

DRESSAGE, EVENTING, HUNTERS, JUMPERS

VOL. 8

PRACTICAL HORSEMAN EXTRA

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Round

5-Point
Checklist for
Selecting Hay

Michael Andrade
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TIME FOR THE HOUR GLASS

A creative jumping exercise for tuning up your position and track-riding skills

By Michael Dowling ■ Photos by Amy K. Dragoo

Looking for a fun, easy way to strengthen your position and improve your jumping rounds? My hourglass exercise is simple to set up and beneficial for any riders with at least some experience cantering small courses and jumping bounces (no-stride combinations). Shaped like an hourglass, with a double bounce in the middle and bending lines to four single verticals in the corners, it will develop and strengthen your basic position and make you a more effective, reactive rider. For example, when your horse jumps into a line on a too-forward stride, you'll be better at correcting that quickly on the back side of the jump.

The hourglass will also hone your skills for track riding, measuring stride length and balancing your horse. At the same time, it will enhance his jumping technique, tightening his front end and strengthening his hind end while improving his straightness, adjustability and rideability between the fences.

For collegiate athletes, who essentially compete at shows as catch riders, this exercise will improve your ability to build a rapport with unfamiliar horses in a short amount of time. You'll learn how to develop the trust and confidence essential for successfully bonding with new horses.

One of the best qualities of this exercise is that it challenges riders of different levels in different ways. As I walk you through the steps, I'll point out the questions it poses for Novice, Intermediate and Open riders (the Intercollegiate Horse Shows Association divisions for riders jumping 2-foot



This fun, simple-to-set-up exercise strengthens your (and your horse's) jumping technique and improves your track-riding, striding and balancing skills.

A professor of equine studies at Centenary University in Hackettstown, New Jersey, **Michael Dowling** has co-coached the university's IHSA team to three national team championships, three reserve championships and four Cacchione Cup wins. He also runs a private show stable, Windham Hill, with Michael Myers in Far Hills, New Jersey, and Florida, helping horses and riders to qualify for and compete in regional, zone and national hunter and equitation finals. Long active in all aspects of the equestrian industry, Michael is a member of the Gladstone Equestrian Association's hunter/jumper committee. *Practical Horseman* thanks Lauren Reid for generously allowing her horse, Norway, to be used for the photos in this article.

Know Your Different Seats

You have four different seat options in hunt seat equitation: full seat, half-seat, light seat and driving seat. For this exercise, you need to be very familiar with the first three:



Full seat – This is when your entire seat (seat bones and buttocks) are in the saddle, providing maximum connection to your horse's back. It offers the most balance and control, which can be especially useful for rollback turns, lead changes, etc.

Light seat – In this position, which is between the full seat and half-seat, your seat bones make light contact with the saddle, but the rest of your backside is still clear of it. This is basically the same position you have during the sitting phase of the posting trot. While offering you some balance and support, it still allows your horse to move freely forward. Much of your course riding will be done in this position.



Half-seat, also known as jumping or two-point position – Your weight is balanced on just the two points of contact between your legs and the horse. We use this seat to follow the horse's motion—for example, over a jump—and to encourage him to utilize his body as freely as possible.

to 2-foot-3, 2-foot-6 to 2-foot-9, and 2-foot-9 to 3-foot, respectively).

Whatever your level, it's critical that you approach the exercise step by step, just as you would with any other gymnastic. Instead of planning to get through the entire lesson in a single day, break it down into easy-to-accomplish steps and confirm that you've achieved confidence and proficiency at each before moving on to the next one.

Also keep in mind that making progress is not about jumping big fences. You can achieve much more and also reduce the pounding on your horse's legs by practicing well-thought-out exercises over small jumps. For this hourglass exercise, I keep both the jump heights and the distances fairly conservative. This encourages horses and riders to focus on good technique rather than fall into the bad habit of galloping through the course and getting long and flat.

To set up, study the diagram on page 6. Build a double bounce out of three small crossrails in the middle of the arena on the centerline, separated from one another by about 10 feet. (You can adjust this distance to as short as 9½ feet if your horse has a very short stride or to as long as 12 feet if he has an especially long stride.) After the third crossrail, build a simple vertical 60 feet away on the diagonal to the left. Build another vertical at the same distance on the other diagonal to the right. Add ground lines on both sides of each vertical. I like to keep these verticals simple—no need to fill them with walls, flower boxes, etc.

If you are a Novice rider, this is all you'll need. If you're an Intermediate or Open rider, build two more verticals on the approach side of the crossrails, 60 feet away on the diagonals, so that you create a mirror image of the first two verticals. Set all of the fences so that they can be jumped safely in both directions—and be sure you have plenty of room on the far sides of the verticals to make comfortable turns between them. If your arena is too small to do this, eliminate one of the crossrails, converting the double bounce to a single bounce.

If you're a more advanced rider, you can change the crossrails to verticals. You could also build this gymnastic in an open field,

lengthening the lines between the double bounces and verticals to a standard five- or six-stride distance (72 or 84 feet, respectively).

For riders of all levels, I strongly recommend having a ground person on hand, not just for safety's sake, but also to reset poles and adjust the distances as necessary.

Warm-up

Before beginning the exercise, do a thorough warm-up on the flat, getting your horse in front of your leg (responding obediently to your leg aids). Include both longitudinal exercises—lengthening and shortening the stride in all three gaits—and lateral exercises—circles, serpentines, etc.—to supple your horse's entire body. If you're more advanced and familiar with leg-yield, turn on the haunches, shoulder-in and haunches-in, do a few of these in each direction.

As you warm up, review your four natural aids: legs, hands, seat and voice. Be sure to use all of them for both upward and downward transitions. (One of my favorite questions to ask students who say their horses aren't listening to them in downward transitions is: "Were you using all four of your natural aids—or just your reins?") Also practice the three seats you'll use during this exercise: full seat, half-seat and light seat. (For a more detailed explanation of these, read the "Know Your Different Seats." sidebar on page 4). Spend a little time on each seat in each gait.

Novice Riders

If you are a Novice rider cantering small courses proficiently, this exercise will improve your ability to stay with your horse's motion over fences without interfering with him in any way. You'll also learn how to reorganize after a fence in time to approach the next one straight and in control.

You'll ride only half of the hourglass pattern, but that will still give you plenty to do. In fact, it may take you more than one session to accomplish all the steps. That's fine! Always progress at your own pace. This exercise requires a strong base of support (a well-positioned lower leg and deep heel) and lots of core strength (strong abs and back muscles), so if you feel yourself begin to tire at any point, end on a good note and save the rest of the exercise for another day. In the meantime, add more two-point practice into your regular schooling sessions to build up your strength.

Set the crossrails about 2 feet high and the verticals between 2-foot and 2-foot-3. If your horse is green or has trouble with straightness, turn the two verticals into crossrails. If you have never jumped a double bounce before, take the poles out of the first crossrail for the beginning of the exercise, replacing them with a single ground pole about 9 feet from the next crossrail. After you've done the single bounce comfortably a few times, put the first crossrail back in.

Start by turning onto the centerline and approaching the crossrails in a posting trot. About 10 feet away from the first one, assume your light seat by lifting some of your weight up out of the saddle while still maintaining light contact with your seat bones. Check that your lower leg is securely positioned at

the girth with your heels directly below your hips and your weight down in your heels. Lift your eyes to a high spot in the distance—the top of a tall tree or, if you're indoors, the top of a window or other visible object.

As your horse takes off over the first crossrail, allow his motion to close your hip angle into a half-seat. Meanwhile, smoothly follow his motion with a long

crest release, pressing your hands down against his mane about halfway up his neck. No hands floating above the neck! Maintain this release through the double bounce while keeping your eye on your focal point and staying in your half-seat, letting your hip angle open and close with his motion. Concentrate on staying down in your legs and keeping your weight in your heels. This is very important. Don't be tempted to sit up or interrupt your rein release in between the crossrails. Wait for him to land all four feet on the ground after the final crossrail before sitting up and feeling the rein contact again.

At this point, it doesn't matter if he lands trotting or cantering. Either way, keep him straight on the centerline while you reorganize and reestablish your own balance. Then drop your weight in your heels and seat, get very tall in your upper body and use all four natural aids to ask him to come smoothly down to a halt. Ideally, the halt should be straight on the centerline, right between the two verticals, but don't worry if you don't get that exactly right the first time. It's more important that you and your horse stay relaxed and positive from beginning to end.

Ask him to hold the halt for 4 to 6 seconds, just as you would for an equitation test. Then move forward again into the trot and make a wide, sweeping turn back to the centerline so that you approach the bounces in the opposite direction. Ride through them just as you did the other way, asking him to come down to a halt on the straight line again afterward.

Repeat this a few times until you feel confident over the bounces and your horse is responding obediently to your aids. It's essential that you establish this rideability on the back side of the fences before moving on to the next step.

Now you're ready to add one of the verticals. Approach the crossrails in the same way as before, only this time, as you ride through them, turn your focus to the left-hand vertical. After your horse lands from the final crossrail, return to your light seat, lift your upper body tall and stretch your heels downward. Then follow a gently bending track to the center of the vertical. In the show ring, this 60-foot distance would typically ride in four strides, but because the jumps are low and the bounces tend to have a compressing, buoyant effect on horses' canters, this should ride in a quiet five strides.

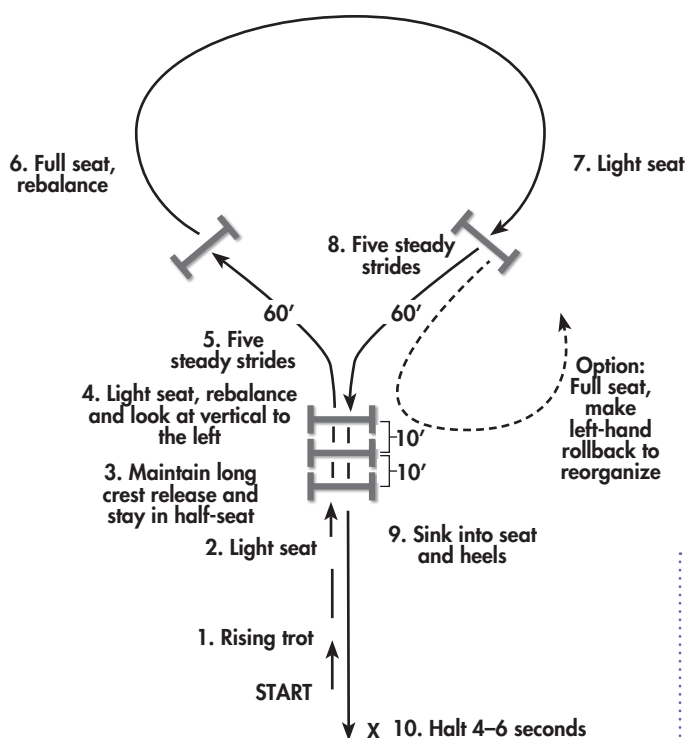
Over the vertical, apply your crest release and go into and out



TIP

If you have trouble fitting in the five strides, stay more on the outside track (ride a wider curve between the bounces and vertical) to make more room.

Starting Out



You'll ride only half of the hourglass pattern in this first exercise and it may take you more than one session to accomplish all the steps.

of your half-seat slowly and smoothly—rather than jerking abruptly into and out of it. Again, allow your horse to complete his jump before sitting up. Then drop the weight into your heels and seat and use your legs, weight and voice in conjunction with your arms and hands to ask him to halt straight on the diagonal track before you get to the corner. This will reinforce the earlier lesson of halting after the double bounce, reminding him to always land and wait for your next signal. Don't worry about what lead he lands on at this stage. Just try to maintain it until you ask for the halt—in other words, try not to let him anticipate the corner and swap leads automatically. This, too, is good prep for equitation tests.

Repeat this a few times until you can maintain a steady rhythm from the bounces to the vertical with five strides of approximately the same length. If you have trouble fitting in the five strides, stay more on the outside track (ride a wider curve between the bounces and vertical) to make more room.

If you're still not managing the five, remove all of the poles from the crossrails and vertical. Then place one ground pole between the standards of the vertical and one between the standards of the third crossrail. Practice cantering over these poles, riding as curved a bending line as necessary to produce five—or even six—strides. When that's going well, replace the jumps and ride the line again. Don't be afraid to circle whenever you feel your horse rushing. He must be rideable before continuing.



Centenary University graduate Michael Andrade turns Norway onto the centerline in a forward, active posting trot. About 10 feet away from the first crossrail, he stops posting and settles into his light seat. With his eyes up, he's careful not to tip his upper body forward toward the jump.

Once you are competently navigating the bounces, vertical and halt, prepare to ride the same exercise without the halt, continuing through the turn instead. To reorganize and balance your horse properly for the turn, sink back into your full seat after the vertical. If your horse landed on the left lead and is properly balanced and educated, he should do a flying change. If he's not balanced or is green, do a simple change of lead through the trot. Take your time to organize and do it well. Slow down to trot, take a deep breath, then ask him to go forward on the right lead. In the intercollegiate world, simple changes are perfectly acceptable—so long as you do them correctly.

Keep the rhythm consistent around the turn, using plenty of space to ride a nice smooth track. If your horse feels balanced coming out of the turn, go to your light seat and aim for the center of the other vertical. If he doesn't feel balanced or starts to rush at any point in the exercise, make a circle. Remember, the goal is to do each part of the exercise in balance and control.

After the second vertical, if your horse doesn't feel rideable enough to continue on to the bounces, drop into your full seat and make a left-hand rollback turn to the rail. Repeat this a few times to teach him not to anticipate the next part of the exercise.

When you feel comfortable and in control after the second vertical, continue cantering on a bending line back to the bounces. As you did before, sit up tall in your light seat and ask for five steady strides. At this point, your horse, having figured out the exercise, might make a beeline for the bounces, trying to get to them in four strides. Be ready for this. Drop your weight in your heels and think of leaning a little away from the bounces. You might even need to ride a wider shape to fit in the five strides comfortably. This is a great lesson in effective equitation. It takes a lot of core strength and balance to create the right outcome.

After riding through the bounces, ask for another straight halt on the centerline before you reach the end of the arena. Then give your horse—and yourself—a pat for a job well done.



Because he is an experienced rider, Michael uses a shorter crest release than I'd expect a Novice rider to use. Even so, he's careful to keep his hands in place on the neck over all three crossrails so Norway can concentrate on doing his job.



After the bounces, Michael sinks his weight into the saddle and his heels, lifts tall in his upper body and uses all four natural aids to initiate a downward transition to halt.

Intermediate Riders

If you are an Intermediate rider, set up the entire hourglass exercise that you see in the diagram on page 8, with the fences at about 2-foot-6. Then follow all of the steps previously outlined. The slightly larger jumps will make the lines ride steadier than they did for the Novice riders. This means you must be even stronger in your position with a clear understanding of the track you need to ride to produce five even steps. Your rein length will be more important, too, for achieving the necessary control throughout the exercise.

Your eyes will also be more critical, as the jumps will feel like they come up quickly. Always be focused one step ahead of where you are, looking for the next obstacle and planning your track to it.

When you're competently riding through the bounces to the left vertical, around the turn to the other vertical and back over the bounces, instead of halting on the centerline, proceed on another five-stride left-hand bending line to the vertical on that diagonal. Then, just as you did on the other end of the ring, return to your full seat before the corner, reorganize and rebalance. Proceed in a steady rhythm around the turn, then come out of it in your light seat, aiming for the final vertical. Be patient in the approach to this jump, as you want to be ready to ask for yet another five quiet strides on the bending line back to the double bounces.

Again, your horse may want to pull a little as he heads into the bounces. Keep your eyes up to help your upper body stay tall. This, in turn, will improve your control of the pace. Remember to stay in your half-seat through both bounces. Then finish up with a nice straight halt on the centerline.

If at any point during the exercise you feel your horse losing his balance—getting too strong in the bridle or long and flat in his stride—execute a circle and reorganize. It's very important that he is balanced and prepared before you go on to the next obstacle.

Once you feel capable of holding your position consistently throughout the exercise, play with the striding a little. Practice riding the third line (the next-to-last line) from the bounces to



Norway responds obediently, coming smoothly down to the halt in between the two verticals. They hold the halt for 4 to 6 seconds.

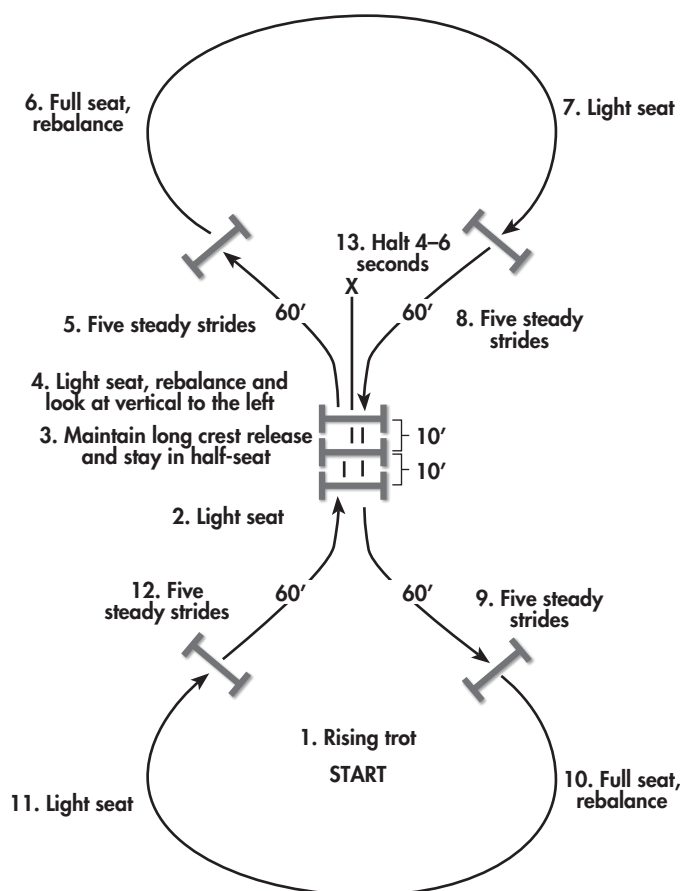
the vertical in a more direct four strides. Then ride the final (fourth) line in the steady five again. This is a test you'll often see in Open equitation classes where judges want to see that you can reestablish the steadier canter after going forward.

You can also mix things up by reversing the direction now and then, following the bending line to the right from the double bounces to the right-hand vertical rather than aiming for the left-hand vertical. This would put you on track to make a left turn to the other vertical, followed by another bending line to the right back to the bounces. Just be sure to plan your track ahead of time and lift your upper body tall as you ride each line.

▶▶ TIP

If at any point during the exercise you feel your horse losing his balance—getting too strong in the bridle or long and flat in his stride—execute a circle and reorganize.

The Complete Hourglass



Shaped like an hourglass, with a double bounce in the middle and bending lines to four single verticals in the corners, this exercise will develop and strengthen your basic position and make you a more effective, reactive rider.



Now, we change the crossrails to verticals and lengthen the distances between them by about a foot so Michael can approach the double bounce at the canter. He rides through it the same way as before, pressing his hands on the neck and allowing Norway's motion to open and close his hips.



This time after landing from the final bounce, he drops into his light seat and canters along the bending line to the left-hand vertical. His quiet position and hands show that he's ridden a good track to fit in the steady five strides comfortably.

Open/Advanced Riders

If you're an Open rider, you'll enjoy all the benefits of this exercise that the Novice and Intermediate riders enjoyed plus a few more. With the jumps just a little bit higher—between about 2-foot-9 and 3-foot but no higher than that—the quiet five-stride lines will require even more core strength and track precision. At this level, rather than trotting into the double bounces, you can canter in. If you decide to do this, lengthen the distances between the bounce jumps by about a foot.

Just as the other riders did, work through the exercise progressively. Incorporate your more advanced skills wherever necessary. For example, after first trotting over the double bounces and halting, instead of making a wide circle back to them, make a neat turn on the haunches.

Depending on your comfort level, use either a shorter crest release (pressing your hands about one-third of the way up the horse's neck) or automatic release (maintaining contact with the

horse's mouth in the air by following his head with your hands). Just be sure to apply it smoothly, always giving him the freedom to *finish* each jump.

Once you're riding through the entire exercise comfortably, challenge yourself by riding some lines in four strides and some in five. And be precise about what lead you want your horse to land on so the lines ride even more smoothly. For example, over the third crossrail, use an opening/leading left rein to encourage him to land on the left lead for the bending line to the vertical. Over the vertical, use an opening right rein to ask for the right lead in preparation for the turn. Over the next vertical, use an opening/leading left rein again to land on the left lead for the bending line back to the bounces.

When you ride the direct four-stride line between the bounces and vertical, use a bearing rein to keep his body straight: After you land from the third crossrail, move your outside hand (in this case, your right hand) toward your horse's neck, so that the



In the air over the vertical, he turns his head to plan the track he wants to ride to the next jump.



After landing, he drops into his full seat to reorganize. By the time he reaches the apex of the turn though, he's returned to his light seat and is looking ahead to ...



... the next vertical. In the air, he looks to the left toward the bounces, preparing to sit up tall on the bending line back to them.



Over the final bounce, Michael has gotten slightly ahead of the motion. He'll have to correct his balance quickly on landing to continue riding the second half of the hourglass. This is why this exercise is so good at improving techniques of riders of all levels.

rein presses against it. Be sure not to cross the withers with your hand. This bearing rein will help to keep him straight and prevent his shoulders from bulging out.

Similarly, use a bearing rein when you make the turns on the ends of the ring or when you throw in the occasional rollback turn. So, for example, when you make the right turn on the end of the ring between the two verticals, use a left bearing rein against the neck. Close your outside leg against your horse's side at the same time. This will keep his body straighter and better balanced so you can ride the track even more accurately.

If you're on an educated, experienced horse who tends to rush down the lines, ask him to compress his stride dramatically and ride an exaggerated bending track, producing six even strides. This will teach him to land and wait after the jumps.

You can also build the verticals into square oxers, being sure to keep ground lines on both sides so you can jump them safely in either direction.

Keep in mind as you ride through the exercise that your goal at this level is to have invisible aids. When you feel you're accomplishing this, cross your stirrups over your horse's withers and ride the exercise again. Focus on keeping your lower leg underneath your body—not slipping forward or backward—with your toes still slightly above your heels. Ride all of the same seats (light, half and full) in the same places that you did earlier. This is a great exercise to do when you're prepping for Indoors, Finals, IHSA Nationals, etc. If your position is strong enough, you'll still be able to pull it off with invisible aids. 🐾

▶▶ **TIP**

Once you're riding through the entire exercise comfortably, challenge yourself by riding some lines in four strides and some in five.

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he relies on forage as opposed to grain, the better off he'll be. Any old hay won't do, though. What's right for another horse may not be right for yours.

Focus on Type and Quality

The nutrition provided by hay depends on many factors, Dr. Martinson says. Here are three:

Type: You can feed grass hay, legume hay or a mix of the two types. Less often, certain small grains—oats, wheat, barley—are harvested for horse hay. Legume hays typically provide more protein and calcium than grass or small-grain hays. Sometimes they provide more energy (that is, calories), too. Within the broad categories your choice is likely to be limited by what's available locally. Coastal bermudagrass grows well in southern states, for example, but not in colder regions. You're more likely to find cool-season grass hays—timothy, tall fescue, brome grass or orchardgrass—in northern states. Alfalfa is the most widely available legume hay, followed by clover or, less often, lespedeza or birdsfoot trefoil.

Maturity: The growth stage of the forage at harvest affects hay quality regardless of type. Hay is easier to digest and more nutritious when it's harvested at the vegetative or pre-bloom stage, before the plants mature, flower and form seeds. Mature plants also make hay less palatable so more is likely to be wasted. With many cool-season grass hays, the first cutting of the season is most likely to contain seed heads, but it's the growth stage of the plants, not the cutting, that most affects quality.

Growing and harvest conditions: Both drought and excessive rain can affect hay quality. Severe drought may increase concentrations of contaminants in some types of hay. Hay that's soaked by rain while curing can lose nutrients and become less palatable.

Pre-bloom alfalfa, properly cured and stored, probably packs the biggest

SELECTING



Demystify that bale of hay to make sure your horse is getting the nutrition he needs.

By Elaine Pascoe with Krishona Martinson, PhD

How much thought do you give to the hay your horse eats? Maybe you view hay as a munchable snack that keeps him occupied or the salad course alongside his entrée of grain. The fact is that hay may be the most important part of his diet. The type and quality of hay your horse eats can make a big difference in his overall nutrition.

How can you be sure your horse gets what he needs from his hay? Read on for a five-point primer, assembled with help from Krishona Martinson, PhD, equine extension specialist and professor at the University of Minnesota. You'll find out how to choose the right hay for your horse.

Forage—mainly hay and pasture—keeps the horse's gut working normally, and it also is a major source of nutrients.

Equine nutritionists agree that forage, mainly hay and pasture, should make up most if not all of a horse's diet. The fiber in forage keeps his gut working normally, and forage is a major source of nutrients: energy, protein, vitamins and minerals. Beneficial bacteria in the horse's gut ferment forage fiber, breaking down materials like cellulose (the complex carbohydrate that makes up plant cell walls) into glucose and volatile fatty acids that provide fuel for body tissues.

Hay may not provide everything your horse needs, but the more



ABOVE: The growing and harvest conditions affect hay quality, especially if there is drought or excessive rain.

ABOVE RIGHT: Cool-season grass hay can be soaked to remove some of the nonstructural carbohydrates then fed to horses with insulin resistance, equine metabolic syndrome or chronic laminitis.

RIGHT: Legume hays, such as alfalfa, typically provide more protein and calcium than grass or small-grain hays.

nutritional punch of any hay—but that doesn't mean your horse should be getting it. He needs hay that fits his individual requirements based on his work level, body condition, stage of life and in some cases health issues. A few examples:

- A steady diet of all-legume hay may provide more calories, protein and calcium than the average adult horse in light to moderate work requires. Good quality grass hay or a grass-legume blend suits most mature horses.

- Mares in late pregnancy and lactation can use the extra nutrients provided by top-quality legume hay. So can thin horses that are being brought back to normal weight and aged horses that have trouble maintaining weight.

- Overweight horses and those who seem to get fat on air will do better on more mature hay. Mature hay has fewer calories so the horse can munch more of it without gaining weight. Most horses easily consume 2 percent of their body weight in hay daily so a small reduction in calorie content can make a big difference. Your other option is to limit the horse's hay to



keep him trim, but limiting hay too much can lead to digestive problems and vices like wood chewing.

- Mature grass-alfalfa mixed hay may be a good choice for horses with insulin resistance, equine metabolic syndrome or chronic laminitis, Dr. Martinson says. These horses have trouble processing the nonstructural carbohydrates (sugars and starches) in cool-season grasses and grains and they need a special diet. "Legumes and warm-season grasses tend to be lower in nonstructural carbohydrates compared to cool-season grasses," she says. If cool-season grass hay is your only option, you may need to soak it to remove some of the nonstructural carbohydrates.

- Small-grain hay is useful for horses who suffer from hyperkalemic periodic paralysis, a genetic disorder that affects certain Quarter Horses and causes uncontrolled muscle contractions, weakness and even paralysis. These horses do better on low-potassium diets, and small-grain hays (especially oat hay) tend to have less potassium than grass or legume hays.

Some kinds of hay pose risks for cer-



tain horses. Tall fescue can be infected with an endophyte, a fungus that lives inside the plant, that causes foaling difficulties and lack of milk in broodmares, although it's harmless to other horses. Low-endophyte varieties are available.

Use Your Senses

How can you judge the quality of the hay you're buying? Start with a hands-on inspection, Dr. Martinson suggests. Break open a bale and pull a handful of hay from the middle. It should feel soft and flexible and have a sweet scent. A musty odor suggests mold. Take a close look:

- Coarse stems and lots of large seed heads (in grass hay) or flowers (in legume hay) show that the hay was cut from mature plants. It may be less palatable, less digestible and provide less nutrition than hay cut when less mature. "Use this hay for horses with low caloric requirements," Dr. Martinson advises.

- Leafiness is a mark of high quality. Leaves are more digestible than stems and provide more nutrition.

- A greenish color indicates high levels of a precursor to vitamin A, but color alone isn't a sure indicator of quality. Pale color suggests the hay may have been bleached by the sun and lost some nutrients, but it can still be nourishing.

- Dark brown or black color suggests the hay was baled with too much moisture. It may have molded; you may even find a film of black or white mold spores on the leaves. Moldy hay should never be fed.

- Dusty hay is a health hazard. The dust can inflame the horse's airways and lead

to chronic breathing problems. Dust can also be a sign of mold in hay.

■ Weeds and other foreign materials are tip-offs to poor quality. A few stray weeds always find their way into hay, but they should be the exception—less than 10 percent of the total—and none should be poisonous. Check alfalfa hay carefully for the presence of toxic blister beetles, which can infest alfalfa fields (especially in drought years) and end up, crushed or whole, in baled hay. “Blister beetles are most commonly found in alfalfa hay that

horse hay supplier, and the horse owner has an established relationship with the hay supplier, then I would rely on the supplier’s analysis,” Dr. Martinson says.

If you’re arranging the tests, you’ll need to gather samples for the lab. The best way is to use a bale probe, a device with a hollow steel tube. Find one online or rent or borrow one through your county extension office or local feed store. There are manual versions and types that attach to a power drill. Push (or drill) 12 to 18 inches in from the butt end of a square

water) and “Dry Matter” (with moisture removed). “Horse owners should use the dry matter results,” Dr. Martinson says. Here are some important basic measures and the ranges she looks for:

■ Moisture, the amount of water in the hay: 10 to 17 percent. Below 10 percent, hay tends to be brittle and can be dusty; above 18 percent it may mold, and above 25 percent it may ferment. Fermentation produces heat, which can build to the point of combustion.

■ Equine digestible energy, the energy the horse can get from the hay: 0.76 to 1.0 Mcal per pound of hay for most types. Mcal stands for megacalories, or millions of calories.

■ Crude protein, the protein concentration: 8 to 14 percent in grass hays, 14 to 17 percent in mixed hays and 15 to over 20 percent in legume hays.

■ Acid detergent fiber, hard-to-digest components such as cellulose and lignin: 30 to 35 percent. The lower the ADF, the more digestible the nutrients in the hay are. Hay with ADF above 45 percent may have very little nutritional value.

■ Neutral detergent fiber, a measure of palatability: 40 to 50.

Dark brown or black hay may have been baled with too much moisture and may have molded.

✿ When you stack ... set bales on their sides so hay stalks run vertically. The air spaces between the stalks will act like tiny chimneys, helping moist air rise out.

has flowered,” Dr. Martinson says.

Your inspection can tell you if the hay is likely to be suitable for your horse. Hay that smells sweet, has good color and texture and contains only the plants it’s supposed to contain is probably acceptable. But the only way to know what’s really in hay is to ...

Have It Tested

You can find published tables that list average nutritional values for grass and legume hays. But because hay varies in nutrition depending on where it was grown, when it was cut, how it was handled and other factors, the tables may not accurately reflect the hay you feed. A forage laboratory can analyze hay for basic nutrient content. Find one through your state’s cooperative extension service.

Be sure to request an equine analysis, Dr. Martinson advises, since most labs test forage for a range of livestock. A few labs, such as Equi-Analytical in Ithaca, New York, focus on testing horse forage.

Basic testing usually costs about \$20, and each lot of hay you buy should be tested separately. This isn’t a big expense if you buy by the ton. If you buy by the bale, in small quantities, ask your suppliers if they test. “If the supplier is a reputable

bale so that the probe passes through several flakes and extract your sample. Take samples from at least 10 percent of the bales and mingle them in a sealable plastic bag to send to the lab. If you can’t get a probe, grab handfuls of hay from the insides of representative bales.

Basic test results are usually reported in about a week; more detailed analyses may take longer. Values are usually listed in two columns: “As Sampled” (including



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ABOVE: Hay must be stored in a properly protected, well-ventilated place to prevent spoilage and maintain its nutritional value.

LEFT: In addition to hay, all horses require supplemental salt to replenish what they lose in sweat.

Find the Balance

Knowing what's in the hay you feed will help you balance your horse's rations so that he gets the right amounts of energy, protein and minerals. You can do this using published nutritional tables (such as those in the National Research Council's *Nutrient Requirements of Horses*) or with the help of a qualified equine nutritionist. A nutritionist can be especially helpful for performance, breeding and growing horses and those with health issues. Your county extension office may be able to help you find one, and many feed companies provide this service.

Many types of hay provide enough calories and crude protein to meet the needs of adult horses at maintenance or light work. Even so, hay rarely meets all the needs of any horse. All horses require supplemental salt to replenish what is lost in sweat. Beyond that, even the best hay may be low in certain nutrients, especially minerals. For that reason, Dr. Martinson says, a horse who isn't fed a commercial grain product in amounts recommended on the feed-bag label should get a ration balancer in addition to his hay. Most commercial feed companies make these products, which are formulated to fill vitamin and mineral gaps in grass or legume hays.

Hay alone will lack the calories needed

to fuel moderate or hard work. It should still be the basis of the horse's diet, but he'll need concentrates for energy. Commercial concentrates also provide protein, minerals, vitamins and other essentials so in most cases other supplements aren't needed. Remember to consider the total diet—hay and grain—when you choose feed. If your hay is high in protein, you can complement it with a commercial mix lower in protein. If the hay is low in protein, try a higher protein grain mix.

Stretch Your Dollars

Hay prices have been rising in many areas, and cost has to be part of your hay-choice calculations. When you shop,

- look for local hay, which can be cheaper than hay shipped from out of state.
- buy in quantity for the best price. But don't buy more than you can store in a dry, protected and well-ventilated place, or much of it will go to waste.
- price by weight. The same hay may be priced differently depending on whether it's put up in small square bales, large square bales or round bales, so even if you buy by the bale, calculate the cost per ton. Larger bales are often a better buy but not if you don't have the equipment needed to move and stack them or enough horses to consume them efficiently.

After the hay is delivered, store it properly to prevent spoilage and maintain its nutritional value. A protected, well-ventilated place is essential because dampness and poor air circulation can cause hay to mold. How you stack your bales can help prevent damage, too. Here are three tips:

- When you stack at ground level, start on a base of wood pallets to keep ground moisture from penetrating the bales. Do this even on a concrete floor so that air can circulate under the stack.
- Set the bales on their sides so hay stalks run vertically. The air spaces between the stalks will act like tiny chimneys, helping moist air rise out.
- Don't jam the bales together. Set them close enough for support (a loose stack can topple easily) while still allowing air to move between them. 🐾



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Horses may refuse to eat hay with NDF levels above 65.

■ Calcium and phosphorus, essential minerals: varying amounts in different types of hay. A horse's total diet should provide these minerals in a certain ratio. For an adult horse at maintenance, the Ca:P ratio should be between 3:1 and 1:1.

Hay can also be analyzed for potassium, magnesium, sodium, iron, zinc, copper and other minerals. And you can get a breakdown of the nonstructural carbohydrates—the sugars and starch. Sugars are reported as ethanol-soluble carbohydrates or water-soluble carbohydrates, depending on how they are extracted. Fructans (plant sugars found in cool-season grasses) are included in WSC. "To estimate non-structural carbohydrate content, add WSC and starch," Dr. Martinson says. You may pay a little extra for these tests, but they're essential for some horses—for example, those with metabolic problems or the muscle disorder polysaccharide storage myopathy, who need rations low in non-structural carbs.



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