



China-US Workshop on Biotechnology of Bioenergy Plants November 16-17, 2009 Knoxville, Tennessee USA

CONFERENCE OVERVIEW

INTRODUCTION

On July 20, 2006, in Beijing, representatives of the University of Tennessee-Oak Ridge National Laboratory's (UT-ORNL) Joint Institute for Biological Sciences (JIBS) and UT's Institute for a Secure and Sustainable Environment (ISSE) signed a framework agreement for the establishment of a China-US Joint Research Center for Ecosystem and Environmental Change (<http://isse.utk.edu/jrceec/>). The focus of this agreement is to promote research collaboration, academic exchange, student education, and technology training and transfer in areas of environmental concern. This specific agreement was reached with two Institutes of the Chinese Academy of Science (CAS)—the Institute of Geographical Science and Natural Resources Research (IGSNRR) and the Research Center for Eco-Environmental Science (RCEES)—both in Beijing. The center's primary collaborative themes include: (1) ecosystem processes and management, (2) environmental sustainability of bioenergy production, (3) ecological foundations of water resources and quality, and (4) technologies for improvement of eco-environmental systems. Since establishment of the Joint Center, a Bioenergy and Environmental Sustainability theme has arisen and been the topic of several reciprocal visits and joint workshops in Beijing, and Knoxville, Tennessee. The Joint Center convened the first China-US workshop on September 11-14, 2007, in Knoxville to address environmental aspects of bioenergy production and sustainability. About 40 scientists from the partnering institutions and six program officers from U.S. National Science Foundation (NSF) and Chinese government attended the workshop. The second China-US workshop, sponsored by the funds of U.S. National Science Foundation (NSF) and the Natural Science Foundation of China (NSFC), was held on October 15-18, 2008, in Beijing, China, with focus on bioenergy consequences for global environmental change. About 80 scientists, students, and program leaders attended the conference, including officials from U.S. Embassy in Beijing. As a follow-up activity, "China-US Workshop on Biotechnology of Bioenergy Plants" will be organized by the UT and UT-ORNL JIBS to bring together bioenergy plant researchers from China and the United States to exchange scientific findings and promote international collaboration in research and education.

BACKGROUND

The China and US economies are the globally dominant drivers of fossil fuel consumption and release of greenhouse gases and are thus strategically linked to the sustainable development of alternative and renewable energy sources. China and the US are natural partners for the development of biofuels. Although they differ in some aspects of agriculture, natural resources, economy, and society, the two nations share many facets in environmental and global change issues. In the US this has given rise to a robust new rural economy of ethanol production which is attempting to meet mandates by expanding and diversifying to non-food, cellulosic feedstocks to meet current and future demand. The US Department of Energy has completed the "Billion Ton Study" indicating the need for cellulosic biomass from forest products and cultivated feedstock biomass such as Switchgrass are needed in order to achieve transportation biofuel goals over the next two decades. In China, the government and renewable energy industry are poised to capitalize on the marketing potential of biofuels. China reports that a comparable billion tons of cellulosic material may be available for biofuel production annually from agricultural wastes. China's 21st Century Agenda emphasizes renewable energy as a foundation for development and the Medium and Long-term Development Plan for Renewable Energy targets 30 GW of biomass power based on agricultural and forestry wastes and energy crops by 2030. However biomass production is facing many grand challenges in view of limits of available natural resources (such as lands and water). Large scale production of bioenergy needs a diverse species of energy plants that are tolerant to environmental stresses and easy to breakdown in bioconversion. In this aspect, biotechnology remains huge potential for making breakthroughs in near future. Biotechnology of bioenergy plant feedstocks is currently developing very rapidly in the United States

and China. For instance, drought-tolerant research on switchgrass is ongoing in northwestern China. In east China, many new species of energy plants are being studied and applied to industrial conversion for bioenergy production. It is therefore necessary to create an opportunity for key Chinese and American scientists to know each other and discuss the potential for scientific exchange, research collaboration, and joint student education.

WORKSHOP GOALS AND OBJECTIVES

Through the workshop, participants will review the advances in biological research on bioenergy plants and discuss future research directions of relevant bioenergy technologies. The workshop will seek to develop joint research/education programs between China and the U.S. in the areas of plant biotechnology. Specifically, the workshop will:

- Evaluate the research progress in the biotechnology of bioenergy plant;
- Summarize the availability of energy plant species and their biomass capacity and environmental benefits;
- Explore research strategies for breakthrough of key bioenergy biotechnology;
- Develop a student/faculty professional network that facilitates bioenergy science exchanges, site visits and investigations, and industry/government engagement in China and the US.

SPONSORS

- The University of Tennessee (UT)
 - Institute for a Secure and Sustainable Environment
 - Institute of Agriculture
 - Southeastern Sun Grant Center
 - Office of Bioenergy Programs
- Oak Ridge National Laboratory
 - UT-ORNL Joint Institute of Biological Science

PARTICIPANTS

Workshop participants (approximately 50) will include faculty, staff, and students from six institutes of the Chinese Academy of Sciences, The University of Tennessee, Oak Ridge National Laboratory, and Purdue University.

WORKSHOP ORGANIZERS AND COMMITTEES

Chair: Dr. Neal Stewart (The University of Tennessee)
Co-Chair: Dr. Gong-She Liu (Chinese Academy of Sciences)
Committee: Gary Saylor, Randall Gentry, Gerald Tuskan, Richard Meilan, Yong-Qing Ma, and Jie Zhuang

HOTEL

The meeting will be held in the Hiwassee Room of the Downtown Hilton Hotel, 501 W. Church Avenue, Knoxville, Tennessee 37902 (Phone: 865-251-2573; Fax: 865-546-1716)

CONTACT INFORMATION

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