Food PROTEIN DIVERSIFICATION THINK TANK
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Factsheet

Biotechnology in Food

Biotechnology in food and feed uses scientific methods to modify living organisms or their components to produce food in new ways.

Biotechnology encompasses a range of techniques such as genetic engineering, cell culture and fermentation technology. These enable many applications, including the potential to enhance the flavour or nutritional value of foods, increase crop yields, or reduce reliance on fertilisers and pesticides. Ultimately, biotechnology could strengthen global food security by producing more food with a smaller environmental impact.

Examples of biotechnology techniques include modifying crops using CRISPR/Cas9 to improve yields and drought tolerance, cell cultivation to create meat alternatives, or fermentation-based production methods that can efficiently produce protein at scale.

While the term itself is not new, it did not become widely used until the late 1960s, when peer-reviewed literature began publishing research based on biotechnology techniques. The processes now described under the label 'biotechnology' are typically relatively new scientific approaches, such as genetic engineering. However, technically speaking, the term also encompasses historic processes, such as adding yeast to a flour mixture to trigger fermentation. In modern food production and manufacturing, biotechnology most often refers to high-tech interventions such as CRISPR/Cas9, rather than traditional practices such as cheese making.

Applications of biotechnology have been in use for decades, particularly in pharmaceutical production. The use of biotechnology – especially fermentation – in food and protein production started to boom in the 1970s.

Consumer perceptions of foods created using biotechnology, particularly high-tech applications, are typically characterised by scepticism and negativity. Consumers often believe that natural foods are better for their health. Thus, genetic engineering and scientific intervention in food are seen as unnatural and potentially dangerous. These perceptions often shift once consumers are informed about the safety and benefits of such food products.

Further Reading

Uncovering Consumer Perceptions of the Upcoming Biotech Act. EIT Food Consumer Observatory. 2025