



Current Report

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Spreadsheet for Calculating Livestock Rations (RATION)

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For years nutritionists have balanced rations using the trial and error technique. With the advent of the microcomputer and spread sheets, this time consuming chore becomes very quick and easy. The output produces a convenient one-page printout that includes two batch sizes for mixing. The spreadsheet is written for Lotus 123.

The program is divided into two sections. The top section (TABLE 1), contains a listing of 16 feed ingredients and their nutrient composition. Note that nutrients must be entered on a **dry matter basis**. All ingredient names and nutrient compositions can be changed by the user from the keyboard. The columns for cost is under column K and is off the screen to the right. This column can be seen by moving the cursor to the right.

If the user wants to change any of the feed names, he must turn off the title lock. The title lock is usually active so that the user can scroll to the right to the cost column and still see the feed names. In order to change a feed name, the title lock can be cleared by entering the keystrokes /WTC from the keyboard. Placing the cursor in the B column and entering the keystrokes /WTV resets the title lock.

There are a large number of calculations hidden off to the right of the screen. This portion of the program contains nutrient totals. In the example ration supplied with the program, the user can see that of the 12.3 percent protein (Dry Matter basis) in the ration, 1.44 units came from urea and 6.11 units came from corn silage. These cells should never be altered because they contain necessary intermediate steps for computing the ration. Any cell that should not be changed is protected to prevent inadvertent removal of an equation.

A total of 16 feeds have been used because this permits the nutrient names to be seen at the top of the

screen and the computed composition values to be seen at the bottom of the screen at the same time. Moving the cursor to the top left hand point on the screen (use the "home" key) will provide the best positioning of the nutrient matrix for viewing.

Ration composition values (TABLE 2), calculated from the program are shown below the ingredient matrix. The initial 16 feeds shown in this example were chosen because they are familiar to most Oklahoma producers.

Nutrients listed in the program you will receive are:

<u>Nutrient</u>	<u>Expressed as:</u>
Dry matter (D M)	%
Total Digestible Nutrients (TDN)	%
Net energy for maintenance (TDN)	Mcal/100 lbs
Net energy for gain (NEG)	Mcal/100 lbs
Crude Protein	%
Potassium (K)	%
Calcium (Ca)	%
Phosphorus (P)	%
Cost (\$)	\$/100 lbs

In order to speed operations, the program is set for "manual recalculation." This permits the user to make any number of changes in feeds and nutrients before the program calculates the ration. When the user is ready to calculate the ration, the "F9" function key is pressed. The program will flash "wait" in the upper right hand corner of the screen while it is calculating. Users with faster computers may wish to let the computer recalculate after each keyboard entry. This may be accomplished by changing to automatic recalculation. The keystroke sequence is /WGRA.

Calculating a ration.

Rations are calculated by trial and error. Although this may seem crude, the speed of the computer makes this relatively efficient.

First, press the "home" key to move the cursor to the top left hand corner of the screen. Next, change any nutrients as needed to correctly represent the feeds you are using. New feeds can be added by clearing the titles lock as described previously and typing the new feed name over one of the existing feeds. The feed name will automatically be changed in the feeding sheet

below. Be sure to enter new nutrient data for the new feed. Note that Cost of each ingredient is entered in terms of \$/hundredweight on an as fed, or wet basis, the way most feeds would be quoted from a feed store.

Next, enter your initial "guesses" for percentages of each ingredient to be used in the ration. The total does not need to add to 100 for calculation of the ration, but keeping the total at 100 may make it easier to visualize the proportions of each feed as you make your first entries. Each time you want to see the nutrient composition of the ration, press the "F9" key and observe the calculated values shown at the bottom of the screen. Values are shown both on "AS FED" and "DRY MATTER" basis.

Once the ration composition is complete, the user can scroll down to the "Feeding Sheet" to view the final ration. Ingredients are listed as percentages on "as fed" basis and as pounds for two batch sizes. The user can change batch sizes from the keyboard for the two batch columns to produce desired batches for mixing. If the program is running in manual mode, the user must press "F9" each time a change is made in order to recalculate the new batches.

TABLE 1. FEED INGREDIENTS AND NUTRIENT SPECIFICATIONS

FEED NAME (16)	AMOUNT	D.M.%	TDN%	NEM	NEG	PROT	K%	CA%	PHOS	COST
ALFALFA EXCEL	0.00	90.00	61.00	66.0	34.0	18.0	2.30	1.40	0.25	4.25
ALFALFA GOOD	0.00	90.00	52.60	57.0	27.0	16.0	1.50	1.25	0.22	4.00
COTTONSEED HULLS	0.00	90.00	47.00	47.0	10.0	4.0	0.90	0.15	0.09	3.00
CORN SILAGE	76.40	36.00	69.00	73.0	46.0	8.0	1.00	0.24	0.22	1.25
CORN DENT NO 2	15.00	88.00	94.24	103.0	67.0	10.0	0.40	0.02	0.29	4.82
MILO, ROLL, GRND	0.00	88.00	75.00	80.0	50.0	10.0	0.40	0.04	0.36	5.00
MILO, EXCL PROC	0.00	83.00	89.00	90.0	60.0	10.0	0.40	0.04	0.36	4.50
WHEAT	0.00	90.00	89.04	100.0	65.0	13.0	0.40	0.04	0.37	4.00
CANE MOLASSES	0.00	75.00	75.00	79.0	50.0	5.0	3.60	0.10	3.60	3.90
COTTONSEED MEAL	7.00	91.00	77.18	77.0	50.0	44.0	1.12	0.20	1.12	7.00
SOYMEAL 44	0.00	90.00	86.38	87.0	59.0	48.9	2.20	0.32	0.70	8.50
LIMESTONE 38%	0.50	97.00	0.00	0.0	0.0	0.0	0.00	34.00	0.00	2.25
DICAL	0.30	97.00	0.00	0.0	0.0	0.0	0.00	22.00	18.65	13.50
UREA	0.50	99.00	0.00	0.0	0.0	288.0	0.00	0.00	0.00	9.00
SALT	0.30	97.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	2.25
PREMIX	0.00	90.00	60.00	60.00	30.00	10.00	1.00	0.05	0.90	19.00

TOTAL & DM COMP	100.00	-->>>	72.25	76.61	48.69	12.13	0.90	0.44	0.35	4.12
AS FED COMPOSITION			41.91	30.28	32.11	20.41	5.08	0.38	0.14	1.73

TABLE 2. RATION COMPOSITION VALUES.
 CALCULATED MOISTURE OF "AS IS" MIXTURE IS >>> 58.08 PERCENT

FEEDING SHEET FOR --->>>	LB. BATCH	1000	2000
FEED NAME	% AS FED	POUNDS	POUNDS
ALFALFA EXCEL	0.00	0	0
ALFALFA GOOD	0.00	0	0
COTTONSEED HULLS	0.00	0	0
CORN SILAGE	88.95	889	1779
CORN DENT NO 2	7.14	71	143
MILO, ROLL, GRND	0.00	0	0
MILO, EXCL PROC	0.00	0	0
WHEAT	0.00	0	0
CANE MOLASSES	0.00	0	0
COTTONSEED MEAL	3.22	32	64
SOYMEAL 44	0.00	0	0
LIMESTONE 38%	0.22	2	4
DICAL	0.13	1	2.59
UREA	0.21	2	4.23
SALT	0.13	1	2.59
PREMIX	0.00	0	0.00
	100.0	1000	2000

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