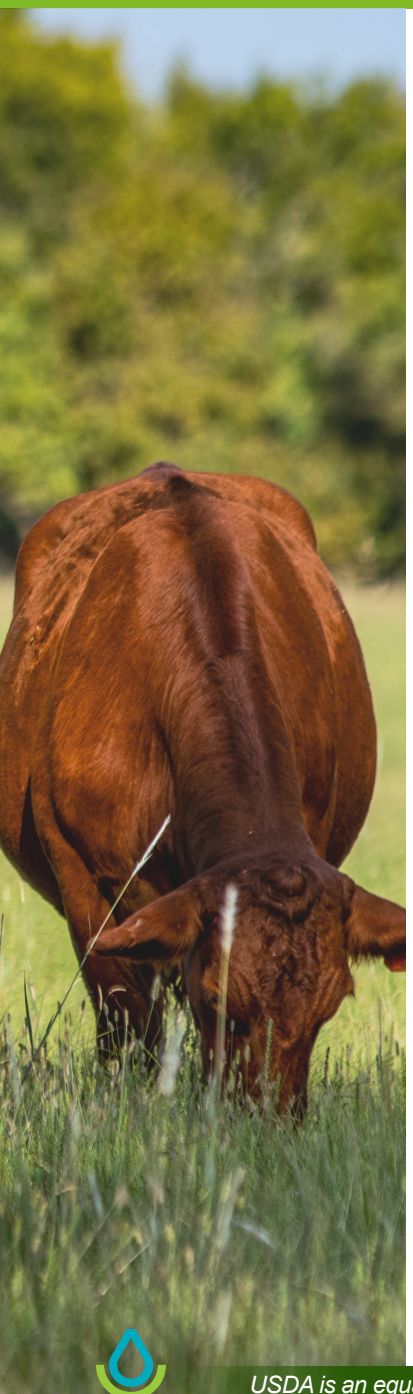
USDA United States Department of Agriculture

Illinois Grazing Manual Fact Sheet

GENERAL

Water Cycle



What

The water cycle is the never-ending movement of water from clouds to earth and to clouds again. Influencing those parts of the cycle that affect grassland is important in hay and pasture management. The cycle begins when precipitation strikes the land, and ends when the water leaves, either through runoff or evaporation. In the interim, livestock producers should store as much water as possible within the soil for use in forage production.

Why

Water is generally the most limiting factor in hay and pasture production. One of three things happen with the moisture that falls as raindrops, snowflakes, sleet or hail used productively on the site where it falls; goes downstream as clean water; Or, goes downstream, carrying soil. When runoff is dirty, the land's production potential is being removed.

How

Impact. When falling raindrops strike bare soil, the impact causes both splash erosion and soil compaction resulting in faster runoff and increased erosion. Good plant cover breaks the force of the raindrops and allows the water to seep into the soil. The soil can act as a large reservoir, holding moisture, reducing flooding and enhancing water quality. Water stored in the soil promotes a greater and more consistent supply of forage.

Soil. Coarse soil takes in water faster than fine soil but stores less within the root zone of most plants. Water that moves below the root zone of plants recharges groundwater supplies, and sometimes reappears down slope as a spring or creek. Because the movement through the soil is slow, the water supply downstream is cleaner, and streams flow longer than where moisture runs off over the soil surface. Where the surface is bare, less moisture enters the soil and surfaces are hotter causing much of the stored water to evaporate during hot, windy days instead of being used for plant growth.

Plants. A healthier, more productive grassland water cycle can be achieved by proper grazing. Plants and the litter they produce affect the water cycle in several ways. Plants break the impact of raindrops on the soil surface and serve as small windbreaks to hold snow. Plants shade the soil's surface causing the soil surface to be cooler, which creates a better environment for plant growth. Litter acts as a sponge, and slows runoff, giving moisture more time to move into the soil. Plant roots increase soil porosity, so water moves more readily into and through the soil. Roots also hold soil particles in place, reducing erosion. Vigorous plant cover is an important part of influencing the grassland water cycle and making effective use of precipitation.

Where to Get Help

For more information about hay and pasture management, contact your local office of the Natural Resources Conservation Service, listed in the telephone directory under "U.S. Government," or the University of Illinois Extension.

USDA United States Department of Agriculture
Natural Resources Conservation Service

University of Illinois Extension
College of Agriculture, Consumer and Environmental Sciences

Illinois Department of Agriculture

ILGLCI Illinois Grassland Conservation Initiative