



# Quantitative Methods in Plant Breeding

**A TWO WEEK COURSE**  
**14 - 25 November 2022**

Statistics, computation and data handling, trial design and analysis, population genetics, quantitative genetics, linkage analysis, association mapping, genomic selection, breeding simulations.

Tutors: Dr Tally Wright, experts from across NIAB and Prof Ian Mackay

## Quantitative Methods in Plant Breeding

This annual two-week postgraduate level course, originally devised at NIAB by Ian Mackay, and successfully run for the first time in 2008, introduces participants to methods in quantitative genetics and statistics. Course content ranges from the well-established, for example variety trial design and analysis, to more contemporary methods such as genomic selection. Emphasis is on practical application of methods to plant breeding programmes with theory covered in sufficient depth to allow confident evaluation and use in real life situations. The course provides an opportunity for participants to become familiar with the concepts and utilization of contemporary methods and software at all stages in the breeding process.

## Who should attend?

Plant breeders and plant geneticists who have some background knowledge of statistics and quantitative genetics, but who wish to understand and be able to apply these methods more thoroughly. Post-graduate students working in crop genetics, for example on the detection and analysis of genes controlling the inheritance of complex traits.

The course is limited to 24 participants.

## Course content

- Revision/refresher: Basic statistics and genetics
- Statistics: Regression, ANOVA, statistical software (R programming)
- Trial design and analysis: Principles of good design, blocking, spatial analysis
- The mixed model: Variance components, REML, BLUPs and BLUEs
- Population genetics: Single and multiple locus disequilibrium
- Quantitative genetics: selection theory, breeding programme design, genotype x environment interaction
- Linkage analysis: QTL, Genetic maps, alternative mapping populations
- Association mapping: Population structure and methods for its control
- Breeding simulations: maximising genetic gain
- Genomic selection: Application in plant breeding

## Course details

The course is limited to 24 participants on a first come basis. Please book as early as possible as we are usually oversubscribed. The closing date for applications and payment is 30 September 2022.

### Duration

Week 1: Monday 14 - Friday 18 November 2022.

Week 2: Monday 21 - Friday 25 November 2022.

The course will run from 9.30-18.00 each day with the exception of Mondays (start at 10.30) and Friday 25 November (finish at 14.00).

### Course cost (no VAT applicable)

Postgraduate student £1,039; non student £1,559

### What's included

Course materials, refreshments, lunches, local excursions, a pub meal, the course dinner and transport to and from the hotels at Orchard Park.

### How to apply

You can apply online at [www.niab.com/QMPB22](http://www.niab.com/QMPB22) or download the form and email it to Beth Postle, [bethan.postle@niab.com](mailto:bethan.postle@niab.com).

### Payment methods

By debit/credit card when you book online. Please contact us if you want to pay by card over the telephone. *Please do not send bank or debit/credit card details by email.*

By bank transfer: Quote QMPB22 and your name

### Contact details

Please address any queries to Beth Postle  
[bethan.postle@niab.com](mailto:bethan.postle@niab.com) or +44 (0) 7739 857845.

## What you need to know

All delegates should bring a (preferably 64-bit) laptop for use on the course. Preferably you should have administrative rights to the laptop, to be able to download software if needed.

A week prior to the course you will be sent a link so that you can download the required course software.

If you provide us with your mobile number we will join you to the QMPB22 WhatsApp group so you can communicate with other delegates prior to and during the course.

## Accommodation

Delegates should book their own accommodation.

Two hotels with reasonable rates in Orchard Park near to NIAB are:

Premier Inn A14, £59-£126/night for B&B. [www.premierinn.com](http://www.premierinn.com)

Travelodge Orchard Park, £42-£105/night for B&B.

[www.travelodge.co.uk](http://www.travelodge.co.uk).

A bus route from both these hotels to the city centre is close by.

For other accommodation options visit [www.visitcambridge.org](http://www.visitcambridge.org)

### On course days

We will organise transport between these hotels and the Sophi Taylor Conference Centre, NIAB Park Farm, Cambridge, CB24 9NZ. Parking is available at NIAB's Park Farm facility for those delegates travelling by car.

## Useful information

Closest airport is London Stansted.

Closest train station to above hotels is Cambridge North.

Taxis: Panther +44 (0)1223 715 715,

Camcab +44 (0)1223 704 704.



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Your details		<b>Payment methods</b> To confirm your place on the course payment must be received by 30 September 2022.  <b>By bank transfer:</b> Quote: QMPB22 and your name.  <b>By debit/card:</b> Online when you book.  <b>By phone:</b> Membership Office +44 (0) 1223 342 495  Please do not send debit/credit card details by email.  <input type="checkbox"/> Request an invoice
Name		
Address		
Email		
Telephone	Mobile	
Course fee (VAT is not applicable)	Cost	
<input type="checkbox"/> Postgraduate Student	£1,039	
Affiliated University		
<input type="checkbox"/> Other	£1,559	



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