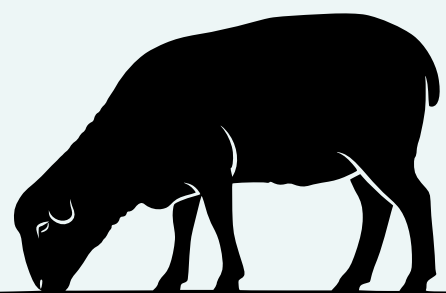


ACCURATE PASTURE ASSESSMENTS



CALIBRATING YOUR ASSESSMENT OF HOW MUCH PASTURE FEED IS PRESENT.



Accurately assessing pasture mass provides invaluable information. The quantity of pasture, referred to as kilograms of dry matter per ha (kgDM/ha), directly affects how much pasture can be eaten per day by grazing livestock and also how much is available to be eaten. Whilst the quality or digestibility of that feed is also critical, assessing pasture mass is an essential step in making informed grazing management decisions.

ASSESSING PASTURE FEED

Pasture feed assessment can be achieved with a skilled eye or a variety of measuring tools. The tools available include pasture rulers, pasture meters, satellite imagery and a range of photo libraries and publications that can assist visual assessment

No matter what tool or technique is used, the value it offers in assessing feed availability is ultimately derived from cutting and drying of pasture to physically measure the quantity of feed present. This cutting calibrates every tool.

However, the default or “factory” calibration cannot be universally applicable. It may not apply to your pasture or current pasture conditions. Taking your own pasture calibration cuts can help check a tool’s accuracy, allow adjustment to reality or confirm confidence in your own skill.

Calibration has a few steps. But so too does the process of turning feed into product and profit. A sound foundation for those steps is a worth a little effort.



Using a pasture ruler to assess feed availability.

DRY MATTER: WHAT WE MEASURE AND ESTIMATE

Dry matter is the term used to describe the quantity of pasture feed. It is the pasture mass with the water content removed, since water has no feed value. Pasture dry matter can include both green (living) or dead plant material. That said, green dry matter is often referred to in feed benchmarks or targets, since this fraction of the pasture mass is so important to livestock productivity.

Step 1: Make an assessment

Make a visual assessment and/or use your tool of choice to estimate kgDM/ha of pasture mass on patch of pasture. A quadrat or square frame can be used to focus the assessment. It will also be required in step 2.

Write your estimates down so you don't forget how well you did, or can see what needs adjusting.

In an optional step, using three quadrats can help make the area assessed be a little more representative of the pasture more generally. Lay out three frames and remove those with most and least feed, leaving only the median quadrat to be cut.



Step 2: Cut the pasture in the quadrat



Use a quadrat (a square frame with known internal dimensions), to select a defined area of pasture to cut. Although there is not one specific size of quadrat that you should use, your quadrat should be large enough to capture variation. A recommended size is 50x50cm (quarter of a square metre), which is sufficiently large enough, and makes for easier calculations.

Using hand shears or electric clippers (an electric shearing handpiece is best) the pasture mass is cut to ground level and bagged.

Avoid collecting soil, dung or rocks (or remove them later as needed) as they distort the assessment.

Steps one and two can be repeated to get a few calibration cuts and build confidence. Cuts across range in pasture masses can be used to build a calibration curve for an assessment tool. Even a couple of cuts can help link reality to what the tool or your eye is indicating.

Step 3: Dry and weigh

This step allows you to weigh the dry matter only, and not the water content. If the cut pasture is too substantial to dry easily, weigh it fresh, then take a smaller sub-sample for drying and take the fresh weight of this as well. In this way, the dry weight of the sub-sample can be multiplied up to provide the dry weight of the total cut (see Step 4).

Drying in a microwave can be the most convenient method, but caution is required to avoid burning the pasture or over-heating the microwave. The best approach is to dry for a short time, initially up to a minute, then remove and weigh. Repeat this step until the weight doesn't change with more drying. As the moisture is progressively removed, reduce the additional drying time to avoid charring the grass.

Some methods suggest including a cup of water in the microwave to reduce the risk of burning the sample. However, condensation within the microwave can defeat the drying process and add errors. Careful monitoring is better.

Step 4: Calculate kgDM/ha

Once the total mass of pasture has been dried, you can now calculate kgDM/ha. If you have used a 50 x 50cm quadrat then the dry weight in grams can be multiplied by 40 to get your kgDM/ha value.

e.g. 25 g of cut and dried pasture = 25 x 40 = 1,000 kgDM/ha.

If a subsample of the cut was dried, then the calculation = (total fresh weight/subsample fresh weight) x dried subsample weight in g x 40.

e.g. if total cut = 125 g, and a subsample of 50 g was dried to 10 g dry weight, then kgDM/ha = (125/50) x 10 g dry weight x 40 = 1000 kgDM/ha.

If a different size of quadrat is used for cutting the pasture, then the multiplication factor of 40 will need to change. The number 40 is derived from converting a quarter square metre to a one metre square (i.e. x 4), convert grams to kilograms (divide by 1,000), and converting a cut for a square metre into a hectare (x 10,000).

Multiply by 4, divide by 1,000, multiply by 10,000 = multiply by 40

Step 5: Compare

The process of estimating pasture mass and then cutting it in a range of quadrats allows your estimate to be compared to reality. This comparison can be laid out in a table or on a graph. You will be able to see if your estimate is similar to the pasture mass measured in the cuts and, if not, what adjustment or recalibration is needed to provide a better measure of the pasture mass.

Quadrat	Your visual estimate of kgDM/ha	Tool estimate of kgDM/ha	Cut measure of kgDM/ha
1			
2			
3			
4			

Take a step back, know what you're measuring. Is it herbage mass or feed on offer?

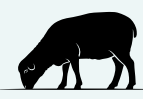
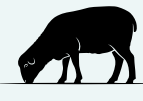

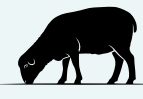

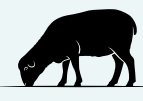
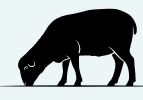
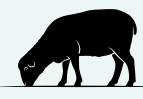
The method of cutting pasture to ground level described above provides a measure of pasture feed known as "herbage mass". This can be achieved by anyone.

A slightly different measure of pasture feed known as "feed on offer" is derived by removing all above ground material with a scalpel and then drying it. Not every will have the patience for this.

This difference in cutting brings with it a difference in the measurement. Herbage mass is less than feed on offer for the same pasture sample. This difference and the confusion it causes arises because New South Wales has historically used herbage mass, while Victoria uses feed on offer. The critical point is to know what measure you have made, what your tool is estimating, and what the pasture targets or benchmarks you are aiming for are expressed in.

A crude conversion between the two systems suggests herbage mass + 300 = feed on offer. In this sum it is assumed that 300 kg per ha has been left behind by the clippers. You may be able to judge for yourself if this is correct by asking what proportion of what you have cut has been left in the quadrat. It won't always or perhaps ever actually be 300. Calibration between the two methods has found that the residue left by clippers can range from 2 to 600 kgDM/ha but averaged 300 kgDM/ha.

IN SUMMARY

-  Don't assume or believe, calibrate your estimate of pasture biomass. Accuracy adds value.
-  Estimate kgDM/ha of pasture mass visually and with your preferred pasture measuring tool, using a square frame or quadrat of known size to identify the area assessed. Record the estimates.
-  Cut, dry and weigh the pasture mass from this quadrat.
-  Calculate the pasture biomass in kgDM/ha by multiplying the dry weight of the cut material in grams by 10, and then also by the number of quadrats per square metre.
-  Compare your visual or tool estimate with the calculated pasture biomass.
-  Know that your cut is expressed as herbage mass. Understand if the targets or guidelines you are using are expressed as herbage mass or feed on offer.
-  Identify if or how your estimates need to be adjusted to match the reality of the cut. Refer this information directly to herbage mass targets, or convert to feed on offer if required.
-  Reward your success in improving assessment accuracy. Chocolate frogs are conveniently small in portion size. This may be an important consideration if you are very successful.