

Towards a scientifically justified, differentiated regulation of genome edited plants in the EU²

The Agriculture Committee of the Accademia Nazionale dei Lincei strongly supports the statement “Towards a scientifically justified, differentiated regulation of genome edited plants in the EU”. prepared by the German National Academy of Sciences Leopoldina, the German Research Foundation, and the Union of the German Academies of Sciences and Humanities.

The Committee fully agrees with the proposal to develop a new legal framework that places the product of genetic modifications, rather than the process to develop it, at the centre of the evaluation process.

Spontaneous, random genetic mutations have been essential for the evolution of cultivated plants and are thus at the basis of human existence. All plants cultivated today are the result of a long process of selection of mutated plants. Starting thousands of years ago from wild species, this process has led to plants that are suited for cultivation and now provide nutritious and safe food at affordable costs. Since the mid-nineteenth century, new mutations have been experimentally induced, using technologies that produce random mutations at higher rates. These plants are not subject to specific regulations. New, more accurate technologies have been developed during the last twenty years that have allowed to introduce specific characteristics: those that go under the collective name of new genomic technologies or new breeding technologies, such as genome editing or cisgenesis; they can induce defined modifications that are equivalent to those that could be obtained from spontaneous mutations or introgressed through crossing procedures. These plants are at present severely regulated according to the same rules applied to GMOs. The stringency of GMO regulations imposes an economic burden that practically favours large multinational companies at the expense of public research and small enterprises. Time has come to implement regulations that modulate severity according to both the technology and the genetic trait. Evaluation of a new plant should be mainly based on the specific characteristic that has been introduced rather than on the technology used to produce it, also taking into consideration the benefits it provides to society, as is the case for vaccines and pharmaceuticals.

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² Statement approved on the February 7th, 2023 meeting.

We are living in an era of great changes in society, economics and ecosystems, some of which are particularly rapid and profound. An important aspect, which is not easily acknowledged by the general public, but is very important for our future, is the strong pressure endured by agriculture to provide sufficient, safe and nutritious food to a fast-growing global population, and at the same time reduce the environmental impact of food production. Building on the advancement of scientific research, all agricultural practices are under continuous revision and improvement to face these challenges. Genetic improvement has historically been, and continues to be, the main option to obtain more nutritious and productive plants better suited to a changing world and to reduce the environmental footprint of agriculture. New genomic technologies, together with digital agriculture, represent key technologies to achieve the goal of sustainable intensification of agriculture, i.e. reducing the environmental impact without compromising yields. They also make it possible to combine innovation with tradition by allowing us to improve the sustainability profile of existing varieties whenever these varieties have great commercial value. This is particularly important for a country like Italy that holds great varietal richness in species such as grapevine where high production is tightly linked to specific traditional varieties.

Within this perspective, the Committee highly recommends a revision of the European Union Directive 2001/18/EC, which currently regulates GMO approval and cultivation, including also the products of new genomic technologies. The maintenance of the *status quo* in Europe for the products of new genomic technologies, would be a serious mistake under many aspects: science, economics, and environment.