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20.13 THE E-LCA AS A TOOL TO QUANTIFY THE ENVIRONMENTAL IMPACT OF MEAT AND LEGUMES-BASED BURGERS

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Abstract

Thanks to its high biological and nutritional values, the meat has always been considered an interesting food for a good diet. However, ethical reasons, religious restrictions and the high prices have driven the consumers' behaviours towards alternative products. Nowadays, the demand for new food formulations has an upward trend. This is also due to the growing awareness of consumers about the environmental impact of food productions. In this scenario, the legumes are considered an alternative food compared to meat.

For this reason, one of the aims of the international project "Legume Genetic Resources as a tool for development of innovative and sustainable food Technological system" (LeGeReTe) is to evaluate the environmental sustainability of legume-based products.

An Environmental-Life Cycle Assessment (E-LCA) was performed to evaluate the environmental profile of one meat burger and one legume-based burger. A conventional functional unit of '1 burger (100 g)' and an alternative one of '15 g of proteins' were used, applying for the study a "from cradle to grave" approach.

The environmental impact assessment helped to identify the most impactful activities: for both the production chains, the agricultural phases were identified as the most damaging. Regarding the production processes, the legume-based burger was identified as the most energy demanding compared to the meat burger.

Considering a functional unit of 1 burger, the results suggest that the meat burger is 3.44 times more impactful compared to the legume-based burger. While switching to a nutritional functional unit (15 g of proteins), the results showed that to reach the same protein content of a meat burger, is necessary to double the legume-based burger production which remains anyway the most sustainable option.

In conclusion, the legume-based burger can be defined as the most environmentally-friendly solution both from a production and from a nutritional point of view.

Keywords: meat, legume, LCA, environment, sustainability