The shikimate pathway is a metabolic route in plants, bacteria, and fungi that creates essential aromatic amino acids like phenylalanine, tyrosine, and tryptophan. Roundup Ready seeds are genetically modified to have a version of an enzyme that is insensitive to the herbicide glyphosate, allowing farmers to use the herbicide to kill weeds without harming the crops. Roundup works by blocking the shikimate pathway, and because Roundup Ready crops have a modified, resistant enzyme, the pathway can continue to function, enabling the crop to survive.

**Shikimate pathway**

* **Function:**

A seven-step metabolic process that produces aromatic amino acids (phenylalanine, tyrosine, and tryptophan), which are essential for protein synthesis and other vital compounds in plants.

* **Importance:**

It is crucial for plant survival and also involved in the production of folates and other plant compounds.

* **Vulnerability:**

The pathway is vulnerable to the herbicide glyphosate, which targets a specific enzyme in the pathway called EPSP synthase.

**Roundup Ready seeds**

* **Origin:**

Developed by Monsanto, they are genetically modified crops designed to be resistant to the herbicide glyphosate (the active ingredient in Roundup).

* **Genetic modification:**

The seeds contain a gene from a bacterium that codes for a version of the EPSP synthase enzyme that is not inhibited by glyphosate.

* **Agricultural advantage:**

Farmers can spray their entire field with Roundup to kill weeds, but the crops will grow unharmed, providing an effective way to manage weeds without harming the crop.