

and 88.5 in. of snow. Snow coverage was adequate during this period. During the remaining months of the year, excepting May and July, precipitation was below average despite the fact that the crop season was damp and cool and rain fell on 16, 19 and 18 days respectively during July, August and October. Sunshine was also below average during these three months. There were 157 frost free days recorded at Charlottetown between 4 May and 8 Oct.

Weather conditions were generally favourable for foliage diseases during the growing season. Apple scab and late blight of potatoes were sev. and frequent applications of fungicides were necessary in order to obtain a fair measure of control. Unsprayed and poorly sprayed potato fields were destroyed early by late blight and a very light crop was harvested from these fields. Club root was sev. in infested fields of Laurentian swedes. Bean anthracnose was unusually sev. and cucumber scab was destructive in home and market gardens. Commercial growers of pickling cucumbers escaped the disease by planting the resistant variety, Maine No. 2. Septoria culm rot was severe on Abegweit oats. The aecial stage of crown rust was of less prevalence on buckthorn than usual because of dry weather in June and early July; however, this rust was quite general on oats. Black leg and Verticillium wilt of potatoes were not serious (J.E. Campbell).

In Nfld., spring planting was greatly delayed as precipitation during March, April and May totaled 14.6 in. of which 5.5 in. fell in May. During the summer and fall months 21 in. were recorded and temperatures were relatively high. Thus conditions were ideal for the development of many diseases, especially late blight and wart of potato. The hay crop was good but continuous rainy weather during haying caused spoilage of many tons of hay. Frost on 7 and 8 Oct. destroyed the tops of potatoes and wet, cold weather greatly retarded harvesting of the tubers (G.C. Morgan).

#### Notes on Some Nematode Problems, 1954

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The golden nematode, Heterodera rostochiensis (Wollenweber, 1923) Franklin, 1940, has not yet been found in any part of Canada. Unfortunately on February 15, 1955, The Victoria Daily Times erroneously reported its probable presence in British Columbia. As this was a false rumor The Times was asked to correct the statement.

The sugar-beet nematode, Heterodera schachtii Schmidt, 1871, did not occasion any severe injury in sugar-beet fields of the Sarnia, Ont., area in 1954. A possible lowering of the infestation level may be due to more strict attention to crop rotations in this district.

The oat nematode, Heterodera avenae (Lind, Rostrup, and Ravn, 1913) Filipjev, 1934, continues to be a pest of importance in Ontario. In 1954 heavily infested oat plants were received from the following localities in Ontario: Aurora, Belhaven, Uxbridge, Bowmanville, Petersburg, and Preston.

Heterodera punctata Thorne, 1948, was named and described from infested wheat in Western Canada. Accordingly, for some time it was referred to by the common name of wheat nematode. Later infestations of this species were reported from Europe but always as a pest of grasses. In September of 1954 the writer visited a number of previously infested fields in Saskatchewan under the guidance of Dr. R. C. Russell, University of Saskatchewan, who first located this pest. A number of spot samples were obtained from these fields including the areas within the fields where the infestation had been heaviest. All these samples were carefully washed and screened at Ottawa and not a single cyst was found. These fields were all in grain in 1954. It is hoped that further search may be made, but it may well be that the present European common name of grass nematode is the more suitable. The difference in reported host plants between Canada and Europe left some slight doubt as to the identity of the species.

The northern root-knot nematode, Meloidogyne hapla Chitwood, 1949, was found on the roots of Fragaria vesca at Kentville, N. S., on carrot from Thedford Marsh, Ont., and from roots of African violet at Ottawa.

Records of infestations of root-lesion nematodes include the following. Pratylenchus penetrans (Cobb, 1917) Sher and Allen, 1953, was recorded from Fragaria vesca roots at Kentville, N. S., daffodil bulbs and tulip roots from Vancouver, B. C., nursery soil from Port Burwell, Ont., red clover roots and soil from Merivale, Ont., roots of African violet and soil at Ottawa, maple tree roots from Ottawa, and apple tree roots from the Okanagan Valley, B. C. Pratylenchus minyus Sher and Allen, 1953, was found attacking corn at Ottawa, oats from Uxbridge, Hampton, and Port Perry, Ont., barley and cultivated and wild oats from Aurora, Ont., and wheat from Harrow, Ont. Pratylenchus pratensis (deMan, 1880) Thorne, 1949, was found in strawberry roots from Stanstead, Que., and from Fredericton, N. B., oat roots from Merivale, Ont., and Fragaria vesca roots from Kentville, N. S. Pratylenchus vulnus Allen and Jensen, 1951, was obtained from rose roots grown in a greenhouse at Mount Bruno, Que.

Ring nematodes, Criconemoides spp., were found in strawberry soil from Fredericton, N. B., and Stanstead, Que., rose roots in a greenhouse from Mount Bruno, Que., maple tree soil and vetch soil at Ottawa, and in soil from the roots of Fragaria vesca from Kentville, N. S.

Although occasional new records of the potato-rot nematode, Ditylenchus destructor Thorne, 1945, have been obtained from Prince Edward Island, there is no clear evidence that the total infestation has become greater. Most of the findings have been trace infestations, and potato harvesting usually reduces the population level. In 1954 this nematode was found at McNeill's Mills, P.E.I. English iris bulbs intercepted from Noordwyk, Holland, contained nematodes conforming to the characters given for this species.

Other plant-parasitic nematodes encountered during 1954 include the following. Spiral nematodes, Rotylenchus spp., were found in soil from Kentville, N.S., Fredericton, N.B., Merivale, Sarnia, and Ottawa, Ont. Psilenchus hilarulus deMan, 1921, was found in grass sod at Ottawa, Ont., Hemicycliophora sp. in tulip soil from Walkerville, Ont., and stunt nematodes, Tylenchorhynchus sp., in oat soil from Preston and Merivale, Ont. A pin nematode, Paratylenchus sp., was reported from apple roots from the Okanagan Valley, B.C., in oat soil in Merivale, Ont., in maple tree soil from Ottawa, and in tulip soil from Walkerville, Ont. Dagger nematodes, Xiphinema sp., were found in tuberous begonia soil from Sarnia, Ont., and from a maple tree from Ottawa. A grass nematode, Anguina agrostis (Steinbuch, 1799) Filipjev, 1936, was found in the heads of Poa pratensis from Cornwall, Ont.

The foliar nematode, Aphelenchoides ritzema-bosi (Schwartz, 1911) Steiner, 1932, was found in chrysanthemum leaves from St. Catharines, Ont. Aphelenchoides parietinus (Bastian, 1865) Steiner, 1932, was found in potato tubers from Prince Edward Island, narcissus bulbs from Montreal, strawberry soil from Fredericton, N.B., lesions on chrysanthemum roots from St. Catharines, Ont., and shasta daisy from London, Ont. Aphelenchoides avenae Bastian, 1865, has been found in oat soil from Aurora and Merivale, Ont., in shasta daisy from London, Ont., in lesions on chrysanthemum roots from St. Catharines, Ont., in narcissus bulbs from Beaurepaire, Que., close to peony roots from Ayers Cliff, Que., in potato tubers from P.E.I., and in apple from the Okanagan Valley, B.C.

A number of new records of predacious nematodes belonging to the genus Mononchus have been obtained by Mr. R.H. Mulvey of the Ottawa laboratory, a specialist in this group. M. brachyuris (Butschli, 1873) Cobb, 1917, was found in soil around begonia roots at Sarnia, Ont., lawn soil from Capreol, Ont., oat soil from Belleville, Ont., and ditch soil from Blackwell, Ont. M. longicaudatus (Cobb, 1893) Cobb, 1916, was found in ditch soil at Blackwell, Ont., and M. muscorum (Duj., 1845) Cobb, 1916, in grass sod from Blackwell, Ont., meadow sod from Norton, N.B., mountain soil from "Summit", Princeton, B.C., and streamside soil from Hope, B.C. M. papillatus (Bastian, 1865) Cobb, 1916, was found in lakeshore soil from Sunnydale, Ogden County, Que., and from grass sod at York, P.E.I. M. parabrachyuris Thorne, 1924, was identified from ditch soil from Blackwell, Ont., and M. parvus (deMan, 1880) Cobb, 1916, in tobacco soil in Harrow, Ont., and from tulip-bed soil from Walkerville, Ont.

It would appear very desirable if more attention were given to the recording of the numerous species of free-living nematodes from soils in different localities. The role that is played by many of these is still rather obscure, but it is not unreasonable to presume that they may play an important part in the problems of soil fertility with possible interrelation with other organisms. Meanwhile we should endeavour to accumulate more of this type of information. Neamatologists are in short supply and it is natural that the main demands on their time are directed toward finding solutions to problems associated with nematodes of known economic importance. However, as time permits, such records obtained at the Ottawa laboratory are now being included in reports in The Canadian Insect Pest Review.

#### Phenological Data - 1954

The phenological data for 1954 make abundantly clear the lateness of the season at the three places where records were taken. Most of the species listed bloomed about two weeks later than usual. Excessive moisture and cloudy weather held back plant growth throughout the season. Wheat matured in less time at Saskatoon than at Winnipeg or Edmonton. The data are summarized in the accompanying table.

The data were collected at Edmonton, Alta., by W.P. Campbell, at Saskatoon, Sask., by R.C. Russell and at Winnipeg, Man., by P. Peterson (R.C. Russell).

The first flowering dates for the majority of plants recorded at Ottawa, Ont., were about normal for the first part of the year. Anthesis dates were as follows:-

Acer saccharinum	11/4	N	Sambucus nigra	18/6	IL
Populus tremuloides	19/4	2L	Rhus typhina	23/6	IE
Ulmus americana	22/4	3E	Phleum pratense	24/6	IE
Acer negundo	1/5	2L	Bromus inermis	25/6	6L
Acer saccharum	6/5	2E	Catalpa speciosa	12/7	IIL
Prunus pensylvanica	15/5	2L	Tilia americana	12/7	5L
Smilacina stellata	19/5	IE	Cephalanthus occidentalis	20/7	5L
Pinus sylvestris	23/5	5E	Cassia hebecarpa	30/7	3E
Anemone canadensis	3/6	N	Solidago canadensis	3/8	2L
Carya cordiformis	12/6	IE	Hamamelis virginiana	14/9	9E

(I. J. Bassett)