



Guidelines for Salvaging Drought-Stressed Corn

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SALVAGING DROUGHT-STRESSED CORN is a serious problem for Michigan cash crop and livestock producers. To help them decide how best to use the crop, Michigan State University scientists offer this "question-and-answer" report. Information is from the departments of crop and soil science, agricultural engineering, agricultural economics, dairy science, and animal husbandry in the College of Agriculture and Natural Resources and from the department of large animal surgery and medicine in the College of Veterinary Medicine.

Q. What are the alternatives for the cash crop farmer with drought-stressed corn?

A. That will depend on the degree of stress, proximity of livestock producers, and any rainfall that could still help some of the corn. Consider these alternatives:

- a. Accept low yield and let mature as grain. Take a chance that the price increase per bushel will be enough to overcome a low yield of say 30 bu./acre. Proper harvester adjustment becomes even more important, to make sure you harvest every ear.
- b. Plow down and prepare for wheat, if herbicide program permits. You can follow corn with wheat the same year if no more than 1 pound of atrazine/acre had been used.
- c. Sell to livestock producer as corn silage.

Q. How can I tell if ears will develop? If kernels will set?

A. If a plant has tasselled and shed pollen, and no ear has developed, it will be barren.

Examine ears after silks are brown. If pollination has occurred, the cob will swell, and white blisters will appear on the outside of the ear about 1 week to 10 days after pollination.

Q. What is the feed value of drought stricken corn?

A. In studies in Nebraska and South Dakota, silage made from corn with no ears or corn with ears but no grain gave 90 to 100% of the growth rate, milk production, and feed efficiency of silage made from well-eared corn. Based on these studies, corn silage made from immature corn would be expected to give nearly equal performance if properly ensiled.

Q. When should I cut for silage?

A. If stored in an upright silo, the forage should not contain more than 65-70% moisture. If stored in a bunker silo, it should not be more than 70-75% moisture. Silage made from immature corn may seep easier than that made from well-eared corn even if both are made at the same moisture content because most of the sugars are in solution in the immature corn. If the corn didn't set ears and is still green, the moisture content will be too high to make good silage. If the ears are all brown and the stalk is still green it can still contain too much moisture to make good corn silage. However, continued hot and dry weather can result in a rapid drop in moisture. Therefore, when in doubt, get a moisture test. Excessive moisture reduces quality, causes excessive seepage and greatly reduces dollar value if sold as silage. See your County Agent for assistance in determining moisture content.

Q. Is the nitrate content of the drought-damaged corn plant likely to be too high for feeding to cattle?

A. The drought-stricken corn plant tends to accumulate more nitrate than the normal corn plant. Therefore, in some cases, nitrate levels could be dangerous, particularly if grazed, fed as green chop or fed at a high level without an adjustment period. During the ensiling process, however, over 1/2 of the nitrate is destroyed. Therefore, the best and safest use of the drought-damaged corn plant is for silage. Whether fed as forage or silage, it should be gradually introduced into the ration. Studies show that cattle can metabolize large amounts of nitrate if allowed to become adapted to feeds containing nitrate. Therefore, start by feeding only a few pounds and then take about a week to fully introduce it into the ration. If in doubt, feed only as part of the ration. If you want to graze it, put one or two cattle on first and observe them for several days for toxicity problems.

Q. What special procedures should I follow in combining drought-damaged corn?

A. First, set up the combine for handling a normal crop. Then examine crop and field conditions, and make a trial run. Examine results, both in grain tank and on the ground behind the machine, and re-adjust with the following points in mind:

- a. With short or lodged corn, run gathering snouts and chains low. Watch for stones, and be sure stone-protective devices are working.
- b. If ears are largely "nubbins", set shelling plates and snapping rolls closer than normal to snap off a higher percentage of nubbins. Don't attempt to snap off barren cobs.
- c. If shelling clean is a problem, increase cylinder speed slightly, and if necessary, decrease cylinder-concave clearance. Avoid excess damage to kernels from good ears.
- d. If separation losses are high, open chaffer and chaffer extension slightly.

- e. If cleaning is a problem, increase fan blast, close lower sieve slightly.
- f. Read the operator's manual.
- g. Drive carefully, stay on the row, do not over-speed or over-load the machine.
- h. Be alert to changes in weather and crop conditions, and make basic adjustments as necessary.

Q. What can I afford to pay for drought-damaged corn to be harvested for silage?

A. As indicated earlier, studies indicate that the dry matter of silage made from drought-damaged corn has 90-100% of the feed value of the dry matter of silage made from well-eared corn. A ton of silage made from well-eared corn is considered to be worth 5 to 6 times the current price of shelled corn per bushel plus \$3, out of the silo. If the buyer harvests, reduce the price by \$2 a ton. Since it has little or no grain content, however, its only alternative use is as forage. Therefore, it should be priced according to the judgment of both the buyer and seller, based on current prices for corn, the expected feeding value of the silage made from drought-damaged corn, and the alternative use of the drought-damaged corn by the seller.

Q. Can I add NPN to raise the protein content of drought-damaged corn?

A. The protein content of drought-damaged corn tends to be somewhat higher than well-eared corn. However, we would recommend treating it similar to well-eared corn due to the limited information available on the protein content of drought-damaged corn.

Q. If I chop for silage and don't have enough storage, can I store on the ground?

A. Yes. Pack firmly and as deeply as possible.

Q. Is there danger of cyanide toxicity in drought-stricken corn?

A. Cyanide toxicity from corn is rare. However, drought-stricken corn can accumulate cyanogenetic glycoside which hydrolyzes to form free cyanide (HCN). The danger is increased if the corn was grown on heavily nitrogen-fertilized soils and any of the following have occurred: frosting, wilting, trampling or hail. Any combination of these conditions on severely droughted corn could lead to a dangerous build-up or release of cyanide.

If in doubt, ask your county agent or local veterinarian to test for cyanide toxicity.

(Note: Danger of cyanide toxicity is much greater for sorghums than for corn.)

Q. What special precautions should I take against nitrogen oxide (silo gas) in the silo?

A. Observe the same precautions practiced with normal ensilage.

Heavier-than-air silo gas develops shortly after filling and accumulates just above silage, at the silo bottom, in the unloading chute or adjacent feed room.

Dead birds around the silo are a clue to gas, but you may not see any signs of gas. Take no chances.

If you must go in the silo, ventilate with the blower 15 or 20 minutes before entering and keep it running while inside. Don't go in alone. Wear a nitrogen dioxide mask.

Q. How do I qualify for ASCS "disaster" payments?

A. If you estimate, or can prove, that your total 1974 crop is less than 2/3 of normal estimated yield, apply at your local ASCS office for crop appraisal. ASCS will pay 46 cents per bushel for estimated crop loss. You must estimate percentage loss of total crop, but payment is based only on your corn acreage allotment. Get details on appraisal and payment from your local ASCS office.