investigation, as it could represent an effective manner to meet consumer demand, i.e. intensely coloured yolks, without using additional pigmenting agents.

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O055

Environmental sustainability assessment: from fruit and vegetable waste to earthworm as feed sources

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Europe's reliance on imported protein to feed livestock, particularly soybean, is inconsistent with sustainability objectives. An increasing dependence on soybean can lead to increasing environmental burden such as deforestation and greenhouse gas (GHG) emissions due to its transport over long distances, which contributes to climate change. In particular, soybean produced in South America embeds a considerable impact in terms of greenhouse gas emissions related to land use change and indirect land use change. At the same time, food waste has already been recognised as an important global issue. On the environmental point of view, food waste has led to an unnecessary exploitation of natural resources (land, water and fossil energy) and to GHG production. Reduction and recycling of food waste is a key driver towards sustainable productive solutions. Among the possibilities to achieve this goal, this study explores the recycling of fruit and vegetable waste (FVW) discarded directly from juice and ready-to-eat food processing industries, as growth substrate for producing fresh earthworms then processed into dried meal. The dried meal is assumed adoptable for feed alternative purposes, which is the studied scenarios.

The aim of the present study is to assess the environmental impact of the bioconversion of FVW into earthworms dried meal as new feed source adopting the Life Cycle Assessment (LCA) method with an attributional approach and economic allocation. With LCA, other than the most widely known Climate Change expressed as kg CO_2 eq., several indicators of environmental impact are considered, among which particulate matter formation (PM), photochemical ozone formation (POF) and freshwater eutrophication (FE). By means of LCA, the environmental impact of the production of earthworm-dried meal was quantified. The results showed that climate change assessed for 1 kg of earthworm meal is 2.2 kg CO_2 eq. The feed substrate for earthworms consists of FVW that, therefore, is highly valorised respect to wasting. From this result, earthworms' meal can represent a future-generation feedstock with improved sustainability in order to reduce the dependence on imported soybean as protein source.

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ANIMAL PRODUCTS – DAIRY SMALL RUMINANT: FUNCTIONAL FOOD AND MARKETING

O056

Dietary hazelnut skins: effects on milk quality of dairy ewes

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The inclusion of agro-industrial by-products in the ruminant diet could be an alternative to conventional feeds and contribute to improve the quality of meat and milk. Hazelnut skin (HS), the perisperm of the hazelnut kernel, is a by-product of hazelnut manufacturing. Due to the high amount of phenolic compounds, the removal of HS is important to prevent the bitter flavour or the colour reaction in some food applications. Mono and polymeric forms of flavan-3-ols account up to 95% of total polyphenols. Dietary phenolic compounds can affect biohydrogenation (BH) promoting the accumulation of unsaturated fatty acids while reducing saturated fatty (SFA) in ruminant products. Also, healthy fatty acids such as oleic (OA), linoleic (LA) and linolenic acid (LNA) are predominant in the HS. This study evaluated the effect of dietary HS on milk yield and quality in dairy ewes. Nineteen Comisana ewes at 80 ± 10 days in milk were divided into control (C; $n = 9$) and hazelnut (HS; $n = 10$) group, balanced for live weight and milk yield. After the adaptation to the experimental diets, the two groups were kept indoor in sawdust bedded pens. For a 28-day experimental period, each animal received chopped alfalfa hay *ad libitum*. At each of the two-daily milking (7:30 and 17:30), ewes were individually offered 400 g of a conventional concentrate containing 370 g/kg of dried beet pulp (C) or 360 g/kg of HS. Milk yield was recorded, and samples were collected weekly. All data were analysed with a repeated measures ANOVA to account for the effects of diet, sampling time and their interaction. Milk yield was not affected by treatment ($p = .525$). In contrast, crude protein ($p = .045$) decreased, while fat tended to increase ($p = .082$) in the