In greenhouse experiments it was pathogenic to potato and tomato but not to sunflower (J.A.H., unpublished data). There are few reports of Verticillium on potato in Manitoba. Bisby et al. (1) reported V. albo-atrum McA. on rotting potato tubers and commented "It has not been found to cause potato wilt in Manitoba." The relationship of V. albo-atrum McA. to V. albo-atrum Reinke & Berth. is not known to the authors. Verticillium wilt was reported to have caused severe damage to potatoes in Manitoba in 1934, but the fungus was not identified (4). In 1956 verticillium wilt affected approximately 25% of the plants in a potato field near Altona, Manitoba, and V. albo-atrum was isolated from the stems of affected plants (3).

Cephalosporium spp. and the causal agent of black dot, Colletotrichum coccodes (Wallr.) Hughes, were also isolated in 1968 from plants in the wilt-affected field near Winkler, Either C. coccodes or Cephalosporium spp. or both were also obtained from diseased potato plants in three other fields in the Winkler area that showed a trace to 1% wilted plants. All isolates of C. coccodes were initially sterile, producing only sclerotia and setae. but on subculturing one isolate produced typical conidia and setae in sporodochium-like bodies on potato dextrose agar. Symptoms of black dot disease in potato resemble those of verticillium wilt, and the pathogen may be systemic (2). A species of Cephalosporium isolated from wilted sunflower caused light symptoms of wilt in potato in greenhouse experiments (J.A. Hoes. unpublished data). Perhaps Cephalosporium spp. were involved in potato wilt occurring in the field in 1968. Other fungi isolated were species of Cylindrocarpon and Volutella, along with an undescribed species of Verticillium. Colletotrichum coccodes (= C. atramentarium (Berk. & Br.) Taub.) was previously recorded on potato by Bisby et al. (1). New host records for Manitoba are Cephalosporium spp., Cylindrocarpon sp., and Volutella sp.

Eight potato fields were surveyed in the Carberry area. Blackleg caused by Erwinia atroseptica (van Hall) Jennison occurred in four fields showing a trace to 2% diseased plants. Rhizoctonia solani Kühn occurred on stolons in all fields examined. In five fields the degree of infection was light, while in the other three fields 50-100% of the plants were infected. Freezing temperatures in mid-August prematurely killed all plants in one field and reduced yield; in three other fields the damage was slight.

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DISORDERS OF FLAX IN MANITOBA IN 1908

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Frost damage, aster yellows, and rust were the most conspicuous disorders of flax (Linum usitatissimum L.) in Manitoba in 1968. Our survey covered the entire southern part of the province and extended as far north as Dauphin. Fifty-six fields were checked for disease.

Frost damage was widespread on flax around Carberry and Dauphin. Symptoms consisted of black, empty, and rotting bolls in earlier planted fields and unopened andsterile flowers in late fields. Reductions in yield were estimated to be 5-10% in several fields. Aster yellows was widespread, occurring in trace amounts in 33 fields, affecting 1-3% of the plants in six fields, and causing appreciable damage in three fields, where 5-10% of the plants were affected.

Rust caused by Melampsora lini (Ehrenb.) Lév. was frequent in southern Manitoba but was not found in the western and northern parts of the province. Race 300 was identified in all cases. The rust situation is a cause for concern. Since the discovery of race 300 in 1962, the Manitoba acreage of susceptible varieties dropped from 61% in 1962 to 11% in 1966, while the frequency of rust dropped at the same time (1). No flax rust was found in surveys in 1967 in Manitoba and Saskatchewan. In 1968 rust was prominent in southern Manitoba, undoubtedly favored by the continued cool and wet weather. Apparently susceptible varieties are still being grown widely in Manitoba, particularly in the Red River Valley. With time a rust race might arise that is able to overcome the resistance of popular varieties as 'Noralta', 'Raja', 'Redwood', and 'Redwood 65'. Such an event would nullify the efforts of many years of flax breeding. Only four or five genes are known that still confer resistance to rust. With continued culture of susceptible varieties, it is only a matter of time until effective resistance genes are unavailable.

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