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# Industry

# Gene editing —

Gene editing has been touted as one of the next big innovations in agriculture, but what is it all about, you might ask. Read on for answers to some Frequently Asked Questions on the topic.

## ***So what does gene editing actually involve?***

Gene editing refers to laboratory techniques that allow scientists to change a selected, very specific sequence within the genome of a crop. It would allow gene changes that can happen naturally in crops (including sugar beet) to be hastened through modern techniques.

This is already done through the process of plant breeding but, while traditional breeding takes many years, gene editing would speed up this process without adding to the genetic composition of the crop. Traditional plant breeding can take 10-12 years to produce market-ready varieties, whereas gene editing techniques can be quicker to deliver results.

## ***How is gene editing different to genetic modification?***

With gene editing, no new genes from other species are inserted into the plant; instead changes are made to the plant's own DNA. This process can and does happen in nature. By comparison, genetically modified organisms contain genes inserted from other species, such as bacteria or another plant species.

## ***How would the agriculture sector benefit from gene editing?***

In crops, gene editing technology has the potential to tackle a range of challenges including pest and disease resistance, drought tolerance and nutrient use efficiency, helping the arable sector to reduce its need to use plant protection products, improve food security and meet national and global sustainability targets.

In sugar beet specifically, the technology would be an important tool in our industry's wider work to protect the crop from Virus Yellows, helping growers to sustain and increase crop yields through making it more resistant to the disease.

## ***How do we know gene editing is safe?***

Gene editing is simply the speeding up of traditional breeding techniques that have been used for centuries. This brings benefits for crops, farmers and the environment. It is also already used in many countries across the world.

## ***How will the techniques impact the environment?***

Using gene editing could actually reduce

the impact on the environment, because scientists could use the techniques to alter the existing genes of a crop to make it more resistant to disease, meaning fewer pesticides will need to be used to protect it once it is sown. This will help towards more sustainable and environmentally friendly food production.

As the techniques give results that are much quicker than using traditional plant breeding, the in-field benefits can also be realised much sooner, helping British farmers to play their part in tackling climate change.

## ***Isn't gene editing banned in the EU?***

Currently, the EU classes gene editing as genetic modification, meaning that yes – it is banned in the EU. However, the EU is behind the curve on gene editing of crops, as many other countries allow the techniques to be used, including the US, Argentina, Australia and Japan.

## ***Why is now the right time for the Government to be considering this issue?***

In Boris Johnson's first speech as Prime Minister in 2019, he pledged to liberate the UK's bioscience sector from the EU's rules around gene editing, so that we can develop "blight-resistant crops". Following Brexit, as a country we are now able to make our own decisions in areas such as agricultural policy, and create policies which are based on the latest science. Modernising gene editing regulations is the perfect example of this.



# your questions answered

## ***What is the Government proposing and how long would it take?***

At the Oxford Farming Conference in January 2021, the Environment Secretary George Eustice MP launched a public consultation on the Government's plans to change the law to stop gene editing organisms from being regulated in the same way as genetic modification, as long as they could have been produced naturally or through traditional breeding. The Government specifically noted that it wants UK regulations to be in step with current science.

The consultation received 6,444 responses, including from British Sugar, NFU Sugar and the BBRO, and at time of writing in July we are still awaiting the Government's response which, if positive, will outline their plans for how they will take the policy forward in legislation. There are a few ways this could happen – either through creating a whole new piece of legislation especially for gene editing or amending an existing piece of

legislation to add it in. Depending on the Parliamentary timetable and which route is followed, this could take between one and two years.

## ***Do consumers need to know whether gene editing has been used to produce their food?***

Although it is not scientifically possible to distinguish between gene edited plants and traditionally bred plants, as a sector we believe that transparency for consumers is important. In our respective consultation responses, our

industry supported proposals developed by the All Party Parliamentary Group on Science and Technology in Agriculture for breeders to declare whether gene editing has been used at the point of registering their new plant variety. This will ensure there is transparency in supply chains and for consumers, but not add any additional administrative burdens, as the existing regulatory framework for registrations could simply be modified, rather than creating a new one.

Across the homegrown sugar industry, we look forward to the publication of the Government's response to their public consultation, which we are optimistic will allow us to make progress towards being able to use gene editing to bring benefits to our crop.