



Hay Prices for New Mexico

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County	Contact	Premium+ Hay (\$/ton)	Top Quality Hay (\$/ton)	Other Hay (\$/ton)	Condition/ Market Activity/Cut Complete
Chaves	Sandra Barraza, County Agent	\$150-170 del; \$270-310 small in the barn	\$140 large; \$240 small	\$120-130 dry cow hay	3 rd cuts started; market very slow and volatile/uncertain, lots of hay going in barn; hot/dry weather
De Baca	Aspen Achen, County Agent	\$190	\$165-175	\$130	3 rd cuts started; hot/dry weather; some grasshopper pressure
Dona Ana / S. NM	Teresa Dean, County Agent / Others	\$120-150 large; \$6.00-8.00 small		\$120-160 wheat/oat	3 rd cuts started; moderate-to-low demand
Luna	Jack Blandford, County Agent	\$140-160 large; \$6.00-7.00 small		\$120-140 wheat hay	3 rd cuts 75%; very slow market/trade; hot/dry making it difficult to bale quality hay
Rio Arriba	Don Martinez, County Agent	\$190 alfalfa; \$5.00 small bale grass-alfalfa mix		\$150 first cut (few weeds)	1 st cuts 100%; slow market; hot weather
Valencia / Bernalillo / Socorro	Various Contacts	\$150-155 large del; \$6.00-7.00 small per bale in the barn		\$6.00-8.00 grass/mix; \$4.50-6.00 oat and wheat hay; \$60-75/bale wheat large; 3.00-5.00 cow hay	2 nd cuts; market slow; hot weather; hay remaining in the barn

Prices are a compilation of Agent information and other area estimates.

N/A = prices and/or supplies not available at this time

Teff – Update on New Mexico Experiences

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Teff [*Eragrostis tef* (Zucc.) Trotter], originally utilized as a cereal grain crop in Africa, has developed a reputation as a rapidly growing, drought-tolerant, high-quality forage crop in the U.S. Multiple studies in several western states and extensive promotion among companies in the hay industry have touted the benefits of teff for several classes of livestock and for use in challenging growing conditions. The forage is suited to a broad range of environments in the Southwest, can be cut multiple times, and offers flexibility to the hay producer for all classes of livestock. The primary utilization potential for teff, however, appears to be in the small bale horse market, and in areas where other suitable annual grass hays are not available to feed to horses. Horse owners have had favorable experiences with teff hay, and demand for the hay has increased significantly in the region. Several producers have attempted to take advantage of the demand by growing all different bale sizes and varieties of teff.

Yields and Quality

Teff has been reported from western states to produce anywhere from 1.5 to over 8.5 tons/ac of total seasonal yield, depending on location, length of growing season, cutting schedule, and irrigation and fertilizer inputs. However, about 1.0 to 2.0 tons/ac per cutting, and 3 to 4 tons/ac total seasonal yield are more common in New Mexico. Over 3 years at the NMSU Agricultural Science Center at Los Lunas, teff has yielded between 2.6 and 4.0 tons/ac for the season (Table 1). Yields of 2.1 to 3.3 tons/ac have been reported at Tucumcari, NM. At both locations, these yields were

obtained with approximately half the water applied to ‘fully irrigated’ alfalfa and yields are similar to those reported by farmers in the region utilizing varying irrigation techniques and amounts. They are also similar to yields observed in neighboring states. Typical water scheduling at Los Lunas is a rotation every 21-28 days. Approximately 1.5 tons/ac of hay can be made in 45-60 days in the Middle Rio Grande region of New Mexico, utilizing flood irrigation. However, this is dependent on time of year and on nitrogen fertilizer applications. For example, in 2013, higher yields resulted on the subsequent cuttings when 50 lbs of urea fertilizer was applied after the June 18 and August 8 harvests (Table 1).

Table 1. Teff hay yields in three different years at the NMSU Agricultural Science Center at Los Lunas, NM.

Year (Planting Date)	Hay Cuttings	# Bales/ac	Ton/ac*
2007 (June 8)	July 24	60	1.8
	August 24	27	0.7
	October 15	38	1.1
	Total Yield	125	3.6
2013 (May 3; cool Spring)	June 18	6	0.2
	July 12	49	1.5
	August 8	24	0.7
	October 10	53	1.6
	Total Yield	132	4.0
2014 (May 30)	August 20	48	1.4
	October 27	40	1.2
	Total Yield	88	2.6

*Assumes a 60-lb bale weight.

Water requirement appears to be more than that reported for sorghum forages (e.g., *Sorghum* sp.; haygrazer or forage sorghums), but water use is often lower than typical alfalfa usage, based on producer reports and researcher observations. Sorghum sudangrass has been shown to yield more than teff with similar water and fertilizer applied. In other locations, teff has exhibited similar irrigation efficiency to sorghums, at about 3-4 inches of water to produce 1 ton of hay.

Another advantage of teff is the fine-stemmed nature of the hay, which not only makes a more palatable feed, but also improves the ability to make a tight, heavy bale, which can be a challenge with other grass forages. Bale weights of 2-string small squares of over 60 lbs are easily achievable with teff. Drying teff hay in the windrow is usually very rapid in New Mexico due to its fine-stemmed nature, combined with normal dry, hot weather. Teff makes a light and fluffy windrow, which makes it conducive to being moved by high winds. Also, the windrow bleaches quickly in the sun. As such, teff should be baled as quickly as possible after cutting.

Teff nutritive value has been described as similar to timothy and orchardgrass hay and full-bloom alfalfa. Studies and producer experiences have shown mixed results when determining horse and other livestock preference of the different hays. However, many horse owners report improved preference and less waste of teff when feeding it. Teff is marketed as a low starch and soluble carbohydrate hay compared to other forages, and this trait may make it a suitable component in the diet of horses with insulin resistance or related disorders. Our bale sampling, as well as research at Tucumcari, reveal that teff soluble sugars (non-fiber carbohydrates; NFC) are lower than most alfalfa hays, but can be higher than other grasses (>18% NFC; Table 2).

Crude protein (CP) of teff is dependent upon available nitrogen and improves with additional N fertilizer applications. Crude protein ranges from 7 to 17%, but CP is usually between 10 and 15% with N fertility of 30 to 100 lbs/ac that is commonly applied. Although teff may have high fiber values (e.g., NDF) as indicated by our sampling and other studies, digestibility (i.e., neutral detergent fiber digestibility; NDFD) shows that the fiber component is highly

digestible (Table 2). Hence, ranking indicators such as RFQ may give better representation of actual feed value of teff than the historical system of RFV. As with most hays, the nutritive value parameter in question will determine which hay is superior to another when comparing for a particular class of livestock. If using digestible energy (DE) for estimation for horses, then teff is similar to or better than other grasses (e.g., fescue and bermudagrass; Table 2) and low quality alfalfa. Studies have shown that teff is capable of meeting 90-97% of the DE and other nutrient requirements of an average horse. Nitrate toxicity potential is low (although possible), but an added benefit is that prussic acid is not a concern in teff as it is in sorghums.

Table 2. Nutritive value analysis of various hay bale samples taken in 2013-14. LL = bales produced at the NMSU Los Lunas Agricultural Science Center.

Sample ID	Source	Notes	CP % of DM	DE (Horse) Mcal/lb	NFC % of DM	Ca % of DM	P % of DM	ADF % of DM	NDF % of DM	NDFD 48 % aNDF	TDN 1x % of DM	RFQ
teff	LL - Baled	After Frost	10.8	0.91	19.0	0.47	0.18	41.1	66.9	53.3	55.3	91
teff	LL - Baled	Mid-Summer	8.1	0.92	17.2	0.32	0.18	38.7	58.8	57.0	58.4	101
alfalfa	Purchased 3-string		14.1	0.86	25.5	0.87	0.27	46.9	56.5	40.5	52.9	86
alfalfa	Purchased 2-string		21.7	1.04	28.4	1.36	0.32	37.8	46.3	49.3	61.4	135
bermuda	Purchased 3-string		12.0	0.87	16.6	0.34	0.23	42.2	65.2	49.3	53.1	85
alfalfa	LL - Baled		19.6	1.11	37.1	1.43	0.27	31.3	39.7	47.4	65.1	164
alfalfa	LL - Baled		15.8	1.00	23.1	0.9	0.26	41.4	51.0	44.0	56.0	93
alfalfa	LL - Baled Cut 2	Rained On	14.3	0.86	12.4	1.1	0.13	51.5	64.7	38.0	48.0	53
alfalfa	LL - Baled Cut 3		15.5	0.99	22.7	0.95	0.29	42.4	51.5	41.0	54.0	85
fescue	LL - Baled Cut 2	Max Q	13.4	1.35	31.0	0.42	0.29	24.1	43.7	87.1	76.9	244
fescue	LL - Baled Cut 3	Max Q	14.2	0.92	14.6	0.38	0.17	33.8	57.1	74.0	65.0	147
fescue	LL - Baled Cut 2	Blend	12.6	0.90	13.7	0.43	0.23	36.0	60.6	68.0	62.0	135

Nitrogen Fertility

Recommendations for fertilizing teff with nitrogen are quite variable and are to add anywhere from 50 to 120 lbs of N/ac for the year, but most sources agree that about 30 to 60 lb N/ac at-plant and in between cuttings is optimum. Little yield advantage has been observed with nitrogen applications greater than 50 lb N/ac per cutting. If crude protein content is a minimal concern, producers may be able to save fertilizer application costs by only applying 90 lbs N/ac at plant. If following alfalfa, enough residual nitrogen may remain in the soil to meet the relatively low nitrogen requirements of teff, even for multiple cuts in a season. This is especially true if the last topgrowth of the alfalfa was incorporated into the soil and not harvested for hay.

Weed Control

Weeds, particularly grass weeds, can be a major problem in teff production. Some broadleaf weeds can be difficult to control if not controlled early. Pigweed species are especially problematic in parts of the Southwest and are probably the number one broadleaf weed concern for teff in the region. Very few herbicides are labeled for use in teff and timing is critical for effective control. Only 2,4-D and Dicamba products (or combination) are labeled. No herbicides are labeled for grass control in teff, so it is important to know the weed history of the field prior to planting. Fields with persistent grassy weed problems (e.g., sandburs, foxtails) should be avoided when considering teff. Fortunately, in alfalfa rotations, many of the grassy weeds have been managed with the competitiveness of the alfalfa along with grass herbicides so that the seed bank has been reduced. These fields make for excellent conditions to insert teff into the rotation prior to going back into alfalfa.

Teff can be planted anytime during spring and summer after soil temperatures warm to 65 degrees. However, teff simply does not compete well with weeds. Some recommendations state that it is better to wait to plant until soil temperatures warm enough that teff growth is rapid and the seedling plants can be more competitive against germinating weeds. Experience at Los Lunas, NM indicates that an earlier planting may be more advantageous and that while teff growth is slow, small plants are able to get ahead of most summer weeds and weed competition is less severe. Later planting can put the germinating teff into the middle of the weed germination window, and reduced

stands can ensue. This can be especially problematic in areas where multiple flushes of weeds occur throughout the growing season and if herbicide applications are delayed due to rain later in the spring or other unforeseen factors. A late freeze is one obvious drawback to earlier planting and can potentially kill a newly seeded field of teff. A longer interval until the first harvest also may occur with an earlier planting.

Summary

In general, teff performs similarly in New Mexico as it does in other parts of the West; however, with high temperatures and prevailing irrigation limitations, yields tend to be more modest (3-4 tons/ac) than those reported for cooler regions (over 5-6 tons/ac). Higher yields may be obtained in the more southerly reaches of the state with longer growing seasons and more cuttings and if irrigation is not limiting. Weed control early is critical to good stand establishment and yield of quality hay. Earlier planting may allow for improved teff competition prior to the primary weed germination window but late frosts are a concern with this method. Nutritive value can be quite variable depending on cut and management; however, overall teff quality can be excellent and certainly comparable to or better than some cool-season grass hays such as tall fescue, which is common in New Mexico.

In times of large supplies and low hay prices, having a high-demand alternative grass hay such as teff available for horse owners could improve marketability and profits for producers willing to try something different or diversify their operations. We've observed that teff hay will bring at least \$1 more per small bale than alfalfa and other grass hays because of its high demand and low supply. Due to the higher price of seed, seeding costs for teff can be as high as \$20-30/ac. As such, producers should assess their hay and livestock needs and also their potential market before determining which crop is best suited for their situation.

For information about teff or other forage management in New Mexico contact your County Cooperative Extension office or visit the NMSU Cooperative Extension forages website at: (<http://forages.nmsu.edu/>).



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