Weather conditions had a marked effect upon the development of crop diseases in P.E.I. The spring was backward and seeding late; grain came up slowly and there were many instances of potato seed pieces decaying in cold soil. Tree fruit bloom was delayed at least a fortnight because of backward weather.

Apple scab spore discharge was very late but the disease was a threat with the onset of warm, wet weather. Rainy weather during June and July made spraying difficult and many orchards suffered accordingly.

Strawberry mildew, usually troublesome in dry, hot weather, was not serious, presumably owing to the comparatively wet season. Turnip brown heart was less troublesome than usual, it being evident that the boron applications were fully effective with high soil moisture. The same was doubtless true of potato magnesium deficiency.

July weather conditions favoured potato late blight development, yet precipitation for July, August and September was slightly under the 26 year average of 10.53 in. During September heavy dews and warm days ensured rapid development of blight, which finally got out of control in many fields. Fortunately, plants thus killed no longer produced spores, and fine frost-free weather made it possible to delay harvesting until the spores were dead. Consequently little tuber rot developed (R.R. Hurst).

Notes on Some Plant-Parasitic Nematodes

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The finding of the potato-rot nematode, Ditylenchus destructor Thorne, 1945, attacking potatoes in Prince Edward Island a few years ago (P.D.S. 25:66) attracted an appreciable amount of attention, particularly from those interested in potato culture in other parts of the world. Fears were evident that this nematode might be an important threat to potato growing. Accordingly, in order that the excellent reputation enjoyed by Prince Edward Island potatoes should be well protected, vigorous steps were taken at once to prevent any spread of this pest even though it was not at all certain that a potato enemy of major economic importance was involved. While there has been no relaxing of the protective measures there has been no evidence, as yet, that the potato-rot nematode presents a threat of great importance to successful potato culture. Potato plantings in sod land have resulted in a few fairly heavy infestations and the planting of infested potatoes may also cause important injury, but this level of infestation has not been increased or even maintained by subsequent plantings of non-infested potatoes. With the planting of land to potatoes in areas in Prince Edward Island where potatoes had not been planted since the identification of this parasite, some few new infested fields are being located. Potato culture is still prohibited in all fields reported infested. However, most of the land now classified as infested is land where trace infestations only are present. The matter of infested land has about

reached the point where some difficulty is being experienced in finding fields sufficiently infested for experimental purposes. Thus, in general, the current situation in regard to this nematode in Prince Edward Island does not yet appear to support very grave apprehensions as to its possible role as a major injurious pest of the potato that might operate with devastating results in potato-growing areas.

The sugar-beet nematode, Heterodera schachtii (Schmidt, 1871), continues as an important problem in the sugar-beet growing areas about Blackwell, Ont. While recent surveys have not revealed any spread in this locality beyond the areas previously known to be infested, the present short crop rotations have not been sufficiently effective in reducing the total annual production of these nematodes to warrant easing the existing regulations that govern the harvesting of the sugar beet crop from this area. From the standpoint of this problem the present rather specialized type of farming could well be replaced by the introduction of additional non-host crops so that the growers could profitably lengthen their crop rotations. The present practice of not allowing one beet crop to immediately succeed another has usually been sufficient to prevent severe crop injury, from this source, but not sufficient to prevent a large crop of these nematodes being produced every year. The provincial regulations now in force governing the harvesting of beets in this area have likely been an important factor in restricting the spread of this nematode, but it should be possible to greatly reduce the present production level of these nematodes by improved farm practices.

Further information has been accumulated on the host range of the Blackwell population of the sugar beet nematode. Records now show this pest attacking sugar beets, garden beets, mangels, turnips, radish, rutabaga, brussels sprouts, cabbage, cauliflower, rape, broccoli, kale, wormseed mustard, wild mustard, curled dock, pennycress or stinkweed, and lambs quarters.

The oat nematode, Heterodera avenae Lind, Rostrup & Ravn, 1913, is an important plant pest over a considerable area in the central southern regions of the Province of Ontario, ranging from Waterloo in the west to Peterborough in the east. However, this is not a continuous area of infestation but consists rather of a number of infested areas lying within these present limits. Many of these points of infestation are well removed from one another and may be quite isolated. Important crop loss has been caused by this nematode, from time to time. This crop loss may vary considerably in different years and seems to be influenced, to some extent, by seasonal conditions. Observations on this parasite provide an interesting example of the danger of using crop injury as an indication of the seasonal abundance of the pest involved. Under some conditions the two events may tend to parallel one another but sometimes the facts will demonstrate that something quite different may occur. In some years the plants may become established early and rapidly and, given uninterrupted good weather for growth, manage to keep ahead of the demands of the parasites. Eventually a fairly good crop of grain may be harvested and, judging solely by the appearance of the crop, it might be assumed that the

nematode population in that year, and in that particular field, had fallen to a low level. Examinations of the soil and plant roots may reveal that this is not the case and that the parasite, having had an abundance of food available at all times, has increased in numbers to a very high level. Thus it is possible to have, at harvest time, a condition where injury may be classified as light and the parasite rated as very abundant. On the other hand, under different conditions, the situation may be reversed. With late or slow establishment of the plants and later unfavorable conditions for plant growth, dry spells of weather, etc., severe crop loss may occur, even though the initial nematode population may not have markedly exceeded that of the case already described. With many of the plants killed and the growth of the remainder greatly stunted the food supply of the nematodes will have been sharply reduced. Thus by the end of the season the nematode population may have been reduced even below the original spring level. In this case injury would be termed severe but the population level of the parasite had dropped. There are, of course, other important combinations of conditions that may occur to give different results, and a very high initial population is liable to result in severe injury almost regardless of the seasonal conditions.

Oats, barley and wheat are the plants which have been most commonly attacked by the oat nematode and injury is often most pronounced in the order given. Large populations may be built up on wheat but sometimes without injury being very conspicuous. Where oats and barley are planted together in an infested field the oats will usually show the most injury.

The situation in regard to the oat nematode in Ontario can not be said to have improved to any noticeable extent and rotation of crops should be emphasized along with precautions aimed at restricting the further spread of this nematode.

Some experimental plots harvested at Blackwell, Ont., on October 27, 1948, disclosed rather heavy infestations of rutabaga and of turnip by the root-knot nematode, Heterodera marioni (Cornu, 1879). These are new host plant records for Ontario.

The root-knot nematode is a comparatively common parasite of plants and, in other parts of the world has been recorded as attacking a very large number of different plants. However, it is not at all certain that any one natural population of this nematode could be successfully transferred to all of the plants recorded as hosts of the species. The variety of theories used to explain these differences in populations will not be discussed here, but the desirability of securing as much information as possible in regard to the host range of local populations of this nematode is stressed. To avoid confusing matters further, greenhouse infestations should be referred to as such and an accurate record of the host range of the field populations emphasized.

Information similar to the above is desired in the case of the meadow nematode, Pratylenchus pratensis (deMan,1880), where it is evident that a complex is involved. The same applies to other species such as Ditylenchus dipsaci (Kuhn, 1857), Aphelenchoides parietinus (Bastian, 1865), and Aphelenchus avenae Bastian, 1865.