation and include this with your assessment. Imagine you are presenting your report to a group of farmers who were unable to attend the event you are reporting on. Include all important findings, impressions and descriptions of the event. The time allocated for your presentation is 10 minutes.

Resources provided
Brouwer, D 2001 Effective Writing Skills, Tocal College, Paterson

This subject fulfils the requirements of the Group C competency AHCWRK503A Prepare reports
Organics skill set

Develop an organic management plan

Content
This subject looks at what is needed to develop an organic management plan (OMP) to convert an agricultural or horticultural farm to an organic, biological and ecological system. The subject involves designing an organic farming system to use as the basis for implementing the plan.

Topics
• Investigate sources of information and expertise for an organic management plan
• Investigate regional catchment plans
• Develop a soil fertility plan
• Develop a weed control program
• Design a pest management plan
• Maintain records and review your production plan

Learning outcomes.
At the end of this subject, you will be able to:
1. Locate and access assistance in developing the OMP
   • locate and access sources of support, advice and training.
   • access suitable industry publications and internet sources to inform decision making.
   • seek and consider input from work colleagues and others during planning process.

2. Design the organic farming system to be described in the OMP
   • develop or obtain a map of the property.
   • determine the time scale to be addressed in plan.
   • collect information on soil fertility and management, and weed, pest, disease and animal health status to use as benchmarks.
   • obtain regional catchment targets for land, water and biodiversity.
   • identify components of OMP for development.
   • use a suitable format for planning documents.

3. Develop soil fertility sub-plan
   • undertake a soil fertility assessment of the farm.
   • map soil types and topography on farm plan.
   • develop a soil fertility plan.
   • identify appropriate inputs according to the National Standard for Organic and Biodynamic Produce.
   • document the sub-plan.

4. Develop soil management sub-plan
   • determine the suitability of land for production based on soil type, slope, aspect and previous use.
   • develop a soil management plan to improve structure, prevent compaction and water logging.
   • identify appropriate inputs according to the National Standard for Organic and Biodynamic Produce.
   • document the sub-plan.
5. Develop weed management sub-plan
   • identify problematic weed species and observe weeds as an indicator of soil health.
   • identify life cycles of weeds species.
   • identify appropriate inputs according to the National Standard for Organic and Biodynamic Produce.
   • develop options for managing weeds.
   • document the sub-plan.

6. Develop and design an integrated pest and disease management sub-plan
   • collect and document evidence of pest and disease burden in farming system.
   • observe and monitor pests and diseases and their life cycles.
   • evaluate the pest and disease burden.
   • identify options for addressing pest and disease issues.
   • identify appropriate inputs according to the National Standard for Organic and Biodynamic Produce.
   • document the sub-plan.

7. Develop animal health sub-plan
   • identify regional and farm-based animal health issues.
   • identify options for preventative actions of animal health.
   • identify options for treating animal health issues.
   • document the sub-plan.

8. Integrate and finalise the organic management plan
   • integrate the above sub-plans.
   • develop a record-keeping system to track various components of OMP as they are put into practice and reviewed.
   • review and update the OMP annually.

Resources provided

This subject fulfils the requirements of the Group A competency AHCORG501A Develop an organic management plan
Prepare the enterprise for organic certification

Content
This subject specifies what is required to prepare an existing enterprise for organic certification. Work is likely to be done with minimal supervision and with the objective of complying with the Australian Quarantine and Inspection Service (AQIS), accredited certification bodies and the National Standard for Organic and Biodynamic Produce.

Topics
- Access industry standards and specific for an organic enterprise
- Develop a risk assessment analysis for soil contamination on the property
- Document how compliance with the standards will be achieved
- Product specific and customer feedback

Learning outcomes.
At the end of this module, learners will be able to:
1. Investigate and access information sources and support for conversion to organic production.
   - establish contact with other organic producers and marketers of organic products.
   - identify and access sources of support and advice and training programs.
   - assess literature, industry publications and internet sources of information for usefulness and reliability.
   - obtain certification requirements from certification bodies.
   - investigate the roles and responsibilities of inspector, certification and accreditation bodies.

2. Conduct a risk assessment of the site.
   - identify and document previous land use and chemicals applied on the site.
   - undertake and document a risk assessment for potential on-farm contaminants.
   - assess potential contamination risk from off-farm land use and agricultural practices.
   - incorporate risk management procedures into a certification preparation plan.

3. Develop and implement hazard analysis critical control point (HACCP) based procedures.
   - identify and document production processes according to certification bodies’ requirements and the National Standard for Organic and Biodynamic Produce.
   - identify quality, organic and statutory product standards to be met. Document these and compare to the actual standards achieved by product and enterprise.
   - document corrective actions or improvements to processes and activities.
   - develop and implement procedures and processes for monitoring and annual review.

4. Manage customer feedback
   - develop and implement procedures to obtain, analyse and respond to customer feedback on quality and integrity of organic product.
   - develop and monitor product recall procedures
Resources provided

This subject fulfils the requirements of the Group A competency *AHCORG502A Prepare the enterprise for organic certification*
Manage organic livestock production

Content
This subject investigates what is required to integrate livestock production into an organic production system. This involves complying with animal health and welfare guidelines, developing grazing strategies for nutrient recycling within the system, monitoring animal health and maintaining relevant records. Managing organic livestock production requires knowledge of animal health and welfare, animal husbandry and management, breeding practices, organic certification requirements, and relevant animal welfare legislation and codes of practice.

Topics
- Manage animal health and welfare
- Develop a feeding program for livestock
- Encourage biodiversity in a grazing system
- Manage soil inputs and outputs

Learning outcomes.
At the end of this subject, you will be able to:
1. Manage animal health and welfare.
   - undertake all work according to the principles of organic agriculture, OH&S requirements and enterprise guidelines.
   - consider natural behaviours of animals and requirements of animal welfare codes of practice.
   - incorporate genetic resistance to parasites into breeding strategy.
   - monitor livestock for health and welfare and keep records.
   - develop and implement animal health preventative strategies.
   - document use of prohibited/restricted substances for organic livestock and identify and quarantine treated animals.
   - conduct animal transport humanely and comply with organic certification requirements.
   - maintain livestock records required for organic certification.

2. Develop and implement feed production and storage requirements.
   - plan for winter feed and drought.
   - incorporate haymaking and/or cropping into the animal feed program.
   - provide storage for hay and feed and monitor quality and quantity.

3. Develop and implement grazing strategies to achieve biodiversity, recycling and sustainability.
   - maintain soil and plant health to provide a balanced diet for livestock.
   - assess pastures for diversity, health, vigour and ground cover.
   - identify infrastructure needed for rotational grazing and incorporate these into a property improvement program.
   - develop and implement rotational grazing strategies.
   - evaluate the impact of grazing strategies on nutrient recycling and pasture diversity, persistence and vigour.
   - implement strategies for controlling weeds in pastures.
4. Research and source allowable inputs for organic livestock production.
   • estimate the level of nutrients exported from the farm.
   • conduct a soil-testing program, including observation of pasture species for optimal pasture species and soil health.
   • replenish soil nutrient levels through recycling and sourcing allowable inputs.
   • apply organic fertilisers and soil conditioners for a mineral-balanced and healthy soil.
   • follow certification protocols for sourcing essential fodder off-farm.
   • source fodder and feed for stock, minimising risk of weed spread and maintain adequate records.

Resources provided

This subject fulfils the requirements of the Group B competency AHCORG402A Manage organic livestock production.
Manage organic soils

Content
This subject investigates how to improve and manage soils for organic production. The subject involves taking samples of soil and plant tissue and analysing results. It also requires improving soil fertility in response to sample testing by modifying cultivation practices. This subject requires knowledge of the processes of soil formation and interactions between the soil, plants and animals.

Topics
- Indicators of soil fertility
- Plant nutrition
- Building soil organic matter and biological activity

Learning outcomes.
At the end of this subject, you will be able to:
1. Monitor indicators of soil fertility.
   - work in an environmentally appropriate manner and according principles of organic agriculture, OH&S requirements and enterprise guidelines.
   - conduct soil testing at reference sites according to enterprise procedures and organic industry standards.
   - assess and record soil acidity (pH), mineral balances and organic matter levels.
   - assess and record soil texture, structure, salinity and sodicity.
   - analyse results to identify trends and areas for improvement.

2. Assess soil-related factors for selected plants.
   - identify nutrient needs of selected plant species.
   - select suitable testing facilities for soil analyses.
   - collect soil and plant tissue samples.
   - analyses results of soil and tissue testing.
   - assess soil condition is assessed for drainage, compaction, aeration and water infiltration.
   - assess soil biological activity by identifying and evaluating presence of organisms.
   - assess soil health by identifying and evaluating plant species present.

3. Select and implement allowable techniques and inputs to optimise soil fertility.
   - identify the allowable inputs according to requirements of the National Standard for Organic and Biodynamic Produce.
   - use suitable nutrient cycling techniques.
   - calculate appropriate inputs based on soil/plant analyses, crop removal and plant/animal observations.

4. Select and manage cover crop and pasture systems.
   - use mulching and composting systems.
   - use rotations to increase soil fertility.
   - select cultural practices to improve soil fertility.
Resources provided

This subject fulfils the requirements of the Group B competency AHCORG403A *Manage organic soil improvement*. 
Other learning activities

There are no residential schools for this course. There are, however, some short courses held each year at the college that may be useful to completion of an assessment task or unit of competency. If you feel you need extra tuition or an introduction to a subject, please check our current offerings of short courses which are advertised on our website (http://www.tocal.nsw.edu.au/courses/list) and by brochures obtained from the college.

There are many short courses conducted by Tocal College that do not directly relate to Diploma of Agriculture subjects but your participation in some of these courses may greatly enrich your learning because of their hands-on practical nature.

Library resources

The study materials you receive in the mail will cover most of your reading needs. However, at times you may wish to read some of the additional references mentioned in the study modules.

If your local library does not have the books you want, it should be able to get them on loan from other libraries in its network. We suggest you discuss your needs with your local library staff.

If your library has difficulty getting a reference book for you, College staff may be able to suggest a source. Ring the course coordinator—details are on page 4.

The Tocal College library can provide inter-Library loans. Again, your local library can organise this. If you are at the College, feel free to use the library. Check opening times and other details with the College librarian on 02 4939 8830.
Other sources of information

How familiar are you with the state and federal government departments, agencies and authorities offering information and advisory support services to primary producers? Are you making effective use of the services offered? A number of authorities offer an extensive range of information and advisory services and it is in your interest to familiarise yourself with these and to use them when you need help.

Internet Service

Bureau of Meteorology
The Bureau will supply information and advice on climate and weather conditions in particular areas. Historic climatic data is available and specific details of weather forecasting are supplied.

www.bom.gov.au/

Land Information Centre
The Centre will answer inquiries and give advice on the availability of appropriate maps for specific purposes. A large range of general and special purpose maps is available.


NSW Department of Primary Industries
The NSW Department of Primary Industries is a division within NSW Trade & Investment and works to develop and sustain diverse, profitable food and fibre industries, and ensures best practice management of our natural resources.

NSW DPI responsibilities include developing profitable, sustainable and biosecure agriculture, and fisheries; ensuring best management of catchments, natural resources and water; and regulating the state’s food sector.

Divisions are:
- Agriculture NSW
- Fisheries NSW
- NSW Food Authority
- Biosecurity NSW
- NSW Office of Water
- Catchments & Lands
- Business Services
Agriculture NSW works with agricultural industries, other collaborators and stakeholders to improve the profitability, sustainability and skills of the agriculture and private forestry sectors. Staff deliver research, development, extension, education and industry development programs in the fields of agricultural productivity, food security, climate, water and soil.


**Local Land Services**

From January 2014 Local Land Services became operational across New South Wales.

Local Land Services (LLS) brings together a wealth of technical and advisory knowledge from parts of the Department of Primary Industries, Livestock Health and Pest Authorities and Catchment Management Authorities into a new grass roots model for regional service delivery.

LLS will be managed by local people on local Boards, working closely with farmers, land managers and communities, to deliver services relevant to their local needs.

Local Land Services will comprise 11 regions; 7-member Local Boards; and 1 Board of Chairs with an independent Chair.

The new Local Land Services deliver:
- agricultural advice
- plant and animal pest control and biosecurity
- natural resource management
- emergency management.

Each Local Land Services region will develop operational management plans that provide service delivery on a regional basis, reflecting regional priorities.

Local Land Services combines the expertise and knowledge of Livestock Health and Pest Authorities (LHPA), Catchment Management Authorities (CMA) and Department of Primary Industries (DPI) advisory services.

Farmers and landowners can have a direct relationship with Local Land Services Advisory Officers, who have an area of expertise, like cropping or livestock, but also have a broad range of generalist skills across natural resource management, biosecurity and agricultural advice to bring to the table.