

ASSESSING ORGANIC SEED TREATMENTS FOR ENHANCED CORN ESTABLISHMENT. Nicholas J. Goeser*, Janet L. Hedtcke, Edward C. Luschei, and Erin M. Silva, Research Assistant, Agronomy Department, University of Wisconsin-Madison, Madison, WI, 53706, Senior Research Specialist, Agronomy Department, University of Wisconsin-Madison, Madison, WI, 53706, Assistant Professor, Agronomy Department, University of Wisconsin-Madison, Madison, WI, 53706, and Associate Scientist, Agronomy Department, University of Wisconsin-Madison, Madison, WI, 53706.

The first line of defense in the cultural weed management strategy is having a good stand and vigorous crop. Poor crop seed germination, emergence, and early seedling vigor can result in uneven crop stands that leave resources available for weed invasions. Delayed corn planting, when soil temperatures warm $> 50^{\circ}$ F, is a common strategy for organic farmers to increase the probability of a uniform crop stand, but this can reduce yield potential if weather further delays planting. Even with delayed planting, it is common to observe poor crop seed germination, emergence, and early seedling vigor due to pathogens, insects or variability in soil moisture availability. Field-scale studies were conducted to compare several of organically approved corn seed treatments with a non-treated control: Agricoat LLC's "Natural II", Bioworks' "T-22 Planter Box Treatment", and Agrienergy Resources' "Myco Seed Treat". Corn growth and development traits were used to assess seed treatment effects. These traits included emergence rate and terminal percentage, seedling vigor (as assessed through above ground plant height of the last collared leaf at the V3 and V5 stages), and terminal grain yield. Field studies were conducted near Arlington and Columbus, WI in 2007. In the spring of 2007, crops were planted at an early (cooler soils) and late (warmer soils) date in May. In the early planted Arlington environment, terminal emergence for Natural II coated seed was significantly greater than the control. In the late planted Arlington environment, T-22 had a significantly lower terminal emergence percentage than the other three treatments. In the early planted Columbus environment, Natural II had a significantly greater terminal emergence percentage than the control and Myco Seed treated seed. In the late planted Columbus environment, T-22 had a significantly greater terminal emergence percentage than the control and Myco treated seed. Corn seed treated with Natural II had the greatest average plant height at the V3 stage at both planting dates, followed by T-22 and Myco Seed Treat, respectively. At the V5 stage, Myco Seed Treat was significantly lower in height than the other three treatments. At both the Arlington and Columbus sites, end of season grain yield comparisons resulted in significant differences between the early and late planting dates. However, there were no significant grain yield differences between the corn seed treatments. Though seed treatments effects on final grain yield were not detectable, the differences in crop density and seedling vigor warrant further investigation. Increases in crop density and seedling vigor reduce the sites and resources (i.e. light, nutrients, and water) available for weed invasions, which is especially critical in organically managed cropping systems.