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CC174 Revised with no date Sudangrass and Sudansorghums Summer Annuals for Pasture

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Sudangrass and Sudansorghums
Summer Annuals for Pasture

Nutritious Pasture in Hot Weather

- Always succulent and palatable.
- Best in hot weather.
- Withstands drought.
- Safe to graze when properly managed.
- Should be used to supplement perennial pastures.
Productive Pastures

Sudangrass and Sudansorghums: Summer Annuals for Pasture

By W. J. Moline
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Sudangrasses and sudansorghums are productive, warm-season, temporary pasture crops that can provide good forage in Nebraska. They are well adapted to all areas of the state and grow rapidly following planting in late May and early June. They supply excellent pasture available from mid-July through August and early September, or until growth has been stopped by fall frost.

Climatic Requirements

Sudangrasses and sudansorghums grow best during warm conditions. Warm soil and warm weather are essential for rapid growth and development. Seasonal temperatures play an important role at seeding time. The usual date of seeding is at corn planting time, but these summer annuals can be planted throughout the summer months when adequate moisture is available. They also do well under irrigation.

Once established, these summer annuals adapt to both hot and dry weather which makes them dependable emergency pasture crops. However, in dry years or in regions of low precipitation, production can be increased with irrigation.

Soil Testing and Fertilizer Requirements

Sudangrasses and sudansorghums do best on very fertile soil, but will grow successfully on almost every type of soil from heavy clays to light sandy soils. Since these summer annuals grow rapidly, an adequate amount of moisture and nutrients must be present at all times for maximum production.

Soil tests will determine whether the soil needs (a) lime or (b) phosphorus and how much should be applied. The usual recommendation for nitrogen fertilization in Nebraska is 40 to 80 pounds of N per acre (120 to 240 pounds 33-0-0 per acre). This rate may be higher where adequate moisture is available. Split applications of nitrogen will provide a better distribution of pasturage.
How to Use Summer Annuals for Pastures

Preparing a Seedbed

A good seedbed is a must for summer annuals. A firm, well-prepared seedbed is essential for good stands. As in all grass seedings, firm seed-soil contact is necessary for rapid germination. Stands can be established using minimum tillage methods but other methods, such as interseeding sudan and sudansorghums into grass sod, have not been effective in Nebraska.

Seeding Date

Sudangrass and sudansorghums are warm-season grasses. They are usually planted at corn planting time. Seedings should be made well ahead of the time when you intend to use this grass for pasture. Little usable forage is available until about 6 weeks after planting.

Sudangrass grows slowly during cool weather. Seeding too early in the spring, or in cold soil, often results in poor stands and slow growth. Seedings made in late May and early June usually give the best results in most of Nebraska.

Seeding Method

The best method for planting sudangrass for pasture is with a grain drill at a depth of 1 to 1½ inches into moist soil. For good stands plant quality seed of high germination that has been treated with a fungicide.

Sudansorghums are not recommended for use as a companion crop where establishing other grasses and legumes. The rapid growth of these grasses plus the trampling of grazing livestock probably will destroy the small seedlings. Also, sudangrass grows very rank and will usually smother out the under-story of plants. However, sudangrass residues make an excellent seedbed for early spring seeding of permanent warm-season prairie grasses the following year.

Seeding Rate

The recommended rate of seeding for pasture purposes in Nebraska is 15 to 25 pounds of seed per acre. Sudangrass tillers freely when given ample space and moisture. A single plant may produce as many as 100 stems under favorable conditions. Larger seeded hybrid varieties and crosses may require higher seeding rates to assure good stands.

Using your Sudangrass and Sudansorghums

Sudangrass is popular as a temporary or supplemental summer pasture crop. It fills an important need in most farming areas in Nebraska by providing feed during the seasons when cool-season grasses go dormant and the feed supply is short.
When to **SEED**

<table>
<thead>
<tr>
<th>Field A</th>
<th>Field B</th>
<th>Field C</th>
</tr>
</thead>
<tbody>
<tr>
<td>During 3rd or 4th week of May</td>
<td>10 days later than Field A</td>
<td>10 days later than Field B</td>
</tr>
</tbody>
</table>

How to **PASTURE**

<table>
<thead>
<tr>
<th>Field A</th>
<th>Field B</th>
<th>Field C</th>
</tr>
</thead>
</table>
| About July 1  
After it is knee high and for 7 to 10 days. Then move livestock to Field B. | Graze for 7 to 10 days. Then move livestock to Field C. | Graze for 7 to 10 days. Then move livestock back to Field A. |

Sudangrass grows when productive, cool-season grasses and bromegrass are short or lacking. Sudangrass not only has a place in a balanced program in conjunction with the cool-season perennials, but may also supplement warm-season prairie grasses as well. It is readily accepted by all livestock.

Pasturing should not begin until the crop is 18 to 24 inches high. Some dairymen divide their sudangrass pasture into two or three fields of such size that they can be grazed down quickly.

An 18 to 24 inch regrowth should be attained before regrazing. Such a system allows for high production of nutritious forage which is low in prussic acid potential.

The carrying capacity of sudangrass may vary from one to two mature dairy or beef animals per acre per month to as high as five or six. Under Nebraska conditions, most varieties will grow until frost and yield more than other types of emergency pasture crops. Sudansorghums are best suited for green-chop programs but can be used as pasture.

**Yield levels of sudangrasses, hybrid sudangrass and sudansorghums for a green-chop program.**

<table>
<thead>
<tr>
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<th>Yield levela (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>sudangrasses</td>
<td>78%</td>
</tr>
<tr>
<td>hybrid sudangrasses</td>
<td>88%</td>
</tr>
<tr>
<td>sudansorghum crosses</td>
<td>108%</td>
</tr>
</tbody>
</table>

* Based on avg. yield of 100% (5.9 tons dry matter per acre).
The Pasturing Program

With proper management, sudangrass and sudansorghums can be safely used as a productive pasture crop. When planted in three or more fields short rotational grazing can be practiced and the danger from young regrowth shoots will be minimized.

By staggering the dates of planting by a week to ten days, grazing can begin on each field when the crop is about in the right stage—18 to 24 inches high.

Such a rotation system allows a maximum production of nutritious forage. If necessary, these fields can be irrigated and fertilized after a grazing period. Also, dry-matter losses from trampling can be minimized through using a green-chop program.

Prussic Acid and Nitrate Poisoning

Prussic acid poisoning is often over-emphasized but you should be aware of the problem. The short, young, dark-green growth or regrowth of sudangrass is the portion of the plant that is potentially dangerous to cattle and sheep.

Plants that are small because of drought or other adverse conditions should not be grazed by livestock. This stunted crop can be made into silage and fed with other feeds to avoid some of the problems of both prussic acid and nitrate.

Regrowth following a killing frost is potentially dangerous. It is these new shoots which can be high in potential hazard. Although the prussic acid content is not substantially increased by freezing, favorable fall weather may aid in the development of new shoots. Research data show that shortly after frost the prussic acid release potential increases slightly in these summer annuals but they can be safely grazed a few weeks after freezing if there is no substantial regrowth.

The amount of prussic acid in sudangrass may be affected by soil fertility. Soils high in available nitrogen and low in phosphorus tend to increase the potential prussic acid content of sudangrass. Soils with a low level of available nitrogen and a high level of available phosphorus have the opposite effect.

Favorable soil fertility in the proper balance plus the available moisture enable the plants to grow rapidly, reach a height of 18 to 24 inches, and be pastured with comparative safety.

There are a number of factors which influence the prussic acid potential of sudangrass. There are varietal differences, and environmental differences. The fertility of the soil, the moisture stress of the plant, the stage of development, in addition to the early growth and regrowth following grazing or after frost are important factors. The grazing animal is a factor. Cattle that are very hungry or in poor health are more likely to be poisoned. All of these factors may contribute to the hazard.
Nitrate contents of sudangrass and the related grasses can be high where high rates of nitrogen fertilizer are used during periods of drought. While not usually a problem in pasture, nitrates can become important in a green-chop program. When in doubt, put the sudangrass into a silo, where most, if not all of the nitrates are given off as nitrous oxide (NO$_4$). Check with your county agent for further details about these problems.

**Recommended Varieties**

There are many good varieties of sudangrass and sudansorghum on the market. Commercial companies and universities have released highly productive varieties. There are three general types of summer annuals used for forage today. They are: (1) true sudangrass, (2) hybrid sudangrass, (3) hybrid sudansorghum crosses.

**True Sudangrasses**

The sudangrass varieties used most extensively in Nebraska are Piper and Wheeler. These varieties are fine-stemmed and are more suited to pasturing than either the hybrid sudangrass or the sudansorghums.

Piper sudangrass was released from the Wisconsin Agricultural Experiment Station in 1950 and has a low prussic acid content. Wheeler was selected by Carl Wheeler of Bridgeport, Kansas, out of seed received from the U. S. Department of Agriculture.

**Hybrid Sudangrasses**

The true hybrid sudangrasses at present are commercial varieties of the Trudan family. They are more productive than sudangrass in a 3-cut green-chop or hay system. Their yield potential is slightly higher than that of other sudangrasses.

**Hybrid Sudansorghum Crosses**

Most abundant of the three types of summer annuals are the crosses between sudangrass and sorghum. The results have been high-producing forage grasses. But a few of these have not made good pasture, green-chop, or silage, because of their apparent lack of energy.

When cut at immature stages, however, quality can be increased, but yields are reduced significantly. The sudansorghum crosses appear to be more suited to the green-chop program than for grazing. But these grasses can be grazed in an emergency pasture situation.
This circular is a publication of the Pasture Improvement Committee of the Nebraska College of Agriculture.
Other circulars in this series on Productive Pastures:
CC 164 Using Temporary Pastures
CC 165 Establishing Pastures in Nebraska
CC 166 Choice of Perennial Grasses for Forage Production and Erosion Control
CC 167 How to Use Pastures
CC 168 Green Chop Feeding
CC 169 Does it Pay to Improve Your Pastures?
CC 170 Irrigated Pastures
CC 171 Pasture Weed Control