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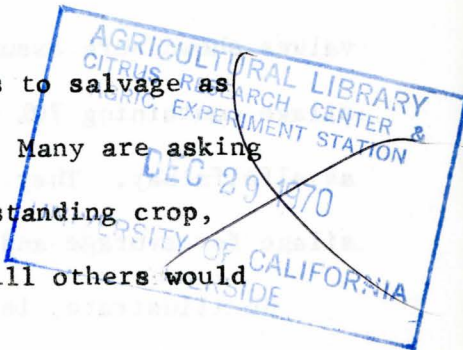
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'How Much Is Drought Damaged Corn Worth as Silage?

By Philip A. Henderson

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Farmers who have suffered severe drought are seeking ways to salvage as much value out of damaged corn and grain sorghum as possible. Many are asking what such crops are worth as silage. Some wish to sell as a standing crop, some would like a price delivered to a wagon or truck, and still others would like a price delivered to a silo.

Paul Guyer, Extension Livestock Specialist, says that drought corn which had its growth arrested before it reached tasseling stage has a fairly high protein content and its feed value on a dry matter basis should be about the same as the dry matter in alfalfa hay. Essentially the same statement could be made about drought damaged grain sorghum. Since the moisture in drought damaged crops can and does vary widely, it is important that the price be based on dry matter content. This means, of course, that samples of the harvested crop should be analyzed for moisture at the time of harvest.

A fairly simple way of determining the percentage of moisture is to take several pounds of the freshly chopped material, weigh it on a scale that will record ounces as well as pounds and then dry it in an oven for several days using moderate heat. At the end of the drying period, weigh the dried material again. The weight of the dried material divided by the original weight gives the percentage of dry matter in the crop which can be used in connection with Tables 1 and 2 to arrive at price.

At least one or two loads should be weighed as a basis for estimating the tonnage; more would be better. In lieu of weighing, the silage could be measured after it has settled two or three weeks and the tonnage estimated on the basis of standard silo capacity tables.

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Table 1 shows the value of drought damaged corn or sorghum delivered to the silo under different moisture content and hay price situations. The values shown here assume that a ton of immature drought corn or grain sorghum silage containing 70% moisture would have the same value per cwt. of dry matter as alfalfa hay. They also assume that it costs about \$2.25 per ton of usable silage for storage and that there is a 15 percent loss in tonnage in storage.

To illustrate, let's look at the value of a ton of silage containing 30% dry matter (70% moisture) when alfalfa hay is worth 20 dollars a ton. A ton of air dry alfalfa hay would contain 1780 pounds of dry matter (89%). The value of a hundred pounds of dry matter would be $\$20 \div 1780$ or \$1.124. Hence the value of a ton of the silage ready to feed would be 600 pounds x \$1.124 or \$6.24. Deducting \$2.25 for storage and then dividing by 115% gives us \$3.90, the amount which could be paid for a ton of 70% moisture silage of this kind delivered to the silo.

The other figures were calculated in a similar manner using \$1.24 as the value of a hundred pounds of dry matter for all of the values shown under the \$20 hay value column, and proportionately higher values for dry matter in the other columns.

Table 1. Value of immature drought corn (growth stopped before tasseling), cut for silage and delivered to silo.

Dry matter content	When alfalfa hay is worth:					
	\$20	\$24	\$28	\$32	\$36	\$40
			(Dollars per ton)			
20% (400#)	2.60	3.38	4.17	4.95	5.73	6.51
25% (500#)	3.25	4.22	5.21	6.19	7.16	8.14
30% (600#)	3.90	5.07	6.25	7.43	8.59	9.77
35% (700#)	4.55	5.92	7.29	8.67	10.02	11.40

Guyer says that corn which matured fairly well as far as plant development is concerned but had either no grain or a comparatively small grain yield would have about the same feeding value on a dry matter basis as regular corn silage. Again, essentially the same could be said about drought damaged grain sorghum.

Dairymen usually figure that a ton of corn silage is worth about a third as much as a ton of alfalfa hay. Research with beef cattle, however, seems to indicate that corn silage is worth 40 to 45 percent as much as a ton of alfalfa hay when fed to beef cattle.

Table 2. Value of mature drought corn with little or no grain cut for silage and delivered to silo, assuming 15% loss in storage.

	When alfalfa hay is worth:											
	\$20		\$24		\$28		\$32		\$36		\$40	
Feeding value of silage as % of alfalfa hay	33 1/3	42½	33 1/3	42½	33 1/3	42½	33 1/3	42½	33 1/3	42½	33 1/3	42½
Dry matter content of 1 ton silage:	(Dollars per ton)											
20% (400#)	2.55	3.62	3.33	4.61	4.11	5.59	4.88	6.58	5.65	7.57	6.42	8.55
25% (500#)	3.19	4.52	4.17	5.76	5.14	6.99	6.10	8.22	7.06	9.46	8.03	10.69
30% (600#)	3.83	5.43	5.00	6.91	6.16	8.39	7.32	9.87	8.48	11.35	9.63	12.83
35% (700#)	4.47	6.34	5.83	8.06	7.19	9.79	8.54	11.52	9.89	13.24	11.24	14.97

Table 2 shows estimated values of matured corn or grain sorghum severely damaged by drought delivered to the silo. Note that values are shown on the basis of silage being worth 1/3 as much as hay and also 42.5% as much. Here again it was assumed that it costs about \$2.25 per ton of usable silage for storage and that there would be a 15% loss in tonnage during storage.

To illustrate how values were determined, look at Table 2 under the \$20 value for hay when the feeding value of silage is 42.5% as much as hay. Ordinarily, good silage would have about 70% moisture or 30% dry matter. So the value of a ton of silage ready to feed would be 42.5% of \$20 or \$8.50. Subtracting \$2.25 for storage, we get \$6.25 which must be divided by 115% to correct for the loss in tonnage. The corrected value is \$5.43 per ton, with a corrected dry matter value of $\$5.43 \div 600$ lbs or \$9.05 per lb. This was the dry matter value used for all figures in this column. Other figures in the table were determined in a similar fashion using dry matter values appropriate to the price of hay.

It appears that the cost of harvesting and hauling silage varies considerably depending on whether the chopper is owner or custom-hired, the hauling distance, acres of silage to be harvested, the yield, etc. Costs could range all the way from as little as \$12 or \$15 per acre to as much as \$30 or more when all costs, including the value of labor and fixed costs on the equipment are considered. The cost of harvesting and hauling a 5 or 10 ton yield would be less than for a yield of 10 to 20 tons but the difference would be comparatively small.

Custom rates apparently vary widely also. The overall average rate for Nebraska in 1968 (most recent rate available) was \$12.36 for the entire job of chopping, hauling, and filling. This appears to be in conflict with a rate of \$2 a ton quoted by Doane's for the North Central States the same year. A review of several publications dealing with costs indicates that a cost of \$20 per acre might be a fair figure to use.

Thus, if a person wanted to buy drought corn standing in the field, he might agree to pay a certain price per ton based on either Table 1 or 2 and then after determining the gross value of the silage delivered to the silo, deduct \$20 an acre for the cost of harvesting and hauling. The remainder should be the amount he could afford to pay for the standing crop. For example, let's say hay is worth \$32 a ton, 400 tons of silage from matured corn has been placed in the silo with a moisture content of 75%, and 80 acres were cut. The silage is to be used for beef cattle, so the 42.5% column in Table 2 is used. The buyer might pay $400 \times \$8.22$ less $\$20 \times 80$ acres or \$1,688 for the standing 80 acres of corn.

If the buyer was desperately in need of roughage and already owned the tractors, chopper, and wagons, he might be willing to overlook most of his own labor and the fixed costs on his equipment. Instead of deducting \$20 an acre, he might deduct only his actual out-of-pocket costs or somewhere in the neighborhood of half as much. In other words, he might bid as high as \$2,500 or thereabouts for the standing crop.

In some instances, the corn grower might have chopping equipment and would want to sell his corn as silage, chopped and delivered into the buyer's truck or wagon. In this case, the amount paid to the corn producer would be 400 tons x the \$8.22 less the cost of hauling and filling the silo which might amount to \$8 to \$12 per acre. Thus the amount paid for the 80 acres of silage delivered to the trucks might be about \$2,500.

The amount might be even more if the buyer wants the silage enough to overlook some of his fixed costs.

Corn and grain sorghum producers have several alternatives for salvaging value from their crops. If there is grain, they could harvest the grain. If they have roughage consuming livestock they could put the crop up as silage for their own use. They could graze the standing crop either with their own livestock or on a custom basis for others. Or they could sell the crop as silage to someone else. Each producer needs to do some figuring to see which would be most advantageous. One possible danger of grazing the standing crop is nitrate poisoning. There is some danger of nitrate poisoning when chopped and fed as silage, but usually less. Consult your county agent or local veterinarian about the possibilities for lessening this danger.

The crop producer should not overlook the danger of wind erosion which might occur if large areas are cut for silage. In addition, there are the fertility and organic matter aspects. Although the fertility content of a badly damaged corn or grain sorghum plant may be quite small, removal of the plant does take away that bit of fertility and organic matter which might otherwise be worked into the ground.