

One collection was made of a race that could not be identified with any of the hitherto known races. This race is provisionally designated as 1946-1. The infection types are: Malakof 0, Carina 4, Brevit 4, Webster 4, Loros 4, Mediterranean 4, Hussar 2, Democrat 4, and Hope X.

Eight races of *P. graminis* var. *Avenae* were identified in 171 isolates. These races were, in order of prevalence: 10, 8, 2, 5, 11, 1, 6 and 7. The year 1946 saw a further increase in the prevalence of races 8, 10, and 11, which are capable of attacking Vanguard, Ajax, and other oats of similar origin. Calculations based on their occurrence on oat varieties equally susceptible to all races show that races 8, 10, and 11 now constitute about 30% of the oat stem rust present in Man. and Ont., 20% in Que., and 15% or less in the Maritime Provinces. Scanty survey data for Alta. and B.C. indicate that these races are not common in these two provinces. The occurrence of race 6 in Ont. and its significance will be discussed in the next section.

From 127 collections of crown rust obtained from localities in Eastern Canada and the Prairie Provinces, 9 races of *P. coronata* var. *Avenae* were isolated as follows, in order of prevalence: 3, 1, 6, 2, 4, 5, 1946-1, 45, and 38. One race, tentatively designated as race 1946-1, had not previously been collected in Canada. This new race heavily attacks all the crown rust differential hosts except Red Rustproof, Ruakura, Sunrise, Steresil, Belar and Glabrota. It resembles races 34 and 45 in that it heavily attacks Bond. Race 1946-1 was collected in one locality in Ont. and in one in N.S. At Pictou its intensity averaged upwards of 20% on Bond and Clinton in the rust nursery. Races 2 and 3 predominated in Eastern Canada where they comprised 57% of all races isolated, and races 1 and 4 were the most common races in Western Canada comprising 80% of all isolates of the area. Race 5, although present in both Eastern and Western Canada, was much less prevalent than in 1945 - 5.5% of all races in 1946 compared with 22.1% in 1945. There was no marked change in the relative prevalence of the other races.

Infection Studies with Aecia on Berberis and Rhamnus in 1946

This is the third year in which infection studies have been made with aecia from barberry and buckthorn collected in Eastern Canada. We are indebted to the following for collecting and forwarding infected leaves: R.R. Hurst, Charlottetown, P.E.I., J.D.E. Sterling, Nappan, N.S., J.A. Boyle and K. Cox, Kentville, N.S., J.L. Howatt and S.F. Clarkson, Fredericton, N.B., J.E. Jacques, Montreal, Que., R.A. Ludwig, Macdonald College, Que., I.L. Conners, Ottawa, Ont., J.W. McRae, Kemptonville, Ont., F.A. Lashley, Alliston, Ont., and W.M. Cockburn, Newmarket, Ont.

In the isolations from barberry, the *Secalis* variety of *P. graminis* predominated as it did in the two previous years. It occurred in 19 of the 25 collections studied. Next in frequency of isolation were varieties *Avenae* and *Agrostidis*, each of which were present in 5 collections. The *Avenae* variety was composed of 3 isolates of race 2 and one each of races 5, 7, and 8. The occurrence of race 7 is noteworthy because in past years it has been very rare in rust collections made on oats and grasses. The

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solitary isolate of wheat stem rust proved to be race 111, which has not been isolated previously in Canada from field material (either barberry or cereals), but had occurred a number of years ago in crosses between wheat stem rust and rye stem rust. As rye stem rust occurred in the same aecial collection (No. 9, Newmarket, Ont.), it is possible that here, also, it resulted from a cross between wheat stem rust and rye stem rust.

Apart from the aecial collections there is some evidence in the general survey that has a bearing on the importance of barberry in the distribution of uncommon physiologic races. Four isolates of oat stem rust were identified as race 6, the most generally virulent of all oat stem rust races. Three of these isolates appear traceable to barberry. They occurred respectively on heavily rusted specimens of Clinton, White Tartar, and Vanguard oats collected near Appleton, Ont. As heavy stem rust infection on Clinton and White Tartar is rare, inquiries were made of the collector as to whether barberry was present in the neighborhood. The reply was that Appleton was "the home of barberry" and that a nearby area of 65 acres was heavily infested with the shrub. It was further stated that the township council had attempted eradication and had sought governmental support for this work, although, so far, ineffectually.

Five physiologic races of *P. coronata* var. *Avenae* were present in the 25 isolates isolated from aecial collections of buckthorn obtained in Eastern Canada in 1946. Races 2 and 3, both of which were quite common in Eastern Canada in 1945, comprised 84% of the isolates. Although in 1945, when the teliospores which caused the 1946 aecial infections were formed, races 5 and 6 were almost as prevalent as races 2 and 3, nevertheless, race 6 was not isolated from the aecial collections, and race 5 was isolated only once. The preponderance of races 2 and 3 in this 1946 aecial material was due no doubt to the fact that these races produce teliospores profusely and conversely, races 5 and 6 were so sparsely represented in this material because they form teliospores very weakly. Race 1 was isolated once and race 45 twice.