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Insects' nutrients – the Animal Frontiers special issue*T. Veldkamp¹ and L. Gasco²*¹*Wageningen University & Research, Wageningen Livestock Research, De Elst 1, 6700 AH Wageningen, the Netherlands,*²*University of Turin, Department of Agricultural, Forest and Food Sciences, Largo P. Braccini 2, 10095 Grugliasco, Italy; teun.veldkamp@wur.nl*

With a growing world population and rising prosperity, the demand for animal-derived product is increasing. To meet this increasing demand, the global feed production has to increase, and new protein sources are being sought worldwide. These proteins must have a good nutritional value and must be produced sustainably. Insects can be part of the solution and the last decade has seen a growing interest in using insects as a sustainable and nutritious source of raw material for animal feed. Insects are high in protein and other essential nutrients and are part of the natural diet of many animal species. In perfect agreement with the circular economy principles, insects can be grown on organic waste, reducing the environmental impact of food waste and converting residual products into high-quality nutrients. The main aim of the special issue of Animal Frontiers is to provide an overview of the development of insects in the global food chain. This special issue tackle different aspects. How these insects should be reared and fed and which is the status of the legislation in the different countries. How to processed insects into protein and lipids and what is the impact of the use of these insect-derived products in animal feed? How to guarantee the safety in the food chain and how sustainable it is to include insects as an important link in the food chain.

Time-course change in lamb composition and reflectance properties: implications for authentication*L. Rey-Cadilhac¹, D. Andueza¹, A. Prunier² and S. Prache¹*¹*UCA, INRAE, VetAgro Sup, UMR Herbivores, 63122 St-Genès-Champanelle, France, ²INRAE, Institut Agro, UMR PEGASE, 35590 St-Gilles, France; lucille.rey-cadilhac@inrae.fr*

Differences in the chemical composition of meat from lambs fed contrasted diets, for example pasture vs a concentrate-based diet indoors, are well known. They are the basis of authentication methods to discriminate between pasture-fed and concentrate-fed lamb meat. However, the question of the timing of appearance of markers of pasture-feeding in lamb meat relative to the start of pasture-feeding is not known. The objective of the present study was therefore to study the kinetics of change in lamb meat composition and to determine whether it was possible to discriminate between different grazing durations in order to authenticate lamb meat production conditions. Four groups of 55 Romane lambs were used: L0, concentrate-fed lambs, no grazing; L21, L42 and L63, with lambs grazing alfalfa for 21, 42 and 63 days before slaughter, respectively. At slaughter, measurements of the commercial and sensory qualities of the carcass and meat were performed, as well as spectral analysis of two fat tissues (perirenal and dorsal fat, PF and DF) and of the longissimus dorsi (LD) muscle using visible and infrared spectroscopy. Regarding authentication purposes: (1) PF skatole concentration (skatole is a compound both responsible for off-flavour and proposed as a marker of grass feeding in some publications) did not allow for a sufficiently reliable classification of pasture-fed lambs vs concentrate-fed lambs; (2) the combination of PF skatole concentration and an indicator of PF carotenoid concentration, using a decision tree, enabled to correctly discriminate L0 lambs from the pasture-fed (L21, L42, L63) lambs, but not to authenticate the duration of pasture-finishing; (3) discriminant analysis on the visible spectrum of PF or DF also allowed to discriminate L0 lambs from the pasture-fed (L21, L42, L63) lambs, but not to authenticate the duration of pasture-finishing. The LD spectral data did not allow to discriminate L0 lambs from L21 lambs and L42 lambs from L63 lambs, but they enabled to reliably discriminate L0 and L21 lambs from L42 and L63 lambs. The perspectives are to expand the spectral range explored using infrared spectroscopy.