

SYMPOSIUM PAPERS AND AUTHORS

INTRODUCTION TO THE SYMPOSIUM, by R. Paul Larsen, Superintendent and Horticulturist, Washington State University, Tree Fruit Research Center, Wenatchee.

COLD RESISTANCE AND ACCLIMATION IN WOODY PLANTS, by C. J. Weiser, Professor of Horticultural Science, Laboratory of Cold Hardiness, University of Minnesota, St. Paul.

INDUCTION OF DORMANCY AND COLD HARDINESS IN CITRUS, by Roger Young, Plant Physiologist, U. S. Department of Agriculture, Crops Research Division, Orlando, Florida.

GROWTH SUBSTANCES IN DORMANT FRUIT BUDS AND SEEDS, by David R. Walker, Professor of Plant Science, Utah State University, Logan.

ROOTSTOCK-SCION RELATIONSHIPS IN HARDINESS OF DECIDUOUS FRUIT TREES, by M. N. Westwood, Professor of Horticulture, Oregon State University, Corvallis.

RELATION OF FALL AND WINTER TEMPERATURES TO FLOWER BUD BEHAVIOR AND WOOD HARDINESS OF DECIDUOUS FRUIT TREES, by E. L. Proebsting, Jr., Horticulturist, Washington State University, Irrigated Agriculture Research and Extension Center, Prosser.

COLD INJURY AS RELATED TO CULTURAL MANAGEMENT AND POSSIBLE PROTECTIVE DEVICES FOR DORMANT PEACH TREES, by Earl F. Savage, Horticulturist, Georgia Experiment Station, Experiment.

CROP PROTECTION BY HEATING, WIND MACHINES, AND OVERHEAD IRRIGATION, by John F. Gerber, Professor of Climatology, Department of Fruit Crops, University of Florida, Gainesville.

INTRODUCTION TO THE SYMPOSIUM

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In a very large measure the location and profitability of the fruit crops grown in this country are determined by cold and the consequences thereof. Horticultural history is filled with the tragic results of cold damage to fruit plants and their crops. All horticultural producing areas have been affected by various freezes at one time or another.

In recent times a number of years stand out for their severity of cold injury. The Armistice Day (November 11) freeze of 1940 in the Midwest, the Thanksgiving Day freeze of 1950 in Michigan and nearby states, the November 1955 and December 1964 freezes in the Pacific Northwest killed or severely injured millions of trees which were not fully hardened for winter. The midwinter deep freeze of 1933-34 in the Northeast killed 2½ million fruit trees and injured almost 4 million others in New York State alone. In the Midwest midwinter freezes in 1962-63 and 1967 caused severe damage to several tree fruit crops; and, the full extent of the devastating freeze of 1968-69 in Washington will not be determined for several years in the future.

The March 1955 freeze in the South, when peach orchards were in full bloom, killed up to 90% of newly set trees. In all fruit sections spring freezes almost regularly kill a certain percentage of developing crops. And, even in the seemingly perennial sunshine citrus areas of

California, Florida, Texas, and Arizona freezes have wrought devastating destruction to trees and fruit.

The economic losses from freeze damage to America's fruit industries exceeds the loss from insects, diseases, rodents, and weeds combined. The violent year to year fluctuations of crops and prices, due to freeze injury, is disrupting to producers, marketers and consumers. In the long run no one benefits, regardless of short term advantages by fortunate producers of "non-frozen" crops.

The problems of cold injury have generated considerable research effort by many horticulturists in all parts of the country. This symposium was organized to hopefully bring together, in one program, many of the diverse physiological and environmental factors associated with cold acclimation, dormancy and hardiness. The program was also structured to explore possible horticultural or physical mechanisms for inducing hardiness or protecting fruit plants.

The resultant symposium, which was arranged and sponsored by the Pomology Section Committee of the Society, included a distinguished group of scientists with varied academic interests and from all parts of the land. But, their discussions and the published papers included herein, flowed from the complexities of the cellular level of dormancy and hardiness to the possible protection of whole orchards from cold injury.