



Great Places

Green Spaces

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Key topics: Tree Selection in Urban Sites, Climate Outlook and Its Impact on Trees

By Josh Larson and Laura Edwards

This issue of the Great Spaces newsletter will focus on the concept of “right tree, right place”. Planting a tree in the countryside with lots of space and good soil is different than planting a tree in your community. For the purposes of this newsletter, a community is any location where development has occurred.

A tree that will be planted in a community is no different than a tree planted in a countryside setting in that it will adapt to and be affected by its surroundings in positive and negative ways. The issues you must consider when planting a tree in a community are not typically found in many rural plantings. The rest of this article will be devoted to discussing a few things to keep in mind when selecting a tree for community sites.

- Goals
- Soil/What’s underneath
- Planting Space
- Tree Species

Goals

When prompted with the question “why do you want a tree?” most landowners/residents will answer with some iteration of “because I just want a tree.” While that might seem like a good answer on the surface a better question is “what do you want from your tree?” Whether they realize it or not, people want to get something out of a tree. Generally speaking, homeowners want to satisfy one or more of the following goals: aesthetics, shade, food production, and privacy.

Knowing exactly what people want from a tree is one of the most critical considerations to selecting the right tree. If someone wants a tree that produces light shade I may suggest a honeylocust. If that same person wants a tree that provides shade and food production, I may recommend a black walnut or apple tree.

Those four goals are by no means the only things to consider when selecting a tree and other goals may be more important for an individual to consider. It is important to remember that goals are guidance and not rules on how to select trees.



Green Ash trees providing shade

Tree Species

Most people think the first step of selecting a tree is looking at a tree species list, but that is actually not recommended at the start of the process. Even in South Dakota, there is a comprehensive enough tree list to confuse or overwhelm someone who is not a tree work professional. Working through the assessment process described in this newsletter helps to narrow down the list of possible tree species. This means a homeowner can go from considering 25+ tree species to 3-5 tree species, making it a far more manageable task to review.

One of the final things to consider is species diversity, both in your immediate surroundings and the community at large. Many communities in South Dakota have an overabundance of ash trees with around 30% of our community forests consisting of them. This has left South Dakota communities vulnerable to invasive pests like the [Emerald Ash Borer](#). The only way to avoid this is to try planting a wide diversity of species to decrease your community’s vulnerability to the arrival of pests or disease. To help you figure out what is growing around you, you can always reach out to your regional Community Forester for help or you can consult our [Tree Inventory System](#) to see what information we have for your community.

“The best time to plant a tree was 20 years ago. The second best time is now.” - Chinese Proverb



Tree Selection cont...

Soil/What's Underneath

Soil and what is happening underground is one of the least appreciated and most important parts of planting a tree in a community. Soil is a variable substance and its characteristics can change greatly depending on its location, parent material, and what sort of damage has been done to it.

Key Characteristics of Soil to Consider

- Compaction
- Organic Matter
- Soil pH
- Texture

Soils in communities are generally assumed to be compacted due to human activity. This compaction makes soil in these areas a poor growing medium and this must be taken into account when selecting tree species. They also tend to suffer from low organic matter as a result of construction and other human activities.

Another aspect of soil that many people don't consider is the soil pH, or the measure of how acidic or basic the soil is. Tree species are sensitive to the pH of the soils they grow in and that can affect the health and longevity of the tree. One of the most common issues we see in South Dakota is chlorosis, which is a nutrient deficiency caused by high pH.

Finally, you have to think about the soil texture. Soils high in clay can hold onto water better, but too much water can lead to poor soil oxygen, which is bad for tree's roots. The flip side is too much sand, which causes water to drain away, leaving trees dry and prone to drought stress. Different tree species are better suited to different soil textures so understanding your soil texture is critical to selecting a tree.

Another commonly overlooked consideration is what is already present underground in your yard. The most common things being utility lines like gas, water, sewer and occasional electric. Depending on where these are located can greatly influence what species of tree you can select and where trees can be planted. You do not want tree roots to interfere with any of those utilities if it can be avoided.

If you are considering a tree in a new spot it is required you get a [SD One Call](#) ticket and see what utilities might be going through that area.



Chlorosis from high soil pH

Planting Space

The space you have to plant a tree should be considered when you are looking at different species of trees. When it comes to planting spaces, you need to pay attention to three aspects,

- Available rooting area
- Vertical clearance
- Horizontal or crown spread clearance.

A tree will need space in all three aspects to grow properly without causing too many issues. In general, you will want a rooting space that is at least 10ft x 10ft with 3-foot depth of good soil. This amount of space can usually be met in an average front or backyard, but the soil quality will be affected by the soil characteristics described in the preceding section. Considering the three dimensional space required by a mature tree reduces the risk of issues like limbs reaching over a house, roots affecting driveways or foundations and growing too close to structures.



Tree Selection cont...

Planting Space Continued....

Next, you will want to make sure species you are considering will not have long term issues with how tall the tree can get. A common issue includes planting trees too close to powerlines because the tree eventually grows tall enough to create a hazard as the tree interacts with those lines. Power companies are required to prune trees that get too close to their lines. For example, Black Hills Energy requires 10 ft of clearance from their distribution lines on the bottom and sides of the powerline, and infinite clearance into the sky. Envision a 10 foot bubble from the sides and bottom of those powerlines, no tree limb may enter that space.

Finally, we have horizontal, or crown spread clearance. This aspect can also run afoul of powerlines so the same consideration for those needs to be taken here. But you also have to think about structures, sidewalks, and road clearances. It is very common for large trees like cottonwoods to grow and spread over peoples houses. While this does give you a good benefit in terms of shade it does risk potential damage to your home from high winds or tree limbs breaking and landing on your roof. Also, trees that are planted too close to your home may damage siding or break windows during high wind events as tree canopies are blown around.



Utility Line Conflicts

Sources

EP309.pdf (ufl.edu)

Andy Bernard—Black Hills Energy Vegetation and Wildfire Specialist

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"Trees and plants always look like the people they live with, somehow." Zora Neal Hurston



Climate Outlook

by Laura Edwards

Spring 2022 will be remembered as cooler than average, and in some areas, a sharp turn away from drought towards wet conditions. The outlook for summer season has hints of drought returning or re-intensifying after a relatively cool and wet spring.

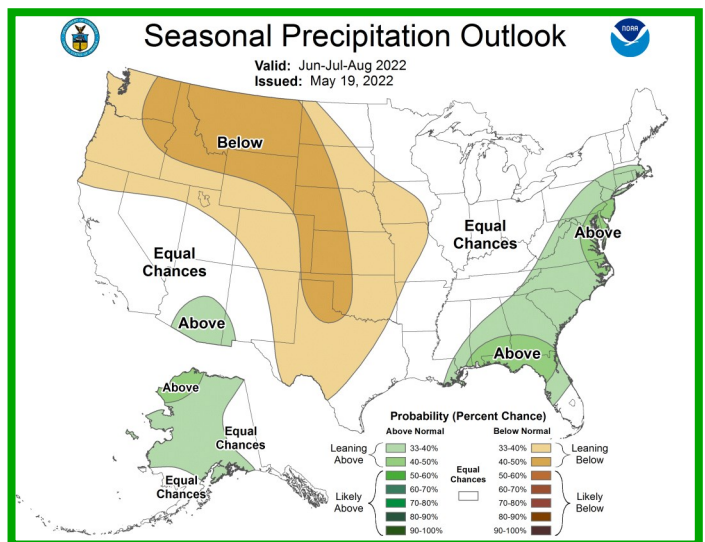
From March 21 to May 19, 2022, average temperatures in South Dakota were two to four degrees cooler than average in the north and east central regions. The region approximately south of US Hwy 14 was nearly normal to about two degrees below average. This is also an area that has been experiencing more drought and dry conditions this spring. Often, warm temperatures (or less cool in this case) coincide with dryness in the growing season. On the flip side, cooler and wetter conditions often coincide, and that has been true in the northeast region.

Data from the USA National Phenological Network indicates that through mid-May, this year's first leaf emergence was the latest in at least 40 years in northern and northeastern South Dakota. In southwest and south central South Dakota, the first leaf was just slightly earlier than typical due to some early warmth in the roller coaster of temperatures this year. This information comes from a phenology model that uses climate data and has been trained with historical observations of lilac and honeysuckle phenological data over many decades. A slow start to spring indicators, with much delayed appearances of first leaves and blossoms, is not an entirely bad thing as temperatures in the 30s were reported as late as May 21-22. This slow arrival of spring is counter to the long-term trend of earlier Spring emergence in the Northern Plains.

There has also been a slow start to the wet season in the Black Hills, southwest and southeast. Much of these areas have measured less than 70 percent of average precipitation from mid-March to mid-May. The north central and northeast has been much wetter than average, with reports of 150-200% of average in that two-month period. This is consistent with the long-term trend of increasingly wetter spring seasons in eastern South Dakota.

The outlook for temperature and precipitation was released by NOAA's Climate Prediction Center on May 19, 2022. Starting in June, temperatures are increasingly likely to warm to above average for most of the summer season, through August. The highest chances of warmer than average temperatures are in the southwest. Overall, this could mean that growing degree days could accumulate faster this summer than in most years. After a slow start to spring, summer warmth could catch up to normal, or even above normal, pace of growing degree days by mid-summer. If you are concerned about pests or disease that are GDD-dependent, keep a close eye on temperatures when a warmer pattern sets up, as issues could arise rapidly.

Precipitation in June through August is leaning towards drier than average as well. Early in the season, the southwest region may be the first to see the dry conditions start. For the three-month season, the outlook indicates drier conditions to spread across all of the state except for the far northeast. The highest chances of drier than average precipitation is in the western third of South Dakota.



Caption: Precipitation outlook for June through August 2022. Tan colors indicate enhanced chances of drier than average conditions for this three-month period.

Source: NOAA Climate Prediction Center, <https://www.cpc.ncep.noaa.gov/products/predictions/90day/>.