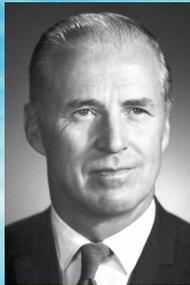


# ARE GMO'S THE WAY TO GO?



**NORMAN BORLAUG**  
"FATHER OF THE GREEN REVOLUTION"

- THE GREEN REVOLUTION IS THE ADOPTION/TRANSITION TO TECHNOLOGY BASED AGRICULTURE. NEW BREAKTHROUGHS SUCH AS HIGH YIELDING VARIETIES (GENETIC ENGINEERING) CHEMICAL FERTILIZERS AND CONTROLLED WATER SUPPLIES HAVE LEAD TO MASSIVE INCREASES IN CROP YIELDS AND SAVED MILLIONS OF LIVES.
- THERE HAS BEEN NO NEGATIVE HEALTH CORRELATIONS FOUND BETWEEN GMO'S AND HUMANS BASED OFF OF MANY FDA STUDIES
- ALLOWS PLANTS TO WITHSTAND STRESSES SUCH AS DROUGHT CONDITIONS AND COLD WEATHER

- GMO PLANTS HAVE BEEN LINKED TO SHOWING DAMAGING EFFECTS ON BIODIVERSITY. WE ARE INTRODUCING FAVORABLE TRAITS INTO THE SPECIES SO THEY WILL OFTEN OUTCOMPETE OTHERS, REDUCING BIODIVERSITY
- THE LEGALITY OF GM CROPS IS ALSO PROBLEMATIC BECAUSE MANY GM CROPS ARE PATENTED IF THEY TRAVEL TO NEIGHBORING FIELDS THROUGH DISPERSAL COMPANIES WOULD SUE DO TO THAT NEIGHBORING FIELD NOT HAVING ACCESS TO THE PATENT
- THE ADVENT OF GMO CROPS HAS CREATED RESISTANCE TO SPECIFIC PESTS, AND ALTHOUGH NOT COMMON IT IS POSSIBLE FOR THESE PESTS TO TO BECOME AGGRESSIVE SUPERBUGS THAT ARE DIFFICULT TO CONTROL

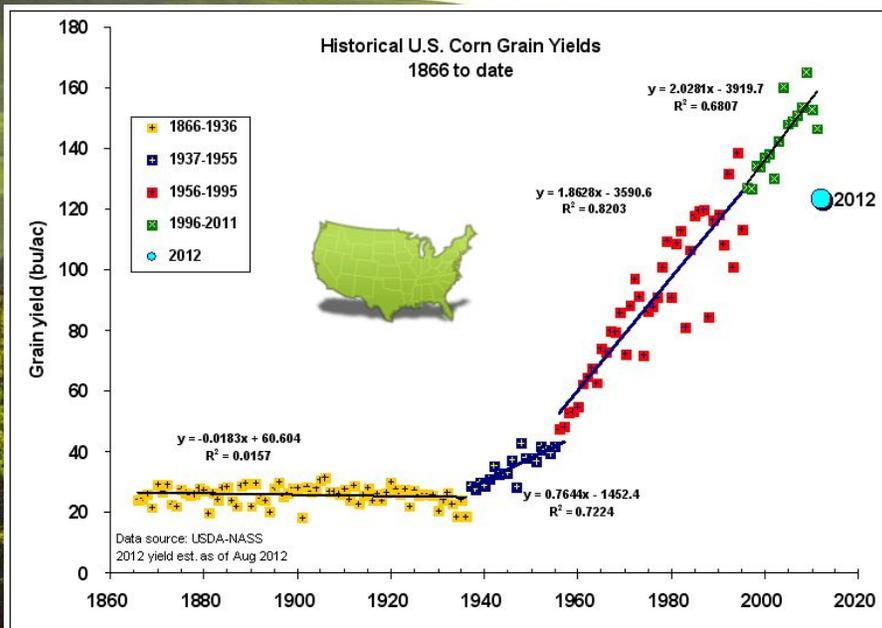


FIGURE 1. IN THE 1960'S WE SEE A SUDDEN INCREASE OF CROP YIELDS DUE TO THE GREEN REVOLUTION. STUDIES SHOW THAT THIS INCREASE IN YIELD IS PARTIALLY DUE TO THE INTRODUCTION OF GENETIC ENGINEERING IN AGRICULTURE

## CONCLUSIONS

ALTHOUGH THERE ARE MANY SETBACKS TO THE ADOPTION OF GM CROPS THEY ARE INTRINSIC TO OUR MODERN AGRICULTURE SYSTEM. RESEARCH HAS PROVEN COUNTLESS TIMES THAT IN MANY STRAINS IN PLANTS, GMOS ARE USEFUL IN INCREASING YIELD. THIS TECHNOLOGY HAS ALLOWED US TO BRING NEW DURABLE CROP SPECIES TO DEVELOPING COUNTRIES WHERE MANY OF THESE TECHNOLOGIES ARE NOT AVAILABLE YET.

References

Irimia R, Gottschling M (2016) Taxonomic revision of *Rocheffortia* Sw. (Ehretiaceae, Boraginales). Biodiversity Data Journal 4: e7720. <https://doi.org/10.3897/BDJ.4.e7720>. doi:10.3897/bdj.4.e7720.figure2f

Bawa AS, Anilakumar KR. Genetically modified foods: safety, risks and public concerns—a review. 2012;50(6):1035–1046.

Tsatsakis AM, Nawaz MA, Tutelyan VA, Golokhvast KS, Kalantzi O-I, Chung DH, Kang SJ, Coleman MD, Tyshko N, Yang SH, et al. Impact on environment, ecosystem, diversity and health from culturing and using GMOs as feed and food. 2017;107:108–121.

Rijk B, Ittersum MV, Withagen J. Genetic progress in Dutch crop yields. 2013;149:262–268.