Isolations from Aecia Collected on Barberry and Buckthorn

During a survey carried out from Ottawa to determine the distribution of common barberry and European buckthorn in eastern Ontario, many collections of aecia from these two hosts were made and forwarded to Winnipeg for study. Specimens were also received from collectors located at Kemptville, Ont., and in Que., N. B., and P. E. I.

Isolations from Aecia collected on Barberry

Aeciospores from the collections studied were inoculated to wheat (Little Club), oats (Victory), rye (Rosen), and barley (Montcalm). As no grasses were inoculated, the studies were confined to the cereal-inhabiting varieties of stem rust. All cultures of wheat stem rust and oat stem rust were analysed for the physiologic races present. Out of 44 collections tested, 23 produced infection on the cereals.

Rye stem rust was the predominant rust variety. It occurred in 18 of the 23 collections studied while oat stem rust occurred in 10 collections and wheat stem rust in 5. That other varieties of stem rust were present in some of the collections, was indicated by the presence on Rosen rye of small (type 1) uredinia with urediniospores of a size suggestive of var. agrostidis. Such uredinia were noted particularly in collections no. 12 (Hawkesbury, Ont.), no. 13 (Camden East, Ont.), and no 30 (Cobourg, Ont.). Collection no. 40 (Shediac, N. B.) failed to infect wheat, oats, and rye but produced type 1 uredinia on barley with spores corresponding in size and shape to those of var. agrostidis.

Oat stem rust was isolated from collections from Ont., Que., and P. E. I. Race 2 was most frequently isolated (7 isolates) followed by race 8 (2 isolates) and race 1 (1 isolate).

The cultures of wheat stem rust, all from collections in Ont., produced no less than 6 races; i. e. races 16, 27, 69, 88, 179, and 185. Not one of these races is at present of common occurrence in uredinial collections from cereals.

Isolations from Aecia collected on Rhamnus cathartica and R. frangula

Twenty-five aecial collections from Rhamnus cathartica and 2 from R. frangula were received from Eastern Canada. But owing to extremely dry weather in the Prairie Provinces during all of May and early June, practically no aecial infections occurred on buckthorns there, and only 3 aecial collections were received from that area.

Spores from each aecial collection originating on Rhamnus cathartica were transferred to oats, rye, Festuca elatior, Holcus lanatus and Lolium perenne and the spores from R. frangula were transferred to Agrostis tenuis as well.

Three varieties of crown rust, Puccinia coronata var. avenae, P. coronata var. secalis* and P. coronata var. festucae were isolated from the aecia collected on R. cathartica, and one variety, P. coronata var. agrostidis, from aecia collected on R. frangula.

*In previous reports this variety was designated as Puccinia coronata var. bromi. Recent tests have shown that it differs from var. bromi and it is now proposed to name it P. coronata var. secalis nov. var.

The var. avenae was isolated from all but one of the 25 eastern collections studied, the variety secalis from 6 collections, and the var. festucae from 3 collections. The variety avenae alone was recovered from 13 collections and it was recovered along with either one of the other two varieties from 9 collections. In one instance, the variety secalis alone (Tecumseh, Ont.) was isolated. This collection consisted of many heavily infected leaves and seemed to be a pure culture of the var. secalis. In collections where the variety avenae occurred with one or the other of the other two varieties, it was the predominant one present. Apparently, in 1952, the majority of aecial infections which occurred on R. cathartica in Eastern Canada were of the variety avenae.

The three aecial collections obtained in Manitoba yielded only the variety secalis and appeared to be pure cultures of this variety.

The variety agrostidis was isolated from both of the collections of Rhamnus frangula studied. The presence of other varieties in this material was not observed. It is of interest to note that aecial infections occurred on R. frangula at Kentville, N.S. Hitherto aecial infections have not been observed on this host anywhere in North America except in a rather restricted area around Fredericton, N.B.

The following 12 physiologic races of Puccinia coronata var. avenae were isolated from the aecial collections (old designation of races given in brackets): 226(1a & 6a), 228(2a); 229(2b); 230(4a & 5a); 231(3a); 234(2c); 235(3c); 236(6b); 238(4 & 5); 239(2 & 38) and 240(3). The races isolated from the aecial collections corresponded fairly closely to those isolated from the uredinial collections.