in an unsprayed portion of a Fredonia planting were affected (G.C.C.). Downy mildew was seen on Fredonia, Van Buren and Agawam about 2 weeks after bloom. Many straggly fruit clusters resulted (R. Wilcox, W.S. Carpenter). The disease was serious in the Burlington-Toronto area in vineyards where no sprays or only one spray was applied (E.F. Muir).

CHEMICAL INJURY. The grape is extremely susceptible to injury from 2,4-D vapor and each year injury occurs in the form of stunting of terminal growth and malformation of leaves as a result of roadside spraying for weed control. One serious case of damage was observed in the St. Catharines area in 1957. The vines showed a marked foliage wilting and drying up with extensive defoliation in mid-July. It is considered doubtful that the vines will recover (G.C.C.). Several vineyards in the Niagara district were affected by 2,4-D. One planting of 14 acres near Thorold, Ont., was a complete loss (R.W., W.S.C.).

FROST INJURY. Temperatures as low as 23°F. on 4 and 5 May in some areas of the Niagara district caused extensive bud injury to grapes. Further injury occurred on 17 May when temperatures dropped to 26°F. Considerable russeting also occurred (R.W., W.S.C.).

MANGANESE DEFICIENCY. Several isolated cases of manganese deficiency were reported shortly after growth started (R.W., W.S.C.).

STRAWBERRY

Strawberry Disease Survey in Ontario - 1957

A.T. Bolton

A disease survey of strawberry-growing areas in Ontario was made during the late summer and fall of 1957. Many strawberry plantations throughout these areas were found to be in poor condition.

In Norfolk county, about 100 acres of strawberry plants were observed. Premier plantings in particular showed lack of vigor, and many plants failed to produce runners. Several other varieties showed much better growth and runner production, although these also produced fewer runners than normal. Other varieties examined included Pocahontas, Catskill, Sparkle, and Empire. The new variety, Redcoat, introduced by the Central Experimental Farm, Ottawa, showed good vigor.

Other areas surveyed in Western Ontario included the Niagara district, and an area near Leamington. In these areas, the plants showed the same lack of vigor. In two fields of Premier near Leamington, constituting

about 12 acres, runners produced were about 25% of normal. In most plantations throughout Western Ontario runner production was less than 60% of normal. Premier plantings were usually below 40%. One field of Premier near Simcoe where only selected plants had been set out showed normal vigor and runner production.

In the central and eastern parts of Ontario, the same conditions were encountered, but to a lesser degree. Most Premier plantations were about 60% normal as far as number of plants was concerned. Other varieties in these areas showed much more vigor than Premier. One exception to this was a field of Temple near Port Hope which showed very poor vigor.

Most of the trouble could be more or less directly associated with climatic or weather conditions during 1956-57. Late planting in 1956 was made necessary because of a late spring. These plants were not as far advanced as usual when they entered dormancy during the winter of 1956-57. Consequently, in the spring of 1957, plants used for setting out new plantations did not have suitable root systems, and the plants remained in the ground for some time before beginning to grow. Much replanting was necessary since as high as 50% of the first plants set out died. A hot, dry summer in 1957 further added to the poor growth of the new plants so that expectations are for a very light crop in 1958.

It seems quite probable that if more care had been taken by growers and nursery men to select better plants, much of the trouble could have been avoided. However, since many other varieties subjected to the same conditions survived much better than Premier, and since, in experimental plots at Ottawa, the latter has failed to show normal vigor during the last five years, it would seem that other factors are involved which also contribute to this lack of vigor in this variety. This condition could be attributed to any one of several factors, or a combination of two or more. Virus disease is perhaps the first factor to be considered since no virus-free Premier has been found in Canada to date. The fact that selected vigorous plants produced the normal number of runners during a year when unselected plants grew so poorly is a definite indication of the presence of virus disease.

Plants from 11 different locations were examined for nematodes. The highest population of Pratylenchus penetrans found was 290 per gram of air-dried roots. It is very doubtful if this population would have any effect on the plants.

Premier has for many years been observed to be very susceptible to black root rot. The plants examined included many with black roots. Isolations made from these roots yielded only fungi which are generally considered to be saprophytic.

Other diseases encountered during the survey include leaf spot, leaf blight, and leaf scorch. Leaf spot was quite severe on many of the imported virus-free United States varieties such as Catskill, Pocahontas, and Premier, and on the recently introduced Central Experimental Farm selections in the Norfolk county area. Leaf scorch was severe in plantations of Pocahontas and Catskill in Norfolk county. Leaf blight was found on Catskill.

Other Observations

GRAY MOLD (Botrytis cinerea) caused a loss of 10-25% of the crop in several garden plots in the Harrow-Leamington area of Ont. (C.D. McKeen). It was seen on a few ripening berries in a large heavily mulched plantation at McNab, Ont. (G.C. Chamberlain). Gray mold was sev. in a number of plantings in the Niagara district during the fruiting period. Where captan was used in a close schedule, wastage was minimized (R. Wilcox, W.S. Carpenter). The only serious losses in the Burlington-Toronto area were suffered by growers who got behind in picking over the wet 1 July weekend. Most growers in the area now follow a captan spray program (E.F. Muir). Sev. on Senator Dunlop at Ste. Foy, Que. (D. Leblond). Tr.-30% losses occurred in all areas of N.B. (S.R. Colpitts).

LEAF BLIGHT (Dendrophoma obscurans) was sev. in a 1/5 acre planting at Hemmingford, Que. (R. Crete).

LEAF SCORCH (Diplocarpon earliana) was sl. in Aug. in Queens Co., P.E.I. (R.R. Hurst). Seventy-five % of the foliage of Stelemaster and Surecrop was infected at Mavailette, N.S. Two % of the total leaf area was destroyed (C.O. Gourley).

LEAF BLOTCH (Gnomonia fructicola) infected 10% of the plants of Jessie at Chebogue, Yarmouth Co., N.S., causing a reddening of the calyx and fruit pedicels (C.O.G.).

LEAF SPOT (Mycosphaerella fragariae). The Valentine variety was heavily spotted at McNab, Ont., but the plants were very vigorous and produced a heavy crop. Sparkle and Premier alongside were not affected (G.C.C.). Leaf spot was sev. in a garden at Hemmingford, Que. (R. Crete). It was widespread and ranged from tr.-100% on Senator Dunlop and Sparkle in Queens and Sunbury Counties, N.B. (S.R.C.). Leaf spot was very light in Queens Co., P.E.I. (R.R. Hurst). There was up to 10% infected foliage on most all commercial varieties in Kings Co., N.S. (C.O.G.). Forty % of the leaves of several varieties on the Experimental Farm, St. John's West, Nfld., were affected (O.A. Olsen).

TAN ROT (Pezizella oenotherae (Patellina fragariae) caused V-shaped brownish lesions with purple margins at the leaf tips on Senator Dunlop at Ste. Foy, Que. The fungus was fruiting sparsely (D. Leblond).

LEAF SPOT (Septoria aciculosa). Isolations from affected plants from Belmont, N.S. yielded this organism (G.O.G.).

POWDERY MILDEW (Sphaerotheca humuli). Mildew caused more damage than ever previously observed in the Fraser Valley of B.C. On Vancouver Island, where the weather is usually more favorable for mildew development, the disease was well controlled by lime-sulphur, wettable sulphur or sulphur dust. Preliminary results with Karathane were promising (W.R. Foster). It was sl. in a small planting at Essextown, Ont. (R.W.W.). Specimens were received from Levis, Montmorency and Montmagny Counties, Que. (D. Leblond). Mildew was tr. on Senator Dunlop, Sparkle and Louise in Queens Co., P.E.I. (R.R. Hurst). At the Exp. Farm, Kentville, N.S. 100% of the fruit of several seedling varieties was affected. The mildewed fruit had an off flavor. The only mildew observed on fruit in commercial plantings was in one field at Wittenburg (C.O.G.).

WILT (Verticillium albo-atrum) was general in the Niagara Peninsula and sev. in some instances on land where previous crops of susceptible plants had been grown. Wilt is becoming a major problem (R.W., W.S.C.). A 1-acre planting of Louise in the Burlington-Toronto area was 75% loss. One row of Sparkle planted down the middle of the field was affected to a lesser extent. Many new plantings did badly in 1957, and some, but not all of the blame could be attributed to Verticillium (E.F. Muir). Typical wilt symptoms developed to a mod. degree in a small field of strawberries at Woodside, N.S. following a crop of Kennebec potatoes (K.A. Harrison).

GANGRENE (various pathogens). Plants showing symptoms of gangrene from Iberville, Montmagny, Montmorency and Megantic Counties, Que. yielded Botrytis cinerea, Cylindrocarpon sp., Fusarium sp. and Verticillium sp. (D. Leblond).

ROOT ROT (various pathogens). At Niagara-on-the-Lake, Ont., 15% of the plants in a field of Premier were stunted and drying up. Many complaints of this condition were received as the season progressed and fruit began to size (G.C.C.). Root rot was sl. in a young planting of Senator Dunlop at Charlesbourg, and mod. in a 3-yr. old field of an unknown variety at Ste. Petronville, Que. (L.J. Coulombe). It was sev. under drought conditions in many areas of N.B. Generally the crop was only 2/3 the 10-year average (S.R.C.).

GREEN PETAL (virus) was observed in the variety Regina on Vancouver Island, B.C. (W. Newton). It was also recorded as affecting several varieties in Kamouraska and Bellechasse Counties, Que. The disease in Que. was more common than anticipated (R.O. Lachance). Green petal caused considerable loss of crop in Senator Dunlop, Premier and Sparkle at Narrows, Queens Co., N.B. It seems to be prevalent in nearly all newly imported plants during the first bearing year (S.R.C.). Approximately 2% of Senator Dunlop in fields at Blomidon and Yarmouth, N.S. were affected (C.O.G.).

YELLOWS (virus). A sev. infection on 0-484 at Ste. Anne de la Pocatiere, Que. caused a mod. decrease in yield (L.J.C.).

JUNE YELLOWS (genetic breakdown). Three plants in a small field of Sparkle in Queen's Co., P.E.I. were affected. The symptoms had disappeared by mid-August (R.R. Hurst).

MAGNESIUM DEFICIENCY was evident in 40% of the plants in a field at Oromocto, N.B. (S.R.C.).

FROST INJURY occurred in pockets in the northern portions of the Burlington-Toronto area, reducing crops in some fields by 25%. Less than 10% of the growers were affected (E.F. Muir).

LOW TEMPERATURE INJURY continues to be one of the major hazards to strawberry growing in B.C. The damage is greater in areas exposed to the wind (W.R. Foster).