Response of Peach Varieties to Blossom Frost

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Spring frosts constitute a periodic if not perennial hazard to commercial orchardists in both Canada and the United States. Tolerance is a component of plant hardiness which, if recognized, has value both in the evaluation of varietal performance and adaptation, as well as in the selection of promising germ plasm which might be utilized for further varietal improvement.

A typical radiation frost occurred in the Essex-Kent region of southwestern Ontario as well as the neighboring states of Michigan and Ohio on the night of May 9-10, 1966. A low temperature of 25°F was recorded at the Research Station, Harrow, although continuous monitoring of orchard temperatures by thermocouple sensors indicated eight hours of continuous cold below 28°F, reaching a minimum of 23°F at approximately 2 a.m. The bloom season for peach had just begun, and Loring showed about 20 percent expanded blossoms. Consequently, heavy damage was sustained to pistil tissues and to a lesser extent to the anthers.

Hydrosis of stylar and ovary tissues was evident with 12 hours of the onset of the cold temperature. Critical assessment of damage was delayed for three to four days until necrotic symptoms were developed enough to facilitate the differentiation between viable and non-viable flowers. At that time a minimum of 100 open and closed blossoms were selected at random at a height six to eight feet above the ground level from three replicated trees per variety and scored as to their viability.

The mean survival of open blossoms was reduced to 9.65 percent, and ranged from complete frost killing of the varieties Babygold 5, Erlyvee, Golden Red and Keystone, to a high of 51.82 percent survival for a promising Siberian rootstock line (Table 1). Survival in the delayed, closed blossoms was appreciably better in most cases, and averaged 27.49 percent.

Varietal differences were significant ($p=0.01$), and by simplification of the Duncan Multiple Range Test for mean comparisons, I have attempted a classification based upon the relative susceptibility or tolerance to frost. Of the lines tested, the Siberian was distinctly superior in its frost tolerance. Moderate tolerance was suggested for the winterhardy oriental introduction, Chui-Lum Tao, and for the varieties Halehaven, Cardinal, Babygold 8, Royalvee, Earlired, Veteran, Olinda and Glohaven.

While survival was substantially greater in retarded or delayed blossoms, as indicated by the analysis of samples still in the late bloom stage four days after frosting, delay in relative bloom season offered no distinct varietal advantage (Table 2). Mean survival was in fact greatest with the earlier flowering lines. In each bloom class, however, the range was considerable suggesting that the inherent capacity of blossoms from a specific variety to withstand low temperature injury can be considered quite apart from the season of bloom.

The spectrum of peach varieties is constantly changing, and it is hoped that the comparison of the frost tolerance of many of the newer releases

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TABLE 1. Blossom survival of 39 peach varieties following exposure to air temperatures of 23-25 F on May 9-10th, 1966.

Variety	Blossom Season	Percent Survival: Statistical Significance[1]	Open Blossoms	Closed Blossoms	Relative Frost Tolerance
Babygold 5					
Erlyvee					
Goldenred					
Keystone					
Richhaven					
Jefferson					
Solo					
Suncrest					
Golden Jubilee					
Washington					
Redhaven					
Collins					
Redcap					Susceptible
Loring					
Redskin					
Dawne					
Babygold 6					
Valiant					
Vanity					
Cresthaven					
Sunhaven					
Ackerman					
Marigold					
Cherry Red					
Dixired					
Redgold					Slight tolerance
Babygold 7					
Envoy					
Elberta					
Glohaven					
Olinda					
Veteran					Moderate tolerance
Earlired					
Royalvee					
Babygold 8					
Cardinal					
Halehaven					
Chui Lum Tao					High tolerance
Siberian					
Mean				27.49	

[1]Statistical significance (P=0.05) as determined by Duncan's Multiple Range Test for comparison of mean survival of open blossoms.

with the established standards will be of value to those concerned either with varietal performance or the search for promising germ plasm.

TABLE 2. Effect of blossom season on the survival of peach flowers exposed to air temperatures of 23-25 F.

Blossom Season	Percent Survival		
	Open Blossoms	Blossoms	Mean

What's in a Name?

Why does Hollywood re-name many of its stars? They need names that have customer appeal. Likewise, with any commercial article, such as soaps, lotions, and scents—the name counts. And so it does in our business—**Fruits.**

The name of a fruit need not appeal to the originator, nurseryman, grower, or broker—we are too few, but it does have to appeal to the many who consume our product. Names such as Halehaven, Redskin, and Dixie Belle are attractive and easily remembered.

Quite some years ago J. H. Hale was the elite among peach varieties. The very large, firm, round fruit usually sold for double the price of Elberta. But the Hale was *self-sterile,* and the tree short-lived. A most reputable nursery introduced an "improved" self-fertile variety under the name, Fertile Hale. As soon as trees were available we set a ten-acre block. When the trees came into bearing I could detect little resemblance to the J. H. Hale. Fruits were about the same size as those of adjoining Elbertas. One day, after the first truck load was delivered to the local packing plant, the manager notified me there were no takers for Fertile Hale; but 'Elberta' they moved readily! Some Fertile Hale had gotten into the market previously and had backfired.

Simple deduction indicated as the reason for non-acceptance: The Lady of the House had an entirely different conception of the meaning of the word 'fertile' than I, as a peach grower! — *W. W. Teichman, Eau Claire, Michigan.*

Processing Apples

N. F. Childers reports (Hort. News) the observations made at the Apple Processing Conference at College Park, Maryland, March, 1966, as follows:

"A Cornell researcher noted the following variety characteristics which are considered in processing: Golden Delicious loses weight fast after harvest if not handled properly. Spy has a very tender skin, as has Golden Delicious. Cortland and McIntosh have a tough skin. Rome and Idared are outstanding in storage life. Rome and Monroe give high yield as peelers. Oblate or conical-shaped varieties give less yield in processing. Delicious has large seed pockets (carpels) whereas Rhode Island Greening has small seed pockets. Greater darkening of flesh near the core and the fibrovascular bundles is important."