

Feeding Fat Horses

What does your horse weigh?

Determining what a horse weighs is the foundation of a logical feeding and management program. In addition to helping calculate daily intake requirements for hay and grain, accurate assessment of each horse's weight is necessary for the proper dosage of dewormers and other medications. In mature horses, keeping track of weight losses can help identify health problems related to teeth (which become worn and need periodic floating) or decreased digestive capability, either due to increasing age or disease. But older horses are more likely to be obese rather than too thin. Since an owner in most instances observes a horse daily, it is often easy to overlook the fact that the mare or stallion has become too fat. Obese horses are more prone to colic and founder, and fat mares have more difficulty foaling as well as getting back in foal. Recent studies also indicate that performance horses have ideal body weights at which they compete at their best, and minor fluctuations of as little as 30 pounds can mean the difference between victory and defeat.

Grow slow

In growing horses, there is a difference between maximum growth and optimum growth. Many breeds have been selected for early maturation, but if too much weight is gained daily (as opposed to skeletal growth), a variety of developmental ills can result, including OCD lesions, wobbler syndrome, rotational deformities and epiphysitis. Some of these problems are mechanical, and are the result of growth plates failing under the added strain of the overweight weanling or yearling. Some of these problems



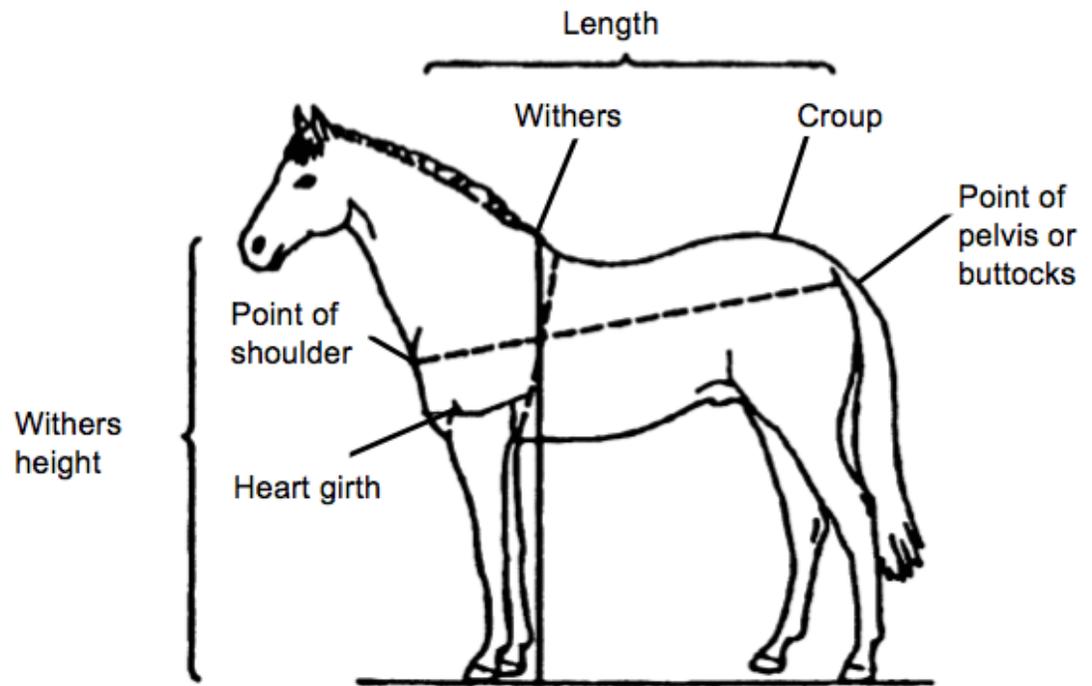
have a number of origins, but are complicated by too rapid growth. Again, bimonthly or even weekly monitoring of the growing horses' weights can help identify which horses are at risk of these and other problems, and may need to have their feed intake reduced to slow their weight gain. Since it has been found that skeletal growth is difficult to slow, there should be little concern that the horse's eventual size can be compromised. It is only the control of too rapid weight gain (i.e. fat) that is the reason for monitoring each individual's growth curve.

Guess your weight?

While the old adage "the eye of the master fattens the ox," has been repeated since antiquity, recent surveys have found that even experienced horsemen routinely underestimate body weight. Two groups, one made up of 77 horsemen (average experience was 15 years) and the other of 62 equine practitioners, were asked to participate in a University of Florida study. Only 10% of the veterinarians and 12% of the horse owners used a scale to actually weigh their horses. Although some in each group said that they did use a weight tape (21% of the veterinarians, 53% of the horsemen), the majority of the veterinarians (96%) and horse men (68%) said they primarily made a 'guesstimate' of the horses' weight. Each group was then asked to estimate the weight of 5 mature horses, which had been weighed just before the test. Over 85% of both groups underestimated all the horses' weights, by an average of 150 to 185 pounds. When these data were analyzed, it was found that there was no correlation between the accuracy of the estimations and length of horseman's experience. This led the researchers to conclude that underestimation of body weight was a common error among both lay horsemen and equine veterinarians.

Scales don't lie

Fortunately, even the most inexperienced horseman can use several methods to determine how much their horses weigh. The most accurate



Where to measure girth and length

method is to use a large portable scale. Such scales are now available which are relatively light (150 pounds), and can be easily loaded by two people into the bed of a light pickup for transit. Since the scales are low to the ground (less than 5 inches), horses of all ages soon learn to walk on, while a digital readout gives their weight in either pounds or kilograms. The process takes only minutes per horse, and yields a great deal of information, particularly if the data are then compared to the preceding weights, for both the individual and for the group. Several computer programs can then take these data and graph the growth curve of the individual, as well as calculate daily gain (or loss) since the last weighing.

Unfortunately scales are pricey (\$3,500 or more) and so are beyond the average farm's budget. However, some feed companies have purchased scales and provide a weighing service for their customers' horses at a nominal fee per head. Weights are recorded and it becomes easier to

keep track of growth rates for the herd. Problem horses can be identified, and in consultation with the manager or owner, a strategy to manage the problem can be developed.

Tale of the weight tape

But there are alternatives to the purchase of a scale. The simplest is the weight tape. It has been long known that there is a correlation between girth measurement and weight. Many horses have had their girth measured and then had this information compared to their actual weight as determined on a scale. The averages of all these measurements were compared with the actual weights. Formulas were developed that translated a girth measurement into an approximate weight. Weight tapes are not marked in inches, but in pounds, thus eliminating the calculation step. And in many instances these weight tapes can provide a reasonable assessment of weight change. However, because they only measure one parameter—girth—weight tapes alone are not the most accurate alternative to weighing. Weight tapes can be as much as 5% or more off (50 pounds per 1,000 pounds), and thus are not accurate enough for small, but potentially important, weight changes. There is a certain amount of error possible depending on who is taking the measurements, and whether they are taken in a consistent manner.

Also, horses can be long backed or short coupled, and while they might share the same heart girth, the horse that stood over more ground could be assumed to weigh more. Similarly, the amount of flesh a horse is carrying can significantly affect any weight estimation. Measuring both heart girth and length will improve the accuracy of weight estimation.

A better weight

To help eliminate some of these inaccuracies, researchers at Texas A&M and elsewhere have developed descriptions to contrast the differences in horse's relative fatness or thinness graded on a scale of 1 to 9 (or in some instances 0-5). Such condition scoring gives the observer a framework by which horses can be compared. Although not objective, this is an improvement over the pure guesstimate. A combination of girth measurement, overall length and conditions score is the most accurate alternative to actual weighing. Although it may take some time for an

individual to be able to develop a systematic approach that is reproducible from one day to the next, this expertise will come if care is taken. Similarly, familiarity with the condition score will increase the accuracy of the weight estimates, and will improve the horseman's eye, which will reap benefits in other areas of husbandry as well.

The condition score

Absolute weight is not the only important criterion by which to evaluate the horse. Appearance and condition have always been used as indicators of fitness and health. This condition score system was developed in an attempt to standardize these descriptions, to allow for easier comparison and communication.

Putting the Brakes on Horse Weight Gain

Every horse owner has seen, at one time or another, the telltale signs of a thin horse: the disproportionately skinny neck, the protruding spine, the row of ribs, and the jutting hipbones. Thanks in part to advances made in feeding management, veterinary care, parasite control, and dentistry, compassionate horse owners can fatten horses safely and with relative ease. But when is it time to switch from a "weight-gain" diet to a "maintenance" diet? How can the diet be altered in the safest way possible for the horse?

With a little forethought on the part of its owner, a horse can move seamlessly from one diet to another without problems.

The goal

Most equine veterinarians and nutritionists use a body condition score-card to determine a horse's need to lose or gain weight. Scores range from 1 to 9, with 1 denoting extreme emaciation and 9 signifying obesity.

Most healthy horses have body condition scores between 4 and 6. This is not to say, however, that healthy horses cannot be thinner or heavier, and certain life stages may prompt scores outside this range. Examples of horses that are typically thinner than ideal include athletes that are

frequently asked to perform strenuous exercise, aged broodmares in the first two to four months of lactation, and horses recovering from illness. In such cases, horses are usually being offered full, nutritionally balanced diets yet are still unable to maintain appropriate body condition.

In these cases, the horses are incapable of consuming sufficient calories to fuel both weight gain and work, regardless of whether the work involved is actual performance, growth, lactation, or tissue repair. Yet once the workload is reduced (less strenuous exercise or weaning of a foal, for example), weight gain can be accomplished.

For most horses, a body condition score of 5 seems to be most appropriate. Horses in this state have sufficient fat cover so that ribs cannot be seen but can be felt. There is also no excessive fat deposition around the shoulders, over the withers and topline, or around the top of the tail. As researchers dig deeper into the metabolic issues that influence body weight, it is becoming obvious that maintaining horses in moderate body condition may be much healthier than keeping them even slightly overweight.

Switching diets

Diets formulated for weight gain often contain high-quality forages and concentrates that are rich in energy. As with any species, horses gain weight when more calories are consumed than are used. Once a horse has reached its target weight (and a condition score of near 5), it is time to rethink his ration, as a continuation of the "weight-gain" diet may eventually lead to obesity.

The first components of a weight-gain diet that should be removed are any high-calorie supplements. Feed additives rich in fat such as vegetable oils (corn oil, canola oil) and rice bran are widely used to pack on pounds, but as the horse reaches an ideal weight, their inclusion in the diet should gradually be tapered off. The next consideration is the concentrate, as it delivers more calories per pound than forage. Owners should carefully read the feeding instructions that appear on the feed bag or the tag that is sewn onto the bag. In order to ensure the horse

Body Condition Score



0-Very poor

- ✓ Very sunken rump
- ✓ Deep cavity under tail
- ✓ Skin tight over bones
- ✓ Very prominent backbone and pelvis
- ✓ Marked ewe back



1-Poor

- ✓ Sunken rump
- ✓ Cavity under tail
- ✓ Ribs easily visible
- ✓ Prominent backbone and croup
- ✓ Ewe neck-narrow and slack



2-Moderate

- ✓ Flat rump either side backbone
- ✓ Ribs just visible
- ✓ Narrow but firm neck
- ✓ Backbone well covered



3-Good

- ✓ Rounded rmp
- ✓ Ribs just covered but easily felt
- ✓ No, crest, firm back



4-Fat

- ✓ Rump well rounded
- ✓ Gutter along back
- ✓ Ribs and pelvis hard to feel
- ✓ Slight crest



5-Obese

- ✓ Very bulging rump
- ✓ Deep gutter along back
- ✓ Ribs buried
- ✓ Marked crest
- ✓ Fold and lumps of fat

receives optimal vitamin and mineral nutrition, he should consume at least the minimal amount indicated.

For instance, if an owner is feeding a formula designed for mature horses in light to moderate work and the feeding instructions state explicitly that the horse should be fed six to eight pounds per day, the absolute minimal that can be fed is six pounds without risking nutritional deficiencies. If less than six pounds are given per day, a well-formulated vitamin and mineral supplement can be added to make up for nutrient deficiencies caused by a low grain intake. If this horse were eating eight pounds of the grain in order to gain weight, reducing his consumption by one-half to one pound per day (accomplished over the course of several days) should lead to a slower rate of gain, or even equilibrium.

At this stage, body condition evaluation becomes a waiting game, as changes in weight often take several weeks. If the horse maintains his body condition on this new amount of feed for several weeks, further reduction by another half pound per day is warranted. If more weeks elapse and he still remains in desirable body condition, another reduction can be made. As mentioned previously, if owners are feeding less than the recommended amount, feed manufacturers can suggest a low-calorie feed that will supply the horse the protein, vitamins, and minerals he requires.

The final part of the diet up for review is the forage. For most horses, a combination of hay and pasture make up the forage allotment. It is not unusual for horsemen to add alfalfa to a diet when weight gain is desired, because the legume contains more calories per pound than grass hays. However, once moderate body condition is achieved, the alfalfa can be removed from the diet and good-quality grass hay can be fed. If alfalfa cubes were supplemented, these can be reduced slowly until they are no longer fed at all.

Depending on the situation, horses might have access to lush pasture. As long as the pasture is introduced slowly (increasing by half-hour increments per day, to be safe), calorie-rich pasture grasses can do much to increase body weight. As the horse reaches a desirable body condi-

tion, grazing might have to be limited if he continues to gain weight. Many easy-keepers have been known to get extremely fat on pasture alone, and this might also occur in horses that have been on an increasing plane of nutrition. Reducing grazing time or using a grazing muzzle might be appropriate for a horse that tends to get too fat on pasture. If the pasture provides little in the way of nutrition, then most calories must be derived from a ration of concentrate and good-quality hay.

Make changes slowly

All changes made to a horse's diet should be accomplished over a period of several days. The horse's gastrointestinal tract is a fragile organ system. If abrupt changes are made, health problems such as diarrhea, colic, or laminitis may ensue. A step-by-step approach to instituting changes in a diet will help horse owners keep their formerly underweight charges in moderate body condition.

If a particular nutrition question or problem arises, horsemen should have on hand the number of a reputable equine nutritionist for consultation. A veterinarian might be able to assist with some nutrition-related questions as well.

Equine Metabolic Syndrome: More Unknowns than Knowns

Horsemen have known for decades that obesity is an unhealthy condition in horses. In olden times, overweight horses were not common because horses were required to toil all day in front of a plow or behind a herd of cattle.

Their reward for a day's work was suitable feed, but not enough to become too fleshy. Many wore the badges of hard work, their hides scarred from ill-fitting harnesses or overzealous spurring. In certain regions of the country, obesity was frowned upon. Peddled by unscrupulous traders of the day, hog-fat, slick horses were often eyed with suspicion at weekly trading fairs. A fat horse was suspected of being temperamental, lame, or otherwise inapt, as sound horses of honest disposition were nearly always employed.

In this age, obese horses are more the rule rather than the exception.

Despite admonitions by veterinarians and nutritionists to keep horses in moderate body weight, well meaning horse owners ply their charges with high-calorie concentrates and hay. More times than not, the result is a plump middle-aged horse that is anything but healthy or athletic. He gasps for breath when subjected to mild exercise, and his limbs bear the brunt of unnecessary pounds.

Now, scientists have uncovered yet another reason to keep mature horses slim and conditioned: equine metabolic syndrome. Because it is a relatively novel discovery, scientists are just beginning to learn the intricacies of this disorder. At first, the veterinary sect could not agree on a suitable name. In the past, it has been commonly referred to as peripheral Cushing's syndrome, pseudo-Cushing's syndrome, hypothyroidism, and insulin resistance syndrome.

Less common names included omental Cushing's syndrome or central obesity. A mysterious-sounding moniker evolved as well, syndrome X. Eventually, researchers agreed on the terminology proposed by the World Health Organization to designate this condition: equine metabolic syndrome.

As the accurate diagnosis of equine metabolic syndrome becomes more widespread, researchers are learning more about the causes, signs, and treatments of the disorder.

Insulin Resistance: The Root

Equine metabolic syndrome is characterized foremost by insulin resistance, defined as a peculiar physiological response to the ingestion of foods that are eventually broken down to glucose or other sugar molecules. Abundant in certain feedstuffs commonly fed to horses, glucose causes a normal state of hyperglycemia or elevated sugar in the blood. Hyperglycemia prompts the release of insulin from the pancreas, which encourages the removal of glucose from the bloodstream by fat or skeletal muscle cells. Once in the cells, glucose can be put to work immediately to fuel exercise or growth or stored as glycogen or fat for later use. Insulin resistance implies that either the central tissue (liver) or the peripheral tissues (the skeletal muscle or the fat cells) are relatively in-

sensitive to the action of insulin or that the quantity of insulin released by the pancreas in response to hyperglycemia is diminished. This leaves glucose circulating in the blood. Because glucose levels do not drop, the pancreas continues to discharge insulin, leading to elevated concentrations of insulin in the bloodstream, a condition known as hyperinsulinemia.

What predisposes a horse to insulin resistance? Little is known on this front but responsibility might rest on genetic, gestational, and environmental factors. In humans, causative factors are well documented: aging, pregnancy, smoking, reduced physical activity, and obesity. In genetically susceptible humans, glucose intolerance can lead to non-insulin-dependent diabetes mellitus.

In the equine model, obesity appears to be related to the onset of metabolic syndrome. One suggested cause is that certain fat cells produce cortisol, among other hormones, which interferes with the ability of insulin to move the glucose into cells. Because obese horses have more fat cells, more cortisol is produced and there is greater interference with insulin. This explains why weight reduction is effective in increasing insulin sensitivity.

Not all fat horses are insulin resistant. Current beliefs hold that horses whose fat cells produce high levels of leptin as well as cortisol are the ones prone to insulin resistance. Leptin is not believed to cause insulin resistance but is found to be higher in horses that are insulin resistant.

Age and diet may be directly related to the development of equine metabolic syndrome. Age is thought to decrease the horse's sensitivity to insulin. Meals high in starch and sugar cause significant spikes in blood glucose and insulin, and years of consuming such meals might lead to insulin resistance.

Obesity-Associated Laminitis

An overwhelming clinical sign of equine metabolic syndrome is laminitis, but not the disabling, painful disease related to gastrointestinal failure and endotoxemic insults. The laminitis exhibited by these obese,

middle-aged horses tends to be mild. On occasion, so minimal are the laminitic episodes that knowledgeable, conscientious horse owners cannot vouch definitively for any clinical signs of lameness. The hard evidence speaks a different tale, however.

Abnormal hoof growth occurs. Dropped soles, unusual growth lines, and separation of the hoof at the white line are frequently observed. More damning, however, is the shifting of the coffin bone within the hoof capsule, which is obvious upon radiography.

But what causes the laminitis? Over the years, the root of laminitis in obese mature horses has been attributed to (1) endocrine disorders, namely hypothyroidism; (2) aggravation of a preexisting laminitis caused by endotoxemia (overconsumption of grain, for example); and (3) mechanical inadequacy due to the stress of excessive weight on soft tissues of the leg.

Regardless of the cause, laminitis is the result of changed circulation to the laminae, the interconnected layers of tissue that insure the integrity of the hoof. In obese horses, researchers believe that insulin insensitivity and vascular spasms may incite changes in the endothelial tissue of the laminae. On a physiological level, this concurs with the circulation problems observed in human patients with non insulin-resistant diabetes mellitus. Despite well-founded theories, a definitive cause for obesity-associated laminitis remains elusive.

Diagnosis

At this time, diagnosis of equine metabolic syndrome is based on description and physical characteristics, results of glucose-tolerance testing, and elimination of similar conditions.

Description and physical characteristics Affected horses are usually between the ages of eight and 18, though numerous patients have fallen outside this range. Horses and ponies of nearly all breeds have been diagnosed, though Morgans, Peruvian Pasos, Paso Finos, domesticated Spanish Mustangs, and warmbloods appear to be especially predisposed to the syndrome. As a group, ponies tend to become overweight

more readily than horses and are often inclined to suffer from laminitis.

What's more telling than either age or breed of the patient is distribution of exterior body fat. Areas of unusual fat accumulation include the top of the neck (commonly called the crest), over the shoulders, and the rump (including deposits over the croup and just above the tailhead). Significant fat sometimes settles in the sheaths of geldings, so much so that they may appear swollen.

Affected broodmares show unusual estrous cycling, which makes them incredibly difficult to get pregnant. Anecdotal evidence by owners is also instrumental in diagnosing equine metabolic disease. Owners frequently describe their horses as easy keepers, finding it virtually impossible to reduce the weight of these horses by calorie restriction alone. Many report that high-calorie feeds such as grain are not being fed.

Results of glucose-intolerance testing Veterinarians often perform an oral or intravenous glucose tolerance test on horses they suspect to be insulin resistant. Following the administration of glucose, insulin and glucose responses are measured and compared against the responses of normal horses. This test should be performed on a fasted animal so glucose from a recent meal does not shade the results of the assessment.

According to some equine veterinarians, the only truly effective method of diagnosing insulin resistance is the "euglycemic hyperinsulinemic clamp." The procedure is complicated, time-consuming, and can be expensive. Because of these limitations, veterinarians typically diagnose on clinical signs alone.

Elimination of similar conditions In the past, veterinarians often misdiagnosed equine metabolic syndrome, suggesting hypothyroidism or Cushing's syndrome instead.

In humans, hypothyroidism occurs when the thyroid gland fails to produce sufficient thyroid hormone, leading to clinical manifestations of thyroid insufficiency such as low metabolic rate and tendency to gain

weight. In horses, neither obesity nor laminitis develops in mature horses from which the thyroid gland has been removed. Thyroid stimulation tests, designed to gauge thyroid function, fail to identify hypothyroidism. Additionally, the thyroid glands from horses affected with equine metabolic syndrome appear normal. Hence, it is clear that the combination of obesity and laminitis are not always ramifications of inadequate thyroid hormone production.

Also mistaken for equine metabolic disease is Cushing's syndrome. This endocrine disorder involves dysfunction of the pituitary pars intermedia. Using tests most commonly administered to verify Cushing's syndrome (including the dexamethasone suppression test), veterinarians yielded negative results on these obese, laminitic horses. The pituitary glands of these horses also revealed no pathology, leading researchers to believe that Cushing's syndrome was not to be blamed for the signs. Misdiagnosis of Cushing's syndrome is understandable as a few of the clinical symptoms are shared by individuals with equine metabolic syndrome: abnormal distribution of fat, elevated circulating insulin, glucose intolerance, predisposition to laminitis, and infertility. Other clinical features of Cushing's are not normally documented in horses suffering from metabolic syndrome, notably an excessively shaggy coat that fails to shed and increased drinking and urination.

Prevention and Treatment

Diet Too many horses eat too many groceries; it's that simple. The objective of all equine feeding programs should be straightforward: provide sufficient feed to satisfy nutrient requirements for growth, maintenance, or work while maintaining optimal body condition. Optimal should not be confused with maximal or obese. Optimal body condition can be defined as a nutritional state in which the animal's ribs can be felt with gentle palpation but cannot be seen.

Horses become overweight because they consume too many calories in relation to the work asked of them. Those that perform mild to moderate work may need little more than good-quality grass hay or pasture and a complete vitamin and mineral supplement, particularly if they are good keepers (able to maintain weight easily). This ration, though sim-

ple, is considered low in starch, one important step in dodging equine metabolic syndrome.

Mature horses diagnosed with metabolic syndrome should not be given grain, grain mixes with molasses, or unlimited access to pasture. A balancer pellet (concentrated protein, minerals, and vitamins) can be given to provide essential nutrients without unwanted carbohydrates. If a horse requires additional energy, non-starch alternatives such as corn oil or rice bran can be fed.

In young growing horses, feeding grain in large quantities should be discouraged. Horses that are overfed as youngsters are the very ones that are likely to be obese in midlife and become prone to laminitis. Termed "easy keepers," these horses harbor disproportionate quantities of fat within their abdomens, which in turn makes them more susceptible to metabolic syndrome.

Exercise In addition to changes in diet, an exercise program should be implemented to slim down overweight horses or prevent them from becoming too heavy. Exercise can be provided in numerous ways: riding, driving, ponying, round pen work, hand walking, longeing, or long-lining. Not only does exercise ward off obesity, research has shown that it improves insulin sensitivity in horses and ponies. A combination of diet changes and increased exercise is the most effective way to increase insulin sensitivity. Exercise programs must be designed with the individual in mind. A realistic assessment of the horse must be made and an appropriate exercise regime chalked out, especially with horses that are old, unfit, or of questionable soundness. If a horse has suffered a mild bout of laminitis, consultation with a veterinarian and farrier is warranted before any exercise is started.

Medication No medication is suitable for treating metabolic syndrome. The two most commonly used medications for the management of Cushing's syndrome—pergolide and cyproheptadine— have proven ineffective for treatment of metabolic syndrome. Both medications have a tendency to limit pancreatic insulin secretion, which only adds to the problem. Equine metabolic syndrome has emerged on the veterinary

scene as a health threat to middle-aged, obese horses.

Though deep understanding of the disease has not occurred, a diet and near-daily exercise program that emphasizes moderate body condition may be just enough to elude this dangerous disease.

Insulin Resistance in Horses

Over the past several years, equine nutritionists and veterinarians have begun to understand better the puzzling condition known as insulin resistance. Weight gain is often seen as part of this syndrome.

As more is learned about this syndrome, quick diagnosis and effective management techniques have developed. Because of the complexity of insulin resistance, the nutritionists at Kentucky Equine Research (KER) have formulated answers to some frequently asked questions. As you will learn, insulin resistance is a syndrome that can be managed with the help of your veterinarian and an equine nutritionist.

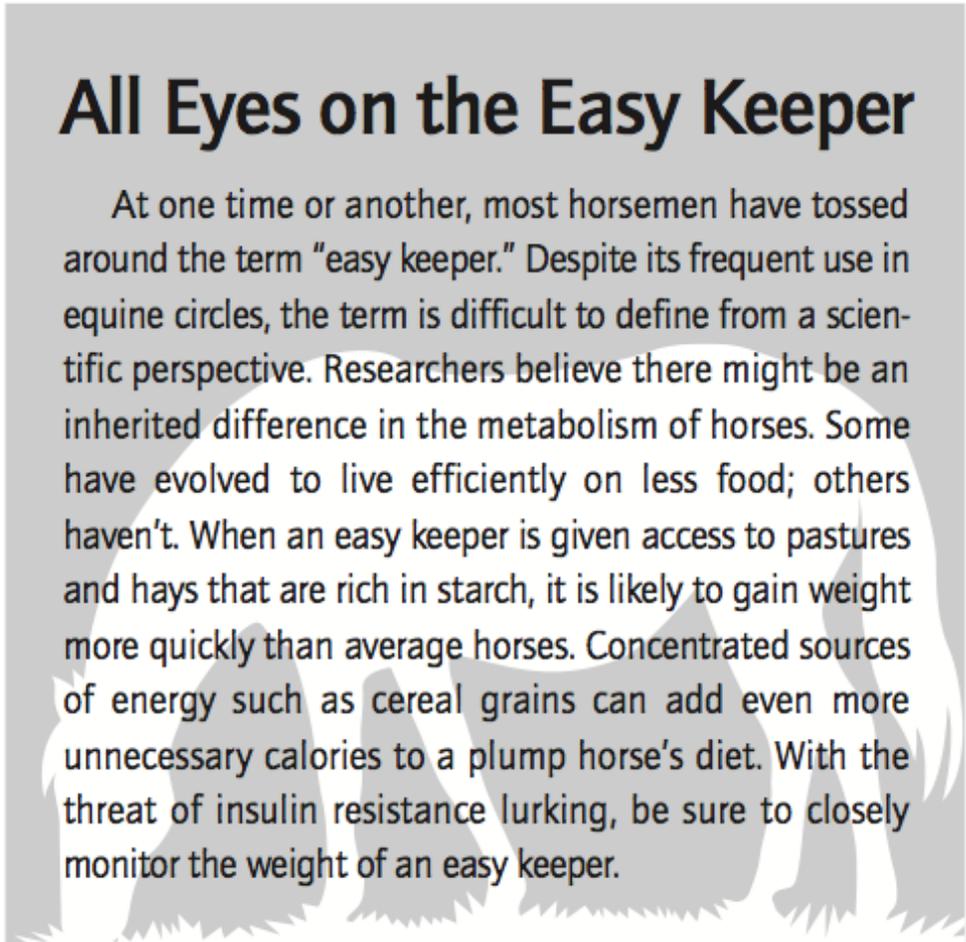
What is insulin resistance?

Simply put, insulin resistance is the failure of body tissues to respond as expected to the hormone insulin.

Here's a little more background: Glucose is the primary energy source by which most cells in the body are powered. As blood levels of glucose rise, such as after a meal, the pancreas releases insulin. The mechanisms that allow different cells to absorb glucose from the bloodstream are complicated and highly individual. Certain cells, like those in muscle and fat, are incredibly dependent on insulin to usher in glucose to fuel body processes.

Insulin resistance occurs when the cells become less sensitive to insulin, thereby limiting the uptake of glucose. When this occurs, more and more insulin is required to move glucose out of the bloodstream and into cells. When insulin resistance is severe enough, glucose accumulates in the blood, thus limiting the availability of energy to cells.

All Eyes on the Easy Keeper



At one time or another, most horsemen have tossed around the term “easy keeper.” Despite its frequent use in equine circles, the term is difficult to define from a scientific perspective. Researchers believe there might be an inherited difference in the metabolism of horses. Some have evolved to live efficiently on less food; others haven't. When an easy keeper is given access to pastures and hays that are rich in starch, it is likely to gain weight more quickly than average horses. Concentrated sources of energy such as cereal grains can add even more unnecessary calories to a plump horse's diet. With the threat of insulin resistance lurking, be sure to closely monitor the weight of an easy keeper.

What are the signs of insulin resistance?

If a horse shows any of the following signs, he might be at risk for developing or having insulin resistance:

- Laminitis of uncertain origin
- Rapid and/or continuous weight gain, especially if placed on diets that could not sustain an average horse
- Unusual fat deposits on the crest, shoulders, withers, croup, and base of tail, even if the horse is trim in other areas
- Abnormally rapid weight gain following a reduction or cessation of an exercise program

How is a horse definitively diagnosed with insulin resistance?

A veterinarian can draw a blood sample and measure the amount of insulin present. If the results of this initial screening test indicate hyperinsulinemia, a veterinarian may choose to perform a battery of more specific tests involving oral and intravenous glucose administration, and measurement of responses over several hours.

What can be done for a horse that is diagnosed with insulin resistance?

Controlling the effects of insulin resistance is possible in many cases. If laminitis is not an issue, daily exercise is a good starting point. Because many affected horses are overweight and out of shape, take the time to slowly build the horse's condition. The goal is for the horse to be exercised 30 minutes each day, primarily at the trot and canter. Exercise does not have to come in the form of riding; longeing or ponying the horse is alternatives that offer the same benefits. The exercise will invariably help with weight loss. At the same time a schedule of suitable exercise is created, a review of the diet should also be performed.

What is an appropriate diet for a horse with insulin resistance?

Once a diagnosis has been made, a horse's diet might have to be overhauled to greatly reduce or eliminate nonstructural carbohydrates in the diet. Grains and high-sugar feeds should be cut completely from the diets of obese horses, as should hays that are high in sugars. Hay can be tested for nonstructural carbohydrate content to determine if it is appropriate for horses with insulin resistance. It is impossible to say which hay varieties are better for these horses, as sugar content depends largely on the environment in which the hay was grown and not necessarily on the forage's genetic potential. If the sugar content of hay is unknown, the hay can be soaked in hot water for 30 minutes or cold water for 60 minutes to make it more suitable for insulin-resistant horses. Soaking removes most of the sugar from the plant.

A base diet of low-sugar, good-quality hay is usually a safe place to begin. If additional fiber or a carrier for supplements is needed, beet pulp without molasses works well. Be especially careful when purchasing beet pulp, as some brands do not explicitly state on their packaging if

they contain molasses. If unsure, it's best to contact the manufacturer for details. Concentrates are sometimes needed to maintain body condition once an exercise program has been established. If this is the case, a feed with a low glycemic index is necessary. These products are generally called "low-starch" feeds in the marketplace. Some feeds that are advertised as having minimal starch could contain much more starch than others making the same claim. Therefore, it's a good idea to consult with your feed manufacturer for information on the best feed for your horse.

Whether or not horses diagnosed with insulin resistance should have access to pasture is probably a decision best made by a team consisting of a veterinarian, an equine nutritionist, and the horse owner. Some horses with a history of laminitis are restricted from pasture entirely, even in winter. Some reports suggest that dead or dormant grasses, such as those found in pastures during the winter, may contain sufficient nonstructural carbohydrates to be problematic. If the professionals give the green light for pasture, you still might want to consider a grazing muzzle so that intake is curbed somewhat.

Caught in its early stages, insulin resistance can be managed quite easily by daily exercise and a carefully formulated diet. For those horses with advanced symptoms of the syndrome including laminitis, the appropriate course of treatment might be more convoluted. With the assistance of a veterinarian and an equine nutritionist, the likelihood of horses returning to a useful life is possible.

Researchers continue to unravel the mysteries of insulin resistance. Though the causes of the syndrome remain elusive, proper management seems to keep horses free of the long-term effects of insulin resistance.