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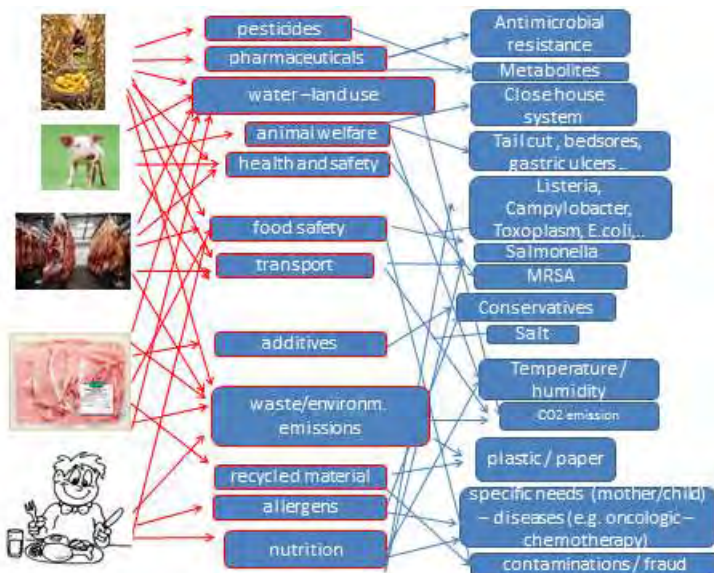
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INTEGRATED FOOD SECURITY: mapping and selecting different indicators and metrics from sustainability till safety, pig product case study

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In food security, integration of data and knowledge across disciplines is needed to prevent food-related diseases, improve sustainability, traceability, quality, animal welfare, diminish food waste, have a clear picture of the environmental impact, improve communication to different stakeholders and introduce nutritional factors considering the enlarging need to “feed the planet”. In this study, we propose a map of indicators and metrics along the production and consumption chain from “farm to fork”, in specific for an Italian pork product (Prosciutto cotto-ham), useful for decision making processes. Databases and predictive models are combined in a broad manner to find interconnections, important variables, and potential nodes to assess the overall sustainable nutrition security and improve elements such as traceability, detection of foodborne hazards, nutritious value and communication in every step of the value chain. Sustainability indicators and metrics from Life Cycle Assessment and Risk Assessment are integrated to provide a more holistic assessment of the food chain. Certified products can gain increased credibility from the consumer, if adequate information is provided through all steps in the production chain from primary production to retail. The map considers human health risks (e.g. infectious agents, contaminants), benefits (e.g. nutritional values), environmental impacts (e.g. energy consumption), and social impacts (e.g. in vulnerable population). The map helps to compare products or product chains, to identify critical steps, and to observe the problems, risks or benefit from several different perspectives.

Fig 1: Extract of indicators and metrics along the food chain and their interdependencies



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