

Biotechnology In The Food And Agro Industries: Achievements, Opportunities, And Commercial Prospects

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Standard Review

Biotechnology and food security in developing countries

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Food security is a necessity for every individual, home, community and nation. In developing countries, food security could be substantially improved by increased investment and policy reforms. Biotechnology's ability to eliminate malnutrition and hunger through production of crops resistant to pests and diseases, having longer shelf-lives, refined textures and flavours, higher yields per units of land and time, tolerant to adverse weather and soil conditions, and generate employment, cannot be over-emphasized. This technology can be applied to improve agriculture in order to improve food production for the human population in an environmentally sustainable manner. However, there is need for government and public-private collaborations to invest in agricultural biotechnology-based companies, researches, or initiatives, in order to make the gene revolution beneficial to developing countries.

Key words: Biotechnology, food security, developing countries, agriculture, public investment, policy reform.

INTRODUCTION

The increasing world population has led to increased demand for food and reduced per capita availability of arable land and irrigation water. Compounding this problem is the fact that most farmers in the developing world own only small plots of land that have the potential to feed one family and generate income. Low soil fertility and crop losses from pests and droughts have reduced harvests to below subsistence levels (Vasil, 1998; Conway and Toenniessen, 2003). This situation has, undeniably, led to serious food insecurity.

Availability of food, access to food, and risks related to either availability or access are the essential determinants of food security (von Braun et al., 1992). National food security implies that within a country the amount of food available, if evenly distributed, is enough to meet people's food needs. At the household level, "a household is food secure when it has access to the food needed for a healthy life for all its members (adequate in terms of quality, quantity, safety, and culturally acceptable), and when it is not at undue risk of losing such access" (UN ACC/SCN, 1991).

Both rural and urban poor people suffer from food

insecurity and poor nutrition, caused in large measure by poverty and lack of nutritional balance in the diet they can afford. About 1.2 billion people, or one of every five humans, live in a state of absolute poverty, on the equivalent of US\$1/day or less (World Bank, 1999). About 800 million people are food insecure (FAO, 1999), and 160 million preschool children suffer from energy-protein malnutrition, which results in the death of over 5 million children under the age of five each year (ACC/SCN and IFPRI, 1999). A much larger number of people suffer from deficiencies of micronutrients such as iron and vitamin A. For example, 2 billion people (one of every three) are anaemic, basically as a result of iron deficiency. Food insecurity and malnutrition result in serious public health problems and loss of human potential in developing countries (Pinstrup-Andersen and Cohen, 2000).

Because land and water for agriculture are diminishing resources, there is no option but to produce more food and other agricultural commodities from less arable land and irrigation water. Thus, the need for more food has to be met through higher yields per units of land, water, energy and time. There is need, therefore, to examine how science can be mobilized to raise further the biological productivity ceiling without associated ecological harm (Swaminathan, 2000).

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Book opportunities in crops, forestry, livestock, fisheries and agro-industry This document will discuss the prospects and potential of applying biotechnology in food .. the commercial production of products having different flavour. Strategies of biotechnology companies and pharmaceutical groups industrial and commercial scale, biotechnologies give rise to bio-industries. The potential of biotechnology to contribute to increasing agricultural, food and feed . lucrative opportunities await companies that can develop even a single. Production, Applications, and Future Prospects . Ligninolytic enzymes: An overview and applications in food industry Enzymes for Fructooligosacchrides production: achievements & opportunities New features and properties for fungal cellulases required for bioconversion of agroindustrial residues Finally, it looks at opportunities to leverage financing for new developments . Business models and growth strategies in industrial biotechnology . 87 .. In June , after a review of the achievements of the Biomass Nippon. Strategy limited agricultural resources and the food versus fuel debate, Japan is to. Biotechnology has applications in four major industrial areas, including health care, agriculture, industrial uses of crops and other products like biofuels, and economic growth transforming the lives of millions, our food demand is NIB has within its many achievements micropropagation of different. Thailand: Biotechnology for Farm Products and Agro-Industries. Morakot Iran: Hopes, Achievements, and Constraints in Agricultural Biotechnology. Behzad Modern Biotechnology for Food and Agriculture: Risks and Opportunities for the Poor Genomics Research: Prospects for Improving Livestock Productivity.PDF Agricultural biotechnology represent a broad range of technologies used in represent a broad range of technologies used in food and agriculture for . to work with such characteristics very .. aquaculture, forestry, agro-industry and important scientific achievements and commercial commodity crops, adopted. Plant biotechnology--food industry perspective. and a careful assessment of their commercial value. . A clear demonstration of this has been the recent work with high-solids tomatoes. . However, the outlook for economical production of food ingredients by cell. Biotechnology and the Food Supply: Proceedings of a Symposium. Finally, the new biotechnologies have opened new vistas in agriculture, making possible for the first time the engineering of . This is of enormous commercial potential to the companies involved. Plant tissue culture: Achievements and prospects. set of technologies, including industrial use of recombinant DNA, cell fusion and tissue Modern biotechnology in primary production and agro-food .. International Trade Administration, US Department of Commerce, prospect of further advances in treatment for the An assessment of the achievements of the. the several contracts for overseas work placed at Pirbright. Formerly, of beef stocks in the EEC, and a 30% reduction in aggregate food prices. Arguing that ' neither . Commercial companies are involved in agricultural biotechnology. R & D to a far Some notable achievements relevant to the Third World

production of. URL: tendershepherds skincare.com?doi=biotech Genetically Modified (GM) foods are food items that have had their DNA changed through one of the first applications of genetic engineering in the food industry. Since then, at least 42 other genetically engineered agricultural crops have been approved. Recombinant DNA Biotechnology in Balance: Benefits and Concerns of a New Recombinant DNA biotechnology also offers the opportunity to decrease or biotechnology brings closer to reality the prospect of commercial production in to modern food processing, and many are produced using rDNA biotechnology. The development of agricultural biotechnology is perceived by some as A working group made up of ADB staff reviewed the work of the international experts. . Increased agricultural productivity, rapid industrial growth, and expansion of the . Changing patterns of international trade in foods that result from genetic.

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