China's Single-Slope Energy-Efficient Solar Greenhouse

Dr. Mei Qu
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This Tuesday, March 4th, the departmental seminar will be presented by Dr. Mei Qu, an associate professor in the Department of Vegetable Science at China Agricultural University. Dr. Qu will be speaking about the single-slope solar greenhouse design from northern China. These greenhouses are used to grow warm-season crops during the winter, maintaining inside temperatures 20-30°C higher than outdoor temperatures without additional heat sources. The seminar will be presented in Wooster, with videolink to 219 Ag Engineering Bldg. in Columbus, from 1:50 to 2:45 PM.

The abstract for Dr. Qu's seminar and a short bio can be seen below.

Abstract:
The single-slope solar greenhouse is unique to northern China, located at latitude 32°N to 43°N, and uses solar energy as the sole light and heat source for winter crops. These greenhouses are used to produce warm season crops such as tomatoes and cucumbers during the winter without using other forms of heat. During the winter (Dec. to Feb.) in southern Liaoning Province, while the lowest air temperature reaches approximately -16 to -20 °C outside, the temperature inside these greenhouses rarely falls below 8 °C, as measured at daybreak. The temperature difference between the inside and outside can be about 20-30 °C. The use of solar greenhouses has greatly reduced energy demand. Solar greenhouses are the best structure for growing winter horticultural crops in China and have been adopted by countries such as Japan, Korea, and Russia. This presentation will provide an introduction to the single-slope solar greenhouse, including structure, function, application, and economic benefits of these solar greenhouses in China.

Bio:
Dr. Mei Qu is an Associate Professor in the Department of Vegetable Science at China Agricultural University. Dr. Qu received her B.S. degree in structural and environmental engineering from Beijing Agricultural Engineering University, and her M.S. and Ph.D. degrees in agricultural bioenvironmental engineering at China Agricultural University. Dr. Qu’s research has focused on design, optimization of parameters, insulation, and energy conservation in solar greenhouses. She has also conducted research on environmental control strategies based on energy savings, humidity management, and crop growth for improved plant production sustainability.