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The impact of plant biotechnology on agriculture in a changing world: Present achievements and challenges ahead

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Plants are the key of life on earth and since the beginning of agriculture humans used the plants that nature provided and modified them through selective breeding to have desirable characteristics and to increase their productivity. Empirical at the beginning, the natural and human-directed selection continued, due to scientific progress, with the tremendous achievements of the green revolution. At present, in conditions of a population growth that is outstripping food production, more than ever agriculture is fundamental to the economies and environments of the entire world. The modern agriculture must meet the needs of the increased population and the expectations of improved living standards, in the conditions of alarming deleterious effects of environmental pollution and declining arable land. Biotechnology became a major source of innovation for agriculture, offering a key to more effective utilization of the world's limited resources that can help to achieve sustainable development, though still remains a challenging objective the overcoming of some significant barriers to largely adoption of these new and powerful technologies. Such a barrier is the common misconception that is reducing plant biotechnology to only genetic engineering and transgenics. In fact plant biotechnology is a broad collection of tools that together with genetic engineering are parts of the biotech-driven revolution in agriculture. A wide range of crop biotechnologies are available and are increasingly used worldwide, such as micropropagation based on cell and tissue culture techniques, mutagenesis, interspecific and intergeneric hybridization, marker-assisted selection, disease diagnostics and bioprotection, biofertilization, cryopreservation, somatic embryogenesis, artificial seed production, exploiting apomixis, male sterility and others. Biotechnology programmes will become effective in creating the „evergreen revolution" only by complementing the well-structured conventional plant breeding and well-managed agronomy research and development programmes

Biography

Ana Rosu is a graduate of the Faculty of Biology, University of Bucharest and had her expertise as Scientific Researcher in the field of Cell Biology and Plant Biotechnology at the Institute of Biology, Romanian Academy of Sciences, obtaining her PhD in Biology in 1987. Over the years, she worked both as Scientific Research Coordinator and was responsible for professional formation of young specialists as Professor of Plant Biology and Biotechnology at the Faculty of Biotechnologies, University of Agronomic Sciences and Veterinary Medicine of Bucharest. She has more than 70 articles published in scientific journals and 25 scientific presentations at national and international scientific events

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