

Traceability of hides from farm to tanned leather

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1. Introduction

A major challenge for the Leather industry today is to improve the quality of hides and skins. On French calf leather, pilot operations conducted by CTC in 2010 showed that a significant improvement of quality can be obtained by systematic vaccination of animals against ringworm, appropriate treatment against lice, complemented by the implementation of good farming practices to eliminate most of the scratches and scars of mechanical origin.

These measures which contribute to a sustainable improvement in quality grading of these hides need a traceability system, to trace the material from animal live to tannery.

On another hand the possibility of establishing the source of the raw materials used when supplying leathers to brands is becoming more important in the context of transparency of the supply chain.

This should allow traceability to link from the farm to the leather and identify each link in the chain.

CTC has developed within the framework of the project "ID CUIR", a solution to ensure the traceability of raw hides from the animal until tanned leather .

2. Material and method

2.1 Possible places for tagging hides

- ☐ On living animal
- ☐ In the slaughterhouse (before separation between the hide and the carcass) if animal identification in place (link between slaughter and animal life before)
- ☐ Possibility to recover the information and stamping the hide before entry in the tanning process

2.2 Constraints of each sector

Breeding:

- ☐ Respect health rules
- ☐ Respect for animal welfare
- ☐ Marking noninvasive in meat (food safety)
- ☐ Easy : the need for a place of contention

- ☐ Acceptable cost
- ☐ Persistence marking

Slaughterhouse

- ☐ Respect health rules
- ☐ Resistance marking material to the environment (moisture, ev. high salt concentration)
- ☐ Operator safety
- ☐ Do not impose an additional operation (not to disturb the process in the slaughterhouse chain)
- ☐ Acceptable cost
- ☐ Persistence marking

Tannery

- ☐ Resistance marking material to the environment (humidity, salt concentration)
- ☐ Operator safety when stamping
- ☐ Acceptable cost
- ☐ Persistence marking at least until tanned (wet-blue) step (particularly during fleshing and splitting operations (removal of material flesh side) & resistance to chemical operations (very alkaline medium during depilation, then acid before and during tanning, optionally degreasing)
- ☐ risk of elimination of the mark when trimming

3. Results and discussion

Our preliminary work helped to highlight some key points and guide the project.

- It is not necessary to insure hide traceability in farm. First the respect for animal welfare could be an obstacle to the implementation of marking.

Then traceability of bovine animals is fully insured in EU, (every bovine is ear-tagged at birth and this tag get a code, an individual identity number and EU slaughtering companies are already obliged to have a traceability system for meat). It was therefore interesting to rely on traceability linked to the meat and ensure marking of the hide from the slaughterhouse before the complete separation between the skin and the carcass. Slaughterhouses in fact, have all the elements to provide information about the life of the animal before slaughter from their own data system used to trace the meat.

- It was decided to ensure traceability not by lot, but hide per hide. Hides of bovine issued from different farms after being salted can be effectively classified by categories (weight ...), and then mixed. For that traceability by lot is not possible.

- It was decided to ensure traceability in two steps:

To obtain a unique marking reference which then resist to the process of tanning, the techniques available are too restrictive and too expensive. A stamping system (using automated pneumatic or hydraulic stamping for example), to apply a code to the hide weighs between 50 and 70 kg and its price is about 70 k €. It is the same for systems with auto increment tattoo or marking matrix holes. The marking obtained is not readable on the hide with the hair. These systems are not compatible with the cadences of a slaughter. Laser

marking can be made readable marking on hair, but the powers necessary for a laser of this type involve safety for operators on the chain in slaughterhouse.

- In a first step, the method works applying a tag on the side of the hide in the slaughterhouse before separating skin and carcass.
- Then, at least before the entry in the tanning process, the information carried by the tag is stamped in the hide.

The solution developed consists in:

□ The application of a tag with RFId information on the side of the hide before slaughter and separation between skin and carcass, (no negative impact on the speed of the chain in slaughterhouse). The code contains information on name of the original slaughterhouse, date, an individual number which identify the animal and linked to the meat traceability.

□ The recovery of information from the tag placed on the hide before the entry into tanning process by performing a micro-percussion marking on the skin.

This persistent marking made on raw-hide is perfectly readable on tanned skin after unhairing process. The time marking for 12 characters is approximately 6 seconds. The tool used in “micro-percussion” system has a weight of about 4 kg and cost about 7000 euros.

The liability of the recovery information is provided by the presence of RFId system on the tag. Reading the information in the RFId tag is automatic.

4. Conclusions

This method to trace the hides from farm to tanned-leather gives the possibility to an individual traceability physically transferred to the hide. The main benefits of the system is that it permits to link directly the hide quality, (through the slaughterhouse), to the tanned leather. We have here all the information to create a system to increase attention on hides and improve quality.