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W. H. Stroube
*University of Kentucky*

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AGRONOMY NOTES | SOILS • CROPS

Prepared by Department of Agronomy, University of Kentucky Cooperative Extension Service

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# FORAGE SORGHUMS

Wide interest and publicity relative to summer annual grasses has developed with the release, availability and publicity of forage "sorghum-sudan hybrids."

There are many varieties of sorghum-sudan crosses and similar materials currently on the market making intelligent recommendations concerning specific varieties most difficult. Our experience and that of workers in some other states indicate that most of these varieties behave somewhat similarly. One of the best ways to choose a variety in this case, is to buy a variety that you or a neighbor have had favorable experience with and buy from a known reputable dealer.

USE: The primary use for these hybrids and sudans in Kentucky is for emergency or supplementary grazing crops. Experience has indicated that they make a rather coarse, and hard to cure hay. A hay conditioner seems to help if harvested as hay. These crops are inferior to corn, cut in dough or dent stage, for silage but are quite good for green-chop.

Data in the accompanying table, under similated grazing conditions in 1964 in Woodford County, show that early in the season the hybrids produced significantly more than Piper sudan but that their relative superiority was reduced during the later dry period. None of the hybrids were significantly superior to Piper, Suhi I, or Tenn. Syn. #1 for total production. It might also be noted that Piper contained less moisture and had a smaller stalk diameter than most of the material tested. These factors might be of particular importance if used for hay, but of little importance if utilized for green-chop or silage, and of questionable importance for pasture.

(To simplify information in this publication, trade names of some products are used. No endorsement is intended, nor is criticism implied of similar products not named.)

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Data from summer annual grass varieties seeded in Woodford County on June 4, 1964 and harvested as pasture[1/]

| Variety[2/] | Tons dry matter/A | | | | % dry matter | | | Stalk Diam.[3/] |
|---|---|---|---|---|---|---|---|---|
| | 7/15 | 8/12 | 10/6 | Total | 7/15 | 8/12 | 10/6 | |
| T E Haygrazer | 2.34 | 1.85 | 1.88 | 6.07 | 12.9 | 24.0 | 18.9 | 9.00 |
| Grazer A | 2.65 | 2.13 | 1.72 | 6.50 | 12.7 | 27.7 | 18.7 | 9.00 |
| Green Graze | 2.57 | 1.83 | 1.57 | 5.97 | 13.4 | 24.2 | 18.6 | 8.33 |
| Trudan I | 2.24 | 2.15 | 1.63 | 6.02 | 14.5 | 25.6 | 20.7 | 6.33 |
| Okla-Piper x S.P. | 1.36 | 2.42 | 1.70 | 5.48 | 15.9 | 29.1 | 22.2 | 5.00 |
| Greenleaf | 1.98 | 1.83 | 1.61 | 5.42 | 14.7 | 26.3 | 22.2 | 3.00 |
| Sweet 372 | 1.90 | 2.10 | 1.31 | 5.31 | 15.4 | 26.2 | 25.7 | 1.67 |
| Tenn. Syn. #1 | 1.95 | 2.24 | 1.63 | 5.83 | 14.7 | 25.5 | 20.2 | 5.67 |
| Piper | 1.80 | 2.33 | 1.62 | 5.75 | 16.2 | 32.7 | 26.3 | 1.67 |
| Stoneville Syn. | 1.75 | 1.56 | 1.29 | 4.60 | 15.0 | 25.0 | 19.4 | 5.00 |
| Suhi 1 | 2.15 | 2.07 | 1.77 | 5.99 | 15.3 | 26.1 | 19.9 | 7.00 |
| Greenlan | 2.21 | 2.10 | 1.75 | 6.06 | 12.7 | 26.4 | 18.3 | 9.00 |
| Hyb.-Sud. blend | 1.93 | 2.02 | 1.83 | 5.78 | 15.2 | 26.5 | 21.0 | 9.00 |
| Starr millet | 1.15 | 1.89 | 1.41 | 4.45 | 13.0 | 21.3 | 18.9 | 3.00 |
| Common millet | 1.49 | 1.86 | 0.99 | 4.34 | 13.7 | 27.4 | 20.3 | 3.67 |
| Gahi 2 millet | 1.34 | 1.92 | 1.31 | 4.57 | 14.0 | 22.9 | 17.7 | 3.00 |
| Gahi 1 millet | 1.30 | 1.84 | 1.60 | 4.74 | 13.9 | 23.1 | 17.9 | 4.33 |
| L.S.D. .05 | 0.52 | 0.59 | 0.33 | 0.91 | 2.00 | 4.42 | 2.19 | 1.43 |
| L.S.D. .01 | 0.70 | 0.80 | 0.45 | 1.24 | 2.70 | 5.97 | 2.96 | 1.93 |
| CV% | 19.80 | 17.60 | 12.60 | 12.90 | 8.40 | 10.20 | 6.40 | 15.60 |

1/ Drilled in plots, 7 rows 8 inches apart per plot. Mowed 6 inches above ground. Seeding rate - hybrids 35 pounds/A, sudans and millet 30 pounds/A. Fertilization: 1,000 pounds 10-10-10/A at seeding; 50 pounds N/A on 7/15 and 8/12.

2/ The varieties underlined are sorghum-sudan hybrids from commercial sources. Trudan I is a commercial hybrid sudan. Other varieties are of public origin.

3/ Relative stalk diameter rating; 1 = smallest to 9 = largest.

MANAGEMENT: To perform satisfactorily and best justify the use of these crops fertile land should be used. They should be planted on a well-prepared seedbed, similar to conventional corn-land preparation. Sorghums are warm-season crops and generally should not be planted until after the soil is warm. A "rule of thumb" might be: Wait until one to two weeks after normal corn planting time to plant. Mid-May seems about right for Kentucky.

Rate and method of seeding may vary with expected use and size of seed. In general for grazing, sudans should be drilled or broadcast at rates of 25 to 30 pounds per acre and most of the hybrids at 35 to 45 pounds per acre. Solid plantings, either broadcast or with a wheat drill, are probably more desirable for grazing purposes than 14- to 21-inch row plantings. Thicker plantings tend to produce a smaller, more uniform stalk size and will allow more uniform grazing and clipping than with wider-spaced rows.

Fertilizer requirements are about the same as for corn. Nitrogen applications are essential for satisfactory production and regrowth. Experience indicates that applications of 50 to 75 pounds actual N per acre at seeding time and 50 pounds after each grazing or cutting is satisfactory.

Due to potential height and size of stalk, fairly frequent rotational grazing is imperative in order to insure reasonable utilization of the plant for pasture. Observation and research data indicate that best grazing is secured when plants have reached a height of 24 to 36 inches. Plants may be grazed at greater heights but animals will tend to eat the leaves and reject the stalks. Rotational schedules may be devised by making two or three plantings at one week to 10-day intervals, or by providing other feed during periods off the grazing. The rotational seeding-grazing scheme is much more desirable because of the inability of animals to adjust quickly to different types of feed. Each area should be clipped and

nitrated after each grazing period to insure quick uniform regrowth. The hybrids should be grazed or clipped so as to leave a 6- to 10-inch stubble. Sudans may be clipped as low as 3 to 6 inches.

PRUSSIC ACID: Most members of the sorghum genus (of which sudan and Johnson-grass are species) have the potential of containing dangerous amounts of prussic acid under certain conditions. None of these crops should be grazed or green-chopped until at least 18 inches tall, nor following a frost, nor during severe drouth conditions. There are no reports of animal deaths from use of the hybrids in Kentucky and the danger is probably negligible if the above precautions are observed, however the potential is present.

SUMMARY: The primary use of forage sorghums in Kentucky will be for emergency or supplementary grazing. Experience indicates that the sorghum-sudan hybrids will probably yield more when harvested with machinery rather than grazing.

For satisfactory performance, high levels of fertilization are necessary. A good level is to fertilize as for 100 bushels of corn per acre.

Limit plantings to areas that can be utilized in about 7 to 10 days. Make two or three plantings at one week to 10-day intervals. Clip the stubble of the hybrids at 6- to 10-inch heights, and nitrate after each grazing. Clip sudan to 3 to 6 inches after each grazing and nitrate.

Do not graze drouth stunted or frosted growth. Allow regrowth to reach at least 18-inch heights before grazing or chopping, preferably 24- to 36-inch heights.

Sorghum-sudan hybrids may well fit into summer forage programs when herd demands can utilize large quantities of feed over a short period of time but under most conditions, these crops will not substitute for perennial cool-season plants under proper hay and pasture management practices. If you can utilize sudans profitably, the hybrids have a place.

The Experiment Station does not have the means to adequately test the large number of new crop varieties and hybrids being developed by private concerns. Even if some provision were to be made to provide this service, such varieties are not usually available for testing prior to their being ready for sale in large quantities. Furthermore, experience has shown that frequently by the time such material could be properly evaluated other newer varieties appear.

W. H. Stroube