WATER SUSTAINABILITY

Nearly half of global gross domestic product (GDP), more than half of the global population, and 40 percent of grain production could be at risk due to water stress by 2050. That’s according to estimates from the International Food Policy Research Institute. Water stress is driven by increasing competition over water in drainage basins, meaning between different agricultural water needs, and between increasing water needs for growing cities, for agriculture, and for the environment. That stress is aggravated by climate change and by land use change that increases risks for droughts and extreme weather events.

Agricultural irrigation is by far the largest user of water. Around 70 percent of all water withdrawn for human uses from rivers and aquifers goes to irrigation, while industry uses about 20 percent and households use a bit less than 10 percent. Although most of this water is from renewable runoff to rivers, a rapidly increasing share is from non-renewable groundwater extraction. Irrigated agriculture is important for production; it provides 40 percent of global agricultural production, despite covering less than 20 percent of global cropland.

The way we eat—both dietary patterns and how we grow our food—dramatically impacts how much water each person requires. While every person consumes around 2 to 4 liters every day as drinking water, and uses around 200 liters of water daily for household purposes, we need between 2,000 and 5,000 liters per person per day for the diet we consume. All told, overall water consumption for food production has doubled between 1960 and today.

Animal-based foods can be particularly water-intensive. Dietary shifts can therefore be important for reducing water needs from agriculture, especially where it depends on irrigation. It is clear that in general, more plant-based diets have substantially lower water footprints than a diet heavy in animal-based food. However, a diet that is good for health—either following the U.S. dietary guidelines, or based on the EAT-Lancet Commission’s model of a healthy diet—doesn’t in itself result in substantial reductions in water use. Beef that primarily feed on rainfed grasslands will have a relatively low water footprint, while beef that are fed irrigated crops or grazed on irrigated pastures can have a very high water footprint. Some of the plant-based alternatives being suggested in place of unhealthy foods can actually be quite demanding on the water supply. For example, the EAT-Lancet Commission suggests that, globally, we double production and consumption of nuts, despite current production practices in many regions requiring very high amounts of water. Fruits, vegetables, and legumes similarly have low water use efficiencies and thus demand relatively high amounts of water. Therefore, it is very important to improve production practices and find the most suitable geographic locations for production of these crops.

Along the same lines, several papers in the past year have emphasized that the necessary water savings can only be accomplished if we see a combination of drastic reductions in food loss and waste, improvements in production practices, and increased consumption of plant-based foods. This means the foodservice industry has a critical role to play in reducing food loss and waste and in sourcing food from production methods that maintain sustainability of water resources.

These changes are particularly important in light of the need to increase water use for food production if we are to healthfully feed a world of 10 billion people by 2050. Doing so will require dramatic increases in fruits, nuts, legumes, and vegetables. Achieving this increase is a substantial challenge, especially given that as much as two thirds of the world’s population will live in water-stressed countries by 2025. Special attention should be given to the rapidly growing use of non-renewable groundwater, especially in the central and western United States and in other parts of the world such as India, China, and Pakistan.

The way water flows through the landscapes can be seen as the “bloodstream of the biosphere,” connecting local places to distant areas. By altering land cover through deforestation, which reduces evaporation, or changing soil properties to reduce infiltration, agriculture can substantially alter this bloodstream. Management of water across the full hydrological cycle is thus as important as managing water withdrawals. Food production can also pollute and further stress water resources. Fertilizer and manure can run off into surface waters and leach into groundwater. Better management practices—

including planted buffers and management efforts for nutrients, manure, and drainage—can substantially reduce water pollution. Few states (such as California) actively manage fertilizer and manure discharge not only to surface water but also to groundwater. This makes it even more important to see efforts by foodservice companies to reduce consumption of both farmers and ranchers who take voluntary steps to conserve and protect water resources.

Climate change and growing food demands will be challenging for water resources management, while potentially reducing protein and nutrient quality of cereals and overall productivity. Climate change poses increasing risks by shifting agricultural production zones and exacerbating flooding, drought, and increased fire frequency. Growing conditions will become more challenging. Water demands for many major food staples will increase due to both increased temperatures and changes in precipitation patterns and amounts.

Opportunities to adopt innovative solutions to reduce the water footprint of menus and operations abound across the foodservice industry. The progress chefs and foodservice providers have made toward decreasing red meat and increasing more plant-forward menu options has significant implications for improving water sustainability among many other benefits mentioned elsewhere in this report (see pages 34, 38, 42). Additionally, greater understanding of beneficial agricultural and land management practices can help chefs choose more sustainable suppliers (see page 28).

The severe and unprecedented drought crisis in Cape Town, South Africa peaked in 2018, bringing attention to the increasing threat of water scarcity around the world and highlighting the role that restaurants can play in reducing water usage and educating consumers on the topic. Chef Luke Dale-Roberts, owner of three Cape Town restaurants, garnered media attention for his bold strides to restrict water use, including limiting laundry usage, reconfiguring menus to use as little water as possible, and taking away 90 percent of the chowhine by instead plating meals on a hand-crafted picture frame-like plate with an interchangeable card for each course. The concepts of waterless recipes, using less water thanks to water-efficient equipment and strategically designed kitchen operations, and featuring crops grown in seawater on menus are gaining more traction within the foodservice industry as threats of droughts and water scarcity continue to impact more geographical locations worldwide.

Food waste in particular represents a significant potential for reduced water usage through the “virtual water” waste embedded in food’s water footprint. While “ugly produce” along with “nose-to-tail” and “root-to-stem” culinary strategies have captured popular attention, the foodservice industry may realize even larger water sustainability impacts by increasing its role in diverse local, regional, and global partnerships with agricultural and food suppliers to help reduce water—including groundwater—risks in agricultural production and move toward sustainable farming practices.

SCORE: 2

As threats of droughts and water scarcity continue to grow worldwide, the concept of reducing the water footprint of menu items and in kitchen operations is only starting to gain traction in the U.S. foodservice industry.

IN SUMMARY:

• Food production requires substantial amounts of water and climate change is further aggravating water scarcity; thus, changes in diet, cutting food loss and waste, and sourcing from farmers who practice water-saving techniques are important.

• Because some of the food items that comprise a healthier diet—such as legumes, nuts, fruits, and vegetables—may have a high water use, best practices in sustainable farming should be encouraged.

• From waterless recipes to water-saving equipment to water-smart food sourcing including a greater emphasis on plant-based ingredients, the foodservice industry has many opportunities to adopt innovative solutions to reduce the water footprint of its menus and within its operations.