

SUDANGRASS

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for
summer
pasture

SUDANGRASS produces excellent pasture in July and August when regular pastures are often short. Farmer experiences and 11 years of trials at the North Dakota Agricultural Experiment Station in Fargo have shown that high livestock production and gains can be maintained on sudangrass pasture during July and August.

Many North Dakota stockmen are short of good pasture during July and August when weather is normally hot and dry. This shortage occurs nearly every year unless stockmen have large acreages of native grasses or alfalfa and are not afraid to risk pasturing alfalfa because of bloat hazard.

Sudangrass is an annual warm season grass and provides excellent pasture in summer, if moisture is at all favorable. Dairy cattle will maintain or increase milk production, and beef cattle and sheep will maintain or increase daily gains, on good sudangrass pasture during July, August and early September.

Sudangrass is adapted to all of North Dakota but yields highest in the southeastern and southern counties. In drier areas of the state sudangrass production will be most reliable when planted on summerfallow or in rows.

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PLANT CERTIFIED PIPER SUDANGRASS FOR PASTURE

Piper variety sudangrass, preferably certified seed, should be planted for use as pasture in North Dakota. Piper was developed and released by the Wisconsin Agricultural Experiment Station. It is very low in prussic acid (hydrocyanic acid or HCN).

Piper gives very high yields of protein per acre and has a better recovery after grazing than some of the available southern sudangrass varieties. This variety has been tested under pasture conditions with sheep, and by chemical tests at NDSU and in other states during the past 11 years. No losses due to prussic acid poisoning have occurred. There has been no indication that the prussic acid content has approached the toxic level when sudangrass was grazed when plants are 15 to 18 inches tall. Even very short plants have not caused poisoning.

While no guarantee can be made that losses will not occur in pasturing Piper sudangrass, the possible gains from the use of this high-producing pasture crop appear to be much greater than the remote risk involved.

Always buy Piper seed from a reliable dealer to be sure the seed is free from mixture with other forage sorghums higher than Piper in prussic acid content. Occasional cases of livestock poisoning on common sudangrass in the past probably resulted from sorghum admixtures in the sudangrass seed planted.

Sudangrass hybrids (crosses between sudangrass and sorghum) are appearing on the market. Limited tests at NDSU indicate their yield is not much different than Piper. The prussic acid content of hybrids has been higher than that of Piper.

PASTURE 1 TO 2 COWS OR 6 TO 14 SHEEP PER ACRE

Piper sudangrass has averaged approximately 3.65 tons of forage at a pasture stage of growth during the past 11 years in experiments at Fargo. This forage production should carry about 2 cows per acre during the period July 15 to Sept. 15, with average rainfall. Sudangrass pasture at Fargo, 1954-1959, has produced 1,050 "sheep days" of grazing per acre or enough pasture to carry 14 sheep per acre from July 1 to Sept. 15. In western and northern areas of the state carrying capacity is about 1 cow or 6 sheep per acre.

Protein production per acre from sudangrass is excellent. Analyses of forage at a pasture stage at Fargo, 1953-1959, involving five different varieties, gave an average production of 792 pounds of crude protein per acre. This is equal to the protein in 1,800 pounds of soybean meal. This protein is worth about \$65 to \$75 an acre, depending on soybean meal prices.

Table 1. Forage production, 1951-61, and protein production, 1953-59, per acre of three sudangrass varieties cut three times at a pasture stage or once at a hay stage, Fargo.

		Tons of oven dry forage			Lbs. of protein 1953-59
		1951-59	1951-60	1951-61	
Pasture	- Piper	3.10	3.23	3.30	792
	Common	3.05	-----	-----	799
	Sweet	2.40	2.60	-----	643
Hay, drilled	- Piper	3.79	3.89	3.93	405
	Common	3.27	-----	-----	343
	Sweet	3.63	3.65	-----	351
Hay, 3' rows, cultivated	- Piper	3.62	3.60	3.64	415
	Sweet	3.62	3.62	-----	453

To get silage yields multiply hay yields by 3

At the Edgeley Experiment Station the 7-year average (1955-61) oven dry forage yield of drilled Piper sudangrass has been 2.35 tons per acre.

The above yields are based on years having fairly adequate, but not unusually high, rainfall. Seeding has been on fallow or on areas cropped the previous year and fertilized with nitrogen. Sudangrass is drouth resistant and will produce even during short dry periods. It can go dormant during prolonged dry periods and come back very vigorously with abundant forage production when soil moisture becomes available again, if the weather is still warm.

USE SURPLUS FOR SILAGE

Any surplus sudangrass in pastures is best used for silage, but can be used as hay. Sudangrass also can be planted for silage or hay, although its greatest value is a pasture crop.

Silage yields may nearly equal corn yields, although the yield of nutrients per acre is less than obtained from well-eared corn silage. As it stands in the field on Sept. 15, sudangrass contains approximately 65 to 70 per cent moisture, ideal for ensiling as "grass" silage.

Piper averaged 4.36 tons of hay annually from drilled plots at Fargo for the period 1951-61. Sudangrass hay, however, is coarser and less tasty than other good hay.

PLANT LATE MAY OR EARLY JUNE

Sudangrass is a warm season crop. It should be seeded during late May or early June, approximately two weeks later than corn. Seeding can be delayed until the third or fourth week of June and still give very good yields for pasture or silage.

The seedbed should be worked up and weeds controlled until seeding time. This can be effective in wild oat control. Broad-leaf weeds also can be controlled with 1/4 to 1/2 pound 2,4-D amine per acre when the sudangrass is 4 to 12 inches tall. A firm seedbed similar to that used for flax is desirable. As sudangrass grows during the warmer period of the year, nitrogen fertilizer usually is not necessary unless the crop is grown under irrigation and large yields of forage are being produced. If nitrogen is deficient, 35 to 60 pounds of actual nitrogen per acre are enough. Treat sudangrass seed with a fungicide, especially if it is to be seeded in cool soil.

Seed 1 to 1-1/2 inches deep in normal soil and slightly deeper on light soils. Plant 25 to 30 pounds of seed an acre with a press drill for pasture or hay. When sudangrass is to be used for silage, it can be seeded in cultivated rows at the rate of 5 to 8 pounds an acre. Rows for pasture or hay may also be desirable in drier areas. When planted in rows the height and maturity of sudangrass may be more advanced at harvest time. Forage production probably will be slightly less than in drilled seedings but protein production is higher because the plants are leafier.

GRAZE AT 18 INCHES FOR SAFETY

Proper grazing management of sudangrass is important for top production and to avoid the hazard of prussic acid poisoning.

In grazing tests at NDSU, sheep have never shown injury even from close grazing of Piper or common sudangrass. As a special safety factor, however, sheep should not be grazed until the plants are 12 to 15 inches tall. Grazing with cattle should not be started until plants are 18 inches tall.

With cattle, grazing can be delayed until the plants are 3 feet or more tall, as sudangrass is relished over a long period. The prussic acid in sudangrass is highest when plants are very small and decreases rapidly as the plants mature or get taller.

GRAZE CATTLE AND SHEEP DIFFERENTLY

When cattle are being grazed on Piper sudangrass, stock the pasture so the height of the grass is kept about 15 to 18 inches, or graze on a pasture rotation basis.

Dry weather may reduce the vigor and rate of sudangrass growth so that the pasture is grazed too short and becomes unproductive. If this occurs, move the animals to another pasture to allow the sudangrass time to recover to a height adequate for best plant growth. The inconvenience caused by a short pasture due to summer drouth can often be avoided by dividing the pasture into at least two areas and grazing these in rotation.

When sheep are grazed on Piper sudangrass pasture, dividing the pasture into three or more areas and grazing in rotation are desirable. Sheep tend to graze part of a pasture down very short and to keep it that way while other areas grow tall and coarse. Under rotation grazing sheep are forced to graze more evenly. A small area can be grazed quickly to a height of 5 or 6 inches and the sheep then moved to another area. The first area is allowed to recover for later grazing. This recovery normally takes 2 or 3 weeks.

SUDAN FOR SOILING OR "GREEN CUT" FORAGE

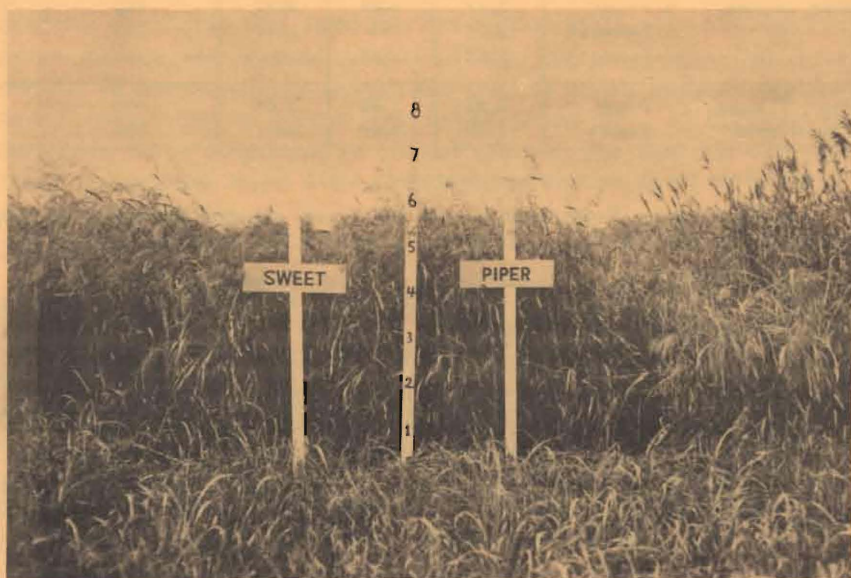
Tests at Fargo with sheep and dairy cattle show that sudangrass cut green and fed to animals in dry lot increased the carrying capacity 50 per cent per acre. Waste from trampling, etc., is eliminated.

Sudangrass recovers rapidly after harvest and is well adapted to soiling use. The first cut should begin shortly after the crop is ready for pasturing and should be completed early. This early first cut prevents the loss of tillers from shading and results in quicker recovery. Sudangrass "sod" is weak, so chopping with heavy equipment must be put off when the soil is very wet.

FROST NOT SERIOUS AS POISONING HAZARD

Although the first frost usually kills all top growth of sudangrass, the dried frosted forage is not a poisoning hazard to animals. If a warm, moist period follows a killing frost, small new shoots or regrowth may occur from the base of the plant. Any poisoning hazard associated with frost lies in this regrowth.

As the frozen forage dries, the prussic acid changes to gas and escapes. Frozen forage after drying contains less prussic acid than before freezing. Grazing may be delayed until the frosted forage dries, as an extra safety factor. Sheep have been grazed on frosted sudangrass forage at Fargo for several years with no illness or death of animals.



SEED PRODUCTION IN NORTH DAKOTA RISKY

Growing Piper sudangrass for seed in North Dakota involves considerable risk. Early frost and other factors often result in seed of low germination.