

Understanding and Interpreting Feed Analysis Reports-G3160

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The feed analysis report may include some unfamiliar terms. This publication explains these terms and their use.

Acid detergent (AD) fiber and Neutral detergent (ND) fiber. These designations measure different fiber components. AD fiber, used in place of crude fiber, gives a more accurate estimation of net energy than crude fiber. A forage test is necessary to determine AD fiber because forages vary greatly. Early-cut forages have lower AD fiber and a higher net energy than late-cut forages. Legumes generally have lower AD fiber and a higher net energy than grasses at comparable stages of maturity. *Book values* for net energy in grains can be used for formulating diets because the low fiber and high net energy values for grains are quite constant. More information about forage fiber determination and feed values can be found in UMC Guide [G 3150](#). Neutral detergent (ND) fiber is explained in Guide [G 3150](#).

Net energy (NE) and total digestible nutrients (TDN). These values measure the energy in feed that is available for maintenance, growth or lactation. Net energy is expressed in megacalories (Mcal) per pound of feed and TDN in percent. Net energy is not equivalent to TDN and should not be used interchangeably. Three net energy terms are provided: net energy lactation (NE lactation), net energy maintenance (NE maint. or NE_m), and net energy gain (NE gain or NE_g).

For dairy cows, NE lactation is the correct term. NE lactation of a food includes energy for maintenance and milk production. A 1,500-pound cow producing 60 pounds of 3.5 percent milk needs 10.66 Mcal of NE for maintenance and 18.60 Mcal of NE for milk production for a total of 29.26 Mcal. If this cow is eating 25.0 pounds of alfalfa hay, she will consume 13.75 Mcal (25.0 pounds x 0.55 Mcal per pound as fed). She will need 15.51 Mcal from 20.68 pounds of grain (15.51 Mcal divided by 0.75 Mcal per pound as fed). See Table 1.

Table 1.

Total daily NE lactation requirement (1,500 pound cow)	29.26 Mcal
NE lactation from feeds:	
25.0 lbs. alfalfa hay x 0.55 Mcal/lb. as fed	13.75 Mcal
20.68 lbs. grain x 0.75 Mcal/lb. as fed	15.51 Mcal

For growing and finishing cattle, NE maintenance and NE gain are used separately for calculating the required energy. A 600-pound steer, gaining 2.0 pounds daily, requires 5.17 Mcal NE_m and 3.54 Mcal NE_g. How much would a 600-pound steer eating 10 pounds of alfalfa hay and 7 pounds of grain be expected to gain daily? The answer is 1.97 pounds by the calculation in Table 2.

Table 2. Find NE_m and NE_g content of ration using values given in feed analysis report.

	NE_m Mcal	NE_g Mcal
10 lbs. alfalfa (as fed)	5.0 (10 lbs. x 0.5 Mcal/lb.)	2.80
7 lbs. grain (as fed)	5.88 (7 lbs. x 0.84 Mcal/lb.)	3.78
17 lbs. total ration	10.88	6.58
Mcal per lb. of ration (as fed)	0.64 (10.88 Mcal/17 lbs.)	0.39

Maintenance must be met first. Calculation of pounds of ration needed to meet the maintenance requirement of 5.17 Mcal is 5.17 Mcal NE_m divided by 0.64 Mcal NE_m/pound of ration = 8.08 pounds of ration. The remaining portion of the ration, 8.92 pounds (17 pounds - 8.08 pounds) can be used for gain: 8.92 pounds x 0.39 Mcal NE_g/pound (= 6.58 Mcal/17 pounds of ration) = 3.48 Mcal NE_g. The 600-pound steer requires 1.77 Mcal NE_g per pound of gain; therefore, 1.97 pounds (3.48/1.77) is the expected daily gain.

The amount of the ration needed above maintenance for a 2.0-pound daily gain is 9.08 pounds (3.54/0.39). Total daily intake of the mixed ration to give 2.0-pound daily gain is 17.16 pounds (8.08 + 9.08).

Total digestible nutrients (TDN) requirements for beef cattle are listed in MU publication G2067, *Nutrient Requirements for Growing and Finishing Beef Cattle*. To calculate rations, divide the animal's daily TDN requirement by the TDN level in the ration. Example: 10.7

pounds TDN are required for a 600-pound steer to gain 2.0 pounds daily. If the ration contains 63 percent TDN (10.7/0.63), 17.0 pounds of feed is needed daily.

Unavailable protein (including heat damaged protein). This is the protein that the cow cannot digest, measured as ADF-N or pepsin in soluble protein. A small amount of unavailable protein (ADF-N x 6.25) is normally found; this is usually 3.0 percentage units or less. Amounts greater than 3 percent indicate heat damage.

Heat damage increases the amount of unavailable protein in forages. To compensate, increase the protein content of the grain or feed a different forage.

Adjusted crude protein. This is the amount of crude protein after heat damage has been subtracted. Adjusted crude protein is the same as crude protein if there is no heat damage. Use the adjusted crude protein value to formulate rations (Table 3).

Table 3. Protein fractions of normal and heat-damaged forages.

	Normal forage	Heat-damaged forage
Crude protein (%)	18.0	18.0
Unavailable protein (%)	3.0	10.0
Heat-damaged protein (%)	0 (3.0 - 3.0)	7.0 (10.0 - 3.0)
Adjusted crude protein (%)	18.0	11.0

[To order](#), request G3160, *Understanding and Interpreting Feed Analysis Reports* (25 cents).

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Practicum Examples

Hay Analysis (10 Questions)

		Sample 1		Sample 2		Sample 3		Sample 4	
		As Is	Dry	As Is	Dry	As Is	Dry	As Is	Dry
Moisture	%	11.3		12.71		10.9		15	
Dry Matter	%	88.7	100	87.29	100	89.1	100	85	100
Crude Protein	%	8.9	10.03	17.87	20.47	16.00	17.96		
Adj Cr Protein	%	8.9	10.03			16.00	17.96		
Avail Protein	%	8.36	9.42						
ADF Nitrogen	%	.09	.10						
AD Fiber	%	29.3	33.01	22.60	25.90	29.70	33.34		
ND Fiber	%	52.36	59.00	37.51	42.97				
TDN	%	58.84	66.30	60.71	69.55	50	56		
NE Lact,	MCal/Lb	.52	.59	.62	.71	.55	.62		
NE Gain	MCal/Lb	.37	.42	.35	.40	.28	.31		
NE Maint	MCal/Lb	.61	.69	.62	.71	.50	.56		
Nitrogen	%	1.42	1.60	2.86	3.27				
Calcium	%	.60	.67	1.61	1.84				
Phosphorous	%	.32	.36	.23	.26				
Potassium	%	1.43	1.61						
Crude Fiber				20.06	22.98				
RFV			100		148.75				
Price per ton	\$	140		220		160			

Hay Analysis Questions

1. What is the moisture content of sample 1?
2. If 25 pounds of sample 2 is fed to a dairy cow, how much energy would be provided for milk production?
3. What is the maximum forage dry matter intake of sample 3 for a 1400 pound beef cow if she can consume 1.1 percent of her body weight as NDF?

4. In terms of crude protein, which sample is the best buy?

5. Which sample would move through the digestive tract the slowest?

6. If 8 pounds of sample 1 was fed to a 600 pound steer, how much energy would be provided for gain?

7. A dairy cow has a 31.01 Mcal NE lactation requirement. You are feeding a ration that consists of alfalfa hay and grain. The cow receives 22 lbs of grain each day that contains .77 Mcal/lb as fed. How many pounds of .sample 1 does the cow need to be fed?
 - a. 12.76 lbs
 - b. 14.07 lbs
 - c. 16.94 lbs
 - d. 24.26 lbs

8. In terms of meeting NE maintenance requirement, which sample is the most economical to use?

Chemical Tank Mix

Chemical Tank Mix Practicum

1. You are preparing to spray an area that is 60 feet by 200 feet with an application rate of 2 oz/1000 sq ft.. How many total ounces of product is needed?

$$60' \times 200' \times 2\text{oz}/1000 \text{ sq ft} = 24 \text{ oz}$$

2. How many acres can be sprayed with a sprayer that has a 750 gallon stainless steel if the application rate is 8 gpa?

$$750 \text{ gallons} \times 1 \text{ acre}/8 \text{ gallons} = 93.75 \text{ acres}$$

3. How many gallons of product will be needed for a 600 gallon sprayer spraying 12 gpa, if you want to apply 28 oz of product per acre?

$$600 \text{ gallons} \times 1 \text{ acre}/12 \text{ gallons} \times 28 \text{ oz}/\text{acre} \times 1 \text{ gallon}/128 \text{ oz} = 10.94 \text{ gallons}$$

4. How many total gallons of spray will be needed for a field that is 1/4 mile wide and 2000 feet long, if you want to apply 12 gpa?

$$1/4 \text{ mile} \times 5280 \text{ '}/\text{mile} \times 2000' \times 1 \text{ acre}/43560 \text{ sq ft} \times 12 \text{ gallons}/\text{acre} = 727.3 \text{ gallons}$$

5. Calculate the volume of a tank that is 8 feet in diameter and 12 feet long.

$$4' \times 4' \times 3.14 \times 8' \times 7.48 \text{ gallons}/\text{cu ft} = 3006.4 \text{ gallons}$$

6. How many gallons of chemical is needed to spray 160 acres at a rate of 1.0 pints per acre?

$$160 \text{ acres} \times 1.0 \text{ pints}/\text{acre} \times 1 \text{ gallon}/8 \text{ pints} = 20 \text{ gallons}$$

7. A pesticide label indicates that it is to be applied at the rate of 4.5 ounces per acre. Approximately how many acres will one gallon of this pesticide formulation treat?

$$1 \text{ acre}/4.5 \text{ oz} \times 128 \text{ oz}/\text{gallon} = 28.44 \text{ acres}$$

8. How many acres are in a field that is 1/2 mile long and 1/4 mile wide?

$$1/2 \text{ mile} \times 1/4 \text{ mile} \times 640 \text{ acre}/\text{sq mile} = 80 \text{ acres}$$

9. How many acres can a center pivot effectively water, if the length of the unit is 1200 feet?

$$1200' \times 1200' \times 3.14 \times 1 \text{ acre}/43560 \text{ sq ft} = 103.8 \text{ acres}$$

10. How many ounces of 41% glyphosate will you need to put in a filled 25 gallon ATV sprayer, if you intend to end up with a 2% active ingredient solution?

$$25 \text{ gallons} \times 128 \text{ oz}/\text{gallon} \times 2 \% \text{ active ingredient} \times 1/41 \% \text{ active ingredient} = 156.1 \text{ oz}$$

11. You want to apply three pounds of active ingredient per acre. Your formulation is 75% WP. How much total formulation do you need for 40 acres?

$$3 \text{ pounds AI}/\text{acre} \times 1 \text{ pound formulation}/.75 \text{ pound AI} \times 40 \text{ acres} = 160 \text{ pounds of formulation}$$

12. How many pounds of an 80% wettable powder are needed to make 50 gallons of 3.5% spray for application by mist blower?

$$50 \text{ gallons} \times 3.5 \% \times 8.3 \text{ lbs}/\text{gallon} \times 1 \text{ pound formulation}/.8 \text{ pounds AI} = 18.2 \text{ lbs formulation}$$

Grain Pricing

Corn Discount Schedule Your Home Town Elevator Anywhere, Missouri

Moisture Discount		Test Weight Discount		Alfatoxin Discount		Damage Discount			
From - To:	Per bu	From - To:	Per bu	From - To:	Per bu		Heat	Damage	
15.1 - 15.5	.04	53.9 - 53.0	.01	0 - 20 ppb	0.00	.5% - 1.0%	.02		
15.6 - 16.5	.08	52.9 - 52.0	.02	21 - 25	.15	1.1 - 1.5	.04		
16.6 - 17.0	.12	51.9 - 51.0	.04	26 - 30	.30	1.6 - 2.0	.06		
17.1 - 17.5	.16	50.9 - 50.0	.06	31 - 35	.38	2.1 - 2.5	.08		
17.6 - 18.0	.20	49.9 - 49.0	.09	36 - 40	.46	2.6 - 3.0	.10		
18.1 - 18.5	.25	48.9 - 48.0	.12	41 - 45	.54	3.1 - 3.5	.12		
				46 - 50	.62	3.6 - 4.0	.14		
				51 - 55	.70	4.1 - 4.5	.16		
				56 - 60	.78	4.6 - 5.0	.18		
Foreign Material		Other Discounts			61 - 65	.86	5.1 - 5.5	.20	.02
From - To:	Per bu	Musty	10 cents		66 - 70	.94	5.6 - 6.0	.25	.04
3.1 - 4.0	.020	Sour	10 cents		71 - 75	1.02	6.1 - 6.5	.30	.06
4.1 - 5.0	.04	COFO	10 cents		76 - 80	1.10	6.6 - 7.0	.35	.08
5.1 - 6.0	.07	Infested	10 cents						
6.1 - 7.0	.10								
7.1 - 8.0	.13								

Soybean Discount Schedule Your Home Town Elevator Anywhere, Missouri

Moisture Discount		Test Weight Discount		Splits Discount		Damage Discounts		
From - To:	% of price	From - To:	\$ per bu	From - To:	\$ per bu	From - To:	\$ per bu	\$ per bu
13.1 - 13.5	1.25%	53.9 - 53.0	.02	20 % or less	0		Heat	Damage
13.6 - 14.0	2.50 %	52.9 - 52.0	.04	20.1 - 25.0 %	.005	.5% - 1.0%	.02	
14.1 - 14.5	3.75 %	51.9 - 51.0	.06	25.1 - 30.0 %	.01	1.1 - 1.5	.04	
14.6 - 15	5 %	50.9 - 50.0	.08	30.1 - 35.0 %	.015	1.6 - 2.0	.06	
15.1 - 15.5	6.5 %	49.9 - 49.0	.10	35.1 - 40.0 %	.02	2.1 - 2.5	.08	
15.6 - 16.0	8 %	48.9 - 48.0	.12	40.1 - 45.0 %	.03	2.6 - 3.0	.10	
16.1 - 16.5	9.5 %			45.1 - 50.0%	.04	3.1 - 3.5	.12	
16.6 - 17.0	11 %					3.6 - 4.0	.14	
17.1 - 17.5	12.5 %					4.1 - 4.5	.16	
17.6 - 18.0	14 %					4.6 - 5.0	.18	
18.1 - 18.5	16 %					5.1 - 5.5	.20	.02
						5.6 - 6.0	.25	.04
Over 18 % Subject to rejection		Under 49 # Subject to rejection		Over 40% Subject to rejection		6.1 - 6.5	.30	.06
						6.6 - 7.0	.35	.80

Foreign Material: All foreign material in excess of 1 % shall be deducted from the weight and will not be paid.

Other Colors: Brown, Black, etc. \$0.01 per bushel for each 1% or fraction thereof in excess of 1%.

Other Discounts: Musty, Sour, COFO, Heating or Infested \$0.10 per bushel discount.

§ 810.404 Grades and grade requirements for corn.

Grade	Minimum test weight per bushel (pounds)	Maximum limits of:		
		Damaged kernels		Broken corn and foreign material (percent)
		Heat damaged kernels (percent)	Total (percent)	
U.S. No. 1	56.0	0.1	3.0	2.0
U.S. No. 2	54.0	0.2	5.0	3.0
U.S. No. 3	52.0	0.5	7.0	4.0
U.S. No. 4	49.0	1.0	10.0	5.0
U.S. No. 5	46.0	3.0	15.0	7.0
<p>U.S. Sample Grade</p> <p>U.S. Sample grade is corn that:</p> <p>(a) Does not meet the requirements for the grades U.S. Nos. 1, 2, 3, 4, or 5; or</p> <p>(b) Contains stones with an aggregate weight in excess of 0.1 percent of the sample weight, 2 or more pieces of glass, 3 or more crotalaria seeds (<i>Crotalaria</i> spp.), 2 or more castor beans (<i>Ricinus communis</i> L.), 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), 8 or more cockleburs (<i>Xanthium</i> spp.), or similar seeds singly or in combination, or animal filth in excess of 0.20 percent in 1,000 grams; or</p> <p>(c) Has a musty, sour, or commercially objectionable foreign odor; or</p> <p>(d) Is heating or otherwise of distinctly low quality</p>				

§ 810.1604 Grades and grade requirements for soybeans

Grading Factors	Grade U.S. Nos.			
	1	2	3	4
Maximum percent limits of				
Damaged kernels				
Heat (part of total)	0.2	0.5	1.0	3.0
Total	2.0	3.0	5.0	8.0
Foreign material	1.0	2.0	3.0	5.0
Splits	10.0	20.0	30.0	40.0
Soybeans of other colors -1	1.0	2.0	5.0	10.0
	Maximum count limits of			
Other materials				
Animal filth	9	9	9	9
Castor Beans	1	1	1	1
Crotalaria seeds	2	2	2	2
Glass	3	3	3	3
Stones - 2	3	3	3	3
Unknown foreign substance	3	3	3	3
Total - 3	10	10	10	10
<p>U.S. Sample grade are soybeans that:</p> <p>(a) Do not meet the requirements for U.S. Nos. 1, 2, 3, or 4; or</p> <p>(b) Have a musty, sour, or commercially objectionable foreign odor (except garlic odor);</p> <p>or</p>				

(c) Are heating or otherwise of distinctly low quality.

^{1/} Disregard for Mixed soybeans.

^{2/} In addition to the maximum count limit, stones must exceed 0.1 percent of the sample weight.

^{3/} Includes any combination of animal filth, castor beans, crotalaria seeds, glass,

Your Home Town Grain Elevator 101 Soybean Drive Anywhere, MO			Delivery Date: November 23, 2016	
Customer: Ima Farmer			Commodity: Yellow Corn	
Gross Weight	85,360		Basis	.48
			CBOT Prices	
			Dec '16	3.49
			Mar '17	3.54
			May '17	3.61
			July '17	3.68
			Sept '17	3.76
Tare Weight	26,900		Grade:	# 1 Yellow Corn
Net Weight	58,460			
Gross Bushels	1,043.93			
		\$ per/bu		
Test Weight	57.2	0		
Moisture	15.00	0		
Damage	--			
Foreign Matter	1.30	0		
Splits				

1. What grade is this sample? # 1
2. What is the basis? .48
3. What is the Spot price for Corn on November 23, 2016? \$3.01
4. What are the total discounts per bushel? \$0.00
5. How many total bushels are for sale? 1043.93
6. What is the settlement price per bushel? \$3.01
7. What is the total settlement value for this load? \$3142.23
8. At what moisture content does the Elevator reserve the right to reject the corn? 15%

9. How many pounds of shrink would we expect from 1000 bushels of 18% moisture corn? **2520 pounds**

Fertilizer Practicum

 University Extension <small>UNIVERSITY OF MISSOURI COLUMBIA</small>	<h1 style="margin: 0;">Soil Test Report</h1>	Soil Testing Laboratory 23 Mumford Hall, MU Columbia, MO 65211 Phone: (573) 882-0823	or Soil Testing Laboratory P.O. Box 160 Portageville, MO 63873 Phone: (573) 379-5431
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FIELD INFORMATION	A																																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Field ID</td> <td>Hill Top field</td> <td>Sample no.</td> <td>1</td> </tr> <tr> <td>Acres</td> <td>40</td> <td>Last Lined</td> <td>Not known</td> </tr> <tr> <td></td> <td></td> <td>Irrigated</td> <td>No</td> </tr> <tr> <td>Last crop</td> <td colspan="3">019 Cool-Season Grass Pasture</td> </tr> </table>	Field ID	Hill Top field	Sample no.	1	Acres	40	Last Lined	Not known			Irrigated	No	Last crop	019 Cool-Season Grass Pasture			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Serial no.</td> <td>M9999</td> <td>Lab no.</td> <td>9969999</td> </tr> <tr> <td>Area</td> <td>015</td> <td>County</td> <td>010</td> </tr> <tr> <td></td> <td></td> <td>Region</td> <td>3</td> </tr> <tr> <td>Submitted</td> <td>06/10/96</td> <td>Processed</td> <td>06/12/96</td> </tr> </table>	Serial no.	M9999	Lab no.	9969999	Area	015	County	010			Region	3	Submitted	06/10/96	Processed	06/12/96
Field ID	Hill Top field	Sample no.	1																														
Acres	40	Last Lined	Not known																														
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Serial no.	M9999	Lab no.	9969999																														
Area	015	County	010																														
		Region	3																														
Submitted	06/10/96	Processed	06/12/96																														

This report is for:

Example Report
University of Missouri
Columbia, MO 65211

B SOIL TEST INFORMATION	C RATING						
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Very low</td> <td style="width: 15%;">Low</td> <td style="width: 15%;">Medium</td> <td style="width: 15%;">High</td> <td style="width: 15%;">Very High</td> <td style="width: 15%;">Excess</td> </tr> </table>	Very low	Low	Medium	High	Very High	Excess
Very low	Low	Medium	High	Very High	Excess		
pH _s (salt pH)	4.9						
Phosphorus (P)	22 lbs/acre						
Potassium (K)	303 lbs/acre						
Calcium (Ca)	2091 lbs/acre						
Magnesium (Mg)	278 lbs/acre						
Sulfur (SO ₄ -S)	ppm						
Zinc (Zn)	ppm						
Manganese (Mn)	ppm						
Iron (Fe)	ppm						
Copper (Cu)	ppm						
Organic matter	2.2 %						
Neutralizable acidity	6.0 meq/100g						
Cation Exch. Capacity	12.8 meq/100g						
pH in water							
Electrical Conductivity	mmho/cm						
Sodium (Na)	lbs/a						
Nitrate (NO ₃ -N) Topsoil	ppm						
Subsoil	ppm						
Sampling Depth	Top						
Inches	Subsoil						
	inches						

E Cropping options	D	F Yield goal	G Pounds per acre				H LIMESTONE SUGGESTIONS
			N	P ₂ O ₅	K ₂ O	Zn	S
Alfalfa/Grass Establishment		0	20	55	0		
Clover/Grass Establishment		0	20	45	0		
Alfalfa/Grass Hay		6	0	80	235		
Cool-Season Grass Pasture		150 CD/A	90	30	20		
							Effective neutralizing material (ENM)
							Effective magnesium (EMg)
							1,395

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To determine limestone needs in tons/acre, divide ENM requirements by the guarantee of your limestone dealer.

When N requirement for cool-season grass exceeds 90 lbs/acre, apply 2/3 of it during the eriod from December through February, and the remainder in August.

Do not use nitrogen on spring seedlings of legumes after May 1st because of potential weed competition.

Area Agronomy Specialist	Agronomy Specialist	Phone (573) 882-1000
White - Farmer, Yellow - ASGS, Blue Firm, Pink - Extension	MP 189 Revised 198	Signature

University of Missouri, Lincoln University, U.S. Department of Agriculture & Local University Extension Councils Cooperating
equal opportunity institutions

Complete the following fertilizer bill for Cool-Season Grass Pasture based on the information below on the soil test above:

- Fertilizer Sources and Costs per pound:

Ammonium Nitrate	34-0-0	\$ 0.14
Diammonium Phosphate	18-46-0	\$ 0.07
Potassium Chloride	0-0-60	\$ 0.08
Spreading charge is \$5.00 per acre		

Agriculture Supply Center
 Anyplace, Missouri 000-555-9999

Name _____ Delivered by _____
 Address _____ Date _____

	Nitrogen	Phosphorus	Potassium
Soil Test Recommendation (lb./ac.)	_____	_____	_____
Total Acres to Spread	_____	_____	_____
Total Pounds of Fertilizer Needed	_____	_____	_____

MANUFACTURING INSTRUCTIONS

Use the Following: Percent of Materials Used Pounds of Actual Plant Food Supplied

Fertilizer Source	Lb.	Percent of Materials Used			Pounds of Actual Plant Food Supplied		
		N	P	K	N	P ₂ O ₅	K ₂ O
Total Lb.		Total Lb. Supplied					

$$\frac{\text{(Total Lb.)}}{\text{(Acres)}} = \frac{\text{Total Lb.}}{\text{Total Lb. Supplied}} \times \text{Spreading Rate (lb. per acre)}$$

Guaranteed Analysis = % N % P₂O₅ % K₂O (lb. of nutrient/acre ÷ spread rate)

Fertilizer Source Used	Cost per Lb.	Lb. Used	Cost per Source
			\$

Total Fertilizer Cost \$ _____
 (\$ _____ per acre) Spreading Charge \$ _____
TOTAL BILL

- 1. What are the total pounds of nitrogen needed?**
- 2. What are the total pounds of phosphorus needed?**
- 3. What are the total pounds of potassium needed?**
- 4. How many pounds of nitrogen are supplied by ammonium nitrate?**
- 5. How many pounds of phosphorus are supplied by diammonium phosphate?**
- 6. How many pounds of potassium are supplied by potassium chloride?**
- 7. What are the total pounds of fertilizer applied?**
- 8. What is the spreading rate in lbs per acre?**
- 9. What is the guaranteed analysis of the fertilizer?**
- 10. If the available limestone has an ENM rating of 400, how many tons of lime are needed per acre?**