Forage - Livestock Balance Worksheet
User Instructions

Overview

This program is based upon predicted Soil Map Unit Yields, taken from the National Soils Information System (NASIS), for Alfalfa/Brome (in Tons/Acre/Year), Smooth Bromegrass and Bluegrass (both in Animal Unit Months/Acre. Yields have been converted to Pounds of Dry Matter/Acre/Year.

The predicted yield of Alfalfa/Brome is used for the following forage choices listed in the program: **Alfalfa/Brome**, **TG/Leg 4-8 padd**(Tall Grass/Legume 4-8 paddocks), **TG/Leg 8-15 padd**(Tall Grass/Legume 8-15 paddocks), and **TG/Leg 15+ padd**(Tall Grass/Legume 15 or more paddocks). It is assumed all other grass/legume combinations will not have a large enough percentage of legumes nor be able to maintain the legumes to be credited in the predicted yield. They will instead be found in the Smooth Bromegrass or Bluegrass predicted yields.

Bluegrass is used for the following forage choices: **Bluegrass**, **60 Blue/40 Tall Grass**(60% Bluegrass/40% Tall Grass), and **Bluegrass/Legume**.

Smooth Bromegrass yield is used for the following choices: **Bromegrass** (Smooth Bromegrass), **Reed Canarygrass**, **Fesc/Mix. Grass**(Tall Fescue/Mixed Grasses), **Orchardgrass/Legume**, **Mix TG/Legume**(Tall Grass/Legumes), **TF/Mix Gr/Legume**(Tall Fescue/Mixed Grasses/Legumes), **TG 1-8 paddocks**(Tall Grass 1-8 Paddocks), **Switchgrass**, **Big Bluestem**, **Indiangrass**.

Input - Select this screen to implement livestock & forage information for the pastures

1. Enter Producer Name, Address, Location and Phone Number
2. Enter Prepared By (your name)
3. Select County (Not Really Important)
4. Enter SMU's (Soil Map Units) – as many as you want to make it as detailed as you want
5. Enter acres of each SMU – use the amount of detail you desire, however ***the total SMU acres must equal the total field acres***
6. Enter field number – Maximum of 20 different pastures, paddocks or fields
7. Scroll to select the kind of forage existing or planned for the field. At the bottom of the list are several choices in addition to the ones described at the top of this page there are 3 more which are:
   - Corn Stalks – This defaults to a yield of 5,950 # DM/Acre regardless of the SMU. Cornstalks will default to being available for grazing in November, December, and January. You can change the months if you want to. ***I suggest entering 19% for Utilization*.**
   - 1 Hay then Graze – An Alfalfa/Brome yield is assumed. It assumes 33% of the total forage yield is taken with the hay cutting in June and the remaining 67% is available to be grazed. Enter the forage use as Pasture and select a utilization rate for the grazing system.
   - 2 Hay then Graze – An Alfalfa/Brome yield is assumed. It assumes 67% of the total forage yield is taken with 2 cuttings of hay and the remaining 33% is available to be grazed. Enter the forage use as Pasture and select a utilization rate for the grazing system.
8. Select Forage Use – Pasture or Hayland
9. Enter Utilization Rate – Enter as a whole number i.e. 30, 43, 71 For Hay Utilization use 65% - 75%.
10. Management Level – ***Nothing needs to be entered*** – it can be used if you think the yield will be > or < than predicted. You may use it to reduce the predicted yield to account for tree cover. For example, if you think that because of tree cover the forage will only yield 50% of its potential then enter 50. The yield will be shown in the current column. You will also need to go to the boxes to the "right" and move the "x" from potential to current.
11. Repeat steps 4 – 10 for each pasture or paddock, existing or planned for the grazing system
12. Select the kind of livestock
13. Enter the number of animals for each kind
14. Enter the weight of each kind (Use the weights the producer provides for the livestock. If that isn't available some weight ranges to assist you are as follows Bull 1600-2000#, Beef Cow 1000-1400#, Horse, Lactating Mare(I do not have a range for horses, sorry), Calf > 3 months old 300-500#, Yearling 500-800#, Lactating Ewe 120-180#, Dry Ewe 120-180#, Feeder Lamb 40-100#, Dairy Cow Lactating 900-1500#, Dairy Cow Dry 900-1500#)

Tables – Select Tables at bottom of screen - information from input screen is transferred to these tables

Pasture Forage Availability - Table 1

1. *Yield*, by field from input screen, **times** the *utilization rate* **equals** the "*available forage*"
2. *Available forage* **times** *percent growth by month* distributes the forage through the year
3. Monthly totals entered as Forage Available in Table 3
4. Yields can be moved to different cells if that "fits" the management of the system better. For example in a stockpile system the August-October forage yields can be moved to winter months.

Hay or Supplemental Forage Availability – Table 2

1. *Yield* by field from input screen **times** *utilization rate* **equals** *available forage*
2. Cutting Dates – Program does not enter anything here and nothing needs to be entered
3. Total Available is entered on Table 3

Livestock Needs – Table 3

1. By Kind the *number of animals* **times** the *animal weight* **times** the following *percent body weights* (Bull .025, Beef Cow .03, Horse .025, Lactating Mare .03, Calf > 3 months old .03, Yearling .03, Lactating Ewes .045, Dry Ewes .03, Feeder Lambs .04, Dairy Cows Lactating .03 expected from pasture, remaining animal needs will be provided by supplement, Dairy Cow Dry .025; the % Body Weight can be changed, contact Brian Peterson for assistance in changing this factor in the formula) **equals** the *#'s DM Needed per Day.*
2. *#'s DM Needed per Day* **times** the *number of days in the month* **equals** the *total #'s DM needed per month*
3. If animals aren't on hand you will need to enter a "0" in the month. For example calves born in April would not have forage needed until July or August so all months prior to that should have a "0" entered.
4. Monthly needs are totaled
5. *Needs* are **subtracted** from *available* to show the *balance for the month*
6. If there is a deficit and there is Hay available the hay meets the need starting in January or the first month hay is needed until all of the hay is gone.

Herd Grazing Days/Paddock – Table 4

1. The table shows the number of days per month the livestock can graze each paddock. The Table can be used to help determine the number of surplus or shortage of days for grazing in a month, for the grazing season or for the year. It can also show the paddocks that might have excess forage that could be harvested as hay.
2. At the bottom the table tells the user if the system has a forage surplus or deficit for the May 1 – Sept. 30 grazing season and it also divides the grazing season into the May 1 – June 30 and July 1 – Sept. 30 grazing periods and tells the user if there are forage surplus or deficits in these grazing periods

Chart – Forage Availability/Livestock Needs – Select Chart at bottom of screen

1. The Bar Chart graphically depicts table 3 (I think this can be a valuable tool when working with a producer) This chart only shows the available forage and the livestock needs.

Chart (2) – Forage Availability/Hay Availability/Livestock Needs – Select Chart (2)

1. This Bar Chart graphically depicts the available forage in both hay and pasture and the needs of the livestock from table 3. (This can be a valuable tool when working with the producer if they have also estimated hay production)

Soils – Select Soils at bottom of screen

1. You will need to check to see if the soils in your county are included in the table
2. If the soils are not on the list you will have to enter the SMU and the Alfalfa/Bromegrass in T/Ac, Tall Grass in AUM/Ac and Bluegrass in AUM/Ac. The formula will convert the yield to #'s Dry Matter/Acre. You will have to first unprotect the table to make the changes and then protect it again once completed.

Save the Worksheet

To save the information you enter for a producer on the worksheet save the file under another name. I normally save it according to the producer name, county and the section where the pasture is located. That way I can separate different pastures with the same producer. Use whatever works best for you.

Printing Instructions

To print any portion of the worksheet you have to be in that screen. For example to print the information from the *Input Screen* you will need to be in the *Input Screen.* Two pastures or paddocks are shown on each page. Unless directed otherwise it will print all 10 pages regardless of how many paddocks or pastures there was information entered for. To print fewer pages select the pages you want printed when asking it to print. If you have 7 paddocks tell the printer to print pages 1-4.

When in the *Tables* section it will print all four pages unless directed to print fewer. Each *Table* will be on its own page. To print the *Chart* you will need to be in that screen.

Some Suggestions for Using the Computer Program

1) When you select a forage it will be important to determine if legumes are a significant portion of the system, either planned or in place. To be considered significant assume the legumes represent > or = 30% of the stand. If they are significant you will need to use one of the following choices: Alfalfa/Brome; TG/Legume 4-8 Paddocks; TG/Legume 8-15 Paddocks; or TG/Legume 15+ Paddocks. There are no predicted yields available for: straight legume stand; Kentucky Bluegrass and Legumes; nor Warm Season Grass and Legumes.

2) The Hay and Graze choices are good options to use in a stockpile grazing program. These choices are also very good to use to better manage cool season forages during the early part of the grazing season. The Hay and Graze choice assumes an Alfalfa/Brome Yield.

3) **An accurate estimate of Utilization Rate is critical to the accuracy of this program**. Don't increase Utilization rate just to make the livestock needs and forage availability balance. Most rotational systems should fall into a 40-55% utilization. To get higher than 55% requires a higher level of management and would normally require rotating livestock twice or more per week.

4) **To get higher Utilization Rates requires moving livestock more frequently and it also requires resting pastures**. The length of time forage needs rest will depend upon the time of year, type of forage and etc. Rests may be as short as 2 weeks or might be as long as 45 days or more depending upon the rate of regrowth.

5) Entering each pasture (paddock) separately gives you the opportunity to manage the system and try some "what ifs". Such as "What if I Hay and Graze Paddock 5?" "What if I make Paddock 6 a Warm Season Grass Paddock instead of Smooth Brome".

6) Remember this computer program is only a tool and it gives an estimate of the balance between livestock needs and forage availability. Use it only as a tool and a basis for planning the system. The owner will need to make day-to-day management decisions based upon weather, actual forage growth, livestock needs and etc.

7) Table 4 can be used as a tool to determine how many days in a month livestock can graze each paddock. Use this information to help determine which paddocks might be able to be used for hay, which paddocks could maybe subdivided to make their production more equal to other paddocks and etc. It can be used to help plan a grazing schedule.

8) Production estimates, unless otherwise noted, are based upon an established system. It might take several years before improvements in the system will result in increased production.