

3 Growing Windows, and How to Use Them

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The cut off date for planting any crop is never etched in stone, but is more of an educated guess based on a collection of information. Planting date, like age, is not just a number but a state of mind. Every planting season, calendar date is just one guideline among many, and it's important to have an overall sense of appropriate timing in the midst of all these variables.



Precipitation, soil moisture, soil temperature, and long term forecast are the main players to consider. These are the factors that influence the germination and early growth of your crop as well as that of weeds. They determine the availability of soil nutrients. Then, timeline – what is your end goal with the crop and how long does it take to achieve that? This determines your planting deadline. For example, if you are planting forage sorghum to be cut at boot stage and planning to follow it with a small grain, the sorghum generally needs to be in the ground by mid-July to allow for a mid-September harvest and timely small grain planting.

Since every year is different and none of us can truly predict the weather, pay attention to year-to-year trends. For example, a wet summer or two likely means we're due for a drier one. Pay attention to field and weather conditions as planting time approaches. Check the long-term forecast.

The planting deadline is more of a success gradient than a hard deadline. What happens if you're late? The more you fall behind the ideal dates, the less your chances of success, but this reduction in success will be incremental. Each day you wait (or are uncontrollably delayed) does have significant impact, however.

Spring-planted perennials: Plant them in spring before grasses start greening up. This gives them every advantage when green-up time hits, and less competition from the budding emergence of weeds. As you get later in the spring, a nurse crop (usually oats) is recommended and will help with early weed suppression as the stand gets established. In Lancaster, PA (zone 6b) the calendar date cutoff is, on average, the end of April. With each USDA plant hardiness zone north of this, that theoretical date moves later 1-2 weeks, and earlier 1-2 weeks for each zone going south. (A map of the plant hardiness zones can be found in our Product Information Guide.) Frost seeding in late winter gives a great head start and timing advantage, but this is often only successful with legumes.

Oats, peas, and spring barley or triticale should also be planted as early as possible in the spring, simply to maximize growing time in ideal conditions for these crops – cool, moist spring weather favors more vegetative growth, which you want for high-quality forage. Then consider the non-negotiable deadline - find the planting date that allows the 55-60 day oat growth timeline fit ahead of summer and fall crops. Oats have a larger seed that can be planted a little deeper to reach moisture if the soil surface layer is dry. Cool season annuals like oats also get going quickly and compete with weeds, so the only reason to wait to plant would be a wet field (not a cold field). When is it too late? When the calendar date cuts short an acceptable growth window that would still leave time for the rest of the rotation.

Summer Annuals – sorghums, sorghum-sudan, sudangrass, millet, crabgrass, teff, etc. : With most summer annuals, the window starts when soil temperatures reach 60 degrees F and rising, and ends with the constraints set by your fall planting plans and the point at which temperatures start dropping off in the fall, beginning with cooler nighttime temperatures in late summer. That date depends of course on the growing zone.

In Lancaster, PA, early June is on average when summer annual planting starts, and mid-July is the often-accepted calendar date deadline. (Again, this is for zone 6b, and will shift by calendar date 1-2 weeks for each additional growing zone.) This one is pretty consistent, since the drop off in heat units and sunlight at the end of the season is fairly predictable. If your planting is delayed until July, you'll get more out of a one-cut crop like forage sorghum at boot stage or photoperiod sensitive sorghum-sudan (which won't head out in a 60-day growth period) than a two-cut sorghum-sudan, sudangrass or millet.

Corn can be planted into cooler soils in the spring, about a month ahead of other summer annuals. Flexibility will be limited by its relative maturity and whether it is intended for silage or grain. However, our late-planted corn silage research plots reveal that planted in early-June heat in Lancaster County, PA, these hybrids jumped out of the ground twice as fast and almost caught up to hybrids planted a month earlier. These later-planted hybrids have the advantage of a jump-start with more initial heat units and less chance for the seed and seedling to sit too long in cold soil. There is more risk of late summer droughts coinciding with tasseling and pollination, however, which can impact grain yield and starch content of silage. This is mainly because silk development is stunted, making it less receptive to pollen. For both early and late planted, weather impact varies depending on the corn's relative maturity, which is why we recommend diversifying the crop with a range of relative maturities (within reason, based on the range that is appropriate to the area).

Late summer and fall – perennials, cool season annuals, and winter small grains: Soil moisture may be more of a limiting factor in late summer, but weed competition will be much less of an

issue. Unlike the spring, soil is warm and plant establishment is much quicker, if enough moisture is present. In Lancaster County (zone 6b), we recommend not waiting past early September to seed perennials. Many people understandably want to wait for good moisture, since perennial seeds are small and need a very shallow planting depth, but late summer is a time when the soil surface region can be quite dry.

Timely planting is key, however, since seedlings need 6-8 weeks to get going before hard frosts begin. If you wait too long, plants don't get a chance to establish deep root systems and get easily heaved out of the ground with frost.

There are challenges with late summer and fall plantings. Although days seem rich with warmth and sunlight in late summer, the amount of daylight and temperature (growing degree days) are quickly dropping – especially nighttime temperatures - and every day you wait is costing you yield and winter survivability. Along with daylight hours and temperature, the angle of sunlight decreases every day, reducing photosynthetic potential in a predictable pattern.

Orchardgrass is a slow starter and probably the most sensitive to a late planting date. Timothy and tall fescue can go a little later, but no later than the middle of September in Lancaster, PA.

A common last-minute question that comes up in mid-September and beyond is “what can I plant right now that will give me forage this fall?” The truth is that anything you plant in late summer needs 50-60 days to produce a decent amount of forage, and the only options are crops designed to mature within 60 days, such as oats, spring barley, spring peas, and brassicas. Except in areas of the south, any date later than mid to late August is too late. Even timing with cutting a winter annual like triticale is tricky because it will need to have time to regrow enough to survive winter.

A final thought

Remember that timing is just one piece of the equation. Seeding rate and technique are equally important to success and can to some extent help mitigate the effects of (temporarily) dry soil. Consider this advice from Marvin Hall, Professor of Forage Management at Penn State University: “Forage seeds need to absorb at least their own weight in water before germination begins. Unless the forage seed has been planted in saturated soils, the water generally moves into the seed from surrounding soil. Adequate seed-to-soil contact ensures maximum water movement into the seed in the shortest time. Field situations (cloddy or loose soil) that do not promote good seed-to-soil contact generally result in extended germination periods and sporadic emergence. The use of press wheels on a grain drill or cultipacking after seeding can improve seed-to-soil contact.”