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The Influence of Bordeaux Mixture on the Rate of  
Photosynthesis and Transpiration of  
Apple Leaves

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ABSTRACT

This material will be published in full in *Plant Physiology*.

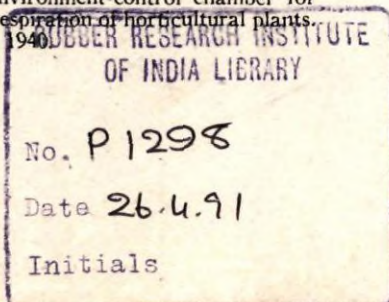
**S**TUDIES were made of the effect of 4-6-100 Bordeaux mixture on the rate of photosynthesis and transpiration of Stayman apple leaves using the Heinicke and Hoffman (1) method for carbon dioxide analysis. All determinations were made in the special plant chamber described elsewhere (2). The majority of the leaves received 1,000 to 5,500 foot candles of light depending on their distance from the light source and shading from other leaves. Three successive applications of Bordeaux were made at 2- to 5-day intervals under temperature conditions of 50, 60, 70, 82 and 100 degrees Fahrenheit.

At temperature levels of 70, 82 and 100 degrees F there were reductions in photosynthesis of 9 to 14 per cent after the third application. When the spray residue was carefully removed from the leaf surface with moist cotton there was complete recovery in photosynthesis. Under temperature conditions of 50 and 60 degrees Fahrenheit the rate of carbon dioxide assimilation showed 27 to 32 per cent reductions following the third application. A purplish-brown spotting developed on the upper surface of the older leaves after the residue was removed, and photosynthesis failed to recover.

The rate of transpiration at temperature levels of 70, 82 and 100 degrees F was reduced from 13 to 25 per cent by three applications of Bordeaux 4-6-100, but there was almost complete recovery in transpiration following spray removal. At 50 degrees there was no reduction in the rate of transpiration resulting from three applications of Bordeaux, but a 15 per cent reduction was apparent at 60 degrees F. When the spray was removed from the leaves held at 50 and 60 degrees F, the above injury appeared and reductions in transpiration ranged from 10 per cent at 50 degrees F to 22 per cent at 60 degrees F.

LITERATURE CITED

1. HEINICKE, A. J., and HOFFMAN, M. B. An apparatus for determining the absorption of carbon dioxide by leaves under natural conditions. *Science* 77: 55-88. 1933.
2. CHILDERS, N. F., and BRODY, H. W. An environment-control chamber for study of photosynthesis, transpiration and respiration of horticultural plants. *Proc. Amer. Soc. Hort. Sci.* 37: 384-390. 1940.



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