



Reducing the amount of salt required for hide and skin preservation

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In Pakistan the most common method of curing is by salting. But all of this salt is subsequently removed and most of this enters tannery effluent where it can only be removed under extreme conditions. It is also the major source of salinity found in tannery effluents.

The Pakistan national flocks and herds are given in *Panel 1*.

The off-take as hides and skin for production is given in *Panel 2*.

The average weight of each hide and skin is 12kg and 1.3kg respectively, and the common practice in Pakistan is to apply approximately 35% to 45% salt for preservation. The total weight of the salt consumed each year is given in *Panel 3*.

The amount of salt used can be minimised under good working conditions, and several techniques were investigated in trials. Fresh goatskins were collected from a slaughterhouse and, after washing and the removal of some flesh, dirt and dung, different quantities of salt and selected preservative aids—1% boric acid, 1% commercial phenol, 1% soda ash—were applied. The skins were inspected twice per day during the two-month trial period. The temperature and relative humidity ranged between 18-30°C, and 44-60% respectively.

The findings show that salt with Soda Ash is not recommended due to the rapid bacterial attack, and although salt with commercial phenol is effective, the presence of phenol would cause environmental problems. Both salt and salt + boric acid were found to be satisfactory under these trial conditions. On the basis of observations in practice, it is suggested that 20-25% salt + 1% boric acid would safely preserve hides and skins in the cold season, rising to 25% salt + 1% boric acid during hot weather.

The cost of boric acid would be approximately Pak Rs 5.00 - 7.00 (US\$0.082-US\$0.115) for hides, and Pak Rs 0.65 - 0.75 for skins, but it provides protection for longer periods as compared with common salt. In addition, the quantity of salt for preservation with its associated transport costs would be reduced, as would the transport weight of hides and skins. This approach could lead to significantly reduced salinity levels in tannery wastewaters. Over and above these observations, for good practice in hides and skins management it is recommended that:

- Curing should be carried out within 3-4 hours of slaughter and flaying.
- Green fleshing, good washing and thorough drainage should be carried out before salting to provide the optimum conditions for preservation.
- The storage temperature should be as low as possible, and must not exceed 30°C.
- The maximum height of hide/skin piles should not exceed 1 metre.

Panel 1: Pakistan: The National Herd and Flock

Category	Quantity in millions of pieces/year				
	00 - 01	01 - 02	02 - 03	03 - 04	04 - 05
Cattle	22.4	22.8	23.3	23.8	24.2
Buffalo	23.3	24.0	24.8	25.5	26.3
Sheep	24.2	24.4	24.6	25.6	24.9
Goat	49.2	50.9	50.9	52.8	56.7
Camel	0.8	0.8	0.8	0.8	0.8
Horses	0.3	0.3	0.3	0.3	0.3
Asses	3.9	3.9	4.1	4.1	4.2
Mules	--	0.2	0.2	0.2	0.3

Panel 2: Pakistan: Off-take as hides and skins

Category	Quantity in millions of pieces/year				
	00 - 01	01 - 02	02 - 03	03 - 04	04 - 05
Hides	7.8	7.9	8.2	8.4	8.6
Skins	38.2	39.2	40.3	41.4	42.6

Panel 3: Pakistan: Annual consumption of salt in hide and skin preservation

Category	Weight in million kg/year				
	00 - 01	01 - 02	02 - 03	03 - 04	04 - 05
Hides	32.8	33.2	33.4	35.3	37.9
Skins	18.3	18.8	19.3	19.9	20.5
Total	51.1	52.0	52.8	55.2	58.3

- Sufficient space should be created between the piles for good air circulation.
- Breaking and re-stacking of piles twice per day in hot weather is essential.

If these guidelines were applied, and the hide and skin dealers in Pakistan reduced the application of salt to 25% salt + 1% boric acid, it is calculated that approximately 19,200 tons of salt would be saved annually and would not enter the wider environment. 🌐

References

- *Economic survey of Pakistan 2004 - 2005*