

Research to make crops more resilient to changing weather

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The project aims to improve the resilience of Brassica crops such as sprouts, cabbage and broccoli by understanding the processes that control plant development. Credit: University of Bath

Scientists at the University of Bath are part of a new five-year project to save brassica vegetables such as cabbage, broccoli and kale.

Oilseed rape and Brassica vegetable [crops](#) have a combined UK market value in excess of £1 billion, but suffer yearly losses of up to £230 million, primarily due to increasingly unfavourable and unpredictable weather patterns.

The Brassica, Rapeseed and Vegetable Optimisation (BRAVO) project, funded by the Biotechnology and Biological Sciences Research Council (BBSRC), aims to combat these crop losses by unravelling the processes that control key aspects of plant development. This knowledge will then be applied to help develop new, more resilient varieties of Brassica crops that can achieve superior field performance whilst reducing yield loss and industry wastage.

The project, led by Professor Lars Østergaard of the John Innes Centre (JIC), brings together the expertise of leading UK plant scientists from three research institutes (JIC, Rothamsted Research and the Institute of Biological, Environmental and Rural Sciences) and four universities (Bath, Nottingham, Warwick, York) together with representatives from the oilseed and horticultural industries.

Mitigating the effects of climate change

Rod Scott, Professor of Plant Molecular Biology and Head of the University of Bath's Department of Biology & Biochemistry, will be leading the research at Bath. He explained: "Environmental conditions influence a number of key stages of plant development including inflorescence growth, flowering, fertilisation and seed production.

"In the face of climate change it is more important than ever that our crops are capable of tolerating rapidly changing [environmental](#)

[conditions](#) while still maintaining good vigour and achieving consistently high yields."

Discussions between BBSRC BRAVO consortium members and industrial stakeholders identified a number of strategic targets sensitive to such changing weather patterns. These include more concise flowering, consistently high fertility under fluctuating environments, reduced yield loss and more uniform seed performance.

As well as improving the fundamental understanding of how Brassica crops grow and respond to the environment, the £4.4 million BBSRC BRAVO project will support the training of young scientists and raise industry stakeholder awareness of new developments through workshops in Brassica genetics, genomics, phenotyping and modelling.

Improving food security

Professor Lars Østergaard said: "As our climate changes and the global human population is predicted to exceed 9 billion people by 2050, it is more important than ever that our crops are able to grow and produce as much food as possible in varying weather conditions and season lengths. By unravelling and exploring the processes behind important genetic traits in crops, we will provide a basis for the development of improved Brassica crops that reduce losses and withstand changes in climate and environmental conditions."

BBSRC's Head of Agriculture and Food Security, Dr Adam Staines, added: "This project addresses a number of key BBSRC research priorities. Making UK crops more resilient to our changing climate is key to maintaining future productivity and reducing food waste. This group is building on past investments in basic plant science and translating this knowledge to key UK crops, working with the relevant industry to deliver real potential long term benefits for UK farmers. "

An impressive 85 per cent of the University's Biological Sciences research was judged as world-leading or internationally excellent in the recent independently-assessed Research Excellence Framework 2014.

Provided by University of Bath

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