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Do Producers and Horse Owners Agree on Important Characteristics of Cool Season Hays?

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Introduction

Hay is Nevada's primary agricultural crop, accounting for nearly 17 percent of total agricultural cash receipts in 2004 (NAS, 2005). Cool season hays, such as Timothy and orchard grass, are often used by hay producers as a rotation crop for alfalfa. Cool season hays are primarily sold to racehorse breeders and companion horse owners both in the United States and overseas. Recent fluctuations in cool season hay pricing due to competition, pest issues, and climactic conditions have caused concern for producers and residents in Nevada's hay-growing communities. Lack of appropriate production contracts and the subjectivity of current pricing controlled by buyers have created a need for expanded markets and new pricing techniques.

The Nevada climate and soil conditions are conducive to the production of highquality alfalfa and specialty hays, such as cool season hays. Cool season hays are primarily grown in north-central and northeastern Nevada, with the greatest concentration in Elko, Eureka, and Humboldt counties. Although Nevada's cool season hays are of an extremely high quality, Nevada's growers do encounter some competition from nearby states, including California, Utah, and Oregon. The greatest source of competition comes from

Washington state. Competition, risk, and the capital expenditures necessary to enter the market for cool season hay keep the market relatively small.

Cool season hays are marketed primarily on visual qualities, as opposed to other hays which are marketed based on chemical composition. Quality cool season hays, therefore, bring a premium in the marketplace. Any discoloration, deformity, or presence of undesirable materials detracts substantially from the value of the product, which leads to large price fluctuations from year to year. Hay buyers inspect the baled hay before the transaction is complete and set a price at that time based on hay qualities. Any low quality product is unacceptable in this niche market and must be sold at expense recovery prices to dairies.

The end quality characteristics of the crop are affected by such things as irrigation scheduling, fertilization, pests, and climate conditions including temperature, wind, and humidity (UNCE BE-87-3, 1987). Recently, drought and other events have led to increases in the numbers and types of pests which cause damage to the crop. Integrated Pest Management (IPM) practices have been used in the past, but are limited as a result of the few chemicals labeled for use on cool season hays. In recent years, Banks grass mite infestations caused a major

reduction in total hay production, increased production expenses due to multiple treatments and trial products, and a decrease in the per ton value of the hay due to product quality caused by insect damage.

For these reasons, it is crucial for hay growers to understand what aspects of their product are important to their customers. In such a competitive and volatile market, growers must not only provide a high-quality product, they must also know how to market their product in order to find new customers and to maintain a good relationship with current customers.

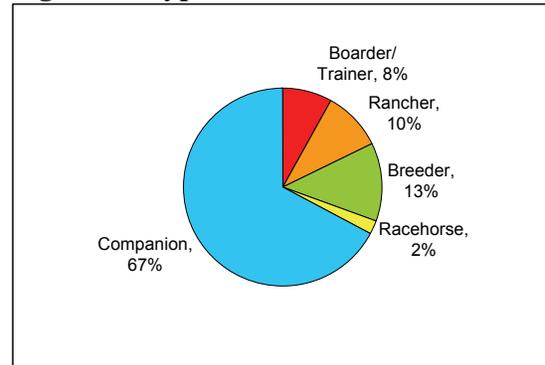
This publication provides a comparison of horse owner (buyer) preferences for important cool season hay attributes and hay producers (seller) views concerning what they feel their customers (horse owners) prefer. As is evident from the following discussion, in many cases hay producers underrate attributes of importance to horse owners, such as nutritional value, digestibility etc., and in some cases overrate attributes of importance to horse owners, such as visual appearance. However, cool season hay attributes of importance differ between horse owner types. These differences may be critical to hay producers marketing to specific types of horse owners. The data for this publication was obtained through a survey mailed to private and commercial horse owners and cool season hay producers throughout Nevada in the fall of 2005, the results of which are discussed in the following sections.

Survey Results: Horse Owners

Surveys were mailed to a random sample of 1,000 registered horse owners in Nevada. Completed surveys were returned by 325 horse owners, for a return rate of 32.5%. Of the 325 horse owners, 222 (67%) were private horse owners (companion), 42 (13%) were horse breeders, 32 (10%) described themselves as ranchers, 25 (8%) were either horse trainers or boarders, 5 (2%) were racehorse owners, and the remaining three (0.9%) either did not specify their operation or described themselves as falling into more than one of the given categories (note that this adds up to more than 325 because respondents were allowed to give more than one response). These results are shown in

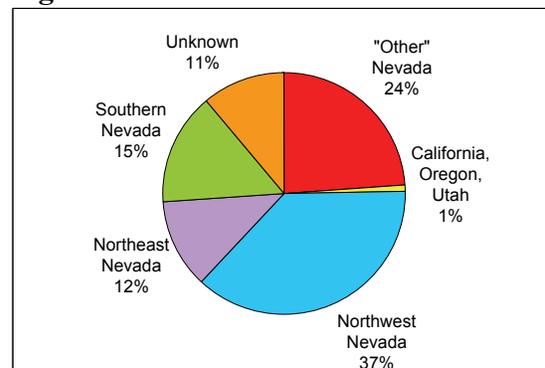
Figure 1. The average respondent owned eight horses.

Figure 1: Type of Horse Owner



Horse owners were asked to provide the location of their operation to give an idea of where Nevada's hay consumers are distributed throughout the state. One hundred and twenty-three (37%) respondents are located in northwest Nevada (Carson City, Churchill, Douglas, Humboldt, Lyon, Pershing, Storey, and Washoe counties), 49 (15%) respondents are in southern Nevada (Clark, Esmeralda, Lincoln, Mineral, and Nye counties), and 39 (12%) are in northeast Nevada (Elko, Eureka, Lander, and White Pine counties). Seventy-nine (24%) respondents said they live in Nevada but did not specify which area, while two respondents each (less than 1% each) said they live in California, Oregon, or Utah. Thirty-seven (11%) respondents did not say where they live. These results are summarized in Figure 2.

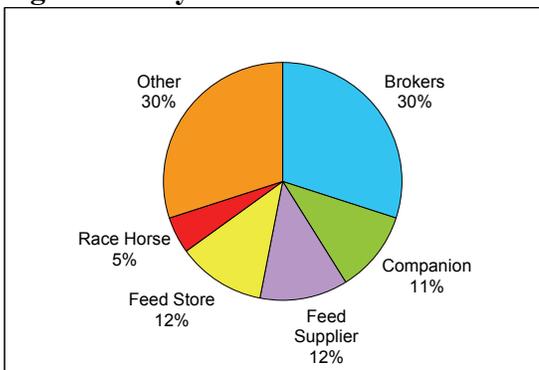
Figure 2: Horse Owner's Location



Survey Results: Hay Producers

The hay producer survey was mailed to 138 hay producers in Nevada and returned by 39 producers (28% response rate), operating on a total of 84,350 acres, or an average of 2,280 acres per producer. This statistic is slightly misleading as 65% of respondents operate on 750 acres or less. Respondents were asked to describe both their direct customers and their end-users (a direct customer is someone who purchases the hay from the producer, an end-user purchased hay directly or through a third party, such as a feed store). As producers were allowed to give more than one response to the question, the total number of direct customers listed was 76. About one-third of the respondents said their direct customers are brokers (23 respondents, or 30%), while nine (12%) producers said they sell to feed stores, and another nine (12%) said they sell to feed suppliers. Eight (11%) respondents said they sell to companion horse owners, and four (5%) respondents said they sell to race horse owners. Another 23 (30%) respondents said they sell to "other" direct customers. This included dairies (16, 21%), ranchers and/or cattle operations (seven, 9%), individuals (one, 1%) and themselves (one, 1%). These results are summarized in Figure 3.

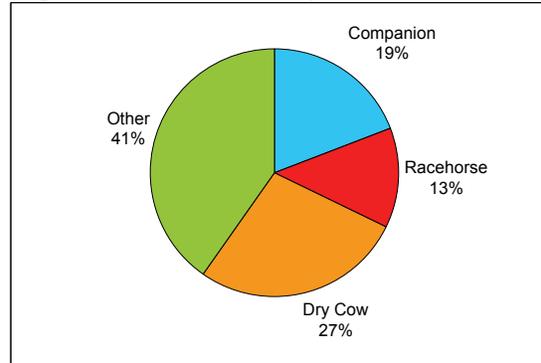
Figure 3: Hay Producer's Direct Customers



When asked to describe ultimate end-users of the cool season hay, 21 (27%) respondents said their product is sold to dry cow operations, 15 (19%) said their product goes to companion horse owners, and 10 (13%) said their product is sold to racehorse owners. Another 31 (40%) respondents said their customers fell into the category of "other," and described their end users as dairies (28

respondents, or 36%), and ranches/cattle operations (three respondents, or 4%). These results are shown in Figure 4.

Figure 4: Ultimate Hay End-Users



Hay Attribute Rating

The survey also asked horse owners to explain which attributes of hay and hay producers they feel are most important, such as the nutritional value of the hay, its appearance (including color and perceived age), and the importance of a grower providing such amenities as including delivery costs in the price of the hay. Cool season hay producers were asked the same questions in the context of what they feel the most important hay attributes are to horse owners. This was done to determine whether or not the needs of horse owners are currently being met.

Participants in this survey were given a list of hay attributes and were asked to rate the importance of the attributes. Each attribute was rated as "not important," "somewhat important," "very important," and "extremely important." Here, the term "more important" indicates the percentage of respondents who gave the attribute a "very important" or "extremely important" rating.

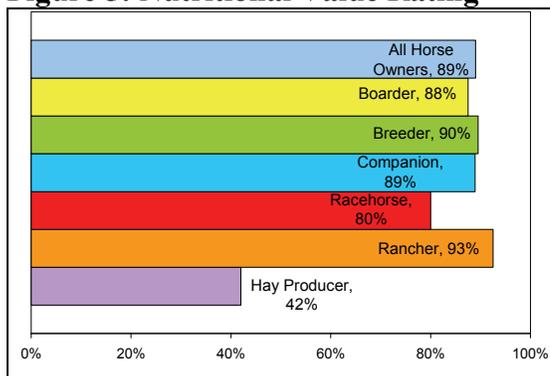
The findings of this study are arranged as follows: first, the hay/producer attributes that owners rated higher than producers are presented; second, the attributes rated higher by producers; and last, the attributes that horse owners and hay producers rated similarly. Finally, attributes that were rated only by horse owners are presented. A comparison of each rating is presented in Figures 5 through 16.

Attributes Rated Higher by Horse Owners

1. Nutritional Value

Nutritional value refers to the nutritional aspect of the hay, including such aspects as forage type, and the relative content of energy, protein, carbohydrate, sugar, fiber, and vitamins and minerals. Although horses are foragers by nature, they can't process poor-quality forages as easily or effectively as ruminants (such as cattle), and although they require as much as 50% of their diet as fiber, too much fiber can create health problems. The nutritional balance of a horse's diet is quite precise, and can be even more critical to owners of expensive racehorses. Over all types of horse owners, nutritional value was ranked as more important by 89% of owners. The participating horse owners rated the nutritional value of hay similarly between the different types of horse owners: 93% of ranchers; 90% of breeders; 89% of companion and private horse owners; 88% of boarders and trainers; and 80% of racehorse owners rated nutritional value as a more important attribute. This is compared to only 42% of participating hay producers who rated nutritional value as a more important hay attribute. Forage quality is an issue which has become increasingly important to horse owners in recent years, and these results indicate that hay producers may not be aware of the increased attention that is being placed on hay's nutritional value.

Figure 5: Nutritional Value Rating

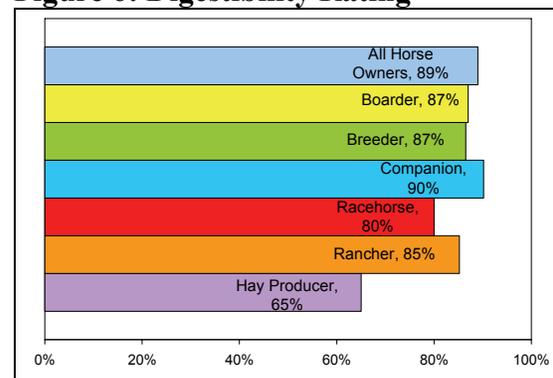


2. Digestibility

Digestibility is the ease with which hay can be digested by a horse. Hay that has matured too long can contain higher levels of crude fiber and lignin, making the hay less digestible (Gibbs, 2005).

Horses are prone to a condition known as hay belly; a distension of the abdomen resulting from the over-consumption of poor-quality, poorly digested hay (Wheeler and Cirelli, 1994). Hay that is soft, leafy, and pliable is more easily digested by horses, while hay that is dry or filled with stems will probably be avoided by both horses and their owners. The majority of horse owners rated digestibility as a more important attribute (89% more important over all horse owner types), with companion horse owners (90% more important), breeders and boarders, (87% each) and ranchers (85%) rating digestibility slightly higher than racehorse owners (80%). All horse owners gave digestibility a higher rating than hay producers as only 65% of participating hay producers gave digestibility a high level of importance. Hay producers should be aware that digestibility and nutritional value were given the most importance by horse owners, even more so than the cost of hay. This indicates that although horse owners may be willing to pay a premium for high-quality hays, if the product is lacking in nutritional value and digestibility, customers are not going to be very interested in it.

Figure 6: Digestibility Rating

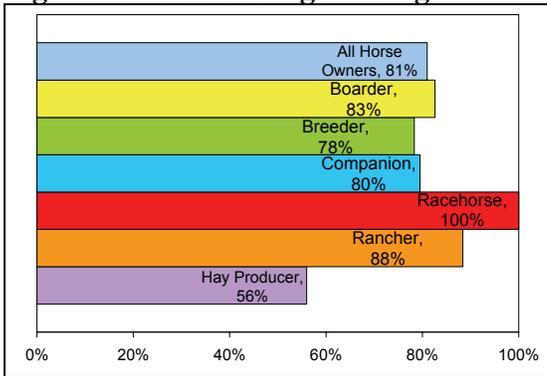


3. Perceived Age

Perceived age refers to how fresh the hay appears to be at the time of purchase. Although 100% of racehorse owners rated perceived age as a more important attribute, the more important rating was given by only 81% over all horse owner type respondents. This includes 88% of ranchers, 83% of boarders/trainers, 80% of companion horse owners, and 78% of breeders rating it as a more important attribute. Only 56% of hay producers rated perceived age as a more important attribute,

indicating that hay producers may not fully realize how important perceived age is to horse owners. Weathering, processing and curing methods, as well as storage facilities, can affect the how fresh hay appears to be. The presence of dust on hay can also affect the way potential customers perceive the age of the hay.

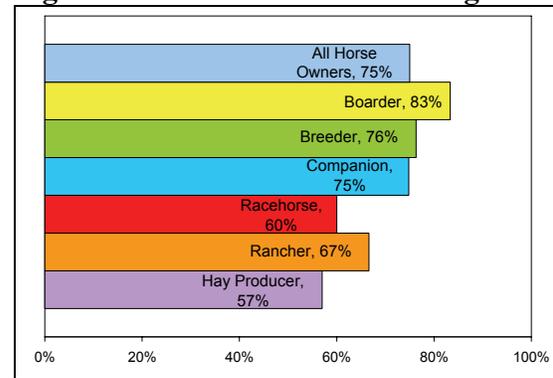
Figure 7: Perceived Age Rating



4. Pesticide/Chemical Usage

Horse owners and hay producers were asked to rate the importance of pesticide and/or chemical use on hay that is purchased for horse consumption. Over all horse owner types, hay producers and horse owners were not in agreement as to the importance of pesticide and chemical usage on hay during the growing process, with 57% of producers rating it as a more important attribute, compared to 75% over all owner types. Boarders and trainers (83%), breeders (76%), and companion horse owners (75%) were slightly more concerned with the use of chemicals and pesticides than ranchers (67%) and racehorse owners (60%). In general, consumers are becoming increasingly aware of the pesticides and chemicals used on agricultural products. Producers may not be able to avoid the use of pesticides/chemicals on their products, but they should be aware of this trend for the future so they can at least explain why such products are used, or describe any potential health issues consumption of such products can cause and/or steps that have been taken to minimize this risk.

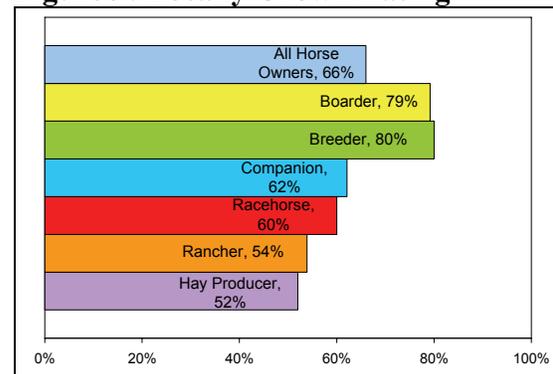
Figure 8: Pesticide/Chemical Usage



5. Locally Grown

Respondents were asked to rate the importance of cool season hays having been grown locally (in Nevada). Over all horse owners, the locally grown aspect was given a more important rating by 66% of respondents, however, there was quite a bit of discrepancy between the different horse owner types. While 80% of breeders and 79% of boarders/trainers rated locally grown as a more important aspect, only 62% of companion horse owners, 60% of racehorse owners, and 54% of ranchers rated it as such. This is compared to the 52% of producers who rated locally grown as a more important aspect. As with pesticide and chemical usage, consumers are becoming more attentive to the origin of agricultural products. Nevada customers may feel a sense of pride in purchasing locally grown hay, while customers from other states may know of the good reputation of Nevada's cool season hays. This is an attribute whose importance will vary between customers and horse types, but producers may want to emphasize the fact that their products were grown in Nevada.

Figure 9: Locally Grown Rating

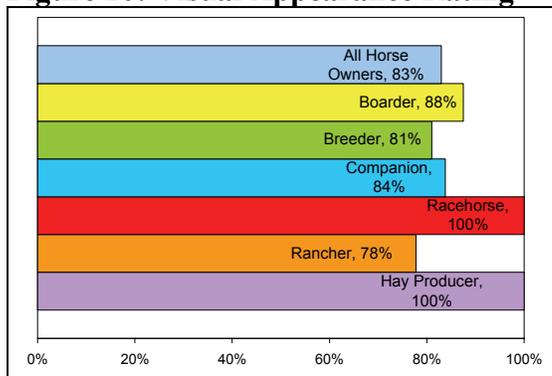


Attributes Rated Higher by Hay Producers

1. Visual Appearance

When respondents were asked to rate the importance of the visual appearance of hay, 100% of hay producers and 83% of horse owners said it was a more important attribute. Racehorse owners rated visual appearance as more important than the other horse owner types, with 100% of racehorse owners rating it as a more important attribute, compared to 88% of boarders/trainers, 84% of companion horse owners, 81% of breeders, and 78% of ranchers. Hay producers should be aware that the visual appearance of hay is not as important to horse owners as some other hay attributes, such as the actual composition of the hay. This could be an indication that other inspection/analysis methods may be preferred by horse owners, such as laboratory analysis, which can determine such crucial factors as protein, fat, fiber, carbohydrates, ash, and minerals. In the absence of materials to conduct such analysis, it may be a good idea to advise potential customers of the visual inspection that has been done. Producers can assure customers that the hay is free of foreign matter, insects, dust, mold, etc. If the hay was inspected by a third party, customers may also be interested to know that the inspection was performed impartially.

Figure 10: Visual Appearance Rating

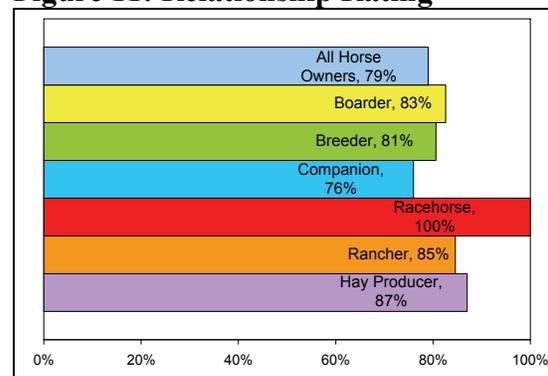


2. Relationship

Hay producers and horse owners were asked to rate the importance of having a relationship with their customers/producers. Aside from racehorse owners, all of whom (100%) rated relationship as a more important attribute, producers gave this attribute a slightly higher ranking than horse owners did (79% of all horse owner types rated relationship

as a more important attribute). While 87% of producers rated relationship as a more important attribute, only 85% of ranchers, 83% of boarders/trainers, 81% of breeders, and 76% of companion horse owners gave relationship a more important rating. Producers must understand that while maintaining a relationship with their customers may be an important aspect of their business, it may not be as important to their customers, who might be more swayed by quality characteristics of the product and/or cost. However, providing consistently high-quality hay and excellent service is one way to ensure repeat customers.

Figure 11: Relationship Rating



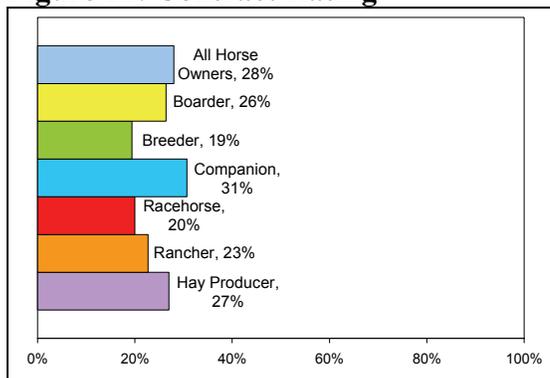
Attributes Rated Similarly by Horse Owners and Hay Producers

1. Existing Contract

Hay producers and horse owners were in agreement as to the importance of existing contracts. Responses were more similar than with other attributes, with 27% of hay producers rating contracts as a more important attribute, compared to 31% of companion horse owners, 26% of boarders/trainers, 23% of ranchers, 20% of racehorse owners, and 19% of breeders (28% more important over all horse owner types). Horse owners and hay producers were also asked if they currently contract with their respective hay suppliers/consumers. Only 32% (104) of horse owners are interested in contracting with their hay suppliers (10%, or 32, currently contract while another 22%, or 72, do not currently contract but would consider contracting in the future). Conversely, 69% (27 producers) of hay producers are interested in contracting: 30% (eight) currently

contract with customers, while another 39% (ten) do not currently contract but would consider doing so in the future). These results are likely a factor of the competitive nature of the cool season hay market: the pressure is on producers to find and maintain relationships with consumers, while consumers have the option of shopping around. However, the fact that nearly one-third of responding horse owners are willing to contract is good news for producers who are interested in contracting. This may indicate that if a producer can consistently meet the needs of the customer, the customer may be willing to commit to future purchases with that producer, which would greatly decrease the risk and uncertainty of the operation.

Figure 12: Contract Rating

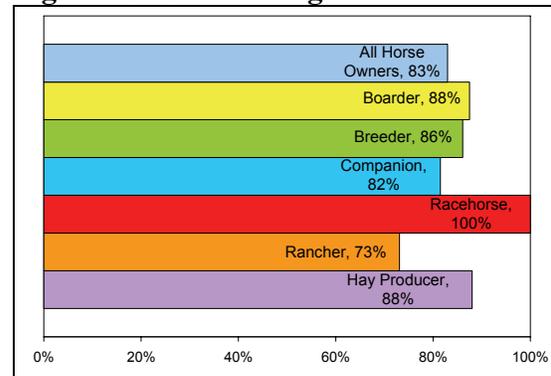


2. Cost

Horse owners were not in agreement as to the importance of the cost of hay. Racehorse owners were the most emphatic in their rating of cost, with 100% rating it as an extremely important attribute, compared to 83% of all horse owners. Although 88% of hay producers rated cost as a more important attribute, they should note that not all horse owners rated cost as a more important attribute, indicating that cost is not the only deciding factor for horse owners when purchasing hay. Boarders and trainers gave cost the next highest rating, with 88% rating it as a more important attribute, while 86% of breeders and 82% of companion horse owners indicated that cost is a more important attribute. Only 73% of ranchers rated cost as a more important attribute. Remember that horses are a big investment; most horse owners are going to want to take very good care of that investment and might be willing to pay a premium

for hay of high quality. The importance of cost will vary from customer to customer, and may be directly influenced by the type of horse they own and/or the function that horse performs.

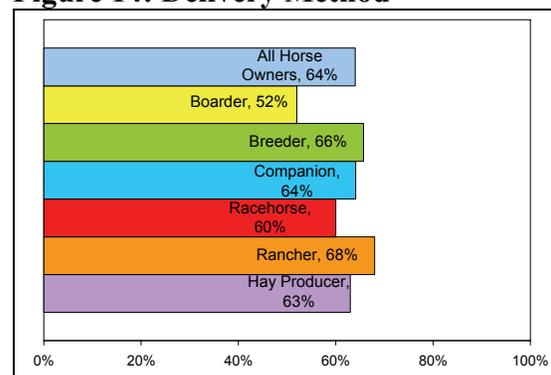
Figure 13: Cost Rating



3. Delivery Method

Hay producers and horse owners were asked to rate the importance of the delivery method the producer uses to deliver hay to their customers. This was given a similar importance rating by producers (63%) and horse owners when observed over all horse owner types (64%). By owner type, 68% of ranchers, 66% of breeders, 64% of companion horse owners, 60% of racehorse owners, and only 52% of boarders/trainers rated delivery method as a more important attribute. This may be an indication that if the quality of hay is high enough, customers won't be so interested in amenities such as delivery. However, if a producer is looking for a way to increase his/her market share and currently does not haul hay, this may be something to consider for the future.

Figure 14: Delivery Method

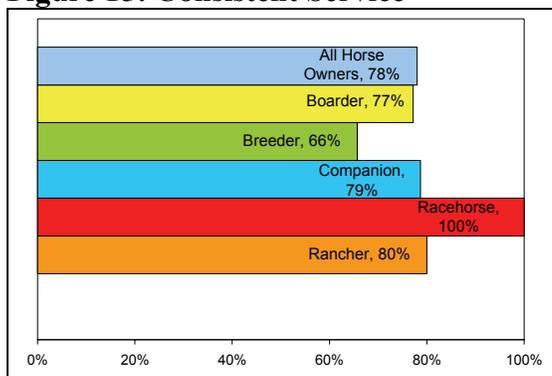


Attributes Rated by Horse Owners Only

1. Consistent Service

Horse owners were asked to rate the importance of receiving consistent service from a hay producer. The majority of horse owners, 78%, rated consistent service as a more important attribute, with 100% of racehorse owners, 80% of ranchers, 79% of companion horse owners, 77% of boarders/trainers, and 66% of breeders rating it as such. Although the majority of horse owners rated consistent service as a more important attribute, the fact that it is less important than some of the hay quality attributes is another indication of the importance of producing a high-quality product.

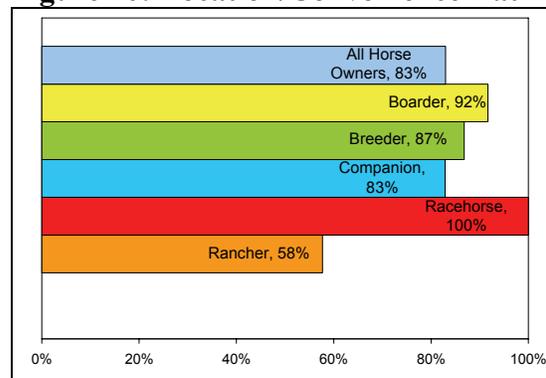
Figure 15: Consistent Service



2. Location/Convenience

There was some difference between horse owners' rating of the importance of a producer's location and/or ease of convenience. While only 83% of all horse owners rated location/convenience as a more important attribute, 100% of racehorse owners rated location/convenience as a more important attribute. This is compared to 92% of boarders/trainers, 87% of breeders and 83% of companion horse owners. Only 58% of ranchers rated location/convenience as a more important attribute. Hay producers were not asked this question, but depending on which group falls into their target market, may want keep this in mind when considering hauling a customer's hay as a free service.

Figure 16: Location/Convenience Rating



Visual Hay Attribute Ranking

Horse owners and hay producers were also given a short list of attributes that may be evaluated during the course of a visual inspection and were asked to rank them in importance relative to one another. The results of these rankings are summarized in Table 1.

1. Mold

Mold was given the highest importance ranking over all horse owner types. While companion and racehorse owners also gave the presence of mold the highest importance ranking, boarders/trainers, breeders, and ranchers gave it the lowest importance ranking. Producers gave mold the second highest importance ranking. Generally speaking, horses will choose not to eat hay that is moldy, but if hunger prompts a horse to do so, consumption of moldy hay can lead to health problems (Gibbs, 2005). Mold is often a result of harvesting at high moisture content, improper or incomplete curing, and/or high storage temperature. Even though not all horse owners indicated that mold is of great concern to them, producers should take care to keep their product free from mold.

2. Color (Greenness)

The color of hay may indicate nutrient content (very green hay is indicative of high carotene content), but can also be an indication of harvesting conditions and storage length (Gibbs, 2005). Color was given the top ranking by boarders/trainers, breeders, ranchers, and producers, though it was given the lowest ranking by companion and racehorse owners, and was rated as the least important attribute over all horse owner types.

While the importance of the color of hay will vary depending on the customer, having hay of good color will generally be a good selling point. Be aware that hay may appear greener in color within the bale than it does on the outside of the bale, due to weathering and storage conditions.

3. Weeds/Foreign Matter

While greater weed content may be present in the first cutting of hay, this should not have too much of an impact on horses eating the hay, provided the hay is not extremely weedy. However, foreign matter such as dirt, dust, trash, or insects in hay can harm horses, and may lead customers to believe that the hay was poorly harvested (Gibbs, 2005). The presence of certain insects, such as blister beetles, can lead to severe illness and/or death in horses who consume the insects along with the hay (Wheeler and Cirelli, 1994). Respondents were mixed as to the importance of the presence of weeds and/or foreign matter during the course of a visual inspection. While companion horse owners gave it the second highest ranking, breeders, racehorse owners, ranchers, and producers gave it the second lowest ranking, and boarders/trainers ranked it as least important. Although foreign matter wasn't given the highest ranking by any of the horse owners, it was ranked second highest over all horse owner types. It is likely that illness and/or death of a horse is a sure way to discourage repeat customers, so this is something hay producers should take into consideration when performing a visual inspection of their hay prior to sale.



4. Leafiness

High-quality hays exhibit a high leaf content, making the hay more digestible, nutritious, and palatable than stemmy hay. Although none of the horse owner types ranked leafiness as the most

important visual inspection aspect, boarders/trainers, breeders, racehorse owners and ranchers gave it the second highest ranking, while companion horse owners gave it the second lowest ranking, and producers gave it the least importance (leafiness was given the second lowest rating over all horse owner types as well). This is an attribute to consider through the entire hay production process, as leafiness may be affected by maturity at time of harvest.

Implications

Recognizing the hay attributes that most appeal to horse owners may help producers to ensure repeat customers or potentially increase their market share. The results of this study indicate that the value of hay attributes differs between horse owner types, indicating that the market for cool season hays is ideal for niche marketing. Niche marketing is the process of marketing a product directly to the consumer without going through a middleman, which allows the supplier to remain in direct contact with the customer, providing the supplier the opportunity to design his/her product according to the customer's specific needs. The information presented here may provide hay producers with a general idea as to the hay attributes desired by different types of horse owners.

For example, the racehorse owners surveyed here placed more emphasis on visual hay characteristics, such as perceived age and visual inspection, than the other owner types. Racehorse owners were the owner group most concerned with the cost of the hay. Racehorse owners also placed the most emphasis on supplier aspects, such as consistent service, having a relationship with the supplier, and the location of the supplier.

Companion horse owners, who made up the majority of the horse owners surveyed, were most concerned with quality characteristics, including nutritional value and digestibility. However, companion horse owners were also interested in the visual aspects of hay, with the majority giving importance to the visual appearance and perceived age of the hay, as well as the presence of mold and weeds. Location of the supplier and the cost of the hay were also among the most important aspects to companion horse owners.

Boarders surveyed here were most concerned with the location of the supplier, the nutritional content of the hay, the visual appearance of the hay, and cost. Boarders were also concerned with digestibility and the use of chemicals and pesticides on the hay. As with companion horse owners, the surveyed ranchers were most concerned with quality characteristics, including nutritional value and digestibility, but also placed emphasis on perceived age and having a relationship with the supplier. As a group, breeders were the most divided in their preferences, but the majority of surveyed breeders gave high ratings to nutritional value and digestibility, location of the supplier, visual appearance of the hay, and cost.

Finally, the information presented here can be used as a tool to give hay producers a better idea of what potential customers are looking for in hay products. The results of this study can also serve as evidence that hay attribute preferences vary between horse owner types. The more information a supplier has about the preferences of his/her potential customers, the better the chances of maintaining a long-term relationship with that customer.

More Information

University of Nevada Cooperative Extension has additional publications relating to hay quality, equine nutrition, niche marketing, and more. These publications can be found online at <http://www.unce.unr.edu/pubs.html>.

References

- Gibbs, Pete, (2005). "Selection and Use of Hay and Processed Roughage in Horse Feeding." Texas Cooperative Extension Publication B-5033.
- Nevada Agricultural Statistics (NAS), (2005). "Nevada Annual Statistical Bulletin 2005." Online at <http://www.nass.usda.gov>.
- University of Nevada Cooperative Extension, (1987). "A Decade of Alfalfa Research." University of Nevada Cooperative Extension Publication BE-87-3.
- Wheeler, Gene and Al Cirelli, (1994). "Alfalfa Hay for Horses." University of Nevada Cooperative Extension Fact Sheet FS-94-5.

Table 1: Rankings of Visual Hay Attributes

	Most Important	Very Important	Somewhat Important	Least Important
All Owners	Mold	Weeds	Leafiness	Color
Boarder	Color	Leafiness	—	Weeds/Mold (tie)
Breeder	Color	Leafiness	Weeds	Mold
Companion	Mold	Weeds	Leafiness	Color
Racehorse	Mold	Leafiness	Weeds	Color
Rancher	Color	Leafiness	Weeds	Mold
Hay Producers	Color	Mold	Weeds	Leafiness

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