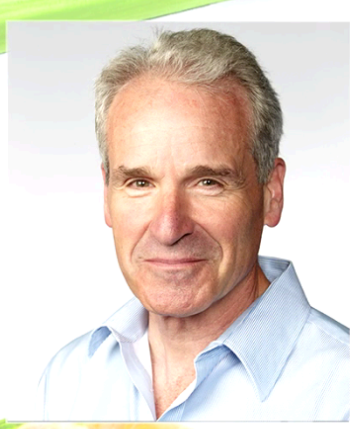
The Solari Report

August 25, 2016

Solari Food Series Pioneering Urban Farms with Will Allen



the Food Series

Harry Blazer

Will Allen

Pioneering Urban Farms

August 25, 2016

Harry Blazer: In July of 2016 I had the honor of interviewing Will Allen in Milwaukee. He took an hour out of his busy schedule to spend with me. We've got quite a bit of collateral material that you can look at that tells you a lot about Will and his background - basketball player, corporate marketing and so on. But what makes this guy truly remarkable is what he has accomplished in terms of urban agriculture - the most amazing stuff you can find in North America, maybe even in the world.

It's closed-loop, vertically-integrated, from growing his own compost all the way up to a retail store, teaching thousands of people how to grow stuff – grow fish, grow animals. He's just a great guy.

I think this interview will put a smile on your face, a song in your heart, a little dance in your step perhaps. He provides some great vision and some great manifestation of what's possible through hard work, through cleverness, creativity, from being the best that humans can be. (see my comment at the end of this transcript)

Will Allen: I've had a long career. I grew up on a farm. Establishing urban agriculture here in Milwaukee and getting it to a scale that people would pay attention to.

Harry Blazer: Big time. I want to get a sense of what that is because not only have you had tremendous energy, intelligence, and commitment to get this thing going, but you've also turned this thing into a real-deal business. I just want to get a sense of what farms you have, what you do and how much stuff you produce.

Will Allen: Our main farm, which is the original farm, that was established in 1993 on 55th and Silver Spring is really the energy that led us to where we are today in terms of being able to scale it up.

Along this 24-year continuum, we were constantly adding more pieces to what I call the 'food system puzzle' that we have. Really it was trying to develop our own food system that could be replicated in other cities, not just in Wisconsin or Illinois, but all over the world. But that wasn't the original idea. The original thing, when I bought

this farm, was to sell my farm produce from my farm into a food desert area that was located up on 55th and Silver Spring where we had the largest public housing project in Milwaukee, called Westlawn. We have dense population in this area. Four miles away is the closest grocery store. It was an opportunity for me to sell some of my farm produce into that area.

I was really looking at that community because it's mostly African-American dominated community. Back then, when you think 24 years, ago, nobody is really talking about urban agriculture or small-scale farming. We were escalating (promoting and subsidizing) large commercial farms and so forth across the country, and 99% of the food that was coming into this marketplace was coming from 1,500 miles away. And that is pretty much still the case even though a little bit more is being grown by other folks. But I don't think their mission and vision was to scale it up.

When I first started, and once I got going, I wanted to actually engage the local community

When I first started, and once I got going, I wanted to actually engage the local community, starting with the youth in the community, and then being able to get to their parents through the kids. That's what really let people know who we are and what we are doing – and getting support from the community in order to be able to do the things that we do.

Historically this was the last remaining farm in the city of Milwaukee that was a registered farm, so we had some rights that we could actually raise animals and grow food and do all kinds of stuff.

Even though you have favorable zoning, you can get some pushback if you don't do the community engagement piece. So we did that through the kids. As soon as kids see you doing something, they all run in and want to get involved. Either you can push them away, or you can invite them in, and that's what we did. That was the start of us becoming a not-for-profit organization. I don't come from that world, but I have a lot of friends who were operating not-for-profit organizations and 501(c)(3) s. They talked me into it. They said, "Since you like doing this work, why don't you start a 501(c)(3)."

Harry Blazer: By "bringing these kids in", do you mean you gave them tours? Were you coaching them on how to grow things? Were you getting them jobs?

Will Allen: Yes. We were coaching them. Because they were younger kids, we started out with theYouth Corps and we would give them a stipend at the end of the summer so they could go and buy school clothes or whatever.

We started them at about eight years old. And once they got into their teen years as we moved along this continuum, we gave them real jobs on the farm in our organization. That's how it kind of rolled out.

Early on we had a retail store that did very well because we did a lot of advertising, and a lot of people came there for things like greens and mustard turnips, collard greens.

Harry Blazer: Just the African-American community?

Will Allen: Pretty much for those kind of items, but we also started educating folks. Then more and more people heard about what we were doing, and it became more multicultural as we moved along the continuum. I think white people were afraid to come into that area, even though at one point historically it was entirely a white community.

Harry Blazer: It was probably an upscale area at one time.

Will Allen: It was really the first part of urban sprawl from Milwaukee into this area because it was called Granville Township. And Milwaukee annexed the land, and neighborhoods just started to change. That was one of the neighborhoods that changed when they built the housing project there and everything.

Today it's an entirely different kind of neighborhood in that people aren't afraid to come there because we're there. Our organization is there, and some good things have happened with the housing project. I believe it's now the only LEED certified housing project in the country – called Westlawn. They reconstructed the whole thing, so it looks more like condos and apartments than it does the typical public housing project that you'll see in other areas of the country.

Harry Blazer: You were probably responsible for that change, I'll bet.

Will Allen: Well, I was partially responsible because the housing authority has embraced us. We have a partnership with the housing authority and the housing project.

One of the things that I realized right away was that we had to do commercial-type projects in order for people to take us seriously. We didn't do the typical small community or garden-type project; we were doing larger scale farming. So we were able to crank out a lot of crops and also adding more farms along the way.

We started building hoop houses and constructing our own hoop houses. I think today we're probably the largest hoop house growing system in the state of Wisconsin because we have over 100 greenhouses and hoop houses in this area and in Chicago and so forth. We grow year-round.

Harry Blazer: You have developed a technique that really doesn't require much supplemental heat.

Will Allen: Right. I developed this technique, because we have a lot of brewery waste from Lakefront Brewery and the Milwaukee Brewhouse and a couple of other breweries. We take the brewery waste, which is really a wonderful product that we use in our compost, and we also use woodchip. When you combine woodchip, brewery waste is on a nitrogen side, and of course the woodchip is on the carbon side, you create a tremendous amount of heat.

What we do is we bank that material around the exterior walls of our hoop houses, and at the four corners, we don't plant all the way to the end. We leave about ten feet of space on each end. In the four corners we put these big piles that may be six feet tall by ten feet in diameter. We have to cap it with woodchip because you have to filter out the ammonia. When you put carbon and nitrogen together and you compost, you're creating ammonia. Ammonia is bad for us and it's bad for the plants, too. It will actually turn the plants white.

So we found that if we put two feet of woodchip on the piles, that would filter out the ammonia. That's been working for many years.

Harry Blazer: Have you ever tried putting layers of char?

Will Allen: We have not. What we do is in each hoop house we have four beds that are 36 inches wide, 24 inches high, and 18-inch pathways between.

Harry Blazer: So they're raised beds.

Will Allen: Yes. They're really raised when you think of 24 inches. Many of these

spaces are on top of asphalt and concrete. So we first put down about eight to ten inches of woodchip, and then we build the beds on top of the woodchip. That adds a lot of heat with just the woodchip alone before you actually build the piles in the four corners.

Harry Blazer: Are those raised beds within containers of any kind, or are they just built?

Will Allen: They are built because we don't sift our compost. When it comes out of the system, it's chippy and lumpy and so forth, and it holds together so you don't have to use wood frames.

Harry Blazer: So is it held together by mycelium and other things?

Will Allen: Just the material itself. Eventually it will break down to soil after so many years, but we're always adding new material because it shrinks.

So we add eight inches during that year at some point in time, depending on the crops that we're

For example, if it's 24 inches high the first year, it will probably lose about eight inches. So we add eight inches during that year at some point in time, depending on the crops that we're growing.

Harry Blazer: But you've got a large layer of compost that you are growing in.

Will Allen: We're growing directly in the compost.

Harry Blazer: That's very unusual.

Will Allen: We grow directly into our compost and we get tremendous results.

Harry Blazer: And you get all the structure you need for the root systems?

Will Allen: Yes. You can grow trees in that stuff. You can grow corn. You can grow anything.

We're talking 24 inches, and we grow tomatoes and stake them on top of asphalt. We grow cucumbers, and we trellis everything.

Harry Blazer: Most people would tell you that if you plant right into compost that it's like giving the plant, especially small plants, way too much nutrition too fast. You've come up with a mix that works.

Will Allen: Not true. If you use one part carbon and one part nitrogen in your recipe, that is what you have to do.

Harry Blazer: Wow!

Will Allen: That is what we do. Most people are nitrogen deficient when they make compost because they always struggle to get nitrogen. Now nitrogen is everywhere because in a city like Milwaukee, there are so many places where you can collect food waste from and brewery waste from. It's that way everywhere. Every city I visit from Atlanta to New York to California.

Harry Blazer: There are plenty of biological waste streams.

Will Allen: Yes. If you're out in a rural area, of course you're going to use animal waste for your nitrogen input. But when you're in the city, or even in the suburban areas where there are so many sources from coffee grinds from coffee roasters to cafeterias. We have cafeterias here that feed 4,000 employees a day. So there's a lot of waste.

Carbon is easy to come by. We're in a state where we have 68% forest. Trees are always coming down. Landscapers are chipping every day. Once they find out that you want to be a place where they can drop off their woodchip, you get more than you could possibly ever use.

Then you have Asplundh, one of the largest companies in the county that trim around all the power lines. They're in every state, and they're in your area. They just create tremendous amounts of materials for chipping. All the municipalities chip. All the suburban municipalities around Milwaukee chip. So there is a tremendous amount of carbon waste.

Then you have your cardboard and newspaper. Carbon is not an issue. It's the nitrogen that people have to get. To get those, your competition is Waste Management, for example.

Harry Blazer: Rendering companies also…

Will Allen: Yes. Basically what you have to do is build relationships with those companies. I find today that most corporate companies are very friendly. They have sustainability departments, they're into sustainability - so it's an easy thing to do. It may have been a little harder 24 years ago, but today it's easy.

Harry Blazer: They're looking for the PR opportunities for sure.

Will Allen: Exactly. So we started building systems. We got into aquaponics, starting with a small system. Then I decided to use the same kind of concept to move water and started building these large in-ground, custom-built systems that can grow 10,000 fish and so forth.

Harry Blazer: Did you get into aquaponics to have an alternative protein source, or to create more of a closed-loop system?

Will Allen: Well, it was for a protein source, but I wanted to come up with a system that didn't cost what these commercial systems cost – these mechanical systems that most of the aquaculture producers were using in raising salmon, even lake perch.

There was one organization over in Indiana, Bell Aquaculture, that is now out of business. They had put in a $90 million investment to grow lake perch, and it failed for a lot of different reasons.

Harry Blazer: I've seen you holding those lake perch and saying, "This is the future of food in a lot of urban areas."

Will Allen: Well, you can put systems in this room. You can put systems in garages and basements. You can put them in old buildings that were built to hold a lot of weight. You can build hoop houses and put them in pole barns. You can dig down holes in the ground and frame up the systems and use pond liner. The basic concept is for you to lift the water out of the tanks and have it gravity feed through rock, pea gravel or river rock, and grow plants. The plants remediate the waste because the system goes through a nitrification process. You have to basically get out the nitrogen byproducts that are poisonous for the fish but which the plants need in order to grow. It's kind of a symbiotic relationship between the fish and the plants to make it work.

Harry Blazer: What kind of plants do you find that are particularly effective?

Will Allen: Watercress. Basically what we do is, depending on your head space, you can have multiple levels of growing. On the bottom level we primarily use

watercress, which is the best filter plant that I've found. You can sell watercress.

Harry Blazer: And you can also eat it.

Will Allen: Yes. It's just been rated the most nutritious plant that you can eat. It's even more nutritious than kale and collards and things like that. So we grow a lot of watercress. We put it in our salad mix, and restaurants use it as a garnish or they put it on top of a steak. It's very tasty. We sell a lot of watercress.

It's easy to grow. People always ask me, "How do I start growing watercress?" I reach in and grab a handful and say, "Here. There's your start." It just grows so easily.

We do a lot of watercress, and we do nasturtium which is another water plant. You have to figure out what plants like to have their feet wet. For example, tomatoes do very well in water, believe it or not.

Harry Blazer: But it's still soil-based?

Will Allen: Yes. We put it inside pots, and we put the pots in the water. Then you get this wicking through the drain holes in the bottom of a 12-inch pot that is maybe 12 inches tall.

Harry Blazer: So the water migrates from a higher concentration to a lower concentration?

Will Allen: Yes. The reason why I like to grow in the soil – and a lot of people are growing directly into the water – is you don't get all the micronutrients that you get when you grow it in soil, especially in compost.

So what we do is we fill it. We put pea gravel or fibrous coir so that you don't get any leaching out of the soil into the fish system because that would change their water chemistry. Then we fill it with the same compost that we use in growing beds. Then we top it with about an inch of worm castings, and then we plant. Then we cover the seed with worm castings. So you have all this fertility in this pot.

We do about 25,000 pots of different crops at Growing Power in our different farms. In the summertime what I do is I get these pots and fill them with compost. Where the hot mix was in the four corners, we remove that and put that in the compost system, and now we use that area for potted plants.

I'll plant things like basil in them or salad mix.

Harry Blazer: Do you have a separate operation to grow the seedlings, or do you put the seed right into these compost pots?

Will Allen: We do both. I do all the broadcast seeding. It's a whole art to broadcast seed.

Harry Blazer: You do it personally?

Will Allen: I do it personally, yes.

Harry Blazer: You seed all of your houses?

Will Allen: I seed all of the houses. I don't do the microgreens. We grow 4,000 trays a week in microgreens, and I don't do those because that's pretty simple. That's the easiest thing I could teach you to do, to make microgreens like sunflower sprouts, pea shoots, spicy sprouts like radishes, and those things. We grow a lot of that stuff for restaurants that go to Sysco and go to Maglio Produce and Roundy's is another one of our wholesale accounts. We have several in Chicago, but those folks won't talk to you unless you're able to repeat the performance 365 days a year.

Harry Blazer: You're as good as your last performance.

Will Allen: Right. You know what it's like. You were in the business. If you're going to deal with a farmer and he gives you a shot of really nice stuff and you call him up the next week and say, "I really liked this stuff. Can you send me 20 more cases of this?" If they say, "Well…" that is the end of the relationship. You know how that is.

It's important that if you can only do four items 365 days a year, then you do four items. Don't try to do 20 different things. A lot of these young farmers and other people try to do a lot of things and they can't repeat the performance, and consistency is where it's at with buyers.

Harry Blazer: So how many different crops do you grow at this point?

Will Allen: We grow about 150 different crops, but we don't wholesale 150 different crops. Our marketing scheme is we go to farmers markets and we have a CSA-type program, we have farm stands that we set up, we deliver to the wholesalers and we deliver directly to our own restaurants. When we send stuff to Sysco, it will wind up in multiple places.

It saves us a lot of money from having a fleet of trucks that deliver all over the city or all over Chicago or whatever. So it's important for us to work with other folks to distribute our product with our label on it and everything.

Harry Blazer: Branded offering.

Will Allen: Yes.

Harry Blazer: How many pounds of produce do you think you produce a year?

Will Allen: Oh, gosh! That's something we still have to quantify; it's a lot.

Harry Blazer: Does it get into the millions?

Will Allen: Yes, easily. When you do things like winter squash that weigh a lot and things like potatoes – and we have grown a lot of potatoes this year.

Harry Blazer: Are you packing in traditional sized boxes?

Will Allen: Yes. We follow the protocol of the industry. For example, salad mix comes in threepound bags, so that's what we do. Greens come in 24 bunches to a case.

Harry Blazer: Do you have a packing operation?

Will Allen: Yes, right here in this warehouse. I've been doing this a long time. I was doing this before I started Growing Power. I was wholesaling from my farm, so I had the knowledge to be able to pass on to folks on how to pack out, what boxes are necessary, and so on.

For example, we grow a lot of romaine in the Hoop Houses. I mean, the stuff that we grow rivals anything that comes out of California.

It's really tricky because of heat. Once those houses get really hot, the stuff just bolts. You've got to be on top of it.

Harry Blazer: That's the other thing I was going to ask you: Do you ever have overages that are difficult to get rid of? How do you do that? Do you call up a couple of people and say, "I need help"? Do you just put an extra special price on it?

Will Allen: We don't do a lot of that 'extra special pricing'. We'll donate stuff because that's part of who we are, to help organizations. If we have waste or extra

product in the cooler we'll donate.

We try to operate in accordance with the principles we believe in. We're not like other wholesalers like Second Harvest/Feeding America stuff that has one day shelf life left on it, and if you don't sell it in a carousel that day, it's in the 30-yard dumpster.

Harry Blazer: Laws have been passed to remove donor liability so when you donate food to organizations you don't have any liability if anybody gets sick, so that tells you how old some of the stuff is and how compromised it is.

My thing is with these emergency food programs, we try to work with them and try to influence them to buy fresh from local farmers

Will Allen: My thing is with these emergency food programs, we try to work with them and try to influence them to buy fresh from local farmers. A lot of them have buying power. Instead, they'll buy a semi-load of some cheap brand of canned vegetables rather than taking that same money and working out a deal with the farmer. I know farmers who grow 7,000 acres of vegetables. It's mostly mechanized, and when it comes in there is so much waste. When they get those lines and they start throwing stuff off the line, they're getting piles of perfectly good beans for example with an end broken off or whatever. With the corn it's the same thing. When they're packing corn, a lot of corn ends up just spread in the field or whatever instead of going out that next day to an organization that can put it into their bags and boxes or whatever.

We try to encourage that kind of relationship.

Harry Blazer: How many separate farms do you have now?

Will Allen: Counting Chicago where we have eight, probably somewhere in the range of 25.

Harry Blazer: All under your brand, all under your IP (intellectual property), all under your technology?

Will Allen: Yes.

Harry Blazer: And then do you have other farms that you buy from that are using

your IP to do stuff?

Will Allen: Yes. We try to do a set-up. One of the hardest things is getting some of these smaller growers to scale up to be able to have enough product. Most of the production in most cities around the country is really small scale. That wasn't our purpose initially – to become big – but I figured we needed to really develop a system that could be replicated by entrepreneurs, since a lot of what we do is training programs.

We run training programs February through June. We teach people how to do aquaponics, working with the School of Freshwater Science at UW Milwaukee with the real experts in aquaponics. We've been partnering with them for about seven years.

We have a commercial Urban Ag training program. So let's say you have an interest in farming. You've done it a little bit and you've gone to a couple of farms and worked as an intern, and you want to start your own operation. We help them with a project plan and a business plan, and we also help them to develop their skill level in terms of how to grow. If they want to do just one thing – if they decide they just want to grow soil for the industry and come up with a composting operation, that's what those folks will concentrate on for five months. Then they get a certificate.

They come three days a week every month for five months, and then they have a graduation and get a certificate. A lot of them have already started their business in between the sessions.

Harry Blazer: So size becomes a critical factor because it gives you that economic viability.

Will Allen: Yes. I mean, there is a certain level where you can have another job and you're just doing this on the side, or there are people who throw everything into it. There are a lot of people who retire early who have always wanted to farm. So they come and get the knowledge of how to do it sustainably without chemicals and everything, and they go through the program.

We've had tremendous success in helping to create businesses with folks from all over the country and all over the world.

Harry Blazer: But you haven't messed with 'certified organic' have you?

Will Allen: No.

Harry Blazer: You don't need to.

Will Allen: I mean, we could get everything certified, but we're GAP certified (Good Agricultural Practices). We have that in our operation. We teach people how to go through GAP certification because with most wholesalers, if you're not GAP certified, they won't buy from you.

Harry Blazer: Tell me a little bit about growing soil. You realize that that is a core competency that you need to have, and you've figured out some great ways to do it.

Will Allen: Well, one of the things that I think a lot of people understand is that 90% of our soil that our food is grown in is depleted of minerals. We're just not producing good food for people to eat, regardless of what they pay for it and regardless of whether they say it's 'organic' or not. That's just a label. But it all starts with the soil, and you have to make sure you have the proper minerals (and biology) in your soil to produce good food. We've known that for many years and yet we've depleted our soil.

Harry Blazer: It's not just minerals; we've basically created a substrate that uses a pharmacological model. You keep adding chemicals to keep it going, but you need living, vital organisms.

Will Allen: You need vital organisms. You need worms. That's the other thing we do. We put worms in our growing beds. We sprinkle worms in, and then they grow because a lot of soil scientists will tell you that you need 25 worms in every square foot of soil. If we have that, then we have good soil. The worms make those minerals and those microorganisms more available to the plants; they break it down into their castings. A worm can produce its weight in castings every day.

If you have 1,000 pounds of worms, you will get 1,000 pounds of food (from castings) for the plants.

Harry Blazer: Those castings are basically excretions.

Will Allen: Yes. It's the excrement from the worms. What happens is a worm can take in 250 million count of (beneficial) bacteria, and as that passes through their body, they multiply that by 14 times. That's how important they are.

A lot of people don't understand it. They just say, "Worms in my sawdust is good." They don't understand the science behind what worms really do for us.

Harry Blazer: In addition to aeration and keeping things flowing.

Will Allen: We spend a lot of time telling people, "Don't farm this year. Let's get your soil right and get your soil tested."

Now you can get sophisticated testing of soil through universities and so forth or private companies. You can get a picture of your soil – whether your soil has lead or whatever in it. You can get all kinds of different tests. There are probably 20 different tests you can get.

It's not so much NPK (nitrogen, phosphorous, potassium) that is so important as it is knowing whether you have these trace minerals that you need.

Harry Blazer: Or too much of something.

Will Allen: Or too much, yes. But once you get good at composting, it becomes pretty routine. In terms of plants, when you look at the plants you can tell.

Harry Blazer: How many tons of compost do you think you use?

Will Allen: Last year we did 40 million pounds of inputs into growing our soil.

Harry Blazer: And how much compost came out of it?

Will Allen: We probably did 10,000 cubic yards (a cubic yard of topsoil weighs about 2,000lbs – so about 20 million pounds of compost). We're always collecting carbon because that's the stable piece; that's the piece that's going to give you your bulkiness whereas food waste is mostly water. Like tomatoes are less than 2% mass (it's actually about 94% water) – when you dehydrate a tomato you get mostly skin. If you make a pile of tomatoes and let it melt down, all that's left is pretty much skin. But those juices are so important because they get impregnated into the woodchip and the other carbon.

You also get some bulkiness out of the crops and also things like brewery waste. It's more bulk than other forms of nitrogen. Coffee grinds are already 4% nitrogen. Brewery waste is 18% nitrogen. We had that tested. So that's a fertilizer.

You can actually spread brewery waste on a field and work it into the soil and get tremendous response just from that alone.

A lot of times we'll add brewery waste to existing compost and mix it. We'll take a bobcat and mix it in. You get tremendous response from that before you spread it.

The stuff is so hot (produces so much heat as it decomposes) that it's important not to sidedress with brewery waste because it will kill your plants just from the heat that it produces. It doesn't take much. If you get a handful and you put it right next to a tomato plant, it might kill the tomato plant.

Harry Blazer: How hot do you keep the internal temperatures of your compost?

Will Allen: 135-150 degrees. You don't want to go over 150 because then you start killing off all your good guys – your microorganisms and so forth.

Harry Blazer: Have you tested the nutrition in your food versus the commercially grown food?

Will Allen: We've done some of that. I'm trying to work with some doctors who will actually work on some of that to really get down to how much more nutritious our food is versus what you generally buy in the produce aisle at the grocery store that could come from a co-op or multiple farmers that get thrown into the mix or whatever. You know how that system works.

It would be good if we could buy some broccoli and identify exactly where that broccoli came from – what farm it came from, what kind of soil it was grown in. That's where the rubber meets the road with me. What kind of soil was it grown in and on what farm?

Not that it came from some brand. You know how it works. I think that's important for us to know.

Harry Blazer: If I said to you, "Tomorrow I want to turn your business into a for-profit business." How much would you have to increase your prices or change practices?

Will Allen: We have a for-profit with nothing but professional workers on this side of the street. On the other side of the street of our organization is our projects and programs and training programs and that sort of thing. So when people reach a certain level, we can bring them to this side of the street. But I don't have any interns or volunteers over here with our commercial stuff.

Harry Blazer: So it's basically a model that we could show people of a sustainable for-profit business?

Will Allen: Yes. Exactly.

Harry Blazer: That's great!

Will Allen: Everybody always wants to do this and they want to intermingle their trainees and volunteers over here with your professional workers, and I always have to tell people that that doesn't work. I haven't been able to do it.

Harry Blazer: I have to give you credit because there's a lot of romanticism and idealism about farming sustainably, whereas you not only have a commitment to work hard but also you have a very intelligent approach and you understand the business. When you go to these farms where they have almost all volunteer workers, it's like a plantation again. It's like slavery. They've got these people working for free, and then they charge big prices. How is that a sustainable economic model?

There is a role for nonprofits to play, but it is not to operate large farms and so forth.

Will Allen: It's not. It absolutely isn't, and it's hard for me because I do a lot of talks. Whenever I go to California or Colorado or New York or wherever, they want to drag me out to these farms. The first thing they ask me is, "We want to hear your opinion about our farm."

I have to say something positive about what they're doing. That is not the time to rip down what they're doing because you want more and more people getting involved in this, but the realism of how small scale farming is going to work in this country in the future is going to be done not by nonprofit organizations; it's going to be done by entrepreneurs.

There is a role for nonprofits to play, but it is not to operate large farms and so forth. We're an exception because we had to prove a lot of things. There were a lot of naysayers who said, "You can't do this," and, "You can't do that."

The other thing is that we have to reach into the community and find a lot of people who have worked on farms who are now living in our cities. (we need to get them back into farming). They may not speak the same language, but they want to farm. They don't like working in a factory. But we have to pay them a living wage. We have to pay them the same wages that they can make in a factory. So you can't start them at minimum wage. You can't treat them like migrant farmworkers. They have families and they live in the city.

You have to start them at a good wage, so our beginning salary is $12 an hour, which I would not consider a 'living wage' per se for a person, but it's much different than what migrant farmworkers get.

Very quickly we bring them up to about $15 an hour, and if they stick around they can make a living wage.

Harry Blazer: Do you have a franchise system or anything like that if I said I wanted to do a Growing Power operation in another city?

Will Allen: No. We would assist you to help you build your infrastructure. So you would have to pay a fee for service for me and my crew to come and help you. Let's say you wanted to build out ten hoop houses on this piece of land you've acquired, and you've gone through my commercial urban Ag training program, and now you want us to help you.

They might say, "We know how to build a hoop house, but we want to get this up and running, and we want to do it the right way, and we want to learn, and we want to train the people who weren't able to come to Milwaukee or to a regional training center."

That's how we do it. We don't go out and ask for work. We have to be invited. I never wanted to push this thing and say, "Our method is the best method in the world. You should go with us." Instead, people invite us into projects, and that feels very comfortable for me.

Harry Blazer: When the students are ready, the teacher will come.

Will Allen: Yes. We get a tremendous amount of requests. Some of them take a long time to evolve. For example, in Atlanta where the Braves play at Turner Field, that has been bought by a company. It's going to be a development project. They're going to tear down the stadium, and they want a farm as part of the development project because a lot of the younger people – 18 to 35 – would be attracted to the development.

If you've got your development project over here but you don't have this farm, and I've got one over here that has all these amenities like a farm and so forth that they can get their fresh food right where they live in these condos or whatever they're going to build, that's more attractive.

So I've had groups come and want us to help them. The Braves are going to play one

more year in Turner Field, and then they're moving into the suburbs. Then they're going to tear that down and turn it into a development project. So we get a lot of requests like that with folks who are looking at urban agriculture and food systems on a local level.

(Note: Change of Plans - From the Atlanta Journal Constitution, August 18, 2016: *Georgia State University and its development partners have agreed to a deal to purchase Turner Field, the 20-year-old former Olympic stadium and soon-to-be former home of the Atlanta Braves. The downtown university and real estate partners Carter and Oakwood Development plan to convert the Ted into a new football stadium for the (Georgia State) Panthers and transform surrounding parking lots into a mixed-use community and southern extension of Georgia State's campus*).

Harry Blazer: Are you growing fruit also?

Will Allen: Yes. The county gave us ten acres of land where I live – in Oak Creek, which is south of Milwaukee, right on the border by the airport. We have a ten acre orchard there. We received trees from Stark Nursery (http://www.starkbros.com), which you've probably heard of, out of Missouri. They have a mail order nursery program. They provide all the trees that you'll find at Walmart. They sell potted stuff and they have a huge business. They've been in the business for 200 years. It's their 200th anniversary.

My son, who is a partner at a law firm, Foley & Lardner here, his firm represents one of the principal owners. I found out that at the end of the season they have these huge warehouses – cooler warehouses – where they pull up 50 acres of bare-rooted trees and bundle them and put them in the coolers. Then they stay in this suspended hibernation state. Then the workers pad up a lot of stuff that they sell semi-loads to – all the marts around the country.

Then at the end of May every year, whatever is left in the warehouse they burn because they don't want to replant. Where they've taken these trees, they've put in rootstock and they start that field all over again until they reach a certain height. It probably takes a year or two.

So they started giving us whatever was left. So I send a truck down, we pick them up, and we "hill them up". I just got 3,000 trees a few weeks ago.

Harry Blazer: Is it going right into the soil, or is it going into compost, or are you taking the compost and laying it on the soil?

Will Allen: We dig a hole – because most of these places have really poor soil. Then we compost them and plant them and water them. Then in the fall we have to put sleeves on them because otherwise they'll get ringed and they're dead. They'll get ringed by squirrels and rabbits and so forth.

Harry Blazer: What I see in your handout information is one of the major projects that you're looking to do is a vertical agriculture project.

Will Allen: Right.
Harry Blazer: There are some of these around. Whole Foods has been doing this even putting these operations on rooftops.

Will Allen: This is totally different.

Harry Blazer: That's what I want to hear about, and I want to get your reaction to what some of those guys are doing.

Will Allen: Those things have limitations. There's only so much you can produce, and it's mostly for show.

Harry Blazer: They are also not soil-based.

Will Allen: Right. A lot of the stuff they're doing is aeroponics and all this kind of stuff. Or they do hydroponics, which we don't do.

What this is going to be is a building. I don't know if you have a picture of it.

Harry Blazer: Yes.

Will Allen: When you look at that building, it's built from the ground up. That building is designed by US greenhouses – the greenhouse part of it. Because of our zoning and whatever rules, we have to pour solid floors on each one. The bottom floor will have a pretty large retail grocery store.

Harry Blazer: And that is going to be yours?

Will Allen: Yes. The second floor will be the first greenhouse. Then the next one on the next floor, all the way up. Then the top floor will be completely greenhouses. It will be positioned so that you maximize the light. (this building will be constructed at the original 55th and Silver Spring Street site).

Inside you can push buttons, and inside each house there will be multiple levels of growing. So if you're a worker inside, you push a button, and whatever you're working on – a tray or a pot – moves right in front of you so you can either harvest it or water it or whatever you've got to do.

Harry Blazer: Will you supplement with any artificial light?

Will Allen: We'll use renewable energy there. We'll probably use some supplemental light in the winter time, because there's that period of about a month and a half to two months where you have to use some supplemental lighting for some crops. But we'll have the ability in this greenhouse to grow almost any kind of crop – from tomatoes to peppers – year round.

Harry Blazer: You said something very important, which was that if you didn't have indoor hoop house capacity that you have right now, you would be in a bit of trouble with variations in climate and the drought and so on.

Will Allen: Right. We're in trouble this year outside because it's so dry. We just worked up a field a couple of weeks ago, and we can't plant until it rains.

Harry Blazer: So how important is indoor growing going to be in the future?

Will Allen: It's going to be everything. It's going to mean everything. We're having so many problems with airborne viruses on tomatoes all over the country. When you go to California, just follow one company. Look at Driscoll. Most of their production now is raspberries and strawberries in the same kinds of hoop houses that we put up.

I saw a 300-acre field with nothing but hoop houses. They use more water, believe it or not, growing inside, but the product is superior, and there is less insect pressure, significant because of a lot of the rules that they have in California around pesticide use and so forth. So that is the future. In warm climates, cold climates, or whatever climate, it's a lot easier to do.

If you were in North Carolina or Georgia, it still gets cold down there, but you would have to have less protection than we would up here.

Harry Blazer: What are the hoop houses made out of? What is the covering?

Will Allen: The covering is just poly (polyethylene). It's greenhouse poly – double layer.

Harry Blazer: And that can withstand snow loads?

Will Allen: Yes. If you build them correctly, you have five purlins. You have a center purlin, and then you have two metal purlins, and then you have a 2x4 purlin four feet off the ground. So when you pull the plastic, it's not like the old days where the plastic went from ground to ground.

You pull the plastic over, and it goes from four feet off the ground on one side to four feet off the ground on the other. Then the other piece goes down, and you attach it at the four-foot level and again at the bottom. You can take the bottom piece and roll it up in the summertime so you get more north/south ventilation because these have to be orientated east-west. You put eight-foot doors in, so you get the east-west ventilation, so you don't need fans and stuff like that.

We use shade cloth in the summertime for certain crops here in Wisconsin.

Harry Blazer: Do you put that over the outside?
Will Allen: Yes. That goes over the top, depending on the weather. If you're in different areas, obviously you have to do it a little bit differently.

We put up hoops in Haiti. Instead of plastic, we just used shade cloth for obvious reasons. It's 100 degrees every day.

Harry Blazer: They get a lot of sun.

Will Allen: Yes, they get a lot of sun.

Harry Blazer: So if you were doing this in western Montana where in the winter you get three or four months of pretty overcast skies and not much solar energy, you would have to use some supplemental light, right?

Will Allen: Yes, but not all year long. Just during those dark months.

Harry Blazer: Do you think that the technology you've come up with – using compost to generate heat – will generate enough heat?

Will Allen: It will for certain crops that are winter hearty crops. If you look at Johnny's catalogue (http://www.johnnyseeds.com), there's a little snowflake by a lot of things. Those things would probably survive – things like kale and collards, and even things like cilantro.

Harry Blazer: Otherwise you might have to use some supplement heat, right?

Will Allen: Possibly in some of those areas, but not a lot. If it gets down to 20 below zero as an actual temperature and the wind chill makes it 50 below, everything freezes. A lot of these crops bounce back after they've been in a frost. They will come back in a couple of days after it warms up.

Supplemental heat helps, but when it gets down to 20 below zero, they freeze.

Harry Blazer: Have you ever experimented with underground growing?

Will Allen: I have not. If you're going to do it on a commercial scale, you've got to have a business plan to figure out if you're going to make money by spending all this money to go underground and build all this stuff that costs a lot of money.

Before we build a hundred-story vertical farm, we need to build a five-story building and study that. So that's what we're doing. We're doing a five-story building. A professor from Columbia University (Dr. Dickson Despommier) did these schematics of 100-story buildings to feed 100,000 people in New York and Boston and cities that don't have a large landmass like Detroit or Chicago, or even Milwaukee. So they're going to have to go up.
As we look into the future with all these billions of people who are going to be in our system in 30-40 years, how are we going to feed them if we don't go up? All of these people are moving into big cities, and new cities are going to crop up. How are we going to feed these folks? (see my comment at end)

Harry Blazer: Will, could you grow fruit and have these fruit trees inside a structure?

Will Allen: Oh, yes. They're doing it in a farm in Minnesota – a huge farm where they have dwarf apple trees and all different kinds of trees inside.

Harry Blazer: So fruit, vegetables, fish. I also saw somewhere that you've got animals.

Will Allen: Yes, we have goats and chickens in the city, and, of course, the fish. I think the fish are going to be one of the most important things because China is the largest producer in the world, and then we have the other countries. The US is a small sliver – about 1% of worldwide fish production today.

Harry Blazer: Within a relatively small space you can grow a heck of a lot of fish.

Will Allen: A lot of fish, yes. And you can almost grow any variety. I mean, when you look at what China has been able to do, they've taken over our catfish. If you go out and buy catfish, chances are it's coming from China. Tilapia is from China. It's grown in some of the worst water that you could ever think about.

Harry Blazer: I won't eat farm-raised fish unless it's from very special places.

Will Allen: What they do is they raise it. It's a Cichlid that takes in food as it breathes. The water chemistry doesn't have to be that great for them to survive, and they grow very fast. In six months you have a fish that is a three-pound tilapia. They take them out and put them in fresh water and call it 'purging', which passes the US FDA approval. They've approved this method, so when you go and buy frozen tilapia filets at $5 or $3 a pound, people say, "Oh, I just love tilapia."

I go out to dinner with people and they order tilapia. I say, "Are you sure you want to order that?"

Harry Blazer: Know how your food is grown, and know where it comes from!

Will Allen: Yes. Most people have no idea what they're eating!

Harry Blazer: Well, you have accomplished something totally remarkable.

Will Allen: Well, it's not without challenges. I mean, when you're doing training, it takes a tremendous amount of money to train people. You can't just write grants to stay in this business.

Harry Blazer: Are you charging tuition for people who come and train?

Will Allen: Yes. We do a lot of scholarships, but we also charge. For our aquaponics weekend training it's something like $400, but they get to go to university, and we spend a day with professors from the university. We tell them how to keep fish alive, we discuss fish biology, and then we bring them to Growing Power. They have to build a system.

We take them through the protocol of how to keep these fish alive in a hands-on way, and the filtering we have to do to make up water that you have to add to the systems. These are closedloop systems, but you still have to because of evaporation and water chemistry because you're testing the water a couple of times a day to make sure the water chemistry is right for certain species.

For example, tilapia is easy. We cut our teeth on tilapia. It's pretty easy to raise tilapia. You almost have to deliberately try to kill them. But a lake perch is very sensitive to changes in water. For example, I was telling you about the pots. If you get up there with folks and they start moving pots around and mess up the water chemistry, you're going to get some fish deaths the next day. You'll have fish dying as soon as the next day, so you have to be very careful depending on what type of fish.

They're doing things like striped bass. You can do bluegill, hybrid bluegill and you can do walleye. I mean, you can grow almost any species in these natural systems. It's interesting. You can grow shrimp.

You can grow almost any species in these natural systems

Harry Blazer: Have you ever experimented with saltwater species?

Will Allen: Never. I want to do some eels, but you can't really have a big stock of eels. You have to buy baby eels and then raise them up because an eel has to leave freshwater, go into saltwater, and then return to freshwater to breed. So that's a little tricky.

Harry Blazer: Salmon is the same situation.

Will Allen: Right. Herring and salmon and all that. I'm from the DC area, so every year we have a herring run. Back in the day there would be millions of herring. They used to come out of the Chesapeake, up the Potomac, into the creeks. They would breed and then die. That's the time that you net them.

Back then they let you use snag hooks to snag them. There were so many of them that all you had to do was drop the hook. We used to do a couple of thousand, salt them down, and eat them all winter. We would even eat the roe – the caviar. They have probably the best tasting roe if you're into that sort of thing. My family was raised on a lot of natural stuff like that.

Harry Blazer: Is there anything else you would like to tell folks?

Will Allen: Oh, there's a lot. I think one of the main things is we have to get this next farm bill right to help support entrepreneurial small farmers. We need more money for farmer training because you can't grow a farmer in a year. So a lot of good things

are happening at schools. There is tremendous interest from folks who want to do this but they don't necessarily understand how hard it is to become a sustainable farmer.

I think what's missing is money now. We've got so much interest from people, but they don't have the funds to do it. We want to get FSA (Farm Service Agency) to be able to give farm loans to small urban farmers and small-scale farmers who are farming on the edges of the cities.

Right now if you applied for an operating loan you probably wouldn't get one. So we're trying to get that going. We're working with the Ag Secretary who visited Growing Power, and he really likes what we're doing. I'm working with his office.

Harry Blazer: If he cares, how could he not?

Will Allen: We've been working with his office to try to change some of these things to get in position to be able to get operating loans. Even with our size of operation, if I called FSA this winter to see if we could get an operating loan, they would say, "You're a nonprofit so you can't get it."

Harry Blazer: Let me ask you this: You have a lot of life experience. Let's say that your way of doing things became very pervasive – went mainstream. There are a lot of vested interests that would be threatened by that.

Will Allen: Yes, but I think at this point in time industrial agriculture people aren't troubled by that right now. And they probably shouldn't be because the production level is still very low. They don't see the needle moving.

Harry Blazer: Let's say that needle did move. Then would that create a special kind of headwind that would create other kinds of problems?

Will Allen: I don't know. I know Michael Pollan pretty well and we've talked about this. When he came to Wisconsin, the Wisconsin Farmers Union or one of those wrote some very nasty things about Michael, because of his popularity and so forth. He was doing a talk at UW Madison. The Madison papers had some articles with industrial farmers criticizing him.

I don't know how nasty it would get in the future. I think right now we need to just work on trying to engage more farms before that so it doesn't come like, "We're going to attack Michael Pollan or Will Allen," if we're able to get our act together and get enough people doing this stuff.

What's happening also is consumers have come on board. So consumers are really pushing this. That's why all these retail grocery stores like Whole Foods and Roundy's and all these warehouses want locally grown food.

It used to be like, "We're just going to get a few locally grown food items and satisfy these folks," but now these folks are coming into these grocery stores and they want to know, "What are the local labels?"

So what I see is the next step will be to have sections in the produce aisles that say 'Locally/Regionally Grown Product'. It doesn't necessarily have to be all organic. It could be natural, or it could even be conventional, but 90-something percent of people would rather buy locally grown food.

Harry Blazer: It's one of the main drivers right now, more so than anything else.

Will Allen: That's what's driving these wholesalers to call us and say, "What do you have?" That didn't happen ten years ago.

Harry Blazer: What do you think about GMOs? What is your position?

Will Allen: I don't like them. We don't know what Roundup does to our bodies. I've talked to scientists at the University of Wisconsin Madison, and they know that they cause birth defects in laboratory rats. They haven't tested humans, but they can't really speak about it because they're getting funded by those guys.

This one scientist who I talked to said he knows for sure that Roundup should be banned. That's the way he put it.

Harry Blazer: So we're not getting the straight talk on it?

Will Allen: No. I don't think so.

Harry Blazer: Will, you're an exceptional human being. You're doing something exceptional for the world. It's been an absolute honor to meet you and have this time with you.

Will Allen: I hope it does some good.

Harry Blazer: It will.

Will Allen: We talk about this all the time: It's hard for us, as producers, to toot your

own horn. So it has to come from folks who are going to really tell the truth about what's happening, and they have to understand what's happening. California agriculture, for example, is on a decline because of their water situation.

Harry Blazer: And degradation of soil and so on.

Will Allen: Yes, and overpopulated areas.

Harry Blazer: Salt infestation.

Will Allen: Yes. I know a farmer out there whose family used to own McGrath on Highway 101 out of Ventura County. His name is Phil McGrath. Back in the 1800's his family owned all the land from the Pacific Ocean thirteen miles in (through large land grants that were made in the past). Then the family started selling off pieces of the land, and now the family has 300 acres left. He farms just 25 acres.

They lease 300 acres to Driscoll at $3,500 an acre. H also pays $3,500 an acre because it's a family corporation and he's the only farmer in the family now. So he pays that per acre for his little farm.

Harry Blazer: That used to be the maximum return you could get out of an acre, never mind paying that for an acre (to lease the land).

Will Allen: I mean, I complain when we pay $200 an acre here. Imagine paying $3,500 an acre. You've got to grow year round, and they are. That's one of the reasons why there are hoop houses.

Remember when there used to be a shut-down period in California? Now you can get California berries year round because they're growing them inside. They developed different varieties that can grow in cooler temperatures, but in Ventura and those places, the temperature never really changes very much.

Harry Blazer: I totally enjoyed this. It was an honor to have met you. Thank you so much.

Comment from Harry:

Several weeks after this interview, I returned to Milwaukee area and visited the original Growing Power site at 55th and Silver Spring. Tours are given daily for a charge of $10.

To be frank, I was disappointed with what I saw. Now Will has lots of other farms under the Growing Power banner. And all of them are newer facilities. But this is the facility they showcase. So you would expect it to be their best facility. And rather than go into the details for why I was disappointed, I would just say the following:

I believe that Will has the right intentions and has done a lot of good for his community and other communities in the USA and elsewhere by example and through his training programs. But even a high profile advocate of sustainable urban farming like Will, with years of experience and the right intentionality has trouble keeping things in the road at times. The person giving the tour mentioned repeatedly that they were short staffed and therefore they were falling behind on certain tasks. It showed. But I will say that the product I sampled (and there was not a lot of variety available at that time), was good quality e.g. tasted good, was fresh and seemed vital.

Being great at Fresh (real food with integrity), day in and day out, whether growing, distributing, manufacturing or retailing, is a very difficult, demanding and challenging task. Anyone looking to make a living from the business of Fresh, should go in with their eyes wide open.

In terms of needing high-rise agriculture to feed the cities of the future: All of the major cities in North America have large expanses of rural areas that are being used and can be used for farming within a three hour drive radius. I agree that use of hoop houses and other enclosed structures for growing (existing and to be developed) will become increasingly important. But with the proper care of soil, there is no need, in my opinion, for the foreseeable future, for cities to have to rely on high-rise, high-tech developments for their primary food supply. I am also very skeptical that non-soil based agricultural technologies for the growing of fruits and vegetables, will provide as high nutrition, vitality and emotional gratification as produce grown in soil that is nurtured correctly in order to maintain its vitality and the vitality of the eco-system of which it is a part. The best way to do things is the right way and by that I mean ways that are respectful of and help nurture vital soil, air and water.

MODIFICATIONS

Transcripts are not always verbatim. Modifications are sometimes made to improve clarity, usefulness and readability, while staying true to the original intent

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