

IOWA AGRICULTURAL EXPERIMENT STATION
AGRONOMY SECTION
Farm Crops

SUDAN GRASS IN IOWA

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Sudan grass is one of the very best non-leguminous emergency hay crops available for use in Iowa. It has been under observation at the Iowa Agricultural Experiment station during the past eight years. Over 250 experimental seedings have been made with it in the past five years. It surpasses millet or oat hay from the standpoint of yield and is about the same in feeding value as these crops, as well as timothy. It is not a legume and is surpassed in feeding value, pound for pound, by clover, alfalfa or soy beans. Since it is not a legume it does not take its nitrogen from the air. It is therefore not recommended as a regular crop in the rotation, but as an emergency or catch crop which can be used to advantage for hay, pasture or soiling. Being an annual, it does not compete with clover, alfalfa, or timothy, which live for more than one year.

ADVANTAGES OF SUDAN GRASS

As an emergency hay or pasture crop it has five decided advantages which need to be emphasized:

1. It gives a large yield. The average yield at the Iowa station for the past four years has been 3.47 tons of dry hay per acre, from two cuttings on land less fertile than that of the average Iowa farm. It has yielded as high as 5.9 tons per acre, while the lowest yield ever secured on any plot, regardless of method or rate of seeding, was 2.20 tons per acre.

2. The crop can be grown easily and cheaply. The best yields are secured by broadcasting and harrowing, in much the same manner that oats are sown.

3. The seed cost is low. Sudan grass seeds heavily and as a result the seed is not expensive. The plant stools readily so that a relatively small amount of seed is required per acre.

4. It can be seeded late, any time from May 10 to July 1, altho seeding from about May 25 to June 15 may be expected to give the best results in an average season.

5. It is dependable, never having failed to make a satisfactory crop in the eight years that it has been under observation. It withstands drought remarkably well after it becomes established.

Sudan grass is a very rank grower and therefore draws heavily upon the soil moisture and available plant food. With the amount produced per acre taken into consideration it probably is no harder on the land than other common grain or grass crops. However, crops grown on land in sudan grass the preceding year usually do not yield as well as when following some other crop. It is not believed that sudan grass injures the soil permanently in any way, but that the decreased yielding power of the soil is due to the poor physical condition in which it is left.

Sudan grass is very leafy and retains its leaves well when cured for hay. It is closely related to the sorghums and when both crops are seeded broadcast or drilled like small grain they give very nearly the same yield. The sorghum usually outyields the sudan grass when planted in cultivated rows. The feeding value of the hay pound for pound is quite similar for both crops. Sudan grass has some advantage over the sorghums for hay in that it is

not so coarse and can be cured and stored in the barns or stacks. Sorghum cannot be stored in this way but must be fed direct from the field. Sudan also surpasses the sorghums as a pasture for cattle, sheep, horses, or hogs because it stools so readily and therefore forms more turf. Neither sudan grass nor sorghum can compete with corn for silage in Iowa.

GROWING THE CROP

Conditions for the best growth of sudan grass are quite similar to those for corn. However, it enjoys hotter weather than corn and is much more drouth resistant. Like corn it thrives best on rich, well drained loams, yet it can be grown on any soil that will grow the ordinary crop.

THE SEED BED is best prepared by fall plowing and harrowing sufficiently in the spring to make it firm and comparatively free from weeds. Sudan starts its growth rather slowly but it is an excellent smothering crop for weeds after it gets established. It will also choke out almost any other crop that is grown with it. Sudan grass can well follow, without plowing, any cultivated crop which does not leave loose material on the surface to interfere with haying. It has even been known to produce a fair crop following early oats with the ground prepared by a couple of discings.

SEEDING should be delayed until the ground is thoroly warm. For this reason seeding from May 25 to June 15 may be expected to give the largest yields of hay or forage. The principal objections to seeding later than June 15 are the possibility of insufficient moisture to germinate the seed, and the lack of time for the crop to grow as it would with an earlier seeding.

It is believed that northern grown seed is more likely to be free from Johnson grass than southern grown. Johnson grass is a weed closely related to sudan grass, but having underground root stalks like quack grass. It is a pest in the south. Its appearance has not been reported north of central Iowa.

THE METHOD OF SEEDING depends largely upon the price of seed and the wishes of the grower. A five year test at the Iowa station shows that very nearly the same yields are secured, no matter whether the seed is drilled in 8, 16, or 32 inch rows or broadcast. Less seed is required for the 16 or 32 inch rows, particularly for the latter, but the hay is somewhat coarser when it is grown in this way and the crop must be cultivated. There can be little question but that the most practical method of growing the crop is by broadcasting and harrowing.

When it is to be grown in rows sudan grass can be seeded by stopping part of the holes of the drill as desired. The grass may also be seeded with the corn planter if special plates are used. The depth of seeding is governed slightly by the looseness of the soil and depth of moisture. As sudan grass seed is comparatively small it is rarely advisable to seed deeper than 1½ inches.

THE RATE OF SEEDING is governed largely by the method of seeding and the price of seed. An average of four years' results at the Iowa station shows that 10, 15, 20 and 25 pound rates of seeding give practically the same yields when the crop is either broadcasted or drilled like small grain. This is because sudan grass stools so rapidly that it makes full use of the ground, whether seeded heavily or lightly. The heavier rates of seeding produce somewhat finer hay that is a little more uniform in maturity because the stools do not head out as soon as the main stems. This is not a great advantage, however. Therefore drilling or broadcasting between 10 and 15 pounds of good seed per acre is recommended. Good seed should germinate between 75 and 100 percent.

Seeding in rows as little as five pounds of seed per acre can be used when the rows are 16 inches apart, and two and a half pounds with the rows 32 inches apart. Here, again, our results show that it makes relatively little difference in yield whether seedings in the wider rows are made at the rate of 2½, 5 or 10 pounds per acre.

HARVESTING—Somewhat higher yields of better quality hay are secured when the crop is cut twice rather than once, but when the increased cost in labor is considered it is probable that it would be found more profitable to make only one cutting. When two cuttings are made, both crops are quite immature, containing a large amount of water. This makes it rather difficult to cure the hay without going to considerable trouble. Hay cut twice has averaged 3.47 tons of air dry hay per acre over a four-year period, while that cut once has averaged 2.51 tons per acre. Two cuttings can be had in an average year if the planting is made by June 1.

WHEN TWO CUTTINGS ARE MADE the first cutting may be made from the time the first heads begin to appear until the crop is in flower. As an average of four years sudan grass yielded 3.41 tons per acre (total seasonal yield) when the first cutting was made when the heads began to appear and 3.54 tons per acre when the first cutting was made when most of the heads were in flower. For both series the second cuttings were made shortly before frost. Apparently, it makes little difference just when the first crop is cut.

WHEN BUT ONE CUTTING IS MADE the crop is not cut until the seed is nearly mature. Cutting when the seed is in the hard dough stage gives practically the same yield as cutting when the seed is ripe and the hay is of better quality. Cutting early allows for an aftermath which may be pastured.

METHODS OF HARVESTING may be varied to suit conditions. The mower, grain binder or corn binder are each frequently suggested. The corn binder, of course, can be used only when the grass is grown in wide rows. It has been our experience that if the first cutting is made with the binder it is very apt to mold in the shock, especially if there is a rain before it is cured. The use of the mower with the hay cured in the swath and in very small windrows, as with the side delivery rake, will no doubt be found to be the more satisfactory in an average season. If but one cutting is made, and that after the seeds of the main stalks have passed the hard dough stage, the binder will no doubt prove to be very satisfactory in most cases.

SUDAN GRASS FOR PASTURE

Sudan grass furnishes good pasture for horses, cattle, sheep, or hogs. It is best not to pasture a young seeding until it is about a foot high, which will be about the first of July. By this time it will have become quite firmly rooted and under average conditions will not be injured much from tramping and pulling by animals. A hay crop can be cut about the last of July and an abundance of succulent pasture secured thruout August when blue grass pastures are burned up, or it can be pastured the early part of the summer and a hay crop secured afterward. The crop may also be cut and fed green with very good results.

We have heard of a few cases of sudan grass poisoning in other states. These cases are so rare, however, that we would not hesitate to use it for pasture. Sudan grass, as is characteristic of the sorghum group of plants, of which it is a member, sometimes develops prussic acid under very unfavorable growing conditions, such as extreme drouth or after a frost.

SUDAN GRASS FOR SEED

The crop is an ideal seed producer because it yields well, does not shatter badly and does not lodge. Since it produces seed abundantly it can not continue indefinitely to be a highly profitable seed crop. The average yield of seed at the Iowa Agricultural Experiment station during the past five years has been 558 pounds per acre and it has yielded as much as 1,210 pounds per acre. Farmers in different parts of the state have reported to us yields as high as 2000 pounds per acre.

Yields of seed are not greatly affected by the method and rate of seeding, as shown by averages of four and five year tests at the Iowa Agricultural

Experiment station. In general, the same recommendations hold true as for hay. The average yield of plats drilled like small grain has been 614 pounds, broadcasted 568 pounds, drilled in 16 or 18 inch rows 541 pounds, and drilled in 32 or 36 inch rows 575 pounds. A five to ten pound rate of seeding is best in 16 or 32 inch rows. When drilled or broadcasted 10, 15, 20 and 25 pound rates of seeding have yielded about the same as an average of four year tests.

Harvesting may be done best with the grain binder. Even tho the crop is five or six feet high it can be cut with the grain binder by removing part of the slats of the reel. The seed borne on stools ripens after that borne on the main stems. It is therefore best to cut when most of the seed borne on the main stems is ripe. It may be threshed with the grain separator.