

press drill, and the ground is clean, very little cultivation is necessary. One of the advantages of using the press drill is that the field would be in better condition for cultivation with the harrow should weeds become troublesome or the ground packed or baked. In such cases the sorghum may be given a light harrowing as soon as it becomes well established. After the first crop has been harvested the field may be again cultivated, and if irrigation is practiced the water may be turned on to good advantage. The same method of procedure may be followed where three or four crops can be obtained.

When sorghum is planted in hills or planted in rows, it should be given about the same cultivation as corn. As a rule, however, the harrow may be used more and the plow and hoe less than with that crop. One of the greatest difficulties in the growing of sorghum in the North is that if the weather is cold, the growth of the young plants is likely to be so slow that the weeds may spring up and choke them out. In such cases cultivation with the harrow should begin while the weeds are small. In the West and Southwest cultivation should be shallow and often. Two or three harrowings and one or two shallow plowings will keep the ground in good condition. In the East and parts of the South, where the soil is heavier, it may be necessary to do more plowing. It is not necessary to thin out the canes when growing it for forage. Six or seven small stalks in a hill are of more value for this purpose than three or four large ones.

mower, corn knife or corn harvester, and shocked like corn, or, if not too heavy, it may be cut with an ordinary self-binder. In the latter case the bundles should be put into shocks loosely, two and two.

Probably the commonest way of harvesting is to cut with a mower, and after the sorghum has become thoroughly dried, which takes from four days to a week or more, according to the weather and the crop, to rake and gather into large piles. There is less loss, however, where it is drawn into barns or put into stacks topped with rye or coarse grass.

It is a good practice in storing to alternate the layers of cane with straw, particularly if the cane is not well cured.

The following method of curing sorghum for hay is recommended by Professor Connell of Texas:

After mowing, allow the sorghum to lie upon the ground sufficiently long to dry out at the ends of the blades. If the crop is thick, it should be turned over upon the ground to expose the bottom portion of the crop to the sun for a short time; usually one full day's sun is required to dry it sufficiently to be put into the "cock." These hay cocks may be five feet high and four feet in diameter, of the shape of an old-fashioned beehive. All of the hay that is put up in this manner should be well settled as it is laid on the pile. After having constructed it to the proper height, rake the loose sorghum away from the sides, leaving a neat pile of hay that will turn water in case it should rain. Allow it to remain in this shape

experiments which have been made on the digestibility of sorghum a greater percentage of these elements is digested when the forage is cut while the plants are in bloom. Hence, much, if not all, that may be gained in quantity by late cutting is lost so far as its feeding value is concerned and the drain on the land is heavier. The sugar content is greater and the crude cellulose less in the more matured cane, but the digestion experiments also show a much greater digestibility for these carbohydrates in the cane cut in bloom. Analyses made at some of the other stations do not agree very well with those obtained at the Texas Station, and give higher percentages of fat and protein in sorghum cut during the blooming period. It is therefore safe to say that, considering the quality of the forage and the ease with which it may be handled, as well as the quantity, the best time to cut this crop for either green or dry forage, is when it is in bloom, or very soon afterwards. When more than one crop is to be harvested it is the usual practice to cut the first one about the time the "heads" are well formed, but it may sometimes be necessary to cut sooner in order to give the second growth an opportunity to make sufficient development.

There is still considerable doubt as to the best time to cut sorghum for the silo. The common practice seems to be to allow it to stand until the seed is in the "dough," and some farmers wait until it is almost ripe. It would certainly seem best to cut at

tons, with from one to three cuttings. In the South, generally, two or three crops are obtained each year, and the yield varies accordingly.

As a rule, except in the best of the corn-growing States, sorghum affords at least one-third more forage than corn under similar conditions, at about the same cost, and it can be fed with much less waste.

#### Value for Forage.

As a Soiling Crop.—Stockmen are unanimous in placing a high value on sorghum for soiling purposes. It is not only an excellent forage for growing animals and those which are being prepared for market, but is one of the best feeds that can be used during the summer and early autumn for dairy cattle, on account of the large flow of excellent milk which it induces.

In many dairying and stock-raising communities one of the most critical periods of the year is that of the dry season during July, August and September. At this time the pasturage is often insufficient for the stock, and great difficulty is experienced in growing enough early fodder to keep the animals in a thrifty condition. Sorghum on account of its drought-enduring qualities and ready adaptability to varying conditions of soil and climate, as well as because of its feeding value, is one of the best crops that can be grown for this purpose. But a judicious selection of early and late varieties or by planting several fields at different times a succession of crops can be had, each of which will be in its prime when wanted. Whatever surplus there may be can be cured for winter feed.

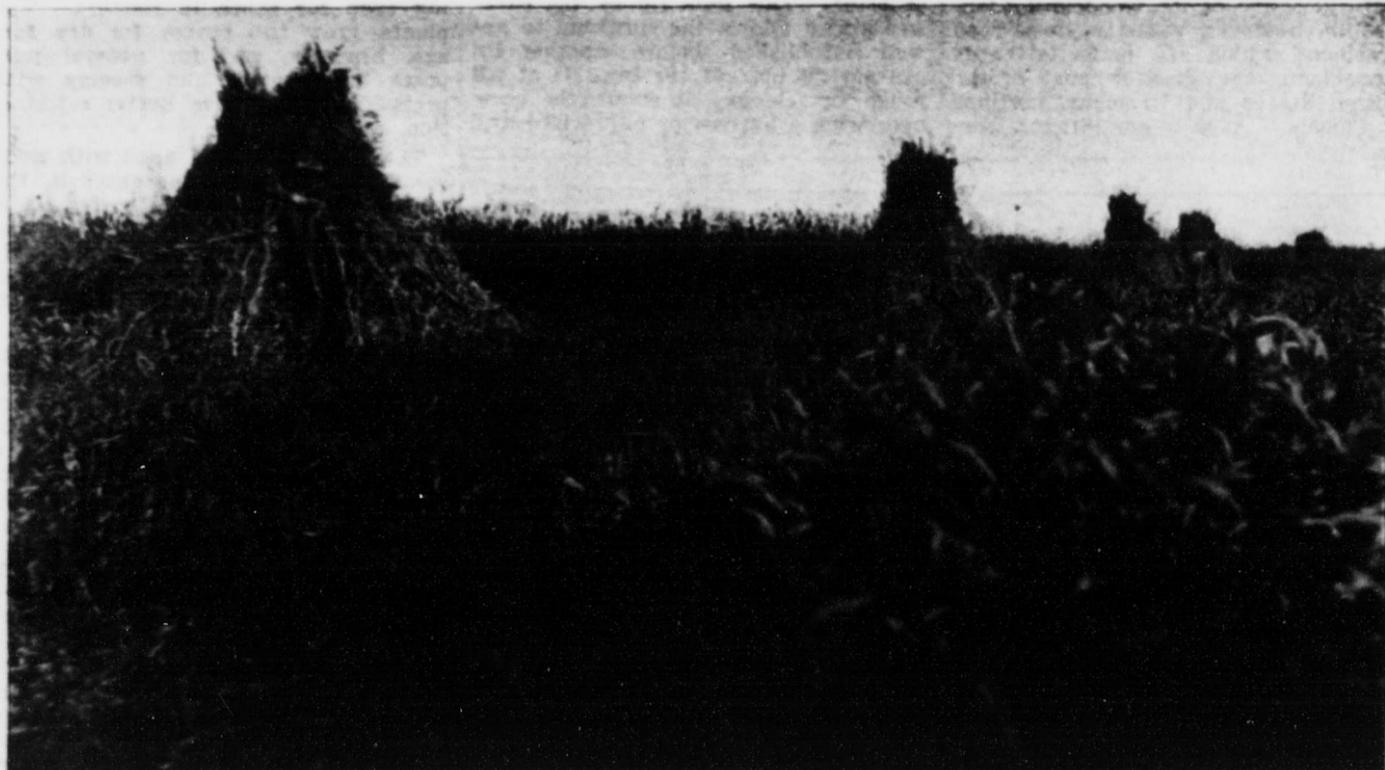
Sorghum may be fed green to all kinds of stock, even to poultry, with very profitable results. A full feed should not be given at first, particularly if the animals are hungry. It is a good practice to give first a light feed of grain or other food and then a small amount of the sorghum. The latter may be increased each day until a full feed is reached. Fresh sorghum is a very succulent forage, and, like clover, is liable to cause bloating when fed in too large quantities at first. With ordinary precautions no trouble from this source need be feared.

As a Pasture Plant.—Sorghum may be used to advantage as summer pasturage for all kinds of stock, and it is especially satisfactory for sheep and hogs. It is claimed that it makes a better pasture than alfalfa for fattening hogs. Many correspondents recommend it highly for pasturage for lambs. At the Arkansas Station it gave excellent results in hog pastures, used in connection with clover and Spanish peanuts to give a succession of fresh feed for the season.

For this purpose sorghum should be sown or drilled thickly and the land left as smooth as possible. Several fields should be sown at different times, so that a succession of forage may be had, and as soon as one field is pastured off they may be turned on the next, and so on through the whole series. By the time the last is fed down the first will be ready again. In California the first crop is often cut for hay or soiling. Stock is then turned on the field and the subsequent growth is pastured off. This is done on ground that is fallowing for wheat the coming season, and the farmers maintain that the land is left in better condition than if nothing had been grown upon it. The plowing and harrowing necessary in putting in the crop give the required cultivation, while the droppings from the stock fertilize the soil.

Care should be taken not to allow the stock to have too much of the sorghum at first. After the animals have been fed in the morning they may be turned on the sorghum for a short time and this practice kept up until they have become used to the forage. It is thought by many farmers that serious trouble is more likely to result when the animals are allowed to feed on the sorghum early in the morning while it is wet with dew; and accordingly, when beginning to pasture it, they do not turn their stock on the field until toward the middle of the day.

As a Dry Forage.—When fed in the dry condition, sorghum is handled in about the same way as fodder corn. It is fed in racks or on the ground, or, if the stalks are coarse, cut up with a feed cutter and fed in close troughs or mangers. An excellent practice is to cut it quite fine and mix



SORGHUM SUCCESSFULLY GROWN IN THE IMPERIAL SETTLEMENT HAVING BEEN PLANTED AFTER THE FIRST DAY OF JULY—PHOTOGRAPH TAKEN NOVEMBER 1, 1901.

As soon as each crop has been harvested the field should be stirred with plow or harrow, and in this way the cane can be kept growing until frost stops it.

Harvesting.—Much of the sorghum grown for forage is cut and fed green as a soiling crop. This is especially true in the East and South. This method of feeding the crop is also coming rapidly into favor in the west and Southwest, where pasturage is often short during the drier months of summer and autumn.

In moist climates there is often some difficulty in getting the cane well cured. The stalks dry slowly and are liable to become sour and blackened if stored in large quantities. Under such circumstances sorghum which has been sown thickly may be cut with a mower or a scythe and allowed to lie several days, when it may be put up into good-sized cocks and left until thoroughly cured. It may then be stacked in sheds or stored in the barn. That planted in rows may be cut with the corn knife or corn harvester and put up in small shocks or leaned up against poles supported on forked posts. It may be fed directly from the field or, when thoroughly dry, stacked or housed as desired.

In the West and Southwest, or where there is not a great deal of moisture during the late summer and early fall months, there is seldom any difficulty in curing the crop satisfactorily. The cane may be cut with the

for two or three days for fermentation to take place, which is evidenced by heating and the deposit of dew upon the interior parts of the cock. When thoroughly warm and before the hay loses its natural color, open the cocks and expose the hay to four or six hours' sun, according to the weight of the crop per acre and the size of stacks. Then the hay is ready to haul to the barn or to be placed in stacks, where it may safely be expected to remain without molding or heating further. If the hay is allowed to remain in the cocks too long, the fermentation proceeds too far and the hay sours and then rots in the field. It will remain longer in the cocks without damage the less of water or sap it contains when put up. \* \* \* Use no salt or other applications to preserve the hay. The hay may be baled safely if given six to ten hours' sun from the cock, depending on the size of stalks.

When used for soiling, the cutting of sorghum may begin as soon as the "heads" are well formed, or even before if necessary, but it is at its best from the time of coming into bloom until the seed is about half ripe. After this time the stalk becomes hard and woody, and there is more waste although the total weight of the forage may be greater.

Chemical analyses of sorghum made at the Texas Station show a gradual increase in the percentage of fats and protein as it approaches maturity. But according to the few

the first-mentioned stage, since the hard, woody canes of the older stages are not easily masticated by stock. It is probable that the time of cutting may have much to do with the keeping qualities of the silage. Careful experimentation is needed to settle this question.

#### Yield.

The amount of forage per acre which may be obtained from sorghum varies according to the soil, climate, and methods of cultivation employed. Yields of from 3 to 15 or more tons of cured fodder are reported from different parts of the country. When but a single crop is harvested, from 5 to 10 tons per acre are usually obtained, while if several tons are cut the total yield may often exceed 15 tons. One correspondent in Ohio reports a yield of over 7 tons and a ready sale at \$6 per ton, which, considering the cost of production, made it a very paying crop.

In Nebraska 3 to 5 tons or more per acre are often raised on land which has already produced a crop of winter rye the same season. Considering the value of the rye for fall, winter and spring pasturing, in addition to the grain obtained, it will be seen that this makes the land very productive.

At the Fashion Stock Farm, near Trenton, N. J., three cuttings and yields of 15 or more tons per acre are reported. In Kansas and elsewhere in the West and Southwest the yield usually ranges from 5 to 12 or 15