Demetri Kofinas:	00:00	Today's episode of Hidden Forces is made possible by listeners like you. For more information about this week's episode or for easy access to related programming, visit our website at hiddenforces.io, and subscribe to our free email list. If you listen to the show on your Apple Podcast app, remember, you can give us a review. Each review helps more people find the show and join our amazing community. With that, please enjoy this week's episode.
Demetri Kofinas:	00:29	What's up everybody? My guest on this episode of Hidden Forces is Lowell Randel, Vice President of Government and Legal Affairs for the Global Cold Chain Alliance, which serves as the voice of the cold chain industry, representing 1,300 member companies in over 85 countries around the world. The food supply chain is breaking, according to the Chairman of Tyson Foods, the second largest meat processor in the world. As the Coronavirus pandemic disrupts supply chains across the country, farmers are being forced to destroy their crops, dump their milk, and euthanize their livestock despite shortages at food banks and empty shelves at supermarkets.
Demetri Kofinas:	01:34	If you're like me, you see headlines like this and you wonder, "Are we running out of food?" The problem is a bit more complicated. Partly, the shortages we're experiencing at our local Costco or Walgreens result from the sorts of disruptions to processing facilities like those referred to by John Tyson. In other cases, they reflect the challenges that come with trying to quickly transition from servicing restaurants and cafeterias to stocking grocery stores and supermarkets. Just as with our financial markets, industrial supply networks, and hospitals, our global food industry is built with efficiency in mind.
Demetri Kofinas:	02:19	Crises like the one we're experiencing today, by virtue of the stresses they place on our markets and political economies, reveal their inner workings, bottlenecks, and centers of power in ways that even the most adept operators of these systems could sell them hope to understand. They offer us unique opportunities to learn about the structural dynamics that govern such systems, forces that normally remain hidden until times of urgency and stress.
Demetri Kofinas:	02:52	This conversation reflects my attempt to learn about how these systems operate, why they're under strain, and what this tells us about whether or not we, as consumers and customers of this multi-trillion dollar industry, are making the right choices, asking the right questions, and prioritizing the right problems when thinking about the security of something as crucial and basic to our survival as food.
Demetri Kofinas:	03:21	For subscribers to the Hidden Forces premium content, available through our Patreon page at patreon.com/hiddenforces, I've included a near hour long discussion between me, Tesla Charts, and George Orwell that we recorded late Friday evening after a bizarre series of tweets by Tesla CEO Elon Musk, prompted a selloff in the company stock, raising serious questions about whether his behavior violates previous securities fraud settlements with the SEC. This on the heels of an earnings call Wednesday that left believers in the company, and even Elon's strongest supporters, baffled.
Demetri Kofinas:	04:04	With that, please enjoy this timely episode on food security and supply chains with my guest, Lowell Randel.

Demetri Kofinas: 04:17 Lowell, welcome to Hidden Forces.

Lowell Randel: 04:21 Thanks, Demetri. Happy to be here.

Demetri Kofinas: 04:23 It's great having you on. How are you doing?

Lowell Randel: 04:25 Yeah, doing well. It has been a very interesting six or eight weeks to say the least, particularly for the food industry. So, we're working hard to keep food going to consumers.

Demetri Kofinas: 04:37 When did things start getting challenging for you guys? When did the disruptions begin to emerge in the food chain industry?

Lowell Randel: 04:44 Well, it really started to build when the WHO declared the COVID-19 as a pandemic, and we started to see grocery demand start to surge. That really amplified when President Trump made the national emergency declaration, and then you started to see empty shelves. That really created some disruption in trying to get that supply chain to catch up.

Demetri Kofinas: 05:13 How soon before the national emergency was announced to the food industry begin to suspect that they would need to make provisions? In their words like, I assume they weren't totally caught off guard.

Lowell Randel: 05:24 No, absolutely not. In fact, one of the things that has been really rewarding and helpful is how the food industry has banded together. So, I'm a part of food industry coalition that represents everyone from the food logistics industry, which is our membership, to the agricultural producers, grocery stores, food service, and really everything across that food supply chain. We began talking about this when we started to see the pandemic emerging. So, we did have those conversations starting before the national emergency was declared. Those efforts have been redoubled now over the last six or eight weeks as this pandemic has really taken hold.

Demetri Kofinas: 06:14 So, I promise those listening that we're going to do a deep dive into this. It's a super fascinating industry. It's relevant and timely given all the news headlines around some of the disruptions and things that we're going to get into. Before we do that, Lowell, give our audience a sense of who you are and your background. How did you get your start in this business?

Lowell Randel: 06:35 Yeah, absolutely. So, I grew up in small town in East Texas and grew up around agriculture. So, was exposed to--I raised chickens, and pigs, and cattle, and sheep. I always knew that I had a close connection to agriculture and food. So, when I went to school at Texas A&M, I studied Agricultural Economics, master's degree in Agricultural Development. So, really was finding ways to support that connection that I have with agriculture and food production. My dad's actually an animal scientist. So, I grew up around that application of science in solving food and agriculture problems. But I knew early on, I didn't want to be the one conducting the science.

Lowell Randel: 07:28 So, I was trying to find ways to support that without having to be the one actually in the lab doing the science. I found agriculture and food policy to be really that avenue for me to support food and agriculture in a way that fit my

interests and skill set. So, then I found myself in Washington, D.C., did a congressional internship for my hometown member of Congress, and really fell in love with the policy making aspect of Washington D.C., and working with partners in industry, partners in government. Whether that be Department of Agriculture, Food and Drug Administration or with folks in Congress.

Lowell Randel: 08:15 So, I've been doing that in Washington D.C., for almost 25 years now and actually spent some time working for the federal government, the Department of Agriculture as well, and a couple of years working for the Texas Department of Agriculture. So, really have grown up around agriculture, and turned that into a career of supporting the food industry, and been working with the Global Cold Chain Alliance since... Well, it was 11 years in February.

Lowell Randel: 08:44 I came to GCCA after serving at the Department of Agriculture as the Deputy Assistant Secretary for Congressional Relations, where in that role, I really got to work with the breadth of the Department of Agriculture. It is really a wide-ranging department that touches all aspects of food, nutrition, animal production, crop production, and really the whole gambit. That prepared me to come into the Global Cold Chain Alliance, which is that connector of food production to consumption.

Lowell Randel: 09:27 You hear people say, "farm to fork" or "gate to plate" and the cold chain plays such a critical role in making sure that that food arrives at high quality and safety. So, I think from early on, I knew I wanted to be involved in supporting the industry. This is a great place for me to be to share my experiences and support that critical function of the food supply chain.

Demetri Kofinas: 09:55 Well, the Department of Agriculture is one of the oldest departments. It was founded by, I think Abraham Lincoln, wasn't it?

Lowell Randel: 10:02 Yeah, yeah, that's absolutely right. Abraham Lincoln founded it. It was established when he was president and it was called the "people's department". I think that's actually true, because it's the one thing that we all have to do. We all have to eat, and not everybody appreciates what it takes to get that food on their dinner table. You hear the adage that chocolate milk comes from brown cows. So, it's a challenge at times to make sure that the public really appreciates what goes into the food supply chain.

Demetri Kofinas: 10:38 It's funny because I don't know where I heard this or how I remember this, but I could swear there was a poll taken at some point where they asked kids in school where chicken nuggets come from. They didn't actually know. They thought they actually came from something called the chicken nugget or something. It's interesting anecdote. I want to move into a conversation about the cold chain because this is obviously so central to our conversation. So, what is the cold chain? How does the Global Cold Chain Alliance fit into this?

Lowell Randel: 11:11 Yeah, so the global cold chain is everywhere that you have the need for temperature control to preserve the safety and quality of a perishable commodity. So, you can harvest a berry, for example. If you can freeze it very near the time of harvest, when it's thawed, it retains that same level of freshness as when it was harvested. So, it's kind of that nature's pause button

that preserves that quality, preserves that safety of food. It can begin right there at the harvest point when you're talking about fruits and vegetables.

Lowell Randel: 11:58 When you're looking at other kinds of commodities, like meat or dairy or poultry, again very soon after harvesting. So, if you have a meat or poultry processing plant, once that animal is harvested, it will go into temperature control immediately. Again, that's to preserve safety, but as well as quality.

Demetri Kofinas: 12:20 Because this is also kind of gets us into a conversation about the evolution of the food industry. Because for a long time, the way that you preserved meats was through salt treatments and other things, I don't know all the different terminology was. But eventually we got to the place where we had these cold chains. Maybe you can also kind of use this as an opportunity to walk us through, to whatever degree you feel comfortable, the evolution of the food chain when it moved beyond just kind of locally-sourced products where farmers had relationships with local restaurants or people would go to farm stands and buy the food they needed.

Lowell Randel: 13:00 Yeah, absolutely. So, the food industry definitely has evolved quite a bit. Yeah, we did start as very local, much like politics is all local, food production used to all be local. These days, food is absolutely global. When you go into a grocery store and you look at the shelves, some of that product may have been produced right down the road. Other of that product was produced on the whole other side of the globe.

Demetri Kofinas: 13:29 New Zealand or something.

Lowell Randel: 13:30 Exactly. One of the linchpins of that evolution is the cold chain, because if you don't have the ability to pause that process for those commodities and ensure that safety and quality, you don't have the time that it would take for a product from New Zealand to get to the United States or vice versa, US exports a lot of food. Without the ability for temperature control, you couldn't make that long marine voyage from New Zealand to the US and come out on the other end with commodity that anybody is going to want to consume.

Lowell Randel: 14:15 So, our industry, the global cold chain industry, refrigerated warehouses, many of them started as ice companies. They would actually harvest ice from rivers. I don't know if you ever saw the movie Frozen. But at the very beginning of that movie, they actually show one of the characters taking ice out of a river. That really happened and it happened here in the US-

Demetri Kofinas: 14:46 So how would that work? I didn't actually see the movie.

Lowell Randel: 14:50 Yeah, so, but basically-

Demetri Kofinas: 14:53 But they would take the ice and then they would what? Like they gather huge amounts of ice and then-

Lowell Randel: 14:58 Yup.

Demetri Kofinas: 14:58 ... package fish with it and transport it through the country or something like that?

Lowell Randel: 15:01 Yeah, rail cars. They put ice in there, or they would put it into their warehouses, and then they would preserve the product for as long as that ice would hold.

Demetri Kofinas: 15:11 So, they had to source the ice right at the origin of whatever the product was that they were transporting, because they didn't have refrigeration. So, they had to have insulated like coolers and a place to get the ice. Is that how it worked?

Lowell Randel: 15:28 Yeah, basically, that's right. This is over 100 years ago. So, we're talking about-

Demetri Kofinas: 15:34 19th century?

Lowell Randel: 15:35 19th century. And then one of the big breakthroughs for the cold chain was the advent of refrigeration systems and that really began with the use of chemical called anhydrous ammonia. So, you probably would recognize the smell of ammonia, bitter smell that you might get if you open a bottle of Clorox or something like that, or some cleaners have ammonia in them. But the ammonia is an extremely efficient refrigerant. Back in the 1800s, scientists determined that they could remove the heat from a room basically, and refrigerate that space, refrigerate that product by utilizing ammonia in a closed loop system.

Lowell Randel: 16:29 Now, I'm not an engineer, so I can't tell you all the technical ins and outs. But basically, that development of that technology and that use of, in this case, ammonia to allow for the refrigerant. Mechanical refrigeration helped us evolve from harvesting ice out of a river to now being able to make our own ice through these refrigeration technologies, and then the evolution of those technologies enabled people like Clarence Birdseye. You may think about Birds Eye frozen vegetables. He was really a pioneer in the process of taking a vegetable and freezing it and being able to package that up. And then you could distribute that far and wide as long as you maintain the cold chain.

Demetri Kofinas: 17:21 That's remarkable. One of the things I didn't even know until I prepared for this conversation was how long-ago refrigeration was actually invented. It was before even the 1850s, it was like 1834 or something like that.

Lowell Randel: 17:34 Yup, I'd have to go back to the history books to give you an exact date, but yes, well over 100 years ago.

Demetri Kofinas: 17:40 Yes, it's remarkable. So, this has been a process that's evolved over time, but now, the cold chain is central to how we get so much of our food. Paint this picture for me, help me and my listeners understand just how vital this chain is before we get into a conversation about how it's been disrupted, the sources of that disruption, and what that means going forward for us.

Lowell Randel: 18:04 Yeah. So, just think about the food that you consume every day and what percentage of that food is shelf stable in a box, in your pantry, versus what you pull out of a refrigerator or freezer. That should give you an indicator how critical the cold chain is. But when you look at what we as consumers are eating every day, the percentage of that needs the cold chain is really, really high.

Demetri Kofinas: 18:40 So, what is that percentage?

Lowell Randel: 18:41 So maybe about five or so years ago, we started to see a little bit of a dip in frozen food consumption. Some of that was driven by consumer preferences change, right? So, some people might say, "Okay, we're going to go more with fresh produce or other non-frozen items." But there's so much value in the ability to have that frozen food where again, you kind of use that nature's pause button, and then you can get those fruits and vegetables at any time you want them, or that meat and poultry that will stay good for extended periods of time in storage.

Demetri Kofinas: 19:26 So, you're talking about just frozen, but the cold chain includes refrigerated products as well, right?

Lowell Randel: 19:30 Yes.

Demetri Kofinas: 19:31 So like when we talk about beef, when we talk about pig, turkeys, chickens, eggs, lettuce, all of these things have to be transported on the cold chain because they have to be refrigerated at the very least, right?

Lowell Randel: 19:45 Yeah, absolutely. Yeah, that's a great distinction. Whenever I talk about the cold chain, that is absolutely not just frozen. That is really anything that requires temperature control.

Demetri Kofinas: 19:57 Which is the vast majority of what people eat, right?

Lowell Randel: 20:01 Without a doubt, without a doubt, you hit the nail on the head. Again, really you think about what you consume that's not temperature controlled. It's things like okay, boxed cereal, yes, canned soup. There's certainly things in the middle of the grocery store, so to speak, that don't require refrigeration. But the perimeter of your grocery store is your temperature-controlled items largely. That's a huge percentage of what we consume every day as Americans and really globally as well.

Demetri Kofinas: 20:36 Right. Also, to your point though, we're not going to talk about that pharmaceuticals. So, I'm going to throw out a few statistics here that I gathered and if I made any mistakes, please let me know. But from what I've looked into, from what I've seen, in the United States alone, we consume over 600,000 head of cattle per week, 2.4 million hogs per week, 4.7 million turkeys per week, and 173 million chickens per week, which amounts to roughly 100 billion pounds of meat and poultry that go through roughly 800 federally inspected plants each year. Does that sound about right?

Lowell Randel: 21:16 Yeah, I don't have those numbers in front of me, but that does sound like you're in the right ballpark there.

Demetri Kofinas: 21:20 That's an enormous... That's just meat. We're not even talking about all the produce. I don't even have those numbers. So, this is an enormous amount of food that's dependent on this very specific and highly integrated supply chain that relies on scientific methods, advanced technologies, and advanced processes, right?

Demetri Kofinas: 21:43 So, what I would love to understand is where and how have we seen this process get disrupted in recent weeks? First of all, we've seen what's happened

at supermarkets, right? I've been to the supermarket the last month, I saw empty store shelves. I heard from different people that this was not a reflection of the lack of food, the food is there, but this was an issue with the supply chain. This was confirmed also by what I continue to read. What's been happening and how much of what people are experiencing in terms of shortages is a result of what's going on in the supply chain itself and not on the farm?

Lowell Randel: 22:25 Yeah, it's a great question. I liken it in some ways, if we're preparing for a big storm, a big winter storm in the northeast or a hurricane in the Gulf Coast, you have that kind of surge in buying at a grocery store. So, really what happened is it was not a lack of food in the country, you're absolutely correct about that. It's just that the food itself was not in those grocery stores at that moment in time. So, let's look at our member facilities, for example. So, our member facilities have been full of food before the pandemic. It's a question I asked my members every time I'm on the phone with them, how are your inventories? They continue to be full.

Demetri Kofinas: 23:19 Just to clarify. I want to interject in moments to clarify for myself and for our listeners. When you talk about inventories, are you talking about just frozen warehousing or are you also including animals that are ready to be processed?

Lowell Randel: 23:33 Yeah.

Demetri Kofinas: 23:34 Vegetables and produce and everything else?

Lowell Randel: 23:36 Yeah. So, it's a good point to clarify. So, there's a couple of pieces to this. So, there's food that's already been produced. That would be what is in our members' facilities currently. That level of volume of food in our members' facilities really has not gone down throughout this pandemic. But having said that, that doesn't mean that there aren't impacts to production as well. So, you kind of have impacts on both sides of the supply chain. We've talked about the demand impacts at the grocery store level and how those created disruptions of kind of needing to catch up and get inventories from warehouses to the grocery store. The other side of that is, do we see disruptions on the production side? Now, we are starting to see disruptions in production.

Demetri Kofinas: 24:42 At the very start of the chain?

Lowell Randel: 24:44 Correct. So, you probably have seen some of the high-profile discussion and reporting on the impacts that are happening in the meat and poultry industry. That is a good example of where we're seeing some disruption on the production side.

Demetri Kofinas: 25:01 Tell our listeners a little bit what is it that we're seeing, what is it that you're referring to?

Lowell Randel: 25:05 Yup. So, let's just take either pigs or chickens, and you've got producers of pigs that are going to go into a slaughter facility. Well, if that slaughter facility is shut down for some reason, then that hog farmer may not have an alternative place to send those pigs. That actually has unfortunately happened in a few local areas, where because of COVID-19 positive cases in their workforces, there have been a few significant closings of meat or poultry facilities in different parts of

the country. But when those plants close, then the farmers are put in a very difficult position. Where are they going to market those chickens, or those hogs, or cattle as examples?

Lowell Randel: 26:09 It's a unique situation when you're dealing with animals, because they get to a certain weight and a certain age and it's time for them to be harvested. If there's no outlet for them to be harvested, that producer faces really difficult decisions. Unfortunately, in some cases, we know that producers have had to use that last resort of euthanizing animals. I think everyone wants to avoid that if at all possible. But as we see the capacity for processing be disrupted, then that impacts things at the production level.

Demetri Kofinas: 26:51 In other words, it's unaffordable for them to continue to feed the animals and house them. So, they're actually better off euthanizing the animal. Even though there are all these food banks out there that need the food. The systems as they are in place currently make that economically unfeasible, so to speak.

Lowell Randel: 27:10 Yeah, it's a challenging situation. Some of its economics and some of it is operational as well. So, you can employ certain strategies to slow down the rate of gain of a hog or a cow, and to try to extend that window when that animal can be harvested appropriately in a processing plant. It's a little bit different than if it's fresh produce. We know there's been some disruption in the fresh produce side as well, but you can put a box of vegetables together and get those over to a food bank or sell them at a farmer's market or donate them-

Demetri Kofinas: 27:57 Because you don't need to process them, you can process them on the farm.

Lowell Randel: 28:00 Exactly.

Demetri Kofinas: 28:00 There's no need to send it to a third-party facility.

Lowell Randel: 28:02 Yeah, it's very simple. You've got that vegetable and it can go right into commerce. Whereas a live animal, it takes equipment. It takes a regulated process for that product to get into commerce. It's heavily regulated by the Food Safety Inspection Service to ensure the quality and the safety of that product. It's not as though you could donate a bunch of pigs to a food bank and let them harvest them themselves. It's just not something that should be done.

Demetri Kofinas: 28:39 These are super expensive facilities. I've seen these processing facilities. But in the case of these farms that, for example, have turned over lettuce, why have they done that if they don't need to send it to a third-party facility?

Lowell Randel: 28:53 Well, again, some of that is their established channels for commerce have been disrupted. So, maybe they had contracts with restaurants or other food service companies that their demand has gone down significantly, because we all know that in most parts of the country, we're social distancing and you can only do restaurants through takeout, curbside, delivery, those types of things. And then big institutions largely are closed. So, a lot of those producers that were faced with that decision, that was because they were growing to provide their product into those chains. Those chains were moving so slow that they weren't able to accommodate that product.

Demetri Kofinas: 29:44 So that's interesting, that point about suppliers having long standing relationships and recurring orders from key sources of demand. Let's break this down. First of all, what percentage roughly of agricultural and livestock production goes towards fulfilling recurring orders made by regular customers with whom farms have long standing relationships, like restaurants and school cafeterias, which I know have also been impacted by all of this?

Lowell Randel: 30:15 Yeah, it's hard to put a percentage on it because every producer's situation is a little bit different. Some work for-

Demetri Kofinas: 30:22 But for the industry as a whole?

Lowell Randel: 30:23 Industry as a whole. Industry as a whole, so what I would tell you is that we were looking at about a 50/50 split across all food. That has shifted tremendously just in the last six weeks. I don't know what the numbers are for particular products, but obviously, food service is down a lot nationally. Now, fast food continues to do pretty well. I'm not sure they're meeting the same volumes as they did pre-pandemic but-

Demetri Kofinas: 30:58 So, like McDonald's, and Hardee's, and those places that are still open?

Lowell Randel: 31:02 For sure. Yeah, so I know at least-

Demetri Kofinas: 31:04 That's interesting.

Lowell Randel: 31:05 ... where I am in Virginia, for example, restaurants can continue to serve as long as it's drive-through, delivery, or curbside pickup. It seems like every time I drive by it, not to call out any particular company, but every time I drive by this Chick-fil-A near where I live, I mean the line is very long. So-

Demetri Kofinas: 31:28 Really?

Lowell Randel: 31:28 ... we know that they're doing a good bit of business. But how that compares to their pre-COVID sales, I couldn't tell you.

Demetri Kofinas: 31:36 Okay, so as a layman consumer, one of the questions I had when I was looking at this was if say 50% of food is made for the food service industry, and most of that can immediately be repurposed for retail, and people need to offset the food they normally consume in cafeterias or at restaurants by eating at home, then does that translate to higher prices at the grocery store?

Lowell Randel: 32:02 Yeah. So, there are a couple of things that we can examine along those lines. One is the form that that product takes is different for food service. So, there are some differences there. That's actually become a little bit of a challenge as we go through this pandemic. Are there ways to redirect food service-oriented product to retail right now while we know that there's this spike in demand?

Demetri Kofinas: 32:33 Why is that so difficult?

Lowell Randel: 32:36 So, labeling is one issue. Another issue is just how it's packaged and packed. So, are people going to want to go to a grocery store and buy huge like... I'm going to make it up, but a 10-pound bag of chicken nuggets when they're used to

buying a 1-pound small freezer bag of chicken nuggets. So, there are some challenges in how it's packaged, how it's labeled. There are also some proprietary restaurant like recipes and configurations that I think are a consideration as well. So, some of that restaurants have been, I think, a little bit hesitant to redirect some of their proprietary products that may be kind of pre-marinated or pre-assembled because of kind of some of their branding and proprietary nature. So, there's definitely some challenges to redirection.

Demetri Kofinas: 33:37 I've read that this is a huge problem. I mean, from what I've come away with the closing down of so many restaurants and the shutting down of schools, and the school lunch program has had a significant disruptive effect on food supply chains. It's led to a lot of what this wasted food is. Is that correct?

Lowell Randel: 33:56 I wouldn't say necessarily that that has led to a lot of food waste. I would say that that has led to at least in the sense of our member facilities, a lot of food sitting. So, as long as that is temperature-controlled product, it has a longer shelf life. So, that's not really leading to food waste. But it's again, maybe displaced food or food that is not moving as it was originally intended.

Demetri Kofinas: 34:24 Is that also the primary reason that we've seen euthanizing of animals for example on farms?

Lowell Randel: 34:30 I wouldn't say that's why we've seen the euthanization. The euthanizing, in my opinion, has been directly related to the ability of processing plants to accept new animals. That's really the crux of that. So, you've got a big plant that harvests thousands of animals a day, and it goes offline for two weeks. There's no place for those animals to go.

Demetri Kofinas: 34:58 So that's the big issue. When it comes to the major bottlenecks we're seeing as a result of this crisis, though the demand side has impacted things, the primary source of the disruption is happening at the processing facilities.

Lowell Randel: 35:11 Well, when you look at fresh meat and poultry, then I would say that the answer is yes, that has been the primary disrupter. But again, that's just an isolated example from a meat and poultry perspective. When you look at the food service breadth of product that would be oriented for food service, I mean, it spans pretty much everything.

Lowell Randel: 35:38 Even in the meat side of things, I know I was talking with one of our members recently, and they actually were asked by one of their customers to redirect turkey that was originally set for restaurant market. They were able to say, "We're going to relabel. Instead of that going into a restaurant as a fresh product, we're going to blast freeze it. We're going to relabel, repackage, and then we're going to be able to get that into the retail chains." So, there are ways that this is happening, but there certainly are challenges as well.

Demetri Kofinas: 36:17 So, I'm curious to ask you, what do you expect us to see going forward? How much of what's happening in the supply chain reflects the types of disruptions that we've already experienced as consumers at the final end of the chain? How many are still baking into the cake, so to speak, like with agricultural products, where if there's a disruption during planting season, that's going to have an effect on harvesting in the fall? So, what is the lag? Because again, in my

research, I've seen reports that we can expect to see farmers continue to have to euthanize livestock as a result of disruptions to processing facilities that can't be turned around in time to save those animals going forward, I don't know, a few weeks or a month or so.

Lowell Randel: 37:06 Yeah, I certainly hope that the euthanizing of animals can be minimized as much as possible. We haven't really touched too much on the Defense Production Act and President Trump's use of that to ensure that meat and poultry facilities remain open, but that happened to this week. It was done, I think, in many ways to avoid the unionization of animals, as well as try to ensure that that disruption of the meat and poultry flow into the food supply chain and ultimately to grocery stores is minimized. Now, I can't say there won't be more in the coming weeks, but I think this will hopefully help minimize that, but time will tell.

Demetri Kofinas: 37:53 Well, I think I speak as someone who is concerned. I've done the best that I can to be prepared, but obviously, I'm concerned about sourcing food, right? I'm fortunate, I have relationships with some local farms in this area. In fact, I'll give you an interesting anecdote. An owner of a local farm near where I'm at told me that he's never seen what he's seeing in the town where he's located. This is in the North Fork of Long Island. He's seen basically summer traffic, right? Normally, the kind of traffic they see during the summer, in terms of people coming and staying there. That's what they're seeing now.

Demetri Kofinas: 38:30 But on top of that, they're seeing lots of people from New York City itself and from surrounding areas that he's never interfaced with before, reaching out to get meat and other products from his farm. We actually spoke when he was on his way up to a processing facility in Upstate New York. Is there a real concern that a consumer out there let's say, in the next month or two months could see significant price rises and shortages in key meats and other products that need to be processed at some of these facilities? Which seems to be again, the most sort of concerning issue facing food supply networks.

Lowell Randel: 39:15 Let me I guess start with the price question. Obviously, supply and demand helps kind of identify and drive what the pricing is, particularly when you're talking about commodities like meat and poultry. So, I do think that you'll see some fluctuations in price there for meat and poultry as supply tries to meet that demand. With production challenges that we've already talked about, that could lead to some increased prices. I feel very confident that we are not in a food shortage. With that said, we have to be able to maintain production to ensure that we stay that way.

Lowell Randel: 39:56 So, when you talk about plantings, and potentially, what does that mean when it comes to harvest time in a few months? We have to ensure that we're continuing to plant crops. We have to ensure that we're continuing to raise pigs, and raise cows, and raise chickens for that domestic production. There's still a lot of food in the system, but we have to be able to continue to replenish that food that goes out to the grocery stores and into those markets with new product. So, exactly what you're talking about is critical that we have to continue to plant, we have to continue to raise animals. It's definitely a cycle. It's a chain that we have to keep every link strong.

Demetri Kofinas: 40:42 So, here's a question for you. One of the things that we've seen and it's not just in food supply chain networks, it's across the board. The one good byproduct of a crisis, whether it's a financial crisis or an economic crisis or a crisis in a relationship or something, it reveals aspects about the structure of the system, the ecosystem, the organism, whatever you want to call it, that you wouldn't be able to see otherwise, right? Choke points emerge. These are stress tests. I think, like many other places in our economy, our food system has made trade-offs of resiliency for efficiency. This is something we see across our economy, in our financial markets, and in our supply chains and networks.

Demetri Kofinas: 41:31 First of all, is it a fair concern that we should try and make our systems more resilient going forward that perhaps we've traded too much in terms of efficiencies? Another place we've seen this, for example, is hospitals. In the United States, hospital efficiency is a premium. So, as a result, there's much less marginal capacity for beds and that's had an impact during COVID.

Demetri Kofinas: 41:53 Where can the food system, as it is currently constituted, improve in this regard to make it more resilient? Would this be for example, local sourcing, more local sourcing of ingredients? Is this an argument for more government investment in agriculture and in small farms, maybe subsidies for some small farms? I haven't read that anywhere. I don't even know if it's a good idea, but I'm just kind of throwing it out there. What do you think about that, about making the system more resilient?

Lowell Randel: 42:25 Yeah, so we definitely do want to try to learn as many lessons as we can from the pandemic and the response. I think one of the things that comes to mind is this concept of just-in-time inventories. I think gets to the point that you're making about efficiency versus resiliency. I think you're going to see companies look at their inventory strategies and assess how did they perform in this situation and how can we make them more nimble when... Hopefully, we never go through a situation like this again in our lifetimes.

Demetri Kofinas: 43:09 But exactly to the point, we can fully expect that we will, right? Not necessarily a pandemic, but certainly possibly a pandemic. But there are all sorts of ways in which economies and supply systems get shocked. Whether it's a cyberattack, whether it's an extraordinary weather event, things can happen, right?

Lowell Randel: 43:28 You're absolutely right. So, inventory strategies is one of the big considerations and that's going to be different for every company. It's going to be different for different kinds of commodities, I think. But it's going to require some investigation, some analysis of how specific nodes in the supply chain performed and what could be done to harden them. Now, I would argue that fundamentals of the supply chain have performed pretty well. Yes, we had surge in demand. Yes, it took some time for replenishment to catch up. But all the while, I would argue that we didn't have people going hungry because of the supply chain. Yeah, they may be didn't have the same variety that they're used to in the grocery stores, but that's different than there being a food shortage.

Demetri Kofinas: 44:30 So, Lowell, in closing, what's the takeaway from this? What do you think people should know? It sounds like you're not particularly concerned about shortages going forward. It sounds like also when it comes to prices, if I understood correctly, you're not particularly concerned about rising prices. Or if there are

going to be rising prices, it'll be totally temporary. With the latest measures taken by the government, we can expect to see these processing facilities reopened soon. In fact, I think some of them, as you said, have already reopened. What's the major takeaway here for listeners?

Lowell Randel: 45:07 Yeah. I just want to revisit the price point because I don't want someone coming back and saying, "Oh, well, the price went up here." He said, "Oh, don't expect any price increases." Price is a supply and demand function. If there are supply issues or surges in demand, we may see some fluctuation in prices. So, I don't want to misrepresent that you may see higher prices for meat and poultry as a result of this. I think we will see some of those fluctuations. So, I just wanted to clarify that. But as we look at this for the future, a couple of things strike me. The first and I'll kind of close the way I started; the food industry has really come together really well.

Lowell Randel: 45:53 There are some ways that the food industry can learn from this to be more efficient and more effective in the future, but we're all in this together. We've seen food service that has slowed, come in, and raise their hand to help retail, because retail was just absolutely going crazy. So, we've seen people come together and find ways to be creative. We've seen innovations in our own facility operations and innovations in working with truck drivers. We really didn't touch much on transportation, but that is so critical. There have been some really good innovations on working with drivers to minimize that person-to-person contact, but actually do it in a way that enhances efficiency. We've seen enhanced efficiency in warehouse operations.

Lowell Randel: 46:52 So, I think we learn from what we've been through, we embrace those new efficiencies and what we've learned. We embrace this concept that we're all in this together and that we can be stronger if we work together to find those innovative solutions.

Demetri Kofinas: 47:10 Well, that's great, Lowell. So, if people want to learn more about the Global Cold Chain Alliance, where can they do that?

Lowell Randel: 47:15 Absolutely. So, we've got a website, www.gcca.org. I would point you to our Coronavirus web portal that's got lots of resources that are important for our industry members, but really good resources I think for anybody who's interested in how the food industry is responding. We've got protocols on there on how you do best social distance in a food production type atmosphere, what to do if you have a positive test within your facility, different resources like that. So, we would welcome anyone interested to go to our website, use the resources on that web portal. As I said before, we're all in this together. So, we want to make those resources available.

Demetri Kofinas: 48:04 All right. Lowell, thank you so much for coming on the program.

Lowell Randel: 48:07 It's been my pleasure.

Demetri Kofinas: 48:10 Today's episode of Hidden Forces was recorded in New York City. For more information about this week's episode or if you want easy access to related programming, visit our website at hiddenforces.io and subscribe to our free email list. If you want access to overtime segments, episode transcripts, and

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Demetri Kofinas: 48:47 Today's episode was produced by me and edited by Stylianos Nicolaou. For more episodes, you can check out our website at hiddenforces.io. Join the conversation at Facebook, Twitter, and Instagram at @hiddenforcespod or send me an email. As always, thanks for listening. We'll see you next week.