



U of M Horse Newsletter

Providing research-based information to Minnesota Horse Owners

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Bodyweight Estimations for Adult Horses

There is a growing problem in the U.S. of overweight and obese horses. Determining a horse's bodyweight is important for weight and health management; however, few owners have access to a livestock scale. Equations exist that utilize horse height and body length and allow horse owners to predict horse bodyweight in the absence of a scale. Recently, new equations were developed that improved upon the existing equations by adding breed type and neck and girth circumference in addition to height and body length for ponies, Arabians, stock-type horses, draft horses and warmbloods.

Body measurements were taken on 629 adult horses and ponies at two horse shows in St. Paul, MN, the WSCA Champ Show and State 4-H Horse Show. In 2014, the same measurements were taken on 227 adult draft and warmblood horses at the Scott County Fair Draft Horse Show (Jordan, MN), and the Fall Harvest Horse Show (St. Paul, MN). At all shows, data were collected on adult horses that were 3 years old and older and non-pregnant. The following body measurements were taken by trained personnel: body condition score (BCS), height at the third thoracic vertebra, neck circumference at the midway point between the poll and the third thoracic vertebra, body length from the point of the shoulder to a line perpendicular to the point of the buttock, and girth circumference at the third thoracic vertebra. Each horse was weighed using a portable livestock scale. For draft horses only, shoe height was measured and actual height (height minus shoes) was used in the calculations. At the draft horse and warmblood show, the horse's exhibitors were also asked to estimate their horse's bodyweight prior to weighing horses on the livestock scale.

As expected, body measurements

were different between breed-types. Ponies and draft horses had higher BCS compared to the other breed types. On average, draft horse and warmblood owners were 115 pounds off their horse's actual bodyweight.

New equations were developed to estimate bodyweight and include:

Arabians, stock horses, and ponies

$$\text{Bodyweight (lbs)} = [\text{girth (in)}^{1.486} \times \text{body length (in)}^{0.554} \times \text{height (in)}^{0.599} \times \text{neck (in)}^{0.173}] / X$$

X = 119 (Arabians), 119 (ponies), or 114 (stock horses)

Draft horses and warmbloods

$$\text{Bodyweight (lbs)} = 25.09 \times [\text{Girth (in)}^{1.528} \times \text{length (in)}^{0.574} \times \text{height (in)}^{0.246} \times \text{neck (in)}^{0.261}] / X$$

X = 1,181 (draft horses) or 1,209 (warmbloods)

New equations were developed to estimate ideal bodyweight and include:

Arabians, stock horses and ponies

$$\text{Ideal bodyweight (lbs)} = [(15.58 \times \text{height (in)}) + (23.52 \times \text{body length (in)}) - X]$$

X = 1,344 (Arabians), 1,269 (stock horses), or 1,333 (ponies)

Draft horses and warmbloods

$$\text{Ideal bodyweight (lbs)} = [(27.55 \times \text{height (in)}) + (25.98 \times \text{body length (in)}) - X]$$

X = 2,092 (draft horses) or 2,235 (warmbloods)

The differences between each BCS averaged 37 (stock horses), 22 (ponies), 33 (Arabians), 86 (draft horses) and 37 (warmblood) pounds.

To remove the technical barriers that may inhibit some horse owners and professionals from utilizing the new bodyweight-related equations, a fee-based app ([Healthy Horse](#)) was developed and is available for use with Android and Apple operating systems.

Author: *Devan Catalano, University of Minnesota*

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Upcoming Events

Equine Pasture

Management Program
One farm visit and a customized pasture and grazing management plan. April 1 through August 1. \$650 per farm. To register: <https://www.regonline.com/EquinePastureManag2016>

Equine Castration Clinic

Saturday, May 14 2016
Jordan, MN
Appointments required
612-625-6776

Minnesota Nutrition Conference

September 21-22, 2016
Prior Lake, MN
For more information, visit the [website](#).

Visit our [Facebook page](#) for "Ask the Expert Monday", "Tip of the Week Wednesday", "Friday Funny" and special events.

Check out our latest horse-related videos on our [YouTube Channel!](#)

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Ask the Expert: Parasites and Pasture Management

Question: My two horses tested high in their fecal egg counts; I dewormed them regularly. We had a mild winter and they were still foraging on the pasture. I am wondering if I am managing their manure badly? We drag the manure piles in the pasture, but are we spreading out the parasite eggs and making it worse?

Response: Good pasture management can help reduce parasites, especially strongyles. Strongyle larvae develop within the manure pile, migrate onto pasture forages during wet weather and wait to be ingested by horses. Rotational grazing, avoiding over-grazing and ideal stocking rate can help to reduce strongyles. We recommend initiating grazing when pasture grasses are between 6 to 8" tall and rotating horses to a new pasture (or a drylot) when most of the forage has been grazed down to 3 to 4" tall. A pasture where most of the forage is below 3" tall is

considered over-grazed. This is especially important when managing strongyles as larvae tend to inhabit the lower part of forage plants. Allowing your horses to graze a pasture during the winter months (when forage re-growth is not possible) may have resulted in over-grazing and ingestion of parasite eggs. We recommend a stocking rate of 2 acres of pasture per adult horse. If the pasture is well managed, this should result in not needing to supplement hay during the grazing season. Parasite populations tend to be greater if the pasture stocking rates are higher (less than 2 acres per horse), especially in over-grazed pastures. Since you have two horses, ideally you would have at least 4 acres of pasture.

Dragging is a recommend pasture management activity. Dragging is necessary to disperse manure piles since horses will rarely graze near these areas. However, to help

reduce the parasite load, dragging should be reserved for hot and dry periods of the summer. A few weeks of high temperatures and limited rainfall after dragging will help kill strongyle larvae. During this time, its important to remove the horses from the pasture. During wet periods, horse owners should remove the manure from the pasture weekly, if possible. This may not be practical in all situations, but may be necessary in high-risk scenarios.

We suggest you continue to work with your veterinarian and use your fecal egg count results to strategically deworm your horses. Implementing a rotational grazing program, avoiding over-grazing, dragging manure piles during hot and dry periods and confining your horses to the drylot during the winter months should also help reduce the parasite load in your pasture and horses.

Authors: K. Martinson, PhD and A. Firshman, DVM, Univ. of Minn.

Research Update: Feeding Order and Rates of Intake

It is thought that feeding hay before a concentrate meal will slow the rate of grain intake. Researchers at Purina Animal Nutrition recently examined this theory, along with how the time of day and adaptation to diet affect rates of hay and grain intake.

Ten quarter horse geldings (average of 12 years and 1,275 pounds) were assigned to one of five treatments in a randomized, crossover design including hay (hay only), hay-pellet (hay fed 20 minutes before pelleted feed), hay-textured (hay fed 20 minutes before textured feed), pellet-hay (pelleted feed and hay fed at the same time), or textured-hay (textured feed and

hay fed at same time). Grain concentrates were fed at 4 pounds per feeding and hay at 0.5% of bodyweight per feeding. Feed intake was recorded using a scale system that recorded weight every five seconds. Data was recorded for 45 minutes per meal.

The hay-pellet treatment had the slowest rate of grain intake, followed by hay-textured. Both treatments slowed the rate of intake compared to the treatments involving hay and grain fed simultaneously. Time of day (morning or evening feeding) did not impact rate of grain intake, but rate of hay intake was faster in the morning than in the evening. The

hay only treatment demonstrated a faster intake on day 5 versus day 1, and for hay-textured, the rate of hay intake was slower on day 5 than on day 1. Horses on the hay-textured feed treatment had the slowest rate of hay intake.

In conclusion, while type of grain, feeding time, and adaptation to a feeding program all influence rate of intake, feeding hay before a grain concentrate will slow the rate of concentrate intake. For more information on this research, click [here](#).

Summarized by Devan Catalano, University of Minnesota