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# Landes Highlights

## Regulating biotechnology

Stuart Smyth and Peter Phillips, both from the University of Saskatchewan, review the consequences of an increasingly divergent regulation structure in the biotechnology sector.

Regulatory decisions for genetically modified (GM) crops in North America and numerous countries in Latin and South America, Australia, and Asia are, in the views of the authors, predictable and efficient. In stark contrast, regulatory decisions reached in the European Union are described as politically motivated rather than being guided by science and well established risk assessment methodologies.

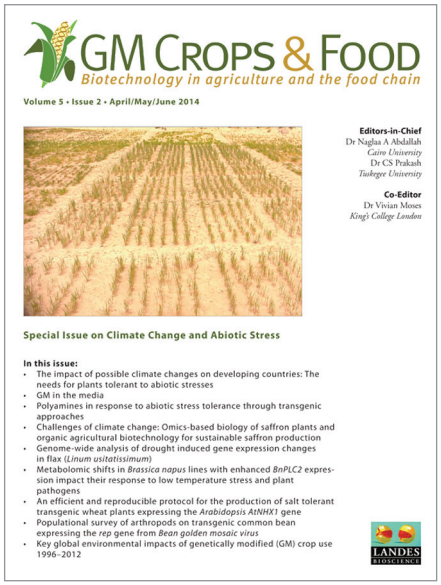
The authors argue that the establishment of the European Food Safety Agency (EFSA) has resulted in a decoupling of the risk assessment and product approval processes within the EU. EFSA conducts the risk assessment using science-based methodologies and provides a report of their assessment to the European Commission, while the product approval process resides with committees of the European Commission, resulting in the politicization of risk.

Several examples are given where the current restrictive politics have led to severe economic consequences and significant costs in the absence of any objective risk for human health or the environment.

Thus, the authors see a pressing need to consider the appropriate role for science and society in the evaluation of new risks imposed by transformative technologies, in this case by the introduction of biotechnology in the agri-food system.

**Reference**

Smyth S, Phillips PWB. Risk, regulation, and biotechnology: The case of GM crops. GM Crops Food 2014; 5; PMID:24922052




## Resistance to bacterial wilt in transgenic brassica crops

In a short communication published in May, a Japanese research team identified two proteins from the *A. Thaliana* ecotype Wassilewskija that confer resistance to bacterial wilt in transgenic Brassica crops. The authors transferred genomic fragments of the *Arabidopsis* RRS1 and RPS4 genes under the control of their native promoters into *Brassica rapa* plants, which belong to the same family (Brassicaceae). Transgenic *B. rapa* plants appeared healthy after inoculation with the pathogen, while bacterial growth in the WT was approximately 10-fold higher than that in the dual Rgene-transformed plants.

**Reference**

Narusaka M, Hatakeyama K, Shirasu K, Narusaka Y. Arabidopsis dual resistance proteins, both RPS4 and RRS1, are required for resistance to bacterial wilt in transgenic Brassica crops. Plant Signal Behav 2014; 9:e29130; PMID:24832367; http://dx.doi.org/10.4161/psb.29130

# Salinity stress in transgenic tobacco

Recently, a group of researchers from New Delhi, India reported on the role of a cyclophilin A-like gene from *Piriformospora indica* (*PiCypA*) in salinity stress tolerance in T1 transgenic and up to seedling stage of T2 transgenic tobacco plants. In this report, *PiCypA* T2 generation matured tobacco plants were evaluated under elevated osmolarity conditions (200 mM NaCl) up to flowering and seed set stages. The authors found that *PiCypA* T2 tobacco lines showed comparatively better survival and exhibited higher root growth and fresh weight compared with the wild type and vector control. This study provides further direct evidence that *PiCypA* transgene maintained the sustainability in providing salinity stress tolerance in T2 generation of transgenic tobacco plants .

**Reference**

Trivedi DK, Ansari MW, Bhavesh NS, Johri AK, Tuteja N. Response of PiCypA tobacco T2 transgenic matured plant to potential tolerance to salinity stress. Plant Signal Behav 2014; 9:e27538; PMID:24394360