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TOTAL LENGTH OF STEM DEVELOPED FROM A SINGLE SEEDLING OF *CUSCUTA*

H. L. DEAN

Curiosity as to the total length of stem that could be developed from a single seedling of *Cuscuta* promoted a series of outdoor experiments in an attempt to answer this question.

Seeds of *Cuscuta Polygonorum* Englm. were germinated on wet filter paper in glass moist chambers and vigorous seedlings placed in contact with young willow shoots growing on the banks of the Iowa River near Iowa City, Iowa. The area surrounding each infestation was carefully inspected to make certain that no other *Cuscuta* seedlings were present. A circle around the site of each infestation was stripped bare of all vegetation in order to confine the dodder growth to a known area and to facilitate observations. Each infestation was examined twice a day until the dodder seedlings were well established and regular inspections made twice a week thereafter. These precautions made certain that no other dodder seedlings, from naturally placed seeds, intruded upon the experiments.

One experimental infestation made April 30, 1938, developed without interference or mishap and the resultant dodder growth (Fig. 1) was collected and measured August 26, 1938. The host plants affected were mainly *Salix* sp., and *Polygonum virginianum* L. The host plants were cut off at the ground level and the entire mass of host and parasite stems taken into the laboratory for measurement of the dodder. Each fragment of *Cuscuta* stem was carefully measured by hand, using a meter stick attached to a table top. All stem measured was alive and functional, no dead fragments or extremely small gauge pieces were considered. The tightly coiled spirals about the host stems were not removed and no estimation of their length was included in the final total. In all, 316 pieces of dodder stem were measured. The longest piece was six feet nine inches in length and the shortest three and one quarter inches. The total length of stem developed from this single seedling of *Cuscuta* was 2,406 feet. This length is due to the repeatedly branching habit of the dodder. It is probable that under more ideal growing conditions a single dodder seedling would develop a mile or more of stem. The total stem length in a

large dodder patch must be astounding and the problems of conduction decidedly unusual, especially with many haustorial attachments on a variety of host plants.

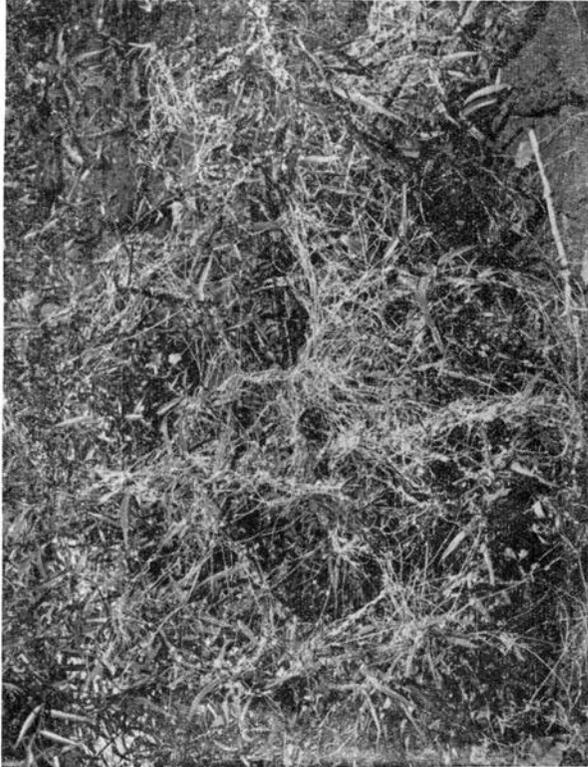


Fig. 1. Dodder growth developed from a single seedling of *Cuscuta Polygonorum*. Englm. The total length of dodder stem was 2,406 feet.

The length of stem developed by this single seedling of *Cuscuta* is not imposing when compared with the total length of all roots formed on a single plant of winter rye. Dittmer (1937) has demonstrated that the length of such a root system (developed in slightly less than two cubic feet of soil) was 387 miles.

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LITERATURE CITED

- Dittmer, H. J. 1937. A quantitative study of the roots and root hairs of a winter rye plant. *Amer. Jour. Bot.* 24: 417-420.