



Rod Sharp is a Colorado native, growing up on a ranch near Woodrow in Northeastern Colorado. Rod realized early on in his life that he wanted to pursue a career in agriculture. "I really have a passion to serve agriculture and believe it is a very important part of our society". He attended Colorado State University and earned a bachelor's degree in Agricultural Business and a master's degree in Agricultural Economics.

Following graduation, Rod worked for nearly 5 years for Economic Research Service in Nebraska, studying the effects of high energy prices on agricultural operations, in particular pump irrigation. He joined Colorado State University Extension in the midst of the farm crisis of the 1980's. Rod was hired as an agricultural and business management economist.

One of his first tasks was to work with farmers and ranchers going through bankruptcy to help them reorganize their operations. Sharp said some operations went out of business, but other farms and ranches survived and remain in operation today—something he considers one of the rewarding accomplishments of his career.

Sharp has been stationed out of the Colorado State University Extension Western Regional office in Grand Junction since 1986. He works with County Extension Agents and agricultural producers across the Western Slope and provides a wide range of expertise from value added agriculture, farm and family financial management, business and enterprise analysis, risk management, and investment analysis.

Rod is lucky to have a great family – a wife, a daughter and a son. He enjoys friends, sports, and music.

STEM Connections



Connecting Science, Technology, Engineering, and Math concepts to our everyday lives.

Tanning Leather Part I1

How does tanning make the hide soft and pliable for our use? **Chemistry!**

<http://www.specialtyleather.com/images/colors/buckskin.jpg>

This month, we will finish our traditional Native American tanning method.

EXPLORE IT - DESIGN IT - DO IT

- Remove the fur or hair (finish the step)
 - You have been soaking your hide in the hydrated lime water for about 10 days. Put on gloves, goggles, and plastic apron. Carefully remove the lid and remove your hide. Place it on your work board. Carefully dispose of your hydrated lime water. Rinse your bucket and add 2 gallons of fresh rain/spring water.
 - Skud** both sides of the hide to remove the fur as well as completely clean the flesh side. When all fur and **debris** has been removed, rinse the hide in the bucket of clean water. Leave in the water for 5 hours.
- Rinse and delime (neutralize the hide)
 - Drain the bucket and fill with 2 gallons. Add 1 pint of white distilled vinegar. Allow your hide to soak in the vinegar water for 24 hours. This is to neutralize the lime, which is a base. To neutralize a base, we are adding a weak acid.
- Dress with pig brain
 - Remove your hide and empty your bucket. Clean thoroughly. Add 2 gallons of warm rain/spring water and 1 pound of pig brain. Mix thoroughly. Add the hide. Allow to soak in this mixture overnight.
 - Remove the hide and squeeze thoroughly. You can do this by wrapping the hide around the handle of your paddle, and then turning the hide, like a tourniquet.
- Stretch and work the hide
 - Nail your leather to the board, stretching it as you nail it to the board.
 - With your paddle or your hands, work the hide by pushing, pulling, and stretching it with a stroking motion until the hide is completely dry.
 - If you are working with a thick piece of hide, you need to repeat soaking it in the pig brain solution, nailing it on the board, and working the hide until it is dry.
- Smoke over a fire pit
 - The actual tanning is smoking your hide. That is when the chemicals in the smoke interact and link to the hide molecules. If you have a smoker, place your hide inside for 3-4 hours. Be careful that your hide is not too near the heat.
 - If you do not have a smoker, you need to build a small fire and burn it down to embers. Add a piece of semi-dry rotted wood for good smoke, and hang the hide over the fire. If you can enclose the hide over the smoke, that is even better. This needs to be smoked for at least 3-4 hours (or longer). Be sure that your fire is smoking the entire time.
 - Add 1 gallon of rainwater to the bucket, and soak your leather for 30 minutes. Remove and squeeze. Place the leather on your work board, flesh side up.
- Oil and finish tanned leather
 - Mix 1 ounce of sulfated neatsfoot oil to 1 ounce of warm water. Apply half of the oil mixture with a paintbrush to the flesh side of your leather. Dry for 30 minutes.
 - Turn the leather over and apply the rest of the oil mixture to the fur side.
 - Cover the leather with plastic and allow to dry overnight. After 12 hours, hang the leather, fur side out, on a pole or tree branch to dry on the skin side, but the flesh side should remain damp.
 - Nail the leather, flesh side up, stretching it slightly, back on your work board.
 - When the flesh side is almost completely dry, remove it from the board and work the skin in all directions, stretching it from corner to corner, and pulling across the sanded edge of your work board. This is a vital step to produce a soft, pliable leather. Repeat this step after dampening the leather to the desired softness.
 - Place sawdust in the empty, dry bucket. Clean the leather by tumbling it in sawdust. To smooth and work leather into a uniform thickness, use sandpaper. The sandpaper will also make the leather softer.

You are done! Congratulations! Each time you tan a hide, you will get better. When you feel ready, you can tan deer or rabbit skin, as well as any other hide.

Age Appropriate:

4th—HS grades

Time Required:

1 week

Materials:

- **Parent's help**
- Piece of cowhide 12x6" processed in last month's STEM Connection
- Scraping tool (old hacksaw blade or ulu knife)
- Wood board work surface with one edge sanded smooth
- 5 gallon plastic bucket
- Rain/spring water 7 gallons (**do not use tap water**)
- Large wood/plastic stirring paddle (i.e. canoe paddle)
- First aid gloves
- Safety goggles
- Plastic apron
- 1 pint distilled vinegar
- 1 lb. pig brain
- Smoker (or wood fire with rotten damp wood to smoke)
- Neatsfoot oil 1 ounce
- Paint brush
- 12-16 nails no. 6 finish
- Hammer
- Plastic wrap
- Sawdust 4–8 cups
- Sand paper

The Set-up:

- **Do not use metal** for any part of this process—only use wood or plastic.
- You can purchase neatsfoot oil from a taxidermy supply company.
- Do not use chlorinated water.

The Clean-up:

- Put away all your materials.
- Clean up any spills.
- Use your tanned leather for one of the leather crafting projects!

Power Words

- **debris**: loose natural material consisting especially of broken pieces of rock; dirt or rubble
- **scud**: to cleanse (a trimmed and roughly depilated skin or hide) of remaining hairs or dirt