

RAMA PLANT BASED BUTTER ALTERNATIVE LIFE CYCLE ASSESSMENT RESULTS FOR SLOVENIA

The Life Cycle Assessment ("LCA") results and claims for the above product are set out below. The LCA methodology and details of the Tool developed for Upfield, the parent company of the brand above, by Quantis is set out in the Annex below.

Tool version: 2023-05-11

Date of assessment: 26.06.23

PRODUCT SPECIFICATIONS

All data and results in this fact sheet are for the following product.

Specification	Description
Product type:	Plant-based spread
Product brand and variant	Rama Plant based butter alternative
Product DU code	91305985
Market:	Slovenia
Product format (grams):	250
Functional unit	1 kg fresh product

The following results are based on a life cycle assessment, from ingredients production through to packaging end-of-life. A total of 16 indicators were assessed: 14 environmental impact indicators from the European Commission Environmental Footprint (EF) 3.0 method and two additional indicators: land occupation (m².y) and water consumption (m³). In order to make comparative assertions, and specific claims on climate, land or water, the overall environmental performance of the Upfield product must be favourable compared to its dairy counterpart, based on all indicators assessed.

ON-PACK CARBON LABEL

0.34 kg CO₂-eq per 100 g

COMPARATIVE CLAIMS

What dairy counterpart is Rama Plant based butter alternative being compared to Dairy butter in Slovenia

CLIMATE IMPACTS BY LIFE CYCLE STAGE FOR 1 KG OF FRESH PRODUCT

Life cycle stage	Rama Plant based butter alternative	Dairy butter
Ingredients & product manufacturing	2.48	13.0
Packaging production & end-of-life	0.10	0.06
Distribution	0.76	0.07
Use stage	0.05	0.05
TOTAL	3.4	13.2

SUMMARY OF COMPARATIVE RESULTS FOR 1 KG OF FRESH PRODUCT

Indicator	Upfield product	Dairy equivalent	Absolute savings	% savings
Climate impacts [kg CO ₂ -eq/kg product]	3.4	13.2	9.8	74
Land occupation [m ² a/kg product]	5.3	13.2	7.9	60
Water consumption [l/kg product]	No claim possible	No claim possible	No claim possible	No claim possible

NOTE: For any given indicator, to make public comparative assertions, savings must be considered significantly lower. If no savings are reported in the table above, the savings are not considered significant; in this case, and in order to be conservative claims are not recommended.

SPECIFIC STATEMENT(S) FOR CLIMATE IMPACTS

In Slovenia, Rama Plant based butter alternative has 74% less climate impact than dairy butter.

SPECIFIC STATEMENT FOR LAND OCCUPATION

In Slovenia, Rama Plant based butter alternative occupies 60% less land than dairy butter.

SPECIFIC STATEMENT FOR WATER CONSUMPTION

No comparative claim possible for this indicator

EQUIVALENCIES PER KG OF PRODUCT

CLIMATE EQUIVALENCIES

In Slovenia, switching from one kg of Dairy butter to Rama Plant based butter alternative could save at least 9.8 kg CO₂-eq, equivalent to:

- Driving a car 49 km.
- Charging a smartphone overnight for 44 months (1339 times).
- Leaving a LED light on for 2856 hours (119 days).

Assumptions: Based on a medium-size petrol car (EURO5), considering tailpipe emissions only.

Assumptions: Based on the electricity consumption of charging a smartphone overnight (19.2 Wh/day), assuming the regional electricity mix (EU)

Assumptions: Based on a 9-Watt LED lightbulb, assuming the regional electricity mix (EU)

LAND OCCUPATION EQUIVALENCIES

In Slovenia, switching from one kg of Dairy butter to Rama Plant based butter alternative could save at least 7.9 square meter, equivalent to:

- 2 table tennis / ping pong tables.
- 126 sheets of A4 paper.

Assumptions: Based on the area of a standard table tennis / ping pong table (4.18 m²).

Assumptions: Based on a letter size (A4) piece of paper of 623.7 cm², excluding the land occupation associated with paper production.

WATER CONSUMPTION EQUIVALENCIES

No comparative claim possible for this metric

EQUIVALENCIES PER HOUSEHOLD OVER ONE YEAR

Based on a household of 4 with an average dairy butter consumption of 4,3 kg per person per year

Source: <https://www.statista.com/statistics/415230/butter-per-capita-consumption-europe-eu/>

CLIMATE EQUIVALENCIES

In Slovenia, if an average household of 4 people switched from dairy butter to Rama Plant based butter alternative for a year, it could save at least 169 kg CO₂-eq, equivalent to:

- Driving a car 840 km. *Assumptions: Based on a medium-size petrol car (EUROS), considering tailpipe emissions only (201 g CO₂eq/km).*
- Traveling 464 km by plane. *Assumptions: Based on a short-haul economy flight (364 g CO₂eq/km), based on My climate tool*
Source: https://co2.myclimate.org/en/flight_calculators/new
- The electricity consumption of 691 washing machine cycles. *Assumptions: Based on a washing machine cycle of 0.64 kWh/cycle (temperature 40°C, 50 litres of water use), assuming the regional electricity mix (EU)*
Source: https://green-business.ec.europa.eu/environmental-footprint-methods_en
- The electricity consumption of putting on an electric kettle 3537 times. *Assumptions: Based on a kettle consuming 0.125 kWh to boil 1 litre of water, assuming the regional electricity mix (EU)*

LAND OCCUPATION EQUIVALENCIES

In Slovenia, if an average household of 4 people switched from dairy butter to Rama Plant based butter alternative for a year, it could save at least 135 square meters, equivalent to:

- 8 parking spots. *Assumptions: Based on a 17.7 square meter parking spot.*
- 0.5 tennis courts. *Assumptions: Based on a standard size tennis court of 260 square meters.*

WATER CONSUMPTION EQUIVALENCIES

No comparative claim possible for this metric

ANNEX 1 - LCA TECHNICAL SUMMARY

UPFIELD PRODUCTS VS DAIRY EQUIVALENT

Upfield is a world leading food company which owns a wide range of well-known plant-based and vegan brands (including Country Crock, Flora, Becel, Rama, Tulipan, 'I Can't Believe It's Not Butter', Violife and many, many more). Upfield, through the sale of its branded goods, offers a range of versatile food products in the margarine/spreads, cheeses and creams categories which provide functional alternatives to equivalent dairy products.

In 2022, Upfield commissioned Quantis to develop a Life Cycle Assessment (LCA) Tool (the "Tool") to enable Upfield to assess the environmental impacts of its products sold in Europe, the USA and Canada ("Upfield Product") and compare these to the dairy equivalent products sold in the same regions.

This Technical Summary presents the Tool methodology including the scope of the analysis, functional unit and system boundaries, method, and data sources which Quantis developed for Upfield to support claims made on its branded products.

The Product LCA Results above are generated by Upfield and include the results of defined products assessed, including the specifications of the assessment for each Upfield Product reviewed and the results used for the relevant comparative claims.

LIFE CYCLE ASSESSMENT

LCA is a metrics-based methodology used to assess environmental impacts resulting from, for example, greenhouse gas emissions, waste production, water, land, and energy use. Environmental impacts are calculated over the life cycle of a product, from extraction of raw materials to the end-of-life.

METHOD

The Tool was developed following regionalized LCA methodology described by Liao et al. (2020) to compare the environmental impacts of Upfield Products to the same amount (1 kg) of the dairy equivalent product sold in the same market. The Tool uses a cradle-to-grave approach requiring data collection of the product recipe, key ingredients sourcing countries, production factory, energy mixes, packaging designs, transportation, and end-of-life scenarios. Spatially differentiated agricultural life cycle inventory data is generated (archetypes), as well as land use change ("LUC") emissions for agricultural ingredients in all markets relevant to each system's supply chain, using an attributional approach as per PAS 2050 (BSI, 2012), aligned with the latest international standards for dairy products, published by the International Dairy Federation (IDF, 2015) and the European Dairy Association (EDA, 2016).

CRITICAL REVIEW

The Tool and the methodology used to perform the LCAs are aligned with PEF methodology and ISO 14040 and 14044 standards for public disclosure of results. The Tool has been peer reviewed by a panel of three independent experts on topics such as LCA, agronomy and dairy production.

The product LCA results generated by the Tool based on assessments performed by Upfield are reviewed by Quantis and respect and conform with ISO 14026 standards (Environmental labels and declarations — principles, requirements, and guidelines for communication of footprint information) for making comparative claims. The results can be found above for the respective Upfield Products.

FUNCTIONAL UNIT

The functional unit ("FU") is a reference unit for which all results are calculated and presented. In respect of the Upfield Products, the FU is to provide the same function (cooking, baking, frying, roasting etc.) of 1 kg of the equivalent dairy product and Upfield branded plant-based alternative product in a relevant country market, packaged, for the relevant consumer (domestic or professional).

ENVIRONMENTAL IMPACT INDICATORS CONSIDERED

The Tool assesses a total of 16 indicators: 14 environmental impact indicators from the European Commission Environmental Footprint (EF) 3.0 method and two additional indicators: land occupation (m².y), which reflects the total area of land used over one year (Nemecek et al. 2011, Milà i Canals et al. 2012), and water consumption (m³), the total amount of fresh water consumed (ISO 14046), which includes, for example, evapotranspiration of irrigation water.

FROM CRADLE TO GRAVE

The LCAs performed with the Tool consider all identifiable activities across the product life cycle (cradle-to-grave) for Upfield Products in the different markets (see Figure 1).

The assessments include impacts from:

- ☒ Farming (crop production or milk production)
- ☒ Packaging manufacturing of Upfield Products
- ☒ Distribution
- ☒ Retail
- ☒ Consumer use
- ☒ Packaging end-of-life

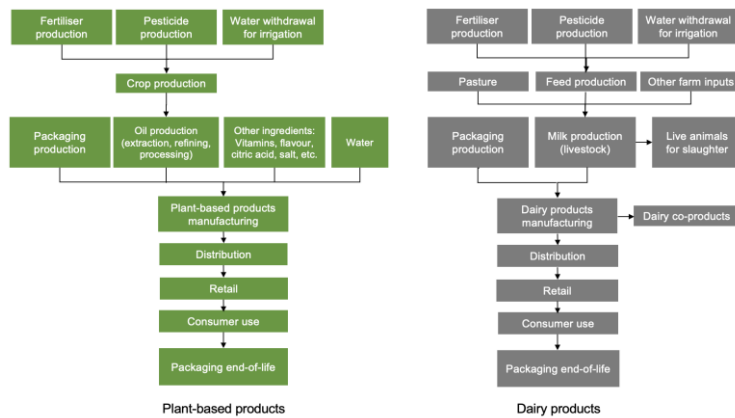


Figure 1. Schematic of the systems evaluated

The studies do not include impacts from:

- ☒Capital goods at the distribution centre and at the point of retail.
- ☒Labour, commuting of workers, administrative work, cattle insemination, and disease control processes.
- ☒Food loss and food waste during distribution, at retail point and at the consumer's home.

DATA COLLECTION AND MODELLING

- ☒Upfield Products: primary data for the recipes and ingredient sourcing were provided by Upfield based on its supply chain and manufacturing operations
- ☒Dairy products for European countries: Default dairy data used to model dairy production, processing, packaging, and distribution and representative of country averages in Europe is based on guidelines published by the European Dairy Association and the European Commission (see Note 1 and 2)
- ☒For those European countries for which no direct national dairy datasets were available, the country with the lowest dairy climate impacts in Europe (in this case, Finland) was chosen for the comparison to ensure a conservative approach.
- ☒Dairy products for US and Canada markets: Default data representative of US and Canada averages and published by the USDA were used. Canadian milk modelling was updated with the latest available data from Dairy Farmers of Canada (DFC, 2018).

NOTE 1: EDA (2018) Product Environmental Footprint Category Rules for Dairy Products. Version 1.0 (April 2018). The European Dairy Association. Brussels, Belgium

NOTE 2: Raw milk datasets are based on the World Food Life Cycle Assessment Database (WFLDB), Nemecek et al. 2015

EXTERNAL COMMUNICATIONS

In order to make comparative assertions, and specific claims (e.g., climate impact comparisons), the overall environmental performance of the Upfield Product must be favourable, overall, compared to its dairy counterpart in each country, based on the 16 indicators assessed. Climate change, land occupation, and water consumption have a high relevance for Upfield product categories and the food industry and therefore are recommended to be used in product footprint environmental communications.

Throughout the development of the Tool, conservative assumptions in favour of dairy have been used for comparisons. For example, the packaging chosen for the dairy comparison is a common format with lowest climate impacts (i.e., for butter, the packaging chosen for retail consumption is 250 g paper parchment wrapper). These conservative approaches ensure further robustness when making comparative claims.

For communication purposes Upfield uses "climate impacts" to communicate the impacts of their products on climate change. Globally, terms like "climate impacts", "carbon emissions", "carbon footprint" or "greenhouse gas emissions" are used interchangeably for communication purposes when communicating about the impact on climate change of products, although there are some technical nuances and differences.

For any given indicator, in order to make public comparative assertions, savings must be considered significantly lower. For some assessments and for some indicators (e.g., water consumption), results may appear favourable, however, as the Tool considers the level of uncertainty for individual metrics, unless there is a significant difference, a reliable comparative conclusion cannot be drawn to support external communications.

For further information, please contact ESGinquiries@upfield.com

ABOUT QUANTIS

Quantis guides top organizations to define, shape and implement intelligent environmental sustainability solutions. In a nutshell, our creative geeks take the latest science and make it actionable. They deliver resilient strategies, robust metrics, useful tools, and credible communications.

With offices in the US, France, Switzerland, Germany, Italy and Colombia and clients around the world, Quantis is a key partner in inspiring sustainable change on a global scale.

Discover Quantis at www.quantis-intl.com

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