KANSAS STATE UNIVERSITY | Extension Wildcat District

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First Frost and How to Fight It

The exact timing of the gardening year is very important. Established calendars and planting dates are the basis for what gardener's plan. The only problem: calendar dates and forecasts aren't always accurate.

It's easier to control the garden space than to predict the weather in Kansas. Therefore, keeping an eye on the first frost date and a hand on the row cover is crucial. In Southeast Kansas, the first frost date is around October 20th. That date is not a guarantee of frost; it's just an average of 30 years of NOAA data.

Avoiding frosts can be as simple as a tarp or bed sheet, but there are sturdier structures that can help in the long term. Their principles all revolve around insulation. Trapping warm air, greenhouse effects from sunlight, and maintaining soil temperature are all ways to insulate plants from the cold. Soil temperature should already be warmer than the air temperature in fall, but moist soils and/or soils containing clay are slower to drop in temperature. Soil type isn't easily changed on a whim, but be aware that soil temperature in raised beds and containers will fluctuate in the cold. The last and best soil insulator is mulch!

The easiest frost protection method is just a sheet, but with a few more steps, it could be a row cover or low tunnel. Floating row covers are essentially just a sheet, but they usually aren't 800-count Egyptian cotton. Typically, materials are polyethylene, spunbonded polyester, or polypropylene, with the former resembling a plastic sheet and the latter more like a fabric. The covers can insulate and allow light through for photosynthesis.

Cold damage can still occur where the cover touches plants, depending on the external temperature. To upgrade a row cover, hoops made of metal or PVC pipe can provide structure. If the hoops are secured in the ground, then a true low-tunnel system is created. If the hoops aren't in the ground, secure the cover with weights and hope for low winds.

Before opting into a full-blown greenhouse, there is another option. A cold frame is a free-standing box made to insulate plants. They can be treated like an emergency plant shelter, a conditioning chamber, or even a pseudo-greenhouse. The walls of the frame can be made of any insulating material, such as brick or wood. The cover is often a hinged door to allow a containerized plant to be moved inside. For short-term protection, the frame can just be a small space for storing plants. For long-term tenants, the roof-door can be fitted with glass or a greenhouse panel, and the plants can be grown in the soil or in a container.

The last thing to consider is how long the plants will survive. Cool-season crops like broccoli, lettuce, chard, and spinach can be grown into late fall and winter with protection. However, summer-loving plants like tomato and cucumber will likely need a greenhouse and supplemental care.

Season extenders allow gardeners to go past the limits of the calendar, but they don't perform miracles. Keep an eye on the forecast and a hand on the row cover!

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