INTRODUCTION
Wheat is the principal U.S. cereal grain for export and domestic consumption. In terms of value, wheat is the fourth leading U.S. field crop and our leading export crop.

Wheat has two distinct growing seasons. Winter wheat, which normally accounts for 70 to 80 percent of U.S. production, is sown in the fall and harvested in the spring or summer; spring wheat is planted in the spring and harvested in late summer or early fall.

Many producers in the southern Great Plains use wheat as a dual crop. Wheat is a cash grain crop as well as forage. Wheat pasture is a valuable source of high-quality forage, typically available in late fall, winter, or early spring, when other forage sources are low in quality and quantity.

This paper discusses the agronomics, cultural, and livestock management practices of wheat pasture. Companion papers discuss:


CULTURAL PRACTICES

Planting date. Producers usually try to plant in late August or early September, to promote enough growth to allow fall grazing. Early planted wheat has the potential to produce excellent fall growth if soil moisture allows rapid germination and emergence. Dry soil nullifies the advantages of early planting. Producers generally plant wheat 2-3 weeks earlier than usual if it is to be grazed. Grazing can begin 6-8 weeks after planting when there is 6-12 inches of growth.

There are disadvantages in planting wheat for pasture too early. The incidence of diseases such as wheat streak mosaic may increase, which would reduce grain production. Early planted wheat serves as a host, spreading the disease to fields planted later. Early planting also encourages heavy Hessian fly infestations. Dry soil conditions frequently prevail in late August and early September and may necessitate “dusting-in” the seed. Variable germination and emergence may cause erratic stands and delay initiation of grazing.

Planting rate. Producers interested in early fall grazing increase planting rates by 50-100 percent, depending on planting date and soil moisture. The earlier the planting date, the less the need to increase seeding rates. Higher rates, however, will promote greater upright growth. If planting is delayed, it is important to increase seeding rates as much as 100 percent.

In irrigated fields and in eastern Kansas where rainfall is higher, seeding rates commonly are 90-120 pounds/acre. In dryland areas of western Kansas, seeding rates should be no more than 50 percent above those of wheat planted for grain. In central Kansas, seeding rates for wheat pasture often will be 75-120 pounds/acre. Because high seeding rates can cause moisture stress, it is necessary to monitor soil moisture carefully to determine when the top growth should be removed.
VARIETIES
There are several hundred varieties of wheat produced in the United States, all of which fall into one of six recognized classes. (This is in marked contrast to the one or, at most, two wheat classes produced in other nations.) Where each class of wheat is grown depends largely upon rainfall, temperature, soil conditions, and tradition. Generally speaking, wheat is more often grown in arid regions where soil quality is poor.

Wheat classes are determined not only by the time of year they are planted and harvested, but also by their hardness, color, and the shape of their kernels. Each class of wheat has its own family characteristics, especially as related to milling and baking or other food use.

THE SIX BASIC CLASSES OF WHEAT.

Hard Red Winter—The dominant class in U.S. exports and the largest class produced each year. Produced in the Great Plains states, a large interior area extending from the Mississippi River west to the Rocky Mountains and from Canada to Mexico. Wide range of protein content, good milling and baking characteristics. Used to produce bread, rolls and, to a lesser extent, seed goods and all-purpose flour. This is the primary wheat variety grazed by livestock. Major foreign buyers include Russia, China, Japan, Morocco and Poland.

Hard Red Spring—Contains the highest percentage of protein, making it an excellent bread wheat with superior milling and baking characteristics. Majority of crop is grown in Montana, North Dakota, South Dakota and Minnesota. Exported largely to Central America, Japan, the Philippines and Russia.

Soft Red Winter—Grown primarily east of the Mississippi River. High yielding, but relatively low protein. Used for flat breads, cakes, pastries, and crackers. Largest customers are China, Egypt and Morocco.

Durum—The hardest of all U.S. wheat and consistently the class with the lowest export volume, accounting for less than 5 percent of all U.S. wheat exports. Grown in the same northern states as Hard Red Spring, although 70-80 percent of the U.S. annual production comes from North Dakota. Used to make semolina flour for pasta production. The largest importer is Algeria.

Hard White Wheat—The newest class of wheat to be grown in the United States. Closely related to red wheats (except for color genes), this wheat has a milder, sweeter flavor, equal fiber and similar milling and baking properties. Used mainly in yeast breads, hard rolls, bulgur, tortillas, and oriental noodles. Used primarily in domestic markets, although it is exported in limited quantities.


Within each class of wheat there are many sub varieties. There are probably greater year-to-year differences than varietal differences in total forage produced. A Kansas grazing study found a difference of 2,000 pounds forage dry matter/acre between years with the same variety, but only 800 pounds forage dry matter/acre difference among varieties.

Some plant characteristics make certain varieties more useful for grazing. Producers should select varieties that tiller profusely, have rapid, upright fall growth, and good regrowth potential after grazing.

FERTILITY
Adequate amounts of all essential plant nutrients are necessary for maximum forage production. Wheat used for grazing will remove more soil nutrients than the wheat grain crop. Nitrogen (N) is usually the most
limiting nutrient associated with wheat forage production. Wheat forage containing 25 percent crude protein will have 80 pounds of nitrogen in each ton of dry matter. A soil test for available nitrogen, phosphorus, potassium and sulfur is helpful in evaluating the amount of supplemental nutrients needed.

**GRAZING MANAGEMENT**

Depending on climatic conditions, wheat pasture may be grazed in the fall, in the spring, or both. During mild winters with adequate rainfall, some growth occurs. Most grazing occurs during late fall and early winter and again in spring, with animals removed early enough to allow good grain production. Some producers completely graze out the wheat, precluding grain harvest.

To maximize forage for grazing, early seeding, increased seeding rate, and more nitrogen fertilizer is recommended. Depending on rainfall and stored soil moisture, wheat pasture is generally available for 120-150 days. Grazing cannot begin until the plants have adequate root development to prevent their being uprooted by grazing animals. Ordinarily, wheat is available for grazing between October 15 and November 15.

Wheat tends to produce more tillers and leaves than are necessary for maximum grain yield. There is definite agreement on the sharp, steady decline in grain yield if grazing continues after jointing.

Grazing wheat generally affects maturity, the number of culms (tillers) produced, lodging, and available soil moisture. Grazed wheat usually matures 1-4 days later than ungrazed, with more severe grazing resulting in longer delays. Delayed maturity may expose the crop to increased stress from high temperatures and/or disease pathogens during grain filling.

Studies in Kansas and throughout the Great Plains indicate that grazing appears to have little effect on grain yields when fertility is adequate, grazing is not too heavy, cattle are removed before jointing, top growth removal reduces water use, and lodging is reduced.

Grazing may reduce grain yields when nutrients are limited, grazing is severe, water stress is limited or nonexistent, lodging is not a problem, or wet soil conditions cause compaction and trampling of the wheat plants.

**LIVESTOCK MANAGEMENT**

Both continuous and rotational grazing systems are acceptable for stocker cattle. Average daily gain on stockers on good wheat pasture is essentially the same with either system. This is true as long as adequate forage is available because the quality of vegetative wheat forage is generally high.

Optimum stocking rates vary considerably from year to year, depending on many climatic and management factors that influence wheat forage yields. Recommended fall and winter stocking rates often range from 250-500 pounds of animal/acre (1-2 acres/stocker, depending on weight). Spring stocking rates usually are 1.5-2.0 times greater than for fall (0.75-1.3 acres/stocker, depending on weight), although rates as high as 1,400 pounds of animal/acre (2.5 stockers/acre) have been noted in some research trials during later spring graze out.

Most Great Plains wheat pastures are not permanently fenced. Upon arrival, while in confinement, animals are trained to electric wire. After a short acclimation period cattle are confined easily with electric wire fencing of pastures. Cattle have been known to “blow out” of wheat pastures fenced with electric wire during severe winter storms. Most wheat pasture country is flat so cattle can stray for miles. Because of this, permanent animal identification is extremely important. Hot iron brands, ear marks, and ear tags identifying ownership of both the owner of the livestock and the ranch or farmer caring for the cattle is essential. A Nevada hot iron may not be recognized in
Texas. The local wheat pasture farmer’s identification would be recognized on stray animals.

References


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