

2. Understanding Your Soil

A major factor in determining how well your plants or seeds will grow is their compatibility with your soil. Each plant species has a range of soil types in which it will flourish. It is very important to choose your seeds and transplants to match your soil type. We have included the soil conditions best suited for each species in our plant descriptions and our Wildflower Selection Guide on pages 2 & 3 of the price insert.

Soil Types

Soils can be divided into three basic classifications: sands, loams, and clays. There is great variation within these basic groups, but these categories will suffice for the purpose of describing where a given plant will or will not grow.

Sandy Soils, referred to as "light" soils, contain large sized soil particles that are loose and easy to work. They allow water to drain readily and tend to be low in nutrients. Sandy soils tend to be more acid than the more fertile loams and clays. If your soil has a pH lower than 5, consider adding lime or wood ashes to bring it closer to a pH of 6 or 7.

Clay Soils are commonly known as "heavy" soils. Consisting of very small, tightly packed soil particles, clays tend to be dense and hard to work. However, they are generally rich in nutrients, have a high water-holding capacity, and can be very productive.

Loamy Soils are "intermediate" between sands and clays. Composed of many different sized soil particles, they combine fertility and moisture-holding capacity with good drainage. Easier to work than clays and better consolidated than sands, loamy soils make an excellent medium for growing most plants. Many prairie plants do best in loam soils.

Determining Your Soil Type

The "Feel Test" can help you determine your soil type. Take just enough moist soil to rub between the thumb and fingers. Rub it back and forth several times and feel it very carefully. A clay soil will be slick and smooth, with little or no grittiness. A predominantly sandy soil will be gritty and will not stick together well. A loamy soil will stick together easily, but not tenaciously like a clay. Loams will feel moderately gritty. As the soil dries

between your fingers, rub it into a dust and feel it carefully. A loamy soil will have a component to it that feels like flour. This is silt, a soil particle size between sand and clay. Clays may also have a floury feeling to them, indicating silt content, but clay soil lacks the gritty sand component found in loams.

If you have difficulty determining your soil type by this method, dig into your soil when it is dry. A sandy soil will seldom exhibit clods. Any clods that do form will crumble easily. A loamy soil will have clods that can be sliced cleanly with a shovel. Clay soils tend to form hard, persistent clods. Rather than slicing through them, a shovel will get stuck or will shatter the clod into many hard, little blocks of soil.

If you are still in doubt, take a soil sample to your local county extension agent or soils lab for analysis.

Improving Your Soil

If you have a sand or clay soil and wish to improve it, there is no better method than to add large quantities of organic matter. Compost and dead leaves are excellent. Do not use sawdust, wood chips, or similar materials. These require a long time to break down and rob the soil of nitrogen. Avoid uncomposted manure. It contains large numbers of weed seeds. Organic matter holds more water and nutrients than any other soil constituent. It breaks up heavy soils, improving water intake and air exchange to plant roots. Organic matter firms light soils, making them richer and less drought prone. In each case, adding organic matter modifies a soil so that it behaves more like a loam. The benefits of adding organic matter include increased seedling survival, better root development, and faster plant growth.

Another effective method of improving poor soils is to plant a "green manure crop," such as buckwheat or winter wheat. These crops improve the soil by bringing up nutrients from the lower soil and converting them into plant organic matter. The crop is plowed under while actively growing to incorporate the roots and leaves into the soil. This is a cheap, ecologically sound way to build soil organic matter.

Tips for Working with Clay Soils

Clay soils with low levels of organic matter can be difficult to work. The fine soil particles pack together tightly, impeding drainage and air exchange. In the heat of summer, clay soils harden and prevent downward root growth. Clay soils warm up slower in spring and

compact if worked when wet. Each of these problems will retard root development and plant growth.

Adding organic matter helps to "open up" clay soils by improving porosity or "breathability." This increases water infiltration and air movement through the soil, which is critical for good root growth.

There are many prairie plants that can grow in clay soils, such as our "Clay-Busters," (page 4). With good initial care, these wildflowers and grasses will flourish, even on difficult sites. Their roots will gradually work their way down into the clay, opening and improving it, just as these plants have done for thousands of years.

After Planting in Clay Soils, We Recommend:

Mulching with weed free straw (clean winter wheat, oat, or marsh hay) to hold in moisture and prevent drying. Mulch 2-3 inches deep for transplants with openings for the emerging leaves. For seeded areas, 1-2 inches of mulch will help to maintain the soil moisture.

Regular light watering of prairie seedlings for the first two months will greatly increase germination and seedling survival. Water when the surface begins to dry out. Mulched areas require less frequent watering. Water only in the morning to help prevent disease problems. Do not over-water. Clay soils hold moisture well and drain down slowly.

Soil Moisture

Soil moisture is equally important in deciding which species to plant. Moist soils have a generous amount of water in the subsurface throughout the growing season. They may have periods of standing water in the spring or fall.

Dry soils include sandy and gravelly soils that drain readily and never have standing water, even after a heavy rain.

Medium, or mesic, soils include well-drained loams and clays. These soils may have standing water for short periods after a hard rain.

See our plant descriptions and our Wildflower Selection Guide on pages 2 and 3 of the center insert to choose plants for your soil type and moisture conditions.

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