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Gibson, K.E.

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Dr. Walter Z. Kist -
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POSSIBLE INCIDENCE OF CURLY TOP IN IRAN - A NEW RECORD

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Kenneth E. Gibson

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Summary

Symptoms of a disease of sugarbeets found in southwest Iran in 1966 strongly resembled those caused by curly top virus, a disease not known to occur in most countries of the Middle East. The beet leafhopper, Circulifer tenellus (Baker), the only known vector of the virus in the United States, is not known to occur in Iran; however, the disease may have been brought in by stray beet leafhoppers or possibly by another vector.

If the disease is confirmed as curly top, it poses a serious problem to the sugar-beet industry in Iran since none of the varieties grown there are known to be resistant or tolerant to the curly top virus.

While I was stationed at Karaj, Iran, near Tehran, I frequently visited Pahlavi University at Shiraz in the southwest part of the country. On 26 July, 1966, while I was visiting the University's Bajgah Experimental Farm about 12 miles north of the city, we examined some small plots of sugarbeets. A number of the plants had symptoms that appeared to be curly top. At that time, the symptoms were not severe but they strongly resembled those curly top expresses in fields of sugarbeets in the States of Washington, Oregon, Idaho, Utah, Wyoming, Colorado, and Montana. The incidence of what appeared to be the virus of curly top was not great, but diseased plants were found in several plots. Between 2 and 3% of the plants showed the symptoms.

When I returned to the same location on September 12, 1966, the expression of symptoms had increased, and from 8 to 10% of the plants were obviously infected; however, the severity of the effect on the foliage had increased little, if any, and I could find no apparent adverse effect on the root growth of the infected plants.

Most infected plants showed the typical symptoms of curly top in the arid and semiarid regions of the western United States where the insect vector, the beet leafhopper, Circulifer tenellus (Baker), is perennially present. These symptoms are an upward and inward rolling of the edges of the leaves, vein-clearing (Fig. 1), and a characteristic pimpling of the under-



FIGURE 1. Sugarbeet plant showing upward and inward rolling of leaf edges and vein-clearing.

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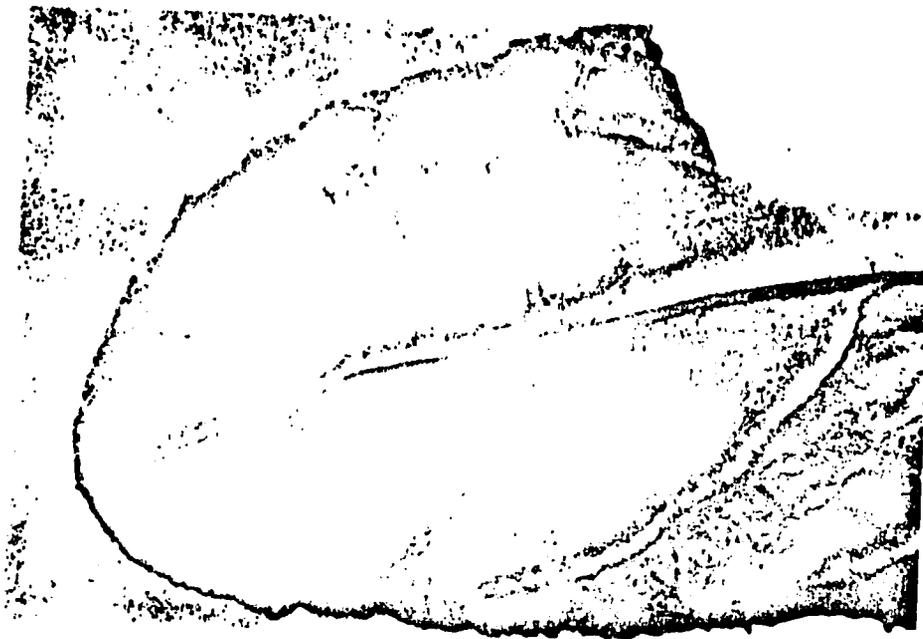


FIGURE 2. Underside of sugarbeet leaf showing characteristic pimpling.

side of the leaves (Fig. 2).

The sugarbeet plants in the experimental plots and nearby weeds were swept thoroughly during my visits in July and September, but no beet leafhoppers could be found. Other leafhoppers that I collected in this general area, together with those I collected in other parts of Iran, have been examined by taxonomists of the U. S. National Museum.

Dr. Paul Oman of this Division (1967 unpublished data) reported that he collected a species of *Circulifer* in northern Iran in 1958 which may have been the beet leafhopper or a closely related species. Other than this, I can find no record of the beet leafhopper ever having been collected in Iran and, so far as I can determine, there is no previous report of curly top in that country. Bennet and Tanrisever¹, however, reported sugarbeet curly top disease in Turkey.

If the symptoms observed on sugarbeets at Bajgah Farm were curly top, there must surely be an insect vector, either the beet leafhopper or some other homopterous insect. Conceivably, however, this could be an incipient infection of curly top, particularly since the disease has not been seen or recognized in any other part of Iran. It could have been brought in by stray beet leafhoppers or even by another vector that accidentally crossed the Iranian border in any one of several ways.

As far as I know, all sugarbeet seed used in Iran was originally of European origin; thus, the plants grown from this seed have no resistance or tolerance to the virus causing curly top. The fact that symptoms have been found on experimental sugarbeet plantings does not necessarily mean that the disease is a potential hazard to the sugarbeet industry in Iran, however. The disease may never become a limiting factor in sugarbeet production. Nevertheless the threat remains, particularly if the beet leafhopper, the only known vector of curly top in the United States, should again be found in Iran and especially in areas where the climate is relatively dry and hot during the summer. Such conditions would provide a good environment for the insect to propagate, maintain itself, increase, and spread.

ENTOMOLOGY RESEARCH DIVISION AND CROPS RESEARCH DIVISION, AGRICULTURAL RESEARCH SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE, REGIONAL PULSE IMPROVEMENT PROJECT, NEW DELHI, INDIA

¹Bennet, C. W., and Aziz Tanrisever. 1957. Sugarbeet curly-top disease in Turkey. *Plant Disease Repr.* 41: 721-725.