Panel Discussion: Complementary Technologies, One Goal: Approaches to Sustainable Food Production

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Title: Biotechnological Approaches to Sustainable Food Production

Although the Green Revolution did much for agriculture in many developing countries, it was less successful in Sub-Saharan Africa and yields have not changed in 40 years. Indeed cereal production per capita has steadily declined. We therefore need a "Doubly Green Revolution," including biotechnology.

The most important areas where biotechnology could play a role in Africa include:

- Virus resistance, especially to endemic viruses of important crops such as maize streak virus and African cassava virus;
- Drought tolerance, especially taking genes from indigenous plants;
- Fungus resistance of both pre- and post-harvest fungi; and
- Insect resistance especially as maize that has been attacked by insects is more susceptible to aflatoxin-producing fungi after harvest.

Results of small-scale farmers planting insect resistant cotton in South Africa have been dramatic with huge increases in earnings, the return of non-targeted insects, birds, and frogs.

Applications for trials and commercial releases have been increasing steadily since 1995.

Another interesting application of biotechnology is the development of edible vaccines — or the use of plants to produce vaccines.

Africa needs agricultural biotechnology because it is estimated that, with current farming practices and yields, we will have a shortfall of 88.7 million tons of cereals by the year 2025.

We will therefore have to increase the area harvested (e.g., by drought tolerance) and increase productivity (e.g., by disease and pest resistance).

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