CLIMATE CHANGE FACTS

Atlantic Canada will sink

The region that has brought us so many folk songs about sinking ships is itself sinking into the sea, according to geoscientists. During the last ice age, the glacier on what is now the Hudson Bay region squished down the fluid material under the earth's crust. Atlantic Canada was, in turn, pushed upward but is gradually sinking back down. The combination of rising water and descending ground is projected to change the relative sea level by a metre by 2100. Thousands of hectares of the red sandstone shores of Prince Edward Island have already been swallowed up.

Central Canada will boil

By 2040, Southern Ontario's maximum temperatures will rise to 44 degrees Celsius. Toronto now averages 16 days per year above 30 degrees and, by 2100, that will rise to 77 scorching days every year. Hotter weather means more freezing rain, as well as thunderstorms like the one that flooded downtown Toronto in 2018. Toronto and Montreal could see 50 percent more of these disastrous weather events in coming decades.

Tammara Soma, *34*

The urban planning prof challenging us to stop wasting food

More than half of the food produced in Canada is thrown away. Over a year, that's enough to feed every Canadian for five months. The cost to the environment is even more pernicious—avoidable food waste in Canada produces the equivalent of 56 million metric tonnes of greenhouse gas emissions. These glum statistics come from a recent report produced by Second Harvest and Value Chain Management International, but they're old news to Tammara Soma, a resource and environmental management professor at Simon Fraser University. Soma is one of the country's foremost experts on food waste and the complicated, surprising and often dispiriting ways it intersects with income inequality, urbanization, land use and climate change. Soma co-founded the Food Systems Lab—charged with proposing a food system that's more equitable, greener and less wasteful. (Some ideas: more community food hubs, more diverse farms, more and better cooking and nutrition education in schools.) One of the lab's early projects was to analyze the efficacy of food waste awareness campaigns by creating a fun, educational pamphlet and fridge magnet with the University of Toronto; the results of that study will be released late this spring. Soma has recently moved to Burnaby, B.C., and is now focusing her efforts more specifically on food system resiliency projects in the province, as well as on food-based biodegradable packaging. She's also in the final stages of editing a new book for Routledge called *The Handbook on Food Waste*, a guide, really, for anyone who eats. "Food is critical for survival," Soma says, "and yet in a world of 24/7 food availability and abundance—we produce enough food to feed close to 10 billion people—close to a billion people globally are still malnourished. As a scholar and, most importantly, as a human, I care deeply about environmental and social justice and strongly believe these problems can be solved."

SOMA PHOTO, JONATHAN SABENIANO.

Annett Rozek, *51*

The chemist reducing the chemicals used to grow our food

ANNETT ROZEK started out as a green-industry skeptic. Ten years ago, the Berlin-born chemist was working in the pharmaceutical industry in British Columbia, enamoured with the purity and simplicity of working with synthetic compounds. "I had a skepticism about plant extracts, because you never really know what you have in there," she says. Over and over again in her work, however, Rozek kept encountering plant-based health remedies and traditional medicine. She couldn't help but wonder: "What if we applied the rigour, techniques and massive funding of the pharmaceutical industry to analyzing what we found in nature? What might we discover?" Upon joining Terramera in 2011 (and becoming chief scientific officer a year later), she began to do exactly that. The Vancouver-based company is working to replace chemical pesticides with natural products from plants like rosemary, wintergreen and neem trees. Terramera's mission is lofty: to increase global agricultural yields by 20 percent while reducing the synthetic chemical load by 80 percent. It's a goal Rozek has come to see as urgent. The way we grow our food today is unsustainable and, as we learn more about the toxicity of the pesticides that have boosted global food production for decades, we're in desperate need of replacements. After much careful testing and research, Rozek has reached the point where Terramera's organic pesticides match or even outperform traditional chemical competitors. A few years ago, on a trip to California to see the results of one of Terramera's trials on red table grapes, she discovered the fruit wasn't just thriving and free of mildew; it was redder and juicier than the untreated grapes or those being sprayed with chemicals. "We discovered that the product we were using wasn't just able to control the disease; it was able to accelerate the ripening process," says Rozek. Today, she walks through her big-box grocery store in Vancouver and notes the growing size of the organics section with excitement and pride. "I now think that the power really is in nature," she says. "Nature has all the solutions for the problems we are experiencing. All we need to do is understand it."

PHOTO, GREG MILLER.