

What is it?

A basic problem facing a livestock producer is how close to safely graze or mow plants and still obtain maximum productivity over an extended period. The problem compounded by varying climatic conditions, growth habits of different plants, and livestock preferences for different plants. The time of year and age of the plant when leaf removal occurs also affects plant growth.

The Leaf Growth Miracle

Plants manufacture food in the leaves through the use of solar energy. This is one of the great miracles of nature.

Yet some people wrongfully assume plants produce food in their roots. True, plants pull water and minerals from the soil, but the food factory is located above ground in the leaves and green stems.

Minerals from the soil make up about 5 percent of the solid material in plant roots, stems, and leaves. Carbon, hydrogen, and oxygen from the air and water make up most of the other 95 percent.

The leaves take in carbon dioxide gas from the air through tiny pores. Using solar energy, the leaves recombine the carbon with oxygen and hydrogen to make sugars and starches. The sugars then combine with minerals from soil to make fibers, proteins, plant oils, and fats. The plant uses these sugars, starches, proteins, oils, and fats to grow and reproduce.

The ability of perennial grasses, legumes, and forbs to recover quickly after grazing or mowing makes these plants extremely valuable for forage production and soil protection. Removing too many leaves will retard forage production and damage the plant's root system. The plant will eventually die if over harvest of the leaves continues.

Leaf Removal And Growth

Root growth is closely related to forage production. Plants maintain their maximum root vigor and growth when no more than half their leaves are removed by grazing or mowing during the growing season. If the plant's food producing mechanism is deprive, leaf and root growth are reduced accordingly.

In all grasses, the amount of leaf volume removed has a direct affect on the growth of new roots. Roots are the vital supply lines of moisture and minerals to the leaves. Perennial grass plants store food in the roots after seasonal growth. They use these reserves to live on while dormant, to make the first new growth the next spring, and to start new growth after green leaves and stems are closely grazed at any time during the growing season.

A grass plant produces twice the volume of leaves that it needs to complete its growth and remain productive. Generally, when up to 50 percent of the plum is grazed, root growth continues unimpaired. When 60 to 90 percent of the plant is removed, from 50 to 100 percent of the root growth is stopped.

Other Growth Factors

Other factors influence plant growth. Proper or light grazing is usually more beneficial to plants than several years of no grazing. Heavy plant residue depresses growth of many grasses.

Growing Points

All plants have growing points where new cells are developed. The growing points of a grass are located just above the last completed joints of each stem. Early in the season, the growing points are situated at the base of the plant. As the season progresses, the joints of most species elongate and push upward to produce a seed stalk. At this time, the growing point is elevated and in a vulnerable position. Removal of the point by grazing or mowing forces the plant to send up new leaves from the base of the plant and to start over as if it were spring. This causes additional drain on root reserves and can weaken the plant.

The growing points of trees, shrubs, and forbs are located on the outer tips of branches.

Reproduction

Grazing management schemes can be used to favor the more desirable plants during their reproductive period.

Seed. All annuals, and many perennials, reproduce primarily from seed. Warm-season plants usually produce seed during late summer or fall. Cool-season plants produce seed near the end of their maximum growth period, in midsummer.

Stolons. Some plants reproduce by stolons, which are prostrate stems, or above ground runners. The stolons grow on the surface of the soil, occasionally tagging down roots at the joints to secure the stolon and to begin a new plant. Black grama and buffalograss are examples.

Rhizomes. Several grasses reproduce by rhizomes, which are underground stems. Most sideoats grama strains have rhizomes. Big bluestem, indiangrass, and switchgrass have rhizomes.

Mixed methods. Many plants reproduce by stolons or rhizomes as well as by seed. Black grama produces seed and stolons. Most sideoats grama plants produce seed and rhizomes. Common bermudagrass uses all three methods of reproduction.

Where To Get Help

For more information on range management, contact the local office of the U.S. Department of Agriculture's Natural Resources Conservation Service.