



Post-Brexit opportunities for better UK regulation of plant breeding innovation

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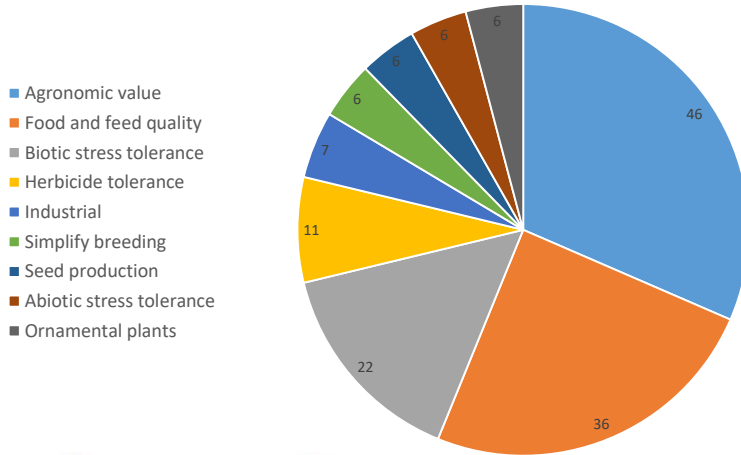
Global genome editing review – Julius Kuhn Institute

- Gene editing applications are increasing rapidly worldwide
- CRISPR-Cas9 is the dominant technique
- Most applications (90%) involve targeted mutations, only 10% insert heritable (foreign) DNA
- Review identified gene editing applications in 46 different crops, led by rice, tobacco, tomato, maize, wheat and soybean
- Applications target a wide range of traits with agricultural, environmental and consumer benefits



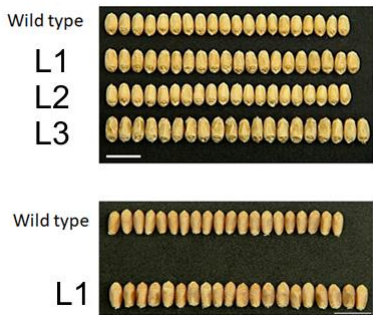


Gene editing Market oriented applications according to trait (Jan 1996 – June 2019)



Gene editing examples – agronomic value

Wheat – bigger grains, increased grain weight



Oilseed rape – pod shatter resistance





Gene editing examples – disease resistance

Rice, wheat, tomato –
wheat powdery
mildew resistance



Orange, grapefruit –
citrus canker resistance



Gene editing examples – food and feed quality

Wheat – reduced
gluten content



Soybean, camelina –
healthier oil profiles





Gene editing examples – stress/climate resilience

Maize, wheat –
drought tolerance



Rice – salt



UK regulation of conventional plant breeding

- National Listing (NL) system delivers proven, product-based regulation
- Statutory testing ensures quality and performance of new varieties meet market requirements
- NL system underpins unique, open-access PVR system of Intellectual Property
- Supported by overarching Food Safety and Environmental Protection legislation (+ Novel Food Regulation)
- Plant breeding has a clear track record of safety





Future regulation of plant breeding innovation

- National Listing system offers a proven vehicle to deliver the outcomes society expects from agriculture and food production
- The system has evolved and will continue to evolve to meet changing market, agronomic and policy demands:
 - e.g. climate resilience, reduced input use, GHG emissions
- Not a high profile subject!
- Breeders, farmers, contractors, regulators and seed suppliers can communicate the approach and benefits.



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