General Information

Module Code

BIO-6025B

Academic Year

2021/2

Module Title

PLANT BIOTECHNOLOGY FOR SUSTAINABLE FOOD PRODUCTION

Module type

WW

Semester / Term

SEM2

Level

6

Credit Value

20

Scheme

UG

Related Modules:

Pre-requisite

None

Co-requisite

Forbidden

Timetable slot

-

Is this module suitable for inbound study abroad students?

Y

Additional costs

Maximum number of students

999

Module Organiser

Dr Colwyn Thomas

Module Description

What is this module about?

Plant biotechnology can play an important role in providing crop varieties with increased disease resistance, better P and N (Phosphorous and Nitrogen) use efficiency, and higher nutritional value. It includes not just genetic modification, but any technology to obtain desirable traits in plants, such as mutagenesis and marker-assisted selection. The identification of important traits from wild germplasm and existing cultivars, and their introduction into elite cultivars has been achieved primarily using conventional plant breeding methods. This module will identify the major challenges for sustainable crop production, and highlight the role of plant biotechnology and current plant breeding strategies.

Learning objectives and Outcomes

What are the Learning objectives?

Sustainable food production is key to the future of our planet. Plant biotechnology can play an important role in providing crop varieties with increased disease resistance, better P and N use efficiency, and higher nutritional value. Plant biotechnology includes not just genetic modification, but any technology to obtain desirable traits in plants, such as mutagenesis and marker-assisted selection. In fact, plant biotechnology has been practised for thousands of years. The identification of important traits from wild germplasm and existing cultivars, and their introduction into elite cultivars has been achieved primarily using conventional plant breeding methods. This module will identify the major challenges for sustainable crop production, highlight the role of plant biotechnology and current plant breeding approaches.

What are the Learning Outcomes?

	Name	Details
1		How plant breeding and agriculture have developed from a historical perspective.
2		What aspects of modern agriculture are or are not sustainable.
3		The underlying principles of crop improvement through conventional breeding approaches.
4		

The application of plant biotechnology, including technologies such as genetic modification and genome editing and their application in crop improveme

5

Alternative uses of crop plants, including biofuel and recombinant protein production.

Learning activities and Effort hours

Learning activity	Total effort hours	Indicative effort hours per week
1. Class sessions (Lectures, workshops, lab sessions, seminars etc.)	24	6
2. Pre-class preparation and follow up study		
3. Work-based or Placement Hours		
4. Formative assessments/ activities	10	
5. Feedback/ Feed forward sessions		
6. Summative assessments (essays, dissertations, oral presentations, worksheets, lab reports etc.)		
7. Background reading	24	2
8. Exams/ OSCEs		
9. Course Tests		
10. Tutorials (Individual or small groups)		
Total Hours =	58.00	8.00

Learning Support Materials

Should this module be exempt from requiring an online reading list?

N

Link to Talis (https://uea.rl.talis.com/index.html)

Formative Assessments

Sequence	Assessment Type	Title	Deadline
FM1	Formative Assessment	Formative Assessment: Essay plan	

Summative Assessments

Sequence	Assessment Type	Title	Deadline	Weighting	Method of submission	Method of return	Return date	Format and purpose of feedbacl
001	Written Assignment	Essay (3,000 words)		30 / 100		VIA HUB		
Further Details								
002	Written Assignment	Poster and Commentary		10 / 100		VIA HUB		
Further Details								
003	Exam Standard	Examination		60 / 100				
Further Details								

Attribute Development

On this module students will develop knowledge, insights and attributes that are readily transferable into future or current work settings. The attributes are articulated below to help understand how the module will help students to thrive on their course and prepare them for the world of work. These attributes are also articulated within the UEA Award.

Academic excellence

- [x] In-depth and extensive knowledge, understanding and skills in chosen discipline(s)
- [ ] The ability to collect, collate, analyse and critically engage with a wide range of information sources, and evidence
- [x] The ability to analyse and critically engage with a wide range of concepts and ideas

Critical thinking & problem solving

- [x] A capacity for independent, conceptual and creative thinking
- [x] A capacity for informed argument and logical reasoning
- [ ] A capacity for problem identification and problem-solving

Learning & personal development

- [x] A commitment to developing professional values, self-insight and capabilities
- [x] The ability to respond positively to constructive criticism and feedback from peers, tutors and colleagues
- [ ] Self-confidence and an ability to exercise own 'voice'

Digital literacy and IT

- [x] Confidently employ a range of digital technologies for academic and professional/ career development purposes
- [x] Use appropriate digital technologies and resources to locate diverse types of information for both academic and non-academic purposes
- [x] The ability to critically evaluate and engage with the information obtained

Self-management & professionalism

- [ ] A capacity for taking responsibilities and ownership of actions
- [x] An ability to manage time effectively, including setting priorities, juggling competing demands and meeting deadlines
- [ ] An understanding of work cultures and practices, including work place professionalism

Team working and leadership

- [ ] An ability to co-operate and collaborate with others, including working to shared aims
- [ ] An ability to take other viewpoints, have empathy for other people's position and give constructive feedback
- [ ] An ability to motivate and lead others, including taking the initiative and delegating when required

Communication

- [x] An ability to communicate in written form for different purposes, audiences and contexts
- [ ] An ability to communicate in person for different purposes, audiences and contexts
- [ ] An ability to network effectively with others for specific purposes

Applied numeracy and Technical proficiency

- [ ] An ability to perform routine calculations in daily tasks and in applied contexts
- [x] An ability to analyse and interpret data and evidence

- [ ] Proficiency in skilled techniques used for academic and professional purposes

Career management

- [x] A capacity to reflect on and articulate qualities, strengths and attributes
- [ ] The ability to research specific job and career areas
- [ ] An ability to present your experience and attributes positively to graduate employers

Commercial awareness

- [x] A knowledge of the link between academic subjects and their commercial applications
- [ ] An understanding of business priorities and the needs of graduate employers
- [ ] The ability to understand and prioritise customer needs

Innovation and enterprise

- [ ] The confidence to introduce and establish something new
- [ ] The potential to take an idea through to its practical application
- [ ] The potential to apply an enterprising mind-set to situations

Citizenship and stewardship

- [ ] An understanding of your place within local and global communities
- [ ] An awareness of the need to manage shared and finite resources, including an appreciation of moral and ethical dimensions
- [ ] An ability to improve the lives of others and lobby for positive change through community and/or political engagement