



**SUSTAINABLE FOOD
SECURITY
FOR ALL BY 2020**

September 4–6, 2001 ! Bonn, Germany



SUMMARY NOTE

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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