


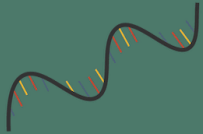



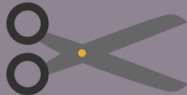



INFOGRAPHIC



How Crops are Genetically Modified				
Traditional Breeding	Mutagenesis	RNA Interference	Transgenics	Gene Editing
<p>Crossing plants and selecting offspring</p>  <p>Desired gene(s) inserted with other genetic material</p> <p>Almost all crops</p>	<p>Exposing seeds to chemicals or radiation</p>  <p>Random changes in genome, usually unpredictable</p> 	<p>Switching off selected genes with RNA</p>  <p>Targeted gene(s) switched off or 'silenced'</p> 	<p>Inserting selected genes using recombinant DNA methods</p>  <p>Only gene(s) inserted at desired locations selected</p> 	<p>When used to delete genes using engineered nucleases (CRISPR, TALENs, ZFNs, etc.)</p>  <p>Desired gene(s) deleted only at known locations</p> 
<p>Number of genes affected: few genes to whole genomes</p>	<p>100s - 1,000s</p>	<p>1 - dozens</p>	<p>1 - 8</p>	<p>1 or more</p>
<p>No safety testing required; Unregulated</p>	<p>No safety testing required; Unregulated</p>	<p>Safety testing required; Highly regulated</p>	<p>Safety testing required; Highly regulated</p>	<p>Safety testing required depending on jurisdiction; Mixed regulations</p>
<p>Undesirable, unintended effects rarely occur in the final product of any crop, regardless which process is used.</p>				

