

EQUINE LINE



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Solar Horse Tank

By Gary & Lori Reysa, www.builditsolar.com

Livestock watering tanks will develop a layer of ice in cold weather, and then progress into a solid block of ice if not tended to. The usual solution for this is to use an electric stock tank heater. These are thermostatically controlled heaters that turn on when the stock tank water gets near freezing. The heaters do a good job of preventing ice, but they are terrible power hogs.

Typical stock tanks have a large exposed water surface that loses heat by both convection and evaporation. They also have highly conductive single wall sides and bottom that are in direct contact with cold air or cold ground. If you set out to design a tank to maximize heat loss, you could not do much better than a typical galvanized or plastic stock tank -- they are awful. The result is lots of energy consumption, high electric bills, and high CO₂ emissions.

We measured the electricity consumption of the heater on the old tank during mild winter weather at 8.5 KWH per night -- this is with night lows in the 15°F to 30°F area, and highs in the 25°F to 40°F area. I would guess that with "real" winter weather you could see 30 KWH per day -- this will cost \$3 a day and generate 45 lbs of CO₂ a day.

The material below describes the latest version in a series of insulated and solar heated stock watering tanks that require little or no supplemental heat to be free of ice. Complete construction details are included.

New Tank

This design is based on the ideas and lessons from all of the above designs, and from Lori's ideas on horses and their interesting habits.



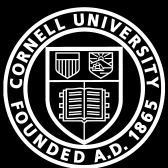
Performance

We measured the consumption of the electric heater on the old tank (a bare galvanized tank) during mild winter weather at 8.5 KWH per full day -- this is with night lows in the 15°F to 30°F area, and highs in the 25°F to 40°F area.

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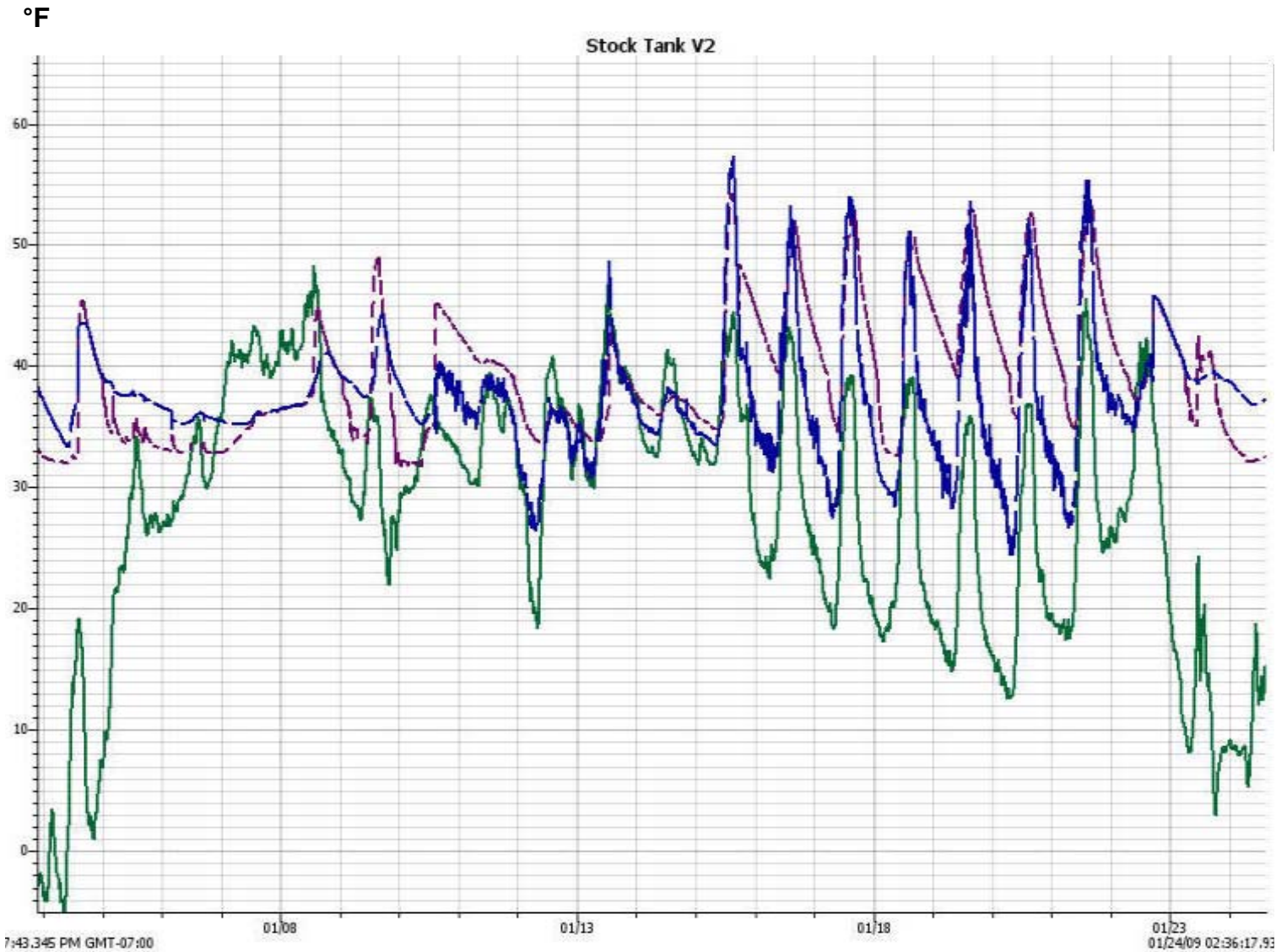
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I would guess that with "real" winter weather you would see 30 KWH per day -- this would cost about \$3 per day and result in about 50 lbs of CO₂ emissions.

Lori's experience with the new tank so far is that it is fine with no heater most of the time. On cold mornings there may be a very light skim layer of ice that is easily broken with a small push from a finger. If you do get this ice in the morning, it usually goes away completely later in the day.

There have been a couple of occasions over the full winter when several days of well -10°F type temperatures required the use of the heater for a couple days.

This is a sample plot for a few days showing ambient temperature, and the temperature near the top of tank and near the bottom of tank.



Solar Water Tank Construction

The pictures provide an overview of the tank construction.



- 1 Build the frame for the insulated box that encloses the tank. The box that encloses galvanized stock tank is framed with 2X4's.



- 7 Install the galvanized tank and the cover.



- 2 Cut and attach the plywood sides to the box. Cut out and attach the plywood sides and back of the box. The front is left open for the collector glazing.



- 3 Cut and fit the Top and Bottom of the box. Cut out the top and bottom panels for the tank. The bottom is installed at this time, and the top set aside to be installed as the last step. The top has the hole to allow the horses access to the water.



- 4 Paint and seal the box. All of the box enclosure parts need to be protected with exterior paint. All the seams should be caulked to reduce air infiltration.



- 5 Install insulation board. The insulation board is cut out and fitted to the bottom and sides of the tank.



- 6 Install the glazing. The two layers of SunTuf polycarbonate glazing are fitted to the front opening of the box. SunTuf is a highly transparent and very tough polycarbonate glazing.

Potential Design Improvements

The tank is doing quite well in its current incarnation, but there are always things that might be improved -- here are some candidate design improvements.

Glazing Protection: While Lori's horses don't seem to be interested in damaging the SunTuf glazing, and the polycarbonate is pretty tough, you might want to consider protecting the glazing if you think your stock are likely to damage it. Livestock panels that CS used on his tank seem like a good way to go.

Draining: The tank is difficult to drain. I plan to add a drain pipe and valve that goes through an insulated hold in the outer enclosure and connects to the threaded drain plug on the stock tank.

Better Lid: A lid design that allowed the tank water surface to be better protected from exposure to cold, and is stock proof would be a good improvement. This is the major remaining heat loss, and reducing it would probably eliminate the need for any supplemental heat even under extreme conditions.

Insulation Levels: The 2 layers of foam board insulation on the bottom, sides, and back may be overkill.

The R value on the bottom, sides, and back with 4 inches of extruded polystyrene is about R20. The heat loss with an outside temperature of (say) 10°F, and a water temperature of 40°F is about $(42 \text{ sqft})(40^\circ\text{F} - 10^\circ\text{F}) / (\text{R}20) = 63 \text{ BTU/hr}$ or 1500 BTU/day.



The 1500 BTU/day heat loss would cool 50 gallons of water by $(1500 \text{ BTU/day}) / ((50 \text{ gal})(8.3 \text{ lb/gal})(1 \text{ BTU/lb-F})) = 4^\circ\text{F}$ from heat loss through the bottom and sides alone.

The heat loss through the front out the double glazing is about $(10 \text{ sqft})(40^\circ\text{F} - 10^\circ\text{F}) / (R2) = 150 \text{ BTU/hr}$ or 3600 BTU/day -- so the heat loss out the front double glazing is twice that of the heat loss out the back and sides. The heat loss from the top is hard to calculate, but is probably at least as much as the front. This probably argues that the insulation on the back and sides could be cut back some without effecting the performance of the tank a lot.

So, if you wanted to cut the budget a bit for building the tank, I think it would still perform quite well with one layer of 2 inch extruded polystyrene all the way around. Be sure that the entire 2X4 frame gets some insulation on the inside -- don't let the 2X4's bridge heat into the box. Another way to save some money on insulation would be to use rigid foam board under the tank but use fiberglass insulation around the sides and back.

Note that if the heat loss out the glazing seems like a high price to pay for the solar gain, the gain for just 1 hour of good sun is about 2300 BTU.

Insulating Covers: If you visit the tank location fairly often, the overnight heat loss could be cut drastically by: 1) placing an insulated cover over the drinking opening at night, and 2) placing an insulated cover over the collector glazing at night. This could be done when very very cold nights are anticipated. Even doing just the insulated cover over the drinking opening would probably help quite a bit. Do horses drink at night?

In Shaded Areas, Eliminate the Solar Collector: If the location for the tank gets little or no sun, then just use insulation all the way around the tank. This should still reduce the ice formation problem significantly. The water has a lot of thermal mass, and has to be cooled from around 50°F down to 32°F for ice to start forming. If the heat loss rate is reduced by using insulation, it will take some time for the water to cool enough to form significant ice.

Use the tank with a heater: Note that the tank could be used with an electric stock tank heater in very extreme cold weather. The added insulation should greatly reduce the power consumption of the heater. But, for most places the heater won't be needed. If you think you might want to do this, then allow for the heater cord in the construction.

How Horses Cope With Cold

Written by Heather Smith Thomas for the Sentinel Online Newspaper (www.saddleshop.com/sentinel/sentinel-frames.htm)

Horses readily adapt to winter weather. Cold temperature in itself is not a problem for a horse if he's had a chance to prepare gradually by growing a winter coat as fall temperatures drop. Wind and wet weather are the factors that can chill a horse. In windy regions, horses need some type of shelter to protect against the wind chill that can whip away body heat.

Horses handle cold weather better than humans do; equines evolved in the cold climates of northern Europe and Asia. Their natural "comfort zone" (energy-neutral temperature zone, in which they don't need to expend extra energy to maintain normal body temperature if weather is not wet or windy) is from about 15 to 60 degrees Fahrenheit. The horse's body is better at creating and conserving heat in cold weather than dissipating it in hot weather.

Body Changes

As fall changes to winter, the horse's body undergoes a series of physiological changes, some of which actually begin long before the first frosts. As soon as the days start to shorten in midsummer, the horse begins to grow a new hair coat, more dense than his summer hair. As you brush and groom him in late summer you'll notice he's shedding some of his short summer hair. His metabolism begins to change also, enabling him to store more fat for insulation and for energy reserves. A layer of fat under the skin makes it more difficult for heat to escape from the body, and protects against cold weather. The layer of fat needs little energy to maintain, and has few blood vessels. The surface vessels that radiate heat in summer draw back deeper in winter.

As soon as nights start getting cold, his body begins to change, even if the days are still quite warm. If you are working a horse hard, you will notice that he does not dissipate heat as well as he did earlier in the summer; he may sweat more, and his sweat may start to have some smell to it, more like the sweat of an unconditioned horse.

He grows thicker hair as part of his protection against winter cold, but if he is blanketed to prevent this extra hair growth, or clipped, he won't do well outside during winter storms. Clipping makes it easier to cool out and groom a horse that is being ridden or worked in winter, but it's not



wise to clip a horse that will have to spend time outdoors. If he does have a good winter coat, don't blanket him or bring him into the barn just because of foul weather. Horses prefer being outdoors even in the coldest weather and do fine if they have some kind of windbreak, or a run-in shed to get out of driving snow or rain. A horse in good condition with a good hair coat is usually better off outdoors. Make sure horses go into winter with adequate body condition. A thin horse won't winter as well as a fat one. Horses should never be too fat, but they need enough for a good insulating layer under the skin.

Long winter hair traps a layer of warm body heat between the skin and the cold air. When it's cold, tiny muscles in the skin make the hair stand up fluffy, increasing the insulating effect, and blood vessels near the skin constrict, conserving body heat by keeping the blood closer to the warm interior of the body, not allowing heat to escape from blood vessels near the skin surface.

To Blanket Or Not?

A normal winter hair coat is much more insulating than most horse blankets. Adding a heavy blanket or piling on several light blankets can actually make a horse colder because it flattens out his hair and destroys the insulating effect. Blanketing may be necessary, however, for a clipped horse, or for one moved north during winter without a chance to grow a heavy coat, or a horse forced to stand outside in a winter storm without a windbreak. If a horse becomes so wet and cold he has to shiver to maintain body temperature, he'll burn more calories and need extra feed, or he'll start losing weight. Under those conditions, he'd be better off indoors or blanketed.

Horses have a normal body temperature of about 100 degrees Fahrenheit (38 degrees Celsius). They maintain this temperature in cold weather with the help of several mechanisms which include shivering, changes in hormone levels, increased body metabolism, increased digestion of fiber (adding more fiber or more protein to the diet can help a horse keep warm, since digestion of these nutrients produce heat), growing longer and thicker hair which can stand up on the skin to make a layer of insulating air pockets, increased feed consumption, and increased activity. Cold horses on a frosty morning often run and buck to warm up.

Valuable Fur Coat

A well fed horse can manage at temperatures down to 30 or even 40 below zero Fahrenheit if there's no wind and he's not wet. Wind ruffles the hair and destroys its insulating quality. The downward direction in which the hair

grows (along with the oil glands that waterproof the hair) help keep a horse dry in rain and snow. The density of the hair coat and the directions in which the hair grows make such a good overcoat that snow can form ice on the outer surface of this coat without the skin becoming chilled.

It takes a lot of moisture on the hair coat before the dampness soaks through to the skin, since most of the water runs off. Once a horse gets wet, however, he may chill. A wet horse loses body heat up to 20 times faster than a dry horse, because the moisture flattens out the hair and eliminates the air spaces between the hairs, greatly reducing the insulating effect. Even a warm winter storm (rain instead of snow, or snow that immediately melts) can be hard on a horse, if he gets soaked and then gets chilled by dropping temperatures before he has a chance to dry off.

His best defense against cold are a long coat and a layer of fat just beneath the skin; both of these help reduce loss of body heat. Most wild animals go into winter fatter than they are at other times of year; this is nature's way to protect them against cold and give them some reserves for energy and body heat. Long winter hair is the first line of defense, but its insulating quality is lost if the horse is wet or covered with mud.

It's important that a horse have shelter during wet weather. A horse will rarely take shelter from cold, but he will try to get away from rain or driving snow. Horses prefer the warmth of winter sun to a shady shed. If an outdoor horse's coat gets muddy, groom him to keep it from being matted down.

Programmed For Cold

Humans tend to get frostbitten toes and noses in severely cold weather, but horses rarely suffer frostbite. The horse's blunt muzzle is so richly supplied with blood that it can withstand extreme cold without freezing. His long nasal passages with their bone spirals and air pouch (which he also uses for snorting and whistling when he blows air through it) help warm the cold air before it reaches his lungs.

A horse's feet and legs are constructed in such a way that they can withstand extreme cold without discomfort or damage, even when standing in deep snow. His slender legs are just bone and tendons below the knees and hocks, requiring much less circulation than muscles, and are thus less susceptible to frostbite. This allows them to handle extended exposure to cold and snow with no ill effects. The cells in bones and tendons need less blood for maintenance and they also lose less heat. The horse is able to



shunt most of the blood away from his feet and still have a very functional foot. When the feet start to get cold, the shunts open up so that the blood flows from the smallest arteries directly into the veins without having to pass through the smaller capillaries.

If the horse gets cold, the blood vessels in his skin constrict to minimize heat loss, and the hair shafts stand on end for better insulating. If he continues to be cold, he starts to shiver, with his muscles rapidly contracting and relaxing--which quickly raises his metabolism rate and amount of fuel burned in the muscles. With his large blocks of muscle, the horse can shiver much more readily and more comfortably than a human. Since most of this muscle action is being converted to heat, this is a very effective way to warm himself. It takes a great deal of energy, however, to shiver for a prolonged period; this can use up his energy stores.

The horse has several other unique features that enable him to cope with winter. He is less vulnerable to snow blindness than a human, since his horizontal pupils can close more tightly than our round ones, filtering out more of the damaging ultraviolet light. His thick eyelashes protect his eyes from winter wind and extremely cold temperatures. If the wind blows, he instinctively turns his back to it. This protects his thin-skinned face and neck, which have more surface blood vessels. His rump and back have thicker skin and hair, and less surface blood vessels, and can withstand the wind better. He uses his tail to protect his more delicate underparts. His mane and forelock give waterproof protection for head and neck. Horses in groups stand close together to block the wind, and thus benefit from each others' body warmth. With a chance to prepare himself for cold weather, the horse can be quite comfortable and happy outdoors in winter.

Frostbite Information for the Rider

Source: Merck Manual

Frostbite is a cold injury in which an area of the body is frozen. Extreme cold may freeze tissues, destroying them and sometimes surrounding tissues. The area may be numb, white, swollen, blistered, or black and leathery. The area is rewarmed in warm water as soon as possible.

The damage caused by frostbite results from a combination of factors. Freezing kills some cells; others survive.

Because cold causes blood vessels to narrow, tissue that is near the frozen area but not itself frozen may be damaged as a result of the decreased blood flow. Sometimes cold also causes clots to form in small blood vessels in this tissue. These clots may limit blood flow so much that the tissue dies. When blood flow returns to the affected area, the damaged tissues release a number of chemical substances that promote inflammation. Inflammation worsens the damage caused by the cold. In addition, toxic substances are released into the bloodstream as frozen tissue is warmed.

Exposure to below-freezing temperatures puts any part of the body at risk of frostbite. The risk of frostbite damage depends on how cold it is and how long the part was exposed. People at greatest risk of developing frostbite are those who have poor circulation because of diabetes or arteriosclerosis, blood vessel spasm (which may be caused by smoking, some neurologic disorders, or certain drugs), or constriction of blood flow by gloves or boots that are too tight. Exposed hands and feet and an exposed face are most vulnerable. Contact with wetness or metal accelerates freezing and is particularly dangerous.

Symptoms

Symptoms vary with the depth and amount of tissue frozen. Shallow frostbite results in a numb white patch of skin that peels after warming. Slightly deeper frostbite causes blisters and swelling of the affected area. Deeper freezing causes the extremity to feel numb, cold, and hard. The area is pale and cold. Blisters often appear. Blisters filled with clear fluid indicate milder damage than do blisters filled with blood-stained fluid.

The extremity may become gray and soft (wet gangrene). If wet gangrene develops, in many cases the extremity must be amputated. More frequently, the area becomes black and leathery (dry gangrene).

Diagnosis

Frostbite is diagnosed by its typical appearance and occurrence after significant exposure to cold. Sometimes frostbite appears the same as nonfreezing injuries for the first few days. After a period of time, frostbitten tissue develops characteristics that differentiate it from nonfreezing injuries.

Take any person who suffers from frostbite symptoms to a healthcare professional or to a hospital as soon as possible.



MUD

Mud is a problem that plagues us all. Even the most strictly managed equine facility can harbor mud under certain conditions. Mud not only creates an unpleasant and annoying environment for us but can be a health hazard for our horses as well. Problems like thrush, abscesses and fungal infections are caused by muddy conditions. Mud also increases breeding of flies and mosquitoes that could transmit disease, creates unsafe footing that can lead to unwarranted lameness, and creates polluted water runoff from pastures. Prevention is the best cure for mud; however, since we can't control the weather we need to control the amount of rain that flows through our paddocks and pastures. Below are some tips to help control mud.

Good pasture management is always a good place to start controlling mud. Keep bare spots to a minimum by avoiding overgrazing, controlling weeds, over-seeding if necessary, and limiting turnout time when conditions are poor.

Installing gutters on all barns and buildings will divert the storm water away from manure-filled pastures and paddocks. Make sure these gutters are capable of handling the average rainfall in your area. When using gutters and downspouts make sure they are protected from animal wear and tear.

Installing a 'sacrifice lot' is a good way to prevent the horses from using a pasture when the conditions are too wet. This area is a fenced dry lot with shelter, water, and feeders, so the horses can be turned out and fed hay, but not allowed access to the pasture. In order to help prevent pollution of runoff through the sacrifice lot, manure and old hay should be picked from the area every 1 to 3 days. This will remove the organic matter that is used to convert soil to mud. Maintain a grass area of about 25 feet around the sacrifice lot to serve as a filter for any runoff.

Horses should be fenced out of streams, ponds, creeks, and other wetlands. Providing stream crossings will help limit the amount of erosion they will create. Key horse areas around the farm should have mud or dirt removed and replaced by a firm material, e.g. concrete, gravel, crushed stone, etc. Most important areas will include areas around gates, waterers, feeders, barn entrances, sheds and shelters. When creating new paddocks or pastures; try to locate them 20-30 feet from any stream, river or other wetland. Try to locate higher ground for your dry lots and have them sloped away from run-in sheds or barns.

Summary of Mud Management Tips:

- ◆ Avoid overgrazing of pastures
- ◆ Practice good pasture management
- ◆ Install gutters and downspouts on buildings
- ◆ Install dry wells around buildings to filter water away from paddocks
- ◆ Create a 'sacrifice lot' to limit the pasture turn out time
- ◆ Fence off ponds, and other wetlands
- ◆ Create stream or river crossings
- ◆ Install an impervious surface around heavy traffic areas
- ◆ Install a laneway that can withstand heavy traffic of both animal and machine

Tack Care: Cleaning it, Feeding it, Keeping it

Source: Successful Natural Horsecare.com

Tack Care - regardless of what type of riding you do, where you live, naturally kept or traditionally kept horses, tack comes with owning and riding horses. It can be expensive and deserves time and thought as to the best way to look after and care for it.

Safe Tack

With leather horse tack if it is not cared for eventually it will become brittle and stiff. It is then difficult to use as it takes longer to undo and do up the buckles and fastenings. It eventually will break and can then easily cause an accident when riding. If it is kept clean and fed regularly while doing this you will spot any tack that needs repair long before it becomes a safety hazard for you when riding.

When you are cleaning and checking over tack you need to be checking that the stitching is not rotten.

You need to be fussy; if you are unsure it is better to get it repaired. Sometimes it will look fine, but if you try and split the leather pieces apart, which are held together by the stitching, it will just break away very easily once the stitching has gone rotten. You need to find a local saddler who will help you with any repairs and restitching that may need doing.

Basic Steps to Cleaning Tack

Here is a brief simple outline to achieving this. Wipe all tack over with a damp cloth after use.



If always done after use, even just quickly, this will help prevent dirt and sweat from building up.

Then use a leather cream on your horse tack and wipe over. This will nourish the leather and help prevent dirt adhering/sticking to the leather (i.e. The cream can act a bit like a sealer). There are some creams on the market which will also give the leather a lovely shine.

Strip Cleaning Tack and Putting it Back Together

Apart from daily wiping over and cleaning tack there will be times when the tack needs to be taken apart and strip cleaned. By this I mean undoing all the parts of the bridle. If you have a number of horses that you are cleaning tack for, after stripping bridles and cleaning all the parts separately you could keep an index card with notes on, showing how each 'horses bridle is set' and where the buckles do up. A little bit of administration can solve a lot of time fiddling with bridles when tacking up after the bridles have been stripped, taken apart and cleaned.

Additional Tack Care Cleaning

Any lumps of sweat that build up on saddles needs removing, you may have to scrape these off with a knife, take care not to damage the leather at the same time. Take the bridle to bits regularly and check the stitching. If it is looking weak and beginning to break and separate, get it repaired, before it breaks when you are riding.

Dirty Tack

Once sweat and dirt has built up it will take longer to clean your tack. Most often warm water will be enough but you may need leather cleaner if it is very mucky. Have an old toothbrush on hand so you can clean areas which are difficult to get. Once the area is cleaned, wipe it dry; then use a leather cream as above and wipe over.

Feeding Leather

If the tack begins to go stiff it is time for you to do an additional feed. Some of the tack care creams may well do this, but you may find you need something more nourishing that will really feed the leather in order to get the leather soft and supple. You can use 'Neats foot oil' to feed your horse tack. Like everything, there are good and bad ones on the market. Some products sold as 'Neats foot oil' are actually diluted with petroleum oil, which is bad for leather. So read the labels. Continue feeding your tack and saddles until they feel soft and supple.

Cleaning Saddle Seats

With your tack care, be careful what you use on the saddle seats. You may find you can get away with using nothing on the seats and can just nourish the underside. If new and not worn in, oiling them will help if the leather is very new slippery but be aware, if you do oil the seats, after oiling them this can mark your clothing.

New Tack

New tack can take time to wear in. You can oil it first, two or three times, this will help it become supple and pliable. Supple bridles are less likely to rub the horses. Stiff tack and bridles can rub and make the horse sore. Well fed tack is like wearing a comfy pair of shoes that are worn in, as opposed to a new pair that are stiff and hard.

Tack Repairs

As mentioned earlier it is well worth finding a saddler who can help you with any tack that needs repairing. With regular care, you will easily spot any tack that has become worn and needs repair, before it becomes dangerous to use. Be fussy, if the stitching is looking weak and rotten, get it repaired. If you are unsure, by gently pulling on the leather where the stitching is, if it is weak it will begin to break and come apart.

Tack Care Conclusion

Some of the above points are small and easily achievable. However, like everything, if you address problems you may be having with your tack you will enjoy the benefits of your tack care. Small problems solved can make such a difference on a day to day basis and alleviate some of the frustrations that can occur with tack care.

Back-Saving Solutions

Farming with a bad back has its problems. The good news is that by using modifications you may prevent further injuries and reduce back pain.

Here are some helpful tips and devices that are low cost:

Add a step with non-slip material to farm machinery to help with getting on and off farm machinery safely.

Suspension seat could be installed in your tractors or a *seat cushion* with lumbar support and *adjustable arm rests*. These modifications could reduce stress or pressure to the lower back.



Automatic hitching devices and *automatic gate openers* can reduce the frequency of getting on and off a tractor.

Additional mirrors could be added to the inside and outside of the tractor cab. You can see what is happening behind you without twisting your back.

Outdoor mobility aid such as a utility vehicle, golf cart or lawn mower can reduce the amount of time you are on your feet and help with fatigue.

Use a *sit/stand stool* for tasks that require standing and bending for long periods of time.

Use *long handled tools* to avoid bending.

Use *handle extenders* to improve leverage.

Use a *cart or wheelbarrow* to transport heavy materials, store items and reduce bending.

Grabbers can be purchased to retrieve small items on a shelf or on a floor to reduce bending. Two types of grabbers are pincher or magnetic.

Add a *gate wheel* to the end of a sagging gate to allow you to roll the gate open versus carrying it open.

Many low cost modifications can be used on your farm to help reduce back pain and prevent further injury.

A portion of the information shared from: National AgrAbility Quarterly May 2003, Volume 3; Marshall Field Clinic, "Back Saving Tips"; Easter Seals Society, "Safety Tips for Farming with a Back Injury or Back Problem".

For further information please contact the NY AgrAbility Project, Cornell Agricultural Health and Safety Program, 777 Warren Road, Ithaca New York 14850 or by phone 1-877-257-9777. The New York AgrAbility Project can not guarantee the effectiveness of any suggestions, solutions or recommendations. The New York AgrAbility Project is administered by Cornell University through funding provided under the United States Department of Agriculture CSREES project number 2002-41590-01372.

Equine Calendar

For more information call 845-344-1234. Get your copy of the 2009 Equine Activity Calendar online at cce.cornell.edu/orange

NOVEMBER 2009

| | | |
|-----|---|---|
| 2 | Monday - Thursday Racing | Monticello Raceway, Monticello, NY |
| 4 | Cow Sorting Practice | Falcon Ridge, Walden, NY |
| 6 | Friday & Saturday Racing | Vernon Downs, Vernon, NY |
| 6 | Weekend Dressage Clinic With Holger Bechtloff | Frog Hollow Farm, Esopus, NY |
| 8 | Gardnertown Farms Schooling Show | Gardnertown Farm, Newburgh, NY |
| 8 | Tri-County Awards Banquet | Otterkill Country Club, Campbell Hall, NY |
| 9 | Monday - Thursday Racing | Monticello Raceway, Monticello, NY |
| 11 | Cow Sorting Practice | Falcon Ridge, Walden, NY |
| 14 | Children's Workshop | Harness Racing Museum, Goshen, NY |
| 14 | Gardnertown Farms C Rated Show | Gardnertown Farm, Newburgh, NY |
| 16 | Monday - Thursday Racing | Monticello Raceway, Monticello, NY |
| 18 | Cow Sorting Practice | Falcon Ridge, Walden, NY |
| 21 | Catskill Equine Center Year End Award Banquet | Friar Tuck Inn & Spa, Catskill, NY |
| 22 | Fall-Winter Schooling Show | Old Field Farm, Goshen, NY |
| 23 | Monday - Wednesday Racing | Monticello Raceway, Monticello, NY |
| 27 | SDHPA 4th Annual Wild Turkey Ride | Ward's Pound Ridge Reservation, Cross River, NY |
| 30 | Monday - Thursday Racing | Monticello Raceway, Monticello, NY |
| TBD | WHH Fall Pace III | Florida, NY |

DECEMBER 2009

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|-----|--|---|
| 2 | Cow Sorting Practice | Falcon Ridge, Walden, NY |
| 4 | Weekend Dressage Clinic With Holger Bechtloff | Frog Hollow Farm, Esopus, NY |
| 6 | Telethon to benefit Winslow Therapeutic Center | WVT Channel 12, Cablevision 77 |
| 7 | Monday - Thursday Racing | Monticello Raceway, Monticello, NY |
| 8 | Equine Science Center Equine Science Update | Rutgers' Cook Campus, New Brunswick, NJ |
| 9 | Cow Sorting Practice | Falcon Ridge, Walden, NY |
| 12 | Fall-Winter Schooling Show | Old Field Farm, Goshen, NY |
| 12 | Children's Workshop | Harness Racing Museum, Goshen, NY |
| 14 | Monday - Thursday Racing | Monticello Raceway, Monticello, NY |
| 16 | Cow Sorting Practice | Falcon Ridge, Walden, NY |
| 21 | Monday - Thursday Racing | Monticello Raceway, Monticello, NY |
| 28 | Fall-Winter Schooling Show | Old Field Farm, Goshen, NY |
| 28 | Monday - Thursday Racing | Monticello Raceway, Monticello, NY |
| TBD | WHH Landowners Picnic | Westtown, NY |





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EQUINE LINE



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