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# Water is life, water is food



**This year's World Food Day is themed around water, in recognition of the essential connection between water and food. More research on the food–water nexus is key to guide effective solutions for our food and water crises.**

Every stage of the food supply chain affects the planet's water resources. Agriculture accounts for more than 70% of the world's total freshwater withdrawals and at the same time constitutes a major source of water pollution due to abusive use of synthetic fertilizers and pesticides. Post-farm stages such as processing[1], packaging and distribution can be very water intensive too, with transportation over long distances often increasing the need for packaging and contributing to greater food loss. Food retailing and individual consumption patterns drive all of these processes around the world and burden in particular water-scarce regions. Finally, food waste and the disposal of the packaging used for food products and agricultural inputs put additional pressure on water and other environmental resources.

Water security and food security are intrinsically connected. Ending hunger and malnutrition depends on access to safe drinking water and water provision for agricultural systems. It is no coincidence that water security and food security are correlated in countries that produce their own food and cannot rely on imports; in fact, water largely defines global patterns of food production and trade. Access to food and access to water are both deeply affected by natural conditions, resource endowments and political economy matters, not to mention the threat posed by climate change.

Inclusion, equity and accessibility concerns pertain to both water and food security. According to the United Nations Food and Agriculture Organization (FAO), "2.4 billion people live in water-stressed countries" and "Around 600 million people who depend, at least partially, on aquatic food systems for a living are suffering the effects of pollution, ecosystem degradation, unsustainable practices and climate change". This is a huge problem, given that aquatic food systems are an essential source of nutrition. FAO Director-General Qu Dongyu's comment in the Rome Water Dialogue in early October underscored the urgency for action: "While some 2.4 billion people live in countries where the supply of water is limited, global water demand for agriculture is expected to increase by 35 per cent up to 2050".

Several initiatives have tried to raise awareness around today's water crisis and foster collective commitments to solve it. Sustainable access to drinking water and basic sanitation were both part of the Millennium Development Goals. In 2015, Sustainable Development Goal 6 defined a broader set of water-related indicators, making a direct link to agriculture through target 6.4, aimed at ensuring sustainable withdrawals and supply of freshwater through two indicators monitored by the FAO. A great push for the alignment between water and food objectives and policies happened earlier this year, at the UN 2023 Water Conference in New York — being echoed by the celebration of World Food Day on 16 October with the slogan "Water is life, water is food".

To join this celebration, the October issue of *Nature Food* features two open access articles exploring the link between aquatic and terrestrial food systems: Ignowski et al. show how integrated aquaculture–agriculture may enhance micronutrient and economic productivity for nutrition-sensitive food systems, and Virdin et al. examine how fishing constitutes a livelihood safety net for populations dependent upon aquatic foods around the world.

*Nature Food* and *Nature Water* are also launching the joint Collection 'Food-Water Nexus', bringing together primary research and commentary pieces published on the topic. The first section of the Collection is dedicated to water-based food production systems. The second covers studies measuring the impacts of food systems on water resources: Proctor et al.[2] propose a more accurate specification of water supply and its importance to future yield predictions; Vanham et al.[3] calculate the contribution of livestock grazing to variation in the European Union's land and water footprints; and Mekonnen and Hoekstra[4] quantify the blue water footprint linked to national consumption and international trade. A third and last section focuses on strategies to mitigate the impact of food systems on water: Mazac et al.[5] show that the incorporation of novel foods in European diets can have important positive impacts on water use and other environmental indicators; Scarborough et al.[6] compare the impacts of vegans, vegetarians, fish-eaters and meat-eaters in the UK in terms of water usage, eutrophication, biodiversity and others; Tuninetti et al.[7] show that compliance with EAT–*Lancet* dietary guidelines would reduce global water footprint but increase it for 40% of the world population; and Zhou et al.[8] assess strategies to reduce waste generation, emissions and water consumption in China's takeaway sector.

Further research on the food–water nexus is key to guide effective solutions for our food and water crises. We welcome papers on practices, technologies and policies that increase the synergies between food and water; the incorporation of the value of water into the true cost of food; water-efficient post-harvest handling, processing, retailing, consumption, distribution and trade strategies; integrated water and food recycling; institutional and behavioural levers to achieve more water-efficient food systems; water scarcity adaptation strategies in agriculture; and water-sensitive and regenerative food systems.

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