EAR ROTS OF CORN IN SOUTHWESTERN ONTARIO

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In 1964 and 1965, ear rots were a source of concern in the corn-growing areas of Ontario. In each year the situation was different in that the fungi involved and the problems to which they gave rise differed.

In 1964, the main fungi associated with ear rots were Fusarium moniliforme (Sheld.) Snyder and Hansen and Hormodendrum cladosporioides (Fres.) Sacc. The former appeared in late September and October as a light surface growth but was not associated with extensive decay. Hormodendrum appeared shortly before harvest and spread rapidly in corn cribs where wet ears were present. On many farms, actual heating occurred in the cribs, preventing storage of the crop for the winter months.

In 1965, pink ear rot was found in high proportions on several farms near Harrow. Since this presented certain dangers in the use of the grain as feed, a survey was conducted of corn cribs throughout southwestern Ontario. Where corn was noticeably moldy, samples were collected for isolation and identification of the fungi present.

Most of the farms with a severe ear rot problem were found in the Lake Erie region where the fungus associated with decay was Fusarium graminearum Schwabe. Further north, in Middlesex, Huron and Bruce Counties, severe infections of Fusarium tricinctum (Cda.) Snyder and Hansen were found (Figure 1). Most of the corn examined throughout southwestern Ontario also had the condition known as red-striped pericarp and a light surface growth of Hormodendrum cladosporioides. However, in contrast to 1964, there was no evidence of further decay in storage in the cribs examined.

The presence of large amounts of corn infected with F. graminearum was potentially dangerous to the feed industry because of the possible presence of toxic substances in the infected grain (2). Although reports were received of sickness and refusal of feed by farm animals fed corn, no deaths directly attributed to Fusarium-infected grain were documented. This demonstrated a definite need for study of the effects on animals of grain infected by various fungi. For instance, no information could be found on the toxic properties of F. tricinctum, a fungus very similar in appearance to F. graminearum.

In both 1964 and 1965, severe drought and below-normal temperatures during the first half of growing season, and cool or wet weather during the autumn were probably the major factors predisposing the crop to ear rots. At present, there is little evidence of heritable resistance to ear rots (1), and the possibility of direct control measures appears remote. However, certain agronomic practices should be explored in connection with ear rot incidence, and certain features related to ear drying incorporated into commercial hybrids. For instance, much of the ear rot observed in both years was associated with tight husks, a feature which might be reduced by hybrid selection. Furthermore, poor ear declination, resulting in inadequate drainage of the ripening ear, was observed in certain fields with a high incidence of ear rot. This may have been due to several causes such as low ear weight or stiff shanks. Lodging of plants resulted in a large number of ears coming into contact with the soil. Much of this lodging could be prevented by the incorporation of stalk-rot resistance into the hybrids. In addition, many of the hybrids grown were of later maturity than those recommended for the area. These hybrids ripened and dried during the cool, wet part of the autumn when fungus infection would be most likely.

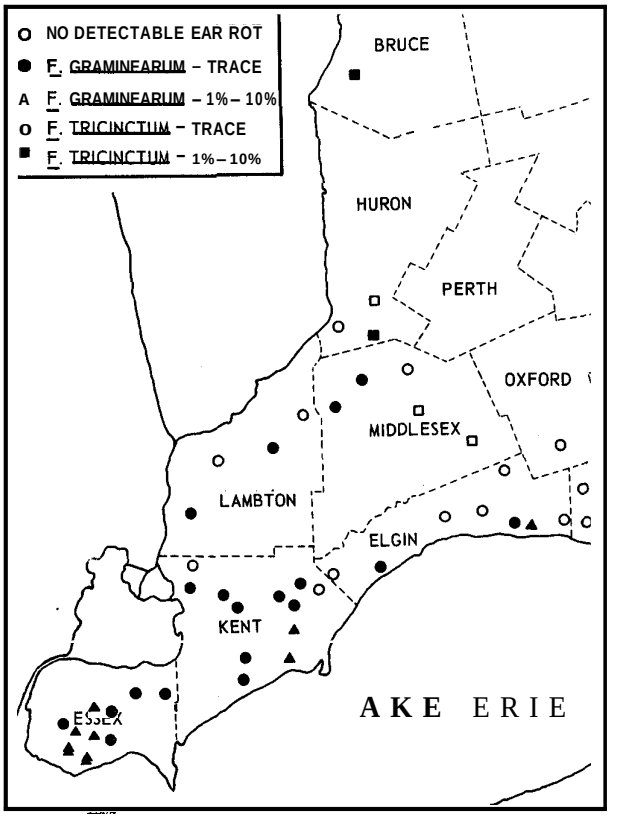

Fig. 1. Outline map of southwestern Ontario showing locations of corn crops inspected for ear rat, December, 1965.

Literature cited

1. Koehler, B. 1959. Corn ear rots in Illinois. Univ. Illinois Agr. Exp. Sta. Bull. 639. 87 pp.

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