

Environmental Impacts of Pasta Cooking

Luca Ruini, Roberto Bassi – Barilla G. R. Fratelli S.p.A., 166, via Mantova, I-43122, Parma (PR), Italy (luca.ruini@barilla.com, roberto.bassi@barilla.com)

Massimo Marino, Sonia Pignatelli – Life Cycle Engineering, Environment Park – 60, via Livorno, I-10144 Torino (TO), Italy (marino@studiolce.it, pignatelli@studiolce.it)

Introduction

Sustainability has now entered in the agendas of companies, policy makers and a fraction of "green consumers". Companies work to achieve environmental impact reduction, while policy-makers work to define strategies aimed at improving the sustainability of production and consumption chains. Consumers are asked to prefer products that demonstrate compliance with these requirements.

Though the production phase always seems to be the most important in terms of environmental impacts, in some cases the consumer use bears even more impact than production itself: pasta falls into this case and, therefore, this paper presents elaborations aimed to the calculation of the environmental impacts of the cooking phase.

Materials & Methods

The starting point is constituted by a full life cycle assessment of Barilla's pasta production that was published in a verified Environmental Product Declaration in which the carbon, ecological and water footprint were illustrated in utmost clarity. Aside from this, a detailed study on the cooking impacts was made, and the carbon footprint of different cases evaluated.

Normally pasta makers recommend using 10 times the water in comparison to the amount of product being cooked: 500 g should therefore use 5 liters of water. It is interesting to consider how the use of different amounts of water can affect energy consumption and the relative impacts in terms of CO₂ equivalent.

Results & Discussion

At this point, it is interesting to examine how the various environmental impacts vary in relation to the amount of water used for cooking. The diagram below represents the impacts for both a smaller and a larger amount of water used for cooking 500 grams of pasta; some considerations were made changing the quantity of water used to cook pasta, moving from 4 to 6 liters. This abstract also accounts for the Italian energy-mix for electricity production. Data about energy production and use come from Ecoinvent database.

It is interesting to assess how a variation of the quantity of water used yields significant differentiations of impact: -20% water corresponds to -7% GHG emissions for gas cooking procedures (Figure 2).

The Carbon Footprint of the pasta cooking phase is similar to that of production. That is why correct consumer behavior is as important as corporate efforts aimed at reducing impacts. In particular, it is quite important to use the right amount of water, cover the pot while waiting for the water to boil, and add salt only when the water is boiling. This aspect of the cooking phase is directly linked to the consumer's behavior. That is the reason why proper consumer information is crucial for achieving sustainability, learning how to avoid useless waste and be more environmental friendly.

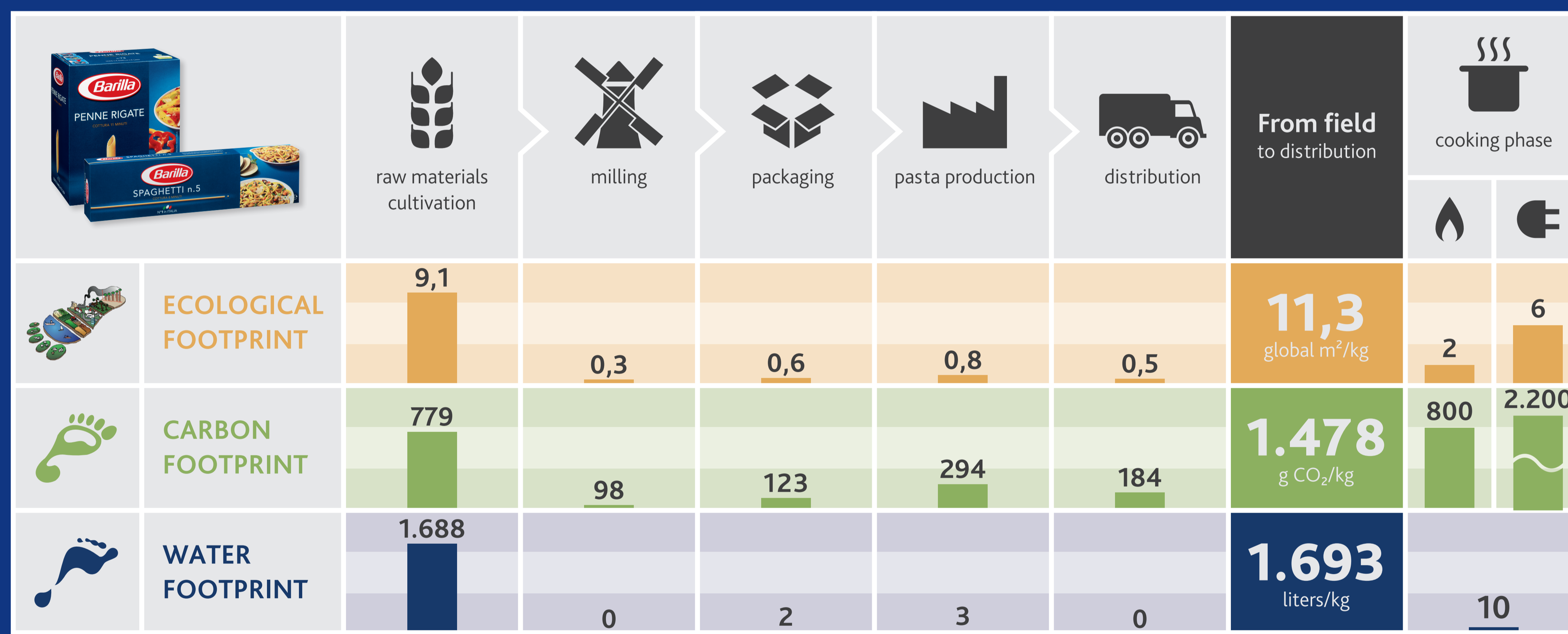


Figure 1 – Footprint of the pasta production (Barilla, 2011). Further information on: www.barilla.it



Use QRcode for see the complete document EPD.

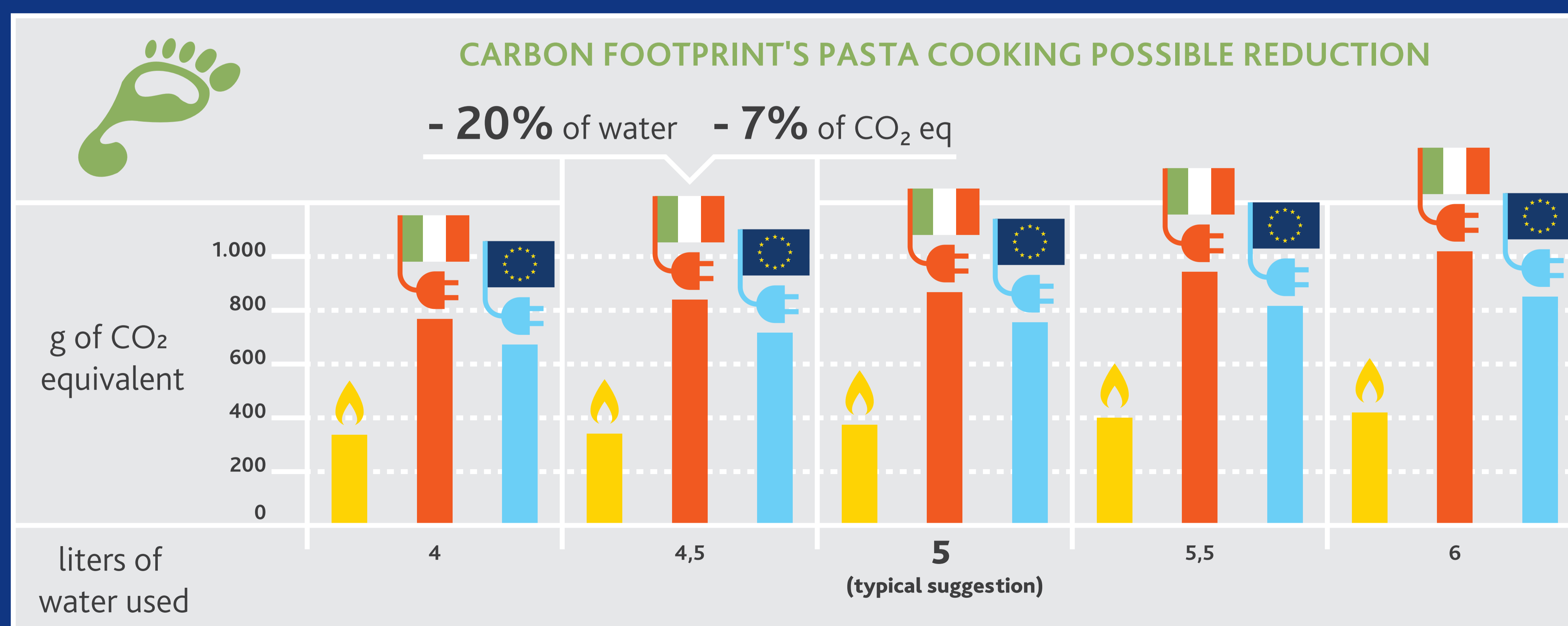


Figure 2 – Carbon Footprint for cooking 500 grams of pasta assuming a variable pasta/water ratio of ± 20% and a cooking time of 10 minutes. A total of 5 litres of water were used as recommended by the producer (BCFN, 2011).

- Gas
- Electricity Italy
- Electricity EU