

Team 5 GMO Food Production Executive Summary

Growing concerns over climate change and overpopulation threaten the future balance between global food supply and demand. Our team conducted a thorough literature review of genetically modified food to assess its potential for feeding the world. Our objectives were to review the history of GMO development, collect information about current and emerging/future technologies and their markets, and synthesize that knowledge to identify any gaps between technology and application. In addition, an assessment of the safety and ethical issues associated with GMO was necessary as well as gaining understanding of the regulations so that recommendations and actions could be formulated.

Today, 12% of global crop area is genetically modified, although in the United States there is parity with non-GMO crops. While a number of crops and modifications are available, the vast majority of commercial crops are either corn and soybean modified for insect and herbicide resistance, primarily used for biofuels and animal feed. GMOs are currently not feeding the world. There are varieties of staple crops (potato, rice, and wheat) that have been genetically modified with traits such as drought resistance, however they are not in commercial use. In addition, gene editing promises the possibility of more accurate modification to avoid potentially hazardous mutations and side effects. Although the associated herbicides and insecticides may be toxic, the GMO crops themselves have not been shown to be unsafe.

The industry is dominated by a few well-established massive corporations and the regulatory structure contains various hurdles that would inhibit competition from

smaller companies. Regulations and public opinion vary widely by continent. Our team recommends that the public be better informed of these issues and the regulatory structure reformed to support commercialization of GMO crops that have potential for feeding the world. To this end, the action is recommended to enhance government research and establish government-owned corporations. Although this would result in taxpayer subsidy, this action would be in the public good.