HOW PROTECT PLANTS BEFORE A FREEZE

When the weather forecast predicts freezing weather, it is important to protect your plants. How do you know what to do and when?

First, let's look at what constitutes a freeze?

- A freeze can happen when the surface air temperature falls to 32 degrees F or below; frost may or may not form.
- A light freeze (between 32 and 29 degrees F) can kill tender plants.
- A moderate freeze/hard freeze (between 28 and 25 degrees F), can cause wide destruction to most plants.
- A severe freeze/killing freeze (24 degrees F and below), causes heavy damage to most plants.

Many plants can survive a brief frost, but very few can survive a severe freeze.

What to do to protect your plants from freezing weather.

1. Water Your Plants Before A Freeze.

Drought-stressed plants are susceptible to cold damage, so watering plants a few days in advance of a cold snap protects the roots. Watering the base of your plants (not the leaves*) right before the freeze* creates a source of warmth that will slowly lose its heat over the course of a long cold evening and protect them from light frost damage.

Note: After watering turn off your sprinkler system and drain the lines if a moderate or hard freeze is expected, so the lines do not burst.

2. Move Potted Plants

For a light freeze that doesn't last for too long, move potted plants close to the house, preferably a southern exposure. Group them close together for greater protection. Plants in pots are more vulnerable because roots are above ground and more exposed to cold air. If only a light freeze is expected, add a heavy layer of mulch or straw, or cover them to help raise the temperature for protection. (See below). However, if a hard freeze is expected or temperatures will drop below freezing for several days, move potted plants indoors or to a garage before temperatures drop. Remember, tropical plants may need protection at higher temperatures. Many tropical plants cannot survive temperatures below 40 degrees.

3. Cover Your Plants

If you cannot move your pots (with annual or perennial plants), or you have tender plants in the ground, cover your plants. The idea behind covering plants is to trap the heat from the soil and keep the cold air out. Allow enough overhang so the cover edge rests flat on the ground on all sides. Hold the edge down with rocks, sandbags or other materials to prevent the wind from blowing it off.

4. Build Frames To Support Covers or Blankets

Create a framework that holds the covers above plants so they don't touch the foliage. This gives the best protection and prevents damage after a heavy rain, frost or snow that will weigh the fabric down. A temporary or permanent framework can be made by using inexpensive materials you have on hand such as short wire garden fencing or wooden stakes or flexible PVC pipes slid over pieces of rebar driven into the ground. Plan ahead and put frames around plants to lessen your workload when the freeze is due.

5. Types of Covers

- Row Covers are generally lighter weight covers used to protect plants from a 'freeze'. They can lie directly on plants or be draped over a frame to provide an air pocket that gives 2 to 4 ^{o} of protection.
    - Thinner row covers typically protect plants to 28 degrees and permit 70 percent of sunlight to reach plants.

- Thicker row covers protect plants from 24 to 26 degrees and while they only allow 30 percent of sunlight to reach plants, they trap heat, raising the temperature under the cover a few degrees, often enough to make the difference between life and death for tender plants.
- Don't use a heavy cover after the weather has warmed or you run the risk of cooking your plants.

- Frost Covers are made from heavier fabrics that insulate the plants to protect them from 'frost'. You can use…blankets, bed sheets, burlap and even old comforters to protect garden plants in winter. Garden centers sell various weights of covers. Place frost covers over the plants before sunset. This will capture the ground heat, and slowly radiate beneath the frost blanket during the night. Frost covers stay on overnight. The next day, once temperatures rise above freezing, remove the covers so the sunlight can reheat the ground. If the covers get wet, dry them out before reusing them.

- Frost Blankets are the heaviest weight covers with thicker material that can add up to 8^{o} of additional protection against freezing weather.

You can layer frost covers, depending on the degree of cold expected. If a low temperature of 29^{o} F is predicted, start with a row cover or frost cover. If temperatures are expected to drop several degrees lower, add a frost blanket or a layer of plastic sheeting over the top that will hold in the air and reflect heat back to the plant and soil. Plastic should never touch the plant because it will burn the plant tissues. It can heat up quickly once the sun is out and 'cook' your plant. Remove the covering next morning when the temperatures rise above freezing.

6. Adding Extra Heat

If it is too cold for the covers to provide enough protection, add a heat source beneath the cover such as a mechanics light or strands of holiday lights for extra warmth. Check the wiring for shorts and be sure rain or other moisture cannot get into the fixture. Also light bulbs should not come too close to the plant or they can cause damage.

Placing containers, such as milk jugs filled with water beneath the cover is another way to add heat. One or two jugs placed right up against a new transplant provide maximum protection. The larger the container of water the more latent heat it can hold. Make sure the cover over the plant prevents air movement from outside wind and is effective in reflecting radiant heat back down.

7. Other Ways To Provide Protection From Cold

- A heavy layer of mulch or leaves can be used to cover sensitive plants in flower beds.
- Place cardboard boxes, large trash cans, or plastic tubs over outdoor plants. Be sure to cover the plants all the way to the ground. The warmth from the soil is what keeps the plant warm, since the soil takes longer to freeze.
- Cloches are like individual greenhouses for plants. Ready-made choices are available and come in paper or plastic form or you can make your own using something as simple as a cut-up milk jug.
- Cold frames are another solution. In fact, for some more moderate climates they can make gardening a year-round activity. Most cold frames are nothing more than a painted plywood frame onto which you put old storm windows to serve as the glazing panels.
- Greenhouses can be designed or purchased, if you have the space and the budget.

Immediately After the Freeze – Now What?

1. As soon as the temperatures are above freezing, remove the coverings, so plants can receive sunlight and air.
2. Be patient. It may take several months before you know the full extent of damage from the freeze. Plants that survived will recover in time. If not, the damage is done.

3. Inspect plants for freeze damage. You may find that some plants that look damaged immediately after a freeze actually aren't. The foliage of some plants may look dark and water soaked and later turn bright green and healthy again. Some plants will come back from the root system. Scratch back the bark on woody plants to see what parts are alive (green) or dead (brown).
4. Wait to prune or fertilize. Pruning or fertilizing too soon may stimulate new growth which can cause further damage if temperatures drop again.
5. Do not over water.

The solution: As days and nights become warmer and days lengthen, plants will start to grow (or not). Then we will have a more information about which plants to cut back and which ones we will need to replace.

RESOURCES:

CCMGA Presentation: Vegetable Gardens

- https://www.almanac.com/fact/what-is-the-difference-between-a-frost#:~:text=A%20light%20freeze%20(between%2032,heavy%20damage%20to%20most%20plants
- https://aggie-horticulture.tamu.edu/wp-content/uploads/2013/06/FrostsandFreezes.pdf
- https://aggie-horticulture.tamu.edu/archives/parsons/misc/coldprot.html
- https://agrilifeextension.tamu.edu/library/landscaping/protecting-landscapes-and-horticultural-crops-from-frosts-and-feezes/
- https://today.tamu.edu/2019/11/11/how-to-prepare-your-plants-for-cold-weather/
- https://www.gardeningknowhow.com/plant-problems/environmental/protect-plants-in-freeze.htm
- https://www.thespruce.com/plant-row-covers-1403237
- https://www.hgtv.com/outdoors/gardens/planting-and-maintenance/plant-covers-for-winter
- https://www.plantanswers.com/articles/dealing-with-freeze-damage-on-plants.asp