Development of A Modular Plant Imaging PET System and Its Use In Evaluating Corn Plant Root Systems[1] ALEXANDER CROWELL, LAURIE CUMBERBATCH, BRENT FALLIN, CALVIN HOWELL, Duke University and TUNL, CHANTAL REID, GREG BONITO, CHRIS TOPP, Duke University Department of Biology, ANDREW WEISENBERGER, SEUNG JOON LEE, JACK MCKISSON, CARL ZORN, Thomas Jefferson National Accelerator Facility, MARK SMITH, University of Maryland at Baltimore — A modular high-resolution positron emission tomography (PET) system has been developed at the Thomas Jefferson National Accelerator Facility to study physiological processes that influence the biodistribution of various substances in plants. This system is used to investigate sugar transport under varying environmental conditions using ^{11}C-tagged sugars. The positron-emitting radiotracer ^{11}C is produced in the tandem laboratory at TUNL. Initial evaluation of the PhytoPET system to image differences in the biodistribution of ^{11}C-tagged sugars in corn plants due to fungal-root interactions is underway at Duke and preliminary results are presented.

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