SOUTHERN LEAF BLIGHT OF CORN IN EASTERN ONTARIO IN 1971[1]

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Abstract

In 1971 southern leaf blight of corn was not found in eastern Ontario until the first week of September. Althoush the disease then became widespread throughout the area, damage to the rapidly maturing crop was negligible. Race T of Helminthosporium maydis was isolated from infected plants and from overwintered corn debris. The primary inoculum affecting corn crops in the surveyed area apparently originated locally from corn residue on the surface of the soil.

Introduction

In eastern Ontario in 1970 southern leaf blight of corn was first observed in mid September (Gates et al. 1971). Although the disease caused very little damage in the few fields affected during September and October, it was suggested that an earlier and more severe outbreak could occur in 1971 if inoculum overwintered in this area. Therefore corn fields at various locations were examined frequently during the 1971 growing season.

Observations

Blight-like symptoms were reported on corn from Renfrew County in August, but the occurrence of southern leaf blight in eastern Ontario was not confirmed until September 6, when Helminthosporium maydis Nisikado (stat perf. Cochliobolus heterostrophus (Drechs.) Drechs.) race T was isolated from corn growing near a crib site in Dundas County about 30 miles south of Ottawa (Fig. 1). Most plants in this field were infected, and 10% to 60% of the leaf area of infected plants was necrotic. A week later in Renfrew County the pathogen was isolated from a field where approximately 2% of the plants exhibited light infection. During the 2-week period following the first positive identification of the disease, leaf symptoms appeared in 26 of 56 fields examined, and by the last week of September southern leaf blight was widespread throughout the major corn growing area, At this time most of the crop was nearing maturity and overall the disease had little effect on yield. However in a few fields of very late corn that was still quite green the disease spread rapidly, involving a high percentage of all leaves and

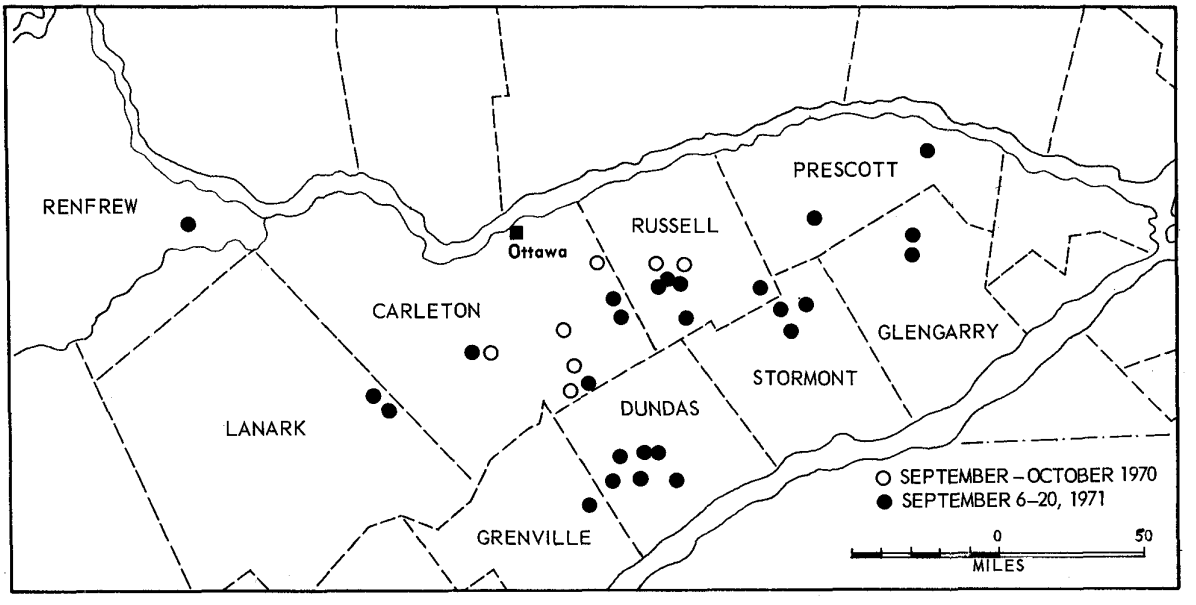

Figure 1. Distribution of southern leaf blight of corn in nine eastern Ontario counties in 1970 and 1971. In late September & October 1971 blight became generally distributed throughout the area,

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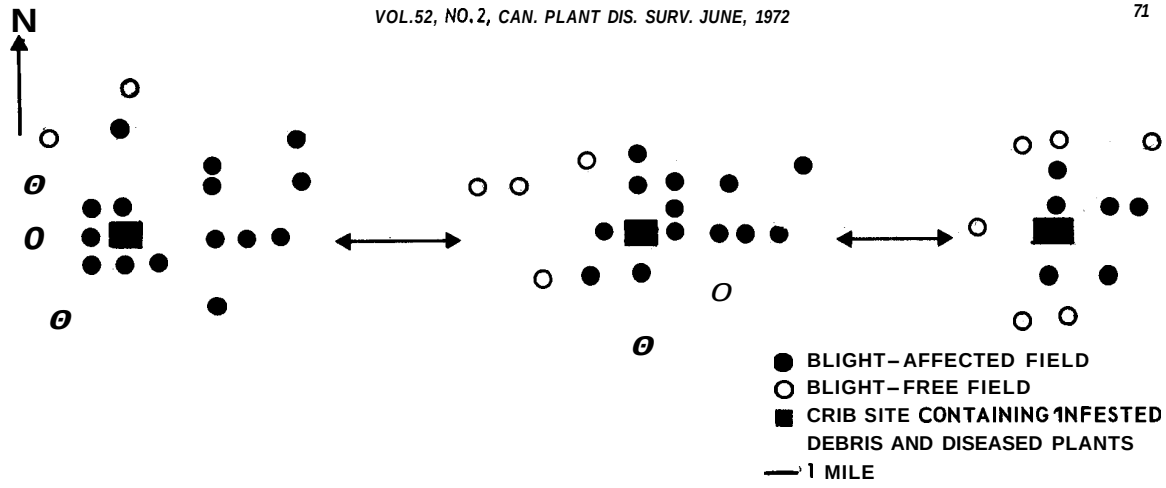

Figure 2. Distribution of corn fields affected by southern leaf blight in the vicinity of crib sites containing overwintered corn debris at three locations in eastern Ontario, October 1971.

cobs on less mature plants.

To determine the source of the inoculum responsible for infection, samples of overwintered corn residue were collected and plated on potato dextrose agar. H. maydis was isolated from kernels, shelled cobs, husks, sheath tissue, and stalks from three locations; in each case the infested residue was collected from the surface of the soil in the vicinity of cribs holding corn harvested in 1970. Volunteer corn plants growing among the debris and plants nearby in adjoining fields were severely affected by blight; many were stunted and showed 80-90% necrosis of the leaf area.

Examination of corn fields in the vicinity of these inoculum sources disclosed a heavily infested zone near the cribs. Although infection was found in nearby fields in all directions, the disease was most prevalent in fields to the east of the cribs (Fig. 2).

Discussion

Weather conditions during early summer 1971 were not conducive to the development and spread of southern leaf blight in eastern Ontario. Rainfall was light and there were few periods in July when corn leaves remained wet for more than a few hours at temperatures above 65° F (18° C). Similarly in central Ontario lengthy cool periods in July and August suppressed development of the disease, and blight was not found in the Guelph area until September 16, following the first period of weather conditions favoring blight multiplication (Gillespie 1972).

Although blight indices based on temperature and leaf wetness (Gillespie 1972) were not calculated for eastern Ontario, three potentially favorable periods for blight development occurred during August. At Ottawa the total rainfall for the month, 5.05 inches, occurred during Aug. 9-14, Aug. 19-22, and Aug. 27-30; undoubtedly much of the development of blight near crib sites and the subsequent spread of the disease evident in early September occurred during these periods.

The fact that H. maydis overwintered successfully on corn residue in this area and the pattern of disease development in fields surrounding crib sites suggest that primary inoculum was produced locally in 1971.

Literature cited

Gillespie, T.J. 1972. A simple index of southern leaf blight activity in corn computed from temperature and leaf wetness observations near Guelph, Ontario. Can. J. Plant Sci. (In press).

Gates, L.F., C.D. McKeen, C.G. Mortimore, J.C. Sutton, and A.T. Bolton. 1971. Southern leaf blight of corn in Ontario in 1970. Can. Plant Dis. Surv. 51:32-37.