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Homage

Nagib Nassar, Geneticist, Botanist and Plant Breeder, Celebrates 50 Years of Teaching and Research

My love of plants goes back to very early in life, at the age of 12 onwards, planting shrubs in our home garden, following their growth and thinking about them constantly. They were my enjoyment, my hobby and my entertainment. At the university, I began to examine flowers and learn about their systematics. This opened the door for me to the very exciting world of botany in which I live to this day. For my Ph.D. study, I applied cytogenetic data to the taxonomy of Chenopodiaceae in what is now known as cytotaxonomy.

My fifty years of teaching were divided into 15 years with Cairo University from 1958 to 1974 and 35 years with the University of Brasília. This multi-cultural experience exposed me to a broad range of learning styles and allowed me to acquire a number of different teaching methods. At Cairo University, I taught horticulture and conservation of plant genetic resources. At Brasília, I taught plant breeding, organic evolution, evolution of cultivated plants, basic cytogenetics, cytogenetic methods and techniques, economic botany, plant breeding of perennial crops, and botany of cassava to both undergraduate and graduate students. I taught several of these courses at the federal universities of Goiás, Viçosa, Rio Grande do Sul, Brasília, Feira de Santana and Costa Rica and Bern University in Switzerland.

Figure 1. Professor Nassar with students at the University of Brasília.

My teaching experience has been very rewarding. It is from my experience with teaching that I have gained my greatest strength. Teaching for me was like composing a piece of music, and for years and years I had the aspirations of being admired by my students the same way students admire their idols such as musicians and artists. I always tried to create a strong friendship with my students from the moment they joined my class up to their graduation.

In 1975, I began my first mission to collect wild *Manihot* species in Brazil on behalf of IITA (International Institute of Tropical Agriculture). I was at that time a visiting scientist sponsored by the Brazilian Ministry of Foreign Relations stationed at the University of São Paulo. The financial support from IITA was so small that it did not permit me to hire any assistants to accompany me on my collection trips. By the end of four months, I was able to collect seeds of more than 20 wild species native to 8 Brazilian states, collecting wild species for IITA, which encouraged the Canadian International Development Research Center (IDRC) to help me plant and propagate a living collection at the Universidade de Brasília. My goal was not only to propagate and conserve them but to use them for crop improvement. Five years later, I was able to provide IITA with hybrid seed that gave rise to cultivars now planted on about 4 million hectares in Nigeria making it the top-ranking producer of cassava all over the world. "Your breeding approach shows the benefits of preserving biodiversity…" "of enhancing cassava germplasm…[and] new methods for the propagation of this crop…." said Rodomiro Ortiz, director and deputy director general of IITA.

See http://www.geneconserve.pro.br/iita2.gif
And http://www.geneconserve.pro.br/decades_of_cassava.pdf

The success of my work on wild *Manihot* in the 1970s prompted the International Board of Genetic Resources (IBPGR) to delegate me for a mission of 3 months collecting wild *Manihot* native to Mexico. Since the 1980s, I continued working on cassava and for the last decade I have concentrated on the embryology of this group. This led me to the most important discovery of apomixis and transfer of their genes to cultivated forms, producing the first apomictic cultivars of this crop. This shows how much botany can serve breeding programs and botanists.

Most recently, I was involved in developing cassava hybrids that are rich in protein. The first such hybrid was bred by me early in the 1980s. We can now release hybrids that are very productive and contain high protein and essential amino acids.

Conserving wild cassava, *Manihot* species native to Brazil and Mexico was the most fascinating work in my career, which began 35 years ago. My knowledge of the botany of this group enabled me to collect and conserve them and manipulate them for crop improvement. I emphasize to my students that knowing the botany of a certain crop is the principal step towards an improvement program or breeding it with cultivated forms. Knowing the habitat in which it grows provides clues to important characteristics that may be incorporated into the cultivar. Breeders must also understand the reproductive system of his crop to choose adequate methods of breeding (See list of publications on this subject).

Nagib Nassar; Departamento de Genética e Morfologia. Instituto de Ciências Biológicas, Universidade de Brasília, Campus Universitário Darcy Ribeiro, Asa Norte, 70910-900 Brasília, DF, Brasil

Phone: (*55.61) 3307.2169. Fax: (*55.61) 3272.0003. E-mail: nagnassah@rudah.com.br

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