The Wenther and its Influence on Plant Disease

There were few extremes of weather in the B. C. Interior in 1962, but conditions that prevailed during several periods had obvious influence on disease occurrence. The lowest incidence of bull's-eye rot (Gloeosporium perennans) of stored apples for a number of years followed abnormally low rainfall in September and October, 1961. Temperatures as low as -4°F in January had no apparent effect on the overwintering of apple powdery mildew (Podosphaera leucotricha). Cloudy, wet weather in mid-May favored abundant development of blossom blight (Monilinia fructicola) of sweet cherry in the Kootenays, but the onset of dry weather from mid-June until the picking season prevented the development of fruit rot.

Apple scab infection periods were confined to May in mast districts and good control was easily obtained. Cool, wet weather in August favored a high incidence of Rhizopus rot in peaches, A severe hail storm in late June, followed by several days of high humidity, provided infection courts, and favored serious outbreaks of fire blight (Erwinia amylovora) on apples and pears. Fire blight cankers remained active very late in the fall of 1962 as minimum temperatures remained high with no freezing temperatures recorded until late November.

During several cool, moist periods in spring and early summer, apple virus symptoms were expressed strongly on developing leaves, There was more variation than usual from district to district in severity of the fruit symptoms of apple virus diseases. The fruit symptoms associated with leaf pucker of McIntosh were unusually severe in northern districts, but very mild in the early southern districts. Ring russeting of Newtown was unusually severe in southern districts, but mild in northern districts, This may indicate that symptom severity is determined during a single short period of fruit development, and that the alternating warm and cool periods in April, May and early June, accounted for the differences in severity between early and late districts.

The **cool,** wet weather in August delayed tomato ripening and resulted in a crop of low quality with a high incidence of early blight (Alternaria solani) and other fruit rots, Foliage diseases of vegetables, including angular leaf spot of cucumber (Pseudomonas lachrymans), were common. Symptoms of Verticillium wilt in most crops were not severe (M. F. Welsh).

The spring and summer of 1962 were generally wet and cool in north and central Alberta. Growth of cereals, vegetables and ornamentals was rank and conditions at ground level were generally wet with dew persisting into late morning. Under these conditions powdery mildew (Erysiphe graminis) and ergot (Claviceps purpurea) of wheat and barley developed more severely than **usual.** White rust (Albugo cruciferarum) increased significantly in the rapeseed crop,

The rank growth and moist conditions favored an unusually severe development of Sslerotinia rot in vegetables, both in the field and in subsequent storage. **Botrytis** diseases of ornamentals were favored by the cool, moist

season (W, P. Skoropad). The annual rainfall in southern Alberta was about five inches below the long-term average, The Lethbridge area had the earliest killing frost on record on September 3. Many cereal crops were damaged by the low temperatures in the latter part of the growing season (J. B, Lebeau).

Moisture conditions in Manitoba at the beginning of May were only fair to poor in many districts, Precipitation from 1 April to 1 May was 49 per cent below norrnal'and the mean temperature for the week ending 30 April was 4.5°F above normal, The cumulative deficit in precipitation by 9 May was 54 per cent but by 16 May weather conditions had changed drastically and by 23 May precipitation was 46 per cent above normal and by 6 June, 65 per cent above normal. Precipitation continued to be above normal through until September. The mean temperature throughout the crop season was generally below normal.

Late seeding, 'abundant and frequent rainfalls and temperatures below normal for most 'of the growing season resulted in a late harvest, particularly in the Red River Valley. These conditions were favorable for rust development and Manitoba and south-eastern Saskatchewan experienced the most severe rust epidemic since 1954. Late-maturing fields were particularly affected,

Foliage diseases of cereals were less common and severe than might be expected under the prevailing environmental conditions. It seems probable that the exceedingly dry conditions that prevailed in 1961 reduced the supply of inoculum. Conditions were favorable for ergot infection at time of flowering and this disease was more common than usual on cereals, particularly rye. The common occurrence of onion blast (Botrytis cinerea) and tomato leaf spot (Septoria lycopersici) can be attributed to the frequent rainfalls (W. L. Gordon),

The occurrence and spread of the tobacco etch virus was in susceptible crops in south-western Ontario was again shown to be closely related to aphid infestations and their movements, which are, to a considerable degree, influenced by, weather. A heatwave in late April induced an early development of both the green peach and potato aphid and resulted in an early-season build-up of both populations, First infections of the virus were recorded earlier than in previous epidemics. There was also good evidence to support the hypothesis that wind currents carried viruliferous aphids into areas where the virus was observed occurring for the first time,

Frequent rain showers in July favored the spread of foliage and fruit diseases of such crops as tomatoes (C. D. McKeen).

The outstanding feature of the season in the Niagara Peninsula, Ont. was the dry weather in April and May, with 1.34 and 0.60 inches of rain respectively and its effect on the development of the overwintering stages of pathogens. The development of perithecia of the apple scab fungus, for example, lagged well behind the development of the trees. There were a few scab infection periods in May and June but dry and warm conditions prevented more

than a trace of scab development.

The meagre spring rainfall was unfavorable for the development of both downy mildew and the shoot lesion phase of dead arm of grapes. Periods of high relative humidity in August and September, however, favored a profuse development of powdery mildew of grapes and losses, especially in susceptible varieties, were heavy. Phytophthora rot of late-season pears was favored by wet weather in late September and early October (G. C. Chamberlain).

In the Lower St. Lawrence district of Quebec, July was excessively wet and the mean temperatures were well below normal. These conditions favored a severe infection of onions by downy mildew and the development of scab in unsprayed apple orchards. Striking symptoms of mosaic and leaf roll were particularly evident on potato foliage. These conditions also were favorable for late blight infection. A further excess of rainfall in the latter part of September favored its development and spread (H. Genereux).