

Ration

A program for designing and evaluating beef diets

From
Balanced Beef



Beef nutrition implemented with balance between

Costs and performance
Technology and simplicity
Science and common sense

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Overview

Like all spreadsheets, Ration is just a bunch of columns (letters at top of page) and rows (numbers at side of page). There are several pages, but pages A - D contain the majority of the needed information and programming. Macro commands hide and display the columns and rows so most of the unneeded information is hidden.

The Ration program can be set up and operated many different ways. I will describe how I would set it up and how I would use it. In these descriptions, I am assuming you have a basic understanding of computers and Windows.

The program currently contains a bit of useless information that is basically a result of unfinished programming.

Use with Excel

When the file is opened, select "Enable Macros". A new menu option called "Ration" will appear on XLs menu (at the top of the page).

Formulas in the worksheet are protected. Removal and application of this protection should be automatic but this process is not perfect. If you are ever asked for a password, it is 4422.

The program will be described through a couple of examples.

Balance a ration

1. Look up the number of the feeds you want to use on the page called "feeds". In this simple example, lets use barley (100), barley silage, (252), and 15% supplement (700). Import these feeds into the working area by entering the feed numbers into cells b8..b27 on page A. When the desired numbers have been entered, import the feeds by accessing the Ration menu and selecting "Import Feeds".
2. You will probably want to edit names and nutrient levels of the imported feeds. Display nutrient levels of ingredients by going Ration => Display => Ingredient Nutrients. When you are done editing, hide ingredient nutrients through by selecting Ration => Hide => Ingredient nutrients.
3. Specify the format (Dry matter or As fed basis) you want to build the rations in by entering a 1 for Dry Matter or a 2 for As Fed in cell A:b28. In this example, we will build rations on a dry matter basis. In cell A:b32, you should also enter the name you are going to give these rations.
4. Enter the ration formulas. Remember, we have specified that these are dry matter formulas.

5. Save the ration formulas. The path that it will be saved in can be specified in cell A:D4. You will have the opportunity to keep it in a specific folder. I personally have folders for each client so make sure there is a folder for this client within the folder where the main “Ration” file resides. Make folders for clients by accessing Windows explorer (press windows key and the letter E simultaneously).

To save the file, go to Ration => File => Save. You will be asked if you want to save the changes. Select Yes. Then you can select the folder you want it placed in. Enter a name for the new ration (near the bottom of the dialogue box) and press enter. I personally name files based on the date they were built in the format yearmonthday. So rations built on May 24th of 2006 would be named 60524. This way, rations are always chronologically sorted. You could add other information to this name to be more specific such as “60524 background”

Open a file

Open a previously saved file by selecting Ration => File => Retrieve. You might be asked for a password at this point. It is 4422. Double click on the client folder where the file is, then double click on the ration you want to open. You will see a message that there is a large amount of information in the clipboard and do you want to save it. Select no. Your file is now open ready to be used.

Print the rations

For a simple concise print out, you probably do not want to print off all of the ration nutrients. In column B on page A, nutrients with a 1 beside them will not be printed.

Print the ration that is in the working area by selecting Ration => Print rations. The information is consolidated with only desired nutrients displayed. As fed formulas will be on top, dry matter formulas will be on the bottom. Highlight the area you want to print and access XLs print menu (File => Print). Remember that you only want to print off what you have selected so choose “Selection” near the bottom of the dialogue box. To print the rations to a file for e-mailing, go Ration => Print => To File.

Print batch sheets

Ration => Print batch sheets will give you the option to print batch sheets for any of the nine rations. Enter the size of the minimum batch size in cell D8. Values in column C indicate the size of the increase in batch size.

Print a Matrix

Print a gain matrix for any of the nine rations by selecting Ration => Print Matrix. Highlight the area you want printed then print through XL’s print menu. On the matrix page (page G), you can specify if weights are in pounds or kg by entering a 1 for kg or 2.2046 for kg in cell B6. If the feedlot calls their bunks in pounds or kg of dry matter, you will want to change the dry matter to

100%.

The 1984 NRC equations were used in the matrix whereas 1996 NRC equations were used in the main ration balancing program. As a result, there will be slight discrepancies between performance predictions of the ration balancing component and the matrix. Due to the variation in ingredient qualities, genetics of animals, weather, and management of producers, we (I) will never be able to predict performance exactly. I always remind producers of this when I provide gain matrices so they realize they are guestimates only. Because of this variation, I have just used the more simple '84 equation in the gain matrix.

Obviously, we must be accurate in our ingredient descriptions, especially dry matters of silages.

Miscellaneous

You can “shrink down” your working area by hiding unwanted nutrients (those nutrients with a 1 beside them). Go to Ration => Hide => Ration nutrients. Display hidden nutrients by selecting Ration => Display => Ration nutrients.

Display the window that shows predicted performance by selecting Ration => Display => Performance window. Hide this window by selecting Ration => Hide => Performance window.

Windows commands

I use the keyboard more than I use the mouse (I think it is faster). If you are already comfortable with a computer and Windows, you will likely prefer to use the mouse where I describe keyboard commands.

Copying: select the area you want to copy (press the shift key and use keyboard arrows to highlight area) press Ctrl + C to copy into the computers memory. Move the cursor to the area you to paste it to, and press Ctrl + V.

Moving: If you want to move something (not copy), press Ctrl + X on the block you want to move, move the cursor to the location you want it moved to and press Ctrl + V.

The working area

The main working area is where feeds are imported and rations are balanced. Feeds contain 34 nutrients (columns E - AL) which are typically hidden. Nutrients are always on a DM basis. To the right of these nutrients are a location for ingredient price (column D) and a total of 9 potential rations (column AM - AU). Nutrient levels (rows 68 - 102) are calculated for each ration based on the proportions of the ingredients and their nutrient profiles. A total of 20 feeds can be imported into the working area.

Calculated levels of nutrients (rows 68 - 102) can also be hidden. To the left of these nutrients (column B), a 1 can be entered to hide the nutrients from view, or to prevent the

nutrients from being included when rations are printed. After entering a 1 to hide the nutrient, select Ration => Hide => Ration nutrients. Use this procedure to display hidden nutrients.

Dry Matter or As Fed formulas

In cell A:B32 you can specify if you are working on Dry matter formulas (1) or As Fed formulas (2). If you want to see and work the rations in the opposite format (if you are working on DM formulas and you want to see AF formulas), go Ration => Switch and the format will be changed. If you just want to see the rations in the opposite format without making any adjustments, you can just go to page B (rows 7 - 26). Specify the format you want to see in cell C3. Although we can specify AF or DM formulas, nutrient levels are always given on a DM basis (no option for AF basis).

Estimated performance

Starting at row 104, estimated performance and economics of each ration are outlined. To see these values while working on rations, select Display => Performance at the main menu. Performance is estimated using NRC equations with the specified mature weight (currently set at 1375 lbs). NRC calculations can be adjusted by the DMI and ADG adjustment factors found at cells AN33 & AN34. Suggested adjustment factors are given to the right of these values. These are the values required to make NRC equations match average closeouts for finished cattle from Southern Alberta Feedlots. The closeout data base included 743 lots (157324 head) of yearling steers, 1482 lots (343844 hd) of yearling heifers, 296 lots (62536 hd) of steer calves, and 399 lots (92204 hd) of heifer calves. Performance will be based on unadjusted NRC equations if values are left at 1.

For performance to be calculated for a ration, there must be an animal weight and a days in the period entered in rows 19 and 20. I typically just enter 1 for days.

If you want to adjust DMI or ADG, you can enter the values you want to use in rows 25 and 26. Economics are adjusted based on the new values.

Daily costs and costs of gain include only feed costs and yardage. Yardage can be specified in cell AN21.

Retrieving feeds

Feeds can be imported into the ration balancing area by going to the top of page A, in column B. By entering feed numbers and selecting Ration=> Import Feeds, feeds are imported into the working area. By looking on page D, you can see the numbers associated with each feed. Feeds on this page are grouped by type. For example, grains are 100-199, forages are 200 - 299 (silages start at 250), proteins are 300 - 399, etc...

Look on the top of page D to see other feed categories.

If you already have feeds imported and you need to bring in another feed but you don't want to import more feeds and lose the information (i.e. nutrient levels) you have entered, you can go to page D, highlight (shift + arrow key) and copy (press Ctrl + C) the feed. Go to the working area where you want to enter the feed and paste it (Ctrl + V).

Once feeds are in the working area, columns containing nutrient levels are typically hidden. You can expose these columns through the main Ration menu. After editing nutrient levels, they can be hidden the same way, but selecting Hide rather than Display.

Hide / expose nutrient levels

Nutrient levels of feeds can be viewed / edited by displaying the hidden columns. At the main menu, go to Ration => Display => Ingredient Nutrients. Nutrients can be hidden by selecting Ration => Hide => Ingredient Nutrients

Calculated levels of nutrients (rows 68 - 102) can also be hidden. To the left of these nutrients (column B), a 1 can be entered to hide the nutrients from view, or to prevent the nutrients from being included when rations are printed. After entering a 1 to hide the nutrient, select Display => Hide => Hide at the main menu. Use this procedure to display hidden nutrients.

Adding feeds to the library

To add feeds to page D so that they are automatically retrieved when you enter their number (page A, B8 - B28) and import feeds (Ration => Import Feeds), a row must be inserted and then nutrients entered on the blank row. You can simply add new feeds at the bottom of the block of feeds, but you will not be able to automatically import the feeds. To insert a row, access the Quattro menu (press the alt key), Block, Insert, Row.

Cow Rations

I typically print off rations for a cow heard using quantities of feed rather than percentages. I also typically expose the nutrients "lb of TDN" and "lb of protein" (see hide / expose nutrient levels). To print off lbs of feed, rations on page A must be on a DM basis. Change the format settings on page B to "2" to change from % to weight (cell C2). Of course you will typically want the numbers to be on an AF basis so the value in cell C3 should be a 2. With these values set, the ration values on page B will be in quantities rather than percent. The quantities are determined based on the percentages of the ingredients and the dry matter intake that is calculated or specified in cells A:AM37 - AU37.