Lunch~N~Learn SEMINAR

NATIONAL C-FAR

THE NATIONAL COALITION FOR FOOD & AGRICULTURAL RESEARCH

Program:

MORE CROP FOR THE DROP

A Global Search Through the National Plant Germplasm System for Drought Tolerant Soybeans

March 17, 2014
PROGRAM

Welcome and Introduction

JANE DEMARCHI
NATIONAL C-FAR REPRESENTATIVE

Distinguished Speaker

THOMAS (TOMMY) E. CARTER, PH.D.
Professor of Plant Science & Research Geneticist
USDA, ARS Soybean Unit, Raleigh, NC

Open Forum

Closing

JANE DEMARCHI

NATIONAL C-FAR IS a nonprofit, nonpartisan, consensus-based and customer-led coalition that brings food, agriculture, nutrition, conservation and natural resource stakeholders together with the food and agriculture research and extension community, serving as a forum and a unified voice in support of sustaining and increasing public investment at the national level in food and agricultural research, extension, and education. For additional information, go to www.ncfar.org; or contact Tom Van Arsdall, Executive Director, at tom@vanarsdall.com.
ABSTRACT

Drought is one of the greatest limitations to successful agriculture in the world. One has only to think of the Gobi and Sahara deserts, and the vast reaches of India and the American West, to realize the global importance. In regions where rainfall is higher and agriculture is more prevalent, crop yields are far from stable. Year-to-year fluctuation of crop production in the Corn Belt of the USA, for example, is high and closely tied to seasonal rainfall. Many climate models suggest that year-to-year fluctuation in rainfall will intensify even further in the coming decades. Thus, problems with water scarcity and drought can be expected to dominate the agricultural landscape through the foreseeable future, greatly affecting the human condition. Water conservation is an important part of the solution to this problem. Another equally important component is development of new varieties of crop plants which use water more efficiently. Desert survival tactics would seem an obvious approach for crop breeders to employ in the quest for drought resistance (e.g. move cactus genes to crop plants). However, in practice, desert survival has not translated into agriculturally usable levels of drought tolerance. A case study is presented where the model of desert survival is abandoned and the focus instead is on intriguing and exotic ‘agriculturally drought tolerant’ soybean types produced in Asia. Developed by ancient farmers through 5000 or more years of farming under frequently drought-stressed growing conditions, these novel soybean types are now preserved in the USDA-ARS soybean germplasm bank. This research is unraveling the mysteries of these Asian heirloom types and applying that knowledge to modern crop production in the USA.

SPEAKER BIOGRAPHY

Thomas (Tommy) E. Carter, Jr., Ph.D., is a professor of plant science and geneticist with USDA as part of the ARS Soybean Unit located on the NC State campus in Raleigh. Dr. Carter grew up in rural north Georgia, the son of a county agricultural extension agent. His love of plants and agriculture led him to study plant breeding at the University of Georgia and at N.C. State University, and then pursue a career in soybean breeding. His career focus has been to increase the impact of the world’s genetic resources on agriculture and society. An important aspect of genetic diversity is drought tolerance. Dr. Carter has led a national program (7 scientists) for 10 years to develop drought-tolerant soybean cultivars using germplasm from Asia as parental stock. This group has just recently doubled in size to include the top 20 specialists on drought and other environmental stresses in the country. The discoveries in drought tolerance by Carter and project members have been the basis for most advances in the country in this area. He identified the first drought-tolerant soybean types and reported the first genes (QTLs) for aluminum, salt, and drought tolerance in soybeans.
SEMINARY SERIES DESCRIPTION

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