

# PLANT PHENOTYPING WITH PROFESSOR TONY PRIDMORE

## TALKING POINTS

### KNOWLEDGE

1. What is a plant's phenotype? And what is a plant's genotype?
2. How are X-ray and MRI imaging techniques used during plant phenotyping?

### COMPREHENSION

3. Why might different traits be observed when the same type of plant is grown in different environments?
4. Why does the field of plant phenotyping require both plant biologists and computer scientists?
5. How would you summarise the process of plant phenotyping, starting with growing the plants, to presenting the data collected?

### APPLICATION

6. Why is PhenomUK important for the field of plant phenotyping?
7. What challenges do you think will arise when plant biologists and computer scientists collaborate? How could these be overcome?
8. What other areas of life science research could benefit from the skills and expertise of computer scientists?
9. How do you think plant breeders use the results of plant phenotyping experiments to develop more productive crops?

### EVALUATION

10. Why is collaboration between different disciplines and institutions in different countries important for research?

## ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

### IMAGINE YOU ARE A PLANT PHENOTYPING RESEARCHER:

1. Design a plant phenotyping experiment to test whether a crop species is resistant to drought. Think about the environment(s) you would grow your plants in, the types of images you would want to collect, the equipment you would need to collect them, and the data that you would want to extract from these images.
2. Write a letter to a hypothetical funding body explaining why the field of plant phenotyping is important for the future of the planet, and why they should fund your phenotyping experiment. Think about how plant phenotyping affects local, national and global communities.

## MORE RESOURCES

- This video shows the University of Nottingham's X-ray facility reconstructed in LEGO: [www.youtube.com/watch?v=lrUCrW66Hr8](https://www.youtube.com/watch?v=lrUCrW66Hr8)
- Watch this video from EMPHASIS for a brief introduction to plant phenotyping: [www.youtube.com/watch?v=Ygq6rOWuDbS](https://www.youtube.com/watch?v=Ygq6rOWuDbS)
- Learn about the phenotyping projects conducted at the Computer Vision Laboratory: [www.nottingham.ac.uk/research/groups/cvl/projects/plant-phenotyping/plant-phenotyping.aspx](http://www.nottingham.ac.uk/research/groups/cvl/projects/plant-phenotyping/plant-phenotyping.aspx)
- The Domain of Science YouTube channel has an excellent introduction to computer science: [https://www.youtube.com/watch?v=SzJ46YA\\_RaA](https://www.youtube.com/watch?v=SzJ46YA_RaA)