

The Curiosity Series Podcast: Sustainability in Food

Audio transcript

[Camila Londoño]

Big problems require bold solutions, and currently, there's no bigger problem than climate change. If we don't change the way we're living, the planet as we know it will cease to exist. Because energy production and consumption are responsible for nearly three quarters of all greenhouse gas emissions, a lot of our efforts focus on solutions in this sector. But the way we grow, transport, and buy the food that we eat is also a very large contributor to our environmental footprint, and changing our trajectory on climate will require radical action from every single angle. On this episode of the Curiosity Series Podcast, we speak with three innovative founders at the Science Discovery Zone about their bold plans for food systems and how they are building a more sustainable world.

[Chris Bryson]

My name is Chris Bryson, I'm a tech entrepreneur who spent most of the last ten years as the founder and CEO of an e-commerce company here in Toronto, and I'm now embarking on a completely new journey in the alternative protein sector, starting a company that is creating plant based seafood.

[Sofia Bonilla]

My name is Sofia Bonilla, the founder of HOPE Pet Food. We use alternative proteins to create pet food that is delicious, nutritious and truly sustainable. I've been doing research at the intersection of biology, environment and engineering and in the past ten years, mainly working with proteins.

[Khaled Fourati]

I'm Khaled Fourati, the founder of Joyvigo, a plant based cultural dairy alternative company. We combine plant protein prebiotic fibre and probiotic strains, then craft them into a balanced union of flavourful yogurt style beverages.

[Camila Londoño]

In the Curiosity Series, we speak with innovators, researchers and changemakers about the world they envision, the impact they're driving, and the opportunities we all have to change the world. I am Camila Londoño, your host. I hope you, like us, find inspiration in these stories.

[Chris Bryson]

So when you look at the food system that we have today, the carbon footprint is astounding. In fact, factory farming is the second largest cause of carbon emissions. It accounts for almost a quarter of total greenhouse gas emissions. Which is shocking! The problem is only getting worse because the population is growing, meaning that our food consumption is growing.

[Khaled Fourati]

Currently, we don't produce our food in a sustainable way. Actually, the agri-food industry is one of the biggest contributors to greenhouse gas emissions. 75% of agricultural land is used for raising and feeding livestock, yet only provides one third of the global protein supply. There is a huge discrepancy here.

[Sofia Bonilla]

and the reality is that our food systems are broken in many ways.

[Chris Bryson]

Basically, the way in which we make food isn't good for us, it isn't good for other creatures, and it isn't good for the planet. The food that most of us consume is crippling our own personal health, that the meat that we produce is crippling the planet that it's completely unsustainable. So we have a really really big problem on our hands, and that means that every single individual can have an important contribution, an important role to play.

[Camila Londoño]

One of the things we can do to reduce your environmental impact is consume more items that are locally sourced. Of course, depending on where you live, you might not have access to certain foods due to climate, but this could be an interesting challenge to explore. In 2019, Canada imported \$6.37B worth of fresh fruit. This number is expected to rise and only accounts for one of several food groups. So innovating our traditional growing methods and adopting them within our own communities is necessary.

An example of new technology to grow fruits and veggies is hydroponics: an alternative that provides benefits beyond saving on the cost to import goods. In a hydroponic system, fortified water flows through a closed loop to provide crops with the nutrients they need. Because this can be set up indoors using LED lighting, we're able to reduce the use of agricultural land and conserve water. More than that, we could start growing our own food within our cities, reducing even further the environmental impact of that transportation.

Aside from that, we could also make changes to the type of dietary lifestyles we lead as recommended by the EAT-Lancet Commission. They've identified four diet patterns that consider sourceable goods in a geographical region along with the health requirements for various groups within that population. With these insights, the dietary lifestyle you lead will be what's best for you where you are, and will allow for the intended reduction of your carbon footprint. These four diet patterns include: plant-based flexitarian, pescetarian, vegetarian, and vegan.

Within our food systems, about 75% of greenhouse gas emissions comes from the consumption of dairy and meat products. Being selective about the types of meat we consume and incorporating more plant-based options could significantly reduce our carbon footprints.

Of course, adapting to new lifestyles might take some time, so innovators in the food space might want to go beyond food consumption and think about sparking change in the transportation of food or ingredient processing methods, whether it's being more energy efficient, designing facilities closer to our goods that are produced, or something else.

[Khaled Fourati]

Though Canada is among the lead producers of pulses, such as peas. Most of its pea production is actually exported to China, where it is processed into starch and protein. Then the pea-protein is re-exported to North America to be used in various plant-based applications. So, transporting these pulses closer to where they are going can help make things more sustainable.

[Sofia Bonilla]

Proteins and food in general are such a vital piece of life as we know it. A lot of people are aware that their food choices have an impact and they are mitigating that impact, for example, by reducing their meat consumption.

[Camila Londoño]

Most of these changes are happening in North America and Western Europe, where growing contingents of younger adults are becoming both increasingly interested in healthier, more sustainable foods, and more concerned about animal welfare. In the last year, as more of us ate at home when COVID-19 hit, the plant-based protein market grew by nearly 10%. But people in the developed world consume much more than our recommended amount of protein, and to this day, meat and dairy still make up the majority of that protein consumption. Worst of all, as other markets see increases in income, their protein consumption, particularly from animal sources, is growing, making this problem worse. According to the United Nations' Food and Agriculture Organization, between the year 2000 and 2018, the world's production of meat grew by 47%, of milk by 45%, of eggs by 50%, and of seafood by 42%. Even in North America, where our consumption patterns are changing and plant-based protein consumption by humans is growing, there's a large drive to increase meat consumption by other species: our pets.

[Sofia Bonilla]

Real sustainability in pet food is virtually non-existent. The whole industry has been promoting more meat in pet food to the point that 25% of meat in North America is for pet food. So that means that more than 70% of the environmental impact of pet food is from the meat ingredients alone. There is a lot of misinformation about the need for meat in pet food. Many pet parents think that their pets can only survive if they eat meat. The main barrier we encounter is that we need to overcome the meat versus plant based debate, and it is true that plants cannot provide all the nutrients our pets need. However, we have been able to find those nutrients in other sources, so what we need to overcome is the way people think in a binary of its either meat or plant, and the reality is that pets need nutrients and not ingredients.

[Camila Londoño]

and this is true not just for pets but also for humans. But the fact is that, regardless of how nutritious food is, that is not the primary criteria we use to decide what we want to eat. Food, more than simply a way to get our calories and nutrients, is a sensory experience. How the food

we eat, smells, sounds, tastes and feels like all play important roles in both how much we enjoy our meals and also how much we eat. Studies have found that people will find equal portions of foods less filling if they aren't consumed by mouth, if they are served in larger plates or if they're split to less pieces, highlighting the importance of all the senses in our relationship with food. Most of us have found enticing food smells make us salivate, regardless of whether or hungry or not, and research has found that exposure to specific food smells before a meal tends to drive people to choosing those foods for the meal they're about to have. Taste, of course, is the sense we most commonly associate with food, but even taste can be deceiving. In the absence of visual cues, unexpectedly detecting a fishy or pungent taste in a salad can make it unpalatable, even if we normally enjoy shrimp or blue cheese. And of course we expect our food to have specific textures; a mushy dessert might be enjoyable in ways a mushy plate of pasta, or worse, a protein-based dish would not be. We've evolved to associate sensory information with the freshness and edibility of specific food, such that a crunchy cracker is good, but a crunchy piece of fruit might not be. The firmness of food determines how fast and how much of it we eat and also how filling it is. For humans to change their diets to more plant based protein, those making them need to make sure that they consider not just sustainability or nutritional profiles but, most importantly, deliciousness.

[Khaled Fourati]

One of the challenges I've faced in this process of building alternative dairy with better sensory quality and functional attributes was to identify the right ingredients. Food has to be nourishing but it needs to be enjoyable so that consumers can have a great experience. Dairy alternative is a more mature space when compared to other plant-based food, but there is still room for innovation and disruption.

[Chris Bryson]

Changing People's habits like what they eat or how they go about their daily lives...changing people's habits is the hardest thing to do, and what's fascinating is that there's already a playbook for how to solve really complicated problems like this humans have done it before, and almost every single time that we as the human race have made such a big change and tackled such a big problem has been rooted in technological evolution. It typically lies at the intersection between entrepreneurship and scientific research. When you build an incredible product that's better than the previous one, people do make that switch, they do change their habits. It's the very reason why we don't use horses to get around any more.

[Khaled Fourati]

We will have to offer higher quality in terms of appearance, texture, mouthfeel and taste, improve versatility and better nutritional profiles.

[Chris Bryson]

The truth is that getting plant based proteins to emulate meat proteins, which are very different by the way, is not an easy problem. The burger is pretty much the only thing that's been cracked

so far. There's still so many other products that need to have a faithful emulation created through plants and today, a lot of those don't exist. So, for example, if you think about chicken, sure you can get plant based chicken strips, but they don't quite yet, you know, taste just like the real thing and we certainly can't get plant based chicken that is a whole muscle or whole filet. So there's still a lot of products that haven't really been faithfully emulated just yet. In fact, there's entire categories like seafood, where there's practically no plant based options at all.

[Camila Londoño]

But why does this matter? Why do we need to emulate existing foods? Well, a fundamental part of the human experience is the cultural significance of the foods we eat and the way we eat them. For example, on the Islamic holiday of Eid, celebrations involve the sacrifice of livestock and the sharing of meat with friends, family and those who cannot afford to eat. In North America, Thanksgiving is associated with Turkey and changing that historical connection will be difficult.

Food serves as an expression of cultural identity and meat is an integral part of many culturally significant holidays and celebrations all over the world. In fact the United Nations Educational, Scientific and Cultural Organization (UNESCO) directly includes food and its customs, preparation, processing and cultivation as intangible cultural heritage.

So how do we balance our need for cultural preservation with our need for a healthier, more sustainable planet? Perhaps by recreating or emulating these culturally significant foods we will be able to maintain our connection to our heritage while contributing to the preservation of our planet.

[Chris Bryson]

Recent research has shown that 60% of an individual's carbon footprint can be traced back to the animal products that they consume as food. So that means that switching to a plant based diet, even in part, can be the easiest way to meaningfully cut down your own individual carbon footprint

[Sofia Bonilla]

and we need to convince them that there are other sources beyond meat and beyond plants such as insects, algae, and yeast that can complement plants and make them a nutritious alternative.

[Camila Londoño]

So what does the future of food look like? We know we need delicious, nutritious and culturally relevant food that allows us to remain connected to our experiences and cultural ancestry, while being much more environmentally sustainable than it is today, and that problem can and must be tackled in many different ways.

We can improve our traditional food systems to make and process more of our food locally, or ensure we use less water and energy during production. We can reduce how much food we throw out by improving our packaging and supply chains, so less of the environmental costs of

making food are wasted. We can change our diets to those that have a smaller environmental footprint, becoming a flexitarian, pescetarian, vegetarian, or vegan, and like Chris, Sophia, and Khaled, we can work to create new versions of the food we already love. Doing that will require improvements in the sensory properties of these new foods, their nutritional and health profiles, their environmental footprints, and how much they cost. But there's hope, and while the work these companies and many others are doing is a step in the right direction, there are still lots of opportunities out there to make our alternative protein industries more exciting, tastier and better for all of us.

[Camila Londoño]

After all of that, what message would you like to leave our listeners with?

[Sofia Bonilla]

The most sustainable thing we can do is to be efficient with how we produce nutrients and how we deliver them.

[Khaled Fourati]

I realize that we are part of a much bigger vision, that of transforming our food system. If the vision is a more sustainable food system, making food from plants is one solution among others, whether its microbial fermentation or cellular agriculture.

[Chris Bryson]

Changing our food system is a way to change the world.

[Sofia Bonilla]

The impact that we can create by developing meat-free diets is huge.

[Camila Londoño]

Thank you for listening to the first episode of the Curiosity Series Podcast, let us know what you thought and what other topics you'd like to hear about by emailing us or through social media @RyersonSDZ. Until next time...