



Growing
SORGHUM
for
SILAGE

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THIS LEAFLET is a step by step guide to the production of sorghum for silage and the cost involved.

For information on growing hybrid corn for silage, see "Growing Field Corn in Sacramento County on Hardpan Land", or "Growing Field Corn in Sacramento County on River Bottom Land".

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IS IT PRACTICAL TO PRODUCE SILAGE?

Dairymen and stockmen can often improve the efficiency of their operation and increase their profit by producing silage.

1. The cost of winter feed can be reduced, especially in years of high priced alfalfa hay. Three tons of silage is equivalent to one ton of alfalfa hay in feeding value. Three tons of silage can often be produced for much less than the cost of a ton of alfalfa hay.

2. A sound crop rotation program is made possible. Poorly producing pastures can be put into silage crop in the Spring, and reseeded to pasture in the Fall. This means a constant improvement of summer pastures without sacrificing production from the ranch. It is possible to produce more TDN (total digestible nutrients) per acre with silage than with irrigated pasture. However, because irrigated pasture is harvested by the animals, it is your lowest cost feed.

3. Increased efficiency in handling feed is possible with self feeding silos. This means lower labor costs.

4. A succulent feed can be used during the winter. This often means increased milk or meat production.

SORGHUM VS. CORN

The first consideration in growing silage is whether to use sorghum or corn. Each crop has certain advantages over the other. Your own experience and the results in your area are the best guides. This means it is wise to try growing and feeding both sorghum and corn under your own conditions.

ADVANTAGES OF CORN

1. Easier to get a stand.
2. Faster maturing, which means -
 - (a) Later planting date possible.
 - (b) Less risk of late harvest, or immature at harvest.
3. Slightly higher percent TDN.

ADVANTAGES OF SORGHUM

1. Tolerates less favorable growing conditions.
 - (a) Lack of moisture.
 - (b) Excess moisture and flooding.
 - (c) Unfertile soil.
2. Higher yields. In Sacramento County tests, yields were 15 to 100% higher than corn.

Yield Comparisons:

In Sacramento County fields, corn on deep soil produces up to 25 tons of silage per acre with an average of about 18 tons. On shallow soil, corn may produce 20 tons of silage per acre, but the average is about 15 tons. Not enough sorghum has been grown in the County to establish field averages, however, in Tehama County in the El Camino district on shallow soil, corn produces only 13 tons per acre and averages 8 tons. Sorghum produces as much as 24 tons and averages 14.

In test plots, in Sacramento County in 1954, on deep soil, sorghum varieties averaged 19% more tonnage than corn. On poor soil, sorghum varieties averaged 97% more tonnage than corn.

VARIETIES

Atlas has been the standard sorghum silage variety for many years. It is tall, stiff stemmed and resistant to lodging. The seed is almost white and heads are large and fairly compact. Maturity time is about one month longer than the late maturing hybrid corn varieties.

Waxy Atlas is an improved strain of Atlas. It is similar in appearance but is a few days earlier in maturity. In yield tests, Waxy Atlas has averaged about three tons per acre more than Atlas.

Kansas Collier is the highest yielding sorghum silage variety. In Sacramento County tests, it has often produced 40 tons per acre. The stems are sweet and grow tall and limber. Heads are loose and drooping and produce light brown seeds. Maturity is very late, about three weeks later than Atlas. Therefore, planting should always be early. The late maturity and a tendency to lodge are serious disadvantages of Kansas Collier. Until experience is gained in overcoming these problems, only small acreages should be planted.

The main problem caused by late maturity is lowering of silage quality because of high moisture percent when the crop is harvested. There is not much loss in tonnage.

Moisture percent at harvest can be lowered by mixing with a dryer forage crop. This can be accomplished by planting Kansas Collier adjacent to a faster maturing variety and chopping a row of one and then a row of the other.

Rox Orange has straight stiff stalks and dark brown compact heads. Yield is high, but probably less than Atlas. Palatability is satisfactory, however, dark seeded varieties tend to be less palatable than light seeded varieties. The big advantage of Rox Orange is early maturity. It is ready for chopping about the same time as late maturing hybrid corn varieties.

Hegari is short, about two feet taller than Double Dwarf Milo. It tillers well and the stalks are thick and leafy. The heads are compact and the seed is light purple in color. Grain yield is excellent but tonnage of silage is low. Maturity time is nearly the same as late maturing corn varieties.

Haas Hegari is like Hegari, except that it is more vigorous and higher yielding in grain and silage. It is about two weeks later in maturity.

High Hegari is a tall type of Hegari, but about two feet shorter than Atlas. Stalks have few leaves and bend at the top as the grain develops. Grain yield is good, but tonnage of silage is much lower than Atlas and usually lower than hybrid corn.

"High Gear" is a name sometimes used for the Hegari varieties.

WHAT WILL IT COST TO PRODUCE SORGHUM SILAGE?

Based on a 24 ton yield placed in a trench silo -
 Labor @ \$1.25 per hour, except irrigation labor.
 @ \$1.00 per hour. Tractor, 20 horsepower, charged @ \$1.00 per hour.

	Cost per Acre	
	<u>Sample Costs</u>	<u>My Cost</u>
<u>Land Preparation:</u>		
Plow Man, tractor, 2-14" plow 2 hrs. @ \$2.40 per hr.	\$4.80	
Disk, 2 times Man, tractor, 6' disk - 1 hr. @ \$2.40 per hr.	2.40	
Furrow for pre-irrigation Man, tractor, 0.5 hrs. @ \$2.30 per hr.	1.15	
<u>Pre-irrigate:</u>		
Labor and Water	1.25	
<u>Seed Bed Preparation:</u>		
Disk and Harrow, 2 times Man, tractor, 6' disk, 6' harrow - 1 hr. @ \$2.50 per hr.	2.50	
<u>Plant & Fertilize:</u>		
Man, tractor, planter with fert- ilizer attachment - 1 hr. @ \$2.50 per hr.	2.50	
Seed 8 lbs. @ 15¢/lb.	1.20	
Fertilizer 16-20-0 200 lbs. @ \$98.00/ton	9.80	

Cultivate and Fertilize:

Cultivate, furrow, side-dress fertilizer man, tractor with fertilizer attach. - 1 hr. @ \$2.40 per hr.	\$2.40
Fertilizer-150# ammonium nitrate @ \$105.00/ton	7.90
Cultivate & Furrow man, tractor .8 hrs. @ \$2.30/hr.	1.85

Irrigate - Six Times:

Labor - 9 hrs. @ \$1.00/hr.	9.00
Water - 2 acre ft. @ \$3.50 per acre foot	7.00

Total Cultural Costs	53.75
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Harvest:

Chop Man, tractors, chopper 3 hrs. @ \$8.00	24.00
Haul 2 men, 2 tractors, 3 trailers, 3 hrs. @ \$6.00	18.00
Unload and pack in trench silo man, tractor, 3 hrs. @ \$3.00	9.00

Total Harvest Costs	51.00
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Overhead, Taxes, Interest, Misc.	22.50
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<u>Total Cost per Acre</u>	127.25
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Cost per ton @ 24 ton yield	5.30
Cost per ton @ 15 ton yield	8.48

With a 24 ton yield, this is equivalent to buying alfalfa hay for \$15.90 per ton.

With a 15 ton yield this is equivalent to buying alfalfa hay for \$25.44 per ton.

SOIL PREPARATION

Sorghums require a better seed bed than corn. The soil must be well mulched with moisture near the surface. Pre-irrigation is often necessary. When in doubt, pre-irrigate. This can be accomplished by using square checks, strip checks, furrows or rain machine. If only surface moisture is needed, furrows or rain machine are usually best because less water is applied. This means the field can be worked up and planted sooner. Use only light equipment after pre-irrigation such as: disk, harrow, drag and ring roller. The trash problem is reduced if the sod is broken in the Fall. Clod pushers or listers ahead of the planter are sometimes helpful to get the seed into better moisture.

FERTILIZING

Nitrogen: The crop will need 80 to 120 pounds of actual nitrogen per acre, depending on conditions. Some should go on ahead of planting, or with a planter attachment. The remainder should be sidedressed 10 inches to the side of the row and 5 to 6 inches deep. Dry fertilizer, ammonia gas or aqua ammonia can be used. The type is not important. Buy on a basis of cost per pound of actual nitrogen, plus cost of application, getting the most for your money.

Phosphate is also needed, except on fertile river bottom soil. Use 40 pounds of actual phosphate per acre. The fertilizer must be in a band near the seed, or with the seed. Therefore, it must be drilled in ahead of planting and the seed planted over the band or it must go on with a planter attachment. Straight phosphate can be placed with the seed, but phosphate nitrogen mixes must be placed two inches away from the seed.

PLANTING

Time: As soon as possible after the soil warms up in the Spring. Soil temperature at planting depth should be over 62° F. This usually occurs in mid April.

Kansas Collier - before April 20.

Atlas and Waxy Atlas - before May 5.

Hegari varieties and Rox Orange - before May 25.

After May 25, use Hybrid Corn.

Type of Planter: Row crop planter - adjust press wheel to firm soil tightly around seed to save moisture and to get fastest possible germination. If there are no press wheels, pull a ring roller behind the planter. A planter with fertilizer attachment is best because it gives most effective fertilizer placement and often cuts application cost.

Seeding Rate: Eight pounds of seed per acre.

Planting Depth: One inch into moisture, but not over two and one-half inches total.

Row Spacing: Thirty to 40 inches. Be sure rows are far enough apart to allow your chopper to work efficiently.

WEED CONTROL

One or two shallow cultivations will probably be needed.

Two, 4-D can be used in sorghum fields. Usually this is not needed for the silage crop. However, it may be desirable to use 2, 4-D to clean up a weed infestation which would give trouble when the field goes back into irrigated pasture.

IRRIGATION

Sorghum must have a good moisture supply throughout the season to produce high yields. However, it does not have to be irrigated as often as corn, because the root system is more extensive. It also tolerates flooding and excessively wet soil better than corn.

HARVESTING

Sorghum is ready for harvest when the moisture content is 65 to 70%. Heads should be in the hard dough stage. A few of the older leaves may have started to dry. Use a field chopper, as with corn.

MAKING SILAGE

The two essentials in making good silage are proper moisture content and good packing. If the field must be cut before moisture is below 70%, mix in a dryer forage. When moisture percent is too high, mixing Sodium Bisulphite or molasses with the silage will improve quality.

WARNING ON GRAZING STUBBLE

The stubble can be pastured but there is some danger when there is a regrowth, especially after a frost. This new growth is apt to contain Prussic Acid. The dried fodder and stubble is perfectly safe.

DOES SORGHUM HARM THE SOIL?

Contrary to popular opinion, Milo or Sorghum will not "poison" the soil. The roots contain sugar which must be decayed by soil organisms. Nitrogen is needed in the process. Poor results following milo or sorghum are due to the temporary tie-up of this plant food. Nitrogen fertilizer will correct any depressing effect on the next crop.

The depressing effect on weed growth can be an advantage when following sorghum with clover or alfalfa. Legumes are not as dependent on soil nitrogen supply as other plants.

MY PRODUCTION RECORDS

Planting Date _____

Variety _____

Fertilizer Used _____

No. of Irrigations _____

Harvest Date _____

Total Tonnage _____

Acres in Field _____

Yield Per Acre _____

NOTES