

Since the New Year began, I have been fielding questions from homeowners regarding the survival of their trees and shrubs. I appreciate their concern. After all, prior to December 21, 2017, the autumn weather in Central Nebraska had remained rather balmy with only an occasional light frost. Then it hit!

On December 21, 2017, the first day of winter arrived and with it the snow fell and so did the thermometer. Throughout the holiday season, our area was in the daily grips of sub-zero temperatures. It was not until the first week in January that we emerged from the deep freeze. Even then, freezing temperatures remained but not necessarily in the minus range. The pervasive thinking of many was that the two weeks of arctic-like temperatures had taken its toll on all creatures, including trees and shrubs. Callers asked, "What are the odds of survival for my trees and shrubs?" My response to them has been, "It just depends."

I must admit such a response is not reassuring. The fact is, only time will tell. It all depends on a number of situations. For example, due to the unseasonably warm weather we had been receiving, one does not really know if one's trees and shrubs were fully dormant before the cold hit. Secondly, it also depends if one's plants were stressed before the extreme, cold spell arrived. After all, for two months prior (along with abnormally warm weather) little, if any, rainfall had occurred. Unless homeowners provided supplemental watering, it is almost certain many trees and shrubs entered the winter stressed due to the lack of moisture.

One might think that the stems and branches of a plant are the most vulnerable to damage from the cold. However, it is the roots that are most susceptible to injury from cold temperatures. It is safe to say the ground is now frozen. I recently checked the UNL website called *Crop Watch* for soil temperatures. Since the first of the year, the Kearney area soil temperatures have been hovering in the low 30s. Fortunately for the roots, the soil does not usually get as cold as the air, and soil temperatures do not fluctuate as much as air temperatures.

The water in the soil around the roots may freeze, but the cold will not hurt the roots themselves until water inside the root tissue starts to freeze. Sometimes that can happen, especially during long spells of bitter cold weather. It is then the

cold has plenty of time to penetrate deeply into the soil. Soil frozen at 30°F is not as dangerous as soil frozen at 0°F.

There is always warmth in the earth; thus, the soil temperature is not constant. Soil may be freezing at the surface but always thawing from below. Throughout winter, plants are always adapting to these changes. Unfortunately, the biggest danger to plants is a sudden deep freeze, thus, as I stated earlier, the survival of trees and shrubs depends on a number of situations.

For now, the best we can do to help protect and insure the survival of our trees and shrubs is to mulch. Mulch is any type of organic material spread over the surface of the soil to protect the root zone. Some examples of mulch include wood chips, shredded bark, pine needles, and even compost. Often we think of mulching as a summertime activity. After all, it helps to retard weed growth and retain moisture. Mulching in the winter after the ground freezes insulates the soil. It keeps the soil warmer when the air temperature drops, and it minimizes soil movement caused by a soil freeze/thaw cycle. Movement of this type often causes damage to sensitive roots. Mulch stabilizes the soil temperature restricting less soil movement.

As I began, it just depends and time will tell.