

## Introduction

Currently, *Listeria monocytogenes* is considered one of the most important foodborne pathogens. It is often implicated in epidemics of human listeriosis that represents a real health risk, given the high mortality rate (over 25%) of infected persons [1]. *Listeria monocytogenes* can directly or indirectly contaminate products and the environment, which makes *Listeria* a worrying pathogen for the dairy industry.

The Commission Regulation (EC) 2073/2005 on microbiological criteria for foodstuffs, imposes an absence of this pathogen in 25g of the products able to support the growth of *Listeria monocytogenes*.

This criterion is applicable to products before they leave the immediate control of the food business operator, unless the manufacturer is able to demonstrate, to the satisfaction of the competent authority, that the product will comply with the limit of 100 cfu/g throughout the shelf life [2].

As butter is a product with a wide variation in the production process, more information and data on the growth and survival of *Listeria monocytogenes* in relation to formulation and butter structure are therefore needed [3].

## Objectives

The aim of this project is to evaluate whether *Listeria monocytogenes* can develop beyond the 100 cfu/g over the shelf life of the butter, and thus the possibility of having a relaxation of the European standard for all producers of raw milk butter.

- Generate an accurate picture of the manufacturing of raw milk butter in Wallonia.
- Study the evolution of physico-chemical parameters throughout the production of butter, and evaluate the effect of the different stages of production on these parameters.
- Study the growth potential of *Listeria monocytogenes* in raw milk butter.

## Study area

The study is carried out in Wallonia (Belgium).

- 278 butter producers listed in the database, of which 67 have stopped the production of butter.
- 147 respondents, that is 70% of those listed, who are still active.
- Most of the producers are located in the provinces of Hainaut and Namur.

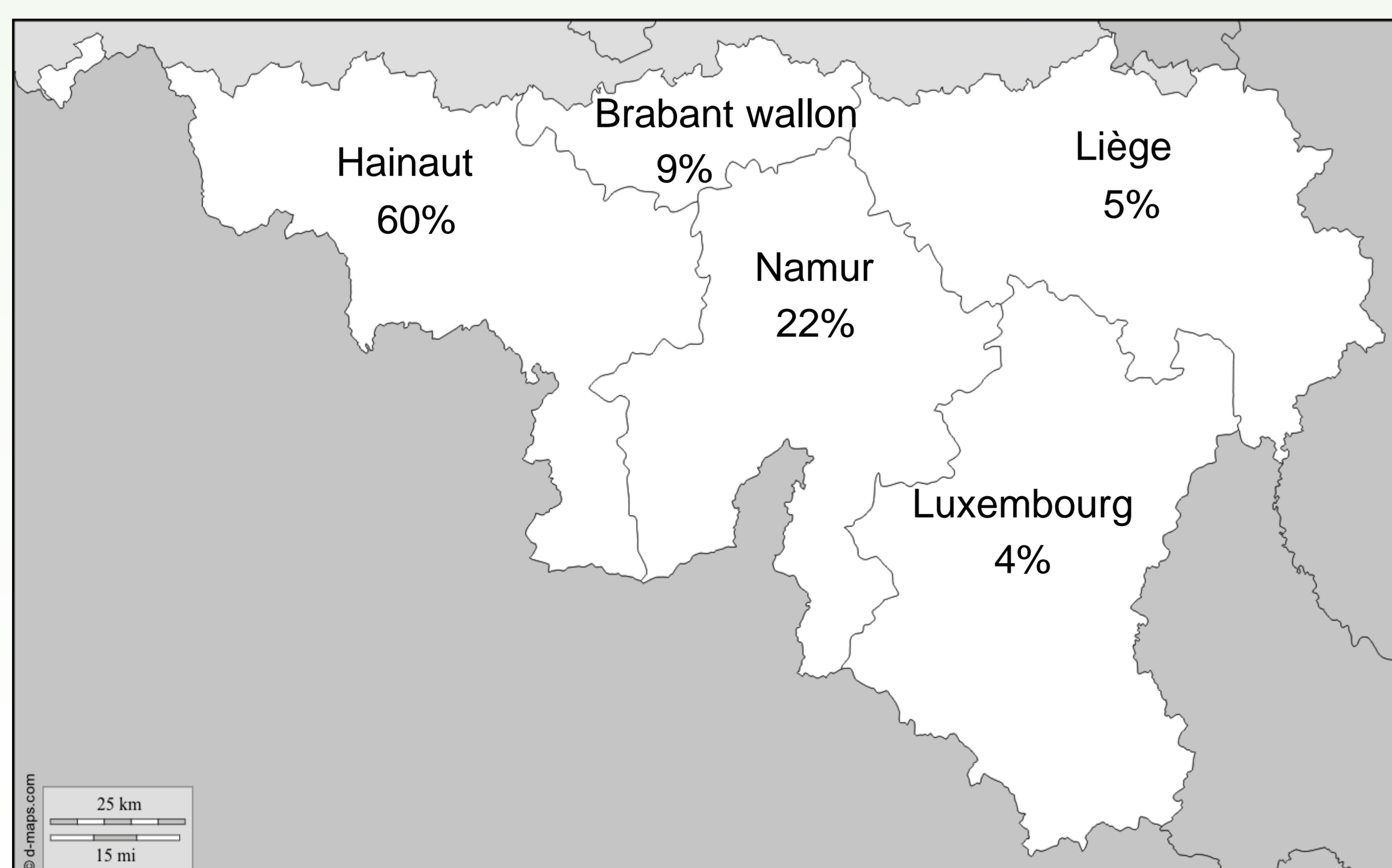


Figure: Distribution of raw milk butter producers in Wallonia

## Methodology

### Descriptive characterization of the manufacturing processes of raw butter in Wallonia

A survey of 147 producers of butter from raw milk was carried out. The different data collected include the process of butter production as well as the practices surrounding the production of the raw milk and the distribution circuit.



### Physico-chemical characterization

Field follow-ups are planned.

A follow-up protocol was developed for this reason. In this protocol, temperature and pH are measured directly at different stages of production. A continuous pH probe was used to monitor acidification of the cream during maturation. Samples are sent to the laboratory for measurements of fat, moisture, water activity and water distribution.



### Study of the growth potential of *Listeria monocytogenes* in raw milk butter

Durability tests will be performed on natural contaminated samples.

This test consists of conducting physico-chemical and microbiological analysis at the reception of the samples ( $J_0$ ) and 30 days after the date of manufacture ( $J_{DLC}$ ). The samples are from the same batch of butter.

- Physico-chemical parameters: temperature at reception, water distribution, pH,  $A_w$ , humidity and salt concentration.
- Microbiological parameters: *Listeria monocytogenes* (presence or absence), *Listeria monocytogenes* (enumeration if presence), total aerobic flora, *E.coli*, *Pseudomonas spp.*, coagulase positive Staphylococci, yeast and mold.

## References

- [1] European Food Safety Authority. 2013. "Analysis of the Baseline Survey on the Prevalence of *Listeria monocytogenes* in Certain Ready-to-Eat Foods in the EU, 2010-2011 Part A: *Listeria monocytogenes* Prevalence Estimates." EFSA Journal 11 (6):3241. <https://doi.org/10.2903/j.efsa.2013.3241>.
- [2] Commission Regulation (EC) No 2073/2005 of 15th November 2005 on microbiological criteria for foodstuffs. Official Journal of the European Union.
- [3] Advice 09-2016 of the Scientific Committee of the FASFC on the growth of *Listeria monocytogenes* in raw milk homestead butter.

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