

# Kentucky Equine Research Develops Feeding Kit for Horse Owners

BY ROBIN STANBACK

*eed the best to the best and hope for the best* is a slight twist on the old equine adage of “breed the best to the best and hope for the best.” The difference between the two is that good nutrition is a safer bet. Research has come a long way in the past 30 years to prove to horse enthusiasts the value of a good feeding program, but geographic differences, feed availability, and the type and purpose of the horses fed can combine to present a confusing challenge. Trying to design the perfect feeding program for individual horses has just become a great deal easier. Kentucky Equine Research (KER) has developed a kit that will help horse owners model the perfect feeding program for their horses.

Nutritionists at KER have long been industry leaders in providing nutrition information for horse owners and veterinarians. Their MicroSteed computer program, designed to provide a complete feeding ratio for horses, is used all over the world by every type of equine professional from breeders and trainers to veterinarians. Now KER has combined a horseman’s version of MicroSteed with a few other essential tools for gauging a feeding program. Called The Kentucky Equine Research Ration Evaluation Kit, the kit contains the horseman’s version of MicroSteed, a weight tape and hay analysis tools.

This combination will allow horse owners to formulate a feeding program that takes into account the type of forage available in their area of the world along with the specific needs of their individual horses.

As the kit was being designed, I was asked to give input as a horse owner and breeder. The product of a multigenerational family of horse enthusiasts, I have a diverse history of feeding horses on which I have drawn to develop my own conclusions and methods of gauging appropriate feeding programs. For many years my own program was determined largely by my senses and not by science. Though I did rely upon feed tag information and knowledge gleaned from articles in equine publications, I depended upon my experience and senses to tell me if my horses were doing well. Did they look to be a good weight? Were their coats healthy and shiny? Did they have bright eyes and willing attitudes? Did they have enough energy to perform as expected? Was my hay free of weeds and dust? Did it smell good and was it a texture that would be appealing to my horses? Was my feed fresh and free of mold and excess chaff?

When KER first opened its offices in my hometown in 1988, I availed myself of its expertise to check my equine nutrition program. I used my local KER dealer, Woodford Feed, to purchase the feeds that were recommended and then felt fairly confident that my horses were getting what they needed. In the past 11 years, however, my herd has grown and the dynamics have changed. Now I am feeding broodmares and foals, as well as horses staying with me for rehabilitation from injuries, my performance horse and our sheep guardian, Bayloo the burro. With this change in herd dynamics, reevaluating my feed program seemed both logical and essential. I jumped at the chance to be the first person to use the KER kit.

The kit came packaged in a sturdy blue and green plastic container. Inside were a computer disk with a horseman’s version of MicroSteed complete with instructions on how to

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*Each horse’s feeding program should be tailored to its age, size and level of activity.*

## How Much Does Your Horse Weigh?

Most experienced horse owners can judge the approximate weight of their horses by looking at them, but even the most practiced eye can make a mistake. A research project Kentucky Equine Research (KER) designed to determine the weight of Miniature horses showed that 51% of the horse owners polled underestimated the weight of their horses by an average of 48.6%. Another group of owners overestimated weight by an average of 51 pounds, a significant amount for a Miniature horse. One owner proudly stated that she knew exactly what her horse weighed because her veterinarian recommended she worm the horse at the dosage recommended for a 450 pound animal. The horse's weight, determined by a KER EQUImetrics Portable Equine Scale, was just over half of that amount. The actual weight of Miniature horses, those at the bottom end of the scale for horse weights, and their counterparts at the opposite end, draft breeds, can be easily misjudged, but the middle of the weight ranges can also be deceptive.

KER Research Coordinator and Farm Manager Kari Hoekstra said, "Balancing a ration for any horse requires an accurate determination of body weight in order to reduce the influence of other variables such as digestive and metabolic differences, nutrient availability, reproduction, and performance capabilities of an individual." Ms. Hoekstra supervised a weight study performed by visiting intern Orlagh Rice to determine the accuracy of weight tapes versus scales. Ms. Rice studied 12 horses at the KER farm and found the weight tapes to be fairly accurate, but even the tapes could not be relied upon for every horse.

KER consultant Mike Lennox explains, "Weight tapes are a very useful tool for the average horse. However, horses that are very fat, very thin or very fit can be difficult to weigh using a weight tape. The reason for this is that you are measuring heart girth and, while for most horses this can be a good measurement, horses in the fat, thin and fit categories can have deceiving measurements. For instance, a horse that is very thin can only lose so much weight through the heart girth area and may be losing muscle tone and tissue from other areas of the body, a situation that is not reflected in a measurement taken with a weight tape. At the other end of the scale, horses that are very fat can carry weight over the rump and tailhead and around the internal organs behind the heart girth area."

In her study, Ms. Rice found that the weight of many of the research horses was easily determined with fair accuracy by the weight tapes, but most of the horses, when placed upon the scales actually weighed more than the weight tape indicated. She also found a difference if the tape was fit very tightly around the horse's girth or just pulled together loosely. She said, "For the average horse, a weight tape fit snug against the horse's heart girth will give a fairly accurate accounting of its weight." (Figure 1)

Weight tapes can be purchased from feed supply catalogues for between \$2 and \$5. For those who may wish for an absolutely accurate measurement of their horses' weight, scales can be purchased for between \$3,250 and \$3,750 from EQUImetrics through Kentucky Performance Products at 3910 Delaney Ferry Road, Versailles, Kentucky 40383, or by phone at 606-873-2974 or fax 606-873-7544.

*Table 1. Twelve horses were weighed using a scale with a weight tape. The weight tape measurements were done two ways, first with the tape pulled tightly around the heart girth (Tape T) and with the tape held snugly but not tight (Tape L).*

Scale W	Tape T	Tape L
872	821	850
914	850	885
974	969	990
1022	955	985
1182	969	1081
1188	1033	1065
1146	1000	1020
1152	1055	1081
1138	1081	1132
1220	1017	1081
1270	1100	1130
1440	1220	1234

install the disk on my computer, a weight tape, envelopes and a form to fill out for submitting hay for analysis to a laboratory, stall cards for individual horses and for permanent record keeping and brochures on KER products.

I followed the directions on how to gather a good hay sample (see sidebar on page 16). I did two different samplings from two types of hay, an alfalfa/orchard grass mix and a third cutting alfalfa hay. The first sample of each was done using a hay probe supplied by KER's research farm and the second was done by grasping hay from the center of a few opened bales along with some fallen chaff. These samples were then sent to a laboratory for analysis. The results were returned to me by post within two weeks. The results between the probe samples and the hand grasp samples of each type of hay were somewhat similar, but there were a few differences that could produce some significant changes in a total feeding program. The most accurate assessment according to equine nutritionists is to use the probe method. I used the nutrient values obtained from these samples to evaluate my feeding program. A surprising finding from the hay analysis was that my alfalfa/orchard grass hay was actually higher in protein and some nutrient values than my straight alfalfa hay. Judging the two hays on their appearance, smell and texture would have led anyone to suppose otherwise.

The weight tape included in the kit is a Sure-Measure™ tape and was simple to use. The directions are on the tape.

I began by using the tape to measure the height of my horses even though I already had an accurate height on many of them. The tape was accurate to less than one inch from what I had determined using a measuring stick. The directions called for doing a few different heart girth measurements and averaging them, particularly if the horse moved about during the measurement. With my foals I found this to be very useful. I had made some estimates of my horses' weights but found that I had a tendency to underestimate. On some horses I was within 25 pounds of accurately assessing their weight but on others I was off by fifty or more pounds. On one broodmare my estimation was off by 110 pounds. While nothing is as accurate as a scale (see weight sidebar on page 13), weight tapes can offer a very close approximation and are recommended by veterinarians and equine nutritionists.

Next, I needed to determine just how much hay and grain I was feeding my horses. I use a standard metal scoop that I purchased from Woodford Feed for \$7.40; although I have been known to use the odd coffee can, I prefer to use a scoop. I weighed my scoop with a standard kitchen scale that can be purchased for \$15 from K-Mart, Walmart or other discount stores. Then, I weighed the scoop full of my feed, a custom blend very similar to KER's Phase III textured feed. The average full scoop of feed, tested between ten different scoops, weighed five pounds. Again, across ten samplings, one flake of the alfalfa/orchard grass hay weighed 3 pounds and one flake of the alfalfa hay weighed 4 1/4 pounds.

Armed with the results of my hay analysis, the weights of my hay and grain and the profiles of the horses I have on my farm, I was ready to embark on my first experience using KER's MicroSteed program. Not being terribly computer literate (understatement of the year), I entered this phase of the program with much trepidation. The kit contains very specific instructions about how to load the program onto a computer and how to set it up to run. My coworkers told me that the program was very "user-friendly;" however, it has been my experience that computer people who utter the words "user-friendly" make the basic assumption that the user is at least somewhat comfortable with a computer.

The instructions to install MicroSteed were basic enough that I was able to load the program onto my computer fairly easily. It might have helped had I read the instructions a bit more carefully. I went right to the A drive directly instead of to the start bar, an assumption even I was surprised that I made. When I went back and followed the careful directions



Photo by Orlagh Rice

*Weight tape directions state that it is important to pull the tape tightly around the heart girth but researchers at KER have found that a snug but not tight tape measurement provides a more accurate evaluation. When measuring any horse it is best to take more than one measurement and average the results to get the most accurate reading.*

I was able to load the horseman's version on my computer and start entering my information.

Entering the information is a fairly straightforward process. First you must enter the data on the horse you are interested in feeding. The window for that entry is understandable and there are some automatic responses built in. For instance, when I entered the fact that my horse, Red Man, was a performance horse, a block appeared asking if he was required to perform heavy or light exercise. There are even examples of heavy and light exercise. Similarly, when I entered the information on Golden Assets, a pregnant mare, I was asked to provide information on the stage of her pregnancy - first, second or third trimester. For my weanlings, I was asked to supply information on the rate of gain I would like to see them achieve. All of these blocks can be easily changed at any point during the process which makes it particularly easy to change horses without having to change all of the other properties in the feed portion of the next window.

The first horse I chose to examine was my pleasure horse Red Man. He is a four-year-old five-gaited American Saddlebred that had been in training but is now at home for me to ride about the farm. He weighs 938 pounds. When he is not being ridden he is in a paddock that has suffered



*Scales are the most accurate method of determining a horse's weight.*

exactly the same as, my hay results. To change the numbers in those fields I cheated. I asked my office neighbor who is very familiar with the program for assistance, mainly because I was so fascinated with the program at this point that I did not want to take the time to read through the directions. I discovered that the changes could be entered by clicking on the percentage sign and then back onto the individual number that needs to be changed. As soon as

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from the draught we are experiencing this year. His feed schedule includes five pounds of textured feed twice a day and six pounds of alfalfa/orchard grass hay once a day. He has been home from the trainer's barn for 30 days and I have noticed him putting on a few pounds. The added weight suits him and I would like to see him just slightly heavier. The program asked for the information on the types of feed Red Man was getting. There are a number of choices including hay, beet pulp, Equi-Jewel and different feeds, such as the KER-developed feeds for my area, already built into the program. When I clicked on the 80/20 alfalfa mixed hay, I found the values to be similar to, but not

these values were satisfactory I was asked to provide information about how much hay the horse was getting per day.

Once I had entered the hay and volume information, I went to the next field and entered the Phase III feed that is similar to my custom mix. The values were almost identical so there was little to change there. I entered the amount of feed the horse was getting and then immediately began comparing the values to the KER requirements that were featured on the screen. By clicking on the option button at the top of my screen I could change the requirements from those KER has designed to those developed by the National Research Council (NRC). The NRC requirements are substan-

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## Sampling Hay Requires the Right Tools

According to Dr. Joe D. Pagan in his book *Advances in Equine Nutrition*, the equine digestive tract is designed to allow the horse to ingest large quantities of forage in a continuous fashion. He states, "Any feeding program that neglects fiber will result in undesirable physical and mental consequences."

For many horse owners the best source of forage for their horses is hay. Hay can be divided into three groups: legumes such as alfalfa and clover, grasses such as orchard grass and timothy and grains such as oat, barley or rye. Most horse owners favor the legumes and grasses, but regardless of the type of hay preferred, the quality of that hay can vary greatly from provider to provider and from year to year. Dr. Pagan asserts that it is wise to know the quantity of the nutrients within the forage to adequately build a complete feeding program. He states, "A great deal can be learned about the nutritive value of a forage by having it chemically analyzed."

The best method of gathering hay to be analyzed is to use a device called a hay core sampler or a hay probe. This tool can be purchased through farm supply companies or borrowed from a county extension



*Hay samples should be drawn from the end of the bale either directly through the center or diagonally from the top to the bottom.*

agent or local feed store. The sampler is a long cylindrical tube with a serrated edge around one end. The other end can attach to a hand crank or a hand drill. The drill or hand crank drives the serrated edge into the bale, and hay collects inside the tube. The hay can then be pushed out of the tube and into a collection bag.

To gather the best sample, it is recommended that the serrated edge of the sampler be placed in the center of the end of a bale of hay and then drilled into the bale. According to Kentucky Equine Research consultant Mike Lennox, "As hay is baled the leaves, which contain more nutrients than other parts of the hay, tend to fall to the bottom of the bale. The center section of the bale then gives a better sampling of the quality of the hay than would a sample drawn from the bottom or the top of the bale." Dr. Pagan suggests that the tool can draw another reliable sampling if it is driven diagonally through the end of the bale from the top to the bottom. Either of these techniques would be preferable to taking a sample of hay by hand. Gathering just fallen chaff will have too much of the leaf represented and grabbing a handful of hay from the center of a flake could also be representative of just that particular flake and not the entire bale. Mr. Lennox and Dr. Pagan also recommend including core samples from a number of bales in the bag that is sent to be analyzed.

Once the samples of hay have been drawn, they can be sent to any number of commercial laboratories for analysis. A county extension agent or local feed store may have a recommendation or the sample can be sent to one of the laboratories listed below. Most laboratories charge about \$25 for this service. Some county extension agents may be able to provide the service for a lower cost. The results should indicate the levels of moisture, dry matter, fat, protein, fiber and minerals in the hay sample. These data can then be used to help design a feeding program that will provide a horse with all of the essential nutrients it needs.

The following companies provide hay analysis:

**Dairyland Laboratories, Inc.,**  
Arcadia, WI 54612

**Dairy Tech Labs**  
805 Rohrerstown Road  
P.O. Box 7508  
Lancaster, PA 17604

**Northeast DHIA**  
Forage Analysis Laboratory  
730 Warren Road  
Ithaca, NY 14850-9877

**Rock River Laboratory**  
N8741 River Road  
Watertown, WI 53094-9988

tially different in many cases than those developed by the nutritionists at KER.

I could compare the figures across the spreadsheet in front of me or click on the bar graph icon at the top of my screen to see a very colorful and descriptive graph of the nutrients Red Man was getting. I was thrilled to see that I was supplying an adequate supply of almost all nutrients but appalled to see that his ration was sadly lacking in sodium and chloride.

By this point my office neighbors were coming around to see what was going on. They were all quick to tell me that I had not entered the fact that I was supplying a salt block for the horse and that there were plenty of fields left for me to use within the program to add this. As it is impossible for me to adequately gauge how much of the salt block Red Man consumes, I played with the figures until I determined

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that about .09 grams per day would provide just slightly more than the KER recommendations. It certainly highlighted to me the importance of providing salt to my horses. The first thing I did when I returned home was to check every pasture to be certain the salt blocks were in good order and easily accessible. Another lesson I learned from this is that more is not better. I had always assumed that a mineral salt block is better than just a plain salt block but, when looking at the bar graph, it was patently obvious that the horse was getting absolutely everything else he needed and then some from the feed and forage provided to him. According to the nutritionists at KER, a mineral block is not necessary if the horse is on a well balanced diet and can actually be detrimental to the horse if he consumes enough of it to throw off the balance of minerals in his system.

Another fact that jumped off the screen at me was the answer to why Red Man was looking so much better. The amount of feed he was getting had an abundance of digestible energy, which translates into weight gain. To keep Red Man where he is currently and not allow him to become overweight, I would have to adjust my feeding schedule appropriately. In the past I probably would have adjusted his feed by cutting back on his grain a bit when I saw him gaining too much weight. I entered eight pounds of grain (down two pounds from what I am feeding him now) into the program and found that, while every other value stayed at or above 100% of the KER recommendations and the digestible energy was closer to the desired level, vitamin E fell below the required amount. As vitamin E is

an essential antioxidant in the equine diet, I definitely want to make certain my horse continues to get the proper amount. Thanks to the MicroSteed program I can top-dress my feed with a vitamin E supplement and be assured Red Man is getting everything he needs.

From the information on Red Man, I progressed through my client's Thoroughbred mares and weanlings to a mare recuperating from a broken pelvis, a two-year-old pasture ornament and finally Bayloo, the coyote menace wannabe.

The program was so easy to change and to maneuver through that it was simple to alter the amounts fed, the types of feed and the horses' statistics. The only drawback I found was not being able to save or print the charts and graphs. In the professional horseman's version of the program, this and a few other features are included but for the much less expensive horseman's version, you must save the

information in writing. The stall card booklet that is provided makes this a simple process too. The cards have two sides, one for a permanent office record and one for a stall card to be placed in the barn or feed room. The perforation between the two cards makes this very useful.

Using the kit taught me a great deal about my feeding program and my herd's nutritional health. While perfectly aware of the importance of salt in the equine diet, I certainly was surprised when I found that my feeding program was sadly lacking in the nutrient without the added salt block. I was also amazed at the difference even one pound of hay can make in a horse's diet. Getting a complete analysis of my hay provided me with the peace of mind that comes from knowing exactly what is provided to my horses. Combining that knowledge with the other information in the MicroSteed program showed me how essential it is to reevaluate my feeding program when changes in hay or feed occur. Both of the hays I sampled were excellent, but each provided different nutrients that needed to be balanced appropriately with my textured feed. It certainly was a comfort to know that my horses were on a sound nutritional program, but armed with the tools in the kit, I now know how to make it even better.

The Kentucky Equine Research Ration Evaluation Kit will soon be available from your local KER feed dealer (see page 20 for a complete listing) or directly from the company. For more information call 606-873-1988 or write Kentucky Equine Research, 3910 Delaney Ferry Road, Versailles, Kentucky 40383. 