



# Forage Management

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November 2001

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## A Table to Estimate FORAGE MASS from HEIGHT OF PASTURE

How do you decide when to move animals onto a pasture field? How long do you expect them to stay before you should move them again? Most likely your short answer is, "it depends." It depends on animal numbers, production goals, available alternatives, and more. Fundamentally, it depends upon the amount of forage present, the **forage mass**. In order to practice **pasture budgeting**, you need to begin with the estimation of forage mass.

Clipped samples that are standard for scientific research do not provide timely information for management, and are costly. This table shows how you can obtain quantitative estimates of forage mass with one of three tools. These are (1) a **ruler** or yardstick; (2) a simple plexiglass **falling plate meter** as developed and used in research at WVU; and (3) a commercial **rising plate meter** (Farm Tracker).

**STEP ONE** is to record pasture height data from many different points in the field (at least 15; 30 or more in a large field). Find the **average height**.

**STEP TWO** is to describe the **pasture density** in relative terms as **thin** (e.g. aftermath meadow), **average** (e.g. mixed grass clover), or **thick** (e.g. tall fescue). (The best way to do this is to **get down on your knees and look closely!**)

**STEP THREE** involves studying the table. Find the **row** corresponding to your **average height** measurement; and the **column** corresponding to your evaluation of **pasture density**. The number in that cell is the estimated **forage mass** in pounds of dry matter per acre.

With this information, you can ask yourself whether the available forage mass will suffice for the number of animals and the length of stay that you are contemplating.

*Each of the three measurement methods has its advantages and disadvantages.* The ruler can be a calibrated walking stick; its disadvantage is the subjectivity required in stating the ruler height of a diverse sward. The falling plate meter is inexpensive and less subjective, but more time-consuming. The rising plate meter is more costly, but handier than the falling plate meter. Also, it provides an automatic calculation of the average height (a disadvantage when the research objective requires a measure of variation as well as an average).

Whichever measurement method you adopt, it can help you become more accurate in estimating forage mass for the purpose of pasture budgeting.

Table 3. Forage density and forage mass available at ground level based on height of pasture measured by any of the three methods listed in the three right hand columns. Under the "Pasture Tiller Density descriptions" are given examples of the pasture types represented.

| Measurement Method |      |      | Forage Density                          |                                 |                         |                              | Forage Mass                        |                         |                              |                     |  |  |  |
|--------------------|------|------|---|---------------------------------|-------------------------|------------------------------|------------------------------------|-------------------------|------------------------------|---------------------|--|--|--|
|                    |      |      | WV falling plate meter                  | Farm Tracker rising plate meter | Thin (aftermath meadow) | Average (mixed grass clover) | Thick (tall fescue)                | Thin (aftermath meadow) | Average (mixed grass clover) | Thick (tall fescue) |  |  |  |
|                    |      |      | Pasture Tiller Density                  |                                 |                         |                              |                                    |                         |                              |                     |  |  |  |
|                    |      |      | Forage Density (lbs DM/a/inch plate ht) |                                 |                         |                              | Forage Mass Available ( lbs DM/a ) |                         |                              |                     |  |  |  |
| inch               | inch | cm   |   |                                 |                         |                              |                                    |                         |                              |                     |  |  |  |
| 3.0                | 1.8  | 7.3  | 513                                     | 592                             | 704                     | 818                          | 1066                               | 1500                    |                              |                     |  |  |  |
| 4.0                | 2.4  | 9.8  | 495                                     | 574                             | 704                     | 1059                         | 1376                               | 1945                    |                              |                     |  |  |  |
| 5.0                | 3.0  | 12.2 | 476                                     | 556                             | 704                     | 1285                         | 1662                               | 2363                    |                              |                     |  |  |  |
| 6.0                | 3.6  | 14.6 | 458                                     | 538                             | 704                     | 1494                         | 1926                               | 2754                    |                              |                     |  |  |  |
| 7.0                | 4.2  | 17.1 | 439                                     | 520                             | 704                     | 1688                         | 2167                               | 3117                    |                              |                     |  |  |  |
| 8.0                | 4.8  | 19.5 | 420                                     | 502                             | 704                     | 1866                         | 2384                               | 3454                    |                              |                     |  |  |  |
| 9.0                | 5.4  | 22.0 | 402                                     | 484                             | 704                     | 2029                         | 2579                               | 3763                    |                              |                     |  |  |  |
| 10.0               | 6.0  | 24.4 | 383                                     | 466                             | 704                     | 2175                         | 2751                               | 4045                    |                              |                     |  |  |  |
| 11.0               | 6.6  | 26.8 | 365                                     | 448                             | 704                     | 2306                         | 2900                               | 4299                    |                              |                     |  |  |  |
| 12.0               | 7.2  | 29.3 | 346                                     | 430                             | 704                     | 2421                         | 3026                               | 4527                    |                              |                     |  |  |  |
| 13.0               | 7.8  | 31.7 | 328                                     | 412                             | 704                     | 2520                         | 3129                               | 4727                    |                              |                     |  |  |  |
| 14.0               | 8.4  | 34.1 | 309                                     | 395                             | 704                     | 2604                         | 3209                               | 4899                    |                              |                     |  |  |  |
| 15.0               | 9.0  | 36.6 | 291                                     | 377                             | 704                     | 2671                         | 3266                               | 5045                    |                              |                     |  |  |  |
| 16.0               | 9.6  | 39.0 | 272                                     | 359                             | 704                     | 2723                         | 3300                               | 5163                    |                              |                     |  |  |  |
| 17.0               | 10.2 | 41.5 | 253                                     | 341                             | 704                     | 2759                         | 3311                               | 5254                    |                              |                     |  |  |  |
| 18.0               | 10.8 | 43.9 | 235                                     | 323                             | 704                     | 2779                         | 3299                               | 5318                    |                              |                     |  |  |  |

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