

Adventures in Interdisciplinary Engineering: Engineering Superior Crops

Approximately \$4 billion in grain is lost each year due to wind-induced stalk failure of maize (corn) stalks. This is a major source of loss for farmers. But it's also a limiting factor in the production of biofuels. By weight, about 50% of a corn plant is non-grain biomass. If this "waste" could be converted into biofuel, it could produce ~15 billion gallons of ethanol (10-15% of US gasoline consumption). This would require the use of new low-lignin varieties which have been structurally optimized to have good stalk strength as well as highly digestible biomass. The goal of the Crop Biomechanics Lab is to identify new avenues for improving the structural performance of crops. We are working with plant scientists to measure stalk strength, identify factors that have the greatest influence on stalk strength, and ultimately, to "design" crops with superior structural architectures. In this seminar, I'll give an overview of how engineering skills and expertise have been used to improve our understanding of maize stalk strength and develop new phenotyping methods.

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Biography: Dr. Cook earned a bachelor's degree in mechanical engineering from Utah State along with minors in mathematics and Mandarin Chinese. He received Masters and PhD degrees in mechanical engineering from Purdue University. His research has been supported by grants from the US National Science Foundation, the US Department of Agriculture, and industry. His research findings have been published fields as diverse as acoustics, biomechanics, biomedical engineering, agronomy, medicine, and botany..

Friday, December 1, 2023 – 10:30 am – COB 110

Fall 2023 Seminar Series