Hello and welcome to Columbia Public Health Now, a podcast devoted to exploring the local and global implications of public health challenges in our communities. This Spring, we are focusing the series on the novel coronavirus, otherwise known as COVID-19, and its impact on our world and our health. I am your host Maria Andriella O’Brien and I thank you for listening.

If there’s a lesson to be learned from COVID-19, it’s that we underestimate Mother Nature at our own risk. It’s a lesson we probably should have learned by now. When it comes to infectious diseases, in the past generation alone, we’ve experienced the emergence of HIV, SARS and the West Nile Virus—to name just a few. The emergence of new infectious diseases is actually not something so new. One thing that has intrigued me as we’ve spoken about COVID-19—are the similarities to climate change. A Greek chorus of scientists have been warning the public for years about how life as we know it may forever change. And although there are well-documented ways in which we can prevent an environmental catastrophe, those changes come at a cost to our personal freedoms and the comforts that we’ve become used to. The results: Many of us hesitate or question the need to act. Like I said, it sounds familiar.

COVID-19, food systems, and climate change. What could those three possibly have in common? To find out, we turned to Dr. Lewis Ziska, associate professor of Environmental Health Sciences at Columbia’s Mailman School of Public Health. Formerly with the USDA’s Agricultural Research Service, Dr. Ziska has been studying the intersection of climate change, plant biology, food systems and public health. It turns out that there’s a delicate balance between the particular foods we eat, how they are produced and shipped, and what that does to the eco-system, which also impacts the emergence of infectious diseases like COVID-19 and our susceptibility to it.

Dr. Ziska, thank you so much for joining us. Can we start with you connecting the dots between food, climate change, and infectious disease? I don’t know if that’s an intuitive connection for many of us.

One of the things that we have to keep in mind, is that food is going to be eternal. As long as people exist on the planet, they’re going to be looking for food and one of the ways that we currently look for food is we deforest things, we go into an area, and we basically take out that ecosystem, we take away that forest. Well, what happens when we do that? Well, the animals leave. The animals carry disease, they carry viruses and when they leave, they go into nearby villages and they interact with them. So, the ability for them to transfer a new virus that heretofore was not something that people came into contact with, well, that ability goes up. And
as it goes up, we can expect to see as we transform the land in order to grow more food, that there’s going to be greater and greater occurrences of this kind of disease transfer from animals to people, and as long as we have that incentive to keep producing our population without any regard to the resources that are needed to sustain and maintain and allow the population to have the essential food and shelter that it needs, then we run the risk of coming into new contacts and new diseases that we don’t really understand. So, it’s better to keep the land that we know works, to sustain that land, to have sustainable intensification, if you will, of agriculture rather than cutting down a new forest, or draining the next swamp so we can plant another crop. We run the risk of increasing our vulnerability to these kinds of diseases if we keep on doing that. But I think that there has to be a place for smart agriculture, for sustainable agriculture, without removing any more of the natural environment, and the rainforest, or any of these kinds of systems around the world. Does that make sense?

MARIA ANDRIELLA O’BRIEN

How do you see this relating to COVID-19 and what we are experiencing today?

DR. LEWIS ZISKA

There are issues related to climate change, specifically for things like temperature and extreme events, that can precipitate the spread of different pathogens and/or exacerbate existing disease. One of the issues that we’re currently trying to investigate is looking at what’s happening with COVID in the case of spring allergies. We are right at the time when the weather gets warm enough that trees in particular start to put out a lot of pollen, and we know that pollen will have respiratory effects—everything from runny noses to watery eyes and in some cases, asthma. So, our question is: do these respiratory effects exacerbate the current COVID crisis? And I’m not, by any stretch of the imagination, saying that we have an answer to that, but it’s an issue that we want to begin to look at in a little more detail. As we go through climate change, what is happening is that as winters warm and springs occur earlier, and the falls are pushed back, that the overall allergy season is changing as a result of these climate effects. That, in turn, has ramifications for something like COVID, but it could also have ramifications in a good way if the weather starts to warm for other flu-like viruses. Or, it could have more ramifications if, for example, you have E. coli or Clostridium or other pathogens that we know are part of food safety. So, it’s a fairly complex issue and it depends, to a great extent, on the specific pathogen or the specific infection that you’re interested in.
You know, there have been comparisons to how climate change is silent until you see large changes, which sounds eerily familiar to how COVID-19 seemed to be in stealth mode until it exploded, yet if you look back, all the signs were there. What’s your take on that?

There are obviously parallels there. When you start looking at the idea that’s been in the public health arena for a number of decades was that we were going to have a pandemic—full stop. It was going to happen at some point, and it was going to be devastating. I can tell you that for decades we had been warning of climate change that it’s going to get increasingly worse, that it’s going to have a great effect in terms of how we live our lives. It’s a little bit slower, but it’s also a little bit more powerful than corona because it doesn’t just affect something and then is gone, it affects in ways that will be permanent. And those permanent changes are going to have tremendous impact in regards to everything as part of our lives and from my point of view, I’m looking from the plant biology lens, and so we look at things like food security—not just the amount of food that’s available but what’s the quality of that food? What’s the nutrition of that food? We have evidence suggesting that rising CO2 can reduce the food quality, and reduce your nutrition. We have evidence that as things get warmer that traditional pathogens like Clostridium, like Salmonella, can increase in your food supply. We have evidence that suggests that other contaminants like pesticides may be another issue. And then away from the food aspect, we have evidence suggesting that poison ivy could be more of a problem, we have evidence suggesting that pollen could be more of a problem. We have evidence suggesting that plant-based medicines could be more of an issue, in terms of where they would be, and how they could be found. So, every aspect of plant biology is going to be impacted by this which is another way of saying that every aspect of your life is going to be impacted because we depend on plants for everything—for medicine, for food, building materials—there’s so much of that that’s intertwined with human civilization. So, understanding those impacts, knowing what the ramifications are in regard to public health is imperative and yet it’s an issue that often we overlook because plants are sort of sedate, and they don’t move around a lot, and we just think of it as green background. We suffer from a kind of “plant blindness” that doesn’t allow us to see what’s happening to the plant communities around us and that’s really unfortunate. So, one of my goals is to try and look more closely at what some of these interactions are, and in the case of what I just described for corona and for pollen, what synergies or exacerbations could occur?
MARIA ANDRIELLA O'BRIEN

As we continue talking about parallels in what we’re experiencing now, and what we see in the conversation around climate change, it feels as though denial seems to be in our DNA. It was so much the case with COVID-19 that even today, there are still question marks about social distancing in some of our states and whether or not that’s necessary. With climate change, despite all of the events of the past decade or two—whether it was super storms Sandy or other extreme weather events—we still seem to be largely in denial about doing what’s needed to counter these things. Your thoughts on this?

DR. LEWIS ZISKA

Well, I’m going to push back a little bit on the “mostly” part. I think we’re starting, finally, to transition to the paradigm that we recognize climate change is in fact occurring. Now, we still differ on how we’re going to respond to that. Some folks will throw up their hands and say, “Oh well, it’s too big for me to do anything about,” others are you know, very much passionate, and charged if you will, in terms of being able to go and find ways to push back against climate change. So, there’s a fair wide-range of ideas of how we’re going to deal with it. But I think we are beginning to accept it. Yes, there are still deniers out there. Psychologically, when you are faced with hard truths, it’s difficult sometimes to wrap your mind around them, particularly when those truths are wicked problems that are not going to be solved by duct tape or WD-40. So, you try and get a handle on them, you try and understand them, and you try in many ways to make them, in terms of coming at it from an academic point of view, the best thing I can try to do is make them personal, to make them not just an aesthetic, academic exercise, or a sort of theoretical discussion—to make it something real. So, I have nothing against polar bears but you know, polar bears are going to be impacted by this certainly, and we should feel for them as part of the overall effect it will have on nature. But if I talk to folks about how climate change can affect their food, or how climate change can affect their health, then they understand, they see that they are going to be personally impacted by it and it makes a difference. One of the things that has struck me about COVID, that I don’t think anyone can deny is how vulnerable our food chain is. When we see folks, eerily similar to what happened during the Great Depression of the 1930’s, you know people are concerned about where they’re next meal is coming from, food banks are depleted, people are buying seeds to start gardens. We recognize to some extent how vulnerable our food system is with COVID. I would argue that that same vulnerability, even more so, can be associated with climate change as we see unprecedented droughts or flooding—these extreme events that occur with the weather and what impact that’s going to have on our produce. But also, what impact is that going to have again, on our food safety? On our food nutrition? On our ability to get to that food? How will it be distributed if hurricanes or other extreme events prevent it from being distributed. Where we grow chocolate—you know,
cause, I like chocolate—we grow a lot of chocolate in West Africa, and the ways that we grow that are very tenuous. There’s only a certain environmental, ecological range where chocolate trees will grow. What happens if the climate moves that range? What effect does that have on chocolate? What effect does it have on coffee? What effect does it have on wheat? What effect does it have on apples? What effect does it have on lettuce? And so on, so on, and so on. The food system is very vulnerable; we can see that now with COVID. I’m just worried that we don’t experience the same thing to a greater degree with climate change.

MARIA ANDRIELLA O’BRIEN

You and I have talked in the past about the impact of plants becoming less nutritious and how it’s the poor who bear the disproportionate burden for this in that they can't afford to buy other types of foods that are more substantive. I’m just curious about your thoughts, because it seems to be the same thing for COVID-19 where we’re really just now seeing major disparities in mortality from the poor versus other groups.

DR. LEWIS ZISKA

Yeah, I think that’s a good observation, and what we tend to find is that when you’re poorer, you have to set a certain amount of money aside for food, and a greater proportion of your budget has to go for that. What’s especially true, is you can’t afford to buy all of the variation, all of the diversity in the food supply that’s necessary in order to provide you with the nutritional balance that you need growing up. So, what you tend to do, is you tend to buy staples—you tend to buy rice, or you tend to buy flour, or you tend to buy certain cereals that are cheap and available. But the problem with that is, is that when you only rely on a small subset of the food that is available to you, and that subset in turn, is being affected by the change in carbon dioxide, which is reducing the nutritional qualities of that, then you’re more likely to be impacted by it. If you live in a food desert where most of your groceries are coming from the local bodega and they don’t have access to fresh fruits and vegetables, you’re going to be eating a lot of carbs, you’re going to be eating a lot of things that don’t include fresh fruits and vegetables, that don’t include the vitamins and minerals that you need. So, we have a food system that is, basically unequal. We don’t often have a chance to learn from this, and I’m hoping that COVID, if nothing else, will provide us an opportunity to look at how vulnerable our food supply is and make the food security one of the paramount focuses in regard to climate change. You can ask, I think reasonably, what this has to do with public health, but I would argue that our ability to access food and the quality of that food, and the safety of that food, are very important as a bottom line,
fundamental aspect of public health, that again in my opinion, does not get the focus, the attention that it so deserves.

MARIA ANDRIELLA O’BRIEN

With all of the efforts that have gone into flattening the curve in the New York area, for COVID-19, do you think any of those lessons learned are transferrable to the climate change issues that we’re confronting?

DR. LEWIS ZISKA

In many ways, how we deal with climate change is the opposite of how we deal with social distancing and the coronavirus. We don’t want to be socially distant, we want to come together to begin to address an environmental change that will impact every aspect of your life from the amount of energy you can consume, to how much food you can eat, the kind of food, your style of living, your ability to use the resources that are available to you in a way that makes sense that’s sustainable and allows the next generation, and future generations, to enjoy the same quality of life that you had. That’s a major role, that’s a major challenge. But I think in many ways we are starting to recognize that challenge. I think the silver lining of the coronavirus, if you will, is that we begin to understand how suddenly these things can happen, we can begin to understand how widespread they are, we can begin to understand how every aspect of your life can be impacted by something as basic, as simple, as a virus. Now, what happens in the same context when you think about all the variations of climate change, from how warm the temperature is going to get, to what sea-level rise is going to do for urban areas, about what drought is going to do for populations where they don’t have enough food. It portends a major change in civilization and in culture, that will affect all of us, in the same way that the coronavirus is doing now, but the exception is that it doesn’t end, it keeps on going with climate change. It isn’t a six-month stay-at-home issue, it’s a sixty-year issue that you have to contend with. So, all of those things are important—beginning to recognize what nature can do and the extent to which a sudden change in nature can affect every single aspect of our culture, of our civilization, is something that we forget at our peril.

MARIA ANDRIELLA O’BRIEN

What do you think scientists and public health professionals can do better to raise awareness and advocate for change?
DR. LEWIS ZISKA

There’s an old saying that says that “education is expensive, but ignorance costs more,” and that’s really true. We need to fight against our own ignorance, we need to fight against our own denial, we need to accept the science and the science is true—it doesn’t depend on your belief system. It just is. Gravity doesn’t stop working because you don’t believe in it, viruses don’t stop working because you don’t think a virus is going to do anything. All of these things are important, they’re crucial. We understand the science behind it; what we often fail at as scientists, is being able to communicate the urgency of what we know in terms of getting culture, getting policy makers, getting other influential people to act on that, and we don’t always communicate what we know in a way that is simple or easy to understand. That’s one of the things that as scientists, we need to work on, we need to make it clear what we think is going on. Not in a way that imposes panic or fright, but in a way that allows people to understand where we’re coming from and that it’s not just a set of facts and figures, but it’s an underlying concern and a caring for how civilization and culture and our families are going to be going forward.

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