

PROJECT NO.: 5215 Progress/Termination Report

TITLE: Fruit Bud Cold Resistance

PERSONNEL:

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REPORTING PERIOD: 1983-95

ACCOMPLISHMENTS AND RESULTS:

1. The winter heating enterprise by which stone fruit growers protect buds during dormancy is unique to our industry and is a direct result of critical temperature information developed in this project. A computer model that estimates critical temperatures from daily or hourly air temperatures is being used experimentally by five packing houses to assist grower decisions on the use of orchard heaters and wind machines. The model output was modified, based on grower preference, to present a range of bud mortality at temperatures above and below the T_{50} . The simulation output mirrored grower T_{50} estimates, although grower estimates were about 2° hardier until chilling requirements were satisfied and warm temperatures initiated bud development. Results differed between packing houses, indicating a further need for identifying sources of variability and improving standardization. This work will continue as a component of cross-commodity project (1461 - Knowledge-Based Decision Support Systems) under the direction of WSU extension agent M.J. Willett.
2. Overhead sprinkler-based frost control is being addressed in project 5198 (Evaporative Cooling to Enhance Color and Reduce Sunburn) with Prosser agricultural engineer R.G. Evans.
3. Laboratory testing of dormant fruit bud hardiness of several promising new peach varieties ('Arctic Gem', 'Arctic Glo', 'Crown Princess', 'IP45', 'Redgold', 'Redhaven', 'Rich May', 'Ryan Sun', 'Spring Diamond', and 'Zee Lady') revealed greater differences between sample dates than between cultivars, indicating no significantly greater or lesser hardiness within the group.

PUBLICATIONS:

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- Gross, D.C., Y.S. Cody, E.L. Proebsting, G.K. Rademaker, and R.A. Spotts. 1984. Ecotypes and pathogenicity of ice nucleation-active *Pseudomonas syringae* isolated from deciduous fruit tree orchards. *Phytopathology* 74:241-248.
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