



Black-grass Bulletin Issue 1

A focus on field management studies



BLACK-GRASS RESISTANCE INITIATIVE

Summer surveying and seeds

The £2.8M BBSRC-HGCA Black-Grass Resistance Initiative (BGRI) is now underway. Officially launched at Cereals 2014, the BGRI is a multidisciplinary project to study and combat herbicide resistance in black-grass using techniques from molecular to field scales.

Black-grass density mapping

The BGRI team are now back in the office and the glasshouses after a busy field season mapping black-grass densities and collecting seeds in July and August.

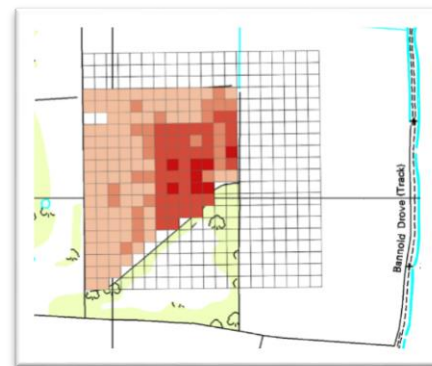
Starting at the foot of the Chilterns in South Oxfordshire and winding our way up through 11 counties, we visited 71 farms and mapped a total of 138 fields of black-grass, to end up on the edge of the North Yorkshire Moors. In each field we began by overlaying a 20x20m grid system onto a field map, then by walking up and down the tramlines and using GPS to pin-point our location we were able to estimate black-grass densities in the grid cells on either side of us. We surveyed everything from a sea of black-grass with well over 100 plants per m², to a clean wheat field with only a few wisps of the troublesome weed.

The next steps are for the team to gather management information for each of the fields that were surveyed, to try and tease

apart links between tillage, herbicide application, crop rotation and the prevalence of black-grass and evolving herbicide resistance.



BGRI field team enjoying the sunshine on day 1 of surveying.



An example of a density mapped field. Darker shades show higher densities of black-grass, while only two squares in this field didn't contain a single black-grass plant!

FAST FACTS

- 90% of all 20x20m squares surveyed this summer contained at least one black-grass plant
- 138 fields were mapped for black-grass densities
- 190 seed populations will be tested for herbicide resistance

TOWARDS A BETTER UNDERSTANDING

"This research is of relevance to every grower in the UK who uses a herbicide"

Susannah Bolton, HGCA

Seed collection and plans for resistance testing

Another major goal of the BGRI this summer has been to collect black-grass seed from as many farms as possible, allowing us to later look at the distribution of resistance across the country. As a result, come rain or shine this summer we've been scouring the countryside for wheat fields containing black-grass to collect seed from. Following closely behind the density-mapping team, we've successfully collected black-grass seed from over 130 fields included in the mapping surveys. In addition, with the help of FERA (the Food and Environmental Research Agency), we also instigated a postal seed collection for farms which we couldn't get to in person and those on the edges of the black-grass geographical range. We've been extremely pleased with the response and have samples from Yorkshire to Wiltshire, and Norfolk to Hereford. We now have seed from over 190 populations of black-grass to work with, which will provide an invaluable resource for our future investigations into resistance.

Since returning from the field, our attention has turned to the un-enviable task of weighing the seed samples, and carefully cleaning them

to remove immature and infertile seeds. With that job now completed a portion of each seed sample is being incubated to break seed dormancy, and we are soon to begin resistance testing. Starting this autumn and running until at least spring 2015 we'll be growing up plants from each seed sample in a glasshouse, and over a range of experiments we aim to screen each and every population for resistance to ALS and ACCase herbicides. To take this further, we'll also be extracting DNA to provide more detailed information on the genetic basis of any resistance found. Needless to say, with so many seed populations to test this will be an ongoing process. Nevertheless, we aim to give

progress updates as frequently as possible so look out for future updates in subsequent bulletins.



Media coverage of the BGRI



Since the launch of the BGRI, the project has enjoyed substantial media coverage from interviews on the BBC Radio 4 Farming Today programme to a detailed article in Crop Production Magazine, outlining the project and featuring comments from colleagues in the BGRI and HGCA.

The official launch of the BGRI came at the two day Cereals event in Cambridgeshire in June. A 'Black-grass Breakfast' event on the Thursday, hosted by Guy Gagen from the NFU, featured introductions to the initiative from Rob Edwards and Paul Neve with around 100 people in attendance. Cereals was also an opportunity for colleagues from Rothamsted and Sheffield to start engaging with the farming community and recruit volunteers for the subsequent density mapping and seed collection that took place this summer. The BGRI will definitely be returning to Cereals in 2015, hopefully with some preliminary results of the research so far.

An important aspect of this project is to ensure that information and results from our research feed directly back to farmers and industry. To ensure this, we will be hosting stakeholder meetings throughout the duration of the project. We will be inviting our project partners, HGCA and BBSRC, alongside representatives from agricultural organisations and leading UK agronomy companies to come and discuss the research and the impact that black-grass has on their business. A summary of the discussions from our first meeting, to be held in London on 25th September, will feature in the next edition of this bulletin.

Black-grass on the Twitter-sphere

Follow the BGRI on twitter - we tweet about the latest news from ourselves, as well as retweeting news and views about the latest on black-grass research and management from across the UK. This month a lot of people are sharing experiences of post-harvest management: *alternative crops, stale seed-beds, ploughing and flushing*. See what everyone else is up to and tell us how you are getting on [@BlackGrassRI](https://twitter.com/BlackGrassRI)



In the next issue:
Toward Understanding Resistance Mechanisms

FOR MORE INFORMATION

For more information on any aspect of the project please see our website at bgri.info or contact us by email at bgri@rothamsted.ac.uk

