

Cowbytes version 5 Training Module

COWBYTES 5

v5.32

*Alberta
Agriculture and Rural Development*

Tutorial – Exercise 1 of 1

Using the Water Analysis Section

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Cowbytes Version 5 – Training Module

Tutorial 2 – Using the Water Analysis Section

Exercise 1 of 1

1,400 lb Cow 5 months pregnant, Body Condition Score 3.0




0.25 lbs body weight gain, November conditions -10C current, +5C previous

85 lb calf expected mid-March

1. Describe Cow and Environmental parameters.
2. Select Feeds from the Feed Table (use default values for this Exercise).
3. Balance Ration using Hay only – Supplied Dry Matter Intake to equal Recommended Dry Matter Intake. Note Body weight gain.
4. Balance Ration using Hay and Straw – Body weight gain should be about 0.25 lbs per day.
5. Check Ca:P Ratio at least 1.5:1, 2:1 is better. Meet minimum P requirements first.
6. Select the **WaterTab** – Enter the values for the Dissolved Minerals in the appropriate boxes.
7. Click on the **Generate Report** Button to view the Water Suitability Recommendations
7. Select the **Ration** Tab and scroll across to view Magnesium, Potassium, Sulfur, Sodium and Chloride.
8. Click on the **Water Droplet** Buttons located beside the light bulb icon. One includes the Dissolved Minerals in the Water to the Minerals in the Feed, the other excludes the Dissolved Minerals in the Water.
9. From the Top Menu Bar, open **Reports | Water Report**
10. **Print the Water Report** (Print to a PDF file)
11. **Save** the Ration File to the Hard Drive – **File | Save | Ration Filename**

COWBYTES 5.2.7 AARD - FULL VERSION

File Edit Feed Table Reports Yardage Calculator Help

Canadian units    **Cows - Dry - 1400lbs, Preg:5Months, Exp. Birth Wt:85.00lbs**

Ration **Animal Type** Feed Table Feeding Info Feed Mixes Client Info Water Modification Config Calculator

Cows - Dry

Body Weight (lbs)
1400

Months Pregnant
5

Breed
British / Continental excluding Simmentals

Expected Birth Wt. (lbs)
85.0

Ionophores
No

Condition Score
3.0 CAN 5 US moderate

Desired ADG (lbs)
0.25

Slaughter/Mature Wt. (lbs)
1400

Current Temperature (C)
-10.0

Wind Speed (km/hr)
5

Hair Condition
dry and clean

Mud in Lot
< 10 cm (4 inches)

Previous Month Temperature (C)
5.0

Hair Depth (cm)
0.51

Hide Thickness
Average

Heat Stress
No heat stress

Light Cooling

Summer Winter

Restore Environmental Defaults

Ration: Cowbytes Training 1400 lb Cow Tutorial.cml Feed Table: system.fml

Select the Animal Type tab

Enter all of this information for the Cow and Environmental Conditions

Feed Name	DM Fed %	As fed (lbs)	DM fed (lbs)	DM %	DE Mcal/lb	TDH %	Protein %	Calcium %	Phosphorus %	Cost \$/unit	lbs /unit	Magne: %
ALF-GRASS HAY	0.0	0.000	0.000	87.4	1.20	60.00	14.0	1.22	0.19	60.00	2000	
BARLEY STRAW	0.0	0.000	0.000	89.1	0.89	44.57	4.2	0.13	0.08	20.00	2000	
BARLEY GRAIN	0.0	0.000	0.000	88.5	1.66	83.10	12.5	0.07	0.38	3.90	48	
18:18 MINERAL	0.0	0.000	0.000	99.0	0.00	0.00	0.0	18.18	18.18	29.00	55	
FORT TMSALT+SE	0.0	0.000	0.000	99.0	0.00	0.00	0.0	0.00	0.00	12.00	44	
ADE 10 MILLION	0.0	0.000	0.000	99.0	0.00	0.00	0.0	0.00	0.00	68.00	44	

Select these Feeds from the Feed Table by placing a Check mark in the "Add Feed" Box in the Feed Table

Dry Matter Intake
 Maximum: 35.3
 Recommended: 27.5
 Supplied: 0 (lbs)
 As Fed (lbs): 0
 Pred. ADG (lbs):
 To lose 1/2 BCS(Can): 19 days

Results Ratios Methane - Manure

Description	DM %	DE Mcal	TDH lbs	Protein grams	Calcium grams	Phosphorus grams	Cost HD/Day	Magnesium grams
Recommended Nutrients per Day		0.00	0.00	648	0	0		
Supplied from Ration		0.00	0.00	0	0	0	0.00	

Description	Mcal/lb	%	%	%	%	%
Diet Concentration (DM)	0.0	0.00	0.00	0.0	0.00	0.00

Feed Name	DM Fed %	As fed (lbs)	DM fed (lbs)	DM %	DE Mcal/lb	TDH %	Protein %	Calcium %	Phosphorus %	Cost \$/unit	lbs /unit	Magne: %
ALF-GRASS HAY	47.9	15.100	13.197	87.4	1.20	60.00	14.0	1.22	0.19	60.00	2000	
BARLEY STRAW	51.7	16.000	14.256	89.1	0.89	44.57	4.2	0.13	0.08	20.00	2000	
BARLEY GRAIN	0.0	0.000	0.000	88.5	1.66	83.10	12.5	0.07	0.38	3.90	48	
18:18 MINERAL	0.2	0.060	0.059	99.0	0.00	0.00	0.0	18.18	18.18	29.00	55	
FORT TMSALT+SE	0.2	0.060	0.059	99.0	0.00	0.00	0.0	0.00	0.00	12.00	44	
ADE 10 MILLION	0.0	0.006	0.006	99.0	0.00	0.00	0.0	0.00	0.00	68.00	44	




- Balance the Ration Using Alf-Grass Hay diluted with Barley Straw
- Supplied Dry Matter Intake should equal the Recommended DM Intake
- Notice the Predicted Average Daily Gain ADG is now 0.3 lbs per day

Dry Matter Intake	Maximum 35.3	Recommended 27.6	Supplied 27.6 (lbs)	As Fed (lbs) 31.2	Pred. ADG (lbs) 0.3	To gain 1/2 BCS(Can) 333 days
Results	Ratios	Methane - Manure				

Description	DM %	DE Mcal	TDH lbs	Protein grams	Calcium grams	Phosphorus grams	Cost HD/Day	Magnesium grams
Recommended Nutrients per Day		27.50	13.78	752	21	16		
Supplied from Ration		28.49	14.27	1110	86	21	0.67	
Description		Mcal/lb	%	%	%	%		%
Diet Concentration (DM)	88.3	1.03	51.75	8.9	0.69	0.17		0.

COWBYTES 5.2.7 AARD - FULL VERSION

File Edit Feed Table Reports Yardage Calculator Help

Canadian units    **Cows - Dry - 1400lbs, Preg:5Months, Exp. Birth Wt:85.00lbs**

Ration Animal Type Feed Table Feeding Info Feed Mixes Client Info **Water** Modification Config Calculator

Auto-Calculate Water Intake **Water Intake(liters)** **Ca : P** **K/(Mg + Ca)** **(Na + K) - (Cl + S)**
 Manual entry of Water Intake 22.7 4.03 1.7 348
 * Ratios include feed and water values

Dissolved Solids	Sulphate (SO4)	Sodium (Na)	Calcium (Ca)	Magnesium (Mg)	
3500	2000	30	40	230	mg/Litre (ppm)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	grams
Potassium (K)	Chloride (Cl)	Iron (Fe)	Nitrate (NO3)		
300	150	0.2	133		mg/Litre (ppm)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		grams

Generate Report

Enter all values then click the "Generate Report" button

Total Dissolved Solids
 < 1,000 mg/litre - (Approximate electrical conductivity of water is 500 microsiemens per centimeter at 25°C)

Calcium (Ca)
 No problem

Sodium & Potassium
 No problem

Select the Water tab
Enter the above values for the dissolved minerals into the white boxes
These values are obtained from a Water Analysis

Ration: Cowbytes Training 1400 lb Cow Tutorial.cml | Feed Table: system.fml

COWBYTES 5.2.7 AARD - FULL VERSION

File Edit Feed Table Reports Yardage Calculator Help

Canadian units **Cows - Dry - 1400lbs, Preg:5Months, Exp. Birth Wt:85.00lbs**

Ration Animal Type Feed Table Feeding Info Feed Mixes Client Info Water Modification Config Calculator

Auto-Calculate Water Intake
 Manual entry of Water Intake

Water Intake(liters) 22.7

Ca : P K/(Mg + Ca) (Na + K) - (Cl + S)

Dissolved Solids Sulphate
 3500
 79.4 48.4
 Potassium (K) Chloride
 300
 6.8 3.4

Generate Report

Enter all values then click the "Generate Report" button to generate calculated values and report.

Suitability for Cattle Report

Total Dissolved Solids
 3,001 - 5,000 mg/litre - (Approximate electrical conductivity from 4,478 – 7,462 $\mu\text{s}/\text{cm}$). This level of TDS indicates the water may be satisfactory for cattle but may cause temporary diarrhea and be refused by cattle not accustomed to it. Assess the suitability of this water for cattle production by analyzing the water for sulphate, magnesium, and iron content (see individual mineral comments). Complications include water/feed intake, trace mineral production related and health/fertility issues. Under experimental conditions, animals have produced satisfactorily at this and higher levels of TDS. However, production and health problems have been noted in the field even at levels below 4,000 ppm. Polioencephalomalacia (PEM) has been diagnosed in range cattle drinking from dugouts and ponds during hot, dry weather where evaporation has concentrated the dissolved minerals.

Sulphate (SO4)
 1,001 - 2,500 mg/litre - Poor for cattle. Water approaching the high level of this range has been associated with cattle deaths as a result of polioencephalomalacia - PEM (thiamine or vitamin B1 deficiency) in cattle. As the sulphate level increases, so does the severity of induced trace mineral deficiencies and the associated effects on growth, fertility, and immune response unless corrected nutritionally. These production and health related problems can be expected to be more severe if the diet is also high in molybdenum - Mo. At and

Ration: Cowbytes Training 1400 lb Cow Tutorial.cml Feed Table: system.fml

The Water Suitability Recommendations will be displayed.

Use the Scroll Bar to see all of the Recommendations

COWBYTES 5.2.7 AARD - FULL VERSION

File Edit Feed Table Reports Yardage Calculator Help

Canadian units Cows - Dry - 1400lbs, Preg:5Months, Exp. Birth Wt:85.00lbs

Ration Animal Type Feed Table Feeding Info Feed Mixes Client Info Water Modification Config Calculator

Auto-Calculate Water Intake
 Manual entry of Water Intake

Water Intake (liters) 22.7

Ca : P K/(Mg + Ca) (Na + K) - (Cl + S)

3500

79.4 45.4 0.7 0.9 5.2

grams

Potassium (K) Chloride (Cl) Iron (Fe) Nitrate (NO3)

300 150 0.2 133

6.8 3.4 0 3

mg/Litre (ppm)

grams

Generate Report

Enter all values then click the "Generate Report" button to generate calculated values and report.

Suitability for Cattle Report

Total Dissolved Solids
 3,001 - 5,000 mg/litre - (Approximate electrical conductivity from 4,478 – 7,462 $\mu\text{s}/\text{cm}$). This level of TDS indicates the water may be satisfactory for cattle but may cause temporary diarrhea and be refused by cattle not accustomed to it. Assess the suitability of this water for cattle production by analyzing the water for sulphate, magnesium, and iron content (see individual mineral comments). Complications include water/feed intake, trace mineral production related and health/fertility issues. Under experimental conditions, animals have produced satisfactorily at this and higher levels of TDS. However, production and health problems have been noted in the field even at levels below 4,000 ppm. Polioencephalomalacia (PEM) has been diagnosed in range cattle drinking from dugouts and ponds during hot, dry weather where evaporation has concentrated the dissolved minerals.

Sulphate (SO4)
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Ration: Cowbytes Training 1400 lb Cow Tutorial.cml Feed Table: system.fml

**From the Top Menu Bar select
Reports Water Report**

This is the Water Report

COWBYTES 5.2.7 AARD

Water Report

Animal Description Cows - Dry - 1400lbs, Preg:5Months, Exp. Birth Wt:85.00lbs
Water Intake(liters) 22.7

Current Temperature (C) -10.0

Item	mg/liter (ppm)	grams	Ratios	Feed Only	Water + Feed
Dissolved Solids	3500.0	79.4	Ca:P	4.03	4.07
Sulphate	2000.0	45.4	K/(Mg + Ca)	0.8	1.7
Sodium	30.0	0.7	(Na + K) - (Cl +S)	348	130
Calcium	40.0	0.9			
Magnesium	230.0	5.2			
Potassium	300.0	6.8			
Chloride	150.0	3.4			
Iron	0.2	0			
Nitrates	133.0	3			

Suitability for cattle

Total Dissolved Solids
3,001 - 5,000 mg/litre - (Approximate electrical conductivity from 4,478 - 7,462 $\mu\text{s}/\text{cm}$). This level of TDS indicates the water may be satisfactory for cattle but may cause temporary diarrhoea and be refused by cattle not accustomed to it. Assess the suitability of this water for cattle production by analyzing the water for sulphate, magnesium, and iron content (see individual mineral comments). Complications include water/feed intake, trace mineral production related and health/fertility issues. Under experimental conditions, animals have produced satisfactorily at this and higher levels of TDS. However, production and health problems have been noted in the field even at levels below 4,000 ppm. Polioencephalomalacia (PEM) has been diagnosed in range cattle drinking from dugouts and ponds during hot, dry weather where evaporation has concentrated the dissolved minerals.

Sulphate (SO4)
1,001 - 2,500 mg/litre - Poor for cattle. Water approaching the high level of this range has been associated with cattle deaths as a result of polioencephalomalacia - PEM (thiamine or vitamin B1 deficiency) in cattle. As the sulphate level increases, so does the severity of induced trace mineral deficiencies and the associated effects on growth, fertility, and immune response unless corrected nutritionally. These production and health related problems can be expected to be more severe if the diet is also high in molybdenum - Mo. At and above this range of sulphates, cattle may benefit from the feeding of special mineral formulations often referred as (breeder) mixes, which contain a portion of the trace minerals copper - Cu, zinc - Zn and manganese - Mn in chelated or proteinated forms. The chelated or proteinated trace minerals are less affected by sulphates and molybdenum - Mo in the

It can be Printed or Saved as a File by clicking on the Printer Icon

Feed Name	DM Fed %	As fed (lbs)	lbs /unit	Magnesium %	Potassium %	Sulphur %	Sodium %	Chloride %	Salt %	Vitamin A KIU/kg	Vitamin E IU/kg	Conc
ALF-GRASS HAY	47.9	1:										0
BARLEY STRAW	51.7	1:										0
BARLEY GRAIN	0.0	1:										0
18:18 MINERAL	0.2	1:										505
FORT TMSALT+SE	0.2	1:										0
ADE 10 MILLION	0.0	1:										10101

Click the Water Droplet icons to either Include or Exclude the 5 Dissolved Minerals in the Water with the Minerals in the Feed.

Scroll across until Magnesium, Potassium, Sulfur, Sodium and Chloride are in view. Sulfate SO₄ is converted to Sulfur.

Dry Matter Intake	Maximum	Recommended	Supplied	As Fed (lbs)	Pred. ADG (lbs)	To gain 1/2 BCS(Can)
	35.3	27.6	27.6	31.2	0.3	360 days

Description	Magnesium grams	Potassium grams	Sulphur grams	Sodium grams	Chloride grams	Salt grams	Vitamin A IU	Vitamin E IU	Cop m
Recommended Nutrients per Day	15	75	19	10		25	43839	300	
Supplied in feed + water	30	195	65	25	19	26	40377	40	

Description	%	%	%	%	%	%	KIU/kg	IU/kg	mg
Diet Concentration + water(DM)	0.19	1.50	0.16	0.20	0.13	0.21	3.2	3	

COWBYTES 5.2.7 AARD - FULL VERSION

File Edit Feed Table Reports Yardage Calculator Help

Canadian units

Cows - Dry - 1400lbs, Preg:5Months, Exp. Birth Wt:85.00lbs

Ration Animal Type Feed Table Feeding Info Feed Mixes Client Info Water Modification Config Calculator

of days on this Ration: 30 # of head: 150

Feed Name	Home	Pu
ALF-GRASS HAY	<input checked="" type="checkbox"/>	
18:18 MINERAL	<input type="checkbox"/>	
FORT TMSALT+SE	<input type="checkbox"/>	
ADE 10 MILLION	<input type="checkbox"/>	

Name or Rename Ration Summary

Provide a name for this ration summary or
Click the dropdown box to choose
an existing ration summary to update

1400 LB COW 5 MONTHS PREG ▾

Cancel Ok

Click Save to Ration Summary Button
Enter 1400 lb Cow 5 Months Pregnant

Manage Ration Summaries Save to Ration Summary Open Ration Summary Report

Ration: Cowbytes Training 1400 lb Cow Tutorial.cml Feed Table: system.fml

From the Top Menu Bar select **File Save**
Type **Cowbytes Training 1400 lb Cow Tutorial**
click **Save**

