



Sebastião Barbosa visits irrigated cotton experimental plots in Apodi-RN, Brazil. Barbosa is leading a current effort to revive cotton production in semi-arid zones of Brazil after complete devastation followed by the arrival of the cotton boll weevil in 1983. Photo submitted. Graphic by David Ammon.

THE AMBASSADOR OF COTTON

CALS alumnus sees crop as key to food security

BY VANESSA BEESON

WHEN MOST OF US THINK OF COTTON, we think of clothes. One College of Agriculture and Life Sciences alumnus, however, sees something else, something bigger.

Sebastião Barbosa doesn't see cotton as a way to clothe the world only; he sees it also as a way to feed it. Barbosa says cotton is an essential ingredient in solving global food security challenges, for the income it generates and for the food crops intercropped with cotton.

"In the U.S., we only see cotton as a fiber crop," Barbosa said, in an on-campus interview in May 2014. "In Africa, specifically Western Africa, however, cotton is very important for food production."

The Brazilian native was on campus to accept an honorary Doctor of Science degree from MSU.

After obtaining his master's and doctoral degrees in entomology from MSU in the early 1970s, he pioneered the industry of integrated pest management.

"I developed a good sense for the agricultural aspect of pest control at MSU," Barbosa said. "The college prepared me for a career in integrated pest management and my time here has served me well throughout the span of that career."

THE EARLY YEARS

In the early 1970s, doctoral fellowships for international students were hard to come by in America. Typically, international students who earned a master's degree in the U.S. were required to return home and work for a few years before being considered for a doctoral fellowship. So in 1974, when the USAID granted Sebastião

Barbosa a fellowship to obtain his doctoral degree just one year after he began Mississippi State University for his master's degree, it illustrated the potential he possessed.

"Originally I came to MSU to obtain my master's degree through a USAID fellowship," Barbosa said. "I had two years for my master's degree but my major professor, Henry Burwell Green, told me to take as many courses as I could that first year."

Green, who saw tremendous promise in Barbosa, encouraged him to complete his master's in a year so he could focus on his doctoral degree the second year. Barbosa finished both his master's and doctoral degrees in entomology in just three years. He earned his bachelor's degree in agronomy from the University of Viçosa, a top school in Brazil.

A GLOBAL IMPACT

Barbosa now serves as head of the cotton unit of the Brazilian equivalent of the Agricultural Research Service-ARS of the U.S. Department of Agriculture—the Brazilian Agricultural Research Corp., or EMBRAPA. In the past, he has contributed in different areas as researcher and research manager for the organization.

In the 1970s, Brazil relied heavily on food imports. With the advent of EMBRAPA, Brazil not only became self-sufficient, but an important food basket. Today, Brazil is one of the largest producers of commodities such as soybeans, coffee, sugar, orange juice, cotton, chicken, and beef. The integration of EMBRAPA has helped make this a reality.

Some of Barbosa's most significant work centers on cotton in Latin America.

"My focus shifted to cotton with the introduction of the cotton boll weevil in South America in 1983. It was first found in Brazil and from there it moved to Paraguay and Argentina," Barbosa said.

The pest had previously wreaked havoc in Central America. Its presence in Latin America has led to the decline and even discontinuation of the cotton industries for many countries.

"In Brazil, the pest had a lot of impact. As a country, Brazil, previously an important cotton exporter became a large importer of cotton in the 1990s," Barbosa said. "Through an integrated pest management system, it was possible for Brazil to make a comeback and today the country is considered one of the larger players in exporting cotton."

Barbosa has implemented agricultural research-cooperation agreements with the U.S. and numerous other nations and helps develop sustainable technologies to increase food supply and protect the environment. As director of international programs for EMBRAPA, he has directed several programs in Africa, a continent that benefits greatly from the food production technologies Brazil has developed specifically for tropical climates.



MSU Provost and Executive Vice President, Jerry Gilbert; Sebastião Barbosa; MSU President, Mark Keenum.
Photo by Beth Newman Wynn.

Barbosa promoted integrated pest management principles in more than 50 developing countries as FAO's senior integrated pest management officer in charge of all global projects in integrated pest management.

"In Asia, there was a rice crop production intensification program with a heavy dependence on the use of pesticides. The governments of Australia, Netherlands, and Switzerland funded projects for FAO to develop an integrated pest management program so that they could reduce the amounts of insecticides from Asia," Barbosa said. I served as the backstopping officer of this effort in Indonesia, Thailand, Malaysia, India, Bangladesh, Sri Lanka, China, and the Philippines. We were successful in solving the problem and reducing the amount of pesticides used. Eventually,

we concluded that through the proper management of rice paddies in that environment, we only needed to intervene with the use of pesticides on a sporadic basis. This was very important for the health and economic vitality of farmers, farms, the countries, and consumers in general."

FROM BOLL TO TABLE

In many developing countries cotton seed is crushed into cottonseed oil. Additionally, a byproduct of crushing the seeds is called cotton cake, which is used to feed dairy cows.

In places like Western Africa, cotton is considered the predominant cash crop. With drought, fertilizer shortages, and limited technology, cotton is the one crop farmers can afford to fertilize. They sell their cotton to buy food; they also use the

residual fertilizer for other crops.

"The entire cotton system helps in the production of food," Barbosa said. "In many countries, cotton is very important for food security."

In developing countries, cotton production uses a lot of pesticides. The old world bollworm has been a serious problem in places like Africa and Asia. The pest is very resistant to most insecticides so integrated pest management was developed for these cotton production systems. Integrated pest management greatly reduced the use of pesticides, contributing to the sustainability of the cotton industry on a global scale.

FEEDING THE WORLD

When asked about food security on a global scale, Barbosa is succinctly optimistic.

"We have many challenges today that we

have not had in the past like climate change, depletion of resources, and less water and land; so we have to be efficient in utilizing what we have. With true technology, we can do that. We can face the problems climate change will bring. Through science, research, and technology, I firmly believe man can survive and conserve the resources we have today for future use. This will require education, a lot of science, and the application of that science. We need to produce food that is more efficient in combating malnutrition, so we talk about functional foods that taste better, that have better qualities to fight diseases, and guarantee better nutrition. Also, all of this has to be delivered at a lower cost so people can have access to good food without spending a great percentage of the family income."



Photo by David Ammon

EMPTY BOWLS HELPS RAISE AWARENESS, FUNDS FOR LOCAL FOOD PANTRIES

By Victoria Russell

The Mississippi Student Dietetic Association and the art department, with support from City Bagel restaurant, MSU Dining Services, and the College of Agriculture and Life Sciences' food science, nutrition and health promotion department, provided a special way of acknowledging and helping alleviate food insecurity and hunger in the Starkville community on World Food Day.

"Empty Bowls," a soup luncheon and silent auction, took place at the Bost Extension Center auditorium on October 16. In conjunction with the Maroon Edition series of events and open to all, the event raised funds to benefit local food pantries.

A silent auction featured 200 auction bowls made and signed by well-known members of the campus and local communities, along with others designed by students and MSU alumni.

The luncheon was catered by MSU Dining Services and City Bagel.