

Documentation

Storage Density Spreadsheet

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Purpose:

This spreadsheet was developed to estimate the average density of forage in selected storage units based on the weight of feed removed and the calculated volume of that feed.

Software Requirements:

The spreadsheet requires Microsoft Excel.

Equipment Needs:

Feed wagon with weigh scales

Tape measure

Forage dryer and gram scale or access to laboratory analysis for forage moisture measurement.

Procedure:

1. On the side of the storage, mark the location of the feed out face at the first day of the test.
2. Measure the critical dimensions of the feed out face needed as spreadsheet inputs for the appropriate storage (see spreadsheet).
3. Over the next several days to a week, record the weight of each feed wagon load removed from storage.
4. Sample every 5th load and determine the moisture content of the sample. See an appropriate publication for moisture measurement techniques.
5. At the last day of the test, measure the silage storage feedout face dimensions and the distance the feedout face has regressed since the start of the test.
6. If the measurements of step 5 are different than those of step 2, use an average of the two values when entering dimensions into the spreadsheet.
7. Sum the weights of each feed wagon load removed from storage to obtain a total weight removed. Enter that total weight into cell E17 of the spreadsheet.
8. Average the moisture contents obtained in step 4. Record the average moisture content in cell E18 of the spreadsheet.

9. Looking in rows 23, 52 and 79 determine which set of storage calculations you will use; Silage Pile, Bunker Silo or Bag or Tower Silo.

10. Enter into the appropriate cells, the feedout face and regression dimensions.

11. Read the Volume Removed, As Fed Density and Dry Matter Density in the results section.

12. If Dry Matter Density is less than 14 lbs DM/cu ft, consider how you will increase density during next year's silo filling. The "Bunkdensity" spreadsheet, downloadable from the Harvest and Storage page of the Team Forage web site,

<http://www.uwex.edu/ces/crops/uwforage/storage.htm>

is a tool that may be useful when making a decision on how the density might be increased.

13. If face removal rate is less than 6 inches per day (piles or bunkers) or 18 inches per day (silo bags), a message will be printed in an adjacent cell recommending increasing the face removal rate to help reduce dry matter loss during feedout.