

AGRI 7001 AGRICULTURAL BIOSECURITY

Credit Points 10

Legacy Code 301368

Coordinator Michelle Moffitt ([https://directory.westernsydney.edu.au/search/name/Michelle Moffitt/](https://directory.westernsydney.edu.au/search/name/Michelle%20Moffitt/))

Description Biosecurity is a set of measures to prevent, respond to and recover crops and livestock from pests and diseases that threaten the economy and environment. Comprehensive biosecurity systems help ensure food security and food safety, which is crucial for community health, competitiveness for agricultural export and conservation of natural environments. This subject studies the epidemiologic triangle consisting of the host, disease and the environment in which the disease develops, and the series of measures and practices to detect and prevent entry and spread of pests, diseases and weeds. The potential for future biosecurity mega shocks to the agricultural industry, preparedness for rapid emergency responses to an exotic incursion, and management of invasion of pests and diseases will be discussed.

School Science

Discipline Agricultural Science

Student Contribution Band HECS Band 1 10cp

Level Postgraduate Coursework Level 7 subject

Assumed Knowledge

Foundation in chemical and biological sciences, quantitative thinking.

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Critically appraise biosecurity systems as applied to global food security.
2. Identify diseases, pests and weeds that are the target of surveillance.
3. Monitor plants and animals for signs of disease and pest infestation.
4. Devise a biosecurity plan that is tailored to the needs of a specific area.
5. Create solutions to dynamic complex problems in biosecurity by synthesizing information from a range of relevant data sources.
6. Justify inferences and solutions to biosecurity issues to a range of audiences.

Subject Content

1. How farms and farm products are affected by microbes (diazotrophs, mycorrhizae, viruses, bacteria, fungi and nematodes), pests and weeds
2. Key concepts of epidemiology; the study of the distribution (frequency, pattern) and determinants (causes, risk factors) of disease-related states and events
3. Methods for diagnosis such as quantitative PCR as well as different sequencing and sensor technologies
4. The symbiotic relationships of microorganisms and insects with plants and animals and their use in biocontrol
5. Methods of control (cultural, chemical, biological, and genetics to breed resistant varieties) and their relative advantages and disadvantages,

6. Data modelling and visualisation together with increased data availability for long-term decision making
7. The relevant legislation and authorities (Biosecurity Australia, AQIS, TGA etc.).
8. The strengths and weaknesses of current biosecurity systems

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/Group Task
Professional Task	500 words	10	N	Individual
Professional Task	3,000 words	40	N	Individual
Presentation	15 minutes	20	N	Individual
Log/Workbook	2,500 words	30	N	Individual

Teaching Periods

Spring (2022)

Hawkesbury

Day

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View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=AGRI7001_22-SPR_HW_D#subjects)

Spring (2023)

Hawkesbury

On-site

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View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=AGRI7001_23-SPR_HW_1#subjects)