



## NASEM Mineral and Vitamin Requirements and Absorption Rev. 2 of 5/27/2022 EN

The **NASEM 2021** Nutrient Requirements of Dairy Cattle, among the numerous aspects considered, has also updated the Absorbed Requirements or Adequate Intake (AI) for minerals and vitamins, as well as the Absorption Coefficients (AC) for several feed ingredients.

Here is a quick summary of what has been done.

#### **Macrominerals**

**Calcium**: maintenance and lactation requirements have changed very little with a major impact from AC. Overall, dietary requirements changed very little.

**Phosphorus**: requirements have undergone very small changes, while AC of supplements was not changed. **Magnesium**: absorbed requirement was increased (2x for Dry Cow and 1.8x for Lactating Cow). Note that potential benefits of high Mg on hypocalcemia are not included.

**Potassium**: no changes for pregnancy and lactating cows while the requirement for growth has increased. AC of the feeds has also been increased a little.

**Sodium**: maintenance requirements have increased in lactating cows and lactation requirements decreased with no changes for growth and pregnancy. AC of the feeds has been slightly increased.

**Chloride**: maintenance requirements increased in lactating cows and lactation requirements decreased with no changes in growth and pregnancy.

Sulfur: no changes

	Heifer	Dry cow	Lactating cow
Ca	$\leftrightarrow$	1	1
Р	$\leftrightarrow$	$\leftrightarrow$	$\leftrightarrow$
Mg	1	11	11
К	$\leftrightarrow$		$\leftrightarrow$
Na	$\leftrightarrow$	$\leftrightarrow$	$\leftrightarrow$
CI	$\leftrightarrow$	↔	$\leftrightarrow$
S	$\leftrightarrow$	$\leftrightarrow$	$\leftrightarrow$

#### **Microminerals**

Two approaches for trace minerals are considered in the new NASEM 2021:

- Requirement: the daily requirement is defined using a factorial approach. This is set for Copper (Cu) and Zinc (Zn). Copper deserves a special mention because its requirement for lactation has been reduced remarkably. This seems to be important as there were several cases of copper toxicity in some countries over the last few years, so updating these values should be appropriate.
- Adequate intake (AI): it is the average daily nutrient intake defined in case only a limited amount of experimental data is available. AI is used when requirements cannot be identified. This approach is set for Cobalt (Co), Iron (Fe), Manganese (Mn), Selenium (Se), Chromium (Cr), and Iodine (I).

Compared to the NRC Dairy 2001, the guidelines for Cu, Mn, and Zn changed extensively. Recommendations for Cr, I, and Co changed, but not widely, whereas the recommendations for Fe and Se remained the same.

	Heifer	Dry cow	Lactating cow
Со	1	1	1
Cu	$\leftrightarrow$	11	↔ ▮
Fe	$\leftrightarrow$	$\leftrightarrow$	↔
Mn	11	111	111
Se	$\leftrightarrow$	$\leftrightarrow$	↔
Zn	$\leftrightarrow$	1	1

#### Vitamins

Adequate intake (AI) and no requirements have been defined and AI is intended as supplemental. This approach has been established for vitamins A, D, and E, while no AI was established for water-soluble vitamins. **Vitamin A**: Recommended AI increased for high producing cows (>35 kg/d), with no changes for other cattle types.

**Vitamin D**: assumed D3. Recommended AI increased for lactating cows, unchanged for heifers and dry cows. **Vitamin E**: AI increased for pre-fresh cows (2-3 weeks pre-calving), unchanged for heifers, dry and lactating cows.

	Heifer	Dry cow	Lactating cow
Vit A	$\leftrightarrow$	$\leftrightarrow$	↔ 🕇
Vit D	$\leftrightarrow$	$\longleftrightarrow$	1
Vit E	$\leftrightarrow$	$\leftrightarrow 1$	$\longleftrightarrow$

Adequate intake (AI) and no requirements have been defined and AI is intended as supplemental. This approach has been established for vitamins A, D, and E, while no AI was established for water-soluble vitamins.

# NDS Update for Mineral and Vitamin

After a thorough check, the development group at RUM&N incorporated the mineral and vitamin updates into **NDS Professional**. There are several updates to this section and we updated the requirement equations for most minerals and vitamins. Also, the Absorption Coefficients (AC), formerly defined as Bioavailability, have been changed. This will have some significant impacts on diet formulation and evaluation.

#### Requirements

All the new equations for the definition of requirements or Adequate Intake for all minerals and vitamins have been implemented in parallel to those currently used by NDS deriving from the NRC Dairy 2001. This means that it is now optionally possible to define the set of equations to invoke.

Diet	valua	ation Pool sizes	Rumen	Synchrony E	xcretion/GHG	Fatty acids	Amino acids	Minerals	Vitamins	Reserves Di	gestibility Wa	ter	~	
	)			Di	iet		Absorbed							
Y		NRC 2001	-	Total intake	Concentratio	n Added	d Orga	nic	Supplied	Requirements	Balance	% Req.	AC	
Ca	*	14100 2001		159,61	g 0,61 % D	м			83,0 g	76,3	g +6,7	g 109%	0,520	
P		NASEM 2021		96,73	g 0,37 % D	м			67,4 g	67,4	9	g 100%	0,696	

A button has been added in the Minerals tab to allow switching between the two sets of equations. When the NASEM Dairy 2021 calculations are active the button will be populated with the icon of the NASEM-Dairy-8 software.

Requ	irements calculate	d according to	NRC Dairy 2001	sk RUFAL a 47	3,5 (1,8%)	*							
Leda	li enertis cacalatet	u according to	Tarce Daily 2001	cretion/GHG Fat	ty acids Am	ino acids Mine	rals Vitamins	Reserves Diges	tibility Water	1	NYZ.		
V			Die	et			Absorbed						
-	Ration	Water	Total intake	Concentration	Added	Organic	Supplied	Requirements	Balance	% Req.	AC		
Ca	159,61 g		159,61 g	0,61 % DM			83,0 g	76,3 g	+6.7 g	109%	0,520		
P	96,73 g		96,73 g	0,37 % DM			67,4 g	67,4 g	9	100%	0,695		
Mg	54,02 g		54.02 g	0,21 % DM			10,4 g	8,7 g	+1,8 g	120%	0,193		
_													
Requir The up	rements calculated	l according to	NASEM Dairy 202: ents of feeds base	t ed on the same sour	rce it is recom	mended	and a Vittle soline )	Press V Dian	ebita. Vana				
Requir The up	rements calculated pdate of the Absor	l according to	NASEM Dairy 2023 ents of feeds base	t ed on the same sour	rce it is recom	mended	rals (Vitamins)	Reserves ) Diges	tibility ) Water				
Requir The up	rements calculated pdate of the Absor	l according to	NASEM Dairy 202: ents of feeds base Die Total intake	t on the same source t Concentration	rce it is recom	Organic	rals Vitamins ) Supplied	Reserves ) Diges Abs Requirements	tibility / Water orbed Balance	% Req.	AC		
Requir The up	rements calculated pdate of the Absor Ration 156.59 g	according to rption Coeffici Water	NASEM Dairy 202: ents of feeds base Die Total intake 156.59 g	t d on the same source t Concentration 0.58 % DM	rce it is recom	mended / Mine Organic	rals Vitamins ) Supplied 73.0 g	Reserves Diges Abs Requirements 67.5 g	tibility ) Water orbed Balance +5.5 g	% Req. 108%	AC 0.466		

### **Absorption Coefficients**

The implementation of the new mineral Absorption Coefficients (AC) proposed by NASEM 2021 for the feeds shows aspects of greater complexity as regards their implementation. What we have done is:

- > Updated the AC for all feeds included in the RUM&N Feed Library
- Left unchanged the AC for all feeds in the CNCPS Feed Library. They will be updated as soon as the appropriately updated Feed Library for these values is provided to us by the Cornell group.
- > Left unchanged the AC for all user feeds

Concerning this last point, some activities can be undertaken by the user:

1. For all feeds cloned by the RUM&N Feed Library, the update of the AC for each feed can be obtained through the Minerals/Bioavailability tab, by clicking on the small button circled in red in the figure below. The old AC will be replaced by the new ones. Please remember to save the feed again at the end of the process.

HV CO Partition: I 12/05/20	CORN SILAGE 2019 [27086228] tition: Forages 05/2022 19:02 Feeds Save as B Report V IN Restore all								HV CORN Partition: Forag 12/05/2022 1 E Feeds	SILAGE 2019 [27 ges 9:02 Save J Save as	086228]	Restore all	Silages Com Medium ground (1.2 - 2.0 cm)					
Forage	age % D.M. 100,000 46,000								Forage % D.M. 100			,000	46,0	100	New below 100		alanco - 100.000	
Concent	ntrate % D.M. S4,000 Mass balance = 100				Mass balance = 100,000	Concentrate	9	D.M.			54,0	00		Pid55 De	siance - 100,000			
Nutrient	Iutrient data entry Constants calculation Info Cloning User lists Quick data entry Mycotoxins Nitrates Inclusions				Nutrient data	entry Constants cal	culation Info	Cloning User lists	Quick data	entry Mycotoxin	s Nitrates I	nclusions						
Carbol	nydrates Proteins	Amino acids	Fatty acids	Minerals	/Bioavailability	SYSTALI			Carbohydr	ates Proteins	Amino acids	Fatty acids	Minerals)	Bioavailability	SYSTALI			
3	Restores								K) R	estores								
Total m	inerals			-					Total miner	als								
	Concentratio	in	Absorption Coefficients			Concentratio	n			Concentration	1	Absorption Coefficients	e		Concentration			
Ca	0,25	0 %	0,6000	g/g					Ca	0,250	%	0,4000	g/g					
Р	0,20	0 %	0,7000	g/g					Ρ	0,200	%	0,8270	g/g					
Mg	0,21	0 %	0,1600	g/g					Mg	0,210	%	0,3100	g/g					
К	1,24	0 %	0,9000	g/g					К	1,240	%	1,0000	g/g					
Na	0,01	0 %	0,9000	g/g					Na	0,010	%	1,0000	g/g					
d	0,23	0 %	0,9000	g/g					d	0,230	%	0,9200	g/g					
5	0,11	0 %	1,0000	g/g					5	0,110	%	1,0000	g/g					
Mn - tota	al 31,00	0 ppm	0,0100	mg/mg	Org. Mn		ppm	% Total Mn - total	Mn - total	31,000	ppm	0,0040	mg/mg	Org. Mn		ppm	96 T	fotal Mn - total
Cu - tota	1 7,00	0 ppm	0,0400	mg/mg	Org. Cu		ppm	% Total Cu - total	Cu - total	7,000	ppm	0,0500	mg/mg	Org. Cu		ppm	% T	fotal Cu - total
Fe - tota	230,00	0 ppm	0,1000	mg/mg					Fe - total	230,000	ppm	0,1000	mg/mg					
Zn - tota	1 27,00	0 ppm	0,1500	mg/mg	Org. Zn		ppm	% Total Zn - total	Zn - total	27,000	ppm	0,2000	mg/mg	Org. Zn		ppm	96 T	Fotal Zn - total
I - total		ppm	0,8500	mg/mg					I - total		ppm	0,8500	mg/mg					
Co - tota	0,40	0 ppm	1,0000	mg/mg	Org. Co		ppm	% Total Co - total	Co - total	0,400	ppm	1,0000	mg/mg	Org. Co		ppm	% T	fotal Co - total
Se - tota	0,03	2 ppm	1,0000	mg/mg	Org. Se		ppm	% Total Se - total	Se - total	0,032	ppm	1,0000	mg/mg	Org. Se		ppm	% T	rotal Se - total
Mo - tota	al 0,57	0 ppm	1,0000	mg/mg					Mo - total	0,570	ppm	1,0000	mg/mg					
Cr - tota	I.	ppm	1,0000	mg/mg	Org. Cr		ppm	% Total Cr - total	Cr - total		ppm	1,0000	mg/mg	Org. Cr		ppm	96 T	fotal Cr - total
F - total		ppm							F - total		ppm							

2. A similar procedure can be launched to obtain the same result for a list of feeds. Through the Utility tab in the Feeds section, it is possible to launch the Recalculate analysis command with both the Make cloning and Update Absorption Coefficients checkboxes checked.

Feeds Feedbank: B	ASE FEEDBANK		
Feeds	😓 Utility 🛛 Elda Sy	stem NASEM Feed Library	
Multiple changes	Directile Cours	Recalculate analysis	Comparison analysis
Duplication/Transfer	Disable Save	Make cloning	View/modify nutrient
Feed identifiers	Parking feeds	Update Absorption Coefficients	Create Excel file
Features	Features	Recalculate analysis	

The procedure, launched first for Forages and then for Concentrates in two separate sessions, will update the AC values for all the feeds previously cloned by the RUM&N Feed Library.

Also for minerals created by the user, it will be necessary to update the AC values. This can be done by following the instructions in #1. Please note that for minerals not previously cloned by RUM&N Feed Library, you will need to do this first.

This procedure may take several minutes, based on the number of feeds to be processed. It is recommended to make a **backup copy** of the database before proceeding with the Recalculate analysis feature. Furthermore, for groups of users connected to a single **SQL database**, the procedure can be launched by only one of them (the administrator of the group, for instance).

It is worth emphasizing once again that the procedure described in #2 will have no impact on the feeds previously cloned by the CNCPS Feed Library. Instead, it will take effect (AC update) when the CNCPS Feed Library will also be updated. We will take care to disseminate it as soon as we receive it. Therefore, for the users who have cloned their feeds mainly from the CNCPS Feed Library, it is suggested, for the moment, to use the procedure described in the next item #3.

For those who have installed the NASEM-Dairy-8 software on their device, the update of the AC for each user feed can be obtained by taking the data directly from the NASEM Feed Library.
If this condition is met, in the Minerals/Bioavailability tab a new button will be shown:

Nutrient data entry	Constants calculat	ion Info	Cloning	User lists	Quick data entry	Mycotoxins	Nitrates
Carbohydrates	Proteins A	mino acid	Is Fatt	y acids	Minerals/Bioav	ailability	SYSTALI
N Restor	es 1 NAS	SEM AC					

This button will open a window with a list of feeds taken directly from the NASEM Feed Library, already pre-selected based on the partition (Forages, Concentrates, Minerals/Vitamins).

HV CORN 5 Partition: Forage	SILAGE 2019 [27 *5 :02		Silages Corn Medium o	15	NA	ASEM Feed Libr	ary			· D	×	
Feeds III	Save L Save as	Report -	P Restore all		In	stal	lation path		1 (2020)	Filter		_
			100		C	:\N/	ASEM\NASEM-D	airy-8				
Forage		D.M.	100	,000		T	Code		Feeds		Category	
concentrate	76	1 D.M.		_	-	F	NRC16F1	1	Alfalfa meal		Plant Protein	
Nutrient data en	ntry Constants calc	ulation Info	Cloning User lists	Quick data	-	F	NRC16F9	9	Barley hay		Grain Crop Forage	
Carbohydrat	tes Proteins	Amino acio	ls 🛛 Fatty acids 📝	Minerals/	-	F	NRC16F11	11	Barley silage, headed		Grain Crop Forage	
K) Re	stores 🛸	NASEM AC			-	F	NRC16F12	12	Barley silage, mid-maturity		Grain Crop Forage	
Total mineral	Is				-	F	NRC16F13	13	Barley silage, vegetative		Grain Crop Forage	
	Concentration		Absorption Coefficients	6	-	F	NRC16F17	17	Bermudagrass hay		Grass/Legume Forage	
Ca	0.250	%	0,6000	g/g	-	F	NRC16F18	18	Bermudagrass silage, mature		Grass/Legume Forage	
P	0.200	%	0.7000	q/q	-	F	NRC16F19	19	Bermudagrass silage, mid-mtr		Grass/Legume Forage	
Ma	0.210	%	0,1600	g/g	-	F	NRC16F33	33	Cool season grass hay, mature		Grass/Legume Forage	
ĸ	1.240	%	0.9000	g/g	12	F	NRC16F34	34	Cool season grass hay, mid-mtr		Grass/Legume Forage	
Na	0.010	%	0,9000	g/g	-	F	NRC16F35	35	Cool season grass silage		Grass/Legume Forage	
d	0.230	%	0.9000	g/g	-	F	NRC16F49	49	Corn silage, immature		Grain Crop Forage	
5	0.110	%	1,0000	g/g	-	F	NRC16F50	50	Corn silage, mature		Grain Crop Forage	
Mn - total	31,000	ppm	0.0100	ma/ma	-	F	NRC16F48	48	Corn silage, typical		Grain Crop Forage	
Cu - total	7 000	ppm	0,0400	ma/ma	1	F	NRC16F52	52	Corn stalks, ensiled, high DM		Grain Crop Forage	
Fe - total	230,000	nom	0,0400	ma/ma	122	F	NRC16F51	51	Corn stalks, ensiled, low DM		Grain Crop Forage	
Zn - total	230,000		0,1000	malma	1	F	NRC16F80	78	Grain sorghum hay		Grain Crop Forage	
T total	27,000	ppm	0,1500	mg/mg	1	F	NRC16F81	79	Grain sorghum silage, mature		Grain Crop Forage	
	0.400	ppm	0,8300	mg/mg	1	F	NRC16F82	80	Grain sorghum silage, midmtr		Grain Crop Forage	
Controla	0,400	ppm	1,0000	ing/ing	1	F	NRC16F83	81	Grass legume mixt, grass slg		Grass/Legume Forage	
Se - total	0,032	ppm	1,0000	mg/mg	1	F	NRC16F84	82	Grass Ig mixt, grass hay, mid		Grass/Legume Forage	
Mo - total	0,570	ppm	1,0000	mg/mg	1	F	NRC16F85	83	Grass Ig mixt, grass hay, mtr		Grass/Legume Forage	
Cr - total		ppm	1,0000	mg/mg	-	F	NRC16F86	84	Grass Ig mixt, leg. hay, mtr		Grass/Legume Forage	
F - total		ppm			1	F	NRC16F87	85	Grass Ig mixt, leg., hay, immtr		Grass/Legume Forage	
Vit. A		IU/kg	1,0000	10/10		F	NRC16F88	86	Grass Ig mixt, legume slg		Grass/Legume Forage	
Vit. D3		IU/kg	1,0000	IU/IU	-	F	NRC16F89	87	Grass Ig mixt, mix hay		Grass/Legume Forage	
Vit. E		IU/kg	1.0000	IU/IU	1	F	NRC16F90	88	Grass lg mixt, mix silage		Grass/Legume Forage	

Partition: Forages 12/05/2022 19:0 E Foeds	)2 ave 😃 Save as 🖞	🕫 Restore all	Silages Corn Medium g	in In	NA: stalla	SEM Feed Libi ation path	ary Dairy-8		Fiter	- 0	
Forage	56	D.M.	100	,000	-			, any a		Cont	
Concentrate	96	D.M.					Code		Feeds	1	Category
Nutrient data ent	Constants calo	ulation Info	Cloping Userlists	Quick data	22	F	NRC16F49	49	Corn silage, immature	Gra	in Crop Forage
Carbohydrate	Proteins	Amino acid	E Fatty arids	Minerals	12	F	NRC16F50	50	Corn silage, mature	Gra	in Crop Forage
Corporty of Gr	is proteins p		y rouy delos	rinci dia	1	F	NRC16F48	46	Corn silage, typical	Gra	in Crop Forage
K) Res	tores	NASEMAC			-	F	NRC16F52	52	Corn stalks, ensiled, high DM	Gra	in Crop Forage
Total minerals				_	-	F	NRC16F51	51	Corn stalks, ensiled, low DM	Gra	in Crop Forage
	Concentration		<b>Absorption Coefficients</b>	1							
Ca	0,250	*	0,6000	9/9							
P	0,200	%	0,7000	9/9							
Mg	0,210	*	0,1600	g/g							
K	1,240	*	0,9000	9/9							
Na	0,010	*	0,9000	9/9							
d	0,230	.%	0,9000	9/9							
5	0,110	*	1,0000	9/9							
Mn - total	31,000	ppm	0,0100	mg/mg							
Cu - total	7,000	ppm	0,0400	mg/mg							
Fe - total	230,000	ppm	0,1000	mg/mg							
Zn - total	27,000	ppm	0,1500	mg/mg							
I - total		ppm	0,8500	mg/mg							
Co - total	0,400	ppm	1,0000	mg/mg							
Se - total	0,032	ppm	1,0000	mg/mg							
Mo - total	0,570	ppm	1,0000	mg/mg							
Cr - total		ppm	1,0000	mg/mg							

Then, filtering by name, it is possible to identify the NASEM food from which to pre-collect the AC which will replace those currently specified in the user feed. By clicking on the selected feed, the feature will replace, after confirmation, the available AC values.

HV CORM Partition: Fora 12/05/2022 1	N SILAGE 2019 [27 Iges 19:02		Silages Corn Medium gr	18	NA	SEM Feed Li	brary			-		
📋 Feeds 🔓	Save 👃 Save as	👘 Report 🔻	Restore all		Ir	nstall	ation path		processory and a second s	Filter		
Forage	9	6 D.M.	100	0,000	C	:\NA	SEM\NASEM	-Dairy-8		com		
Concentrat	e 9	6 D.M.				T	Code		Feeds	1		Category
Nutrient data	entry Constants cal	culation Info	Cloning User lists	Quick data	-	F	NRC16F49	49	Corn silage, immature	Gra	in Crop	Forage
Carbohyd	rates Proteins	Amino acid	s Fatty acids	Minerals/	122	F	NRC16F50	50	Corn silage, mature	Gra	in Crop	Forage
- carbony a				rine usy	-	F	NRC16F48	48	Com silage, typical	Gra	in Crop	Forage
K)	Restores	NASEM AC			-	F	NRC16F52	Attenz	ione		×	prage
Total miner	rals				12	F	NRC16F51					orage
	Concentration		Absorption Coefficients	•		-			Do you want to replace the current Abs	orption Coefficien	its	
Ca	0,250	%	0,6000	g/g					with those from the NASEM feed: Corn	silage, typical?		
Р	0,200	%	0,7000	g/g					Fd_acK = 1			
Mg	0,210	%	0,1600	g/g	1				$Fd_acCa = 0.4$ $Fd_acCu = 0.05$			
к	1,240	%	0,9000	g/g	1				$Fd_acZn = 0.2$			
Na	0,010	%	0,9000	g/g	1				Fd_acNa = 1 Fd_acPtot = 0,827			
d	0,230	%	0,9000	g/g					Fd_acCl = 0,92 Ed_acMg = 0.31			
5	0,110	%	1,0000	g/g					Fd_acMn = 0,004			
Mn - total	31.000	ppm	0.0100	mg/mg	1				$Fd_acre = 0,1$			
Cu - total	7.000	ppm	0.0400	mg/mg								
Fe - total	320,000	0000	0,0100	ma/ma					5	î No		

The feed will have to be saved again to implement the changes.

In order to facilitate the identification of user feeds that are not up to date for the Absorption Coefficients proposed by NASEM 2021 when the NASEM Dairy 2021 requirements are set, these feeds are marked with a magnifying glass with a small red triangle

10	E	Feeds [ 17/17 ]		As fed kg	DM kg	DM %	C/Tonne		Days in milk	130,0		Holstein	1	
Ø	F	CCS Corn Silage	2	19,618	7,455	38,00	50,000	100	Milk production kg	43,50	ECM	kg 44,57	BCS c.	2,75
	F	Alfalfa hay 45.19 NF=1536		3,693	3,247	87,93	175,000	4LOR	Mik Fat % w/w	3,78	BW	kg 690,0	BCS t.	2,75
		Oat Hay 62.06 NF=1541	Feed	with Absorption	Coefficients not	updated ac	cording to NASEN	2021	Milk Protein % w/w	3,21	3,05	2,48	days	30
	с	Corn grain fine 63%	14	5,717	5,109	89,36	320,000	net	S Milk quality	Well-being	risks Fib	er adequacy		
Ø	c	Beet pulp pellet	2	1,676	1,491	88.98	275,000			Supply	Balance	% Req. 7	s Mil	k kg ^
M	c	Sovbean meal 47% NF=16 0479	8	2.663	2,358	88.56	433,000	ME Mo	al/day	68,45	-0,02	100,0	43	,48
M	c	Canola Meal Solvent 37% (CCC)	ø	1.601	1.441	90.00	325.000	MP g/	day	2.899,7	-1,0	100,0	43	,48
	c	Barley grain gr - PGO=118261	2	1 155	1.014	87.80	268.000	NH3-I	g		71,1	132,6		
		Sugarcane molarses 40%	0	0.738	0.533	73.30	200,000	Urea (	CPE) g	110,2	2,6 %CP	203 g RDtru	eP/kg fCHC	2
9	-	Sugarcane molosses 45 %		0,728	0,333	13:30	200,000	peND	kg	5,13	0,13	102,6	19,48 %	bDM
E C	-	Soy Plus	-	0,000	0,000	07,09	693,000	Met g		64,3	-6,9	90,3	2,22 %	MP
	c	Enertat	14	0,310	0,299	96,50	1.160,000	Lysg		195,7	-6,9	96,6	6,75 %	MP
M	c	Urea	P	0,040	0,039	99,00	700,000	MP 94	DMI	11.02	47.4	o/Mcal ME		in the second second
Ø	c	Soybean steam flaked	P	0,260	0,233	89,88	610,000	-	urat ald	(142/220)	Waharin	DUTAL	172 7/11	Y L 100
Ø	.1	MIN-VIT 1/10 - v2015	P	0,293	0,287	97,73	1.550,000	Total	valuation (Pool sizes)	Rumen Synch	rony / Excretio	GHG Y Fatty	acids / Am	ino acids
		Potassium Carbonate	P	0,119	0,117	98,50	1.320,00	-			Diet			
	1	Calcium Carbonate	P	0,050	0,050	99.20	55,000		Ration	Water To	otal intake	Concentration	Add	ed
M	1	Magnesium Oxide Low solubility	P	0,040	0,040	96,20	430,000	Ca	212,97 g		212.97 g	0.81 % D	и	
	-	-						P	94,01 g		94,01 g	0,36 % D	м	

This indicator helps to easily open the feed and update it for mineral AC (with one of the available options, # 1 or # 3) so that the recipe is also updated accordingly. When returning to the recipe screen, after saving the updated feeds, the conventional magnifying glass will appear again to indicate that the feed is now also updated for its AC.

In summary, the choice of the updated set of equations for the requirements by the user will be logical and reasonable only if the user will update the old AC with the new ones using one of the procedures described above.