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GMO Regulations are Killing Biofuels

Progress in creating profitable biofuels is being slowed down by strict regulations on genetically engineered (GE) crops (aka GMOs). Setbacks that biofuels face can be addressed with genetic engineering. However, public pushback and regulations make it extremely difficult to implement solutions. We should have more lenient regulations on GE crops so that we can speed up the progress of improving biofuels.

A genetically engineered crop is one that has DNA from a different species inserted into its own DNA. As a result from GE crop benefits, CO₂ emissions were reduced by 26.7 billion kg in 2012, and poverty was alleviated for 16.5 million small farmers according to the ISAAA (International Service for the Acquisition of Agri-biotech Applications). GE crops have the potential to greatly benefit our environment, even more so through improving biofuels.

There are several issues biofuels face that genetic engineering can mitigate. For example, we can increase oil yields in oilseed crops for biodiesel, or make cell walls easier to break down to extract sugars for cellulosic ethanol. These traits can make production easier and cheaper to produce biofuels.

Competition with food crops for land resources is another issue biofuels face. However, GE can be used to increase crop yields in food crops so that less land is required. According to the

ISAAA in 2016, genetic engineering freed up 174 million hectares of land due to increased crop productivity. These yield increases can come indirectly from preventing pests and diseases through crop resistance.

These breakthroughs may not come fast enough, however, if getting through GE regulations continues to be as difficult as it is. Phillips McDougal, a consulting agency, did a study in 2011 on the cost to introduce a GE crop. To get through the regulation process, it costs \$35.1 million (26% of total costs) and takes ~5 years. Including discovery and development, it costs a total of \$136 million.

Some GE products need to go through three separate agencies before they can begin commercialization. The USDA, FDA, and EPA all address different aspects of a GE product. The turnaround from these agencies on authorization can take months, as agencies return with more requirements that must be met.

Clearly, it is extremely expensive to create a GE crop, so only large corporations have the ability to do so. Excessive regulation is preventing small businesses from entering the GE market. The issues people have with GMOs ultimately lie with the irresponsibility of large corporations that dominate the industry. Herbicide resistant weeds, excessive pesticide spraying, and introducing environmentally risky GE crops to make profits are among the complaints people have against companies. It appears much of the backlash is at the large corporations, such as Monsanto, and not with the genetic engineering itself.

A more reasonable regulation process will lead to more small business entry, more competition, and therefore more innovation. This faster paced innovation will ultimately lead to the faster development of profitable biofuels through genetic engineering technology.

New genomic editing technology, such as CRISPR, is creating a debate as to whether crops modified using this non-foreign DNA method should be regulated the same way GMOs are. This means that these CRISPR crops would get to bypass heavy regulations, and enter the market faster.

In the next few years, regulations will have to be rewritten, and we must decide how we will address genome edited crops. There must be lenient regulations not only in the US, but internationally as well. This way, we will be able to trade with countries that currently do not import GE crops. Now is the time to push for more lenient regulations, and to save biofuels.

References

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