

Sustainable Horticulture Technology BSc

Dr Anjana Patel Course
Leader & Research Assistant



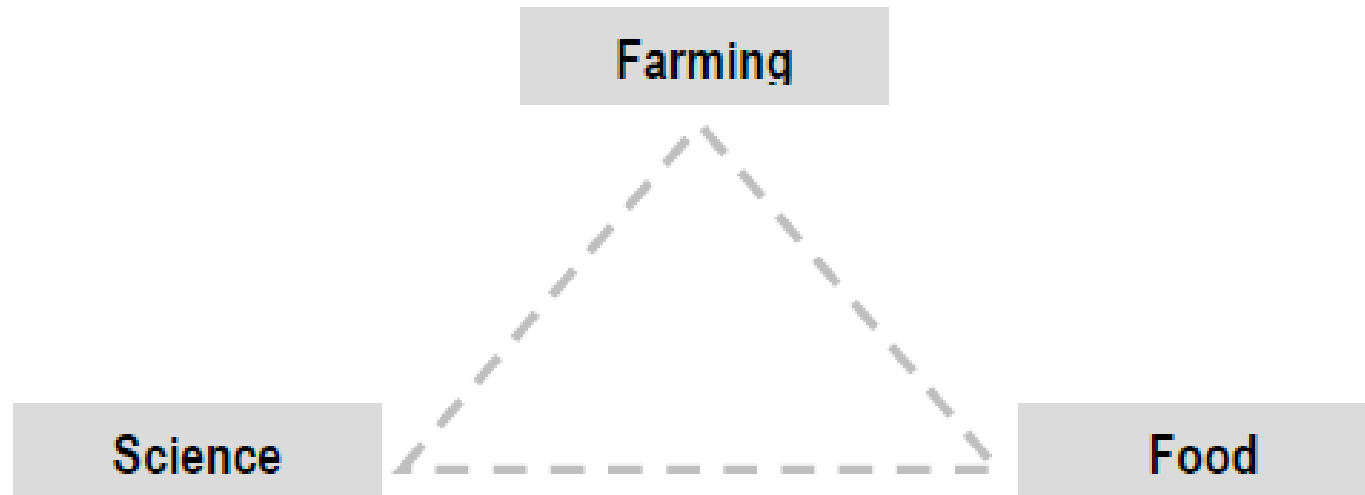
WARWICKSHIRE COLLEGE
**UNIVERSITY
CENTRE**



Background

- BSc Biomedical Science (2013)
- PhD Biotechnology (2018)
- Sustainable Horticulture Technology Lecturer/Course Leader (2023)

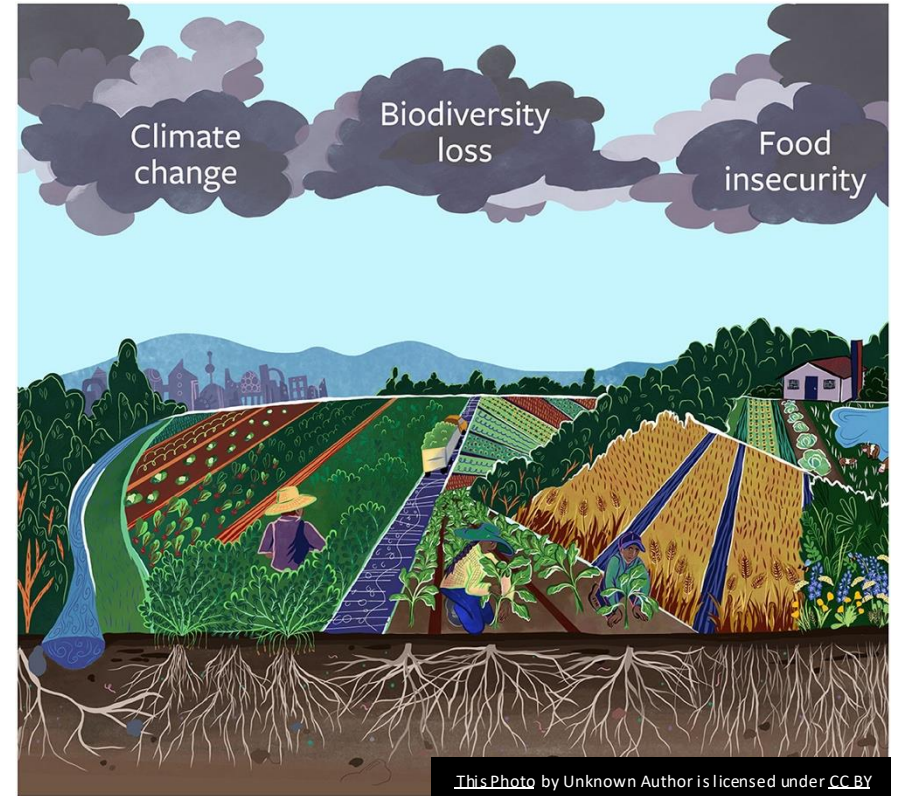
**Agricultural Technology ('Agri-tech') –
The use of technology to achieve sustainable productivity growth
in agriculture and processing**



Agri-Tech West Report 2016

Why is Agri-Tech Important?

- Increasing population
(plus consumerism)
- Fewer resources
- Changing climate





L4

Introductory plant and soil science
Agronomy
ASSET (Academic Skills)
Horticultural engineering systems
Programmable logic controllers
Introduction to plant pathology



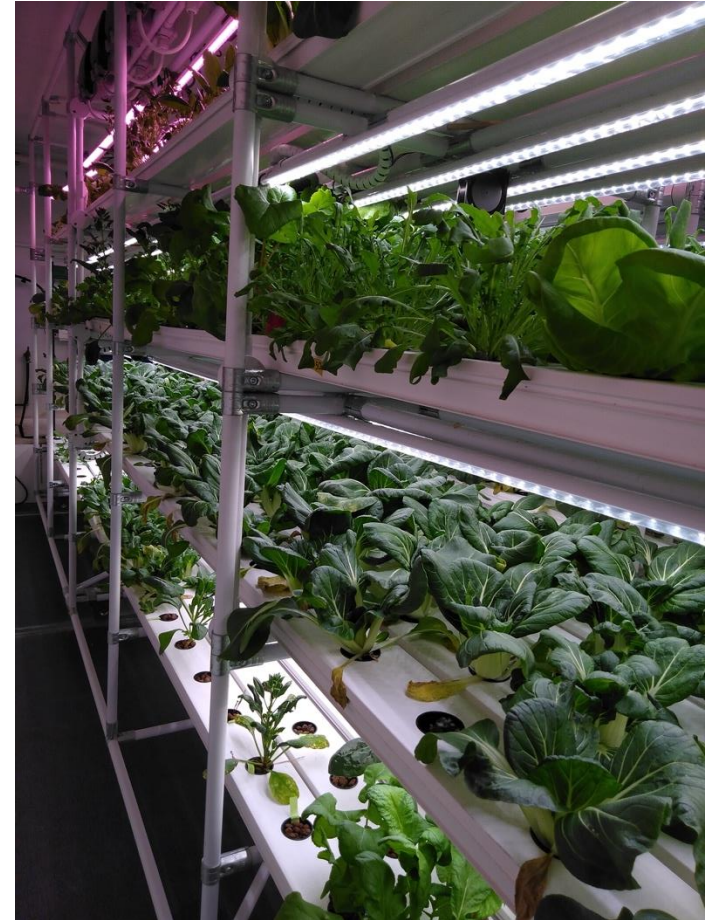
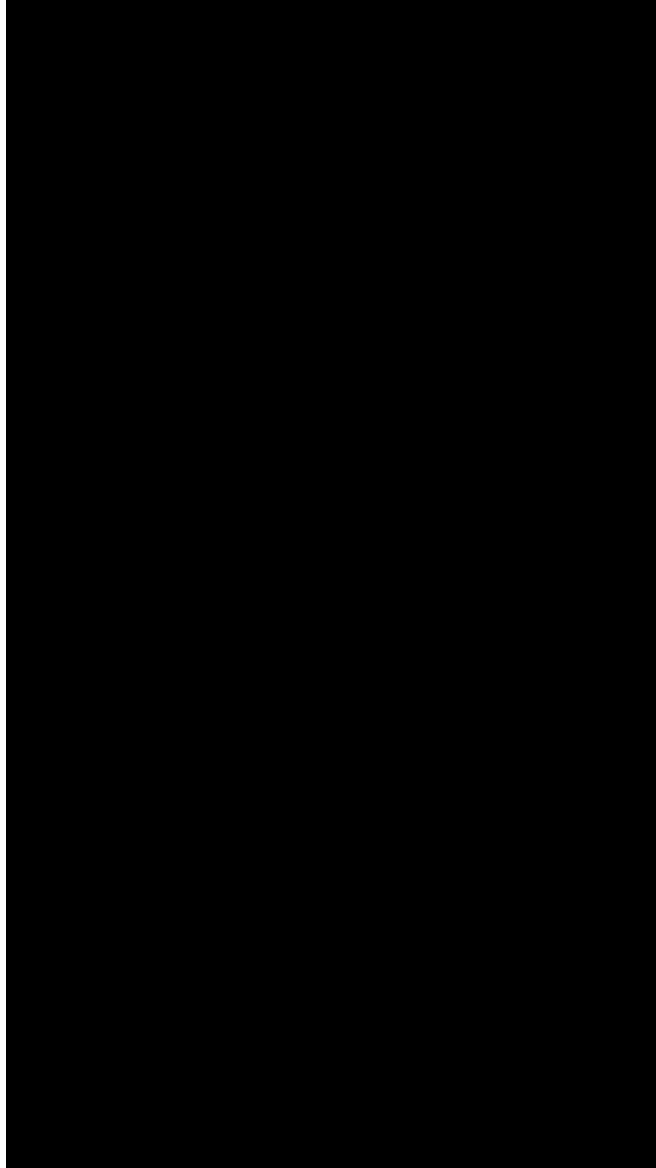
L5

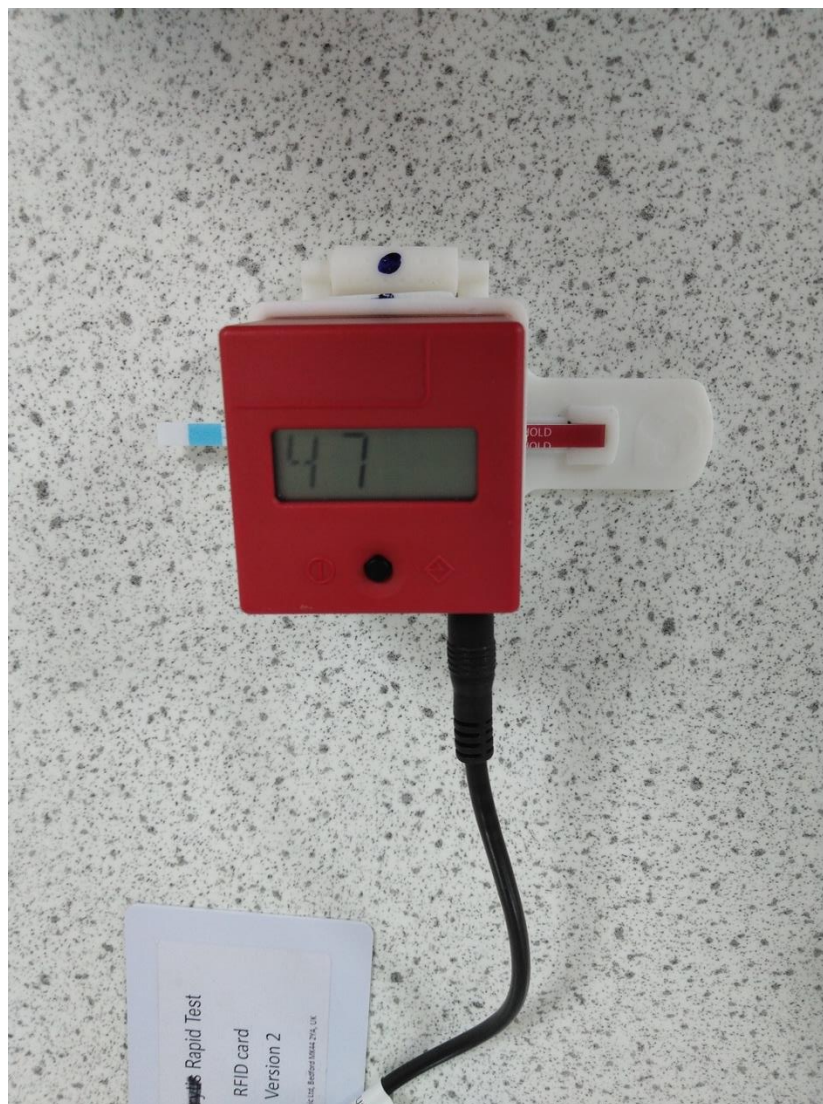
Technology integration
Hydroponics
Programming
Research projects
Work based learning
(100h)



L6

Applied problem solving
Build a robot
Disease detection
Dissertation





BotrytisAlert

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Botrytis Alert is a field-side, quick and easy to use low-cost test to measure *Botrytis* in the air and plant.



- Botrytis Alert is the first step to reduce crop and post-storage harvest losses
- Botrytis Alert can be used to help inform decision making and drive early intervention to prevent polycyclic disease epidemics and post-storage rots.
- Botrytis Alert: Monitor, Act, Treat, Control and Harvest (MATCH)

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Translational Expert Lecturers



Professor Kennedy



Nigel Pugh



Nnamdi Onuigbo



Dr Lavender



Mark Edwards



Dr Patel

Educational Visits



Rothamsted
University



Oakland's
Strawberry Farm



James Dyson's
Farm

Droitwich Student launches project to get UK children growing

12th October 2024

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Ross Dyke, a horticulture student from Droitwich (Image: Ross Dyke)





Nick's growing reputation based on skills from Pershore College days



Rob George
22nd Apr, 2023



A FORMER Pershore College student has secured a position at a world-leading cultivation science and technology company thanks to the skills he developed during his studies – and the college has now launched a new degree to help even more students move into the industry.

Nick Monkton has secured a position as a research and development technician at Birmingham-based Saturn Bioponics after completing an Agritech foundation degree at Pershore College.

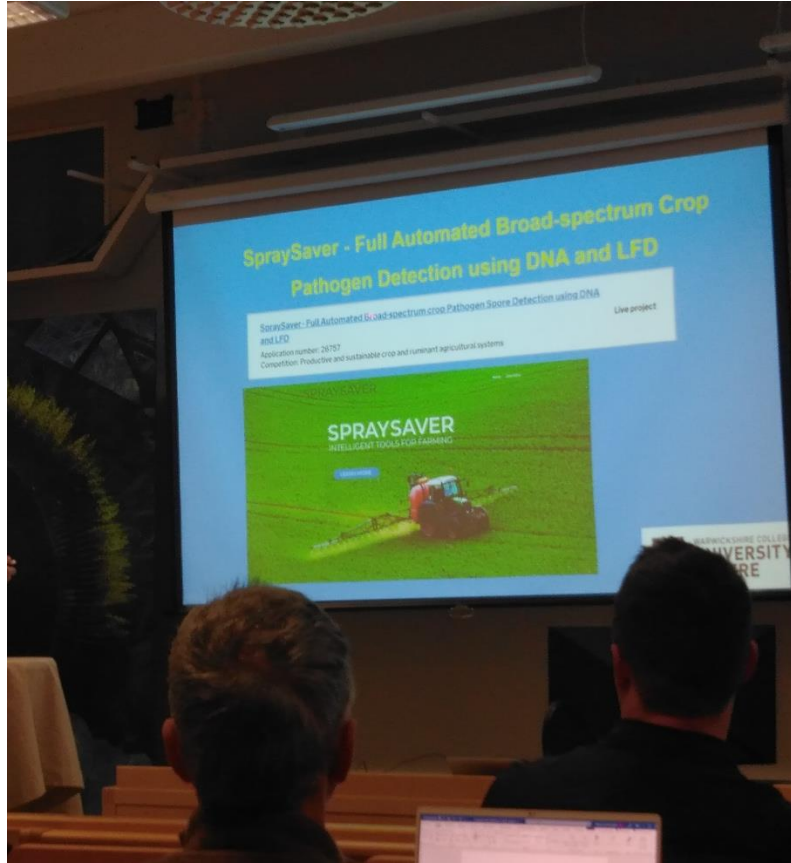


**All our
graduates
secured
employments
less than 2
months after
graduating**

Utilising new technologies to improve
the sustainability of the horticultural
industry
Roy Kennedy

21 June 2022
Persore College, Persore, Worcs, UK





Conferences



Links with local industry and growers



> [Plants \(Basel\)](#). 2023 Apr 18;12(8):1690. doi: 10.3390/plants12081690.

Production of Clubroot Standards Using a Recombinant Surrogate to Overcome Natural Genetic Variability

Anjana Patel ¹, Roy Kennedy ¹

Affiliations + expand

PMID: 37111913 PMCID: [PMC10146943](#) DOI: [10.3390/plants12081690](#)

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Abstract

Clubroot is caused by the obligate pathogen *Plasmodiophora brassicae*. The organism targets root hair cells for entry and forms spores in numbers so large that they eventually develop characteristic galls or clubs on the roots. Clubroot incidence is rising globally and impacting the production of oil seed rape (OSR) and other economically important brassica crops where fields are infected. *P. brassicae* has a wide genetic diversity, and different isolates can vary in virulence levels depending on the host plant. Breeding for clubroot resistance is a key strategy for managing this disease, but identifying and selecting plants with desirable resistance traits are difficult due to the symptom recognition and variability in the gall tissues used to produce clubroot standards. This has made the accurate diagnostic testing of clubroot challenging. An alternative method of producing clubroot standards is through the recombinant synthesis of conserved genomic clubroot regions. This work demonstrates the expression of clubroot DNA standards in a new expression system and compares the clubroot standards produced in a recombinant expression vector to the standards generated from clubroot-infected root gall samples. The positive detection of recombinantly produced clubroot DNA standards in a commercially validated assay indicates that recombinant clubroot standards are capable of being amplified in the same way as conventionally generated clubroot standards. They can also be used as an alternative to standards generated from clubroot, where access to root material is unavailable or would take great effort and time to produce.

Keywords: clubroot standard; qPCR; recombinant clubroot DNA



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[Review](#)

Phototherapy as a Treatment for Dermatological Diseases, Cancer, Aesthetic Dermatologic Conditions and Allergic Rhinitis in Adult and Paediatric Medicine

by Roy Kennedy

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Life **2023**, *13*(1), 196; <https://doi.org/10.3390/life13010196>

Received: 27 September 2022 / **Revised:** 27 December 2022 / **Accepted:** 29 December 2022 / **Published:** 9 January 2023

(This article belongs to the Special Issue Blue Light and Wound Healing)

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Abstract

The development of light-emitting diodes (LEDs) has led to an increase in the use of lighting regimes within medicine particularly as a treatment for dermatological conditions. New devices have demonstrated significant results for the treatment of medical conditions, including mild-to-moderate acne vulgaris, wound healing, psoriasis, squamous cell carcinoma in situ (Bowen's disease), basal cell carcinoma, actinic keratosis, and cosmetic applications. The three wavelengths of light that have demonstrated several therapeutic applications are blue (415 nm), red (633 nm), and near-infrared (830 nm). This review shows their potential for treating dermatological conditions. Phototherapy has also been shown to be an effective treatment for allergic rhinitis in children and adults. In a double-anonymized randomized study it was found that there was 70% improvement of clinical symptoms of allergic rhinitis after intranasal illumination by low-energy narrow-band phototherapy at a wavelength of 660 nm three times a day for 14 consecutive days. Improvement of oedema in many patients with an age range of 7–17 were also observed. These light treatments can now be self-administered by sufferers using devices such as the Allergy Reliever phototherapy device. The device emits visible light (mUV/VIS) and infra-red light (660 nm and 940 nm) wavelengths directly on to the skin in the nasal cavity for a 3 min period. Several phototherapy devices emitting a range of wavelengths have recently become available for use and which give good outcomes for some dermatological conditions.

Keywords: phototherapy; skin conditions; allergy; rhinitis; blue light

1. Introduction

Non-invasive phototherapy procedures for medical and aesthetic dermatologic conditions are becoming more common. Phototherapy as a medical procedure is the use of non-thermal, non-invasive light for therapeutic medical applications. Usually, the therapy is provided by a variety of light-emitting devices which are based on light-emitting diode (LED) technology. Interest in recent advances in the use of LEDs has led to their application for a variety of

Sustainable Horticulture Technology

- The course is **multidisciplinary**
- Offers solutions to the global challenges facing future food production, (growing population and increasing climate uncertainty)
- Underlying supporting technologies embrace **drones, robotics** and growth optimised environments such as **hydroponic chambers**.
- Technologies such as these support **continuous productivity improvement** and facilitate 'Greater Automation' across all horticultural production.

Sustainable Horticulture Technology Courses

- FdSci (Foundation degree)
- IFY (Integrated First Year)
- BSc (Bachelor of Science)



Sharing Success

- Establishing new collaborations
- Regular online forums (informal and formal)
- Information dissemination
- Improved wider networking opportunities

