

Plant scientists call for rethink of GM crop regulation

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Credit: Jesper Dyhre Nielsen

In a report to the Council for Science and Technology, which advises the Prime Minister on science policy, the scientists warn that unless GM crops are regulated at national, rather than at EU level, European agriculture could suffer because it will be unable to adopt GM crops.

The new regulatory system should be modeled on the way pharmaceuticals are licensed in the UK, says the report, which was written by scientists at the universities of Cambridge and Reading, The Sainsbury Laboratory and Rothamsted Research.

According to lead author Professor Sir David Baulcombe of the Department of Plant Sciences at Cambridge: "Most concerns about GM crops have nothing to do with the technology, which is as safe as conventional breeding.

"They are more often related to the way that the technology is applied and whether it is beneficial for small scale farmers or for the environment. To address these concerns we need to have an evidence-based regulatory process that focuses on traits, independent of the technology that has been used to develop them."

This is the approach used for regulating pharmaceuticals, regulators looking at the effects that new drugs have on patients, not at the technology used to develop them – which in many cases involves genetic modification.

The report recommends the European Food Safety Authority retains an advisory role on risk and safety, similar to the European Medicines Agency for pharmaceuticals, but that approval is made on a national basis, as by the National Institute for Clinical Excellence in the UK.

"As there is no evidence for intrinsic environmental or toxicity risks associated with GM crops, it is not appropriate to have a regulatory framework that is based on the premise that GM crops are more hazardous than crop varieties produced by conventional plant breeding," it says.

Since GM crops were first developed 30 years ago, major advances in basic science have led to new methods for transferring genes into specific locations in a crop plant's genome.

To respond to today's challenges of population growth, climate change and environmental degradation, as well as the need to develop biofuels

and other materials, the report argues plant breeders in the UK – which is a world leader in plant genomics – need GM technology and a well-functioning R&D pipeline for both GM and non-GM crop varieties.

GM crops were first grown commercially in the USA in 1994, and in Europe in 1998. They are now grown in 28 countries worldwide, with GM crops currently accounting for 12% of global arable acreage. Most of that acreage is soybean and cotton, and 81% of the global acreage of these crops is sown to GM varieties.

However, even though 70% of protein fed to livestock in the European Union is imported as GM crop products, less than 0.1% of the global acreage of GM crops is cultivated in Europe. This, the report argues, is because experimentation and commercial release of GM crops in the EU is subject to much more stringent regulation than conventionally bred plants, with a slow and inefficient approval process.

As a result, multinational companies such as BASF and Monsanto have abandoned research to develop GM crops in Europe, and there has been a significant reduction in experimental field trials in the UK, with only one in 2012, compared with 37 in 1995.

To ensure a well-functioning research and development pipeline that can translate genomic research from the laboratory to the market place, the report also recommends establishing a new R&D capacity – PubGM.

PubGM would allow preliminary evaluation of the practical application of academic research findings to crops, including field testing new GM crops either in partnership with companies or so that the public sector could validate traits before engaging in partnerships with the private sector.

More information: The report is available online:

www.gov.uk/government/uploads/.../m-science-update.pdf

Provided by University of Cambridge

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