Don't Forget Annual Forages

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After going through one of the toughest winters in recent memory, hay supplies are depleted and ranchers will be interested in rebuilding hay stocks this summer. An option that ranchers should not overlook in rebuilding hay stocks is the use of annual forages. Annual forages are often overlooked or are planted as an afterthought by producers with only a brief review of tonnage produced or potential forage quality. Both warm and cool season forages have a place on the ranch and producers will need to grow the forage that fits their operation. Producers once worried about how the government farm program would affect their planting decisions when it came to seeding alternative crops but now with the FAIR Act, producers should be concerned with quality as well as tonnage.

Research initiated by Pat Carr, Dickinson Research Extension Center (DREC) agronomist, is looking at both yield and quality of warm and cool season annual forages. Three separate trials (warm season, cool season, and barley and oat forage) conducted at DREC provided the information found in Tables 1 - 3. Though this represents only one year's worth of data and has not established trends or recommendations, the data does provide farmers/ranchers the opportunity to begin thinking about how annual forages might fit their operation. Annual forage trials conducted in the past reported tons per acre, date of cutting, and occasionally some quality information. Cow/calf producers have had a difficult time comparing alternatives for producing feed on their ranch. Dairy producers have used forage quality information for years since feed quality is readily reflected in milk production. Quality has not been as important to cow/calf producers in the past. However, as margins between costs and returns narrow, forage quality in addition to quantity is becoming important. Improving quality of feed produced on the farm/ranch will provide producers greater flexibility in selecting and reducing costs of purchased feeds.

Interpreting all of the information provided in a quality and yield analysis can be difficult for producers. What most producers understand is the gross dollar value of forage produced from an acre of land. Tables 1-3 include a relative dollar value of feed produced per acre ($/A) column which combines both yield and quality factors. These values were calculated using equations that values total digestible nutrients, crude protein, and neutral detergent fiber found in $65 a ton mid bloom alfalfa hay, $18 per ton corn silage, and $30 per ton lower quality grass hay. If the livestock producer normally uses one or several of the feeds used as a basis for the cost comparison, the value of the annual forage produced per acre to the cattleman should be that listed in the table. Dollar value will fluctuate during the year and from year to year but the relationship between feeds will remain fairly constant.

Quality and quantity of forage produced is greatly affected by the stage of development that the crop is in at the time of harvest. Producers want both quantity and quality, which is a real balancing act. Work in progress at the Dickinson Research Extension Center will help farmers/ranchers understand how stage of development at harvest affects the value of forages produced. When feed is scare, such as in a drought or long winter, quantity is an overriding factor. Ranchers recognize this acute problem readily. It is the production lost from poor quality forages that cause chronic problems which for many producers is difficult to recognize and difficult to put a dollar value on.

Further information about ongoing research at the Dickinson Research Extension Center is available by calling 227-2348.

Table 1. Barley and oat forage trial - 1996, Dickinson Research Extension Center, Dickinson, ND

	Dry matter basis					
Crop/combination	Yield	CP*	ADF**	NDF+	RFV++	$/A*+
	ton/A	%				
Barley B 7518	3.3	12.2	34.7	50.0	115	$205.80
Bay oat	3.2	12.4	32.7	50.3	117	$203.95
Chopper barley	3.6	14.2	28.6	48.3	128	$254.95
Dumont oat	3.3	11.8	33.8	50.1	116	$203.15
Dumont oat + Trapper Pea 30/50	2.4	11.4	33.3	55.8	105	$144.15
Dumont oat + Trapper Pea 60/150	2.7	11.2	39.8	55.1	99	$153.65
Haybet barley	3.3	12.8	27.8	48.8	130	$221.20
Horseford barley	2.7	12.6	29.6	48.6	126	$177.50
Mammoth oat	2.9	12.1	37.5	61.2	91	$173.65
Paul oat	2.5	13.4	35.1	52.4	109	$163.65
Stark barley	2.8	15.3	31.9	54.0	110	$202.00
Weal Barley	2.1	14.8	34.1	51.6	112	$147.00
Mean	2.9	12.9	33.2	52.2	113.2	$187.55
CV%	11.6	8.9	11.4	6.4	10.5	
LSD (.05)	0.5	NS	NS	NS	NS	

Previous crop: black lentil (plow down); Soil test results: 70 lbs N, 12 ppm P in top 2 ft (no fertilizer applied); Planting date: 14 May; Seeded at: 800,000 viable kernels (PLS)/acre (approximately 60 lbs) except for oat + pea mixtures (30/50) = 375,000 PLS/acre for oat [30 lbs/acre] and 162,500 PLS/acre for pea [50 lbs/acre]; Harvested when cereal crop was in milk to early soft dough stage: 22 July for Stark and Weal barley, 16 July for Chopper, Haybet and Horsford barley, 22-24 July for other crop varieties and mixtures.

*CP, Crude protein. Includes both protein and non protein nitrogen. **ADF, Acid detergent fiber. As this number increases, digestibility decreases. +NDF, Neutral detergent fiber. As this number increases, potential dry matter intake decreases. ++RFV, Relative feed value. Combines intake (NDF) and digestibility (ADF) estimates. Allows for comparison of like forages. *+$/A, Relative dollar value of feed produced per acre rounded to the nearest nickel when compared to alfalfa, 88% DM, 56% TDN, 17% CP, 46% NDF@$65/T; corn silage, 33% DM, 70% TDN, 8.1% CP, 53% NDF@$18/T; and lower quality grass hay, 90% DM, 48% TDN, 5.6% CP, 81% NDF@$30/T. Equations provided by Chip Poland, Area Extension Livestock Specialist, Dickinson Research Extension Center.

Table 2. Cool season forage trial -- 1996, Dickinson Research Extension Center, Dickinson, ND						
	Dry matter basis					
Crop/combination	Yield	CP*	ADF**	NDF+	RFV++	$/A*+
	ton/A	%				
Arvika pea	2.4	11.2	47.1	39.3	124	$133.00
Azure barley	2.8	13.6	27.9	41.0	170	$196.10
CLOL 1- oat+pea	2.5	13.0	35.6	51.6	110	$160.45
CLOL 2- oat+pea	2.5	14.5	33.6	49.0	119	$174.00
Frank triticale	3.5	11.5	25.8	44.1	146	$225.75
Frank triticale + Trapper pea	3.1	10.5	31.9	46.2	130	$182.65
Paul oat	2.3	12.4	38.4	54.4	107	$140.80
Paul oat + Trapper pea	2.2	12.1	35.3	52.7	111	$135.45
Triticale 2700	4.2	10.1	26.6	48.2	132	$250.85
Triticale 2700 + Trapper pea	3.5	10.9	27.1	45.6	138	$217.30
Whitestone oat	2.7	10.7	45.1	58.0	86	$143.20
Whitestone oat + Carneval pea	2.7	11.0	37.5	52.3	108	$153.30
Whitestone oat + Trapper pea	2.6	12.3	36.1	56.3	101	$159.90
Mean	2.8	11.8	34.5	49.0	110	$174.83
CV%	9.2	10.4	11.1	13.7	20	
LSD (.05)	.04	NS	8.4	NS	NS	

Previous crop: black lentil (plow down); Soil test results: 70 lbs N, 12 ppm P in top 2 ft (no fertilizer applied); Planting date: 14 May; Seeded at 100 lbs viable seed/acre for Arvika pea; 100 lbs PLS/acre for Azure barley, 75 lbs PLS/acre for Frank triticale and triticale 2700), 110 lbs for CLOL 1 and CLOL 2; 130 lbs PLS/acre triticale + Trapper pea mixutre (45 lbs Paul + 60 lbs Trapper); 65 lbs PLS/acre for Whitestone oat and 115 lbs/ acre for Whitestone oat = either pea variety (35 lbs Whitestone + 80 lbs Trapper and 35 lbs Whitestone + 80 lbs Carneval); Harvested when the cereal crop was in the milk to early soft dough stage of growth: 11 July (Azure barley), 24 July (oat sole crops and oat-pea combinations); 8 August (Triticale sole crops and triticale/pea combinations). *CP, Crude protein. Includes both protein and non protein nitrogen. **ADF, Acid detergent fiber. As this number increases, digestibility decreases. +NDF, Neutral detergent fiber. As this number increases, potential dry matter intake decreases. ++RFV, Relative feed value. Combines intake (NDF) and digestibility (ADF) estimates. Allows for comparison of like forages. *+$/A, Relative dollar value of feed produced per acre rounded to the nearest nickel when compared to alfalfa, 88% DM, 56% TDN, 17% CP, 46% NDF@$65/T; corn silage, 33% DM, 70% TDN, 8.1% CP, 53% NDF@$18/T; and lower quality grass hay, 90% DM, 48% TDN, 5.6% CP, 81% NDF@$30/T. Equations provided by Chip Poland, Area Extension Livestock Specialist, Dickinson Research Extension Center.

Table 3. Warm season forage trial -- 1996, Dickinson Research Extension Center, Dickinson, ND						
	Dry matter basis					
Crop/combination	Yield	CP*	ADF**	NDF+	RFV++	$/A*+
	ton/A	%				
Foxtail dalea	1.6	18.0	30.58	38.9	159	$131.15
German millet	4.8	10.1	35.7	63.5	89	$262.00
Greentreat III	3.9	8.6	36.5	59.8	94	$196.00
Millex 32	3.5	10.4	36.2	66.9	85	$192.25
Piper sudan	2.8	9.3	37.9	65.4	89	$143.35
Siberian millet	3.6	12.4	39.7	66.2	81	$213.80
Sudax ST6E	4.6	8.0	39.4	62.1	87	$216.70
Mean	3..5	11.0	36.6	60.4	98	$193.61
CV%	12.6	19.3	10.0	13.3	19	
LSD (.05)	0.7	5.2	NS	NS	NS	

Previous crop: black lentil (plow down); Soil test results: 70 lbs N, 12 ppm P in top 2 ft (no fertilizer applied); Planting date: 14 May; Seeded at: 20 lbs viable kernels/acre for millets and 25 lbs/acre for other crops and crosses; Harvested on 29 August. *CP, Crude protein. Includes both protein and non protein nitrogen. **ADF, Acid detergent fiber. As this number increases, digestibility decreases. +NDF, Neutral detergent fiber. As this number increases, potential dry matter intake decreases. ++RFV, Relative feed value. Combines intake (NDF) and digestibility (ADF) estimates. Allows for comparison of like forages. *+$/A, Relative dollar value of feed produced per acre rounded to the nearest nickel when compared to alfalfa, 88% DM, 56% TDN, 17% CP, 46% NDF@$65/T; corn silage, 33% DM, 70% TDN, 8.1% CP, 53% NDF@$18/T; and lower quality grass hay, 90% DM, 48% TDN, 5.6% CP, 81% NDF@$30/T. Equations provided by Chip Poland, Area Extension Livestock Specialist, Dickinson Research Extension Center.

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