Debate

The Pros and Cons of Genetically Modified (GM) Crops

ISSUE: Are seeds that have been genetically modified a better alternative than pesticides?

In the United States genetically modified (GM) food has become a way of life. More than half of the crops grown in the United States are genetically modified, including 70 percent of corn. While the European Union has largely resisted GM crops, biotechnology firms such as Monsanto are finding ample opportunities to expand in places such as Africa and India. However, new findings have recently cast a cloud over the use of GM seed. Despite the numerous benefits of GM crops, their extensive use in agriculture has created controversy.

GM crops offer a number of benefits both to farmers and consumers. Because GM crops are able to develop their own toxins to kill pests, they have enabled farmers to use fewer pesticides on their crops. One study has estimated that GM crops have prevented the use of 965 million pounds of pesticide. Because fuel is needed for farmers to operate machinery in spraying pesticides, GM crops have also been estimated to save on fuel. In one estimate GM crops were thought to have reduced carbon dioxide emissions to the equivalent of 8.6 million cars. GM crops are also beneficial because they have been modified to target certain types of pests, such as rootworm. Pesticides, on the other hand, tend to kill a number of insects without differentiating which ones are harmful to the crop. Finally, GM crops often result in greater crop yields. It has been estimated that corn crop yields are 31 million tons larger worldwide, while soybean crop yields are 14 million tons larger than they would be without the use of GM crops. This is estimated to have increased farmer income by $14 billion. This increase in crop yields is especially important as the world's population grows. Scientists believe that the world will have to grow more food than ever before in Earth's history.

Despite these many benefits, significant obstacles to GM crops remain. Although the Food and Drug Administration (FDA) has studied the impact of GM crop consumption and have determined these crops to be safe, many consumers and world governments are still skeptical. Because they are relatively new, critics argue, it is impossible to gauge their long-term health effects. Biodiversity is also an issue since wind and pollinators can transport GM seeds into areas with non-GM plants, potentially leading to the contamination of native vegetation. Another major problem is insect resistance. The more a pesticide—or in this case a GM crop that produces its own toxins—is used, the more likely insects are to develop a resistance. Insects that become resistant to these toxins are harder to kill. While companies like Monsanto have advised farmers to rotate their crops every year to try and keep resistance at bay, many farmers do not follow these guidelines. As a result, certain GM crops are starting to lose their effectiveness, and resistant super bugs are emerging. For example, rootworms have been attacking crops after becoming resistant to a rootworm-targeting gene called Bt. This has been causing some U.S. farmers to once again turn to pesticides. An increase in pesticide use not only exposes farmers and the environment to potential harm but also eliminates one of the biggest benefits of using GM seed.

Biotechnology companies are working on a solution to the problem of resistance. Monsanto, the largest biotechnology company, is working on seeds that possess multiple traits for killing rootworms, which should increase the GM seed's effectiveness. Monsanto also plans to release new technology to combat pests. However,

some scientists believe that even multiple trait seeds might not solve the problem for very long as rootworms that are resistant to one trait are more likely to become resistant to the other traits as well.

There are two sides to every issue:

1. Genetically modified crops are more effective in combating pests and are therefore more beneficial than pesticide use.
2. Genetically modified crops are not a permanent solution to pesticides and are therefore not a more beneficial alternative.

Sources:

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