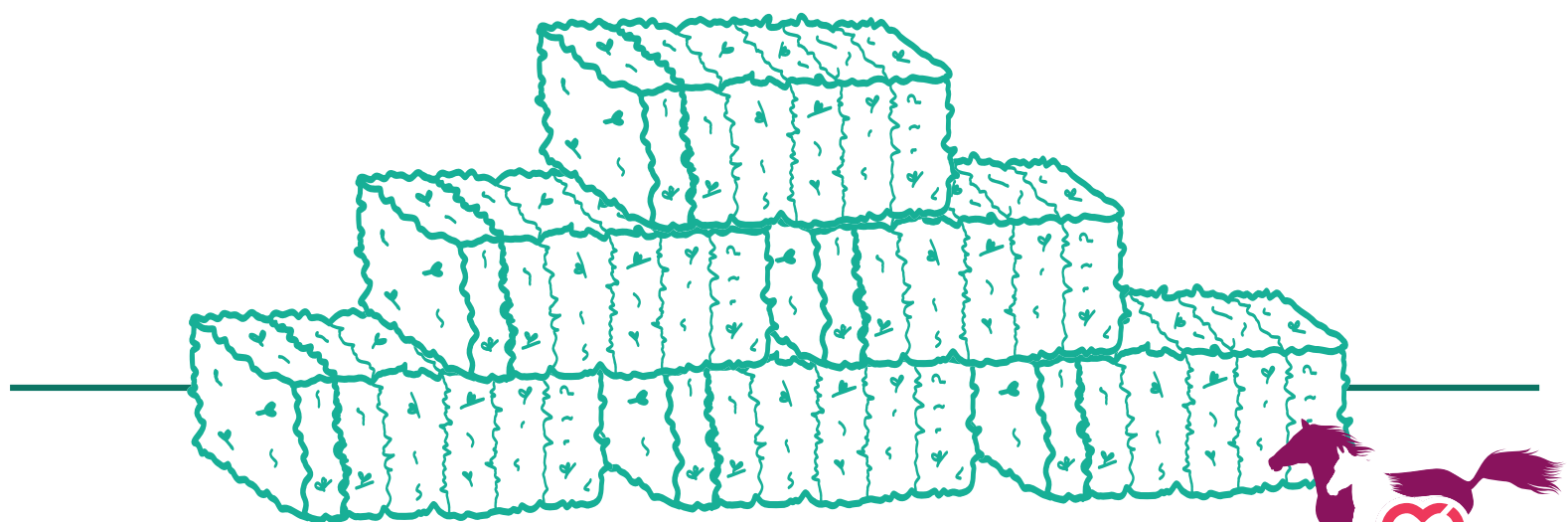


BUYING HAY FOR YOUR OTT

BY DR. NERIDA MCGILCHRIST



QUEENSLAND
OFF THE
TRACK™

INTRODUCTION

Hay...

It serves so many purposes in our life as horse owners and riders... mounting blocks, show jumps, seating at parties, chicken nests, camping tables and garden mulch...

AND it is everywhere! In our hair, in our pockets, in our boots, stuck to our jumpers, in our cars and in the charging ports of our mobile phones!

And it is, of course, together with pasture, our horses' most important source of nutrition!

When pasture is available, hay provides nutrients and fibre to complement the pasture.

When pasture isn't available, hay is the single most important ingredient in your OTT's diet, and will have the greatest impact on your horse's overall nutrition, as well as on gut health, gastric ulcer risk and mental health, wellbeing and welfare.

So it is **HUGELY** important to understand what type of hay you should be feeding and what to look for when you go to buy it!

Thankfully, as it happens, we humans are pretty good at using our everyday senses to sort hays into different categories.

So let's spend some time looking at the types of hay available and delve into the simple science of how to use your basic 'touch, see, smell' senses to determine hay quality.

Then we can look at some specific scenarios and work through the type and quality of hay that may be needed in each situation... with the goal being to leave you with enough knowledge to buy hay with the confidence to know it is fit for your OTT's purpose!

Let's go!



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HAY

TYPES OF HAY

Let's look briefly the types of hay you may have available and what they are able to 'bring' to your OTT's diet.

Starting with my favourite...

Lucerne Hay

Lucerne is a legume, so by nature, lucerne hay is rich in energy, protein and calcium. And, owing to lucerne's very deep-rooted physiology, is often higher in minerals like copper, zinc and selenium than other hays.

Lucerne is most useful in increasing the overall energy and protein content of a diet. When fed with grass-based pasture or hay, it also provides incredibly valuable nutrient and fibre variety. AND it is a [natural acid buffer](#). So, it is the perfect hay to feed before you ride to reduce the risk of gastric ulcers (for more on this, watch the QOTT Video 'Managing Gastric Ulcers in Your OTT').

Horses also love lucerne hay. Which means it is nearly always easy to incorporate into a diet to increase the overall nutrient value of the forage portion of your OTT's diet. BUT, you can have too much of a good thing.

Too much lucerne can cause issues with excessive urination, electrolyte loss, dehydration and tying up in performance horses. And it's high calcium level can affect the absorption of other nutrients.

So, it is my favourite hay, but it **must be fed in controlled amounts** alongside other forages.



TYPES OF HAY (CONT..)

Cereal Hays - Oaten, Wheaten or Barley Hay

These, technically, are all grass hays. But they are in their own special category of 'cereal hays' because they are made from crops that are typically harvested for grain.

However, the hays should actually be cut from specialised 'forage varieties' of these plant species. The forage varieties will be leafier and won't have the long or sharp 'awns' that their grain-specific family members tend to have on their seed heads.

Cereal hays provide wonderful fibre, with good levels of energy and protein. And there is typically nothing special about their vitamin and mineral profile. Which means these hays make excellent forage bases for OTT diets.



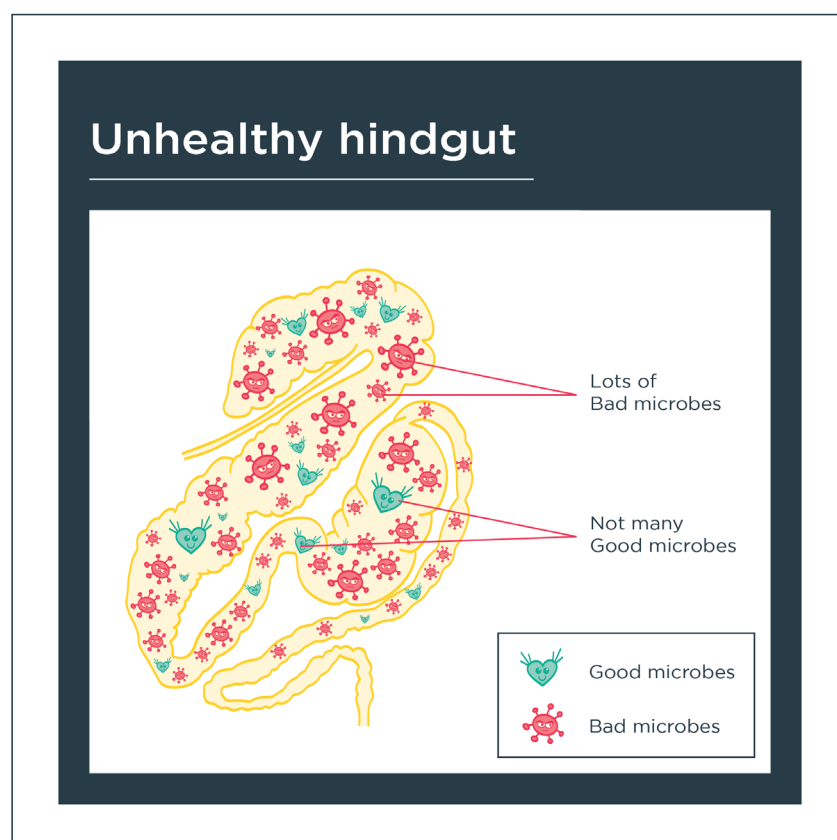
However, be aware that cereal hays can accumulate large amounts of certain carbohydrates that fall into the category of **water soluble carbohydrates** (WSC). And WSCs can cause two major issues.

The first is that some of these water soluble carbohydrates ferment rapidly in the hindgut in the same way raw starch from cereal grains will ferment. And this causes a few issues including **gassy colic** and a **shift away from the beneficial microbes in the hindgut**.

The second is that the sugars in these hays can cause issues with dental caries... or cavities in your horse's teeth.

While I like these hays for many reasons, I highly recommend you purchase tested cereal hay so you know that any cereal hay you use is not too high in water soluble carbohydrates.

A maximum of 16% WSC is my preference.



Severe peripheral dental caries.

Image credit: Jackson K, Kelty E, Tennant M. Equine peripheral dental caries: An epidemiological survey assessing prevalence and possible risk factors in Western Australian horses. Equine Vet J. 2018 Jan;50(1):79-84. doi: 10.1111/evj.12718. Epub 2017 Aug 18. PMID: 28707363.

TYPES OF HAY (CONT..)

Rhodes Grass Hay

Rhodes grass hay is readily available in Queensland and being a grass hay, is similar to the cereal hays. It typically contains average to good levels of energy and protein and there is nothing remarkable about its vitamin and mineral profile.

Unlike the cereal hays, rhodes grass hay will not accumulate water soluble carbohydrates (WSC).

Because rhodes isn't high in WSC, it isn't sweet. Which means it's also not nearly as tasty as the cereal hays. Horses tend to eat it more slowly, and you may find, if there are too many other options, they may not eat it at all.

It is this less-palatable characteristic of rhodes grass hay that I actually love about it.

When you have hungry OTTs eating you out of straw-house and home, using some rhodes grass hay is ideal... because you can give them hay to chew on 24/7... WITHOUT them eating bank-breaking amounts of hay, just because it tastes so good!



Teff Hay

Teff is also a grass hay and provides average to good levels of energy and protein.

If you feed teff you do need to be aware that it contains oxalate, a compound that binds to calcium, reducing its bioavailability. Meaning teff hay doesn't provide much available calcium.

If you are feeding lots of teff hay, you may need to add additional calcium to the diet to prevent a calcium deficiency.

Feeding lucerne hay (with its high calcium content) together with teff hay is often an excellent solution for making sure there is enough calcium in the diet.

To learn more about this, watch the QOTT video ['Keeping Your OTT Safe on QLD Pastures'](#).

Native Grass Hay

Native grass hays are another favourite of mine. They can and often are made up of a mix of grasses meaning they provide wonderful nutrient and fibre variety.

Being native grasses, they typically provide low to average levels of energy and protein and can be of variable palatability.

But they make up for what they lack in direct nutrition to the horse, in what they can provide in terms of fibre variety for your horse's microbes! For this reason they are always a wonderful addition to any OTTs diet.

TYPES OF HAY (CONT..)

Straw

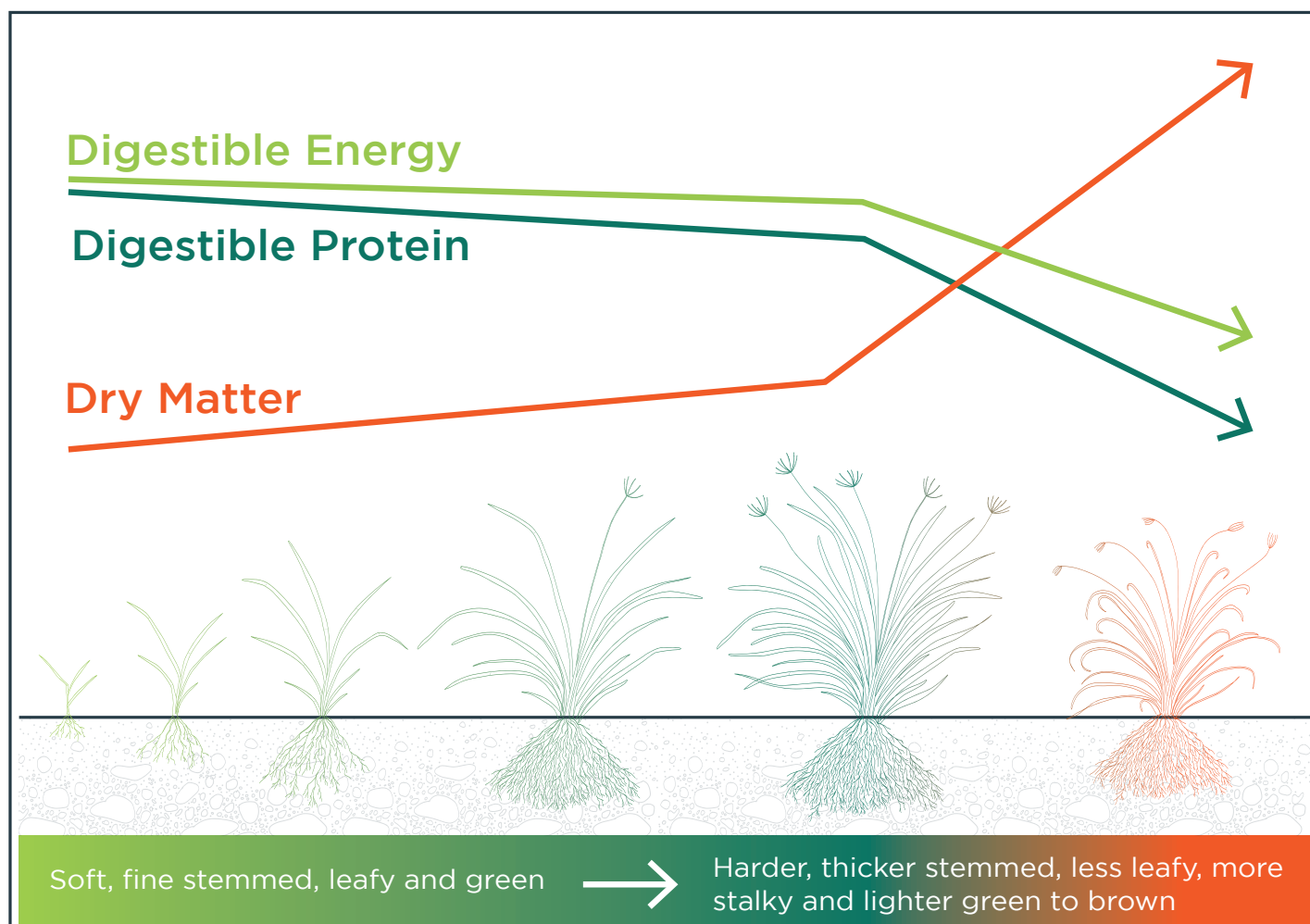
Straw is generally made from cereal grain crops AFTER they have been harvested for grain. It is literally the stem/stalk left over post-harvest. Straw contains minimal energy and protein, very little mineral and is totally devoid of vitamins.

To be honest, most OTTs would only ever consider straw as something that should be slept on. BUT, it can find small places to fit in some feeding programs and it is certainly possible to feed straw as bulk during drought.

SEEING, SMELLING AND FEELING QUALITY

Research has shown that humans can accurately group hays into quality groups that align with the nutrient value of the hays. Using our sight, smell and touch senses, we can determine a subjective measure of hay quality. Let's quickly explore the plant physiology that allows us to do this.

As plants mature, they go from being soft, fine stemmed, leafy and green, through to being 'harder', thicker stemmed, less leafy, more stalky and lighter green to brown in colour. And as a plant matures in this way, the energy and protein levels drop. So high quality hay, cut from young, soft, leafy, green plants is higher in energy and protein and therefore higher quality, than hay cut from more mature, thicker stemmed, less leafy, browner plants. AND our senses can reasonably reliably tell us what is what, once these plants are baled into hay!



SEEING, SMELLING AND FEELING QUALITY (CONT..)

Low quality hay (eg. cereal straw or mature grass hay) **can be described as:**

- Yellow
- Dry
- Thick stemmed
- Rigid
- Prickly
- Straw-like

And it will probably smell musty, old, and possibly even rotten.

High quality hay (eg. prime lucerne or cereal hay) **can be described as:**

- Green to dark green
- Fine stemmed
- Thin
- Soft
- Flexible

And it will likely smell pleasant, sweet, and fresh.

Hays of medium quality will then fall somewhere in the middle, being medium stemmed, a colour between yellow and dark green and a smell that isn't musty or unpleasant but not necessarily fresh and delicious either.



SEEING, SMELLING AND FEELING QUALITY (CONT..)

WHICH QUALITY FOR WHEN?

Choose high quality hays when you need to maximise diet energy intakes. For example for horses who are in hard work or horses who are struggling to maintain their weight.

Good quality hays, that land somewhere in the middle of this quality scale are excellent choices for horses who are holding weight well, even if they are in work, and will allow you to feed plenty of bulk without oversupplying energy.

And average to poor quality hays, down on the low end of the scale have their place when you need to provide bulk simply to fill hungry horses up. Or when you need to make sure horses always have forage to chew 24/7, without them eating crazy amounts of hay simply because it tastes good!

WATCH OUT FOR WHAT YOU CAN'T SENSE!

You can't accurately see, smell or feel the water soluble carbohydrate content of hay. To get an accurate measure on WSC content it is essential to either purchase hay that has had a reliable pre-purchase analysis conducted (from a resource like FeedCentral <https://app.feedcentral.com.au/buy/>) or have your own lab test done. This is particularly important if you are feeding predominantly cereal hays.

There is also no way to sense nitrate levels. Nitrate is a naturally occurring compound in all forages that can accumulate, under certain growing and environmental conditions, to unsafe and even deadly levels.

Moderate levels of nitrate (>3000 ppm) have been observed, in my working career, to cause laminitis in racing thoroughbreds and abortions in broodmares. Higher levels (>6000 ppm) have been documented as causing severe colic, diarrhoea, stomach rupture and death in thoroughbred horses.

Needless to say, it's really very important to know that your hay is not high in nitrate. Hay made following prolonged drought, or following application of nitrogen-containing fertiliser, is particularly risky. Again, you should purchase hay with a reliable pre-purchase analysis available. Or, have your own hay lab tested for nitrate by a laboratory such as FeedTest (<https://feedtest.com.au>).

Be mindful that labs will frequently report results as 'Nitrate Nitrogen'. You must multiply this number by 4.4 to calculate actual 'Nitrate'.

My preference is for hay to be <500 ppm nitrate. But feeding hay with up to 1000 ppm nitrate is acceptable.

WHY DO YOU NEED HAY?

Now we have covered types of hay and their quality, let's look at why you are buying hay. Because you need to understand the WHY before you can work out what type and quality of hay is going to be best for your OTT.

WHY DO YOU NEED HAY? (CONT..)

There are MANY reasons why we buy hay for our horses. And each reason presents a different set of goals we want the hay to achieve. Which means each situation potentially requires a different type or quality of hay! Let's look at some specific examples and consider the types and quality of hay that would work best.

Hay where there is no pasture

When you have no pasture, hay needs to be providing the bulk of your OTT's daily nutrients as well as a majority of the fibre your horse needs to maintain proper gut fill. AND it needs to be providing enough fibre variety to support a diverse, stable and healthy hindgut microbe population. PLUS it needs to provide enough bulk that your horse will have hay to munch on 24/7, without getting overweight... and without costing you an absolute fortune in the process.

Because hay in this situation needs to achieve so much, it is best to use MULTIPLE different types of hay, with as much variety as you can manage.

For a typical OTT, you might use some good quality lucerne hay together with a high quality cereal hay as rich sources of nutrients. Then you might add some good quality rhodes grass hay and some native grass hay and/or straw for bulk.

Hay to be fed alongside lush pasture

Lush green pastures are typically very low in fibre. So when horses graze these pastures, they will often go looking for some 'roughage'. If none is made available your horse may develop diarrhoea and you will commonly see horses chewing on fence rails or trees for fibre.

To improve manure consistency and to stop them destroying your fences or trees, you can simply feed hay together with their lush pasture to add fibre to their diet.

You can use almost any hay for this situation. What you choose depends to some extent on what your OTT is doing. You might choose higher energy hays like high quality cereal hay or good quality lucerne hay if your horse is in work or needs to gain weight.

Or you might choose a lower quality rhodes grass or native grass hay or even straw if your horses are already holding excellent condition and just need a source of roughage.

Hay to be fed alongside poor quality pasture

When OTTs are on poor quality pasture they will often struggle to maintain weight. Bringing in a higher quality source of forage helps them to hold their weight without having to rely heavily on hard feed.

Good quality lucerne hay is perfect for this role! And any high-quality cereal or grass hay is also a useful addition to the diet in these situations.

If you happen to be in a position where your OTT is maintaining weight well on poor quality pasture and you simply need to provide bulk, adding any grassy or cereals hays to the diet, at a quality you feel is appropriate for your OTT, will work nicely. And of course, a small amount of lucerne will add that crucial fibre variety!



WHY DO YOU NEED HAY? (CONT..)

Hay to fill up hungry horses

If you have a hungry OTT, who demolishes their feed and hay quickly and then are left standing around with not a lot to eat for the rest of the day, providing access to a not-so-tasty source of hay that they can just pick at, whenever they just want to chew, is a great idea.

Using any low-quality grass hay is ideal. I also make straw available when I have horses in yards without pasture and am worried about them running out of fibre. I know they won't just eat the straw because it tastes good... but they will definitely munch on it when they are looking for fibre to chew!

Drought hay

Please watch the QOTT video [“Feeding in Drought Conditions”](#), where we cover hay in drought... including how to feed to balance your OTT's diet depending on the hay you are able to access during severe droughts.

Hay for weight gain

When you need to feed for weight gain, go looking for the highest quality hays you can find, because these will contain the highest energy content, and will therefore be best for encouraging weight gain.

And feed as much variety of high quality hay as you can find, with lucerne as well as multiple types of grassy and cereal hays working beautifully together.

Hay for weight management

When feeding horses to control weight, you need to control diet energy intake, WITHOUT restricting your OTT's daily forage intake amount!

In other words you need to reduce energy intake without reducing the bulk of forage they eat every day... because that bulk is so, so, SO important for keeping their gut, their mind, their microbes and ultimately them, healthy and happy!

The easiest way to reduce energy without reducing bulk, is to feed lower quality hay. How low the quality needs to go will depend on your horse and how much you need to control weight.

Use your newfound confidence in selecting hays, to buy lower quality hay that you can still feed plenty of, without causing weight gain!

Hay for when you are riding or competing away from home

Horses away from home almost always have slightly altered feeding behaviour and will commonly be a little fussy and eat less. So choose the highest quality and tastiest hays you can for when you are on the road.

AND be sure to avoid sudden changes to their diet. If you plan to feed certain hays while travelling, introduce these hays to their diet in the two weeks prior to travel so their gut can get used to the hay ahead of time.

Do try to maintain forage variety, even while you are on the road, by feeding as many types of hay as you can when you're away from home.



Image courtesy of Gutzbusta

FOCUS ON FIBRE VARIETY

Don't get toooo caught up on exactly what hay you should buy and feed your OTT. The best answer to 'Which hay is best?' is 'As many different types of hay as you can find!'

I really can't overemphasise just how important building fibre variety into your OTT's diet is. The health benefits your OTT will receive from fibre variety, that then supports gut microbe diversity, are as far reaching as immune function, behaviour, muscle energy levels and colic risk.

So when in doubt, feed every type of hay you can get your hands on! And use your senses to select these hays at an appropriate quality level for your OTT.

THE IMPORTANT BITS

To recap, remember:

1. Hay, together with pasture when it is available, forms the forage base of your horse's diet.
2. Forage is the most important part of every OTT's diet.
3. There are many types of hay. Lucerne hay is the most commonly available legume hay in Queensland. And there are multiple types of cereal and grassy hays with barley hay and rhodes grass hay being the most commonly available in Queensland.
4. The quality of hay can be determined using your seeing, feeling and smelling senses.
5. Low quality hay is typically yellow, stalky, rigid and doesn't smell great.
6. High quality hay is typically green, fine stemmed, softer and smells wonderful.
7. The type and quality of hay that is best for your OTT depends on WHY you need hay.
8. And finally, the best possible approach to choosing which hay to feed is to go for fibre variety! Feed as many different types of hay as you can find.

Fibre variety keeps your horse's gut microbes diverse and that will keep your horse physically and mentally healthy and happy!



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