

**Worksheet for Calculating Supplement Needs**  
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1. For nonlactating cattle, is the crude protein (CP) of the forage greater than 6.25% crude protein and the Total Digestible Nutrients (TDN) greater than 52%?

If both of the above conditions are being met and there is an adequate forage supply, then supplementation is not needed. If not, calculate supplement needs by the procedure below.

2. Determine cow requirements from Table 1.

Example: A 900 lb. cow in the last trimester of pregnancy requires 10.1 lbs. of TDN and 1.5 lbs. of crude protein.

3. Have the forage analyzed.

Example: The forage tested has 48% TDN and 5% crude protein.

4. Estimate forage intake from Table 2 below.

Example: A 900 lb. cow on a pasture with 48% TDN and 5% crude protein is going to be supplemented with adequate protein to meet forage deficiencies.

**Table 1. Nonlactating Cow TDN and Protein Requirements**

Cow Wt.	Lbs. TDN	Lbs. Protein
Replacement Heifers, Gaining .5 lb/day, 58% TDN		
400	7.5	0.84
500	8.5	0.94
600	9.4	1.04
700	10.0	1.13
Mature Cows		
800	9.2	1.40
900	10.1	1.50
1000	11.0	1.60
1100	11.7	1.60
1200	12.5	1.70
1300	13.3	1.80
1400	14.0	1.90
1500	14.8	2.00

Therefore, forage intake is adjusted upward by 15%; 1.7% of body weight forage intake x 1.15 = 1.96 or 2%. Forage intake is 18 lbs: 900 lbs. body weight x .02 body weight intake in forage = 18 lbs. forage.

**Table 2. Forage Intake of Range Cattle**

Total Digestible Nutrients in Forage, %	Nonlactating Cattle, % of Body Weight Forage Intake	Lactating Cattle, % of Body Weight Forage Intake
43	1.2*	1.3*
45	1.5*	1.7*
50	1.9*	2.0*
55	2.0	2.1
58	2.1	2.3
60	2.2	2.4
62	2.3	2.6
65	2.4	2.8

\*Add 15% to above lbs. of forage intake if addressing insufficient crude protein in forage (less than 6%) by using protein supplements.

5. Determine nutrient intake from forage to see if its adequate.

Example:

TDN: 18 lbs. forage intake x .48 TDN in forage = 8.64 lbs. TDN

CP: 18 lbs. forage intake x .05 CP in forage = .9 lbs. CP

6. See how much TDN and CP are needed.

Example:

TDN: 10.1 lbs. TDN required - 8.64 lbs. TDN in forage = 1.46 lbs. TDN

CP: 1.5 lbs. CP required - .9 lbs. CP in forage = .6 lbs. CP

6. Choose a supplement from feed tables provided by NRCS or Cooperative Extension or see below.

Protein and Energy Content of Some Supplements		
Dry Matter Basis		
Feed Supplement	% Protein	% Total Digestible Nutrients (TDN)
Corn	10.0	91
Soybean Oil Meal	44.0	81
Cottonseed Oil Meal	44.8	75
Alfalfa Hay, Full Bloom	15.9	52
Barley	13.0	84

Example: We will use cottonseed oil meal with 44.8% CP and 75% TDN.

7. Determine amount of supplement needed (dry matter basis).

Example:

TDN: 1.46 lbs. TDN needed  $\div$   $\frac{.75 \text{ lbs. TDN}}{\text{lb. CSM}}$  = 1.95 lbs. cottonseed oil meal

CP: .6 lbs. CP needed  $\div$   $\frac{.448 \text{ lbs. CP}}{\text{lb. CSM}}$  = 1.34 lbs. cottonseed oil meal

8. Adjust for moisture in supplement to get lbs. to feed (water has no energy or protein).

Example:

TDN: 1.95 lbs. CSM  $\div$  .90 moisture = 2.16 lbs. per day of CSM (as fed basis)

CP: 1.34 lbs. CSM  $\div$  .90 moisture = 1.49 lbs. per day of CSM (as fed basis)

9. So, feed 2.16 lbs. of cottonseed oil meal per day or 15 lbs. of CSM per week at one feeding.  
**(Feed energy supplements daily!)**