

RESEARCH NOTES

FAILURE OF RATS TO TRANSMIT THE CAUSAL AGENT OF THE RATOON-STUNTING DISEASE SUGARCANE

Of the various diseases of sugarcane caused, or suspected of being caused by viruses, ratoon stunting is one of the latest to be recognized.¹ It was found in Queensland, Australia, during the 1944-45 crop. Since that time ratoon stunting has been discovered in all the important sugarcane areas including Puerto Rico. The ratoon-stunting disease is now considered an important factor in the failure or "running out" of sugarcane varieties.

The ratoon-stunting disease is readily transmitted by the cane knife or the mechanical harvester. Several other efficient methods of introducing the causal agent into the healthy cuttings have been described for experimental purposes. Seed pieces from infected stalks of cane give rise to diseased plants. There is no evidence that the ratoon-stunting disease is carried by the true seed (fuzz). Likewise there is no indication of an insect vector, or that the virus is transmitted through the soil.

However, it has been recently reported² that the field rat is capable of transmitting the ratoon-stunting virus by feeding alternately on diseased and healthy canes. The importance of this finding has special significance to our cane-growers since our cane fields are heavily infested with rats. We, therefore, decided to investigate this means of transmission of the virus.

Several white rats (*Rattus norvegicus*) brought from the School of Medicine, University of Puerto Rico, through the courtesy of Dr. J. F. Maldonado were used in the course of the experiments. The rats were confined in a wire cage (fig. 1) and starved for periods of 24 to 48 hours, and then fed cuttings of sugarcane variety P.R. 1050 showing symptoms of ratoon stunting. The rats began to consume the infected cane cuttings immediately and were allowed to nibble on them for periods varying from 2 to 4 hours. Immediately after feeding for the specified time the infected cuttings were replaced by healthy 2-eyed cuttings of the same variety and the rats were allowed to gnaw at them. Checks were made by planting cane cuttings taken from the same healthy canes used in the transmission experiments. Sixteen cuttings were exposed to infection with ratoon-stunting disease in this manner.

Of the 23 plants that developed from the 16 cuttings subjected to infection by rat-biting, none showed symptoms of ratoon stunting when the

¹ Todd, E. H., The Ratoon-Stunting Disease of Sugarcane and its Control in Florida, *Crops Research, Agr. Res. Ser.* 34-12, pp. 1-7, March 1960.

² Wehlburg, C., Ratoon-stunting disease in Cuba, *Sugar* 51 (3) 27-9, 1956.

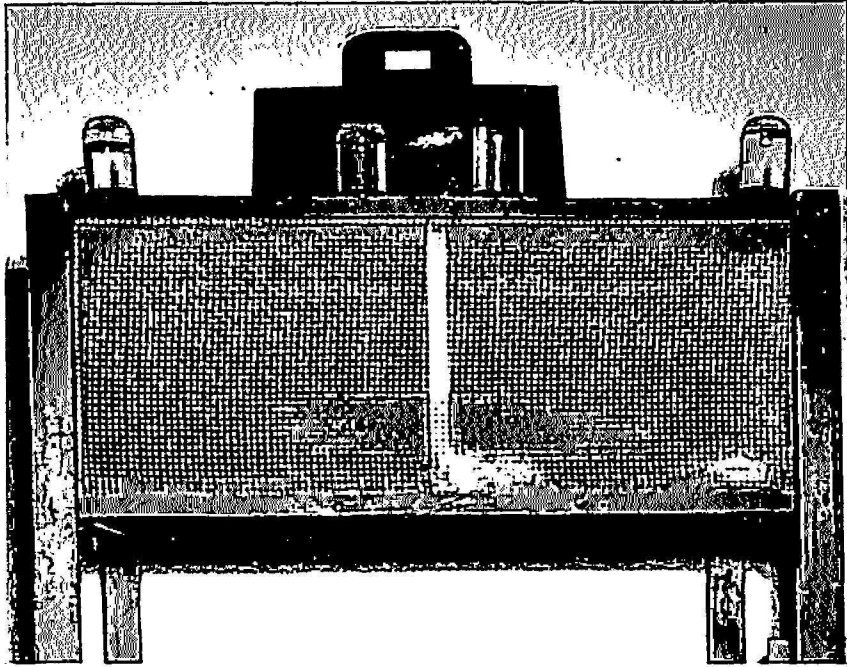


FIG. 1.—Type of rat cage used in experiments on the transmission of ratoon stunting.

stems were examined internally 4 months later. All the checks remained healthy.

We therefore report being unable, at least under our experimental conditions, to transmit the ratoon-stunting virus via the rat.

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