

Module code: MOD011210	Version: 1 Date Amended: 17/Jun/2025
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1. Module Title
Resilient Future Farming - Novel and Global Crops

2a. Module Leader
Christos Gerofotis

2b. School
Writtle School of Agriculture, Animal and Environmental Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
6

3b. Module Type
Standard (fine graded)

4a. Credits
15

4b. Study Hours
150

5. Restrictions			
Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	BSc (Hons) Agriculture		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

This module explores the future of arable farming through the lens of crop diversification, sustainability, and global agricultural trends. Building on your existing knowledge, you'll investigate a wide range of crop types beyond traditional food crops—including those grown for fuel, fibre, fodder, and industrial use.

Emphasising both global and UK-specific perspectives, you will be introduced to crops that play key roles in international agricultural economies, as well as novel or underutilised species with potential for domestic production. You'll critically evaluate their suitability for UK farming systems in terms of climate, soil, market demand, and sustainability.

A core focus of this module is on building resilience in farm systems, particularly in response to climate change and evolving market pressures. You'll examine how integrating novel and world crops into farm rotations can enhance ecological and economic resilience. The module also highlights emerging career opportunities in global agriculture, agritech, consultancy, and sustainable farming innovation—both in the UK and internationally

6b. Outline Content

The module examines a wide range of crop types relevant to global and resilient agricultural systems, including fuel crops (e.g. solid biomass, biogas feedstocks, oil crops), fibre crops (cotton, flax, bamboo), drug and industrial crops (rubber, opium poppy, cannabis), and staple food crops from overseas (such as sugarcane, cassava, yams, and maize). Emphasis is placed on novel and underutilised species with potential relevance for UK agriculture, as well as major global crops with sustainability or market implications.

Content is organised thematically—grouping crop types by function (e.g. fibre, energy, starch)—to support comparative evaluation of agronomic performance, sustainability, and market potential. Students will assess whether alternative or heritage crops (e.g. flax, sorghum) offer viable substitutes for dominant species such as cotton or wheat, particularly in the context of climate resilience and farm diversification.

Although many crops considered are not suited to UK field production, selected visits to niche UK growers (e.g. soya, biomass crops) may be included where feasible to provide applied context. Core sustainability metrics explored include greenhouse gas emissions, water use, soil erosion, pollution, habitat impact, and human wellbeing. Economic viability is also addressed through analysis of production costs, input requirements, market demand, and value chains.

An indicative content is provided below.

1. Global Crop Systems & Emerging Markets (overview of key global cropping systems like tropical, Mediterranean, semi-arid, case studies, trade flows and market trends in world crops)
2. Novel & Underutilised Crops (definitions, agronomy and production potential of crops like
3. Resilience in Cropping Systems (climate adaptation strategies using crop diversity and other farming systems like mixed cropping, intercropping, agroforestry, and cover cropping, climate change modelling and stress-tolerant crop traits (e.g. drought, salinity),
4. Sustainability assessment of novel crops (e.g. use of metrics like water use efficiency, carbon sequestration potential, etc.)
5. Economic & Market development (niche markets and value chains for non-traditional crops; barriers to adoption (e.g. lack of machinery, knowledge, policy; entrepreneurial opportunities: product development, farm diversification; certifications and market incentives (organic, fair trade, carbon credits)

6c. Key Texts/Literature

The reading list to support this module is available at: <https://readinglists.aru.ac.uk/>

6d. Specialist Learning Resources
None

7. Learning Outcomes (threshold standards)		
No.	Type	On successful completion of this module the student will be expected to be able to:
1	Knowledge and Understanding	Comparatively assess crops in terms of resilience and sustainability across multiple criteria in different countries.
2	Intellectual, practical, affective and transferrable skills	Critically evaluate the suitability of world and novel crops for production within the UK.

8a. Module Occurrence to which this MDF Refers				
Year	Occurrence	Period	Location	Mode of Delivery
2026/7	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	Hours	Learning Outcomes	Details of Duration, frequency and other comments
Lectures	30	1-2	Lectures and seminars
Other teacher managed learning	6	1-2	Visits, guest speakers and case discussion
Student managed learning	114	1-2	Independent study
TOTAL:	150		

9. Assessment for the above Module Occurrence					
Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Coursework	1-2	100 (%)	Fine Grade	30 (%)
2000-word report; 10min presentation and 5 min Q&As					

Assessment components for Element 010				
Component No.	Assessment Title	Submission Method	Weighting (%)	Components needed for Mark Calculation?
010/1	Presentation of summary		40 (%)	All
010/2	Report		60 (%)	

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:

- (a) achieve the qualifying mark for each element of fine graded assessment as specified above**
- (b) pass any pass/fail elements**

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]