



Desmond R. Layne

Stone Fruit

Reflections On The Easter Freeze

FOLLOWING a very warm March, a devastating late freeze occurred during the Easter weekend (April 7-8) over much of the fruit growing regions in the eastern half of the U.S. In particular, fruit crops were damaged from the Southeast to the Midwest, and even into the central and southern plains. In regions where the freeze occurred, most fruit crops were damaged to some degree or another. Growers lacking crop insurance or sufficient diversification in their operation were particularly devastated.

Estimates of peach crop loss in South Carolina and Georgia (the #2 and #3 peach producing states after California) are 90% and 75%, respectively. For orchards that I have visited in South Carolina, the damage has ranged considerably depending on location and variety. However, some young trees in low lying areas had all the new shoot

growth completely frozen back to the woody side branches. These trees are beginning to grow back but their total growth this year will be stunted. In fruiting trees, most varieties were at shuck split stage or phase I of fruit growth.

The most severe freeze damage resulted in fruits that were completely frozen. These fruits have subsequently dropped from the tree. In other cases, fruits did not freeze completely, but the seed was frozen and it was completely brown within a few days after the freeze. These fruits may hang on the tree as "buttons" and later fall, or not. However, they will not attain full size because the nonviable seed cannot produce hormones necessary to facilitate fruit growth. Other fruits have a partially damaged seed that appears somewhat amber in color and is not clear.

The decision on whether these fruits will make it or not is difficult to discern. Even if they do size, they may

have other insults that are problematic. For example, the pit may have sustained damage predisposing it to shatter during phase III of fruit growth. Also, the skin of the fruit may be damaged and cracks will enlarge as fruit grows, giving it the appearance that a cat has clawed or scratched the skin from the stem to tip end. Fruit from freeze-damaged trees may also develop soft suture or tips and may be more

chilling requirement, a lower bloom density, and early blooming.

Second, we can consider cultural practices that can minimize the impact of a freeze. I know growers who have used a combination of wind machines and burning bales of straw to reduce freeze damage. Orchard floors that are devoid of vegetation retain more heat to liberate at night, and soil that is moist gives off more heat than soil that

is dry. The fall application of ethephon to increase flower bud cold tolerance and slightly delay bloom was reported by some to reduce damage. However, in most sites I visited, both advective and radiation freezes occurred over the weekend and significant damage occurred even when preventive actions were taken.

Third, growers who have diversified to include strawberries in their operation had protective measures that they could take to

save the crop. Where growers used a combination of 1.5-ounce row covers and overhead irrigation for frost protection, minimal crop damage and loss was sustained. I do not recommend overhead sprinkler irrigation for freeze protection of peaches, however.

Finally, good decision making to minimize risk (site and cultivar selection, cultural practices, crop insurance, farm diversification, etc.) and alternative sources of income (i.e., business diversification) can help maintain long-term farm viability after a devastating year. I am reminded of the biblical character Joseph from the Old Testament who stored up grain during the years of plenty that would be needed in the years of famine that were to come. ... ●



The photo on the left is a healthy, viable peach, approaching pit-hardening phase, with a viable seed. The photo on the right is a freeze-damaged peach, approaching pit-hardening phase. The seed is dead and shriveling.

predisposed to rot. Decisions on which fruits to thin off and whether there are enough viable fruits to manage a block or partial block of trees are painstaking and the outcome is uncertain.

Lessons Learned

What can we learn or how can we benefit from such an "act of God?" First, we can examine where peaches survived and why. This reminds us of the importance of both site and cultivar selection. I have visited grower blocks where a slight change in topography resulted in a full crop in the upper half of the block and essentially no fruit in the lower half. Sites of high elevation with good air drainage should be preferred to those with low elevation and poor air drainage. Cultivars that have a fairly high chilling requirement for the region, high bloom density, and bloom later may be impacted less than those with a lower

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