



## Drought Impacts on Corn and Forage Crops

---

Local farmers don't *plan* for a drought as much as they *react* to one. That's because most farmers are optimists and expect that rain will soon arrive, ending any incipient or actual drought. So while a farmer may not plan for a drought, one way to reduce drought risk is to maintain an ample inventory of forage crops. This includes silages, which once they're fully fermented have a long storage life.

Farmers are commonly advised to delay feeding "new crop" corn silage until near the end of the calendar year. This is due to increased starch digestibility with storage time, so the corn silage farmers feed in January, for instance, almost always has greater milk production potential than that same silage would have if fed in November. However, another advantage of having enough corn silage to be able to delay feeding the new crop is that during a short crop year, farmers could start feeding their new crop corn silage a month earlier than normal. (One month earlier, not three!) This isn't ideal from a starch digestibility standpoint but is better than running out of corn silage next summer. And the following spring the farmer could then plant extra acres of corn to rebuild his corn silage inventory.

The starch content of corn silage will usually be lower during a drought year, but the concentration of soluble sugars in the corn plant will be higher. Soluble sugars are the food of fermentation bacteria, so as long as droughty corn is chopped in the recommended 33-35% dry matter range, it should ferment quite well. However, droughty corn is often lower in dry matter than it appears from the seat of a pickup truck, so decisions on when to harvest drought-impacted corn should be based on moisture tests, not a "windshield appraisal". Typically, droughty corn silage has lower energy content but higher crude protein. Feed value can range widely, from 60% to almost 100% of "normal" corn silage. Yield is impacted more than quality: A useful rule of thumb is that drought-affected corn will yield about one ton of dry matter per foot of height, though severely droughted corn with very poor ear fill will yield less than this.

Nitrate toxicity can be an issue during a drought year in summer annuals such as sudan-sorghum hybrids, but also in corn harvested for silage. Nitrates concentrate in the bottom portion of the corn stalk, so one recommendation is to chop higher than the normal 6 to 8 inches. But this isn't what farmers want to hear given that yields are already low. Nitrate levels are higher right after a soaking rain and where very high rates of nitrogen were applied either as manure or commercial fertilizer. Nitrate levels are decreased by silage fermentation, which is probably one reason we so seldom hear of nitrate toxicity problems even during a drought. However, this doesn't mean that nitrate toxicity can't occur, so when in doubt: Test, don't guess.

When nitrate testing is done along with a standard forage analysis, the additional cost is about \$15.00. High nitrate forages can produce harmful concentrations of silo gases for several weeks following ensiling; these gases can be lethal to humans as well as livestock.

Drought-stressed alfalfa may need careful management during the fall. Dry soils may delay the uptake of the carbohydrates needed for winter survival. Therefore, though the temptation may be to take a fall harvest of drought-impacted alfalfa fields, this may be a case of “robbing Peter to pay Paul” since it could impact forage yield and quality the following spring. In general, if the crop is less than a foot high, it’s probably not economical to harvest, especially since the recommendation for good winter survival is to leave about 6 inches of stubble.

If the need for additional forage is known early enough in the summer, one option may be to plant oats in late summer for fall harvest. When the oats are planted depends on the specific growing area, but the planting date will normally range from late July through the first week of August. Either grain-type or forage oat varieties can be used; the grain varieties usually mature a bit earlier so would be preferable if planting is delayed into August. Wisconsin data suggests that typical dry matter yields are 2-3 tons per acre, with yield influenced by planting date and growing conditions following planting. Of course where to plant the oats may be a challenge since no corn land is yet available, so the best alternative may be alfalfa or grass fields in their final year of production before rotation to corn or another annual crop.

Finally, check neighboring farmers who normally grow corn for grain; the drought may have impacted their crop enough that it will be worth more chopped for silage than combined for grain. It may be possible to purchase some of this corn acreage harvested as silage, either in the field or by the ton.

---