



UK FOOD SYSTEMS
CENTRE FOR DOCTORAL TRAINING
DEVELOPING LEADERS FOR A HEALTHY AND SUSTAINABLE FOOD FUTURE



**ROTHAMSTED
RESEARCH**



**UNIVERSITY of
GREENWICH**



**Biotechnology and
Biological Sciences
Research Council**



BCPC: How will Climate change affect blackgrass in the future?

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Acknowledgments

Supervisors:

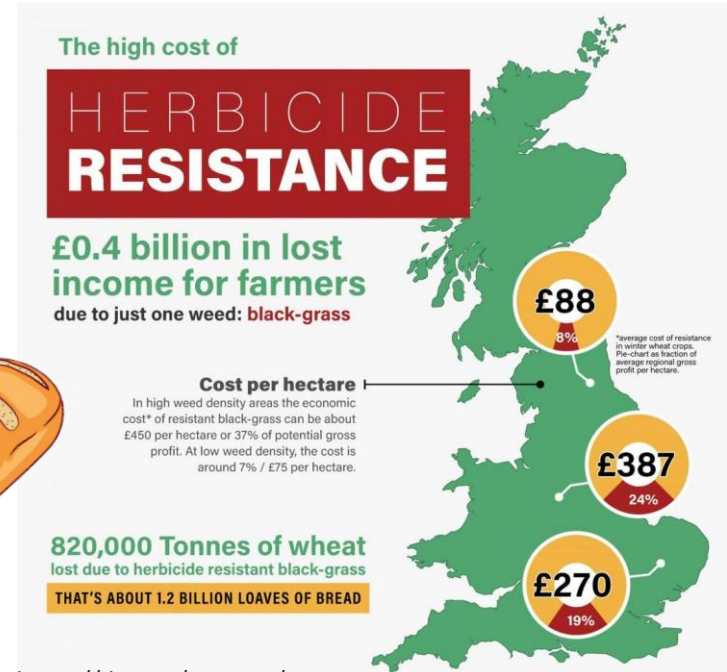
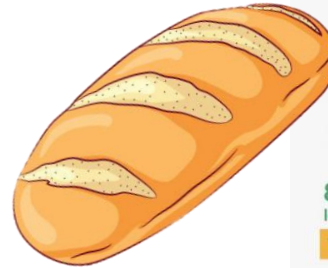
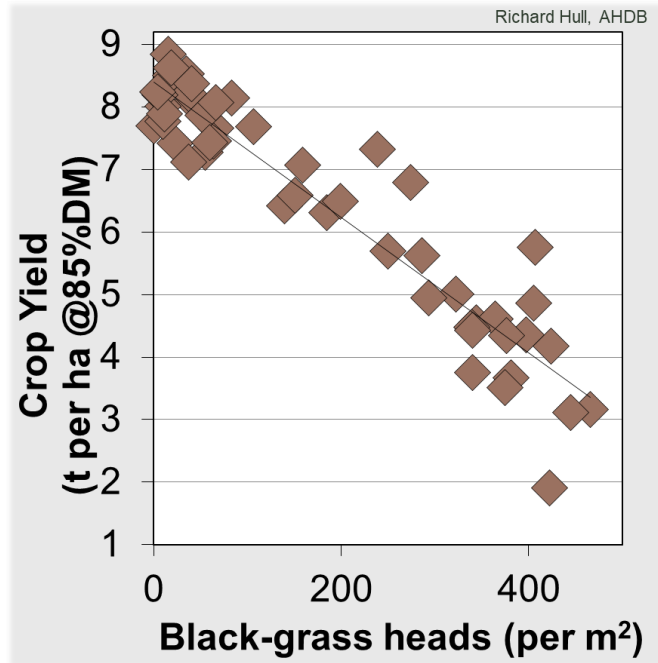
Dana MacGregor - Protecting Crops and the Environment, Rothamsted Research, Harpenden, UK

Andrew Mead - Intelligent Data Ecosystems, Rothamsted Research, Harpenden, UK

Huiyi Yang - Natural Resources Institute, University of Greenwich, Chatham, UK

Christian Reynolds - Centre of Food Policy, City, University of London, London, UK

In the UK, blackgrass (*Alopecurus myosuroides*) is our worst weed



<https://doi.org/10.1038/s41893-019-0450-8>

Blackgrass reduces yields and increases costs of winter cereal production

Not all blackgrass biotypes are equally responsive to herbicides

Black-grass density and resistance in surveyed fields (n = 125) across 13 counties in England. Resistance is the average resistance of a population to two selective herbicides (Atlantis and cycloxdim).

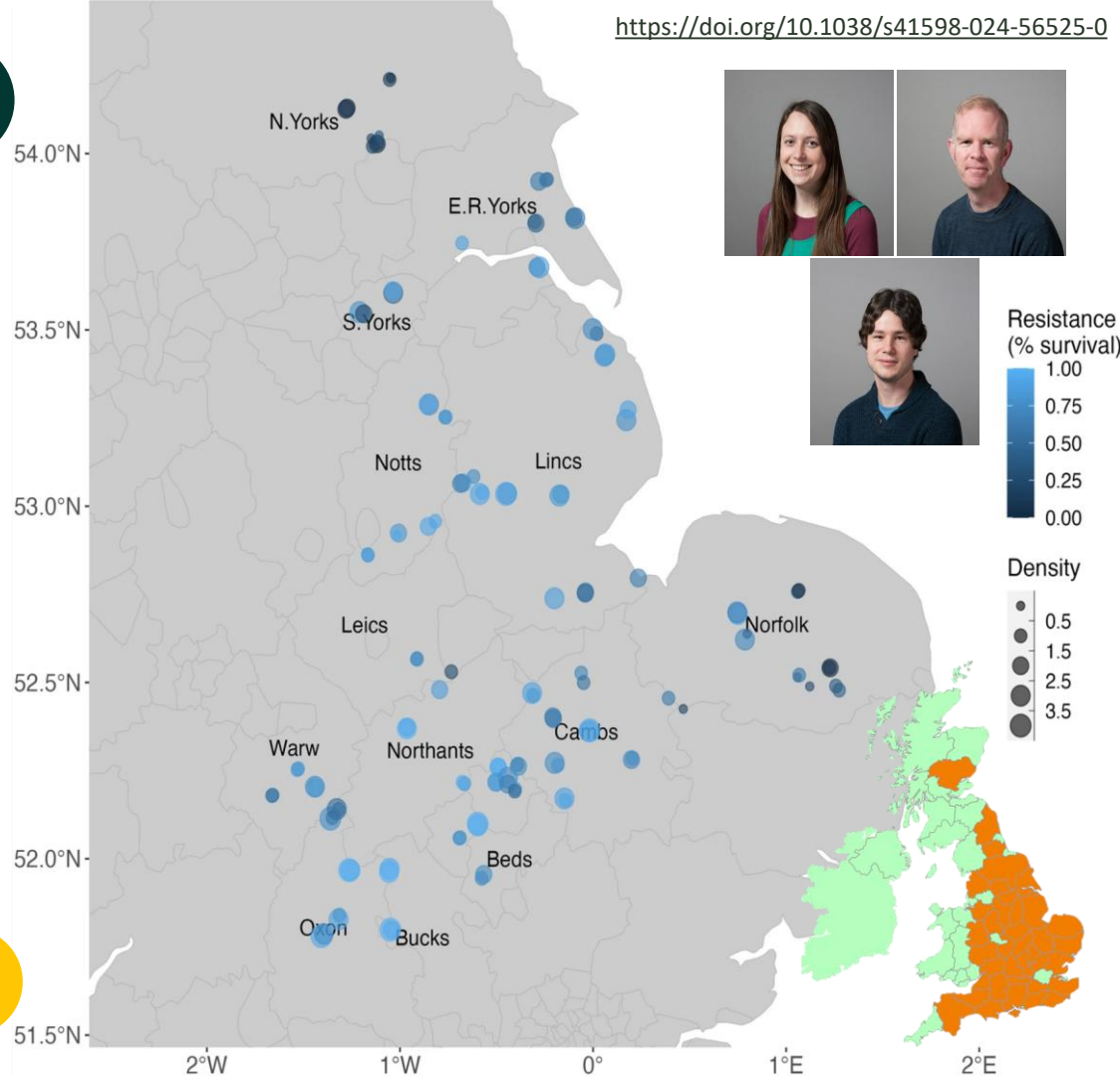


Rothamsted

Sensitive to all herbicides tested

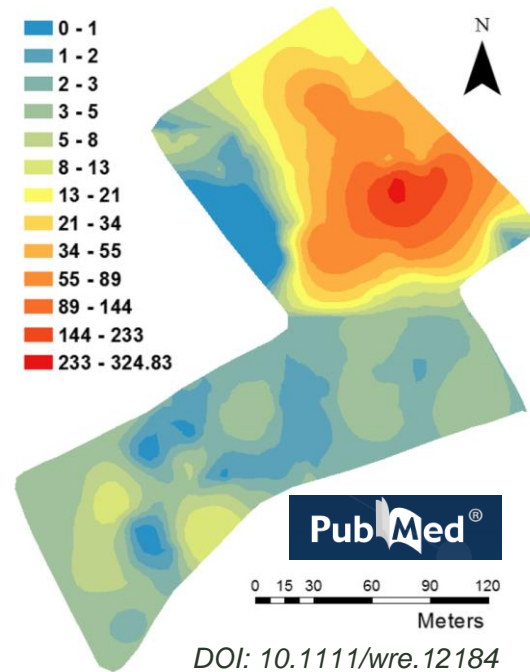
Peldon

NTSR to ACCase
No TSR

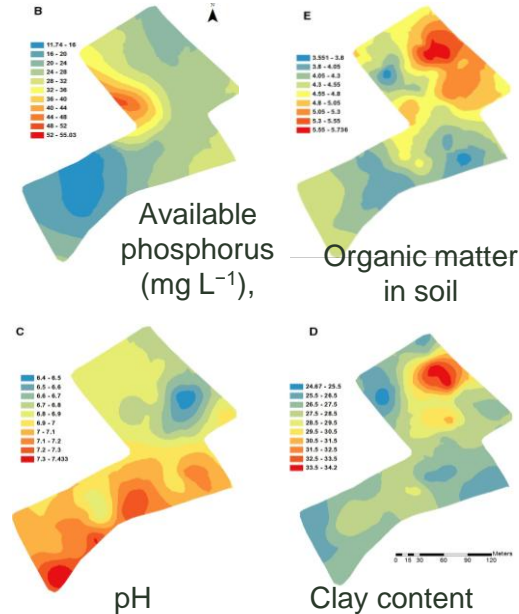
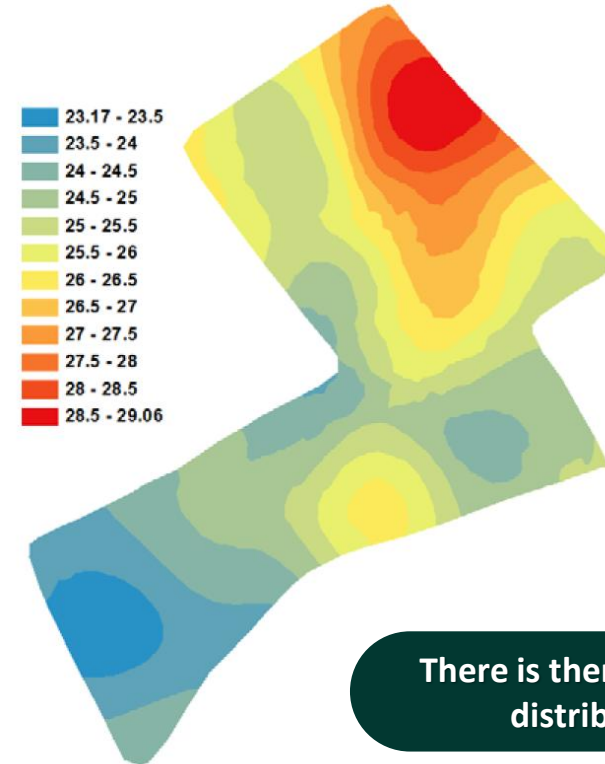


Black-grass density in fields associates with specific soil properties

Black-grass abundance (seedlings)

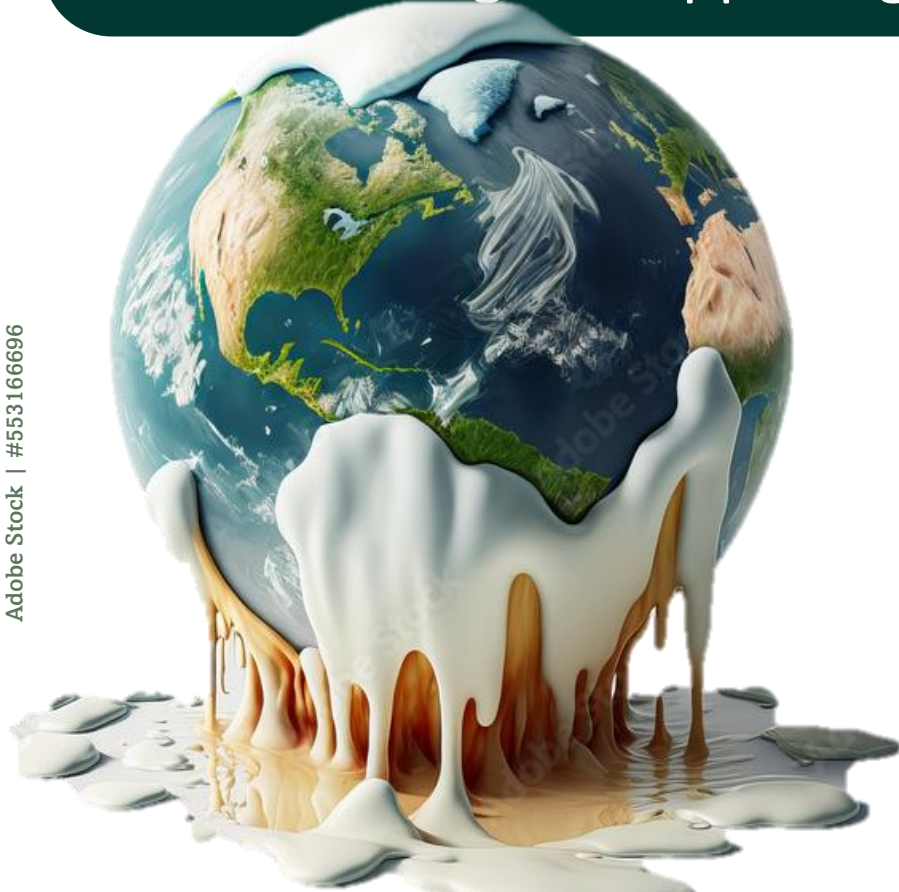


Soil moisture content (top 10cm)



There is there a relationship between weed distribution and soil properties.

Climate change is happening and will alter agroecosystems



Drought

Floods

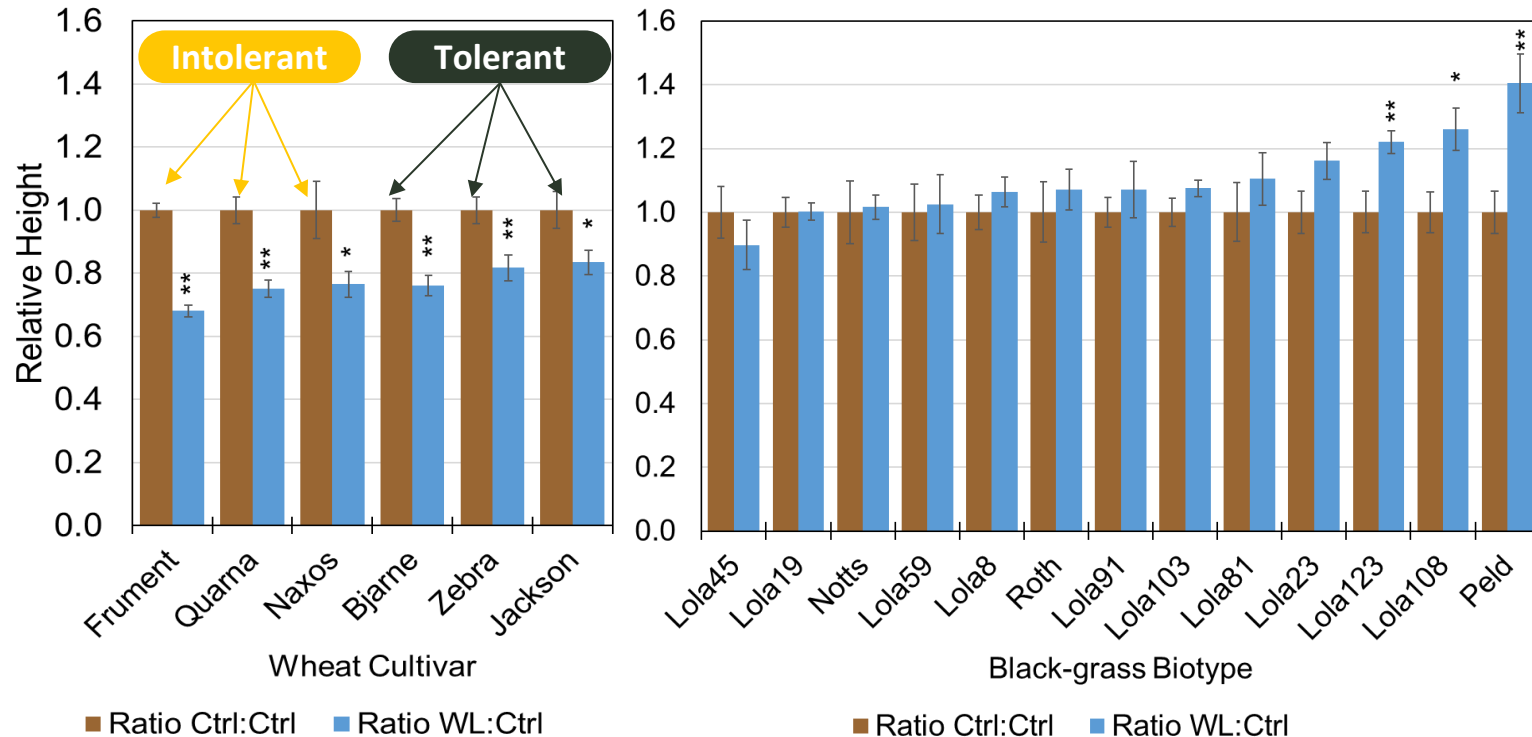
Extreme Heat

Extreme Rainfall

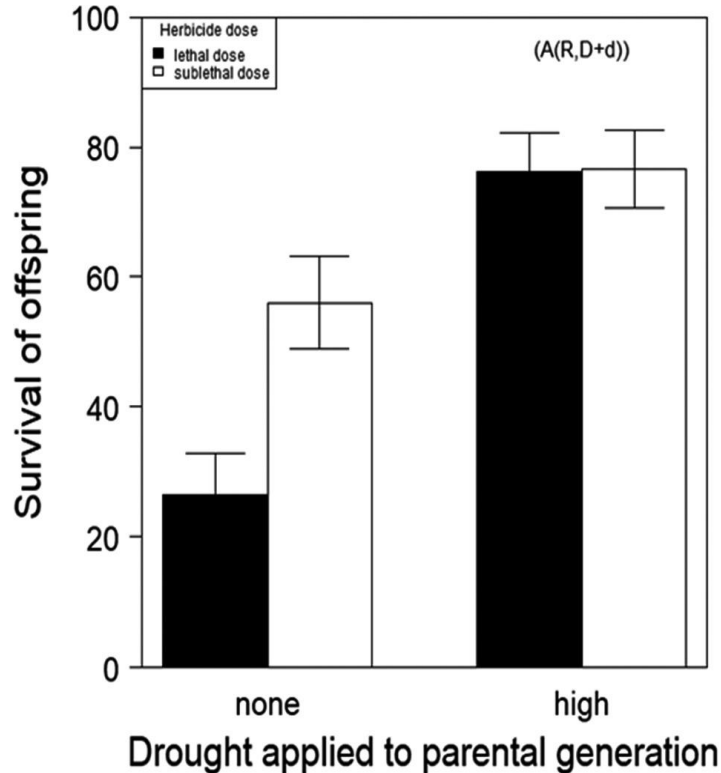
Storms /
Hurricanes

Yield loss =
Food insecurity

There are differences in waterlogging tolerance within and between wheat and blackgrass



Previous experience of drought alters herbicide resistance



↑ Drought = ↑ Herbicide resistance

So.... What does blackgrass of the future look like???

What can I do to help prevent blackgrass from getting worse in a climate change world...?



My Work

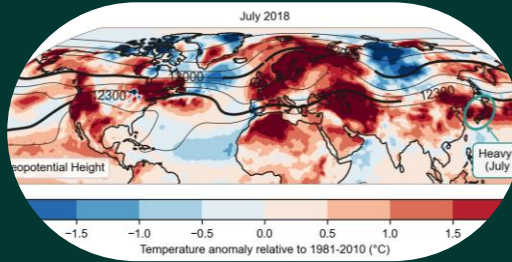


Laboratory



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Can lab experiments show
blackgrass's ability to survive
future climates?



Climate Projection



UNIVERSITY OF
GREENWICH

Natural Resources
Institute

What will the UK's climate be
like in the near future?



Social Aspect/ Farmers views

CITY

UNIVERSITY OF LONDON
EST 1894

How will farmers change
management practices in
response to blackgrass?

Interested in talking more?

Get in touch!

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