
Scotland *The Bread*



News

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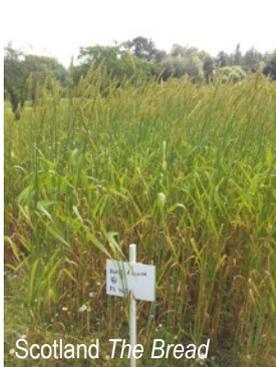
A project to re-establish a **Scottish grain and bread supply** that is healthy, equitable, locally-controlled and sustainable. Combining participatory research and action, it links plant breeders, farmers, millers, bakers, public health nutritionists and citizens. It will develop **better grain in Scotland**, grow and process it for lowest environmental impact and maximum **nutritional benefit**, support local economies with **more jobs per loaf** and help combat diet-related ill-health by making sure that this revitalised staple food can be enjoyed by everyone.

Welcome to this brief update on developments in the Scotland The Bread project. Read on for news of

- crop report on the 13 Scottish heritage wheats
- issues with the imminent harvest
- test results from the James Hutton Institute
- Nordic Cereals Seminar
- next steps in the project.

Crop report

Reports from Mungoswells (East Lothian), Craibstone (Aberdeenshire) and Macbiehill (Borders) indicate that the winter-sown wheats are looking good so far. This is the second year of bulking up samples of 13 varieties sourced from the John Innes Centre. Some were originally bred by Patrick Shirreff at Mungoswells in the 19th century. There are several accessions of *Rouge d'Ecosse* and *Golden Drop* (from different gene banks around the world) plus *Shirreff's Squarehead* and two *Hunters* lines. They are all, naturally, long-strawed varieties, giving them good potential weed suppression and useful distance from mycotoxins carried on soil-splash. The question is, however, whether they can stand up to Scottish winds and rain, especially when growing on fertile ground and carrying heavy seed heads.



Harvest

With potential gross yields of approaching a tonne (across all 13 varieties) on at least one of the trial sites, access to a plot combine and seed cleaning equipment is critical. The labour of keeping each variety separate is also significant. We are urgently seeking help with these costs.

Test results

In March, Bread Matters successfully bid for an Innovation Voucher from the Technology Strategy Board. This was used to conduct tests on the mineral and trace element density of the heritage Scottish varieties, using samples grown at Macbiehill Farmhouse in 2013, with a modern variety (Mulika) grown at Mungoswells as a control. The testing was supervised by Dr Luke Ramsay and Professor Derek Stewart at the James Hutton Institute. Their report, just received, shows significantly higher levels of iron, magnesium, phosphorus and zinc in most of the 13 compared to the control and more calcium and selenium in a few. There were considerable variations in trace element concentrations, too. These results are consistent with evidence from Sweden ([Hussain et al, 2010](#)) that *'wheat grain with high mineral nutritional value can be produced by using specific genotypes under organic cultivation'*.

Clearly we need to account for soil and site differences as well as conducting baking tests on the 2014 crop. This, as the JHI report noted, will enable us to see how much of the enhanced mineral density of the Scottish wheats is retained in the baked bread – and therefore available to the consumer. The attention to bioavailability of nutrients as well as digestibility (normally only tested in crops grown for animal feed) places **Scotland *The Bread*** amongst the most innovative research projects in progress.

Nordic conference



Andrew Whitley of Bread Matters attended the Nordic Association of Agricultural Scientists conference in the Åland Islands in Finland between July 15th and 17th. Entitled 'Nordic heritage varieties of cereals', it brought together plant breeders, farmers, millers, bakers and researchers for three days of interesting presentations, discussions and farm visits.

It is clear that the Nordic countries are some way ahead of us in researching and developing markets for heritage varieties and landraces of wheat, rye, emmer and einkorn. We hope to be able to incorporate a selection of promising varieties from Scandinavia into further growing and breeding work to develop highly nutritious grains that crop well in Scotland. This could be, in some respects, another 'homecoming', since gene bank specialists at the conference described how 'prolific' wheat varieties, developed by people like Shirreff in the 19th century, had replaced (or been mixed or crossed with) local varieties in many parts of Europe, including Scandinavia.

Next steps

With the prospect of usable quantities of grain being available soon and with the initial test results giving us a steer, the project is set to move up a gear. Over the coming weeks, we need to

- conduct baking tests on all 13 varieties
- make decisions on which of the 13 to sow again this autumn (based on the farmers' evaluation, the baking tests and the mineral density evidence)
- acquire seed of other varieties and landraces (e.g. from Scandinavia) to put into the trial programme and for possible crossing
- seek funding for the expansion of the project to enable multi-site testing, development of crosses and establishment of an end-user infrastructure that will make the improved grain part of an improved Scottish diet.

Meetings of relevant participants will be convened shortly. In the meantime, thanks are due to those farmers, researchers and citizens who are contributing their expertise and enthusiasm to this vital project.