BLACK ROT (Xanthomonas campestris) affected 10-20% of the crop in several swede fields in P.E.I. Infection is believed to have originated in the stecklings on which the seed was produced. This disease may be eliminated by the hot water seed treatment but none of the seed sold locally had been so treated (G.W.A.).

SWEET CORN

RUST (Puccinia sorghi). At St. Jean, Que. most of the leaves in a 10-acre field were covered with rust pustules. Many leaves dried up and died (R. Crête). Mod. infections occurred at Ste. Foy, Que. (D. Leblond).

TOMATO

Diseases of Greenhouse Tomatoes in Essex County, Ontario in 1958

R.W. Walsh

Approximately 15 acres of greenhouse space in Essex Co., Ont. is devoted to tomato production between 1 Jan. and 15 July. From August to about 15 Dec. about 45 acres are planted to tomatoes. This report is a summary of disease conditions in the spring and fall crops respectively in 1958.

Spring Crop

Damping-off caused by Rhizoctonia sp. and Pythium sp. was common in late Feb. and early March. The increase in the incidence of this disease seemed to stem chiefly from the practice of overwatering and over feeding during a period when light intensity and temperatures were low.

Stem rot, caused by Sclerotinia sclerotiorum, that developed in a few crops was traced to inoculum carried on mulching materials. The most serious outbreak of this disease occurred at Harrow on a 4600-plant crop where sunflower seed hulls were used for mulch. Lesions usually appeared on the plant at the base of a petiole that was covered by infected hulls. More than 10% of the plants in the crop were killed before the first fruit was picked. Spread of the disease was checked by removing hulls from contact with plant stems and also by dusting or spraying with zineb. Based on the average yield and returns that the grower received from this crop, his losses from stem rot exceeded $200.00.

The few scattered light infections of early blight Alternaria solani and Septoria leaf spot, Septoria lycopersici, seen throughout the area in late April were readily controlled by spraying with maneb at 4 lb/100 gal. of water.

Gray mold, Botrytis cinerea, caused stem and fruit rot in a few crops where temperatures were too low and ventilation was inadequate. Ferbam or thiram sprays and a reduction in the relative humidity arrested the disease.

A fruit rot caused by Trichothecium roseum was found at Harrow and Leamington in early May on the Michigan-Ohio Hybrid tomato. The organism appeared to invade the fruit through the blossom end by first attacking the necrotic remnant of the style. From this point the lesion radiated uniformly through the host without seriously changing the outward conformation of the fruit. Invasion by secondary organisms often occurred resulting in a rapid breakdown of the fruit.

In the most heavily damaged crop, half of the fruit in one set was infected resulting in a loss to the grower of about $100.00. Additional heat to improve ventilation and reduce humidity controlled these outbreaks. Maneb sprays or dusts also give satisfactory control.

Several outbreaks of leaf mold, Cladosporium fulvum, appeared in late May and spread slowly until checked by increased heat and improved ventilation which reduced the relative humidity of the air surrounding the plants. The Michigan-Ohio Hybrid tomato, which constitutes over 90% of the spring crop, is not resistant to the disease.

Fusarium wilt, Fusarium oxysporum f. lycopersici, killed 5% of the plants in a small crop of tomatoes planted in unsterilized soil. This disease is present in many crops but usually only one or two plants in every 1000 show serious symptoms, and crop losses are very slight. The Michigan-Ohio Hybrid tomato is reported to have inherited resistance to this disease from one of its parents, Ohio W.R. Globe.

Tobacco mosaic virus could be found in all crops in the area but in only a few were the severe fern leaf type of symptoms evident. In only one instance was there evidence of a marked reduction in yield from the disease.

Light outbreaks of blossom end rot were seen in many crops. A more serious loss of approximately one pound of fruit per plant was experienced by a grower at Kingsville in his 2000-plant crop. This apparently resulted from an inadequate water supply in the sub soil. Examination of the soil showed that the upper 6 inches of soil had

considerable moisture but below that depth the soil was "powdery dry". Normally this grower floods his greenhouse soils to leach out excess salts but being pressed for time he did not flood the soil in this house. The crops in his adjacent greenhouses, planted on ground that had been flooded, had a good even supply of moisture in the soil and were free of blossom end rot.

M agnesium deficiency became evident in some of the more heavily laden plants just before all the fruit on the first truss had been picked. At this time the fruit load on the plants is greatest as is, apparently, the need for magnesium. The condition was corrected by spraying the foliage with a solution of one pound of magnesium sulphate in 12.5 gallons water.

Fall Crop

Light infections of late blight, Phytophthora infestans, were general in the fall crop and most were readily controlled by reducing the relative humidity and by the thorough application of maneb 4 lb./100 gal.

Leaf mold caused by Cladosporium fulvum appeared in a few crops planted to varieties not resistant to the disease. More than 95% of the fall crop in Essex County is planted to the leaf mold resistant variety Vinequeen. At Kingsville heavy leaf mold infection was found in a crop reported to be Vinequeen. Pathogenicity tests, with samples of the organism from this crop, were performed by members of the Botany Department, University of Toronto, and these failed to produce lesions on plants known to be Vinequeen.

Fusarium wilt caused by Fusarium oxysporum f. lycopersici was troublesome in more crops this year than at any other time during the past 5 years. In several crops from 5-10% of the plants were killed by this disease.

Virus diseases were of especial importance in the crop this past fall. Tobacco mosaic virus, for example, was of widespread occurrence and caused symptoms that ranged from a mild mottle to the severe fern leaf type. In one establishment an appreciable quantity of fruit was rejected because of gray wall or blotchy ripening caused by tobacco mosaic virus infections. Virus streak has destroyed up to 10% of the plants in some greenhouses.

A few growers experienced considerable crop loss from heavy infestations of root knot nematodes, Meloidogyne sp. In an 8,000-foot house nearly all plants were attacked, some of them so severely that 40% were dead by 1 Oct. The balance of the crop was abandoned.

Other

EARLY BLIGHT (Alternaria solani) was tr. in 2 plots at Lethbridge, Alta. (J.E. Moffatt). Only where inadequate protective measures were used was early blight a problem in s.w. Ont. (R.W. Walsh). Sev. infections occurred at La Gorgendiere, Que. (D. Leblond). It was widespread in N.B. but there was little damage to fruit (S.R. Colpitts). In Kings Co., N.S. early blight causes annually 25-75% defoliation. The new variety Scotia is quite susceptible. Maneb sprays, where applied, gave satisfactory control (K.A. Harrison).

GRAY MOLD (Botrytis cinerea) attacked all varieties in greenhouses at Kingston and Falmouth, N.S. Spots developed where floral parts were caught on leaves and in axils next to the stem. Stem infections developed killing 1-2% of the plants in the most sev. infected greenhouses. Infections in different houses ranged from 10-100%. Dull, rainy weather through the spring season contributed to the severity of the disease. With the return of sunny weather and the application of Thylate sprays the outbreak was checked (K.A.H.).

LEAF MOLD (Cladosporium fulvum) was observed at Saanichton, B.C. in 1 field where overhead sprinkler irrigation was used (W.R. Orchard). Specimens were received from a commercial greenhouse at Haney, B.C. Basal leaves only were attacked (H.N.W. Toms). Sev. infections on several susceptible varieties were observed at Kingston, N.S. following the dull, cold spring weather (K.A.H.).

ANTHRACNOSE (Colletotrichum spp.). In s.w. Ont. anthracnose was a problem only where sev. virus infections had limited foliage development or where protective measures were inadequate (R.W.W.). Fruit from the Leamington, Ont. area was 100% infected when examined on the market at Ottawa (D.S. MacLachlan). At Kentville, N.S. anthracnose was sev. on a crop grown on land that had borne infected crops in previous years. No infections were found on land planted to tomatoes for the first time (K.A.H.). (For a discussion of the organisms involved in the anthracnose complex in Canada see P.D.S. 37:85-86. 1957). (D.W.C.).