Hay Inventory and Purchasing Calculator for Horse Owners

Robyn L. Stewart  
*University of Georgia*, rlstew2@uga.edu

Brooklyne M. Wassel  
*University of Georgia*, brooklyne.wassel@uga.edu

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The Hay Inventory and Purchasing Calculator for Horse Owners is an Excel-based tool for estimating hay needs and expenses for horse owners. Challenges with hay quality and availability can result in higher than expected costs for horse owners as they attempt to purchase enough horse-quality hay to meet their needs. Estimating intake requirements and creating a budget for hay purchasing is key for the effective management and profitability of equine operations. This tool can be used regardless of geographic location and will benefit a diverse audience including Extension educators, equine business owners, and horse owners.
SHEET 2: HERD REQUIREMENTS

The second sheet is designed to estimate the individual and total forage intake requirements for a herd of horses. Users need to input each horse’s name and BW in pounds. Horses can be weighed in three ways: on a scale, such as at a vet’s office; via calculation by using measurements of heart girth and body length; or with a weight tape (commonly found at feed stores). The preferred way of determining adult horse weight for use in this calculator is by using the formula \((\text{Heartgirth})^2 \times \text{Body Length}\) (Ivey, n.d.). An additional resource for determining BW can be found in the References portion of this article. It is recommended that horse owners overestimate BW to ensure that the calculations are as accurate as possible to best meet their needs. Inaccurate body-weight measurements will skew the calculations in the rest of the program and can quickly compound inaccuracies in the final values. After entering names and weights, users need to determine how much hay they intend to feed as a percentage of the horse’s BW. Options are based on standard recommendations and include 1.0% BW for weight loss, 2% BW for maintenance, and 2.5% BW for weight gain or forage-only diets (NRC, 2007). The calculator then automatically calculates the daily forage requirement for each individual horse and sums the individual totals to provide a daily requirement for the entire herd (Figure 2).

SHEET 3: ANNUAL FORAGE INTAKE

The third sheet of the calculator is designed to evaluate the impact of pasture access on the hay needs of the herd. Pasture intake is estimated by using a grazing rate of 1–2 pounds of dry matter per hour, but actual intake will vary (Siciliano, 2013). Users need to state how much time their horses spend grazing an actively growing, well-managed pasture and how many horses they are feeding. Options include no grass/dry lot/no turnout, less than 8 hours, 8–14 hours, and 14–24 hours (Siciliano, 2013). Based on length of turnout and number of horses being fed, the program determines how much forage the pasture can provide and how much additional forage the horses need to meet their requirements.

This sheet also accounts for how many days hay will be fed as the sole forage source and how many days it will be fed as a supplement to pasture. For example, horses that are continuously stalled or on dry lots are commonly fed hay as their sole source of forage. On the other hand, horses with 24/7 turnout may need only supplemental hay in specific times of year. Users need to input how many days in the year they feed hay as the only forage and how many days they feed hay as a supplement to pasture. This value may change from year to year and is an estimate;
therefore, it is recommended that calculator users overestimate the number of days they plan on feeding hay. The calculator then provides an estimate of the total volume of hay needed for the number of days users expect to feed it (Figure 3).

**SHEET 4: ANNUAL HAY NEEDS**

The fourth sheet of the program is designed to take the requirements of the herd and calculate how many round and/or square bales are needed to feed during the time period specified. Users input the average weight of the hay bales they feed in pounds and identify the number of days they feed each hay type, with and without supplemental grazing. For round bales, users also need to estimate their hay losses during the feeding, moving, and storing process. Low losses (5%–10%) include using covered storage, hay rings, and nets. Average losses (10%–20%) are
incurred without the use of hay rings and nets, and high losses (25% or more) occur without covered storage or protective feeding equipment (Martinson et al., n.d.). Once the necessary information is input, the calculator estimates the number of round and/or square bales the user needs to feed for the time period specified (Figure 4).

**SHEET 5: ESTIMATED EXPENSES**
The final sheet of the calculator can be used to estimate the annual expense of hay. Users input their average price for round and/or square bales. Using the number of bales needed from Sheet 4, the program calculates the amount of money spent on each hay type and provides an estimated annual hay expense (Figure 5).

![Figure 4. Screenshot of sheet 4: calculating annual hay needs.](image)

![Figure 5. Screenshot of sheet 5: calculating estimated expenses.](image)
LIMITATIONS

It is important to recognize that the calculator provides only estimates and does not accommodate variations in pasture, hay quality, feed or supplements being fed, or differences in dietary needs due to age, workload, or other conditions. It is not a replacement for working with a qualified equine nutritionist, but it can provide a starting point for horse owners. The program was designed with the intention of covering a yearlong time period but can be used to cover smaller periods as well.

CONCLUSION

The Hay Inventory and Purchasing Calculator for Horse Owners is a useful tool for Extension professionals, equine business owners, and horse owners to estimate the volume and cost of hay needed to feed their herd over a period of time. Specifically, they can determine daily intake requirements and contribution of pasture to intake needs, estimate the number of round and/or square bales needed for a specific time period, and determine a hay purchasing budget. This information can be used to prepare for hay feeding season, reduce stress around purchasing hay, better manage equine diets, and allow for better financial planning and recordkeeping.

REFERENCES


