

FIELD AND GREENHOUSE OBSERVATIONS UNDER WHICH VASCULAR-BROWNING (GRAY WALL) OF TOMATOES OCCURS

R. A. DENNISON AND C. B. HALL¹

Agricultural Experiment Station

Gainesville

Vascular-browning of tomatoes is a fruit disorder which is found only at varying times during the season of production. There have been some seasons in certain areas of the state when this disorder has caused serious losses to the grower. It is necessary to discard fruits which are affected.

Conover (1) described the external appearances of the vascular-browning and how the tissues of the fruits are affected and pointed out that the disorder is usually most severe where the vines have made heavy growth and the fruits are shaded. He was unable to find any organism associated with the disorder. Stoner (3) was unable to find any transmissible virus associated with the disorder.

FIELD OBSERVATIONS

This disorder has been observed in a number of fields of tomatoes. There are certain general conditions of growth which usually exist where vascular-browning of tomatoes is found.

Fruits affected with vascular-browning are nearly always found on plants which have made vigorous growth as was pointed out by Conover. The affected fruits are usually found beneath the foliage where they are shaded. If there is a high percentage of the fruits in a field, or a localized area of a field, showing the disorder then it is frequently found that exposed fruits as well as shaded fruits are affected. This is especially true if the condition exists after several harvests have been made from the plants.

Following a period of excessive rainfall or when there have been several consecutive days of rain and cloudy weather, the condition of vascular-browning will frequently be found

occurring in tomato fields. If there is a very prolonged rainy period and water has stood in the fields, the percentage of fruit which must be discarded because of vascular-browning is frequently very high.

Several growers have reported and the writers have observed that the occurrence of vascular-browning is greater along the spray row or where heavy equipment has travelled in the fields. In February of 1954 a field in Dade County was examined in which the only fruits showing vascular-browning were those on plants beside which heavy vehicles had been travelling and had made a roadway close to the plants. The soil in the vicinity of these plants was very badly compacted as compared with the soil in other areas of the field where there were no fruits found showing vascular-browning.

The greatest amount of the disorder occurs in the areas of the state where tomatoes are produced during the cool seasons of the year. This indicates that temperature may affect the physiological condition of the plant which results in the occurrence of this disorder.

GREENHOUSE EXPERIMENTS

Several experiments have been conducted to study factors of growth which may influence the development of vascular-browning of the fruits. The methods used and results of these experiments are reported in another paper (2).

In the greenhouse experiments the data indicate that low light intensity, excessive moisture, cool night temperature, and soil compaction are environmental factors which are associated with plant growth and the development of vascular-browning in the fruits.

LITERATURE CITED

1. Conover, Robert A. 1949. Vascular Browning in Dade County, Florida Green-wrap Tomatoes. *Plant Disease Reporter* 33: 283-4.
2. Hall, C. B. and R. A. Dennison. Environmental Factors Influencing Vascular Browning of Tomato Fruits. *Proc. Amer. Soc. Hort. Sci.* (In Press).
3. Stoner, W. N. 1950. Graywall of Tomatoes. *Proc. Fla. State Hort. Soc.* 63: 129-136.

¹ This study was supported in part by the International Minerals and Chemical Corporation, Chicago, Illinois.