



Kyle R Bailey

Hometown: Columbia, MO  
Undergrad: University of Missouri  
2007

Major: Agricultural Systems  
Management

Courses taught at Purdue: ASM 201  
(current), ASM 222

Awards: Magoon Graduate Teaching  
Award (2010), CETA Graduate  
Teaching Award (2011)

Publications: Effect of a Seed Tube  
Modification for Granular Pesticide  
Application on Corn Seeding  
Uniformity. 2010 ASABE International  
Meeting, Pittsburgh, PA

Organizations: Alpha Mu (member),  
ASM Club (Graduate Advisor)



# Agricultural & Biological ENGINEERING

## Thesis Defense

**Speaker:** Kyle Bailey

**Title:** Effect of a Seed Tube Modification for Granular Pesticide Application on Corn Seeding Uniformity

**Major Professor(s):** Dennis R. Buckmaster, Daniel R. Ess

**Date:** Wednesday, April 04, 2012

**Time:** 2:00 pm

**Location:** ABE 212

### Abstract:

In In-furrow application of granular insecticides in corn is an effective way to provide root zone protection against insects such as corn root worm, wire worms, cutworms, white grubs and other harmful species. Traditional granular application methods consist of dispensing a uniform application of pesticide over the entire length of the furrow. A seed-specific granular pesticide application system was developed to decrease the volume of chemical used by metering pesticide into a modified seed tube fitted with a brush to hold granules in the seed tube. As a seed passes through the brush, granules are released and fall into the open furrow near the seed. Modifying seed tubes with a brush introduced the possibility of an effect on seed spacing. Effect of the seed tube modification on seed spacing was evaluated in laboratory and field trials. Lab results showed while average seed speed was significantly ( $p < 0.001$ ) decreased by the seed tube modification, the standard deviation of horizontal seed velocity and the standard deviation of vertical velocity were not significantly ( $p > 0.25$ ) affected. Field results showed seed tube modification did not significantly ( $p > 0.25$ ) affect seed spacing.

### Application:

Granular insecticides for corn are most commonly applied in-furrow after the seed has been planted. The seed tube modification allows granular insecticides to be applied using the seed tube and the seed. This modification could potentially affect the overall seed to seed spacing, which has been shown by some researchers to result in a yield loss. This research focused on evaluating the affect of the seed tube modification on seed to seed spacing.