

## AN AECIUM ON RED CLOVER, *Trifolium pratense* L.

GEO. N. HOFFER.

The aecia of *Nigredo fallens* (Desmaz.) Arthur are reported in the North American Flora, Vol. 7, Part 3, 1912, as being uncertain. The rust *Nigredo trifolii* (Hedw.f.) Arthur is unknown on red clover.

Kern, 1911, calls attention to the fact that the common rust on red clover had long been ascribed to *Uromyces trifolii* (Hedw.) Lev. He mentions however, that Liro in 1906 pointed out that the rust of white clover, *T. repens*, differs from that of the red clover both in structure and habit. Kern distinguishes *Uromyces fallens* (Desm.) Kern growing on *Trifolium incarnatum* L., *T. medium* L., and *T. pratense* L. from *Uromyces trifolii* (Hedw.) Lev. which grows on *T. incarnatum* L., *T. hybridum* L. and *T. repens* L., but not on *T. pratense* L., by the fact that the urediniospores of *Uromyces fallens* have scattered the germ pores.

In the same paper Kern suggests, however, that he believes that the red clover rust is heteroecious. There seems to be but a single uncertain report of an aecial stage on red clover. The further fact that a number of similar rusts of legumes are known to be heteroecious led him to suggest that the alternate host possibly belonged to some euphorbiaceous host of the group to which *Euphorbia commutata* belongs.

The writer has found aecia on the stems and leaves of the red clover. It was impossible to grow aeciaspores on any red clover plants and be certain that they gave rise to uredinia because of the lack of proper controls. The evidence is circumstantial that they are the aecia of *Uromyces fallens*.

The aecia were found on May 23, 1915. They developed on leaves of a plant which had all the appearances of *Trifolium pratense* L., but the plant was not in flower. Because of the difficulty in determining the host species, the plant was dug up and transferred to the writer's garden. The plant thrived.

During the following two weeks a number of other leaves bore aecia. Several of these leaves were left on the plant to note the effect of the fungus upon them.

Later in July, the plant blossomed and its identity determined. Three heads formed and developed during the summer. These were taken and form part of the collection.

Dr. J. C. Arthur, of the Purdue University Agricultural Experiment Station, has given the writer his estimate of some previous collections of aecia supposedly on red clover. None of these collections sent to him had blossoms with them and because of similarity in the leaves of the various species of clover they were not absolutely authentic.

One of the above referred-to collections made by Mr. J. Dearness, at

London, Ontario, on May 20, 1911, corresponds closely with mine. All of the other collections of leaves bearing aecia are undoubtedly *Uromyces trifolii* on related species of clover.

*Pathology.*

The striking feature of the leaves bearing aecia is that they blacken and wilt in a very short time. The mycelium causes rapid necrosis. It is for this reason that the writer believes that the collection of the aecial stage of this rust is difficult.

During the latter part of the summer the plant was badly rusted and bore urediniaspores of *Uromyces fallens* continuously. The plant died during the following winter.

---

Kern, F. D. *Phytopathology* 1: 1, 1911.

Liro, J. Ivan (J. I. Lindroth—F. D. Kern) in *Acta Soc. pro Fauna et Flora Fennica*, 29: 15. 1906.