

**AG NOTES**  
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**COLD DAMAGE**

Well, we had a 'late freeze', didn't we? Any way you look at it, the weather got very cold. We were participating in a cattle event at Lebanon over the weekend, and I can vouch for the fact it was cold and blizzard conditions coming back on Friday night and then miserably cold on Saturday.

What about the damage to crops? We had damage to wheat a couple of years ago, but that crop was further along and was in the pollination stage. This year, the wheat should have missed any significant damage to this point. Let's hope that does not happen in the weeks to come.

But the fruit crop is another story. Dr. David Lockwood, our fruit and nut specialist at UT Extension, sent out a last-minute warning on Friday, with the sad news that there was not anything that could be done to prevent fruit damage. Here is a shortened version of what he said. It is really a good educational piece to read.

"We are anticipating what I would describe as a classic 'advective freeze.' An arctic air mass is moving across the country, affecting an entire portion of the country. With it, daytime conditions may be cool to cold, cloudy to clear and windy. At night, temperatures will continue to drop and the wind will continue to blow. Advective freeze conditions may persist for more than one day. With an advective freeze, the ability to protect crops is very limited.

As buds progress from dormancy to bloom, they become more sensitive to cold damage and the gap between minor damage and severe damage narrows. Buds on healthy plants are somewhat more tolerant of cold than on stressed plants. Conditions leading up to the cold event, the duration of the cold event and the severity of the cold will all impact the actual amount of bud damage received.

The relatively sudden change from warm weather to cold and the magnitude of the temperature drop are significant factors and could result in greater damage than if temperatures over the past few days had been lower.

As mentioned above, protecting crops during an advective freeze event is difficult and the options are few. Active control techniques often associated with radiation frost events are worthless in an advective freeze. With the absence of an inversion layer plus the presence of wind, heating and wind machines are not options.

Using irrigation to "ice down" plants likewise is not advisable during an advective freeze. The wind will distort discharge patterns from emitters resulting in erratic coverage. Failure to continuously wet an area will result in evaporative cooling of the wetted surface. If this occurs, the actual temperatures that the plant is exposed to will drop below air temperatures, resulting in greater damage than if nothing had been done.

If the weather forecasts are even close to being accurate, the ability to protect crops is virtually non-existent. The stage of bud development on your crops will give some idea as to what kind of damage may occur.

This article is being written in early March. Additional cold events this spring certainly could occur. If such events are in the form of radiation frosts, several things can be done to lessen the potential for damage. In some crops such as grapes, delayed pruning may be beneficial in that it can delay bud development in the desired fruiting zone of the vine for spur-pruned vines.

Anticipate future cold events. While a spring frost is not a certainty, their frequency is great enough to merit preparation. Radiation frosts are more common than advective freezes. There are several things that can be done in anticipation a radiation frost. Maximize air drainage from the site by

removing grown up fencerows, cleaning up ditch banks and by closely mowing between rows and around the outside of the planting. Do not cultivate soils. If soils are dry, irrigate a few days in front of a predicted cold event. If you have active frost control techniques, make sure they are operational prior to needing them.”

Dr. Lockwood attached some charts with temperature damage points for several crops. I looked at them to try to determine the extent of damage that we might have experienced, and it’s not good news.

For apples, peaches, grapes, strawberries, blueberries, and blackberries, we saw low temperatures for an extended time that could cause extensive damage to the buds. How much damage is to be determined, but I would expect it to be close to the 100 % damage range for all of the above fruits. The low temperatures coupled with the wind chill and the length of time that these conditions lasted has caused a tremendous loss.

Let’s hope that we don’t see any more late freezing conditions this spring.