Extension
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Corn Silage Cutting Height Calculator – Background and Guide

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Objective

To provide an educational and decision-making tool for dairy educators, consultants, and producers, and to evaluate the potential impact of changing cutting height during corn silage harvest.

Background

Whole-plant corn silage is an important part of the diets of dairy cows, that provides a significant source of energy to support milk production. Improving nutritive value, and therefore energy potential, can maximize the benefits of home-grown forages and reduce reliance on purchased feeds. Regardless, the nutritive value of corn silage varies widely, and there are many strategies that producers can use to manipulate corn silage nutritive value.

Increasing cutting height during harvest is an alternative producers may use to improve corn silage nutritive value, since silage harvested at greater cutting heights have greater starch concentrations and NDF digestibility (NDFD; Wu and Roth, 2003). However, these improvements come at the expense of lower dry matter (DM) yield when farmers increase cutting height (Wu and Roth, 2003). Furthermore, producers may struggle to decide how much they should increase cutting height. Thus, a tool to help farmers estimate how increasing cutting height can change the nutrient composition and DM yield would be valuable to improve decision making.

Cutting Height Facts

1. **The stalk of corn plants is less digestible.** The stalk of corn plants contains greater concentrations of NDF, ADF and lignin (Tolera and Sundstøl, 1999) which are less digestible or cannot be digested by dairy cows.
2. **Increasing cutting height increases the proportions of leaves and grain in whole-plant corn silage.** At greater cutting heights more of the stalk is left in the field, meaning there is less stalk to dilute leaves and grain (Wu and Roth, 2003). This increases starch concentration, along with NDFD, of high cut corn silage.
3. **Increasing cutting height may support greater milk production.** The greater energy content of corn silage with greater starch concentration and NDFD may improve productivity by dairy cows. Feeding dairy cows corn silage harvested at 18 in compared to 5 in improved total tract NDFD, milk production, and feed efficiency (Neylon and Kung, 2003).
4. **Increasing cutting height decreases DM yield.** Since more material is left in the field at greater cutting heights, DM yield is reduced (Wu and Roth, 2003). This highlights the trade-off of increasing cutting height and must be considered by producers.
5. **Low DM yield increases the cost of silage.** Although producers harvest less silage when they increase cutting height, the cost of production and harvesting per area of corn remains the same. That means that the price per ton of corn silage produced at greater cutting heights is greater compared to lower cutting heights with greater DM yields.

6. **Cutting height usually does not affect fermentation.** Although increasing cutting height also increases DM concentration, fermentation generally does not change when corn silage is harvested at greater cutting heights (Diepersloot et al., 2025).

Corn Silage Cutting Height Calculator

The corn silage cutting height calculator aims to estimate how nutritive value and DM yield may change when producers increase cutting height. This simulation is based on a meta-analysis conducted to evaluate the effect of cutting height on whole-plant corn forage and silage (Diepersloot et al., 2025). This spreadsheet also uses the expected or historical nutrient composition and DM yield that users add as the baseline for the silage harvested at their normal cutting height.

Inputs

The corn silage cutting height calculator **includes an imperial and metric tab** in the spreadsheet. Users should ensure they input values in the correct tab, depending on which they prefer to use.

1. **Cutting heights at harvest** (in or cm) for both the normal setting users harvest corn at (Normal) and the greater cutting height (High) users want to evaluate for corn silage harvest.
2. **Cost of silage production** per area ($/ha or $/acre). This can be the actual or estimated cost of production for users to harvest corn silage.
3. **Dry matter (DM) concentration** (% as fed).
4. **Crude protein (CP) concentration** (% DM).
5. **Neutral detergent fiber (NDF) concentration** (% DM).
6. **Neutral detergent fiber digestibility** (**NDFD**; % NDF). Its recommended users input 30 h NDFD, although other NDFD timepoints can be used if desired.
7. **Acid detergent fiber (ADF) concentration** (% DM).
8. **Lignin concentration** (% DM).
9. **Undigested neutral detergent fiber (uNDF) concentration** (% DM). It is recommended that users input 240 h uNDF, although other timepoints can be used if desired. ***Users must input uNDF as a percentage of DM, not NDF.***
10. **Starch concentration** (% DM).
11. **Ash concentration** (% DM).
12. **Dry matter (DM) yield** (ton/acre or Mg/ha).

Example

Table 1 shows an example of how increasing cutting height may affect nutritive value and DM yield, along with cost of silage production per ton. The initial cutting height is defined at 10 inches, with simulations including 25 and 40 inches.

Table 1. Corn silage nutritive value, yield, and cost of production at different cutting heights. The values for 10 in represent inputs in the cutting height spreadsheet.

Item	10 in	25 in	40 in
DM, % as fed	35.0	36.9	38.8
CP, % DM	7.5	7.9	8.3
NDF, % DM	35.0	31.6	28.1
NDFD, % NDF	65.0	68.0	71.1
ADF, % DM	20.5	17.5	14.4
Lignin, % DM	3.5	3.1	2.7
uNDF, % DM	12.0	10.1	8.2
Starch, % DM	37.0	40.4	43.9
Ash, % DM	4.0	3.6	3.2
DM Yield, ton/acre	8.0	7.0	6.0
Cost of Production, $/ton DM	125.00	143.26	167.78

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