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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS AND UNITED
STATES DEPARTMENT OF AGRICULTURE COOPERATING

Extension Service
County Agent Work

TANNING LEATHER

J. H. Williams, District Agent - Specialist

The tanning of leather at home is one of the most profitable activities that can be practiced. It is profitable from three standpoints.

1. It will insure the individual an adequate supply of much needed leather and permit him to maintain his harness and equipment in good shape.
2. It permits the individual to convert low priced hides into a high priced material. Thus, it will make available for the home the difference for extra and needed conveniences.
3. It will serve to lengthen the number of days of farm labor. The time of farm labor is at present largely used for producing the absolute necessities and requirements for maintenance. If we can add a few days to productive effort, the additional days of labor will result in profit.

To create interest and extend the knowledge of tanning methods, it is suggested that community tanning demonstration schools be held during the slack seasons of the year.

Suggested Plan for Running a Tanning School

See Extension Bulletin 86 - "Home Tanning."

The best method of learning how to tan leather is to see all stages of the tanning operation and actually handle each stage. To permit this it will be necessary either to have those interested visit the demonstration daily for several days or to have hides in each of the several stages. The latter is the better method for a school, thus using only one day for the demonstration of the actual tanning operations. A second day can be utilized very profitably for demonstrating the making of different articles from the finished leather. In this connection, the operator should read Extension Bulletin 86 - "Home Tanning" - before beginning to prepare the hides for the demonstration.

However, should it not be possible or feasible to have each stage of the tanning operation going on, it is better to have the finished leather available for those attending to handle and work with. In this case, simple harness may be made to demonstrate the type of equipment necessary for farm leather work.

If only two hides can be prepared, it is better to have one finished and the other one ready to dehair in order that those attending the demonstration can see the ease with which the most disagreeable part of the tanning operation may be handled. The more nearly all stages in tanning are in progress for the demonstration, the more successful will be the school. If one man does not care to handle all phases of the demonstration, it is suggested that several in the neighborhood can cooperate in this school, each preparing a hide for a different stage, and on the day of the demonstration bringing it in the barrel with the solution of the previous day to the demonstration.

Generally, men will be more interested in harness leathers. Boys will be most interested in furs made from opossum, coon, and other small skins.

Therefore, to have this type of school, light skins should be included. Sheep or goat skin after shearing, and it is better to shear or clip before dehairing to save the wool or hair, may be dehaired and delimed as in the case of cowhides, then tanned with the same preparation as in the case of furs. These thin leathers can be used in purse making, etc.

In addition to thin or light leathers, boys also like leathers for making halters, bridles, etc., hence one hide weighing 25 to 30 pounds should be completed for them by chrome process.

To demonstrate the making of farm harness and show the necessary equipment for such work, it is suggested that things be made that have vital use, - such as hame straps, mule halters, cow halters, back bands, riding bridles, bridle reins and wagon lines. These are rapidly made and will work easily into a demonstration.

If care is taken to follow the directions in Extension Bulletin 86, "Home Tanning" excellent leather will be obtained and as a result of such a demonstration many should be inspired to do likewise and the farm leather and equipment situation should be much improved.

(Failure is the result of failing to read B-86 - "Home Tanning", Texas Extension Service, A. & M. College, Texas, and should not occur.)

DEHAIRING AND PICKLING HIDES

Schedule 1: Salted hides should be shaken and wrenched before proceeding to clean all flesh, fat, and trimmings from the hide. After it has been cleaned soak 24 hours before putting in lime bath to remove salt.

Dry hides should be soaked 24 hours before attempting to clean them. All fat, flesh and trimmings should be removed before putting in lime bath. Hair or wool may be cleaned from the hide as soon as it slips well.

1st day: Weigh and split down back and put in barrel in enough water to cover hides in which 2% of weight of hide of hydrated lime has been well stirred. Plunge twice during day.

2nd day: Add 2% lime and plunge twice

3rd day: Plunge twice during day

4th day: Add 2% lime and plunge twice

5th day: Add 2% lime and plunge twice

6th day: Scrape the hair off well, remove any flesh and fat left. Hides should be washed thoroughly before they are put into pickle.

Bate

Put in pickle bath consisting of 5% muriatic acid and 15% salt and leave over night - stir twice during day.

Pickle Bath

After hides come from the bate bath they should go into a pickle consisting of 10% salt and 2% sulphuric acid, remaining until they are light in color and soft to the touch.

Schedule 2: . Double Bath Chrome Tan

Remove from pickle and put in chrome bath consisting of 5% sodium bichromate, 3% muriatic acid and 5% salt - plunge frequently during first thirty minutes.

Hang up to drain for two hours and then put in bath consisting of 12% sodium hyosulfite or sodium thiosulfate and 3% salt. Let remain 30 minutes - add 6% muriatic acid in three portions about one hour apart and stir after each addition - plunge occasionally.

Hang up to drain for two hours and put in bath containing one half cooking soda.

Stretch on a frame and oil with neat's foot oil or a 50/50 mixture of neat's foot oil and tallow when water stops dripping.

Hides must dry slowly. Keep out of droughts and sunlight. Do not remove from frame until thoroughly dry.

List of material used in tanning hides, per 100 pounds

| | |
|--------------------------|----------------------|
| Hydrated lime | 8 pounds |
| Muriatic acid | 14 pounds |
| Salt | 23 pounds |
| Sodium Bichromate | 5 pounds |
| Sodium Hyposulfite | 12 pounds |
| Cooking soda..... | $\frac{1}{2}$ pounds |
| Neat's foot oil | 1 quart |
| Tallow | 2 pounds |

These chemicals may be obtained from Green Brothers, Dallas, Texas, Fort Worth Laboratories, Fort Worth, Texas, and Durr Drug Co, Montgomery, Alabama.

Dyes may be obtained from the National Analine and Chemical Company, Chicago, Illinois, or from E. I. Dupoint E. Nemours Company, Charlotte, North Carolina.

Schedule 3:

Tanning

Tan Hides with Tanolin

For each 100 lbs. pickle hides, use:

| | | |
|--------------------|--------------------|---------------------------------------|
| Light weight hides | #1 - 4 pounds salt | 7% Tanolin - $\frac{3}{4}$ of 1% soda |
| Medium " | " #2 - 5 " " | 7 $\frac{1}{2}$ % Tanolin 1% soda |
| Heavy calf " | " #3 - 6 " " | 8% Tanolin 1 $\frac{1}{4}$ % soda |
| Cow hides | " #4 - 8 " " | 10% Tanolin 1 $\frac{1}{2}$ % soda |

Put salt and eight gallons of water per 100 pounds of hides in vat or barrel, dissolve. Put hides in barrel and stir or plunge frequently for 15 minutes. Add one third of tanolin solution. Plunge occasionally for 40 minutes. Add one third of tanolin solution. Plunge occasionally for thirty minutes. Add one third of stock. Plunge occasionally for 15 minutes, then leave in solution until color goes through. Plunge occasionally. This will require from four to twenty-four hours depending on thickness of hide. Add more water if

necessary to keep hides covered.

Add soda in solution four equal parts, 15 minutes a part. Plunge often. Let remain in solution from three to 24 hours. Plunge occasionally, use boiling test to determine cure. If not fully tanned, add another charge of soda dissolved and let stay in solution. When tanned lay out smooth for 24 hours covered. Then soak in solution containing 1% soda two hours. Wash thoroughly with clear water. Stretch and oil. In testing boil sample from thickest part of hide, it should not curl.

Preparing Tanolin

Take amount of powder required and stir into boiling water at the rate of two pounds of tanolin to one gallon of water. Stir for five minutes keeping container covered. Let set over night. Stir well before using. This solution must be made in a crock or wooden container.

Tanolin can be secured from Martin Dennis Co., Newark, N. J., or from any commercial tanning company.

Schedule 4: One hide for lace leather - use calf or yearling hide or other light skin.

Date

- _____ Put in clear water to soak
- _____ Cut off ears, tail and shanks. Remove flesh and weigh. Split down back and put in lime bath - 2% lime - plunge twice during day
- _____ Add 2% lime - plunge twice during day
- _____ Plunge twice
- _____ Add 2% lime and plunge twice
- _____ Add 2% lime and plunge twice
- _____ Plunge twice during day

Date

_____ Dehair and remove any fat and flesh remaining. Put in pickle of 5% muriatic acid and 15% salt. Leave in bath for 24 hours. Let drain 4 hours.

_____ Put in alum bath of 6% alum and 12% salt in smallest amount of water that will cover hides. Stir occasionally - should stay in from 2 to 5 days.

_____ Stir occasionally

_____ Stir occasionally

_____ Rinse - put in bath containing 1/2% cooking soda

_____ Rinse - wash with soap and water - rinse and stretch

_____ Oil

_____ Work

COOPERATIVE WORK IN
AGRICULTURE AND HOME ECONOMICS

Tanning Schedule for Glove Leather, Rugs and Furs

Rugs, Robes, and Furs

This schedule is for two sheep or goat skins or their equivalent in weight of small furs.

Today: If skins are dry wash in soapy water, rinse, drain and trim before weighing. Soak in 2% muriatic acid and 15% salt for 24 hours. Then add 6% salt and 5% alum to solution and soak another 24 hours.

If skins are salted do not use salt in the first soaking.

If skins are fresh, wash thoroughly with soap and water then rinse. Clean off flesh and fat and put into solution of 5% alum and 6% salt in smallest amount of water to cover hides. Let remain 48 hours.

Lay out flat and allow to dry slightly. Then rub on flesh side a paste made of one pound alum and one pound of salt dissolved in one gallon of water, then whip in one pound flour, then whip in one-fourth pound egg yolk and one-fourth pound Neat's foot oil. Then fold with flesh sides together.

Today: Apply paste and refold.

Tomorrow: Apply paste and refold.

Today: Let dry hard. Scrape off surplus tanning material, wash and stretch. Leave until nearly dry.

Remove from frame and work until pliable.

Glove Leather

Two goats or sheep. If salt hides, soak in clear water 24 hours. Then cut off tails and shanks. Remove fat and flesh, weigh, put in lime bath with 2% lime. Plunge twice daily.

The next day add 2% lime. The next day plunge. The next day add 2% lime. The next day plunge.

Dehair, remove any flesh and fat remaining and pickle in bath of 5% muriatic acid - 15% salt. Should remain in bath until skin is white and flesh -like.

Lay out flat and allow to dry slightly. Then rub on flesh side a paste made of 1 pound alum and 1 pound of salt dissolved in 1 gallon of water, then whip 1 pound flour in, then whip in 1/4 pound egg yolk and 1/4 pound Neat's Foot Oil. Then fold with flesh sides together.

Apply paste and refold.

Apply paste and refold.

Let dry hard, wash and stretch.

Remove from frame and work until pliable.

It is best to lay all hides out flat immediately after skinning and salt them. After they are cured this way they will keep for months and tan easier than dry hides.

Keep all hides out of direct sunlight.

Water Proofing Boots and Shoes

Heat 1 pint of tallow. Hold a 6-inch square of inner-tube with pliers and apply match to lower end so rubber meets and drifts into tallow. Stir well and apply warm.

Making Sole Leather

Good sole leather is of course made from the very heaviest hides. The middle or back is best.

Sole leather is "filled" to make it stiff and durable by melting equal parts of tallow, paraffin, wax and neat's foot oil together and immerse the sole leather in this after the hide is tanned.

Saddle Soap for Harness Leather

- 1 lb. Tallow
- 1 lb. Soap flakes (not washing powders)
- 1 qt. Neat's foot oil
- 1 gallon water

Directions: Melt tallow and mix with neat's foot oil. Dissolve soap flakes in the water. Pour soap mixture into oil mixture stirring constantly. Stir occasionally while cooking. Apply two coats to hide after oiling.

ALUMINUM SULPHATE TAN

If the skin is dry, relax it by soaking it in water until it is soft. Any hard spots should be worked over the beam and the skin again soaked until no hard spots remain. Then salt the skin well and let it lay for 2 or 3 days.

Before actually tanning the skin, it is first necessary to pickle it. Prepare the pickle bath as follows:

Water - 10 gallons
Salt - 2 pounds
Sulphuric acid (commercial grade) 5 ounces
by weight, or about $2\frac{1}{2}$
ounces by measure)

Leave the skins in the pickle bath from 3 to 7 days, depending on the thickness of the skin. If tanning skins which are very fatty or greasy, you can add an extra couple of ounces of sulphuric acid to the pickle bath on the last day.

When the skins are white all the way through, they are pickled.

Now wash them out thoroughly in a couple of gallons of water, in which you have dissolved a half pound of soda. Then wash them thoroughly in clear water.

The skins are now ready to be tanned. Prepare the aluminum sulphate tanning solution as follows:

Dissolve $2\frac{1}{2}$ lbs. of salt in 10 gallons of water.
Then in another container, dissolve 1 pound of aluminum sulphate, (Tanol) in hot water.
Then pour about half of the aluminum sulphate mixture into the salt water and stir it up thoroughly.

Plunge the skins up and down in this tanning solution and leave them there overnight. On the second day, add the rest of the aluminum sulphate solution to the tanning mixture and again stir the mixture well, plunging the hides up and down several times.

Leave the furs in the tanning solution anywhere from 5 to 20 days. Ordinarily a fox skin would be thoroughly tanning in 5 days, a squirrel, muskrat, racoon, etc., in 8 to 10 days, and a heavy horse or cow hide, for instance, would require up to 20 days.

When thoroughly tanned, take the skins out and wash them several times in plain water. Then stretch them out to dry and when about half dry, take them down for oiling.

The oiling and finishing should be carried out as described under the above instructions for Krome-Tanning Furs. This will tan goat or sheep or its equivalent of small furs. This formula will make excellent glove or art leather. Materials can be secured from J. W. Elwood Supply Co., Omaha, Nebraska.