EXTENSION

OSU Cowculator Beef Cattle Nutrition Evaluation Software

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Introduction

Feed and grazing costs can be 50 to 70 percent of production costs in cow/calf enterprises and 60 to 80 percent of production costs in growing and finishing enterprises. As a result, beef cattle producers must critically evaluate grazing, feeding and supplementation programs to ensure efficient use of available resources and optimization of animal performance. OSU Cowculator is an Excel-based spreadsheet program designed to assist cattlemen in making informed decisions associated with beef cattle nutrition. Animal criteria and the feed library can be customized to each operation and to each situation. Animal requirements, feed intake estimates and performance predictions are based on years of research data summarized in the National Academies of Science Engineering and Medicine, Nutrient Requirements of Beef Cattle publication (NASEM, 2016).

This program is intended to replace previous versions of the OSU Cowculator program and all previous versions of OSUNRC and OSU Ration Calculator programs.

If the user has limited training in beef cattle nutrition, please contact your Extension educator, Agriculture; Area Livestock Specialist or other beef cattle nutrition professional for assistance. Simply meeting the requirements calculated by this program does not guarantee the ration is safe to feed or that it will result in satisfactory animal performance.

Getting Started

To use Cowculator you need:

- Microsoft Excel. This program is only compatible with Microsoft Excel 2010 or newer versions. Earlier versions of Excel are not fully compatible with this program. Using an earlier version will result in a loss of functionality.
- Macros must be enabled in this program. To learn how to enable macros please visit Microsoft Office Support. https://support.office.com/en-us/article/enable-or-disable-macros-in-office-files-12b036fd-d140-4e74-b45e-16fed1a7e5c6

Oklahoma Cooperative Extension Fact Sheets are also available on our website at:
extension.okstate.edu

Saving Files

Cowculator v3.0 is a macro-enabled excel file and is identified with the file extension 'xlsm.' Excel files are referred to as workbooks. As specific data is entered for each evaluation in Cowculator, changes can be saved in the current workbook by either clicking on the save icon or by choosing SAVE from the FILE menu. This will update all entries that have been made since the last save.

Users may also select the SAVE AS command from the FILE menu and rename the workbook. This option will create a new workbook with the settings entered, while leaving the original workbook intact.

Using the Software

To navigate from one worksheet to another, use the buttons embedded in each worksheet or the tabs at the bottom of each worksheet. Cells that are intended for user inputs have a white or gray background. All other cells are protected to retain the integrity of the program.

Cattle and Management

The Cattle page allows the user to define the type of animal being considered as well as the management decisions for a specific group of cattle. This information is used to calculate the animal's nutrient requirements.

Class of Cattle / Stage of Production

Select the drop-down list to view the available categories: Growing and Finishing Cattle; Mid Gestation, Bred Heifer; Late Gestation, Bred Heifer; Early Lactation, First-Calf Heifer; Mid Gestation, Dry Cow; Late Gestation, Dry Cow; Early Lactation, Mature Cow; Late Lactation, Mature Cow and Mature Bulls. Depending on the class of cattle selected, the visible input cells change automatically (Figure 1).

Feeding Period

Enter the number of days this group of animals will be fed this diet. For cows and bred heifers, mid and late gestation are intended to approximate the 2nd or 3rd trimester of pregnancy (approximately 90 days each), respectively, with average gestation length of 283 days. Early and late lactation

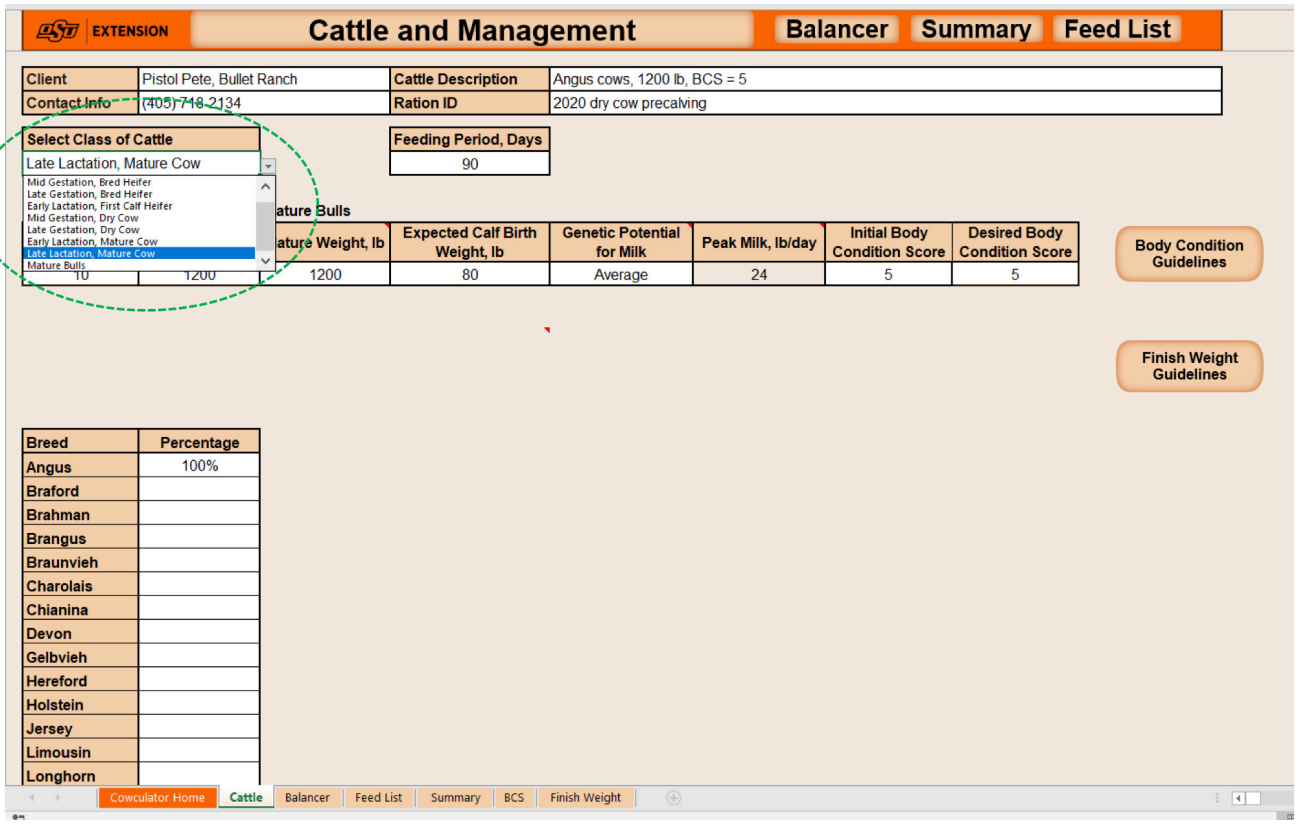


Figure 1. "Cattle and Management" page showing drop-down list for classes of cattle.

are intended to reflect the first and second half of lactation (approximately 100 days each). For this reason, the feeding period input for lactating cows or heifers should not be longer than 100 days. Feeding periods for growing or finishing cattle may need to be considerably longer.

Breed Composition

Cowculator allows the user to select the known or approximate breed makeup for the cattle being considered. The NASEM (2016) publication provides estimates for breed differences in maintenance energy requirements. Cowculator uses maintenance requirements adjusted for breed effects for all classes of cattle. Breed composition is also used to estimate milk yield. Twenty-two beef and dairy breeds are listed. Enter percentages in the input cells so that the total equals 100.
Examples

1. For purebred Angus cattle, enter 100 beside Angus. It is not necessary to enter a "%" sign.
2. For black, white-faced cattle out of Angus cows and sired by Hereford bulls, enter 50 beside Angus and 50 beside Hereford.
3. A set of cattle sired by Simmental bulls and out of Limousin x Brangus cows is entered as 50 Simmental, 25 Limousin and 25 Brangus.

Breed adjustments are identical for Black and Red Angus breeds and therefore "Angus" should be selected to represent the breed.

The total at the bottom of the Breed Composition Table must equal 100 before proceeding!

Inputs for Cows, Bred Heifers and Mature Bulls

Initial Weight

The Initial Weight input should represent the expected weight of the animals at the beginning of the feeding period. This weight should not be adjusted for body condition score (BCS) or age.

Mature Weight

Enter the expected mature weight at six to seven years of age when BCS is equal to 5. This entry is used to determine nutrient requirements for growing bred heifers and growing lactating first-calf heifers. Mature weight is not used in nutrient requirement calculations for mature cows nor for mature bulls. Rather, current and desired BCS is used as described below. Cowculator assumes that each unit of BCS change requires 7.1% change in body weight.

Expected Calf Birth Weight

Enter the average calf birth weight anticipated for calves out of this group of heifers or cows. This value is used to determine energy and protein needs for fetal development during gestation. Expected calf birth weight does not influence nutrient requirements for lactating cows or mature bulls.

Genetic Potential for Milk

Milk production varies as much within a breed of cattle as it does among breeds. Milk yield can have a dramatic

impact on nutrient requirements and therefore, a reasonable estimate of genetic potential for milk can improve accuracy of projected nutrient balance. Five levels of productivity are available: low, medium-low, average, medium-high and high. These levels are intended to approximate sire milk expected progeny differences (EPD's) relative to breed average. For example, if most of your cows or heifers are sired by bulls with milk EPDs in the top 20th percentile of the breed, then you might select "High". If your cows or heifers are out of bulls ranging in milk EPD from 40th to 60th percentile for the breed, you might select "Average" and so on.

Peak Milk Yield

This cell provides an estimate of daily peak milk yield for mature cows consuming adequate protein and energy to maintain their weight and BCS = 5. This is not an input cell. The value is calculated from the other inputs provided. Milk yield generally peaks six to 10 weeks after calving and gradually declines over the remainder of the lactation period. This cell does NOT reflect lactation yield during late lactation, even when "Late Lactation, Mature Cow" is selected as the class of animal. Similarly, peak milk yield in first-calf heifers will be approximately 20% lower than the value displayed in this cell.

Initial Body Condition Score

Input the current (or anticipated) BCS of the cows, heifers or bulls at the beginning of this feeding period. The average of the Initial and Desired BCS inputs are used to calculate maintenance energy requirements. Cattle in thinner condition (lower BCS) have lower maintenance requirements compared to cattle in fatter condition, assuming there is no cold stress. For further information about the body condition scoring system for beef cows, see ANSI-3283, Body Condition Scoring of Beef Cows.

Desired Body Condition Score

Enter the target or desired body condition at the end of this feeding period. The difference between the Initial and Desired BCS will be used to determine the amount of weight gain or loss targeted during this feeding period. The user then compares the projected weight gain or loss and the projected change in BCS generated by the nutritional program with the desired weight gain or BCS change. Assuming the projected weight gain or loss is deemed acceptable by the user, the energy supply generated by the nutritional program is adequate.

Body Condition Score Guidelines

Click on "Body Condition Score Guidelines" to learn more about the body condition scoring system. A description of each BCS is provided and pictures of cows varying in BCS are provided. Recall that each unit of BCS change is associated with approximately 7.1% body weight change.

Inputs for Growing and Finishing Cattle

Initial Weight

Initial weight is intended to indicate the weight of the cattle at the beginning of the feeding or grazing period being evaluated.

Desired Weight

Either a desired or projected weight at the end of this feeding or grazing period should be input in this cell.

Finish Weight

This weight is intended to represent weight of the cattle when they reach a constant body composition at the end of the finishing phase. Cowculator uses 0.6 of an inch of backfat as the constant end point to determine relative differences in weight and body composition. For example, heifers will reach 0.6 of an inch backfat at a lighter weight than steers. Calf-fed animals entering the feed yard at 600 pounds will reach 0.6 of an inch backfat at a lighter weight than yearling steers entering the feed yard at 900 pounds. Smaller frame cattle will reach 0.6 of an inch backfat at a lighter weight than large frame cattle.

> Note that Cowculator does not require an input for sex of growing and finishing cattle. Finish weight at 0.6 of an inch allows an estimate of differences in body composition at various stages of growth. Therefore, differences in nutrient requirements due to sex are accounted for by these body composition calculations.

Finish Weight Guidelines

The "Finish Weight Guidelines" button links the user to a fact sheet providing details to assist the user in determining the appropriate finish weight for their situation.

Genetic Potential for Growth and Feed Efficiency

This drop-down list allows the user to refine the growth and feed efficiency genetics of the cattle being considered. Whereas the "Finish Weight" cell modifies nutrient requirements and projected performance based on body composition, the "Genetic Potential" selection modifies weight gain and feed efficiency based on metabolic efficiency. The drop-down menu provides Above-Average, Average and Below-Average options.

Table 1. Predicted performance for feedlot steers varying in genetic potential for growth and feed efficiency.

Genetic Potential	*Feed Intake, lb DM*	*ADG*	*Days on Feed*	*Feed:Gain, DM basis*
Above Average	23.9	4.24	146	5.6
Average	22.4	3.58	173	6.3
Below Average	22.4	3.28	189	6.9

When the user selects "Average", the Cowculator growth model is calibrated to project similar feed intake, weight gain and feed efficiency as the pen closeout data provided by Hitch Enterprises and shown in the Finish Weight Guidelines fact sheet.

To demonstrate the influence of the genetic potential for feed efficiency input selection, three scenarios were modeled using the Cowculator program. A finishing diet containing 0.68 Mcal NEg = net energy for gain per pound was used to project performance of steers entering the feed yard at 818 pounds, fed for 166 days and finished weighing 1,438 pounds. Ionophore was set to "Rumensin", Implant to "Yes", and initial body condition to 6.0. Table 1 summarizes the results when each of the three genetic potential options were selected, feed intake was rebalanced to 1.0, and days on feed was adjusted to achieve 1,438 pounds finish weight.

Ionophore

Three commercially available ionophore selections are available. These selections have modest influences or adjustments on feed intake and cattle performance. Feed intake and performance equations are calibrated to finishing diets incorporating the ionophore Rumensin. When any of the other three options are chosen (none, Bovatec or Cattlyst), feed intake is increased by 3% (NASEM, 2016). Similarly, dietary metabolizable energy (ME) concentration is reduced by 2.3% when "none" is selected and by 1.5% when Bovatec or Cattlyst is selected (NASEM, 2016).

Implant

Anabolic implants enhance weight gain, feed intake and feed efficiency in growing and finishing cattle. The Cowculator growth model is calibrated to the Hitch data where cattle were treated with implants throughout the finishing phase. Therefore, when the "NO" option is selected for the Implant input, predicted feed intake is reduced by 6% (NASEM, 2016). Consequently, when the feed intake is rebalanced to 1.0, projected ADG declines substantially.

Initial Body Condition

Initial body condition is used to adjust feed intake when cattle are fleshy. Cowculator reduces predicted feed intake by 2.5% when initial body condition is equal to or greater than 7.

Feed Library

The feed library or Feed List contains a limited number of feeds common to Oklahoma in the following categories: grazed forages, harvested forages, concentrates, commercial feeds, and vitamins and minerals. Feed nutritive values are intended as a starting point and can be completely customized as the user gathers data specific to their operation. Within each category, blank rows are provided to encourage users to enter new feeds.

Units and $/Unit

The user can select the weight units (in pounds) and the associated price per unit in the $/Unit column. For example, if corn is priced on a bushel basis, the user enters 56 in the Units column and the price per bushel in the $/Unit column. If corn is priced per ton, the user enters 2,000 in the Units column and the associated price per ton.

Dry Matter

Most feeds contain water or moisture ranging from 80% in fresh, vegetative forage to less than 10% in some dry feeds and 1 or 2% in mineral products. Dry Matter (DM) is calculated as 100 minus the moisture concentration. All nutritive values in the feed library are expressed on a DM basis.

Protein

Feed crude protein values should be entered on a DM basis. Crude protein (CP) refers to the nitrogen content of a feed multiplied by 6.25. This value is used because protein molecules contain an average of 16% nitrogen (1/16 = 6.25). Commercial laboratories provide standardized testing for protein concentration in feeds. Protein requirements for cattle are calculated on a metabolizable protein basis and then converted to a crude protein basis in the Cowculator program.

Degradable intake protein (DIP) values are provided for most feeds in the feed library. Degradable intake protein is an estimate of the proportion of crude protein that is degraded in the rumen. Currently, Cowculator does not provide DIP supply or requirement calculations. Degradable intake protein supply can be determined by using a weighted average dietary DIP value, expressed as a percent of CP, multiplied by the daily CP supply (reported in the nutrient balance table on the Balancer worksheet).

Degradable intake protein requirement can be calculated using the following equation: DIP requirement, grams per day = 0.087 x Total Digestible Nutrient Intake (grams per day) + 42.73. Daily TDN intake (pounds per day) is provided in the nutrient balance table in the Balancer worksheet. One pound = 454 grams.

Energy

Energy values are entered on a DM basis and include total digestible nutrients (TDN, percent), metabolizable energy (megacalories per pound), net energy for maintenance (NEm, megacalories per pound), and net energy for gain (NEg, megacalories per pound). The only feed energy input required is TDN expressed as a percent of DM. The program automatically calculates ME, NEm, and NEg. If the user has information for ME, NEm or NEg, simply manipulate the TDN value until the desired ME or NE values are achieved.

Fiber

Neutral detergent fiber (NDF) consists primarily of plant cell wall tissue such as hemicellulose, cellulose and lignin. Neutral detergent fiber is the primary source of digestible energy in most beef cattle diets except for situations where large amounts of concentrate feeds are provided, such as the finishing period. However, NDF digestibility is highly variable ranging from approximately 30% to 70%, making prediction of energy values difficult, especially for feeds high in NDF. Most commercial laboratories provide services to analyze feeds for NDF using standardized methods.

Physically effective neutral detergent fiber (peNDF) is the percentage of the diet DM that is effective in stimulating chewing, salivation, rumination and rumen motility. These factors are important in keeping the rumen healthy and minimizing the risk of low pH leading to acidosis and founder. The Cowculator program uses two components to calculate peNDF; NDF concentration of each feed and a "physically effective" factor for each feed ranging from 0 to 1. These values can

be determined using a Penn State Particle Separator. See https://extension.psu.edu/penn-state-particle-separator for more details.

For example, long-stem grass hay has a physically effective factor value of 1.0 and is used as a standard to compare other feeds to. Low quality grass hay may contain 67% NDF. Therefore, its peNDF value is 67 x 1.0 = 67. On the other hand, finely chopped alfalfa silage may contain 42% NDF (DM basis) with a physically effective factor value of 0.6. Therefore, the alfalfa silage peNDF value is 42 x 0.60 = 25.2%.

Cowculator uses the dietary peNDF value to predict ruminal pH and provide guidance where cattle may be at risk for acidosis or founder. The NASEM (2016) publication recommends no less than 7% diet DM peNDF for feedlot cattle and minimum 12 to 20% diet DM peNDF for growing cattle and limit-fed diets. In general, the lower the dietary peNDF in the diet, the greater management intensity will be required. Examples of management factors that minimize risk of acidosis when dietary peNDF is marginal include the following: consistent feeding times, more frequent daily feeding events, shorter time period consuming low peNDF diets, more gradual transition from high to low peNDF diets and ensuring that diet characteristics do not allow animals to sort and preferentially consume grain particles.

Fat

Also referred to as ether extract or lipid, fat provides energy and essential fatty acids in beef cattle diets. Like other nutritive values, fat is expressed as a percent of DM. Fat contains approximately 2.25 times more calories per unit of weight compared to carbohydrates and 1.66 times more calories per unit weight compared to proteins. Excessive dietary fat can reduce digestibility of other dietary nutrients. Therefore, the NASEM (2016) publication recommends no more than 6% total dietary fat in forage diets and no more than 10% total dietary fat in high-concentrate finishing rations. Commercial laboratories typically provide analytical services to determine feed or diet fat concentration.

Minerals

Feed macro-mineral concentrations are expressed as a percent of DM. Feed trace or micro-mineral concentrations are expressed as parts per million (ppm) on a DM basis. Many commercial laboratories provide analytical services to determine mineral concentration in feeds. . For more information, see Vitamin and Mineral nutrition for Grazing Cattle at https://extension.okstate.edu

Balancer

The Balancer page allows the user to enter dietary ingredients and indicate the amount of each to be fed or consumed by the cattle. Cowculator then assists the user in comparing the nutrients supplied to the requirements of the cattle.

To begin creating a diet, first select the drop-down list in the Feed Category column. Next, under the Feed or Forage column, select the feed or forage of interest. Under the “lb or %” column, enter the amount provided for that specific ingredient (as-fed basis). The amount can be input as pounds per day or as a percent of the diet. Repeat this process in each row until all ingredients have been included.

At the bottom of the feed ingredient table, enter the total amount of feed provided in the cell labeled “Feed Intake, lb As Fed” (see Figure 2). This is necessary whether feed amounts above were input as pounds or as a percent of the diet.

Ration evaluation or “balance” is achieved by monitoring ratios for dry matter intake, protein, calcium and phosphorus. Dietary energy supply is evaluated by comparing estimated weight gain or loss to target weight gain or loss. Each ratio is derived by dividing the amount of each nutrient supplied in the diet by the calculated requirement.

For example, if 20 pounds of dry matter is supplied and the predicted dry matter intake is 23 pounds, the intake ratio is 0.87. Moreover, if 26 pounds were supplied, the intake ratio would be 1.13. Ratios close to 1.0 are considered to meet nutrient requirements for desired animal performance without excessive nutrient waste and cost.

For feed intake, users are encouraged to use observed or measured intake data when available. Predicted intake values should be used as a general guideline when actual intake is not known. The intake equation uses animal weight, stage of production and dietary energy concentration to predict daily dry matter intake. Consequently, predicted dry matter intake is responsive to changes in diet ingredients and relative amounts fed.

Once diet ingredients and initial feeding rate is established (or balanced), the second priority should be to ensure that dietary protein supply is adequate (equal to or greater than 0.98). If the protein ratio is below this amount, correct the protein deficiency by increasing the amount of protein-rich feeds. It should be noted that the intake equation predicts dry matter intake for diets containing adequate protein. If a protein deficiency exists, feed intake, diet digestibility and, subsequently, weight gain will be overestimated.

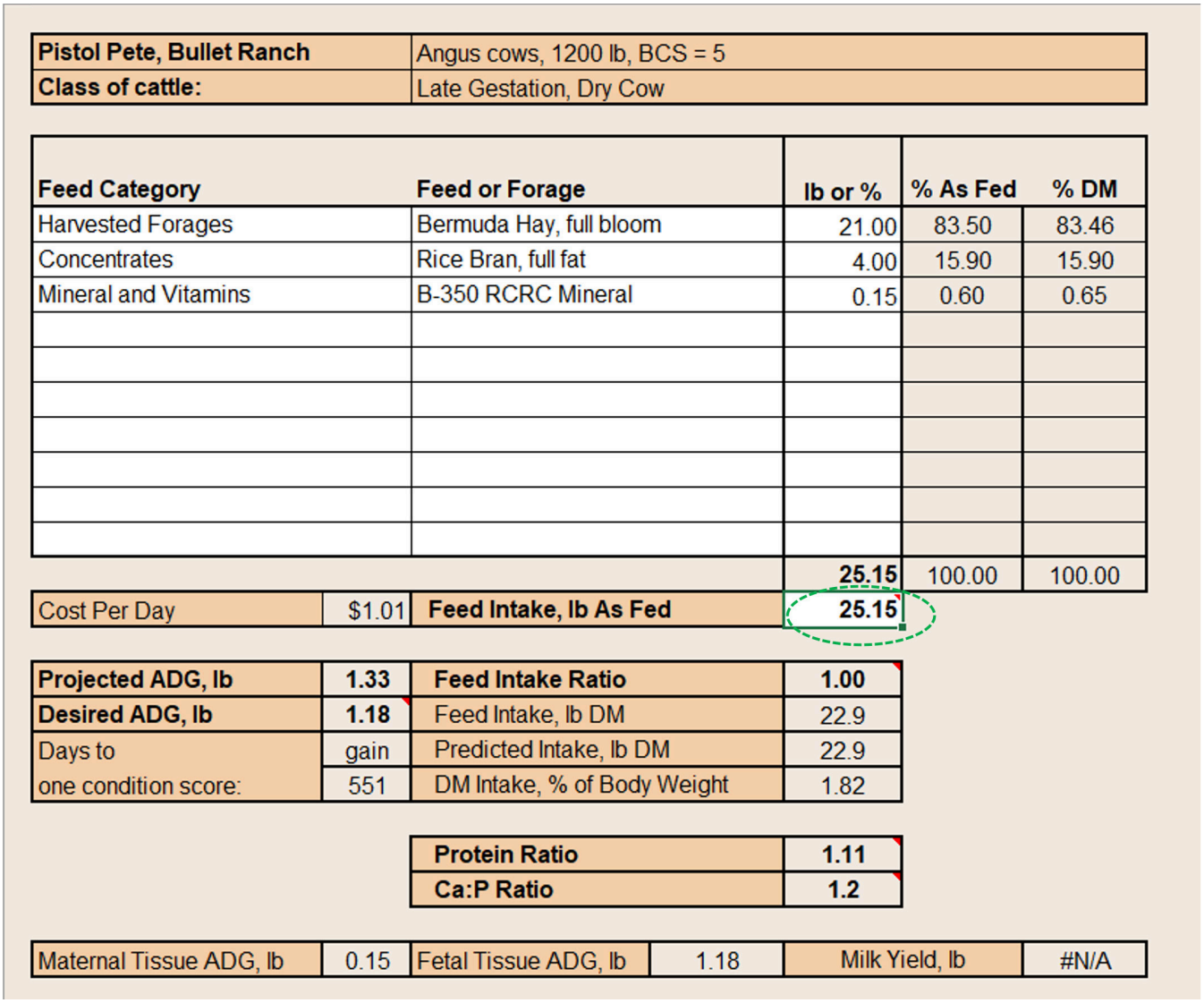
Beneath the protein ratio, a calcium and phosphorus ratio is provided. The CA:P ratio should be formulated for approximately 2:1 and within a range of about 1.25 to 3.

Once the user has adjusted any protein deficiency, projected weight change should be evaluated and compared to desired weight change. At this point, the user must determine if the projected weight change is acceptable, and if not, make necessary adjustments to energy intake. This can be done by adding concentrates or harvested forages with high TDN. Note that the cost per day of the feed/forage combination is given as cost per head per day. Experiment with alternative plans to determine whether a lower cost combination exists.

At the bottom of the balancer page there are three outputs specific to heifers and cows that will appear only when those classes of cattle are selected on the “Cattle” page. These outputs include maternal tissue gain, fetal tissue gain and milk yield.

The table to the right of the ration balancer summarizes the diet concentration of nutrients and compares them to calculated nutrient requirements (Figure 3). The required amount is listed in its respective units and a “status” is given to inform the user if the amount is deficient, adequate, excessive or toxic.

For the purpose of printing the Balancer worksheet, the preparer can provide their contact information. This information is entered at the bottom of the Summary page.



Pistol Pete, Bullet Ranch	Angus cows, 1200 lb, BCS = 5
Class of cattle:	Late Gestation, Dry Cow

Feed Category	**Feed or Forage**	**lb or %**	**% As Fed**	**% DM**
Harvested Forages	Bermuda Hay, full bloom	21.00	83.50	83.46
Concentrates	Rice Bran, full fat	4.00	15.90	15.90
Mineral and Vitamins	B-350 RCRC Mineral	0.15	0.60	0.65
		25.15	100.00	100.00

Cost Per Day	$1.01	**Feed Intake, lb As Fed**	**25.15**

Projected ADG, lb	**1.33**	**Feed Intake Ratio**	**1.00**
Desired ADG, lb	**1.18**	Feed Intake, lb DM	22.9
Days to	gain	Predicted Intake, lb DM	22.9
one condition score:	551	DM Intake, % of Body Weight	1.82

Protein Ratio	**1.11**
Ca:P Ratio	**1.2**

Maternal Tissue ADG, lb	0.15	Fetal Tissue ADG, lb	1.18	Milk Yield, lb	#N/A

Figure 2. "Balancer" page showing input cell for feed intake. Enter estimated total diet feed intake on an as fed basis.

Nutrient	Diet Concentration			Daily Amount		Status
	As Fed	DM	Required	DM	Required	
Diet DM	91%	-	-	-	-	-
TDN	50%	55%	-	12.2 lb	TDN:CP	5.64
ME, Mcal/lb	0.82	0.90	-	20.1 Mcal	-	-
NEm, Mcal/lb	0.46	0.51	-	11.4 Mcal	-	-
NEg, Mcal/lb	0.23	0.26	-	5.8 Mcal	-	-
NDF	59%	65%	-	3.0 lb	-	-
peNDF	57%	62%	7 - 20 Min	13.9 lb	7.0 pH	ADEQUATE
Crude Protein	8.8%	9.7%	-	2.17 lb	2.51 lb	DEFICIENT
Fat	1.7%	1.9%	-	0.41 lb	-	ADEQUATE
Calcium	0.62%	0.68%	0.32%	68.8 g	32.3 g	ADEQUATE
Phosphorus	0.26%	0.29%	0.26%	29.1 g	26.0 g	ADEQUATE
Sodium	0.14%	0.16%	0.10%	16.03 g	10.14 g	ADEQUATE
Potassium	1.20%	1.33%	0.60%	134.4 g	71.0 g	ADEQUATE
Magnesium	0.21%	0.23%	0.15%	23.0 g	20.3 g	ADEQUATE
Sulfur	0.19%	0.21%	0.15%	21.3 g	15.2 g	ADEQUATE
Cobalt ppm	1.34	1.47	.15 ppm	14.9 mg	1.5 mg	EXCESSIVE
Copper ppm	20.62	22.7	10 ppm	230 mg	101 mg	EXCESSIVE
Iron ppm, mg	184.49	203.2	50 ppm	2060 mg	507 mg	EXCESSIVE
Manganese ppm	115.28	127.0	40 ppm	1288 mg	406 mg	EXCESSIVE
Selenium ppm	0.29	0.32	.1 ppm	3.3 mg	1.0 mg	EXCESSIVE
Zinc ppm	69.01	76.0	30 ppm	771 mg	304 mg	EXCESSIVE

Figure 3. Diet nutritive value concentration and daily nutrient requirements.

Summary

The Summary provides an overview of cattle & management information such as diet composition, pounds of ingredients in a batch and costs. Inputs on the summary page include the batch size and preparer's contact information.

The batch size must be input, or summary page will not calculate results. This page is printer friendly and is useful to give to the feed manufacturer for mixing/blending/manufacturing. The summary page allows the batch to be customized using check boxes to the left of each ingredient. For example, if you would like to remove chopped hay from the batch, deselect that ingredient. From there, the batch and cumulative pounds are adjusted to reflect all ingredients excluding those that are not checked. Note that not all items in the summary page will change based on this selection. Costs per head per day, projected ADG and final weight do not change based on ingredient selection on the summary page.

Weather

Cowculator does not adjust maintenance requirements for cold stress. Extreme weather conditions necessary to warrant ration changes in Oklahoma are infrequent and often short-lived. Additionally, when cattle have access to shelter, the effects of wind are greatly reduced. Nevertheless, extended periods of cold temperatures, wet conditions and wind, or any combination of these conditions, can result in substantially increased energy requirements. Therefore, producers should be prepared to adjust the nutritional program when these stressful weather conditions persist.

References

National Academies of Sciences, Engineering, and Medicine. 2016. *Nutrient Requirements of Beef Cattle*, Eighth Revised edition. Washington, DC: The National Academies Press.

The Oklahoma Cooperative Extension Service

WE ARE OKLAHOMA

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

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- It utilizes research from university, government, and other sources to help people make their own decisions.
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