

Three physiologic races of barley leaf rust were isolated from 5 cultures of the rust. Two races were similar to two previously identified by A.M. Brown. The third race, collected at Agassiz, B.C. differed from any race previously collected in Canada.

#### Infection Studies with Aecia on Berberis and Rhamnus

In the spring of 1944, arrangements were made with several individuals to collect aecia on Berberis vulgaris and other species and on Rhamnus cathartica and to forward the collections by air mail to the Laboratory at Winnipeg. The writers are indebted to these persons for their collaboration.

On arrival at Winnipeg, the aecia were placed in moist Petri dishes to induce spore discharge and the aeciospores so produced were used for the inoculations. Spores from aecia on barberry were used to inoculate seedlings of wheat, oats, rye, Agrostis alba, and Poa pratensis. Spores from aecia on buckthorn were used for the inoculation of oat seedlings. The aecia were collected between May 31 and July 19. The distribution of viable collections by provinces was as follows: aecia on barberry - Man. 2, Ont. 10, Que. 10, N.B. 12, N.S. 1, total 35; aecia on buckthorn - Ont. 1, Que. 4, N.B. 5, total 10.

The following varieties of Puccinia graminis were isolated from aecia on barberry: Secalis only from 21 collections; Poae only from 1; Secalis and Agrostidis from 6; Secalis and Avenae from 3; Agrostidis and Tritici, Agrostidis and Poae, Secalis, Avenae and Agrostidis, and Secalis, Avenae and Tritici, from 1 each. In most instances the first mentioned variety predominated in the collection. Similarly the following races were isolated from aecia on buckthorn: race 3 from 8 collections; race 2, and races 3 and 24 from one each.

The work with the aecia on barberry leads to the conclusion that grasses play a predominant part in spreading rust to barberry. In most localities in the East, P. graminis Secalis was the predominant rust in the aecia. Most of the infection came from telia on Agropyron repens. The second most common variety of stem rust was P. graminis Agrostidis spread to barberry presumably by telia on Agrostis alba and probably other Agrostis spp. that may be common in the East. P. graminis Avenae, which occurred in five different collections of aecia, was probably spread to barberry by cultivated oats, although orchard grass (Dactylis glomerata) could also be responsible. P. graminis Poae is probably not very common as it occurred in only two collections. P. graminis Tritici appeared in only two collections, one from Dorchester, N.B. and the other from Glenholme, N.S. As only a single uredinium appeared in the latter collection, this may have arisen through a contamination from wheat stem rust present in the greenhouse. 1/

With regard to buckthorn, the races of crown rust appearing from the aecial collections are the same ones common in field collections made on oats. Race 3, which predominated, is also as far as our knowledge goes, the one most common in the field. Similarly, the races of oat stem rust from barberry also the ones common in the field with exception of the single culture of race 10 occurring in the collection from Glenholme, N.S.

1/ Lest any reader should conclude that the barberry is of little importance in the epidemiology of stem rust of cereals because the authors have concluded "that grasses play a predominant part in spreading rust to barberry", his attention is directed to the discussion by the two senior authors in their paper entitled "Physiologic specialization of oat stem rust in Canada" in Can. Jour. Research 22, C:201-216. 1944. There can be no doubt that the barberry is important in local epidemics of stem rust in Eastern Canada. Even if all the initial inoculum is not aeciosporic, especially in the northern and western sections of Eastern Canada, local epidemics are of prime importance wherever the barberry occurs in close proximity to fields of susceptible varieties. The authors also point out that "the barberry may play a role in the origination or spread of physiologic races capable of attacking .....varieties now regarded as resistant." They have produced new races by hybridizing, or selfing, existing races and presented evidence that the number of races isolated tends to be greater in barberry areas than in non-barberry. As all local outbreaks almost certainly begin by the introduction of the rust from wind-borne uredinosporic inoculum, a new virulent race has but to reach a variety now regarded as resistant and produce enough inoculum to infect any barberries in the vicinity for the establishment of a local centre for the new race. It would be distinctly worthwhile to observe how localized the infection on the grasses may be, particularly on Agrostis tenuis, which is an abundant species in the Maritimes. (I.L. Connors).