



Livestock Production

Animal Nutrition

Handout 4

Practical Application

PRACTICAL APPLICATION

Step 1:

What are the nutrient requirements of this sheep? Look in Table I. Nutrient requirements of sheep.

A sheep of 50kg in her first 8 weeks of lactation with a single lamb requires:

Crude protein requirement = 10,4 % ******(1)

Energy requirement = 9,7 MJ/KG ME ******(2)

Step 2:

Look at the nutritive value of feedstuffs (Table 2)

Feedstuff	Crude Protein Content	Energy Content MJ/KG ME
Maize Stover (roughage 1)	4 ** (3)	7.5 (4)
Maize Stover (roughage 2)	- (5)	0.0 (6)
HPC (with urea) 60	60 (7)	5.3 (8)
Maize meal	9 (9)	12.5 (10)
HPC (without urea) 40	40 (11)	9.0 (12)

Step 3:

Select a preliminary ration and determine its nutritive value.

Total roughage content of preliminary ration (See Table 3: App A) 50%

Ratio of roughage 1 50 % (13)

Ratio of roughage 2 -- % (14)

Ratio of HPC (6,5 of 10%)* 6.5 % (15)

Ratio of maize meal: $100 - (50(13) + .?. (14) + 6.5(15))$ 43,5 % (16)

Composition and nutritive value of preliminary ration A

Feedstuff		% CP
Maize Stover (roughage 1)	$50 (13) \div 100 \times 4 (3)$	2.0 (17)
HPC I 60	$- (14) \div 100 \times - (5)$	0.0 (19)
Maize meal	$6.5 (15) \div 100 \times 60 (7) \text{ OR } (11)$	3.9 (21)
Total	$43.5 (16) \div 100 \times 9$	3.92 (23)
		9.82 (25)
Feedstuff		ME MJ/KG
Maize Stover (roughage 1)	$50 (13) \div 100 \times 7.5 (4)$	3.75 (18)
HPC I 60	$- (14) \div 100 \times - (6)$	0.0 (20)
Maize meal	$6.5 (15) \div 100 \times 5.3 (8) \text{ OR } (12)$	0.34 (22)
Total	$43.5 (16) \div 100 \times 12.5$	5.44 (24)
Metabolisable Energy		9.53 (26)

Deficit						
Crude protein deficit	10.4	(1)	-	9.82	(25)	= 0.58% (27)
Energy deficit	9.7	(2)	-	9.53	(26)	= 0.17% (28)

Step 4:

Correct energy deficit of preliminary ration and test its nutritive Value %

Maize Meal replacing roughage with lowest energy content: $0.17 (28) \times 100 \div (12.5 - 7.5 (4)) = 3.4\%$ (29)

Quantity roughage with lower energy content $50.0 (13) - 3.4 (29) = 46.6\%$ (30)

Quantity maize meal $43.5 (16) + 3.4 (29) = 46.9\%$ (31)

Nutritive value of preliminary ration B

Feedstuff		% CP
Maize Stover (roughage 1)	$46.6 (30) \div 100 \times 4 (3)$	1.86 (32)
Maize Stover (roughage 2)	$- (14) \div 100 \times - (5)$	0.0 (19)
HPC I 60	6.5(15)	3.90 (21)
Maize Meal	$46.9 (31) \div 100 \times 9$	4.22 (34)
Total		9.98 (36)
Feedstuff		ME MJ/KG
Maize Stover (roughage 1)	$46.6 (30) \div 100 \times 7.5 (4)$	3.50 (33)
Maize Stover (roughage 2)	$- (14) \div 100 \times - (6)$	0.0 (20)
HPC I 60	6.5(15)	0.34 (22)
Maize meal	$46.9 (31) \div 100 \times 12.5$	5.86 (35)
Total		9.70 (37)
Deficit:	Crude protein deficit	$10.4 (1) - 9.98 (36) = 0.42\%$ (38)
	Energy deficit	$9.7 (2) - 9.70 (37) = 0$ MJ/KG (39)

Step 5:

Correct the protein of the preliminary ration and test and test its nutritive value % Urea free HPC replacing roughage with lowest energy content

$$0.42 (38) \times 100 \div (40 (11) - 4 (3)) = 1.2\% (40)$$

Quantity roughage with lower energy content

$$46.6 (30) - 1.2 (40) = 45.4\% (41)$$

Composition and nutritive value of final ration

Feedstuff		% CP
Maize Stover (roughage 1)	$45.5 (41) \div 100 \times 4 (3)$	1.82
Maize Stover (roughage 2)	$- (14) \div 100 \times - (5)$	0.0 (19)
HPC I 60	6.5(15)	3.90 (21)
Maize meal	46.9 (31)	4.22 (34)
HPC 2 (Urea free)	$1.2 (40) \div 100 \times 40 (11)$	0.48
Total		10.42
Feedstuff		ME MJ/KG
Maize Stover (roughage 1)	$45.5 (41) \div 100 \times 7.5 (4)$	3.41
Maize Stover (roughage 2)	$- (14) \div 100 \times - (6)$	0.0 (20)
HPC I 60	6.5(15)	0.34 (22)
Maize meal	46.9 (31)	5.86 (35)
HPC 2 (Urea free)	$1.2 (40) \div 100 \times 9 (12)$	0.11
Total		9.72