




Food and Agriculture
Organization of the
United Nations

Contribution of terrestrial animal source food to healthy diets for improved nutrition and health outcomes

Key messages





The Committee on Agriculture (COAG), an FAO governing body, at its 27th session in October 2020 requested FAO to produce a “comprehensive, science and evidence-based global assessment of the contribution of livestock to food security, sustainable agrifood systems, nutrition and healthy diets” (the Assessment). The first component document of the Assessment focuses on the contribution of terrestrial animal source food (TASF) to healthy diets for improved nutrition and health. By TASF FAO refers to all food products derived from livestock production systems of any scale and from wild animals.

Further component documents under preparation will examine the factors determining demand, supply, and consumption of TASF; the livestock sector benefits, trade-offs, and synergies to food security and sustainable agrifood systems; and opportunities for transforming the livestock sector sustainably to optimize food and nutrition security.

Key messages

TASF provide high-quality proteins, important fatty acids and various vitamins and minerals including iron, zinc, selenium, Vitamin B12, choline and calcium, among others.

Within appropriate dietary patterns, TASF can make vital contributions to meeting the nutrition targets endorsed by the World Health Assembly and the 2030 Sustainable Development Goals Agenda related to reducing stunting, wasting and overweight among children under five years of age, low birthweight, anaemia in women of reproductive age, and obesity and non-communicable diseases (NCDs) in adults.

The contribution of TASF to dietary patterns vary substantially across different agrifood systems and population subgroups, with some populations showing very high intake and others very low intake.

Current scientific evidence is mostly concentrated on the contribution of TASF for nutrition and health outcomes of women during pregnancy, children, adolescents and adults. There is a significant gap for older adults, especially from low and middle-income countries.

Increasing attention is being given in the public domain to how TASF affects chronic disease and contributes to environmental impacts arising from livestock production.

Most scientific evidence for nutrition and health outcomes relates to the contribution of milk and dairy products, followed by red meat (primarily beef), and eggs. There have been fewer studies on other TASF.

Most policy recommendations on the consumption of TASF are qualitative. They do not propose quantitative recommended consumption levels or address the health implications of consumption above or below any specific level. Nor do they address potential differences in health implications of consumption level among various population subgroups. This is an important gap given that micronutrient deficiencies coexist with overweight, obesity and NCDs in many populations globally.

Environmental sustainability considerations for the production of TASF were found only in policy documents from eight upper middle-income countries and mostly in the form of qualitative recommendations. Animal welfare was mentioned only in two food-based dietary guidelines.

Effects of terrestrial animal source food across the life course

With regards to benefits: Most evidence is available from milk and dairy (yoghurt and low-fat dairy particularly) consumption showing positive nutrition and health outcomes among pregnant women (on birth weights of infants), school age children and adolescents (on increased height and reduced adiposity), adults (reduced risks for all-cause mortality, hypertension, stroke, obesity, type 2 diabetes, colorectal and breast cancers, osteoporosis and fractures) and older adults (on mitigating sarcopenia, fractures, frailty, dementia and Alzheimer's disease). A fairly strong evidence-base from high-income countries shows positive effects of lean red meat consumption on muscle health of older adults. Robust evidence shows that the intake of muscle tissue is positively associated with the iron status in adults. Evidence suggests that, among all women of reproductive age in any context, two eggs per day can provide high proportions of recommended nutrient intakes, particularly for choline, selenium and Vitamin B12.

Systematic reviews point to some benefits of TASF intake among infants and young children in terms of increased height/length and weight. However, the mixed results from studies in different countries highlight the importance of considering the overall child diet and other contextual factors that affect child growth and development when assessing the relationships between TASF and child nutritional outcomes.

With regards to risks: Evidence on the association between milk consumption and coronary heart diseases is equivocal. There is also limited evidence between consumption of eggs and elevated risk of blood cholesterol, which is associated with coronary heart disease, stroke and hypertension in healthy adults. Synthesized findings from risk analyses show that consumption of modest amounts of unprocessed red meat (ranging from 9 to 71 g/d) has minimal health risk. For processed red meat, however, very low levels of consumption can elevate risk of mortality and chronic disease outcomes, including cardiovascular disease and colorectal cancer. Cow's milk, and poultry eggs are among the eight food groups that pose allergenic risks, but there is no evidence that avoiding such foods during infancy can delay or prevent hypersensitivity or allergic reactions.

Policy recommendations on terrestrial animal source food

A review of food and agriculture legislation and nutrition policies revealed that recommendations related to the consumption of TASF were scarce, primarily qualitative and mainly targeted to the general public. The analysis of NCD-related documents from 51 countries showed that most recommendations on TASF consumption focus on mitigating potential health risks linked with NCDs with very little consideration of micronutrient intake and almost none to environmental sustainability.

Food-based dietary guidelines (FBDG) are the most comprehensive reference for TASF consumption. FBDG from 95 countries provide recommendations primarily linked to micronutrient intake for health benefits (e.g. iron intake), followed by the mitigation of potential health risks (i.e. diet-related NCDs). Most FBDG target the general public, although many make recommendations for specific groups in the life-course cycle. Environmental sustainability considerations were only included in the FBDG of six middle-high income countries, with only the Netherlands providing quantitative recommendations. Animal welfare was only mentioned in the FBDG of Denmark and Sweden in relation to food labeling.

Irrespective of the type of policy document, most recommendations address TASF consumption generally without any specification of food types. These are followed by recommendations on meat (in general), milk and dairy products, eggs and red meat. In the red meat category, most recommendations refer to beef; others such as pork, goat and sheep meat are less covered. There is also less coverage of white meat, offal, meat from wild animals, and insects. Micronutrient-related recommendations tend to be more detailed providing quantitative indications in terms of daily or weekly intakes of TASF. Consumption of TASF above or below recommended levels is rarely addressed. This is a significant gap given the co-existence of micronutrient deficiencies with overweight, obesity and NCDs.



Recommendations for policy makers

Food-based dietary guidelines should provide context specific recommendations, accounting for the existing levels of TASF intake, the needs of vulnerable populations based on their life course and other socio-economic factors, the most prevalent forms of malnutrition in both rural and urban area and the potential trade-off with sustainability in terms of environment, socio-economic and cultural dimensions.

COAG's Sub-Committee on Livestock encouraged Members to consider the impact of livestock policies, programmes and legislative frameworks on nutrition and health outcomes and to update national food-based dietary guidelines so that they adequately consider terrestrial animal source food and specific nutrient requirements during the life course of people.

