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SUDANGRASS for SUMMER PASTURE

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SUDANGRASS is an annual warm-season grass. It will provide excellent grazing for livestock from July 15 until mid-September. Forage production on cool-season spring pastures is generally very low during this portion of the grazing season. Sudangrass production is highest during the warm summer months (Fig. 1). The use of sudangrass during the low forage production period of cool-season spring pastures usually will provide an abundance of quality forage for grazing livestock, especially in central and eastern North Dakota.

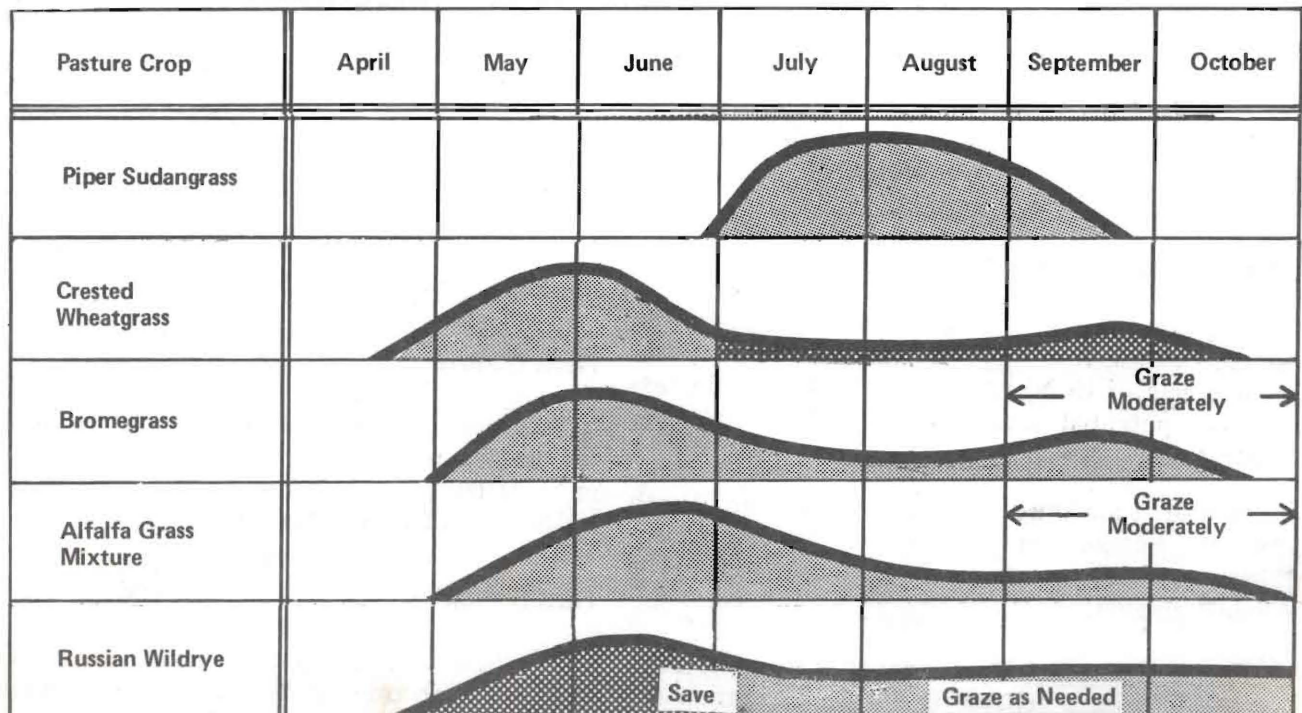


FIG. 1 - RELATIVE GROWTH PERIOD OF SUDANGRASS COMPARED TO SEEDING COOL-SEASON PASTURES.

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The grazing season can be extended into the fall period by grazing Russian wildrye, crop aftermath on harvested fields and by moderately grazing re-growth on spring pastures.

Sudangrass is adapted to all of North Dakota. However, forage yields (Tables 1 and 2) will be highest in central, eastern and southern counties where summer temperatures and moisture are usually higher. Solid seedings have yielded more forage per acre than cultivated three-foot rows where tested. However, at Fargo the two-foot row spacing has produced higher forage yields than the wider row spacing. In drier areas of the state, forage production would be more reliable if plantings were made on summerfallow, or in cultivated rows on spring plowed land if weeds can be controlled in the row.

TABLE 1 - HAY YIELD OF PIPER SUDANGRASS AT NORTH DAKOTA EXPERIMENT STATIONS.

Location	Tons Per Acre - 12% Moisture			
	Years	Drilled	Years	Rows
Carrington	-	-	1	2.22
Dickinson	-	-	7	1.30
Edgeley	4	2.72	5	2.68
Langdon	2	1.66	2	1.30
Mandan ^{1/}	4	1.23	-	-
Minot	3	1.60	7	1.28
Williston	3	0.75	5	.57

^{1/} Northern Great Plains Research Center, Mandan, North Dakota.

TABLE 2 - HAY YIELD OF PIPER SUDANGRASS AND SUDANGRASS HYBRIDS AT THE NORTH DAKOTA EXPERIMENT STATION, FARGO, N. D.

Crop	Tons Per Acre - 12% Moisture			
	Years	Drilled	Years	3' Rows
Piper	8	4.46	22	4.17
Hybrids	-	-	12	4.59

Variety Recommendations

The variety Piper is recommended for pasture in North Dakota. It is very low in prussic acid (hydrocyanic acid or HCN) which is present in sudangrass and is a potential hazard to ruminants in high concentrations.

Hybrid sudangrass also is adapted to North Dakota. Forage yields are similar to the variety Piper for pasture and prussic acid content may be slightly higher.

Purchase certified Piper sudangrass seed, or, if uncertified, from a reliable dealer to be certain the seed is free from admixtures of forage sorghums which are often higher in prussic acid content. Pure

seed is important because sudangrass and sorghum cross-pollinate readily.

CULTURAL PRACTICES

Seedbed Preparation

A firm, well prepared seedbed is essential. Since sudangrass is a warm-season grass, prepare the seedbed from mid-May to early June. Control weeds until planting time. If soils are sandy, the plow, packer, and pony press drill is a good method of planting to reduce the wind erosion hazard.

Date of Planting

Plant sudangrass in late May or early June, approximately two weeks later than corn. Planting can be delayed until the third or fourth week of June and still produce satisfactory yields, provided adequate moisture is available at seeding time.

Rate of Planting

The rate of seeding is 25 to 30 pounds of seed per acre when planted in solid stands. The lower rate is for drier areas of the state. A grain drill set to sow 2 pecks of wheat per acre will plant about the correct amount of seed per acre. In low rainfall areas, planting in cultivated rows will usually increase forage yields if weeds can be controlled. Rate of seeding in rows spaced 18 to 24 inches apart is 5 to 8 pounds of seed per acre. Four to six plants per foot of row is a satisfactory stand. Treat seed with a fungicide.

Depth of Planting

Plant sudangrass 1 to 1½ inches deep on medium and heavy soils. On sandy soils, plant 1½ to 2 inches deep to help maintain higher moisture levels near the seed for germination and emergence.

Weed Control

Broadleaved weeds can be controlled by applying 1/4 to 1/2 pound of 2,4-D amine in 5 gallons or more water per acre. Apply the 2,4-D when the sudangrass is 4 to 8 inches tall.

Fertilization

Fertilizer requirements of sudangrass are considered similar to other annual grass crops such as oats. Nitrogen has been shown to increase forage yields. Very little response has been observed from the ap-

plication of phosphorus fertilizer, except on soils testing low to very low. Suggested nitrogen application rates are 40 to 60 pounds per acre on non-fallow and 0 to 35 pounds on summerfallow. Fifteen to 25 pounds of P₂O₅ are suggested on soils testing low to very low in phosphorus. Limited fertility work indicates that forage yields are higher if the major portion of the fertilizer is broadcast and plowed down, with a starter fertilizer applied at seeding time.

Grazing Management

Delay grazing of sudangrass until the plants are 12 to 15 inches tall for sheep and 18 to 24 inches tall for beef and dairy. This will permit the plants to become well established and reduces the potential hazard of prussic acid poisoning, although this has not been a problem in North Dakota.

Grazing sudangrass in two or more small rotation pastures will help maintain a young, nutritious and highly palatable forage throughout the grazing season. When grazing in rotation the grass may be grazed to a height of 2 to 4 inches before livestock are moved to an ungrazed area (Fig. 2). A period of about three weeks of rest from grazing will be required to permit forage to reach desired grazing height provided soil moisture is adequate.

FIG. 2 - ROTATION GRAZING SYSTEM

PASTURE # 1	PASTURE # 2	PASTURE # 3
Graze 7 to 10 days then move livestock to Pasture # 2	Graze 7 to 10 days then move livestock to Pasture # 3	Graze 7 to 10 days then move livestock to Pasture # 1

Rotation grazing is best when sheep are being grazed. Sheep tend to graze part of a pasture down very short and to keep it that way while other areas grow tall and coarse. Rotation grazing forces sheep to graze the forage more evenly. Smaller areas can be grazed down quickly, then sheep can be moved to a new pasture.

Rotation grazing may also be practiced with cattle. If rotation grazing is not practiced, stock the pasture to maintain a grass height of 15 to 18 inches. If sudangrass is permitted to grow 3 to 4 feet tall before grazing begins the grass may become coarse and unpalatable and forage will be wasted as a result of trampling losses.

Stocking Rate

The production of sudangrass can vary from year to year depending on growing season conditions. Consequently, the number of animal units grazed per acre will also vary. Plant additional acres to compensate for yield variability and if not required for grazing, harvest excess for hay or silage. The estimated stocking rate in animal unit months per acre is listed in Table 3,

TABLE 3 - INITIAL STOCKING RATE OF SUDANGRASS PASTURE IN ANIMAL UNIT MONTHS (A.U.M.) PER ACRE^{1/}

Area	A.U.M.'s Per Acre
Red River Valley	3.5 - 4.25
East Central	2.5 - 3.25
West Central	1.5 - 2.25
West	1.0 - 1.5

^{1/} An animal unit is considered to be 1,000 pounds live animal weight or roughly equivalent to a cow and a calf or 5 ewes and their lambs.

Frosted Forage

The first frost usually kills all top growth of Piper sudangrass. Frosted forage after drying contains less prussic acid than before freezing. As the frosted forage dries, the prussic acid changes to a gas and escapes. Delay grazing until the frosted forage dries, as an extra safety factor, especially if hybrids or unknown varieties or selections are being grazed. If a warm moist period follows a killing frost, new shoot growth may occur from the base of the plant. Any poisoning hazard associated with frost is in this regrowth.

Nitrate Problems

Nitrate accumulation can occur in sudangrass under certain growing conditions, the same as corn and oats. Dangerous levels are more likely to occur under extreme drouth conditions, on heavily matured fields, on fields having a legume in the rotation recently, or on fields with an excessive application of nitrogen fertilizer.

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