Policy Recommendations on New Genomic Techniques for European Plant Breeding

Policy Recommendations

Context

These recommendations were developed in the context of the five-year EU-funded Research and Innovation Action CHIC (Chicory as a multipurpose crop for dietary fibre and medicinal terpenes) to explore the potential of New Genomic Techniques (NGTs) for niche crops in European agriculture by drawing on root chicory as a case study.

Eight key recommendations were developed in a multi-step process involving a broad range of stakeholders. All recommendations in this document were rated by participating stakeholders as important or very important.

1-Against the backdrop of the multiple challenges, the European Commission should consider ALL available plant breeding and farming methods to respond to these challenges – including possibly synergistic effects of combining methods.

Recent key EU policy documents in the context of the European Green Deal and beyond, in particular the Farm to Fork Strategy, the Biodiversity Strategy, and the Guidance Document on Public Procurement, give priority to organic farming for making EU agriculture more sustainable and resilient.

Multiple challenges such as extreme weather conditions, disruptions of food supply by pandemic and war, phasing-out of pesticides and the ever-increasing time pressure to respond to these challenges require reconsideration of prioritising organic farming only.

As shown in the CHIC project, NGTs can reduce breeding time from 12-15 to 2-3 years and can be applied to underutilized crops. This would greatly increases the economic incentive for plant breeding to target small crops and small markets.

2-The EU GMO legislation should be amended to exempt certain types of NTGs from the scope of pre-market assessment and labelling requirements presently required for GMOs.

Significant lowering of the regulatory barriers is a key requirement for adoption and use of NGTs for the European market, specifically by SME plant breeders and farmers. It is also a key requirement for the acceptance by other agro-food value chain actors (GMO stigma) for the EU market. Without such changes, the EU would be left with only traditional breeding techniques to respond to the many challenges, restricting significant breeding investments mostly to staple crops (see Recommendation 1).

It needs to be clarified where exactly a line should be drawn for exemption. In any case those types of genetic changes that can also be achieved by conventional breeding or natural mutations should be exempted.

If certain NGTs would also be exempted from the legal definition of GMOs (alongside other breeding methods presently covered by the definition), adoption of these NGTs by the entire agro-food value chain is expected to be more likely and faster.

3-Different options for providing non-discriminatory information to consumers on the use of such NGTs in food products should be investigated and assessed

A mandatory label on food products similar to the GMO label would constitute a stigma and discourage adoption of NGTs by food value chain actors. Therefore, different options for providing information to consumers on the use of such NGTs in food products should be investigated and assessed in terms of consumer needs, needs of food-value chain actors, in terms of feasibility and costs, as well as liability implications.

The option embarked on should be non-discriminatory, i.e. not jeopardizing adoption of NGTs, as this would prevent contributions to sustainability goals of the European Green Deal.

4-The emerging legislations in jurisdictions outside the EU should be monitored to identify possible hurdles to international trade, and processes should be supported at the international level (UN, OECD etc.) striving for harmonisation of legal provisions or mutual recognitions.

The triggers for case-by-case evaluation before commercial use differ among countries e.g. extracellular DNA or nucleic acid vs. foreign DNA vs. transgenic DNA.

These practices also make it hard to identify possible scenarios for harmonisation. Often the absence of foreign nucleic acids is evaluated but there is no clear guidance on how this can be achieved.

5-Policies should facilitate processes aiming at (i) clarification of the IPR landscape, and at (ii) easy access of key IPR for EU-based SME-type plant research and breeding companies.

Participation of plant research and plant breeding SMEs has been highlighted as an important advantage of NGTs when addressing important challenges and policy goals in the EU.

Business investment requires clarity on who owns relevant Intellectual Property Rights (IPR), what are the conditions for licensing and that these conditions work for SME-type businesses. At present, this is not the case. For example, the IPR for the CRISPR/Cas9 technology is owned by several parties, each with varying rights in different jurisdictions. This complex situation needs to be closely and routinely monitored so that SME and breeding companies have clear information on the best routes to obtaining IPR in the EU. To this end, clarifying and simplifying these processes would be very beneficial. Therefore, policy action is needed to facilitate clarification of IPRs and licensing processes, including e.g. information and guidance for innovators.

6-Dedicated funding programs for R&I should be established for further investigating applications of NGTs to plants (i) with sustainability or human health traits, and (ii) in underutilized crops in Europe.

Drawing on the experience with the controversy of first generation GMOs it is important to move beyond announcements and promises towards making plant varieties a reality offering valuable contributions to European challenges. Business uncertainties are however likely to prevail for a couple of years hampering adoption of NGTs driven by market forces. Therefore, dedicated funding programmes for R&I are needed, including EU and national research programmes, public-private partnerships.

For sustainability and human health traits, EU-funded flagship projects aiming at high priority challenges should be launched, including e.g. contributions to plant health and securing production while reducing pesticides; EU-funded flagship projects should be initiated to improve underutilized and promising European crops. Such initiatives would also benefit from social science and sustainability research identifying and prioritising a research agenda, identifying and assessing sustainability impacts (environmental, economic and social dimensions) and societal needs, including their dynamics and for improving the interactions between science, technology, and society.

7-Dedicated funding programs for R&I should be established for further investigating applications of NGT-improved plant varieties for medical purposes.

The results of the CHIC project illustrates the potential of NGT-improved plants to target human health-related applications in general and their use as sources for nutraceuticals or drugs more specifically.

The development of plants and plant-derived products for medical purposes requires specific types of interdisciplinary collaborations between plant scientists, biotechnologists, and medical doctors, farming specialists, lawyers and social scientists and encourages participation of public and private research organisations, pharmaceutical companies, as well as public health organisations. This is presently not reflected in EU R&I funding programmes.

8-Dedicated platforms should be established to facilitate exchange among stakeholders of NGT-specific information and views as well as to re(consider) and coordinate strategies.

Against the backdrop of multiple challenges for the European agro-food sector, there is a need for reconsidering existing strategies or the development of new ones. Conditions should allow sensitive actors to participate, discuss issues freely and build mutual trust.

In particular, such platforms should be established for dialog

– among agro-food value-chain actors: Interesting examples are the retailer-driven initiative “Varieties for Tomorrow” in Switzerland and the Landbruk Cooperative in Norway. Both of them bring together actors across the food chain.

– with the organic farming community in order to clarify under what conditions and how the potential of NGTs can be used without jeopardizing their business model

– with a broader range of civil society organisations active on consumer and environmental issues aiming to broaden dialogue beyond the “usual suspects”.

CHIC was a Research and Innovation Action bringing together 17 partners from 12 countries for five years. The project has received funding from the European Union’s Horizon 2020 Research and Innovation Programme under grant agreement No 760891. For more information: chicproject.eu