

Unfortunately for our beloved plants but good for our husker football team, there was more than one type of frost in Nebraska last week. On October 10th, the temperature dropped to 32 degrees, and the night of October 11th, it dropped to 25 degrees. The average frost date for this area is around October 15th, so we are right on time this year. Last year around this time the east side of Nebraska was also seeing snow, so it could be worse.

First let's look at what frost actually does to the plant. Plants are made of millions and millions of cells. The outside two layers of cell are called the cell wall, and the cell membrane. The cell wall provides support and structure, to make up for plants not having bones. The cell membrane is more like a zip top bag. It can let things in and out, but is overall pretty waterproof. It chooses what can leave and enter the cell. Plants are made of around 90 percent water. When water freezes and ice forms, it forms crystals. These crystals stack on each other to form larger crystals. When plants aren't given the opportunity to "winterize" themselves, there is still a lot of water in the cells. The ice crystals form in the cells, and when the ice melts, the cells collapse. It's like having a zip top bag full of water and pushing pencils through the sides of the bag. While the pencils are still in the bag, the water stays in. But as soon as you start removing the pencils, all of the water rushes out and the bag, or the cell membrane, can no longer serve its purpose. The cells collapse and die, turning the plant black with dead cells.

Frost is almost never a great thing for plants, but the frost injury severity is dependent on two different factors. The first is how fast the temperature drops. If the temperature slowly gets cold over a period of time, the plants have time to adjust and "winterize" themselves. If the temperature drops suddenly, the plant hasn't had time to remove at least some of the water from the cell. The water expands and the cell shatters. This can be seen in trees that have had frost crack occur. The second component to frost injury is how long the temperatures are below freezing. A few minutes is not going to do much more than kill the edges of the leaves, whereas four hours below freezing and that plant is going to be having a very bad day.

There are a few different ways that you can protect plants from frost. Watering the soil will help, as water holds heat better than dry soil. Plants can also be covered with old sheets to help hold in the heat. Commercial operations handle frost advisories a little bit different than homeowners. You may have seen the orange groves in Florida covered in ice several years ago. Believe it or not, the layer of ice is actually an intentional decision. By turning the sprinklers on and coating the plants in a layer of ice can prevent frost damage. This is because as the water changes from liquid to solid, it releases heat. This heat is what prevents the fruit from freezing. The key is to leave the sprinklers on until the ice has melted. If there is no ice forming, no heat is being released, and the fruit will freeze.

Living in Nebraska, we never know what Mother Nature has in store for us. We could have snow next week, or decent weather until Thanksgiving, but when in doubt, protect the plants. If you have any questions feel free to contact me at the Buffalo County Extension Office, at 308-236-1235, or mearnest2@unl.edu

If you enjoy my column, like gardening, or learning about plants, I'd like to invite you to an informational meeting for the Extension Master Gardener program on November 10 from 2-3 at the Buffalo County Extension building. The Master Gardener program is a volunteer program that helps educate the public about Horticulture, and make a difference through the volunteer hours they put in. Come learn more about the program and be able to ask questions! Please RSVP through the contact information listed above. See you soon!

-Miranda