Factors Affecting Resistance of Peach Varieties to Late Spring Frosts in Southern New Mexico[1]

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Late spring frosts restrict the peach acreage in southern New Mexico. Frosts have reduced yields in approximately two-thirds of all seasons since 1943[2]. Variety evaluations for resistance to frost have shown Raritan Rose and Redhaven to be more dependable than most other varieties tested. Elberta, Redskin and Sunhigh are particularly susceptible to late frosts. A number of other varieties appear intermediate in frost resistance. Apparent reasons for the differences in variety susceptbility to late frosts are discussed below.

Frost Hardiness of Open Flowers

In 1964, following an unusually cold winter, all peach varieties flowered at the same time. A low of 26° F on March 26, at full bloom, permitted comparison of relative hardiness of open flowers of several varieties. Redhaven flowers sustained little injury. Nearly all Sunhigh flowers were killed. Redskin and Elberta lost high percentages of flowers but still produced about half a normal crop. Most flowers of Red Cap and Cardinal appeared normal, but the resulting fruits developed into "buttons." Ranger, Dixiegem, Coronet, Gold Dust, and Red Globe suffered some flower loss but set heavy crops of fruit. Varieties differed considerably in hardiness of open flowers.

Flower Bud Set

The dependability of Redhaven is due in part to its habit of flowering prolifically. In some areas this habit may be a disadvantage because it necessitates heavy early thinning. In southern New Mexico, however, the advantage gained through greater fruit set in years when frost occurs during bloom outweighs the disadvantage of extra thinning costs. Prolific flowering varieties have a definite advantage in New Mexico.

Bloom Date

Records since 1943[2] show Redhaven to be later blooming than Elberta and one of the latest blooming varieties under trial. This also contributes to its dependability in New Mexico.

In 1965, following a relatively mild winter, full bloom occurred March 19 to March 25. A low temperature of 28° F on March 19 injured flowers of all peach varieties (Table 1). Redskin was in full bloom, while only about a fourth of the Sunhigh and Redhaven flowers were open. Sunhigh, which was more severely damaged than Redskin in 1964, suffered less damage in 1965 because of the difference in bloom dates.

Chilling requirement appears to influence bloom date following mild winters in southern New Mexico.

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[2]Corgan, J. N., J. V. Enzie, D. T. Sullivan, and M. B. Jones, 1964. Peach Variety Evaluation in Southern New Mexico. New Mexico Agr. Exp. Sta. Res. Rpt. 104.

Table 1. Percentage survival of peach flowers and flower buds following a temperature of 28° F during bloom, 1965.

Variety	Percentage of Full Bloom	Percentage of Flowers Surviving
Redhaven	25	58
Sunhigh	25	18
Redskin	95	3

Other hardiness factors being equal, long chilling varieties should be more reliable than short chilling ones.

Treatments with N-dimethyl aminosuccinamic acid (B-9) and Decenylsuccinic Acid

On February 10, 1965, about the time when rest was terminated, Redhaven peach twigs were treated with 2500 ppm B-9. The treatment had no effect on bloom date or flower-bud survival following the freeze on March 19.

On the afternoon of March 19, twigs of Redhaven and Redskin were dipped in a solution of 250 ppm decenylsuccinic acid. The anhydride of decenylsuccinic acid was dissolved in 10cc ethanol and made up to one liter with distilled water containing 1cc of X 77 spreader per liter. Surviving fruit was counted April 22. Results in Table 2 indicate little, if any, effect of treatment on flower bud survival.

Table 2. Effect of treatment with 250 ppm Decenylsuccinic acid on survival of peach flower buds following a temperature of 28° F during bloom, 1965.

Treatment	Average Percentage of Flowers Surviving	
	Redhaven	Redskin
250 ppm Decenylsuccinic acid	61	2
Control	55	4

Differences between treatment means not significant.

Chemicals now available for delaying bloom or inducing frost hardiness in peaches do not appear promising in New Mexico, although different times and rates of application may produce beneficial effects.

Hood, New Strawberry for the Northwest

An attractive midseason strawberry was named Hood and introduced by the U. S. D. A. and the Oregon Agr. Exp. Station for the Pacific Northwest, mainly for the manufacture of jams and preserves. It is a cross of US-Oreg. 2315 and Pudget Bauty, and has been tested by G. F. Waldo and R. M. Bullock since 1958.

Hood is productive (up to 6 tons per acre), produces large plants and a moderate number of runners. It is mildew resistant, and, although susceptaible to red stele, has averaged one ton more per acre than Northwest on infested soil. It is susceptible to viruses.

The fruit is round-conic, bright medium red and glossy. Flesh is light red, medium firm, with a pleasant subacid flavor. It is superior to other varieties now being grown for jams and preserves, but Northwest makes a better frozen product.

Registered plants are available to qualified propagators from the North Willamette Exp. Station, Aurora, Ore., and nuclear stock can be obtained from the Plant Propagation Center at the Oregon Agr. Exp. Station, Corvallis.