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Genetically Modified Crops

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INTRODUCTION

The effects of Genetically Modified (GM) crops on income, poverty, and nutrition in developing nations are still a source of debate. Supporters believe the method has a lot of potential for increasing agricultural output and reducing seasonal changes in food supply caused by biotic and abiotic pressures. Productivity increases are an essential precondition for attaining long-term food security in the face of rising demand for agricultural products, natural resource scarcities, and extra problems brought by climate change. Second-generation GM crops, such as those with enhanced vitamin content, could also help poor people overcome certain nutritional deficits. Furthermore, GM crops have the potential to increase rural income, which is important for poverty reduction in developing countries. Finally, proponents argue that GM crops could help to alleviate environmental and health issues associated with intensive agricultural production systems by reducing the use of chemical pesticides. Biotechnology opponents, on the other hand, emphasize the environmental and health risks associated with genetically modified crops. Furthermore, concerns have been expressed about the socioeconomic ramifications in poor countries. Some people believe that high-tech applications are inappropriate for smallholder farmers and that they disrupt traditional farming systems. Furthermore, it is feared that multinational companies' dominance in biotechnology, as well as the international proliferation of intellectual property rights (IPRs), will lead to agricultural producers' exploitation. GM crops, in this view, are rather harmful to food security and development. Despite ongoing public debates, there is a growing corpus of research giving actual evidence on the effects of GM crops.

There are lots of examples of GM crops but the most highlighted examples are BT cotton and Golden rice. BT Bacillus Thuringiensis (BT) cotton, Insect-resistant is the first-generation genetically modified crop. Bt cotton is resistant to different lepidopteran and coleopteran insect pests. Smallholder farmers have the widest spread. Over 5 million farmers in India have previously adopted Bt cotton, which currently covers nearly 90% of the country's total cotton land. In India, Bt cotton has a significant output advantage due to fewer crop losses, in addition to pesticide reductions. Second example is Golden Rice and it is a second-generation GM technology that promises to improve the vitamin A level of rice consumers, hence reducing nutritional inadequacies and health problems among the poor. Golden rice has been genetically modified to synthesize b-carotene in the grain. Golden rice has been proposed as a promising intervention to reduce vitamin A deficiency (VAD). In many underdeveloped nations, VAD is a significant public health issue. Every year, up to 3 million children die as a result of this. In addition to increased child mortality, VAD can cause vision issues, including blindness, as well as an increase in the incidence of infectious conditions. Because Golden Rice is not yet available on the market, all impact studies are ex ante. Although Bt cotton and Golden Rice may not cover the entire range of current and prospective GM crop applications, they do provide some important insight into the kind of effects that can be predicted from first- and second-generation technology. GM crops aren't an answer for all problems in underdeveloped nations, but they do have the potential to help with poverty reduction, improved nutrition and health, and long-term development. Some of these possibilities have already manifested. However, because GM technology can be quite diverse, concrete claims must be separated rather than talking about the impacts of GM crops in general. Despite these positive examples, more public assistance is needed in biotechnology development and technology delivery to ensure that further promising solutions for the poor are created and made broadly available. Some regulation is important to eliminate hazards, but excessive regulation raises the cost of technology excessively, resulting in a bias against small crops, small governments, and small research organizations, as well as a prejudice against the poor. Better and more science-based communication flows are needed to correct this predicament.