

# Innovation case study monsanto roundup ready soybean



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Monsanto was created in 1901. The company focused primarily on basic industrial chemicals and during the 1940's became the leading manufacturers of synthetic fibers and plastics. They continued to be one of the US top ten chemical companies. Following the Second World War, Monsanto championed the use of chemical herbicides in agriculture and created such agrochemical products as DDT, Lasso and Agent Orange, which was widely used as a defoliant by the US government in the Vietnam War until it was shown to be highly carcinogenic. Following the ban of Agent Orange and increasing criticism of Lasso, Monsanto developed a new herbicide, Roundup that became their most profitable product.

From the 1980's onward Monsanto was hit hard by a series of lawsuits concerning the production of pollutants that posed a serious threat to the environment and human health. In response to this they needed to radically transform the company and relaunched itself as an agricultural biotechnology company. The company claimed that their new technology could achieve goals such as ensuring adequate food production, responding to the challenge of global warming and reduce agriculture's negative impacts on the environment. Monsanto went on to become the dominant player in commercial genetically engineered (GE) crops. The product I am going to look at in this case study is Monsanto's Roundup Ready soybean.

#### How Development was Influenced

The development of this product was encouraged by the need to support another existing Monsanto product that was already on the market. Round-Up, a weed killer developed by Monsanto, was launched in 1976. This

herbicide was a replacement for previous herbicides that had been banned such as Agent Orange and Lasso. Round-Up had global success and helped to make Monsanto the world's largest producer of herbicides. Within a few years of its launch Roundup was being marketed in 115 countries and soon became Monsanto's most profitable product.

By 1990 Monsanto's agriculture division was significantly outperforming their chemicals division in terms of operating income and this was increasing annually. Although Roundup was a blockbuster product and the profits were increasing, Monsanto's directors felt uncomfortable relying on a single brand for profits and with the patent for Roundup due to expire in 2000; the market would be open to new competitors. The company needed to develop a strategy to prolong the life of their best selling product.

Over the next few years Monsanto moved into biotechnology, this was a relatively new industry that today is worth over £30 billion. During this time they also spent \$10 billion globally buying up seed companies, as a result they are now the world's largest seed company. The company began then to take on a new narrative; Monsanto claimed genetic engineering could help to feed the world. This ground-breaking technology was a once in a generation opportunity for Monsanto to dominate a whole new industry. Genetic engineering offered the chance to preserve the life of their most profitable product even after the patent expired.

By 1996 Monsanto had introduced the Roundup Ready soya bean to the market. The genetically modified crop contained a gene that gave a resistance to glyphosate (the active ingredient in Roundup). This meant that

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farmers could spray Roundup onto their fields even during growing season without harming the crop. The introduction of this new product allowed Monsanto to expand the market for Roundup and continue to do so after the patent expired through a marketing strategy that would couple proprietary Roundup Ready seeds with continued sales of Roundup. When the soybean was launched, growers adopted it at a very rapid rate. There were clear potential cost savings attached to the product which drove adoption, however the primary reason was the simplicity and flexibility of a weed control program that relied on one herbicide to control a wide spectrum of weeds without crop damage or crop rotation restrictions.

Monsanto's Roundup Ready soybean was one of the first GE crops to be marketed in the US, two years after the FlavaSavr tomato in 1994, which had been engineered to have a longer shelf life. This entry into the market so early helped Monsanto to become a stronghold of the biotechnology industry.

Today, over 80% of the total worldwide area devoted to GE crops carries at least one genetic trait for herbicide tolerance. Roundup Ready soybean seeds have been at the top of the biotech industry for over a decade, creating a near monopoly of the market.

#### Technology Push - Market Pull

The product was pushed into production due to the expanding possibilities within the biotechnology industry. It was created to support another existing product, however when realized to the public of the US was received very well and gained a market very quickly.

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## Political Factors Involved in Development

The success of the Roundup Ready soya beans was encouraged by patent laws that allowed Monsanto to patent their new product for 20 years. The US offered a much more liberal approach to the patenting of life and granted patents on certain life forms. The European patent laws did not. However, there was fear that the difference in patent law left European companies and their intellectual property at risk to the US who had the means to protect such information. This policy difference permitted the US company to explore the GE crop industry and protect their findings before Europe. Monsanto was in the perfect position to secure the market for themselves.

However, granting the patent means that universities cannot study the GM crops without breaking the law. Until the patent has expired no independent research can be carried out, which prevents development of a potential product that could globally increase food production, an important challenge with the increasing global population. I think it is also important to mention the possibility that Monsanto's research into GE crops will continue to support the use of Roundup. As of yet there has been no new developments in herbicides or GE crops that decreases the use of pesticides, as one of Monsanto's business objectives is to reduce the use of pesticides in agriculture, the continuation of GE crop research coupled with the use of Roundup goes against this.

The biotechnology industry is a relatively new concept but has grown rapidly since its introduction. The length of time a patent is granted remaining at 20 years may be seen to some as being too long for an industry with such rapid

growth and possibilities. Patents can prevent innovation within the industry as the technology cannot legally be explored by competitors. Monsanto have used this to their advantage and were the first to be able to benefit by the patent on their GE crops. This case demonstrates how private organizations can strategically use patent laws and their financial affluence to gain control over an industry. By imposing patent protections and high licensing fees on new seed products, Monsanto was able not only to capture a large share of the market, but also to earn billions through fees from other organizations.

### Social Influences

In the US, the adoption of the GE soybeans happened very quickly. By 2001 68% percent of U. S soybeans were genetically engineered, covering 50. 4 million acres. In 2011 90% of soybeans produced were GE, covering 75 million acres. (Figure1) Such wide acceptance of the seeds at such a rapid rate enabled Monsanto to grow, increasing production, acreage and in turn profit.

### Effects on the Economy

The rapid growth of the biotechnology market and cutting edge technology along with patent protection allowed Monsanto to dominate the GE crop market, especially in the US. Traditional farmers who are situated close to Monsanto farm land fear that their GE seed will pollute their own crop and if this is found to be correct by Monsanto, they have the ability to sue them for patent infringement. This creates a situation where the old age tradition of saving and sharing seeds among farmers becomes very difficult. Traditional methods of farming are being challenged with the introduction of GE crops <https://assignbuster.com/innovation-case-study-monsanto-roundup-ready-soybean/>

and farming in the US is rapidly turning into biotechnology industry. Farmers who do not plant the GE crop have increased financial and legal difficulty in a once thriving industry. .

### Environmental Concerns

There are some environmental concerns surrounding Roundup and GE crops created by Monsanto. It has been suggested that the binding of the two products encourages the continued use of herbicides within the farming industry. The introduction of GE crops has also had an effect on traditional farm land as superweeds, resistant to herbicides spread, making farming without the use of a herbicide much more difficult and costly. Farming with a limited variety of commodity crops also limits choice within the market and reduces biodiversity. Monsanto controls a substantial percentage of the seed market in the US, with this concentration of corporate power US agriculture threatens to remain shackled to intensive chemical use.

### Conclusion

While there has been conflicting findings on the impact of the adoption of new agricultural technologies on profitability, it has been well-established in the literature that improvements in technology have the potential to increase productivity, raise real incomes and thus enhance economic growth.

Monsanto's journey to biotechnology may have been rocky; however their Roundup system has achieved global success especially in the US.

Biotechnology raises many issues with regard to the environment and human health, but the adoption of this product into agriculture and the wide

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acceptance of its use suggest that genetically engineered crops are the future of farming. In effect genetic engineering is just a more technologically advanced way of selective breeding, which farmers have been doing for centuries.

The exploration of any new technology involves various stages of development, Monsanto has been at the cutting edge of new technologies for over 100 years, and although they may have suffered bad press in the past, they contribute to the exploration of the possibilities that new technologies can offer.