DETERMINING CONDITIONS FOR GROWTH AND MAINTAINANCE OF USTILAGO MAYDIS UNDER LABORATORY CONDITIONS

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ABSTRACT

Ustilago maydis, causal agent of common corn smut, is a warm temperature wound pathogen that infects corn at all growth stages but is most harmful to young vigorously growing corn (Zea mays) seedlings. Growth requirements include temperatures that range from 17-20 C to 30-25 C and better rates of growth have been reported at higher temperatures. In South Dakota, an increase in incidence and severity of infection in field corn was reported for fields in Lake County 1999 and may be correlated with hot dry weather. The long range prediction is for a hot dry summer 2000 and therefore *U. maydis* may lead to economic problems for growers in SD. Field corn and sweet corn are susceptible to infection. Because sweet corn is more susceptible than field corn, a commercially available cultivar ‘Early Sunglow’ was chosen for this study. The purpose of this study was to examine growth requirements of a field collected isolate of *U. maydis*, and to establish conditions for infecting greenhouse grown sweet corn seedlings.

An isolate of *U. maydis* was collected from Lake County SD fall 1999 and a pure culture was selected and maintained on potato dextrose agar. Growth of *U. maydis* was examined at five different temperature regimes ranging from 15 C to 34 C. The best growth occurred in a 34 C incubator. Inoculation of wounded ‘Early Sunglow’ corn seedlings involved and application of a liquid suspension of *U. maydis* incubated in potato dextrose broth. Corn seedlings were inoculated at two, three, and four leaf stages. My study selected a field collected isolate of *U. maydis*, established growth requirements under laboratory conditions, determined a method for inoculating sweet corn, and will serve as the foundation for field studies of the epidemiology of corn smut summer 2000.