

AGRICULTURAL EXPERIMENT STATION

KANSAS STATE AGRICULTURAL COLLEGE
MANHATTAN, KANSAS

DEPARTMENTS OF AGRONOMY AND DAIRY HUSBANDRY



DAIRY COWS ON SUDAN GRASS PASTURE

Sudan grass grows best during the season when other pasture crops are likely to be short. This picture was taken in September

SUDAN GRASS AS A SUPPLEMENTARY PASTURE CROP FOR DAIRY CATTLE

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Sudan grass is the best annual pasture crop for Kansas now known. It can be grown in any part of the state but is especially valuable in central and western Kansas. It makes its greatest growth and produces the most feed during July, August, and September when other tame grasses and native grass pastures are the least productive. It can therefore be used to the best advantage to

supplement these pastures. Many dairymen find that milk production declines very noticeably during July, when they depend upon native pastures alone. If the cows can be turned upon Sudan grass during the summer months, milk production will not only be maintained but the native pastures will be rested and improved, so that much better feed will be available during the late fall months than if they had been used continuously. Many farmers in Kansas have used Sudan grass successfully for pasture for dairy cows, and its use for this purpose is rapidly increasing. There is good reason to believe that it should be used more extensively.

A PASTURE TEST AT DODGE CITY

One of the first tests with Sudan grass for pasture was conducted at the Dodge City Branch Experiment Station in 1914. On May 20 of that year three acres of Sudan grass were planted at the rate of 23 pounds of seed per acre, using an ordinary grain drill for seeding. A good stand was secured and stock was turned into the pasture on June 24. More stock was used than the pasture would carry continuously so that at times it was necessary to run the cows on good native buffalo sod. During the season the three acres of Sudan grass produced the equivalent of 375 days' pasture for one mature animal. The records show that the milk flow increased an average of 3.2 pounds daily per head each time the cows were turned upon the Sudan grass pasture.

EXPERIMENTS IN EASTERN KANSAS

In order to obtain information under eastern Kansas conditions an experiment was conducted by the Departments of Agronomy and Dairy Husbandry of the Kansas State Agricultural College at Manhattan during the summer of 1919. On May 21, 1919, a 5.4-acre upland field was seeded to Sudan grass at the rate of 17 pounds per acre. On account of cold weather and heavy rains it was necessary to reseed the field on June 6. The growth was very satisfactory and on July 10, six Holstein cows were turned into the field. At this time the Sudan grass was three to four feet high. The cows should have been turned on about two weeks earlier, difficulty in getting help accounting for the delay.

The cows had previously been fed on alfalfa hay, silage, and grain. They showed no hesitancy in eating the Sudan grass from the start. They had free access to salt and water. A shelter was made for them where they were fed and milked.

In addition to the pasture the cows were fed a grain mixture of 400 pounds of corn, 200 pounds of bran, and 100 pounds of oil meal. This was fed in the proportion of

one pound of grain daily to each four pounds of milk produced. An exact record was kept of the grain fed and the milk produced. The cows were weighed before being turned on the pasture and again each days thereafter. Composite samples of the milk were taken every days and tested for butterfat by the Babcock method.

On account of its rank growth much of the tall grass was not eaten, and it was thought advisable to mow half of the field. Two weeks later the other half was mowed. Altogether 7.33 tons of field-cured hay were harvested. After the first of August, the cows had no difficulty in keeping the grass eaten down. (See illustration on front page.) The rainfall for July, August, and September was very light, but in spite of this fact the grass was able to support the cows until frost. The cows were taken off the pasture on October 11.

Considering the hay that was taken off, it may be concluded that the 6.4 acres of pasture were more than enough to support six cows during the dry summer of 1919.

The following table gives in detail the weights of the cows at the beginning and end of the experiment, the milk and butterfat produced, the value of the fat and skimmed milk, the value of the grain fed, and the value of the pasture above the cost of feed:

TABLE SHOWING RESULTS OF PASTURING SUDAN GRASS WITH DAIRY CATTLE

Cow No.	Wt. at start	Wt. at close	Gain or loss	Milk produced	Butterfat produced	Value of butterfat and skimmed milk	Grain fed	Value of grain	Value of pasture above cost of feed
	Pounds	Pounds	Pounds	Pounds	Pounds		Pounds		
19	1348	1302	-41	2658.5	82.08	\$60.54	684.00	\$20.52	\$40.08
16	1325	1267	-54	2473.9	92.19	65.82	656.50	19.89	46.14
102	1175	1200	25	1104.3	37.92	27.44	366.25	10.98	16.46
114	1248	1185	-63	334.5	93.87	70.49	870.75	26.12	44.37
108	1375	1397	22	2104.8	64.01	47.35	595.00	17.85	29.51
112	1391	1380	-11	587.2	19.11	14.46	263.25	7.89	6.58
Total	7857	7731	-126	12263.2	389.18	\$286.14	3435.75	\$103.05	\$183.09

These data show that the six cows lost 126 pounds during the three months. This is an average of 21 pounds per head for the lot. This loss is not as great as generally occurs when cows are on pasture during dry summers.

The average production of butterfat and milk was low, due to cows No. 102 and No. 112 which did not hold up their production as did the others. This fact is not attributed so much to the feed as to their lack of persistency.

In order to estimate the value of the pasture under average farm conditions, the amount of butterfat produced has been estimated at 60 cents per pound and to this has been added the value of the skimmed milk at 50 cents

per hundred, assuming that each 100 pounds of milk would make 85 pounds of skimmed milk. The six cows, on this basis, produced \$183.09 worth of butterfat and skimmed milk above the cost of grain. Crediting the pasture with 7.33 tons of Sudan hay at \$10 per ton, gives a total credit of \$256.39 or \$47.47 per acre of the Sudan grass pasture. Calculated on the basis of whole milk at 30 cents per gallon, each acre of pasture returned \$73.55 above the cost of the grain.

SEEDING SUDAN GRASS FOR PASTURES

Sudan grass should be seeded on ground that has been plowed and worked into good condition. It is a good practice, when possible, to plow in the fall. When this cannot be done the ground should be plowed as early in the spring as weather and labor will permit. It may then be worked into good condition, but the seed should not be sown until the ground is warm. The middle of May is sufficiently early to seed in southern Kansas. In northern Kansas it is often advisable to wait until the first of June before seeding. Nothing is gained by earlier seeding. The grass will not grow until the weather is warm. If it is sown too early and the weather turns damp and cold the seed often rots and a poor stand is secured.

In the eastern part of the state, Sudan grass for pasture should be seeded at the rate of 20 to 25 pounds to the awe. In western Kansas, 15 to 20 pounds is better. If insufficient seed is used weeds may give trouble.

The seed can be planted to the best advantage with a grain drill. A wheat drill set to sow two pecks of wheat to the acre will ordinarily sow about 30 pounds of Sudan grass seed to the acre.

The crop should be ready to pasture in about one month after seeding if the weather is favorable.

DANGER OF POISONING

It should be remembered that Sudan grass belongs to the sorghum family. On certain occasions hydrocyanic acid, one of the most dangerous poisons, has been found in almost all the sorghums. Sudan grass is no exception. This poison is most likely to be present in an immature crop after a period of drouth or after the growth of the plant has been arrested in some manner. It is not advisable to turn cattle upon Sudan grass when the crop has been stunted by dry weather. When the crop is growing normally there is very little danger in pasturing. According to the best information available cattle turned upon Sudan grass in this condition have never been known to be poisoned even though they were left on the pasture during the very driest portion of the summer. Sudan grass should not be pastured after frost.