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Decades-old GMO regulation unfit for 21st century

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[Klaus Ammann and Marcel Kuntz](#) 12. Januar 2016



European legislation should not continue to stigmatise plant-breeding techniques used successfully to cultivate herbicide-tolerant canola. [\[Jan Smith/Flickr\]](#)

The European Commission is set to guide the regulatory fate of new biotechnologies crucial to the future of plant breeding. To meet such agricultural challenges, we need a product-oriented, flexible and adjustable regulatory system, write Klaus Ammann and Marcel Kuntz.

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A new age of biotechnology but an old regulation

[New methods](#) of influencing genetic traits in diverse organisms (here we concentrate on plants) become available at an increasing speed and low cost.

Before, plant breeding was divided into GMOs and non-GMOs, focusing worldwide (with rare exceptions) on processes. [EU regulation](#) deals with direct DNA transfer creating transgenic organisms, defines it as a legal object called “GMO” altered in a way which does not occur in nature.

The argumentation below will show that future inclusion or exclusion of “gene editing” technologies from the present day GMO regulation is building on specific semantic analysis of a flawed conception of GMOs.

An EU regulation based on Genomic misconceptions

Generally, the molecular processes of modern technologies are copied from natural ones, a view promoted since many years by [Werner Arber](#) (Nobel Prize recipient). This is why a separation between plants originating from *natural* against *unnatural* breeds has its [pitfalls](#) and is basically wrong – since many [naturally occurring transgenic plants](#) exist, amongst them [sweet potato](#). Another misconception: crops with herbicide resistance obtained by natural mutation, or by artificial mutation through chemistry or radiation, they are excluded from regulation for political reasons... While the current EU regulation was meant to allow the use of biotechnology when proven safe, it has encouraged political polemics and stigmatization, disinformation at a massive scale (unprecedented in a democratic world) and ultimately prevented farmers from freedom of choice and scientists from academic freedom, not to mention the shameless exportation of these problems to poor countries.

Call for a new regulation of modern crop breeding

In recent years, many important public institutions and researchers called for a *new product-oriented regulation*. “Product” should not be understood as the DNA construct, but as the final product that goes on the market, (farmers and consumers do not buy “DNA products”). Globally, dozens of [scientists](#) and academies (such as the European Academies, [EASAC](#)) and others (e.g. [UK House of Commons](#)) are calling explicitly for a shift towards product-based regulation.

Another [scientific statement](#) (on herbicide tolerance, HT, but the reasoning is valid for all general traits):

“It is clear that the EU cannot sustain its inconsistent process-based regulatory position and it must decide to either: (i) regulate non-GM so-called upgraded crops (e.g. HT) From an environmental risk perspective in a similar fashion to GM crops; or (ii) remove environmental regulations from GM crops that have equal environmental risks to unregulated non-GM crops (e.g. HT)”.

What about New Plant breeding Technologies (NBTs)?

Some of these new methods are applying micro-mutations at very precise genomic locations. In addition, these methods are becoming simpler and cheaper. There are regulators such as the [German Bund für Verbraucherschutz](#) (BVL) and Swedish [scientists](#) calling for exclusion of such “gene editing” from the GMO regulation as long as such crops are not containing any “foreign” DNA. These arguments are derived from a semantic analysis of regulatory paragraphs and present day molecular knowledge. This is a view with some merits, but actually neglecting still existing potential risks which will be admittedly low, but not zero.

In addition, following this logic, focusing again to DNA structures would make some falling back into the old stigmatizing regulation, with all the above mentioned drawbacks. Moreover, it is justified to say that [it is practically impossible](#) to give a clear definition of GMOs. Others wrote about the “[nonsensical GMO pseudo-category](#)”), a parallel to the failed attempt to genetically define human [races](#). Similarly, it will be difficult to define “foreign” DNA.

All these considerations allow predicting that such a mixture of de-regulation/regulation of New Breeding Techniques will encourage unnecessary bitter disputes: [Opponents](#) already opened new confrontations, calling for strict moratoria and the in-discriminatory inclusion of all new breeding methods into a regulatory regime. It is obvious that opponents (some generously funded by [European public money](#)) will succeed in propagating fears over non-regulated NBTs, which will be called “hidden GMOs” as is already the case for mutagenized crops such as some HT sunflowers (some fields were already [vandalized](#) in France).

It will indeed be difficult for non-experts to understand why decades-old GMOs are still regulated (with their regulation even strengthened or their marketing bluntly banned by the European Parliament, leaving aside science, in contrast to the advice of the European Food Safety Authority), while novel biotechnologies should only be regulated partially.

What about talking benefits for a change?

Talking about [benefits](#) of modern breeding is not to say we should remain in the old-fashioned techno-fix age and focus alone on the belief that technology will be the alpha and omega of progress in agriculture. There are plenty of data filled papers and reviews demonstrating that the ultimate success of an introduction of new biotechnologies depends on many other factors, such as production structure, farmers lifestyles, farmers family structures, [crop ecology](#), landscape ecology, historical elements, [tradition](#) etc.

We have a dream

What we actually need, is a global regulatory system built on the best scientific knowledge (which evolves with time), including a [possibility](#) to differentiate according to the depth of risk impact related to the technologies applied.

The political implication should not be limited to always more regulation, bans and bargaining over modern agriculture. At a time when many doubt about Europe, the greatness of European policy should rather be to lift political barriers, drop unscientific stigmatization and shed light on the indispensable factors for ultimate success and progress of modern agriculture to reach the agricultural challenges facing the 21st century.

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