AGRI13009 *Resource Smart Food Production: More With Less*

Term 2 - 2022

Profile information current as at 26/04/2024 06:04 pm

Corrections

Unit Profile Correction added on 05-08-22

Adjustments to Assessment 3

1. Minimum mark or grade should be 50%
2. Addition to "Assessment Criteria":

For Assessment 3 you will be assessed on:

- Your understanding of the relevant food production system
- Your ability to outline resource challenges in food production
- Your analysis of innovations and options for addressing resource challenges in food production systems
- Your development of a viable solution to overcome the relevant resource challenge
- Your use of reputable sources of evidence to support your findings
- Your written communication and formatting.

A marking rubric will be available on Moodle.

General Information

Overview

Current conventional agricultural approaches have caused a number of serious environmental issues requiring proposals for mitigation. In this unit you will be introduced to the sustainability challenges of current food production systems in relation to the availability and use efficiency of resources (water, nutrients and energy) and greenhouse gas emissions. Case studies will be drawn from a range of food production systems including crops and livestock. You will undertake an investigation into a current challenge confronting a food production system of your choice. You will explore the effects of resource availability and management actions on productivity and discuss ecological consequences.

Details

Career Level: *Undergraduate*
Unit Level: *Level 3*
Credit Points: *6*
Student Contribution Band: *7*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites

Minimum of 72 credit points
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the Assessment Policy and Procedure (Higher Education Coursework).

Offerings For Term 2 - 2022

- Bundaberg
- Emerald
- Online
- Rockhampton

Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website

This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

Regional Campuses
Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

Metropolitan Campuses
Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Case Study**
Weighting: 20%
2. **Online Test**
Weighting: 30%
3. **Report**
Weighting: 50%

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the University's Grades and Results Policy for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the CQUniversity Policy site.
You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the CQUniversity Policy site.

Unit Learning Outcomes

On successful completion of this unit, you will be able to:

1. Evaluate how plant and animal functioning and productivity are impacted by resource availability and management actions
2. Integrate scientific knowledge for the development of sustainable resource management solutions for the cropping or livestock industry
3. Develop solutions to complex problems in agroecosystems.

Alignment of Learning Outcomes, Assessment and Graduate Attributes

— N/A Level | ◦ Introductory Level | • Intermediate Level | • Graduate Level | ◦ Professional Level | ◦ Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes		
	1	2	3
1 - Online Test - 30%	•		
2 - Case Study - 20%	•	•	
3 - Report - 50%		•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes		
	1	2	3
1 - Communication	•	•	•
2 - Problem Solving		•	•
3 - Critical Thinking	•	•	•
4 - Information Literacy	•	•	•
5 - Team Work		•	•
6 - Information Technology Competence		•	
7 - Cross Cultural Competence			
8 - Ethical practice			
9 - Social Innovation			•
10 - Aboriginal and Torres Strait Islander Cultures			

Textbooks and Resources

Textbooks

There are no required textbooks.

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

Referencing Style

All submissions for this unit must use the referencing styles below:

- Harvard (author-date)
- American Psychological Association 7th Edition (APA 7th edition)

For further information, see the Assessment Tasks.

Teaching Contacts

Saba Sinai Unit Coordinator
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Schedule

Week 1: Introduction to Resource Smart Agriculture - 11 Jul 2022

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Resource Smart Agriculture	Eisenstein, M. (2020). Natural solutions for agricultural productivity. Nature 588, S58-S59. doi: https://doi.org/10.1038/d41586-020-03445-4	

Week 2: Water - A Global Perspective - 18 Jul 2022

Module/Topic	Chapter	Events and Submissions/Topic
Water - A Global Perspective	Tong, L.A., Ulubaşoğlu, M.A. and Guven, C. (2022), Growing more Rice with less water: the System of Rice Intensification and water productivity in Vietnam*. Aust J Agric Resour Econ. https://doi.org/10.1111/1467-8489.12477 J.E. Fernández, F. Alcon, A. Diaz-Espejo, V. Hernandez-Santana, M.V. Cuevas. Water use indicators and economic analysis for on-farm irrigation decision: a case study of a super high density olive tree orchard. Agric. Water Manag., 237 (2020), Article 106074	

Week 3: Water - Australian Challenges - 25 Jul 2022

Module/Topic	Chapter	Events and Submissions/Topic

Water - Australian Challenges	M.E. Qureshi, M.A. Hanjra, J. Ward. Impact of water scarcity in Australia on global food security in an era of climate change. Food Pol., 38 (2013), pp. 136-145	**Assessment 1 Part A Due:** Friday of Week 3 (July 29, 2022) at 11:45PM.

Week 4: Greenhouse Gas Emissions - 01 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
Greenhouse Gas Emissions	T.N. Maraseni, D. Anh, K. Reardon-Smith, S. Mushtaq. Carbon smart agriculture: an integrated regional approach offers significant potential to increase profit and resource use efficiency, and reduce emissions J. Clean. Prod. (2021), p. 124555	

Week 5: Energy Efficiency - 08 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
Energy Efficiency	Australian Pork Limited: Reducing Energy Costs in Piggeries W. Powell, J.M. Welsh, D. Pannell, R. Kingwell. Can applying renewable energy for Australian sugarcane irrigation reduce energy cost and environmental impacts? A case study approach. Journal of Cleaner Production, 240 (10) (2019), p. 118177, 10.1016/j.jclepro.2019.118177	**Assessment 1 Part B Due:** Discussion boards will close on Monday of Week 5 (August 8 at 5PM).

Vacation Week - 15 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic

Week 6: Plant Nutrients - 22 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
Plant Nutrition	Erdal Elkoca, Faik Kantar & Fikrettin Sahin (2007) Influence of Nitrogen Fixing and Phosphorus Solubilizing Bacteria on the Nodulation, Plant Growth, and Yield of Chickpea, Journal of Plant Nutrition, 31:1, 157-171, DOI: 10.1080/01904160701742097 Bakach Dikand Kadiata & Kabamba Lumpungu (2003) Differential Phosphorus Uptake and Use Efficiency Among Selected Nitrogen-Fixing Tree Legumes over Time, Journal of Plant Nutrition, 26:5, 1009-1022, DOI: 10.1081/PLN-120020072	

Week 7 - 29 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic

Animal Nutrition	Pomar C, Andretta I and Remus A (2021) Feeding Strategies to Reduce Nutrient Losses and Improve the Sustainability of Growing Pigs. Front. Vet. Sci. 8:742220. doi: 10.3389/fvets.2021.742220 Silva TACC, Quigley SP, Kidd LJ, Anderson ST, McLennan SR, et al. (2022) Growth and reproductive performance responses to post-weaning supplementation of early and normally-weaned Brahman crossbred heifers raised in tropical rangelands. PLOS ONE 17(2): e0263786. https://doi.org/10.1371/journal.pone.0263786 Anene, D., Akter, Y., Thomson, P., Groves, P., Liu, S., O'shea, C. (2021). Hens that exhibit poorer feed efficiency produce eggs with lower albumen quality and are prone to being overweight. Animals, 11(10), 2986	

Week 8 - 05 Sep 2022

Module/Topic	Chapter	Events and Submissions/Topic
Chemical Controls in Agriculture	Ervin, Breshears, Frisvold, Hurley, Dentzman, Gunsolus, Jussaume, Owen, Norsworthy, Al Mamun, and Everman. "Farmer Attitudes Toward Cooperative Approaches to Herbicide Resistance Management: A Common Pool Ecosystem Service Challenge." Ecological Economics 157 (2019): 237-45. Doidge C, Ruston A, Lovatt F, Hudson C, King L and Kaler J (2020) Farmers' Perceptions of Preventing Antibiotic Resistance on Sheep and Beef Farms: Risk, Responsibility, and Action. Front. Vet. Sci. 7:524. doi: 10.3389/fvets.2020.00524	**Assessment 2: Midterm Online Test** Due: Week 8 Friday (9 Sept 2022) 5:00 pm AEST

Week 9 - 12 Sep 2022

Module/Topic	Chapter	Events and Submissions/Topic
Food Security and Post-Harvest Losses	The State of Food Security and Nutrition in the World, 2021 - FAO, IFAD, UNICEF, WFP and WHO Fernando, I., Fei, J., Stanley, R., Enshaei, H. and Eyles, A. (2019), "Quality deterioration of bananas in the post-harvest supply chain- an empirical study", Modern Supply Chain Research and Applications, Vol. 1 No. 2, pp. 135-154. https://doi.org/10.1108/MSCRA-05-2019-0012	

Week 10 - 19 Sep 2022

Module/Topic	Chapter	Events and Submissions/Topic
Food Waste	Hogan, L 2018, Food demand in Australia: Trends and issues 2018, ABARES Research Report 18.	

Week 11 - 26 Sep 2022

Module/Topic	Chapter	Events and Submissions/Topic

Financial and Labour Resources	Omobitan O, Khanal AR. Examining Farm Financial Management: How Do Small US Farms Meet Their Agricultural Expenses? Journal of Risk and Financial Management. 2022; 15(3):133. https://doi.org/10.3390/jrfm15030133 Segal, M. How automation is changing work (2018). Nature 563, S132-S135. doi: https://doi.org/10.1038/d41586-018-07501-y	

Week 12 - 03 Oct 2022

Module/Topic	Chapter	Events and Submissions/Topic
Transport, Infrastructure and Supply Chain Efficiency	Nicolas Denis, Valerio Dilda, Rami Kalouche, and Ruben Sabah (2020) Agriculture supply-chain optimization and value creation. McKinsey & Co. Sinai, S. (2021) Agriculture can drive infrastructure development in northern Australia via https://www.aspistrategist.org.au/	**Assessment 3: Resource Challenge Report** Due: Week 12 Friday (7 Oct 2022) 11:45 pm AEST

Review/Exam Week - 10 Oct 2022

Module/Topic	Chapter	Events and Submissions/Topic

Exam Week - 17 Oct 2022

Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Assessment 1: Agricultural Resources Case Studies

Assessment Type
Case Study

Task Description
Assessment 1: Agricultural Resources Case Studies has two parts. Part A is an individual task and Part B will be completed in pairs.
In Part A (worth 15/20) you will select three (3) resources from a list provided. These resources are placed in a particular context (to be provided on Moodle). In Assessment 1 you must describe the function of your selected resource in the associated production context. The word count for Assessment 1 is 1800 words (+/- 10%) and should be structured as follows:

- The function of the relevant resource in the associated production system
- The impact of resource constraints in the relevant production system or supply chain (i.e., what happens when the availability of the selected resource is limited)
- Sustainable solutions to resource limitations

You should provide a 600 word response for each resource you select. Part A is due on Friday of Week 3 (July 29, 2022) at 11:45PM.
In Part B you will be paired with another student in a Moodle discussion board. In Part B you will share your Part A submission with your colleague and you will provide feedback to each other. Part B is worth 5/20 for Assessment 1. The discussion board will open on Monday of Week 4 and close on Monday of Week 5 (August 8 at 5PM).

Assessment Due Date

Part A is due on Friday of Week 3 (July 29, 2022) at 11:45PM and must be submitted through Moodle. The discussion board for Part B will open on Monday of Week 4 and close on Monday of Week 5 (August 8, 2022) at 5PM.

Return Date to Students
Week 5 Friday (12 Aug 2022)
Feedback for both items will be returned by Friday in Week 5

Weighting
20%

Minimum mark or grade
50%

Assessment Criteria
For Part A you will be assessed on:

- Your understanding of agricultural resource requirements
- Your research skills and critical analysis of the literature
- Your ability to draw on information to develop or suggest sustainable solutions
- Your written communication

For Part B you will be assessed on:

- Your understanding of your partner's response
- Your ability to provide constructive feedback

Referencing Style

- Harvard (author-date)
- American Psychological Association 7th Edition (APA 7th edition)

Submission
Online

Submission Instructions
Part A is due on Friday of Week 3 (July 29, 2022) at 11:45PM and must be submitted through Moodle. The discussion board for Part B will open on Monday of Week 4 and close on Monday of Week 5 (August 8 at 5PM).

Learning Outcomes Assessed

- Evaluate how plant and animal functioning and productivity are impacted by resource availability and management actions
- Integrate scientific knowledge for the development of sustainable resource management solutions for the cropping or livestock industry

2 Assessment 2: Midterm Online Test

Assessment Type
Online Test

Task Description
Assessment 2: Midterm Online Test will assess your understanding of the topics in Weeks 1 - 7. It will be administered as a test through Moodle in Week 8. The Midterm Online Test will be open for two hours, including reading time. Once the test has been opened, the two hours will begin. You will only be allowed 1 attempt at this assessment. The Online Test will Open at 9AM on Monday of Week 8 (September 5, 2022) and can be accessed at any time. However it must be completed by 5PM on Friday of Week 8 (September 9, 2022). There are 15 questions each worth two (2) marks. The total marks allocated to this assessment item is 30. It contributes 30% of your final grade for AGRI13009.

Assessment Due Date
Week 8 Friday (9 Sept 2022) 5:00 pm AEST

Return Date to Students

Results of the online test will be returned within 21 days after the test

Weighting
30%

Minimum mark or grade
50%

Assessment Criteria
You will be assessed on your understanding of concepts covered in Weeks 1 - 7

Referencing Style

- Harvard (author-date)
- American Psychological Association 7th Edition (APA 7th edition)

Submission
Online

Submission Instructions
The Midterm Online Test will be administered through Moodle

Learning Outcomes Assessed

- Evaluate how plant and animal functioning and productivity are impacted by resource availability and management actions

3 Assessment 3: Resource Challenge Report

Assessment Type
Report

Task Description
In Assessment 3: Resource Challenge Report you will undertake an investigation into a current challenge confronting a food production system of your choice. Your report must explore the effects of resource availability and management actions on productivity, being sure to discuss ecological consequences. The word count for Assessment 3 is 3000 words (+/- 10%), not including headings, subheadings, references, tables, figure legends and appendices. Your report should be structured as follows (suggested word count for each section is indicated within parentheses):
Introduction (400 words)
o Overview of the report
o Introduction to the food production system
o Introduction to the resource challenge facing your selected system
The resource challenge (1200 words)
o Here you should outline in detail what the resource challenge is and how the challenge impact commercial production of your selected food product. Here you must demonstrate an advanced understanding of the role of the relevant resource on the production and commercial viability of your selected food product.
Solution(s) (1100 words)
o In this section you must outline practical solutions to overcoming the selected resource challenge. These must be appropriately justified, and you should demonstrate your critical analysis of the peer-reviewed literature in your development of appropriate solutions.
Conclusion (300 words)
References (at least 20)

Assessment Due Date
Week 12 Friday (7 Oct 2022) 11:45 pm AEST

Return Date to Students
Exam Week Friday (21 Oct 2022)

Weighting
50%

Assessment Criteria
No Assessment Criteria

Referencing Style

- Harvard (author-date)
- American Psychological Association 7th Edition (APA 7th edition)

Submission
Online

Learning Outcomes Assessed

- Integrate scientific knowledge for the development of sustainable resource management solutions for the cropping or livestock industry
- Develop solutions to complex problems in agroecosystems.

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the **Student Academic Integrity Policy and Procedure**. This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?
A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?
A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?
For academic advice and guidance, the Academic Learning Centre (ALC) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?

Be Honest
If your assessment task is done by someone else, it would be dishonest of you to claim it as your own

Seek Help
If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)

Produce Original Work
Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem