



THE UNIVERSITY
of EDINBURGH



Biotechnology and
Biological Sciences
Research Council



THE ROYAL
SOCIETY

Day 4

Spatial variation and genotype by environment interaction

Introduction

Daniel Tolhurst, Jon Bancic, Chris Gaynor, Gregor Gorjanc



Day overview

- **Spatial variation**

- Lecture: Introduction to plant breeding field trials
- Tutorial: Simulating plot data with spatial variation
- Practical: Simulating plot data with FieldSimR



Lecture room

Lab

Lunch

- **Genotype by environment (GxE) interaction**

- Lecture: Introduction to multi-environment field trials (MET)
- Tutorial: Simulating MET data with GxE interaction
- Practical: Simulating MET data with FieldSimR

Lecture room

Lab

Why implement spatial variation and GxE into simulation?

- Introduces more realistic structure and complexity to simulated field trial data
- Answer more targeted questions
 - What level of (partial) replication is required?
 - How many locations are required?
 - Where should material be deployed?
- Fine tuning a breeding pipeline
 - Comparison of breeding strategies, experimental designs and statistical analysis approaches

Required software

- Install the following packages in Rstudio directly or `install.packages` function
 - AlphaSimR
 - mbend
 - interp
- **FieldSimR**
 - `install.packages("devtools")`
 - `library(devtools)`
 - `install_github("crWerner/fieldsimr")`