Forage budget calculator

Step by Step walk-through

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Cells with a border are to be filled out based on your operation. The first worksheet (or tab on the bottom of the page) is “yearly animal intake”. This looks at one year’s estimated forage and grain intake by all animal groups. In column A are animal types and stages of production. Input the number of ewes, ewe lambs, rams, young rams, and nursing and weaned lambs on your farm in column B. Then input each group’s average body weight (BW). Weight of ewes is when non-pregnant. For the nursing and weaned lambs, input the BW at the beginning and end of these times. So for nursing lambs use birth weight and weaning weight, for weaned lambs use weaning weight and market weight.

Then enter how many days each animal group will be in this stage of production in column E. Column F uses general feeding guidelines to estimate dry matter intake (DMI) based on BW. Feel free to change these numbers to fit animals on your farm or to increase if you have more feeding waste, etc. Column G is the calculated amount of daily DMI for each animal in that group based on their BW. Enter the amount of grain you feed to each animal in column H. The worksheet will subtract the grain intake from the total intake to produce forage intake (column I). The daily forage intake is multiplied by the number of days in each feeding period to give a total DMI for that group each year, or column J. Column K calculates the yearly amount of grain per animal group.

Down below in cell J22 is all the yearly intakes added together, in lbs of DM. Cell J23 gives this number in tons of DM. This is the amount of forage DM you can roughly expect all your animals to each over a given year. In cell J26 is the amount of yearly grain intake in tons of DM.

The “monthly animal intake” worksheet goes a little further to tell us how much the animals are consuming each month to get a better idea of what your forage consumption looks like throughout the year. Then we can compare this to forage production/supply to see when you might need to harvest (oversupply) or purchase (shortage of supply) forage. You need to fill out the “yearly animal intake” worksheet first, because “monthly animal intake” uses it to do calculations.

In column A and B are the animal types and stages of production. Along the top (row 2) are each month. Enter the number of animals present in each stage for each month. For example, ewes that lamb in May are in late pregnancy for April (30 days), and then lactating in May, June, July (I’m going to say a longer weaning time here for illustration). Don’t get too caught up in the exact dates here, this is an estimate of who you are feeding each month. For nursing and growing lambs, we have to enter their average BW because they are growing along the way. Enter the group’s average BW in row 13 and then how many are nursing and weaned.

The worksheet then produces a monthly DM consumption/demand line on the bottom (row 34). This is the tons of DM consumed each month of the year. You’ll notice that those lambs play a big factor in how much forage you’ll need, plus ewes eat a lot more during late pregnancy and lactation. I put the total tons DM consumed/year in cell P34 – you can compare it to cell J22 on “yearly animal intake” and it should be somewhat close, but don’t get hung up about it if it’s off a little bit. It depends on how many days exactly were put into each calculator. I also divided up the DM requirements in terms of “high, medium, and low” quality forages you would like to fulfill those intake requirements. These are in lbs DM/day for rows 38-40 and tons DM/month in rows 42-44. So row 34 basically can be divided into 3 portions in rows 42-44 based on what quality hay this forage might be.

Hurray! We’re getting there. The next worksheet is “yearly forage inventory”, which is the amount of forage available each month on your operation. In columns A and B are the field number (or name or whatever you like to call them) and the forage type(s) present. I have seven pastures in my example, but you may keep adding up to row 13 and if more, just insert more rows and make sure the section below (tons DM/field) adds them up. After you have name and type of forage, put in the pasture acreage (column C). Then enter your best guess as to how that pasture is growing over the year and how you’ll use it. Basically, we are estimating how much forage you have ready for grazing or harvest, so this can be used to fulfill the animal consumption demands each month. If you have 2 tons of DM that are grazed or harvested in May on pasture 1, then put in a 2 in cell H3. Let’s say the next time you get out there to graze you’ll expect 1 ton of DM available in June, so put a 1 in cell I3. Fill in the available forage DM each month for all your pastures. Column P totals them up to provide a yearly tons of DM estimate. Also, since the animals don’t use all of the DM available, put in an average utilization rate for each pasture. For example, if you are grazing that pasture, it may be around 50% utilized/consumed, so put in 0.5 in column Q. For harvesting hay or silage, this number will be higher. Some months you may graze and some you may harvest.

Below, in rows 14-28, the monthly pasture yields are summed. Row 24 provides the total acres, then the total tons of DM available each month of the year. Cell P24 at the end sums up the total forage DM available on the farm that year.

The last worksheet brings supply and demand together. Row 2 is the tons of DM available (from yearly forage inventory worksheet). Row 3 is the tons of DM consumed (from the monthly animal intake worksheet). Row 4 takes the difference between these to provide the tons of DM balance. Negative numbers are how many tons of DM short you are that month (how much stored forage you’ll need). Positive numbers are how many excess tons of DM you have available that month (you should harvest this or adjust your feeding scheme).

If you are a visual person, I have made a graph below that shows the farm forage supply and demand throughout the year (by month). The graph under it is simply the difference between the two, or the Balance between supply and demand. If you are negative, you’ll need to purchase or use stored feed, if you are positive, this is your estimate for how much is available to harvest.