The Effects of Mycorrhizal Fungi on Ustilago maydis

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The purpose is to determine if mycorrhizal fungi can protect corn plants from corn smut infections. If corn smut is exposed to the symbiotic relationships between corn plants and various mycorrhizal fungi, then corn smut will not infect corn plants. Corn plants were germinated and planted in environments containing corn smut. Solutions containing either Trichoderma, Glomus, or Trichoderma combined with Glomus were applied to the seeds. Root lengths and plant heights were recorded every other day. At the end of experimentation, corn plants were examined under a microscope. Trichoderma was the most effective in controlling corn smut infections. Only 20% of the germinated corn plants were infected and none of the plant height tests had infections. A Student t-Test showed that Trichoderma had a significant effect corn plants germinated around corn smut ($t = 4.28 > t.05 = 2.57$) and a highly significant effect on corn plants grown in infected soil ($t = 8.71 > t.01 = 4.60$). The combination of Trichoderma and Glomus was not successful; 80% of germinated plants and 60% of potted plants were infected after the tests. A combination of Trichoderma and Glomus also had no significant effect ($t = 1.95$ and $t = 1.52$). Glomus did not prevent corn smut infections; 100% of plants had infections following both tests. Glomus had no significant effect on the corn smut ($t = 0$ and $t = 0.55$). The hypothesis was partially supported because the Trichoderma prevented corn smut infections.

Awards Won:

First Award of $5,000