Interview with John J. Albers, PhD on

Sustainable Urban Gardening

By

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CENTER FOR THE WOMEN OF NEW YORK

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This transcript has been edited.

Victoria:

Hi, everyone. Welcome to the Center for the Women of New York interview with Dr. Albers. Dr. John Albers is a research scientist and professor of medicine at the University of Washington. He is also a passionate environmentalist and the author of several books about sustainable gardening. Although recently retired from teaching, Dr. Albers continues to review scientific and medical research papers, as well as continuing to assist young investigators in their research. Dr. Albers has graciously agreed to an interview with the Center for the Women of New York and our new Green Team to discuss urban sustainability. Welcome Scotia Hille, our Green Team Coordinator and Social Media Specialist Volunteer.

Scotia:

Dr. Albers, your first principle of sustainable gardening is "Create, conserve, and protect healthy soil." Can you speak a little about what that looks like in an urban environment like New York, particularly for people who might have smaller plots and not much open soil?

Dr. Albers:

Right. Well, I would say New Yorkers who live in a small space with little or no land, such as in a apartment or condominium, can reap the benefits of gardening and improve the urban environment by planting fruits, vegetables, herbs, and flowers on a balcony deck, or a rooftop using containers or planters. These should contain high quality potting soil, which have good drainage and excellent water holding capacity. So, you really do not need much space to make a significant contribution to the green infrastructure of your urban community. Now, if you were fortunate to have a little bit of land, also with some good native soil, then you, of course, you can do plantings in addition to those on your balcony or deck. In order to improve that soil it would really depend upon the nature of your soil and we don't have time to go into all the possibilities, but I can just give you a couple of examples. If for example, you have some very sandy soil with fast drainage, you can improve the water holding capacity by adding fine compost to that sandy soil. If you happen to have clay soil, somewhat compacted, which often happens in cities, you can reduce that compaction and enhance infiltration, again, by adding more organic matter to that soil. Those are just two examples of how to improve a soil in the urban environment. Does that take care of it?

Scotia:

It sounds like quality, not quantity is what you're saying.

Dr. Albers:

That's right.

Victoria:

Dr. Albers, your recent book and much of your horticulture work has focused on the particular environment of the Pacific Northwest. Besides the differences in native species, are there significant differences in the environment that our Northeastern viewers should keep in mind?

Dr. Albers:

Yes, definitely. It may surprise New Yorkers that New York City actually gets more rain than Seattle, with the Seattle area getting about 35 to 40 inches of rain, while New York City gets about 50 inches of rain per year. The Seattle area gets most of its rain in late fall and winter but gets very little rain in the summer. In contrast, New York gets most of its rain primarily evenly distributed throughout the four seasons, getting about four inches of rain per month. Seattle has mild and wet winters and very dry summers that are generally mild as well, but New York City, correct me if I'm wrong, has cold and often windy, snowy winters and hot and humid summers. With climate change, New York City can expect more extreme weather events with the summers getting hotter along with some unusually cold or snowy winters. Certainly, there are some major differences in climate in New York as opposed to the Northwest.

Victoria:

Thank you, that was very interesting.

Scotia:

I had no idea. Seattle has such a reputation for being a rainy city.

Victoria:

I would have lost money on a bet. I would have thought that you had more rainfall than we did.

Dr. Albers:

The other major city that has more rain than New York City is Houston, for example, but New York is one of the major cities having quite a bit of rain.

Victoria:

Well, I would have lost the bet on Houston, too, so thank you for educating us and our listeners.

Scotia:

Although sustainable gardening has immense benefits in all types of communities, including rural and suburban, there are some explicitly urban benefits of biodiversity and green space such as improving air quality, counteracting urban heat island effect, et cetera. Could you expand on those a little bit more?

Dr. Albers:

Well, yes, there are many key benefits of green infrastructure. I think the first one we should talk about is the fact that it takes up carbon dioxide during photosynthesis and converting it to oxygen and sugars. These sugars are stored in plant tissue, making green infrastructure a major sink for carbon storage. Also plants play a key role in the storage or sequestration of carbon in the soil. A second benefit is that it improves air quality by trapping atmospheric pollutants, such as carbon monoxide, sulfur dioxide, ozone and nitrogen oxides, as well as particulate matter on leaf surfaces by absorbing and detoxifying these pollutants. Another benefit is that it improves water quality by removing waterborne pollutants. Also, it regulates the urban microclimate, which you alluded to by diminishing the effects of the urban heat island, primarily through shading and evaporative cooling. It also reduces erosion by intercepting the rain, slowing the storm water going over the soil surface, and anchoring soil with plant roots. It also can reduce noise, particularly if you have plant groupings. It can also serve as a screen or privacy barrier. I think importantly, it can provide food, shelter, and nesting sites for wildlife and pollinators. Another one is

many provisioning services, such as providing fruits and vegetables and a host of other products. It can provide cultural benefits such as providing steady enjoyment, various outdoor activities, and it's a great place for social gatherings. And finally, I think overall, it can play an important role in improving human health and wellbeing through reducing stress and improving air and water quality. Now specifically in terms of biodiversity in green infrastructure, it can provide stability and resilience to the urban ecosystem, as it provides functional redundancy and resilience to change. Thus, biodiversity can help us in the adaptation to climate change. I think that covers the key points.

Scotia:

That was definitely very illuminating. We know we all have a lot to benefit from expanding biodiversity and sustainable gardening and the Center for the Women of New York is actually hoping to, as part of our Green Team work, start our own sustainable garden in Queens, New York, so it will all be very helpful.

Victoria:

One thing you emphasize in your own garden is maintaining permeable surfaces and the drainage of water. The spread of impermeable surfaces due to urban sprawl has had drastic impacts on cities coping with sea level rise and increased extreme weather activity in recent years, including in New York during Hurricane Sandy. Can you speak to the role of urban green space in alleviating that?

Dr. Albers:

Urban green space can indeed alleviate flooding and help in reducing sea level rise in response to an extreme precipitation event through a number of ways, primarily by minimizing storm water runoff and recharging the urban groundwater. And this is done by enhanced infiltration and evaporation of storm water. Urban green spaces can further enhance this process by incorporation of rain gardens, bioswales, and soakage trenches. As you probably know, a rain garden is nothing more than a small depression planted with appropriate plants that is designed to collect, hold and infiltrate storm water, while bioswales are shallow depressions landscaped with a dense native vegetation to convey and infiltrate storm water runoff, and then soaking trenches are shallow trenches containing perforated pipe surrounded by coarse gravel. And all of these three features are used to reduce the flow and volume of storm water, enhance infiltration, remove pollutants and recharge the groundwater. And if you want more information on this topic, I suggest that you contact the New York City Soil and Water Conservation district which has, as I understand it, public outreach and education on this specific topic. And I might add one other point is that if we really want to have a reasonable chance of actually minimizing the sea level rise, we need to do more than just green infrastructure. We need to reduce the use of fossil fuels so we can reduce the amount of greenhouse gases produced. And this not only has to be done on a regional and national scale, but on a global scale. I wanted to make that point.

Victoria:

Throughout New York City, there are bioswales on various sidewalks and now I have an explanation as to why. Leadership in New York city has definitely done their research and is trying to help our urban situation.

Scotia:

One of the more popularized aspects of the urban gardening movement, particularly for cities has been for the production of food, taking climate change into account and having to find new sources of land and means for food production. That includes using the, the expansion of hydroponics in order to use urban spaces in order to grow food. So first, do you grow food in your own garden?

Dr. Albers:

Yes, of course, I grow food in my garden. Currently, I am growing fruit trees and shrubs, and of course, a diversity of vegetables. Because our summer nights are cool in the Seattle area, I grow vegetables in raised beds, but I follow sustainable agriculture practices by embracing diversity. That means diversity of

vegetables, rotating crops, planting cover crops, reducing or eliminating tillage, and eliminating the use of pesticides. It really makes a lot of sense to incorporate edible fruits and vegetables into a sustainable garden. I don't see any trade offs for cultivating non-native species to produce food.

Scotia:

Most foods are not native species to any one particular region, because we tend to have similar crops that we eat no matter what area of the country.

Dr. Albers:

Right. I still would encourage people to grow perennial fruits. We have a number of perennial fruits here that are native to the Northwest that are very useful as crops. And then the advantage of using perennial native fruit bearing plants is they're easier to take care of. They definitely require a minimum amount of resources and they are well adapted to the local microclimate. And so we encourage that and made a major point of that in my recent book that I published. But certainly, there's no problem at all, of using non-native plants as part of that picture.

Scotia:

And of course, part of what you were saying with having to decrease our reliance on fossil fuels means producing more food closer to home rather than shipping from miles away.

Dr. Albers:

Exactly. So you reduce the fossil fuels, used for transportation, et cetera, for both going and coming and transporting the fruits and vegetables. In the United States today, of course, the major bulk of our food, it really comes from someplace else, generally a long way away. For example, we get a lot of our fruits and vegetables from California, but that's a lot of transportation. We can minimize that by growing a certain portion of ours right at home. I think more and more people should do that. And the other thing that could be done in a city and for those people who don't have land to do this, they can have pea patches in the community that people can come and grow their vegetables on, which is done here in this region. I don't know, does New York have pea patches?

Victoria:

Do you mean community gardens? Yes, we do.

Dr. Albers:

I think that also is an asset, to minimize transportation for fruits and vegetables.

Victoria:

I've learned something new. I never thought of growing perennial fruits or vegetables. My husband and I tend to grow annual. And I look forward to reading your book. I want to learn more about perennial varieties.

Dr. Albers:

Well, I grow blueberries and raspberries. Those are two good examples. I really enjoy those. I need to check up on what you have here and there in the Northeast and see what you're missing out on.

Scotia:

I do believe, isn't there a species of blackberries that is invasive in the Northwest?

Dr. Albers:

Absolutely. Himalayan blackberries. They're very tasty, delicious, but invasive. But we do have a native blackberry, also.

Victoria:

We had a presenter from the Parks Department speak to us and the New York City Parks are very careful about invasive species in our natural habitat. I think too often when people move to new areas, they bring invasive species with them because they were used to them or they bring new species that don't really help the new environment. I remember reading that areas where people would move because they no longer had their environmental allergies, well, they started– New Yorkers and East Coast people moving to the Midwest would bring their plants with them, and then it was no longer a safe haven for certain allergies. We have to be careful about what we bring to a new environment. We can change so much for so many people and children.

Dr. Albers:

Right. Generally, people like plants that are easy to grow. The problem with that is the ones that grow the easiest are the most likely to be invasive. These are generally plants from other places, so they could be from Australia or some other place. They take over the native plants and there are many, many other consequences of that. Certainly, there's a warning to everyone to be aware of what plants you are growing in your garden. In fact, I can say that generally, I don't have problems because I have a good knowledge of what plants may be invasive, but there are a number of incidents where I did have a problem, and those were my friends who had given me wonderful plants that had wonderful flowers and turned out to be invasive. So you never know. You really have to study up on what plants people are giving you or what plants you are buying before you do it. I think that's the message.

Victoria:

That's a very important message. In our own garden, we once planted Roses of Sharon, they just took over and they were really hard to maintain. They kept growing, they grow very fast and they grow wide. I found that to be invasive. We've grown this one type of arugula that turns out to be invasive. And we like to use a particular type of mint, which is a savory mint in our district because my background is Southern Italian and we use mint in our savory dishes. And that happens to be very invasive. So I'm trying to grow those in pots now.

Dr. Albers:

Well, it really depends upon the environment. I can take an invasive plant that loves wet weather, wet conditions and put it in a dry sandy area, and it won't be a problem and vice versa. That's another thing to keep in mind. It really depends on the specific microclimate for how aggressive it's going to be. We've found that even some native plants can be overly aggressive. When we think of planting, we have to think of plant communities, which plants can live together without some outcompeting all the others. Some native plants actually can be too aggressive and outcompete and actually cause problems as well. I can think of one of course: number one on my list is native, and that's horsetail. It's very, very difficult to get rid of, and yet it's considered native because it's been around for centuries.

Victoria:

Well, that's why it's been around for centuries. It's hard to remove, right?

Dr. Albers.

Exactly. I think you have to keep a perspective on all this.

Victoria:

I'm making a connection, as someone who hasn't studied the way you have, I'm making a very strong connection that invasive species remind me of what we call weeds. They grow with ease. They're very

difficult to stop. So we do have to be very careful what we purposely plant in our gardens because they don't only affect our gardens, they grow into our neighbors' (gardens).

Dr. Albers:

Right, and you have a major negative, and economic impact on communities.

Victoria:

We spoke about community gardens. We have to educate those who grow in community gardens to be careful because they can affect the next door neighbor's patch.

Dr. Albers:

That's correct.

Victoria:

Do you have any advice for urban composters without much space to store their compost?

Dr. Albers:

Well, first of all, I think it only takes a three-by-three-foot space to make compost. And once the compost is ready, it can be placed around plants as a top dressing. If you do that, you really don't need a lot of storage space. Generally, those with small plots will not have a lot of compost to make anyway because they will have a minimum amount of cuttings. Those were little space have the option, for example, of using a compost tumbler, which is nothing more than a container that you can rotate and you can make compost in a relatively short time, say four to six weeks, and then you could spread it around your plants and then you take your next batch and put it in the tumbler. Another thing for kitchen waste, a worm bin can be used either inside or outside the home. It just takes a small container to take care of your kitchen waste. Those are a number of examples. I don't really see a problem with compost storage for people with small plots of land.

Victoria:

In all the gardening segments I've viewed, listened to, and read about, no one does what my parents did. They are Southern Italian farmers and they would just bury their kitchen peelings in the backyard garden. None of the neighbors had the success in a tomato harvest and other vegetable harvest that they had. I'm just wondering, what is your take on simply burying peelings in the garden? Is there a negative aspect?

Dr. Albers:

Well, I do that. We make about 15 to 20 yards of compost a year in my garden, and I have about four plus acres of garden. Our peelings and things, we bury in the garden. Now the potential downside of that is having rodents about, so you have to be careful with that. It all depends upon conditions and what's around your property. There's a positive and negative of using kitchen waste. You have to be more careful with rodents. Particularly rats.

Victoria:

There sometimes aren't shortcuts.

Dr. Albers:

Yes.

Scotia:

All right, moving on. Victoria already mentioned this a little bit, but we had a recent webinar with a representative from the New York City Parks Department. We learned that 40% of New York's land

cover is green space. So only 60% is developed. However, about 75% of the available green space is landscaped. Do you see an expanding role for sustainable native gardens rather than lawn in public spaces?

Dr. Albers:

Definitely. I see an expanding role of sustainable gardens in both public and residential areas. However, they should not be exclusively native gardens. This is an important point. Concerning the soil in New York City, old city parks may contain native soil, particularly Central Park, for example. Soil in many other areas of New York are likely to have significantly altered soils. These may contain fill, may lack a native topsoil, and they could contain harmful contaminants or toxic residues. And these non-native soils, urban soils are less likely to support native plants. They're going to support native plants poorly. Furthermore, non-native plants, particularly woody plants and shrubs adapted to a specific urban microclimate can provide ecological benefits similar to native plants regarding pollinators. Many native generalist pollinators have become dependent on non-native plants in the urban environment. Of course, in contrast, specialist insects depend upon one or a few specific native species. So for those, native plants are very important. Introduced trees, which means non-native trees, generally have the same or greater resistance to pests and diseases than native trees. Community parks and residential gardens actually support a wider diversity of insects, including pollinators in areas with only native plants. Therefore, I would strongly recommend that as you expand sustainable gardens, in the New York community, both native and nonnative plants adapted to the specific micro climate be incorporated into these sustainable gardens. Now you indicated that 75% of New York City's green spaces are landscaped. I know that a significant proportion of these landscaped areas, including Central Park, have lawns. Well, lawns generally are low in biodiversity and require high maintenance and resources. By reducing areas of lawn, both in residential and public spaces and replacing them with the diversity of plants adapted to the sites would go a long way in enhancing sustainable landscapes and biodiversity in New York City. So please pass that message on to your Parks Department.

Scotia:

We'll do our best. Thank you. That's really interesting.

Dr. Albers:

I think that lawn is really more of a tradition. People expect it and so people do it. We do have a small amount of lawn in my own garden: I inherited about one acre of lawn and we reduced that to a much, much smaller acre, and then we created a new lawn that was more sustainable. In that new lawn, you can still have a lawn, but we included clover and other plants that fix nitrogen. So we never fertilize our lawn. We water it infrequently and, therefore, it doesn't take the resources and fertilizer; and we don't use herbicides on this more sustainable lawn. That type of lawn could be used in your park department, as well as removing it entirely and using other plants. So you have two different alternatives there: making the lawn itself more sustainable, but still being a lawn where you have a mixture of plants, including plants that fix nitrogen so you don't have to fertilize it, and also more drought tolerance, so you don't have to water it. Those are features that can be incorporated into your sustainable landscape plans.

Scotia:

That has some community benefits as well, considering how many resources are expended every year to maintain such perfectly manicured lawns in public spaces.

Dr. Albers:

Right. They use lawnmowers that generate a lot of greenhouse gases and a lot of energy is used. All of that is counterproductive when we're trying to mitigate climate change. It subtracts from all your efforts in sustainable landscapes.

Victoria:

Based on past interviews, it seems that you have been involved in the horticulture community for the past two decades. How have you seen the interest in sustainable gardening shift during that time?

Dr. Albers:

First of all, I believe I've been involved in the horticulture community probably for more than four decades. When I first came to the Northwest nearly 50 years ago, a half a century ago in 1971, I bought 10 acres of raw land and began to grow a half acre in vegetables. At that time I began to pursue my interest in ornamental horticulture. Of course, while I was a professor in the department of medicine, I attended classes in horticulture since I had 50 years to do that. I was particularly interested in developing sustainable landscapes, probably around 1999 when I began to develop a botanical oasis here in Bremerton, Washington. The Washington State Nursery and Landscape Association started to have an interest in promoting sustainable gardening, probably around 2012, and soon thereafter began to sponsor an ecoPRO sustainable landscape professional certificat[ion]. I would say in the past few years, there has been a lot more interest in sustainable gardening and the use of native plants in the landscape by the gardening public here in the Northwest. I hope that answers your question. I don't know if you can comment on New York City specifically, but I assume there's a lot more interest there as well.

Victoria:

I think, I think we're seeing it worldwide. It's just not enough to balance all the development and non-sustainable gardening.

Dr. Albers

The burning of the forest in Brazil, for example, that's the major issue. It's counteracting all the efforts that we're trying to do here at home. Hopefully we can change. I think the major factor that can change that is more education, more environmental education in our schools and our youth. That's something we're trying to do more here, is try get more of the grade and high schools involved with environmental education, so that they realize the importance of this. Then maybe that will eventually filter down to our new politicians.

Victoria:

There is a start here. We are seeing many schools have a small garden and involve students. Having their own garden, I think is a great start where the kids would see hands-on what goes into maintaining it and the importance of the diversity of the garden.

Dr. Albers:

Education begins with the youth. I was brought up on a city farm and so we always had fruits and vegetables and a large vegetable garden. My father had a vegetable garden until he was age 93. In summertime we would have canning parties and, as kids, we would pick the fruit and vegetables and can, and we would have enough fruit and vegetables to supply as through the entire winter in the Midwest where I was brought up. We also picked vegetables on my grandfather's, who was dead then, but we picked vegetables on his farm. We would cut asparagus and sell it door to door. Those memories were fond memories because we enjoyed doing that. Once I got to the Northwest, I was looking for an opportunity to begin my own garden and grow vegetables. I think how I was brought up had a major factor in that viewpoint.

Scotia:

Those formative years are definitely so important. The thing that gives me hope about climate change– not that I have much–is knowing that a lot of people in my generation in particular are growing up quite impassioned about climate change and dedicated to studying it, myself included. It seems like awareness of the things that we need to change is growing, at least definitely from the younger generation. Our

interest continues and wanting to to hear the wise words of older generations in ensuring that we inherit the best planet that we can.

Dr. Albers:

The other thing I'd like to add is the importance of scientific information in public policy. That's been on the back burner for now, unfortunately, and I think we have to put more and more importance on the scientific basis of our policies and what is being carried out today. All of our departments, governments and cities need more scientific input. Obviously, there are facts and there are models and there's been a lot of negativity by some of the people in the general public of not paying attention to this. I know you're also involved with studying foreign relations and the environment, which is a nice combination because this is a worldwide problem now, in terms of not following scientific evidence to support public policy. I think that's a broader issue, but if we're going to really tackle climate change, this needs to be done. Kind of getting off topic here.

Victoria:

It's very much on topic, Dr. Albers, and it really strikes a chord for me. I think the problem sometimes with worldwide public policy is that the immediate effect of environmentally friendly laws would be an immediate [economic loss to certain corporations]. If they did their research, if their R & D departments did their research, they would see that long term, the benefits would help the corporations as well. Yes, there may be job losses initially from certain incentives, but no one ever studies the job gains with the new environmentally friendly incentives. The voices are so loud from those areas and fields that are losing jobs that the soft voices of the research-based statistics of job gains with new incentives and also health gains and sustainability for the near future, let alone 50-100 years ahead, those voices are overpowered by the louder voices of potential immediate job losses. I think that's what's going wrong worldwide. Those voices are louder.

Dr. Albers:

That's true. An example is electric cars and ultimate energy. I think more people are accepting that now, but there's still, like you say a drawback because of these other issues, immediate impact. Many years ago in 1983, I built a passive solar home on the 10 acres that I described, which I bought in 1971. We finally got around to building a home there and it was passive solar. To this day it has no central heating and everybody said I was crazy. "Why would you do that? It's never going to work in the Northwest. We don't get any sun," which of course is not true. It worked and we have a building now on site where I have a horticulture library, and it has active solar panels. I pay no electricity and we send energy back to the grid every month. Even though it is an initial investment, over time, it's going to more than pay for itself within 10 years.

Everybody can do that. There are also passive aspects—how the architects and city planners sit the houses on the site–all can make a huge difference on how much energy and all of that's going to impact the use of fossil fuels and greenhouse gases. We have the scientific information to do everything better, the only problem is we're not doing it. I think we have to get more people on the bandwagon to follow up where the science can take us and we can have a chance of mitigating climate change. Hopefully in my lifetime, and certainly yours.

Scotia:

I think also that goes back to what we were saying about the importance of science and public policy, because one way to overcome the cost of the initial investment and spread it out over time is through the government shifting incentives for people.

Dr. Albers:

Exactly, incentives are very important. That's why I think the solar field has done well in the Northwest for a while, because of incentives, but now the incentives are going to be going away and that would be a problem. So the government has to introduce new incentives to keep this going. It's a very important issue.

Scotia:

Well, our last question is a little speculative. I was just wondering: considering that being a professor of medicine is your day job and that's your background and training. Do you see kind of a continuity between that work in microbiology and your work in sustainable gardening?

Dr. Albers:

Yes, just as the microbes living in and on our bodies are essential to our health, the microorganisms and fungi living in soil and among plant roots are essential for a healthy, urban ecosystem, or sustainable garden and the health and wellbeing of humans are intricately and intrinsically linked to the natural environment of an ecosystem. Therefore, I view my efforts in improving the urban environment as an extension of my own work and medical research. I think there's a direct connection there, but unfortunately, it's underappreciated by the general public. All of the things that our natural environment does for us, they take for granted and don't realize that damage can be done once you start taking that away by urban development. Urbanization has had a major role in decreasing biodiversity, for example, but there are ways of doing development and maintaining or actually enhancing urban biodiversity if it's done right. So that's my view.

Scotia:

That definitely makes a lot of sense as to why those would be your dual passions. I think the point that you make is very astute. Well, clearly you have many more years experience than me, but, to the extent that people take for granted the work of microorganisms in maintaining ecosystems much the way that we take the everyday functioning of our body for granted and all of the parts that you don't necessarily think about that come together to allow us to process all of our food.

Dr. Albers:

Any other issues you'd like to entertain or expand on, or do you think we covered it today? You can always come back and ask me questions at a later time.

Victoria:

We would like to know how can our listeners and viewers reach out to you? Is there perhaps a website for your book where they can leave a comment or a question, or is there a direct email that you give out?

Dr. Albers:

I have to two emails. One is my garden email info@albersvistagardens.org and also they're okay to send me an email at jja@uw.edu which is very easy to remember. Either one will work. I try to use my garden one for our garden activities. Specifically, we have a website www.albersvistagardens.org. Albers Vista Gardens is a 501c3 nonprofit since 2007. We give tours and the garden is open to the public. Unfortunately, at the moment it isn't, but we will have some tours scheduled for September and October. We've had people from the East Coast, just this year, a number of people. We have people from out of state coming, even from abroad. So we do have visitors and we focus on sustainable landscape practices as part of our educational component of the garden, and we give workshops on a variety of horticulture topics. We built a solar building specifically for its use as a place for educating the public on these topics.

Scotia:

I have a lot of family in the Seattle area, I'll have to direct them to your garden.

Dr. Albers:

If you come out, please visit. Our summers are beautiful and you're more than welcome to come and visit.

Scotia:

I do actually have one more question. This is more just something I thought of. So um

Talking about urban or just biodiversity in general, and particularly on an ecosystem level, a central part of that is large mammals that aren't humans. In a lot of areas, particularly urban sprawl, has in a lot of ways, pushed out other large mammals. I'm thinking of wolves and other predators, but also deer and animals like that. If they remain, they're seen as pests or a danger to the community. Is there any way to continue to incorporate those in sustainable gardens, while they still pose kind of a risk to human communities? What do you think about that?

Dr. Albers:

It's a good question. I would say generally no, it depends upon the specific mammal. For example, with deer we know a lot about deer and we've had such a problem with deer pressure. We do have a lot of deer in our open environment, which cause problems for biodiversity because they destroy the biodiversity in the plants, but they need their habitat. So if you take away their habitat, they're pushed out to other places. Since they're now compatible and used to being in an urban environment, they go in everybody's garden that is not fenced and come in. It poses a big problem. We ended up fencing the garden. We have one area of the garden that we recently purchased to save a large California Redwood, and it is outside the garden, but it's part of the garden. So we devised a garden which has deer resistant plants, and there's also no water there. And actually the deer come by, but they don't bother the garden, largely because of plants they don't like– they're aromatic. If you have a lavender, for example, they don't bother them because the aromatic smell of that plant or many other plants you can use, deer generally don't bother. But deer in general are not compatible with sustainable landscapes in the urban environment because of the damage they can do.

Generally, the native plants per se, in the urban environment are fairly deer resistant. That's something to keep in mind. You can have both non-native and native plants that are deer resistant most of the time, except of course, in extreme weather or wintertime, they can eat almost anything if they have a shortage of food. The big problem though, of course, is the fact that on young trees, saplings, particularly the male deer in the fall will have a tendency to rub their antlers on the bark and destroy the cambium around those young trees. And once they do that, that tree is dead. We lost very valuable, rare species from deer doing that until we had to fence it. So that's a problem.

Coyotes is a problem because they are, I can be a real problem for people's pets, particularly the cats and dogs. When we first developed our garden, we were in a place with more infrastructure and surroundings so we actually had coyotes come in there. In fact, there was a particular part of the property that we had purchased where coyotes and foxes, were seen on those properties on a regular basis. We also have seen deer, I mean bear and also a large cat. I believe it was a bobcat, which was very unusual because bobcats are in the mountains in the Northwest, but generally don't get down to this Greater Seattle area. They do come and enter. They are around our area, the immediate area, where there is larger native woodland around the foothills of the mountains. But they're really not compatible with the denser urban environment.

So the answer to that is to have green spaces that is compatible with these larger mammals and ensure that they have some habitat remaining in order that they survive because not only larger mammals, but there's a lot of other smaller invertebrate species. Of course, a large number of insects are going to extinction and disappearing. We have much fewer birds now. Every one of those groups of species are important to the ecosystem. And if one is gone, that has an impact on the nutrient cycles and the food webs that are absolutely essential for our natural environment. For us to return these ecosystem services, we need this biodiversity. We really don't have the scientific evidence to know which of these species are critical. However, we do have elements that, which ones that might be keystone species, being the most important that we could focus on to preserve, but there are many others that may be important to us at the present time. The important thing is to try to eliminate or minimize the extinction of these species that's going on today, which is much, much faster than it was in the past.

This all comes with population growth and development. Many, many species can be compatible. The smaller species can be compatible and the insects and the birds with the urban environment, they actually can do very well if it's done properly, and if you have diversity there. By diversity, I'm talking about plant diversity. Most landscapes, ornamental landscapes are not diverse in plantings, unfortunately. I mean, you don't want one of each and one of another– there's a purpose, we need to plan so you have groupings of diversity to attract the greatest number of pollinators, for example. There's a whole science in that, for information on pollinators, which is also key because once they disappear, then we lose our food supply so it's definitely important. There is the Xerces Society, which is an organization to help preserve pollinators. As you plan your sustainable landscapes, you want to keep that in mind of how to ensure a diversity of plants that will attract the greatest number of pollinators and a diversity of the pollinators. If you have diversity, you have resilience and if you have resilience, then you can help mitigate these changes that are happening with climate change. So it all fits together.

Victoria:

Dr. Albers in your research, have you found that pollinators were disappearing because of pesticides or are there other reasons?

Dr. Albers:
Both, other reasons and pesticides.

Victoria:
Would you say pesticides are the main reason?

Dr. Albers:

It's one of the major reasons, I wouldn't say the main reason. I would say one of the major reasons, for example, agriculture is a major reason. Of course, agriculture uses pesticides, but you can do organic agriculture where you minimize the use of pesticides. You minimize tillage and you have plant diversity, hedge growth, etcetera. There's scientific evidence of how to do agriculture and still preserve the diversity of pollinators, but our current way of doing it with the major farms that use excessive tillage and a lot of pesticides, which is true of the larger nurseries too–the same problem. The small farmers can do things in an organic way and not use pesticides, but the larger ones use pesticides. So pesticides is one of the major factors, but there are many others. I think invasive plants that remove the native species is a major problem.

There's a long list, but I think we hit on two of them: invasive species and pesticides. Pesticides can be used if used properly. You could use them early in the morning when the bees or other pollinators are not going to be attracted to, it may be okay to use if done properly and following the instructions, of course. Avoid doing it when it's windy, which causes off-target problems, which happens all the time on farms. Now they put pesticides on seeds and the seeds are eaten by a variety of species. So, those are major problems. We have the science to do it properly. The problem is getting people to do it the proper way. We can't just eliminate pesticides because our food products depend upon their usage at the moment, but there are other ways of doing it. We have to go through a transition of growing the crops differently.

Victoria:

I think you mentioned something that's little known out there that sometimes we use pesticides on seeds. Where I had learned about your work was on Growing a Greener World, and there was another segment on an organic seed farmer. Although people think they're buying organic vegetables, they may not know that the seeds themselves had pesticides.

Dr. Albers:

The fact though, many of the seeds have pesticides on them, or something to prevent organisms eating or doing something with the seeds, so they spray them. The problem with that, it gets into the food chain. Same thing with heavy metals. Now we have mercury getting into fish and we have to worry about how

much fish we eat, and yet fish is good for us. But if you focus on the source, it may be actually bad for us now, so it's a big concern because we have a lot of contaminants. Just to mention another one: plastics, we have microplastics everywhere. We breathe in plastics now every day, and people don't realize that. It's everywhere. You cannot buy a commercial compost without finding number one plastic, number two pesticides. It doesn't exist anymore because there's so much in the environment. So if you make your own compost, you can have it practically pesticide free, but commercial compost will always have some pesticides today.

Victoria:

I'm glad you said practically, because we have relatives who are farmers in northern Massachusetts. And although their farm is pesticide free, there's always the chance of water running under the soil, from their neighbors who are not pesticide-free. I think your use of the word practically is correct. We do the best we can in our patch of land and just hope for the best.

Dr. Albers:

That's right. But if everybody did a better job, then we could reduce the problem.

Victoria:

Well, I learned that there are parts of Canada where neighbors will look down upon neighbors who don't have weeds in their lawn because they know they are using herbicides to control the weeds. This caring for our environment and for our own biodiversity can grow. If enough people in a community feel the same way, the ones who don't will stand out and will have to get in line.

Dr. Albers:

The average urbanite is too lazy to pull weeds and figures that the solution is just spraying and doesn't realize the consequences. Maybe if they did, they would take the extra effort and do it right. In my garden we don't have a major weed problem. Everybody who comes to the garden and says, where are the weeds? I said, do you want the weeds here? They said, no. They said well, what do you do? Where do they go? I said, well, the key, the way we handle the weeds is we take them out right away. And then we use a lot of mulch to keep them from coming back. The combination has gone a large way of getting out the worst weeds, but we do have plants that we didn't plant and could be called a weed in somebody's garden. As long as it's not an aggressive, we may let it go because we know that the pollinators will like it. Some vegetables I let go to seed, for example, because I don't need the vegetables anymore, but I know that pollinators will like the flowers of the vegetable once they go to seed.

Dr. Albers:

It’s the same thing when we do pruning, we leave a lot of the stems or the old seeds there, for the wildlife, particularly the pollinators and other insects, because they need that. They need shelter for the winter time and they need food, so you leave some of that behind. It's okay to have a messy garden. This idea that it needs to be managed, that you need a monoculture of lawn– I don't know where it came from, but that isn't what we need for the biodiversity. We need just the opposite. So a few weeds are okay. The definition of weed is something that you don't want there. But I think the idea of what you don't want there, the definition should be changed to what's needed and what's harmful. If it's not harmful and it's beneficial, you may want to leave that “weed” there. It depends upon your perspective knowing what's good for the environment and what's useful for biodiversity. And that means a little mess and a little of the old stuff and a few weeds are okay. Actually, they're actually beneficial. And certainly the use of pesticides is not beneficial, and should be reduced within all practical for both agriculture and gardening, but it is doable if you know how to proceed.

Scotia:

The thing I was going to mention is, just bringing up something that you had already said, that once you expand past a monoculture, you can actually use additional plants to serve as kind of natural pesticide

keeping deer away or keeping particular insects away. Integrating different plant species is essential to moving away from chemical pesticides,

Dr. Albers:

Right. And then of course, you know, some plants put out chemicals to inhibit the growth of other plants. And so when you do planting, you have to consider their compatibility. That's a difficult thing to learn of course. Experience, I guess, is the best teacher. But nature does a pretty good job of that. So that's important, but it is true that you have to be aware of how compatible the plants are with other species. And that's true. That's more planning: some vegetables, you don't plant with others. And so you have to know which ones are compatible. So these are just part of the educational process of improving the landscape and biodiversity, but there's a lot more education that needs to be done. And there's a lot more research that needs to be done in that area. You know, we did a lot of research on human diseases and genetics. I would like to do a lot more research on plants and their relationships, but there was very limited money available for that. Unfortunately, I was mainly getting my money from National Institutes of Health. They weren't particularly interested in plants, yet plants play a very important role in our health. How we grow our food and how it gets to market is very important in terms of overall health and nutrition. I was in the division of metabolism, endocrinology, and nutrition. So nutrition of course is an important issue and so that relates to agriculture and landscapes. And I think that the importance of that to our communities is really underappreciated. We need more. I think maybe in some of your efforts, you can help to educate the public on these matters to make them at least think about these issues a little more. I think that will go a long way.

I think that most people would follow tradition. For example, I'm on a tree committee for a city near me. And they're wanting to do things the same old way. They buy big plants, B and B, which means ball and burlap. And they use large equipment, burn a lot of gas. They would eliminate all that by buying bare root plants, smaller ones with smaller caliber. But the evidence is that in three years those smaller trees would be the same size as the bigger trees, which they paid more money for and used up a lot of gas to plant. They don't have to do it that way. Now the downside is they should be planting probably in the spring and fall or early spring while B and B you can plant all times a year. They just have to change the way they're doing things.

And then the other problem is they plant the same tree everywhere, you know, a monoculture of the same maple tree, and that's not contributing to biodiversity and that's not helping the environment. We have to do groupings of different types of trees. I think cities now are changing a little bit and understand that they are sometimes planting invasive trees, which of course spread around and cause problems. A lot of nurseries still sell invasive plants. So one of my objectives has been educating the nurseries to stop selling and base of plants. So those are all important that will help in this process. And that could be done in New York as well. I'm sure there are probably New York nurseries still selling invasive plants. I don't know if you have a tree list for the city of the trees that are acceptable to plant, but there are probably other ones that are better to plant than what they have on their list.

First of all, they need to have an inventory of what they have. So they don't keep planting the same plant, and plant something different. So all of these are issues that need to be addressed by cities. And basically it comes down to using the scientific evidence to do a better job of having sustainable landscapes. It really bothers me that cities are mainly spending their efforts and money on the problems that they caused themselves by planting the wrong tree. In 10 years, it starts going down and getting sick and problems. So they spend all this money to take it out. It's now a hazard tree, instead of planting something different. In the East Coast, you have trees that have been growing there for 50 years or more, which are still healthy because it was done right. They gave it enough soil here.

Dr. Albers:

They planted soil volume that is too small. The soil itself is lousy, poor soil. So the trees are never going to do well. And then they're going to spend more money planting another tree in another 10 years. This is repeated over and over again in many, many cities and all this can be avoided. If people take the time,

spend the extra money upfront and do it right, then they would have trees living much longer and contributing to the diversity of the environment.

Victoria:

They're also cleaning our air for us. Right?

Dr. Albers:

Absolutely. In fact, you know, my new book is on conifers and the main advantage that they have is they are effective in removing pollutants all year round. If you think about deciduous trees, they're not doing anything about removing pollutants in the wintertime– they have no leaves– but the conifers can remove it all year round.

Also they have a large amount of surface area that is exceptionally good at removing pollutants and particulate matter. We really need that now because we have an increased amount of pollutants and particulates in our urban environments today. If you think of other big cities like Shanghai and cities in India, it's horrible, what they're faced with. And it's getting worse and worse here as well. We have more ozone and pollutants in our air. I'd say 50 years ago, we never had poor air quality where I was living. And now many urban areas have poor quality at different times of the year. [Southern] California is one other place with big problems with urban pollution. So plant diversity, including deciduous trees and conifers, can really help with that and it's very important. Even houseplants can help, actually, in your urban environment.

Actually, in my house we've always had air exchangers. So we bring in fresh air without losing heat in all the houses that I've lived in, except my house of birth. We didn't have that, of course, but as I got older, but every house I lived in, I made sure I had air and heat exchangers. So if you have a well-insulated house to save energy, which is good, it's important that you minimize the amount of pollutants built up. You should have a mechanism of bringing in fresh air. If you have a well-insulated house, you really need both. And very few people do that today. And the cost is minimal to do it. You just need a filtering system and a fan. Of course, nowadays you want to filter out viruses and everything-–it becomes more and more important. There was a major push because of COVID-19 to improve filtering systems, both public and private spaces. So that's another issue, but it all comes down to your urban environment and improving the air quality, and of course plants play an important role, but there are other steps that need to be taken as well now, today.

Victoria:

Are there any plants in particular that help filter the air in our homes, any indoor plants that you highly recommend?

Dr. Albers:

I don't have expertise in that. We do have quite a few indoor plants, but that's my wife's domain. She's the expert there. I would say, off the top of my head, I would say plants with a good amount of leaf surface. You'd have to, you know, a small little bitty plant with the minimum leaf surface probably was not going to do much, but you'd have to have a larger plant. Now we have a few plants that go up to the ceiling and it's coming down already inside the home. Now those are probably more effective. I don't know, specifically in terms of which species would be better, but I think a good size plant with good leaf surface would probably help remove pollutants. But I think even beyond that, I still think it's important to have a good filtering system where you can bring in fresh air if you have a well-insulated home, which I do.

You probably would want to do both, but certainly houseplants do help. Now the other side of course, is the role of allergens. The downside is that you have to be very careful of allergens and they can be produced by plants in certain people and pollens. So that's another issue–it's more complicated. For every good you do, there may be downsides, not only economical, but health wise for a certain subset of the

population. And that's an issue we have been involved with from a genetic point of view of looking at what makes people more susceptible. That goes even to the cancer field, breast cancer, now the thing is to fingerprint the specific antigens that are present to know people's risk and target the treatment. And I'm sure that's an area that you have focused on for women in New York. But that's an area that I'm very well aware of and know the importance of fingerprinting the individual to target their treatment and also predict the risk of the younger women. In terms of what they should do in terms of treatment, or to protect themselves from that.

Scotia:

That is an important connection because that's part of what we're trying to accomplish with the Green Team is to really emphasize the connections between environmentalism and women's rights, which is of course the central focus of Center for the Women of New York. So our hope with the Green Team is to further educate our members with topics such as this, and to emphasize the fact that to support women's rights and to advocate for women's rights is to also advocate for the women of the future. And so that means protecting future generations from climate change and doing all we can to make our lives more sustainable.

Dr. Albers:

I think that's important, but sustainability and a healthy, urban environment is for everyone, not just women. That may be a message, too. I mean as a man.

Victoria:
Dr. Albers, we have to say that the Center for the Women of New York does not exclude men, but we have to focus on women because their rights are not always protected by the law. So sometimes we have to isolate a group to make sure that group gets attention from the government. Not to exclude the other groups, but to just shine a light on the issue that one group faces. Of course, the Center for the Women of New York does not does not discriminate against men. We need good men like you to fight for our causes.

Scotia:

With our most recent webinar, which was the kickoff to the Green Team, we did go through the different ways that climate change impacts women.

Dr. Albers:

Does it impact women differently than men?

Victoria:

We'll give you an example. The Flint water crisis caused many miscarriages, caused many stillbirths, many preterm births–-those affect women directly--we’re the ones carrying the babies. It's not that we're saying men weren't affected, but we need to shine a light on how they affect women so that we have more women in legislature creating the laws that help women and not men creating the laws.

Dr. Albers:

Pollution and all these other things, I think women who are pregnant are probably the most susceptible.

Victoria:

Exactly. Men [specifically those assigned male at birth] do not carry babies.

Dr. Albers:

But we care about our women who are exposed--at least this man does. There is little more important than our future generations than the women who carry these babies. Our future depends upon these women.

Victoria:

We need good men in legislature to fight for these laws.

Dr. Albers:

We also need good women.

Victoria:

We need more women because the studies show that women in government do create laws that protect families, that protect the environment, and in the end protect all humans.

Dr. Albers

Right. I agree with that completely. I support more women in politics and the legislatures. Because I overall, I think they do a better job. Maybe they're poor politicians, but better legislators. We need to get rid of the old boys' club.

Victoria:

Yes. Because they [women] think about the future of the family and that involves health. We cannot create laws that don't cover health, and health is based on the environment, is based on nutrition, so women will do that.

Dr. Albers:

Amen. Well I think you're doing a great thing for the city of New York and I really support your efforts. Can I become a member?

Victoria:

Yes. We invite you to become a member. We will send you our membership application. It's also on our website. We would be so proud to have you as a member.

Dr. Albers: Well, count me in!

Victoria: You are counted. Thank you Dr. [Albers] for your time, and Scotia?

Scotia:

It seems like we've run quite a bit over, but we had a lot of different questions to talk about. This is definitely illuminating and thank you so much for sharing your wisdom with us.

Dr. Albers: My pleasure.