

Chequeo para determinar la cantidad de protefna

$$.09 (12.77) + .5 (3.13) = 2.71 \text{ Lb de P.C.}$$

Además se puede checar la energía

$$.89 (12.77) + .90 (3.13) = 14.18 \text{ Mcal EN}_L$$

3) Método algebraico.

X = Lbs. de maíz con olote

de la pag. #5 tenemos 15.92 - X = Lb de harina de soya.

Lo primero que se hace es colocar los valores de P.C. de los alimentos y la cantidad de P.C. necesitada.

$$.09 (X) + .5 (15.92 - X) = 2.71 \text{ Lb P.C.}$$

(P.C.) (P.C.)

$$.09 X + 7.96 - .5 X = 2.71$$

$$\text{Maíz con Olote} - .41 X = -5.25$$

$$X = 12.8 \text{ Lb de maíz y olote}$$

$$15.92 - 12.8 = 3.12 \text{ Lb de harina de soya}$$

Si checamos vemos que:

$$.09 (12.8) + .5 (3.12) = 2.71 \text{ Lb de P.C.}$$

Otro cuarto método el cual no es muy conocido pero que puede ser útil es el método 28.

Suposiciones básicas

a) Estamos dando 50% de grano y 50% de forraje

b) La cantidad de protefna en la ración es 14% (si uno quiere 15 ó 16 use 30 ó 32 en lugar de 28).

CAPILLA ALFONSINA

Cálculos:

% de P.C. en forraje (50% silo y 50% heno).

$$.5 (8) + .5 (19) = 13.5$$

Silo Heno

% de P.C. en el grano

Constante 28

% P.C. en forraje 13.5

14.5

Posteriormente el cuadrado de Pearson debe ser usado para determinar la proporción de granos.

En promedio el valor puede ser usado pero no así en vacas de alta producción donde se usan los factores 30 y 32

30.0

13.5

16.5%

Esto fue una comunicación personal del Dr. Robert D. Appelman de la Universidad de Minnesota.

BIBLIOTECA UNIVERSITARIA U.A.N.L.

APENDICE No. 1

NORMAS PARA HENOS Y ENSILADOS EN BASE A MATERIA SECA

TIPO DE COSECHA	CLASIFICACION	% TOTAL NUTRIENTES DIGERIBLES	% PROTEINA BRUTA
-HENO DE LEGUMINOSAS	1). EXCELENTE	65 O MAYOR	18 O MENOR
	2). BUENO	58 A 65	MINIMO 15
	3). REGULAR	54 A 58	MINIMO 12
	4). POBRE	MENOR DE 54	MENOR DE 10
-HENO DE GRAMINEAS	1). EXCELENTE	65 O MAYOR	15 O MAYOR
	2). BUENO	58 A 65	MINIMO 12
	3). REGULAR	54 A 58	MINIMO 10
	4). POBRE	MENOR DE 54	MENOR DE 10
-ENSILADO DE MAIZ	1). EXCELENTE	65 O MAYOR	9 O MAYOR
	2). BUENO	60 A 65	9 A 11
	3). POBRE	MENOR DE 60	MENOS DE 9
-OTROS ENSILADOS	1). EXCELENTE	MAYOR DE 65	MINIMO 16
	2). BUENO	60 A 65	12 A 16
	3). PASABLE	54 A 59	MENOR DE 12
	4). POBRE	MENOR DE 54	MENOR DE 12

REFERENCIA: Optimum feeding of dairy animal by M.E. McCullough 2nd Edition 1973. University of Press Georgia.

APENDICE No. 2

NIVELES MAXIMOS ACONSEJABLES EN EL USO DE RACIONES PARA GANADO LECHERO EN ALGUNOS GRANOS Y SUBPRODUCTOS (BASADO EN EL 100 PORCIENTO DE MATERIA SECA).

ELEMENTO	NIVEL
GRANO DE CEBADA	75
PULPA DE REMOLACHA	20
DESPERDICIO DE CERVECERIA	33
HARINA DE MAIZ Y OLOTE	100
GRANO DE MAIZ	100
OLOTE DE MAIZ	25
HARINA DE GLUTEN DE MAIZ	*
HARINA DE SEMILLA DE ALGODON	*
GRASA	5
MELAZA DE REMOLACHA	10
MELAZA DE CAÑA	10
AVENA	100
PAPAS	50
RYE GRASS	100
LECHE DESCREMADA	100
GANADO DE SORGO	100
SEMILLA DE SOYA	20
HARINA DE SOYA	*
HARINA DE GIRASOL	*
TRIGO	50
SUERO SECO	10
LEVADURA SECA	5

* Se añade lo suficiente para balancear y alcanzar los requerimientos de protefina.

Table 1. Daily Nutrient Requirements of Dairy Cattle-Continued

Breed	Body Weight (kg)	Size, Age (wk)	Daily Gain (g)	Feed Energy				TDN (kg)	Total Minerals			Vitamins			
				NE _m (Mcal)	ME (Mcal)	DE (Mcal)	Feed IM (kg)		Protein (g)	Ca (g)	P (g)	A (1,000 IU)	D (IU)		
	1100	—	—	14.10	16.91	—	—	28.84	34.83	7.90	1169	36	27	47	—
	1200	—	—	15.05	18.05	—	—	30.77	37.17	8.43	1244	39	29	51	—
	1300	—	—	15.98	19.17	—	—	32.67	39.46	8.95	1316	41	31	55	—
	1400	—	—	16.88	20.27	—	—	34.49	41.66	9.45	1386	43	33	59	—

* Breed size: S for small breeds (e.g., Jersey); L is for large breeds (e.g., Holstein)

* Age in weeks indicates probable age of S or L animals when they reach the weight indicated.

Table 2. Daily Nutrient Requirement of Lactating and Pregnant Cows

Body Weight (kg)	Feed Energy				Total Crude Protein (g)	Calcium (g)	Phosphorus (g)	Vitamin A (1,000 IU)
	NE ₁ (Mcal)	ME (Mcal)	DE (Mcal)	TDN (kg)				
Maintenance of Mature Lactating Cows ^a								
350	6.47	10.76	12.54	2.85	341	14	11	27
400	7.16	11.90	13.86	3.15	373	15	13	30
450	7.82	12.99	15.14	3.44	403	17	14	34
500	8.46	14.06	16.39	3.72	432	18	15	38
550	9.09	15.11	17.60	4.00	461	20	16	42
600	9.70	16.12	18.79	4.27	489	21	17	46
650	10.30	17.12	19.95	4.53	515	22	18	50
700	10.89	18.10	21.09	4.79	542	24	19	53
750	11.47	19.06	22.21	5.04	567	25	20	57
800	12.03	20.01	23.32	5.29	592	27	21	61
Maintenance Plus Last 2 Months of Gestation of Mature Dry Cows								
350	8.42	14.00	16.26	3.71	642	23	16	27
400	9.30	15.47	17.98	4.10	702	26	18	30
450	10.16	16.90	19.64	4.47	763	29	20	34
500	11.00	18.29	21.25	4.87	821	31	22	38
550	11.81	19.65	22.83	5.20	877	34	24	42
600	12.61	20.97	24.37	5.55	931	37	26	46
650	13.39	22.27	25.87	5.90	984	39	28	50
700	14.15	23.54	27.35	6.23	1035	42	30	53
750	14.90	24.79	28.81	6.56	1086	45	32	57
800	15.64	26.02	30.24	6.89	1136	47	34	61
Milk Production -Nutrients Per kg Milk of Different Fat Percentages (% Fat)								
2.5	0.59	0.99	1.15	0.260	72	2.40	1.65	
3.0	0.64	1.07	1.24	0.282	77	2.50	1.70	
3.5	0.69	1.16	1.34	0.304	82	2.60	1.75	
4.0	0.74	1.24	1.44	0.326	87	2.70	1.80	
4.5	0.78	1.31	1.52	0.344	92	2.80	1.85	
5.0	0.83	1.39	1.61	0.365	98	2.90	1.90	
5.5	0.88	1.48	1.71	0.387	103	3.00	2.00	
6.0	0.93	1.56	1.81	0.410	108	3.10	2.05	
Body Weight Change During Lactation -Nutrients Per kg Weight Change								
Weight loss	-4.92	-8.25	-9.55	-2.17	-320			
Weight gain	5.12	8.55	9.96	2.26	500			

To allow for growth of young lactating cows, increase the maintenance allowances for all nutrients excepts vitamin A by 20 percent during the first lactation and 10 percent during the second lactation.

Table 3. Recommended Nutrient Content of Ration for Dairy Cattle

Nutrients (Concentration in the Feed Dry Matter)	Lactating Cow Rations				Nonlactating Cattle Rations									Maxi- mum Concen- trations (All Classes)	
	Cow Wt (kg)	Daily Milk Yields (kg)			I	II	III	IV	V	VI	VII	VIII	IX		Max.
		< 8	8-13	13-18											
Crude Protein, %	13.0	14.0	15.0	16.0	11.0	8.5	12.0	16.0	22.0						
Energy	1.42	1.52	1.62	1.72	1.35										
NE _I , Mcal/kg															
NE _m , Mcal/kg						1.20	1.26	1.90	2.40						
NE _g , Mcal/kg							0.60	1.20	1.55						
ME, Mcal/kg	2.36	2.53	2.71	2.89	2.23	2.04	2.23	3.12	3.78						
DE, Mcal/kg	2.78	2.95	3.43	3.31	2.65	2.47	2.65	3.53	4.19						
TDN, %	63	67	71	75	60	56	60	80	95						
Crude Fiber, %	17	17	17	17	17	15	15								
Acid Detergent Fiber, %	21	21	21	21	21	19	19								
Ether Extract, %	2	2	2	2	2	2	2	2	10						

LEAST COST DAIRY RATION

SPECIFICATIONS:

AVERAGE MILK PRODUCTION =	90 LBS	NE(L) FOR ACTIVITY..... =	10%
AVERAGE MILK FAT..... =	3.75 %	1ST LACTATION HEIFERS IN GROUP =	0%
AVERAGE COW WEIGHT..... =	1400 LBS	2ND LACTATION HEIFERS IN GROUP =	16%
MILK BLEND PRICE (\$/CWT) = \$	12.25		

FEEDS USED IN RATION:	LB/DAY AS FED	%ROUGHAGE		PRICE ---RANGE---			---CONSTRAINTS---			
		AS FED	DM	\$/CWT	LOWER	UPPER	AS FED -POUNDS- MIN MAX	100% DM -%CONC.- MIN MAX		
ALFALFA HAY, 28% MCF	14.56	54.8	54.8	6.00	4.62	6.19	4.0			
WHEAT HAY	9.00	33.9	34.2	3.25-99.99	4.71		8.0	9.0		
COTTONSEED, WHOLE	3.00	11.3	11.5	12.75	11.30	99.99	3.0	5.0		
TOTAL ROUGHAGE....	26.56	(24.17 LBS DM)								
		%CONCENTRATE								
		AS FED	DM							
CORN GRAIN, GR OR RLD	13.14	40.0	39.3	8.30	7.70	11.38			39.3	93.4
HOMINY FEED, LOW FAT	7.12	21.7	21.8	7.90	7.01	7.96				25.1
CORN GLUTEN FEED	4.11	12.5	12.4	8.75	6.83	9.43				12.4
COTTONSEED MEAL, 41 S	3.02	9.2	9.4	11.50	10.48	11.58				10.2
SOYBEAN HULLS	2.15	6.6	6.6	6.50	6.44	8.25				7.5
WHEAT MIDDS	1.31	4.0	4.0	7.00	1.01	8.09				4.0
SODIUM BICARB	.50	1.5	1.7	18.00	-3.17	99.99	.5			
SOYBEAN MEAL, 44 SOL	.49	1.5	1.5	12.00	11.91	130.43			1.5	50.0
LIMESTONE, GRAUND	.37	1.1	1.2	4.00	-2.96	6.75				
SALT	.20	.6	.7	4.60	-3.08	209.88				.7
DYNA-K MINERAL	.16	.5	.6	11.00	-3.03	257.34				.6
MAGNESIUM OXIDE	.09	.3	.3	17.00	-2.58	99.99	.1			
DYNA-MATE	.08	.2	.3	11.00	-3.10	503.67				.3
DICALCIUM PHOSPHATE	.07	.2	.2	18.50	16.27	37.66				
GORE HOFF/ROCH PMX	.03	.1	.1	51.00	-1.27	99.99	.0			
TOTAL CONCENTRATE.	32.85*	(29.73 LBS DM)								
TOTAL RATION.....	59.41*	(53.90 LBS DM)								

NOTE: PROVIDE SALT FREE CHOICE OR AS 0.5% OF CONCENTRATE MIX.
 PROVIDE OTHER ESSENTIAL MINERALS NOT SUPPLIED IN ADEQUATE AMOUNTS
 BY FEEDS IN RATION LISTED ABOVE.

ROUGHAGE: CONCENTRATE RATIO = 45:55 (DM)