

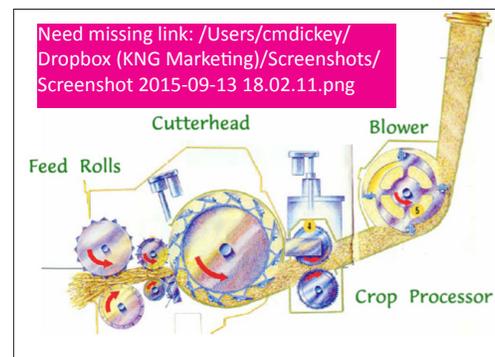


## PROCESSED CORN SILAGE

As corn silage is harvested, a large percentage of it will be processed. When processed, the entire plant is passed through adjustable, counter-rotating rolls located between the cutter head and the blower of the forage harvester. Processing results in the crushing and shearing of the corn grain, cob, and stem. We've all seen the "hockey pucks" (cob) that remain uneaten in the feed bunk and the undigested corn on the parlor floor. When properly processed these should disappear. As the crop passes between the rolls its particle size will be reduced by as much as 30%. Ideally 100% of the cob will be pulverized and 90% of the kernels damaged. This will improve its digestibility, making more of it available to the rumen microbes. This can result in a reduction of energy lost in the feces and an increase in milk pounds and components (Table 1).

**Table 1: Effect of Processing on Corn Silage Harvested at Black Layer**

	Unprocessed	Processed
DMI (lb/day)	50.6	53.7
Corn grain in feces (%DM)	3.15	.86
Starch in feces (%)	3.96	2.93
Milk (lb/day)	79.2	81.0
3.5 % FCM (lb/day)	82.3	82.1
Milk protein (lb/day)	2.49	2.55
Milk fat (lb/day)	3.92	4.00



Normally when chopping, it is recommended that the theoretical length of cut (TLC) of the corn be set to 3/8". When a processor is added, the TLC should be increased to 3/4". Adjusting the shear bar or removing knives ensures that effective fiber (pNDF) levels are maintained and optimal rumen pH promoted. This not only creates a healthier diet but also reduces the amount of fuel used to chop and process the corn. Throughout the harvest season, it is important to regularly check to see that the crop is being properly processed. Rolls are generally adjusted to a clearance of 1/8" – 3/16" (1-3 mm). A lot of tons are put through today's chopper. With increased tons, the rate at which the rolls wear increases. Every 4 to 6 loads, a 32-oz sample of fresh forage should be collected, spread on a hard surface and large kernels picked out. An alternative method is to dump the sample into water. Once floating forage is skimmed off, the corn kernels are easy to see on the bottom. If more than two half or whole kernels are found, the silage is not properly processed, and roll clearance may need to be adjusted. After adjustment, if the corn is still not properly processed, it may be necessary to re-groove or replaced the rolls. Re-grooved rolls are less expensive but have not proved to be as effective as new. When a custom harvester is used, it is important that the expectation of proper processing be communicated. If not properly processed, "hockey pucks" will pile up in the feed bunk all winter and undigested corn pushed into the manure pit. Truly, money down the drain!

When balancing diets that include processed corn silage, it is important that the program know that it's processed. Choose a forage template that has "processed" in its description. This, in conjunction with identifying its particle size, helps the rumen model more accurately predict the digestibility of its fiber and energy fractions. For example: in the Cornell Model (CNCPS) 6.5 library, a 40% dry matter, 45% NDF, processed, medium particle size, corn silage has a starch (CHO B1 fraction) digestibility (Kd) of 27% per hour and the same silage, un-processed has a Kd of only 15% per hour. Using the processed template would mean that less corn grain would be necessary to support the desired level of milk production. In the end, a less expensive diet and one that should better perform would be created.