



Canter For Climate



RUGGING HORSES

CARE OF HORSES IN EXTREME WEATHER
FACTSHEET SERIES

Canter for Climate aims to assist horse owners to tend to their horses in severe weather events. This is the second Factsheet in our series “Care of Horses in Extreme Weather”.

RUGGING HORSES

The practice of horse rugging has important implications for horse welfare and performance. We rug our horses to make them more comfortable; warmer in winter, cooler in summer, dry in the rain and to protect them from biting insects. Sometimes we rug to prevent a faded coat or to simply keep a horse clean.

Because knowledge of what horses require is improving every year as we understand more on how they regulate their bodies, we need to ask ourselves “Does my horse need a rug?”

Climate change is making weather extremes occur more often, and our “usual” seasons no longer seem to apply as often with frequent rapid changes in the weather.

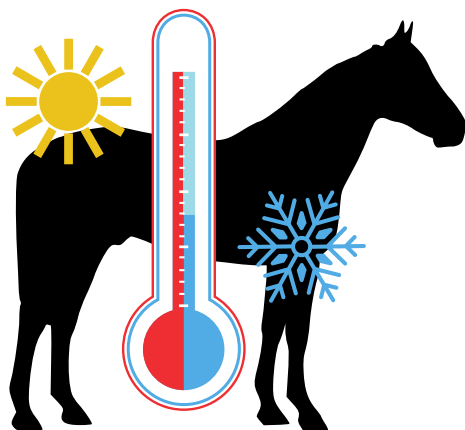
So, are our rugging habits still benefiting our horses?

Do we need to review whether our horses need a rug and if they do, then which rugs we should be using?

Horse Physiology

To enable us to make the best choices we need to understand how horses regulate their own body temperature.

Horses are warm-blooded mammals that use thermo-regulation to maintain a core temperature of approximately 38 degrees Celsius. They are extremely good at regulating their body temperature and can survive in a wide range of temperatures of up to 50°C in northern Australia and Arabia and down to -70°C in places like Yakutia in Russia.



Usually horses are most comfortable when the environmental temperature is between

5°C and 25°C

(this is called their thermoneutral zone), where they can warm themselves up or cool themselves down using little additional energy.

Compare this to humans that have a comfort range of 20°C to 30°C.



How horses regulate their core body temperature

Digestive system - creates heat as it digests food

Cardiovascular system - diverts blood to vital organs as needed

Weight gain - during summer months for greater winter insulation

Winter coat - thicker and longer creating a layer of insulation

Erect coat hair - traps air improving the layer of insulation

Water repellent natural coat oil – keeps the coat layers close to the body dry

Sweating - during warm and hot weather, for evaporative cooling

Behaviour - seeking shade or walking into water to cool down, eating or running around to warm up

Herd - standing close to their paddock mates

*Horses gain weight in
Summer for Winter
insulation*



What influences how cold or hot a horse feels

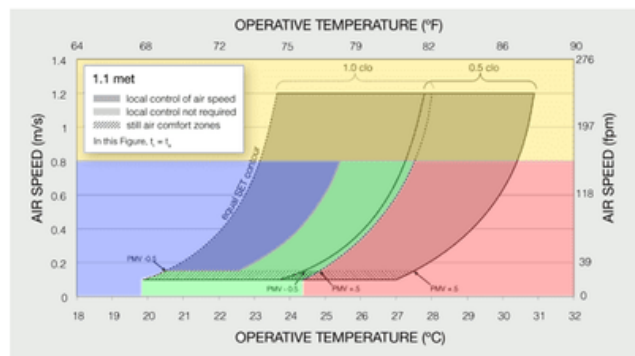
Weather

- ambient temperature
- wind speed
- relative humidity
- rain

The “feels like” temperature takes all this into account.

Wind and rain have a significant impact. Constant rain saturates the coat, stopping the hairs from standing erect, preventing air from being trapped therefore leading to faster heat loss.

Wind across a wet surface causes evaporation, which is great in summer but causes significant wind chill factor in winter.



Comfortable | Too Hot | Too Cold | Too Drafty

Horse

- Breed - The shape and unique characteristics of certain horse breeds help in the retention or loss of heat.
- Size: - As a general rule, smaller animals lose heat more easily than larger animals so larger horses could cope better with cold.
- Coat - Horse hair length and density has a big effect on their ability to retain heat by trapping air. The breed of horse has a lot of influence on this e.g. Thoroughbreds and Arabs generally have fine skin and coats and would feel much colder than Highland ponies with a thick double coat. But even within breeds horses can vary greatly in their winter coat thickness.
- Age - Just like humans, very young and very old horses have a decreased tolerance of extremes in weather and may be less able to retain or shed heat.
- Metabolic rate - Some horses have a natural higher metabolic rate and will cope with cold more easily but suffer in the heat more.
- Body condition - Horses with a low body fat score will suffer more in the cold than a horse with a high body fat score who may be more likely to suffer in the heat.
- Fitness level - A fit horse may cope better with both hot and cold conditions.

Other

- Diet - High fibre diets generate heat better than a diet of the same calories made up of high starch or high oil-based feeds. Horses living in cold climates are able to keep in good condition as long as they have unlimited access to good quality forage.
- Shelter - Access to shelter gives a horse a better chance of keeping dry when it's raining (and by extension staying warmer), and provides protection from winds, greatly reducing the risk of chills. While shelters also provide shade against strong summer sun, natural shade from trees with evapotranspiration provides the best shade for hot conditions.

How horses cope with cold

Weight gain

Horses in the wild have survived for centuries by gaining weight during the summer months and then utilising body fat stores to keep warm in winter. If an overweight horse is well rugged and prevented from losing weight, we risk messing with their natural hormone levels which could lead to EMS Equine Metabolic Syndrome with the risk of laminitis and other health problems.

Winter coat

Autumn can bring on thicker coats in many equines but it is in fact not the cold that triggers the growth. If that was the case, horses wouldn't begin to grow their coats until it was already cold, when it would be too late. As the days get shorter, it is the reduction in sunlight hours that triggers the horse's body to begin increasing the production of melatonin, which prompts hair growth. The further south, the greater the difference in day length, so the greater the hair response. The reverse is also true; when days get longer in the spring, melatonin production slows and the coat sheds out.

Reaction to cold


When a horse is exposed to cold, the individual hairs spring up, trapping air pockets that provide extra insulation and kept warm air close to the skin.

Heat gain

A horse is a very poor engine, as 80% of the energy created by digestion of food is released as heat. Digestion of fibre in the hind gut is most effective at this. Horses gain most of their heat through digestion and body function, not through radiated heat from the sun on their body, or from heat in the air. Providing forage to a horse will assist them to stay warm in cold weather.

Heat loss

Horses lose the vast majority of their body heat through evaporation of sweat and only small amounts through respiration. For details of the different types of heat see [Appendix B Types of heat](#).



The reduction in sunlight hours causes coat growth – not the temperature

Deciding whether to rug

Before we select a rug we need to consider whether our horse actually needs a rug.

If you decide they do need rugging then selecting a suitable rug is not always easy, as there are many different styles of rugs available and many factors to consider. Most critical are the changes of the weather during the period the horse will be wearing the rug.

Things to consider when deciding if and with what to rug:

Weather

- 'feels like' temperature
- rain

Horse age, general health and body condition

- a very young foal will suffer from cold as it has a smaller body weight and poor body regulation
- a veteran horse may need extra warmth to stay healthy and maintain weight
- a horse prone to winter colds may need rugging in those months
- an underweight horse will require additional rugging
- an overweight horse may benefit from not being rugged, even in quite cold conditions as they may then naturally lose some unhealthy weight during winter.

Winter hair growth

- thickness of your horses' winter coat in your location
- clipped horses will require rugging during the winter months

Ability to move about

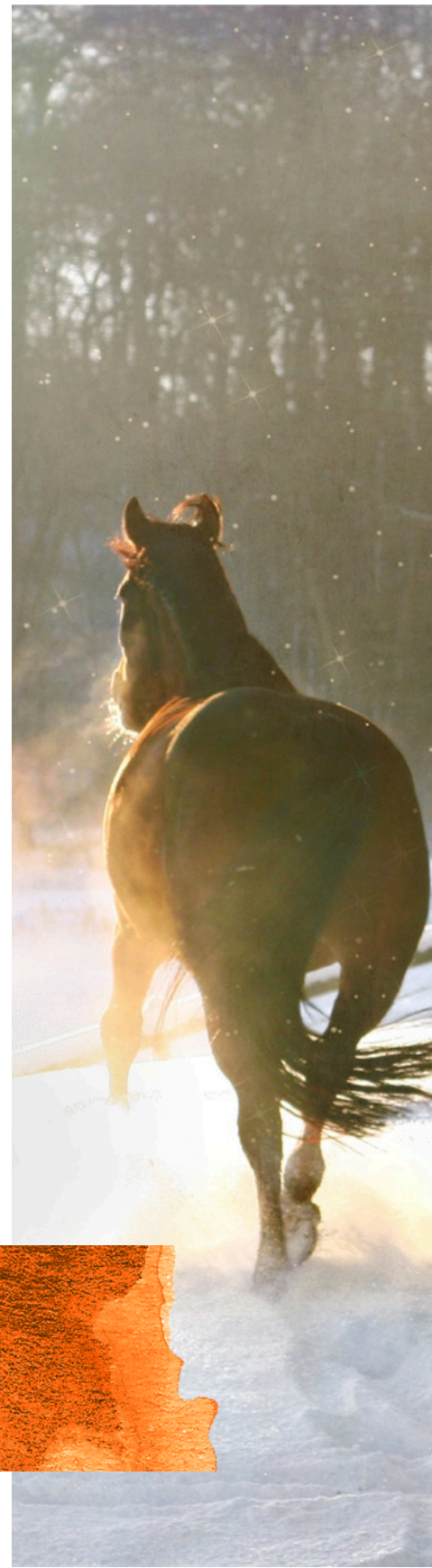
- horses able to move around can keep themselves warm
- horses confined in small yards are more likely to need a winter rug

Shelter from rain, wind, sun

- when stabling consider the temperature inside the stable not outside
- wet horses will feel much colder in wind, so if they do not have access to a rain-proof shelter they may require a rug in wet, windy weather
- if a horse has a good winter coat and access to shelter a rug might not be required in winter
- rugs are not a substitute for shade in the summer months

Insects

- when insects are at their peak, light rugs help prevent bites and associated "itch" issues
- small insects like sandflies may still be able to bite a horse through mesh rugs



Horses can keep themselves warmer if they are able to move around

Choosing which rug to use

See [Appendix A: Types of rugs](#) for a description of the various types of rugs, their advantages and disadvantages, and also fitting.

The equestrian discipline in which horse owners are participating, especially if competing, strongly influences Australian horse rugging practices. The individual horse requirements and weather should absolutely be the deciding factors.



Rugging in winter

Horses are rugged in cold weather to keep them warm. Do NOT rug your horse based on how cold YOU feel. While we can be feeling quite cold at 10°C, our horses are likely to be very comfortable.

Horses can easily increase their tolerance to cold by making their hair erect, trapping air, holding their body warmth next to their skin and insulating them against the cold surrounding air. They will also eat and/or undertake physical activity to create warmth.

A rug with 'fill' (like the inside of our doonas) works in the same way and the more fill a rug has, the more air is trapped inside the rug, the greater the level of insulation. The amount of fill is given as grams (grams per meter square). Rugs with no or minimal fill are often used as rainsheets when the temperature isn't too cold, to keep a horse dry and to block the wind. However, when it is cold they can actually make a horse colder as they will flatten the horse's hairs and prevent the natural insulation of the horse's coat.

Below is a very general guide for what, if any, rug is needed for warmth for a healthy, unclipped horse that has access to a shelter, forage and movement.

> 10°C	5°C to 10°C	0°C to 4°C	-4°C to -10°C	< -10°C
Nothing	Nothing or Light (0-100g)	Nothing to Light-Medium (100-250g)	Light Medium (100-250g)	Heavy (>300g)

Many of the charts provided on-line only differentiate between clipped and unclipped, stabled or turned out horses but we need to adjust this for all the factors that have been discussed previously. It is recommended that you do up a chart for your own horses and conditions relevant to your area.

Signs your horse is cold

Short term - shivering and restlessness

Long term - losing body condition

Rugging in summer

A rugging horses in summer can prevent insect bites and protect the horse's coat from fading.

In the northern regions of Australia horses often need protection from extended periods of summer rain. Over rugging a horse is, however, a big problem in the summer months, frequently causing discomfort for the horses and, at time, heat stress.

A horse is outside its comfort zone once the air temperature is hotter than 25°C when the ability to evaporate their sweat and access to shade and cool drinking water becomes very important.

Horses gain most of their heat through body function and digestion and not through radiated heat on their body from the sun. Many feel that a horse with a dark coat is cooler in a white light rug, however there is much debate but little data on this.

As horses lose the majority of their excess body heat through evaporation, any rug that reduces evaporation rates, no matter the colour of rug or horse will result in a hotter horse than if un-rugged. So only use very light cotton, flag or mesh rugs in summer.

Signs your horse is overheating and it is time to remove the rug or use a cooler rug:

- wet patches behind the ears, and along the neck
- feeling too warm between the rug and skin
- heavy breathing in the absence of exerted
- listlessness and lethargy or unusual lowering of the head
- lack of sweating can be a sign of heat stress

With climate change horses are having to cope with more frequent heat waves producing temperatures that they are not acclimatised to.

Rugging in Spring and Autumn

The change of seasons can make it extremely difficult to know what rug our horses might need, especially if we are going to be away from them during the day. The weather when we feed in the morning is likely to be significantly different to what the horses will be experiencing at mid-day.



REMEMBER:

**It is much easier for a horse to warm up than to cool down.
So with rugging, if in doubt, don't.**

Rain

In winter a wet horse will suffer significantly more from the cold. In summer constantly wet horses are prone to fungal infections on the skin commonly known as rain scald. Rugging during hot wet weather can be a real challenge.

A rainsheet or an unlined waterproofed canvas rug is the usual choice for rain protection. It's important to note that although these rugs are touted as being breathable, their breathability is generally reduced to zero once water covers the fabric's 'pores'. In warm, wet weather, this means that your horse can become quite hot very quickly. All rainsheets will eventually end up wet in steady rain as none of them are completely waterproof like a human raincoat, as these would be extremely hot to wear.

If it's quite hot or there is any chance of sunshine during the day most horses are better off getting wet than steaming up under a waterproof rug.



Insects

Biting insects cause constant annoyance and can lead to many itch issues in our horses, sometimes causing them to hurt themselves and destroy rugs when trying to scratch or escape the insects.

The type of rug required for insect protection depends on the horse and the offenders. A very sensitive horse that is under attack from very small biting insects, such as sand flies, would require a rug that offers complete block-out, such as a cotton rip-stop rug with belly wraps.

For horses that are less sensitive or for areas that are prone to larger biting insects, a fly mesh rug is an excellent option. These rugs will keep larger insects from biting whilst allowing better airflow than a close weave cotton rug.

When it comes to sensitive horses, most people find the need to select a rug that stands up to plenty of rubbing and scratching, reducing the number of rugs needed each season.

Sun bleaching

A light cotton rug, flag or fly mesh is the best choice to prevent bleaching, as it will keep the sun off while still allowing airflow. Flag rugs are light but not very durable, so if your horse is tough on rugs then a strong fly mesh or ripstop cotton is generally a better option.

Conclusion

Rugging can be difficult because every horse is different and there are so many products on the market but the most important question is “Does my horse need a rug?”

The answer to this, as you have read, is complicated and involves various factors that all need to be considered when deciding whether your horse needs a rug, and then which one to use.

Most horses in Australia generally don't need rugs for warmth, if they are unclipped, have shelter, constant access to forage and the ability to move.

Developing your own chart for when you will rug and which one to use individually for your horses saves the constant decision every feed time.

Protecting horses from insects and rain in hot weather is difficult, as to stay cool horses need air flow across their skin, however this allows in insects and rain.

All rugs should be checked daily for movement which can lead to rubbing and discomfort and fully removed every few days to check the horse has no rub marks or skin irritations.

The most important thing to remember is that a horse can cope with cold far better than you and horses generally suffer more from overheating than cold. At the end of the day, your horse knows best. Listen to them if they show signs of not wanting a rug on.

References

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World horse Welfare - Rugging horses: when does your horse need a rug?
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Appendix A: Types of rugs

All rugs should be checked at least daily to correct slipping causing unwanted pressure points which could lead to discomfort. Rugs need to be removed every few days and the horse checked for rub marks and skin irritations.

RUG NAME	SEASON	DESCRIPTION	FILL GRAMS PER METER	POSITIVES	NEGATIVES
SYNTHETIC WINTER	WINTER	Two layers, a heavier tight weave material and light inner layer with polyfill insulation	Heavy 300g + Medium 100-200g Light <100g	Durable Comfortable	Weather must be monitored closely as horses may overheat quickly in the heavier fills
WINTER CANVAS	WINTER	Two layers Canvas outer, inside wool lining	Wool layer	Strong and durable	Bulky
RAIN SHEET	ALL SEASONS	Usually a very tight weave material designed to be breathable while keeping the rain out.	None	Lightweight Good for summer storms to keep coat dry when its not really cold	Will lose breathability when water is filling the fabric pores and horses still get wet after constant rain.
STABLE DOONA	WINTER	Two layers with insulation, a comfortable rug for horses that are in stables away from the rain	Heavy 300g + Medium 100-200g Light <100g	Comfortable	Not waterproof
POLY COTTON RIPSTOP	SUMMER	A common summer rug, complete block out so excellent UV protection and are very effective at preventing insect bites (inc. sand flies). Made from a combination of polyester (for strength) and cotton (for breathability), these rugs also incorporate a rip-stop weave.	None	Excellent UV & insect protection Breathable Strong Comfortable	Slow to dry in humid/wet climates which may cause skin irritations. Reduce evaporation and can lead to over heating.
MESH	SUMMER	Light weight mesh rugs allow for airflow and are quick drying while still preventing sun bleaching and most insect bites. Some are made from a brittle mesh, while others are a much softer and more flexible. Mesh rugs vary greatly in their durability.	None	Cooler and promote greater airflow Dry out quickly Good insect protection	Coarse mesh can rub if rug is ill fitting or horse has a fine coat Smaller insects (sandflies) may get through
HYBRID	SUMMER	As the name suggests hybrid rugs combine both mesh and polycotton fabrics. Generally, the structure of the rug is polycotton and mesh inserts are integrated into the neck and skirt.	None	Offers the benefits of both rip-stop sheets and mesh rugs Good airflow Offers good insect protection	Some horses may get warmer in this style rug that a standard mesh rug
FLAG	SUMMER	Flag rugs feature a light, open weave (similar to cheesecloth) and are ideal in hot climates. While lighter, more breathable and offering better sun and insect protection than mrsh, flag cloth is not very durable	None	Good breathability Great protection from sun bleaching and insects	Not very durable - not suitable for paddock use or horses that are tough on their rugs

Appendix A: Types of rugs continued...

How to ensure your rugs fit

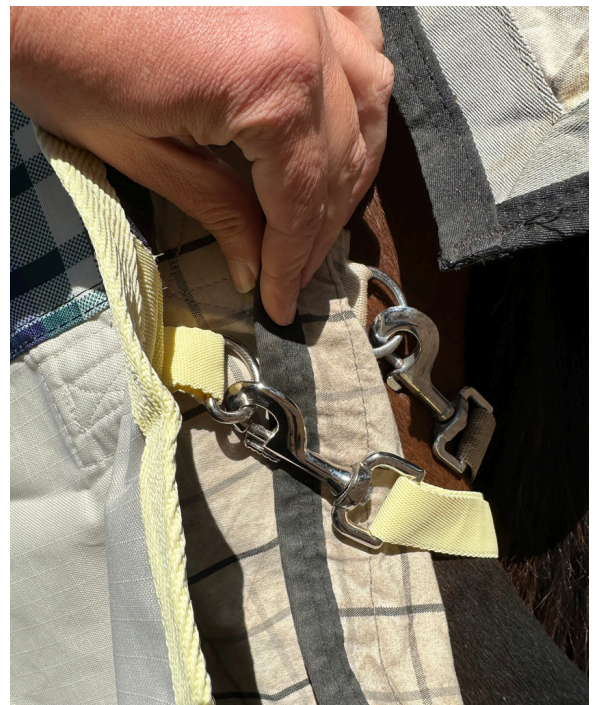
A well-fitting rug won't move, rub or restrict movement. A good wide gusset up to the shoulder will allow the horse's front legs to move freely.

A well fitting rug will sit a few centimeters in front of the wither so that it is not putting pressure on the sensitive wither area.

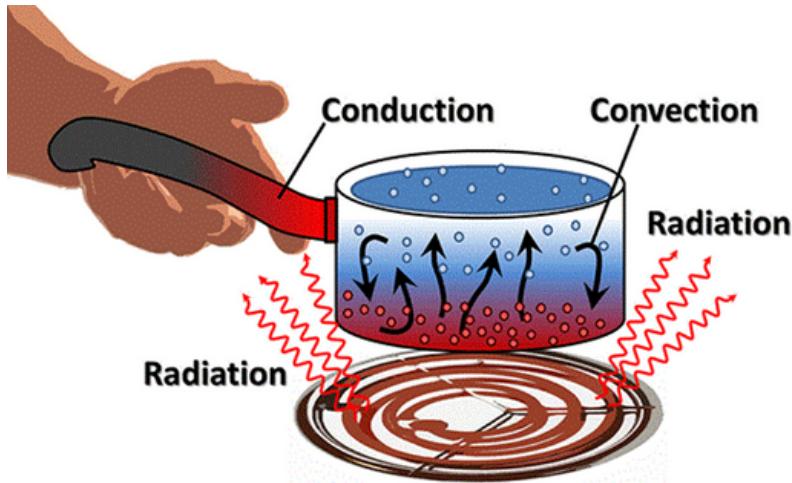
When fastened, the surcingles (belly straps) should be a hand's width from the horse's belly i.e. you can put your hand sideways between the straps and the horse.

When you do up the leg straps the second strap should go cross through the other, and clip back onto the same side, with the clip facing inwards towards the horse. The straps should be done up with a hand's width between them and the horse's back legs.

Rugs must be checked daily.



Appendix B: Understanding heat



Conduction heating is when heat is transferred through a solid object from the hotter part to the colder part without involving any movement.

Convection heat transfer occurs through liquid or gas. Oil-filled space heaters work using convection to warm all the air in the area.

Radiation is the transfer of heat through electromagnetic waves, such as infrared radiation. This is the heat you feel immediately coming off the sun, a fire or bar heater while the air between you and the heat source is still cold