

ACHIEVED RESULTS

- Demonstration of the innovative bio-treatment effectiveness in reducing poultry manure bad smell: **odor impact 80% reduced.**
- Demonstration of the **applicability of treated poultry manure in the bating phase** of the tanning process: enzymatic measurements made on them showed proteolytic activity in the range of applicability. Moreover, the obtained results indicate this treatment as available even for small thickness skins, without damage risk.
- Demonstration, at laboratory level and semi-industrial level, of the **applicability of this innovative technique for leather production**, in terms of final product quality and environmental impact reduction: finished leathers have no odor and appear very similar to those obtained with traditional methods.
- **Lack of biological risk** for operators: presence of pathogenic microorganisms was not detected.

THE PARTNERSHIP



Coordinator
Faenza (RA)-
Italy



Santa Croce s/
Arno (PI)-
Italy



Ferrara- Italy



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THE PODEBA PROJECT HAS BEEN
COFINANCED BY THE EU THROUGH THE
LIFE+ PROGRAM



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USE OF POULTRY DEJECTION FOR THE BATING PHASE IN THE TANNING CYCLE



ENVIRONMENTAL PROBLEMS TARGETED

Raw leather is made up of three main layers. The middle layer (*corium*) is the one to react with the tanning agent and to constitute the leather product, while the others are removed during processing. The bottom layer (*ipodermis*) is mostly removed by mechanical means (fleshing). The upper layer (*epidermis*) and the hair are removed by chemical means (liming).

Bating results in the removal of all unwanted proteins that remain after the liming phase. In particular, during this phase the unhaired, fleshed and alkaline hides are neutralized with acid ammonium salts and treated with enzymes, similar to those found in the digestive system, to remove hair remnants and to degrade proteins. This phase produces the largest part of the **ammonium load** of the effluents.

The PODEBA project will demonstrate an **innovative, natural and sustainable process**, capable of providing the same results as traditional bating techniques, while at the same time cutting the environmental impact of tanneries and reducing water consumption.

PROJECT OBJECTIVES

The PODEBA project aims at demonstrating the use of an innovative material, a recycled treated waste (poultry dejection) for the production of new leather products with a significantly higher **eco-sustainability** profile. The environmental impact of the project is evidenced through the following means:

- Recycling and use in an innovative application of a waste, poultry dejection, characterized by high environmental problems of management and disposal.
- Application of an innovative treatment able to deodorize the poultry dejection, based on the use of an European patented recipe (plant enzyme mixtures).
- Use of recycled waste instead of industrial products with saving of economical costs and energy and water consumption.
- Drastic reduction of the high environmental impact of tannery wastewater by using a natural product instead of traditional industrial products in the bating phase.
- Production of leather products with antimicrobial, self-cleaning biological, eco-friendly properties for well-being, health, product customization, clothing and smart furnishing.

ACTIONS CARRIED OUT AT HALF PROJECT

This project aims at demonstrating the use of poultry dejection in the bating phase of the tanning cycle at different levels. To date the following actions have been carried out:

1. A certain quantity of poultry manure was subjected to **bio-treatment of deodorization**, for laboratory tests and to be used in tannery.
2. **Enzymatic measurements** were carried out on treated poultry manure, in order to test its effectiveness in the bating process.
3. Physical-chemical characterization and **microbiological tests** were performed on the poultry manure to verify the absence of biological risk for operators.
4. Treated poultry manure was tested on different samples of skins during the bating phase at laboratory and at **semi-industrial** level.
5. **Odor emission measures** were carried out on treated poultry manure, on skin samples during processing, on the bating floats and on the final product.