How Can AgBiotech Foster Green Revolution in Africa?





Food and Agriculture Organization (FAO)

To feed a world of 9 billion people in 2050, without allowing for additional imports of food:

Africa has to increase its food production by 300 percent



Latin America by 80 percent; and Asia by 70 percent. Even North America must increase food production by 30 percent



•Without an Increase in Farm Productivity, Additional 1.6 Billion Hectares of Arable Land will be Needed by 2050!

Africa

- Only region where poverty and hunger is increasing
- Africans living on less than dollar a day has increased by 50% in the past 15 years
- Undernourished increased from 169 m to 206 m between 1991 and 2002
- One-third of all sub-Saharan Africans are undernourished

source: R. Paarlberg; 2008)

Agriculture in Africa

- African farmers harvest less than a ton of maize per hectare compared to nearly 10 tons in USA
- Fertilizer use is 9 kg per ha compared to 117 kg/ha in the West
- 2 tractors per 1000 workers (vs. 883 per 1000 workers in the UK)
- \$379 value per ag worker (vs. \$37,000 in France)

Low Productivity of Agriculture in Africa

Poor soils Unfavorable environment Little or no chemical input Small Holdings Drought Market Access Disease, Pests, Weeds Storage and Transportation

How Can Biotech Help African Agriculture?

- •Improve Food and Nutritional Security •Increase Crop Productivity
- •Enhance Production Efficiency
- •Reduce Crop Damage& Food Loss
- Promote Sustainable Agriculture
- •Reduce Environmental Impact
- •Empower the Rural Sector through Income Generation •Reduce Economic Inequity



How Can Biotechnology Add Value to African Agriculture?

- Environmental Impact Decreased use of pesticides
- Reduce losses from pests and diseases
- Improve nutrient efficiency
- Improve productivity















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Enhancing Food and Agriculture

- More Nutritious Food
- Healthy Produce. Low Toxins
- Pharmaceutical Proteins
- Clean Up Environment
- Biofuel Ethanol, biodiesel
- Industrial Products
- Value-Added Products



Sweetpotato

- Fourth largest crop in the developing world
- Excellent source of calories, vitamins and minerals
- Grown by resource-poor farmers
- Very hardy



Resistance to Virus and Weevil Enhancement of Nutritional Protein

Cassava

- Eaten by 500 million Africans
- Very productive, drought-tolerant
- Rich in Calories. Cyanogenic glucosides.
- African Cassava Mosaic Virus devastating the crop
- ILTAB Danforth Ctr (Beachy, Fauquet)



















African rejection of GM

crops

- Only three countries (S. Africa, Egypt and Burkina Faso) out of 53 countries grow biotech-enhanced crops
- Lack of government support
- Absence of regulation or law
- NGO Campaign
- UN Convention on Biological Diversity
 - Biosafety Protocol



Why Europeans Dislike Biotech Crops?

- Poorly understood science
- Lack of reliable information
- Mistrust of regulators
- Absence of consumer benefits
- Negative media opinion
- Opposition by interest groups
- Mistrust of the globalization and multinational corporations

Lack of individual control
 Environmental release





Is Safety an Issue?

- As Safe as Conventional Food
- Subject to High Regulation FDA, EPA, USDA
- Every Product Tested on Case-by-Case
- Over Billion Acres Grown Since 1996
- More than 10,000 Food Products Contain GM
- Not One Single Instance of Hazard
- Dozens of Scientific Societies Have Endorsed it
- >5,000 Scientists plus 24 Nobel Laureates
- EU Scientific Commission 'Safer than Conventional Food'



Famine in Southern Africa



- Nearly 13 Million people in 19 African countries faced severe hunger and starvation during 2003-2004
- About 300,000 faced death
- World Food Program
- US Donated 500,000 tons of corn

Zambian President, Levy Patrick Mwanawasa "We would rather starve than get something toxic."

Against science in farming

- Resistance to science-based farming in US and Europe (R. Paarlberg, 2008)
 - Environmental objection
 - Anti-Industrial Objections
 - Consumer objections



Downgrading and withdrawing support for Agricultural science in the West

- Very low R&D spending in agriculture
- Not a top priority for politicians
- Poor donor support
- Hostility from NGOs
- Advocates of organic farming in Africa
- Uncertain support from philanthropic foundations
- "Caring about Africa, but not agriculture"
 R. Paarlberg, 2008)

Keeping Biotech Crops Out of Africa

- Regulatory environment (Precautionary Principle)
- Trade barriers (European pressure)
- Orchestrated public perception
- Imported environmental activism
- Negative media portrayal
- Food industry and retailers
- Organic food industry