

APEC Climate Symposium 2017

A Presentation By
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Solutions From the Land

Envisioning an Agricultural Renaissance
Resilient Food Systems:
Looking at the Past to See the Future

Good afternoon, and thank you to the APCC organizers for your hard work to bring us all together!

Human history as we understand it today is full of missing pages and chapters that are either forgotten or lost. The history of humanity and its efforts to change the environment to create a more dependable food supply is even more fragmented. Just a few years ago, archaeologists suddenly announced that agricultural activity had taken place 30,000 years ago instead of the 10,000 year marker...quite a leap backward..or forward if we can believe that the agricultural systems of the past might hold a clue for how we might better farm in the future. So understanding the past and present...to better prepare for our agricultural future is what my presentation is about today.



Some 30,000 years ago our farming ancestors began to pursue the management and understanding of life systems and the natural resources and energy forces that surrounded them. This continues to be the focus of our efforts to improve the agricultural endeavor in search of predictability and resilience. All civilizations have prospered and suffered from the successes and failures of their agricultural food systems. And governments, dictatorships, kings and emperors have all had to deal with the unraveling of society when their food systems fail. We can look back at the rise and fall of civilizations and read and understand the historical accounts that long periods of abundance tend to deliver long periods of peace...and the reverse of that is well documented...that scarcity puts populations into a survival state and threatens any social order with collapse...



As WWII ended 72 years ago and the Korean, Viet Nam and Cold War played out...the world was dangerously close to a scenario of mutual destruction...as it seems to be today by some accounts. And yet here we are today faced with certain troubling challenges...but also living at a time of relative peace...peace because of the relative abundance of food available to our global population.

How different the world might be today had several critical interventions not occurred. Perhaps the most important of these, and the most under appreciated today, is the role “modern” agriculture has played in the stability of humanity over the last 100 years. Mechanization, fertilization, breeding achievements exemplified by Norman Borlaug and others...all converged in a timely way to keep up the productivity of food systems just apace of population growth. It was in the 20th century that mankind developed, for the first time in recorded human history, the collective capacity to logistically feed everyone on the planet.



When we speak about the capacity of global agriculture today, it's stunning to recognize just how far we have come in the course of a single lifetime. My farming neighbor is 92 years old and still actively farming. As I was talking to him at the coffee shop the other day, he still remembers the names of the horses he used to cultivate his fields...he told me Baldy, Clod were big draft horses and Dolly was a smaller horse. His Japanese immigrant farming neighbors used to borrow Dolly to cultivate their fields because she had small feet and wouldn't step on their vegetable crops...It was an early example of precision agriculture!

As today's urban populations become more and more disconnected to agriculture and unaware of the challenges that exist every day to deliver food and fiber from the farm to the table, an alarming kind of ignorance or negligence emerges. While almost 40% of the global workforce makes its living through agriculture...the other 60% have begun to forget how vulnerable their food supply really is. It takes a drought or a flood to remind us of how quickly our global food systems can find themselves in deep trouble...



Droughts, flooding, hailstorms, freezes, pests, and diseases...all of these factors and phenomena determine whether a farmer will secure a harvest, season after season. I've lost enough crops and plantings to all of these events in my lifetime to know that I can never take my cultivation efforts for granted.

I farm in California near Los Angeles and we have just come out of a punishing 5 year drought that forced me to abandon one field because the well went dry...and to abandon another well because of salt water intrusion. I might have been out of business if we had hit year 6...



Ironically, this last winter as we emerged from our drought with record rainfall amounts, I lost significant production to fruit rot and disease as our strawberry fields suffered from extreme rain damage and my early spring plantings of vegetables were late due to saturated soils.

And yet now I'm concerned about the possibility of a long over due hurricane that may hit our area in the months ahead. The last hurricane to directly hit Southern California was in September of 1939 and there was virtually no warning as one of the most productive farm regions in the world went under water. There were no satellite assisted weather channels...in fact there was no TV!



The hard learned lessons of the past are still as relevant today as any time in the history of mankind. In fact, our vulnerability to unpredictable weather patterns only complicates the task at hand...to feed a hungry planet. Today we rely on new technologies and ever improving ways to predict and forecast the weather. Our capacity to communicate and learn has increased exponentially with the advent of new information systems. Whether scientists are projecting a hard freeze in California or Florida on sensitive citrus crops...or



...a farmer in Rwanda is taking out her hand held smart phone and checking on that incoming monsoon or dust storm...and in real time adapting to the incoming threat...these are remarkable times.

We have the privilege of learning from history, of learning from our successes and failures...of using old knowledge combined with new knowledge to create solutions for our predictably challenging future. As we tear down our old myths and fears and embrace new truths...a dynamic world is opening up to us.

Amazing things are happening in agriculture. In my own lifetime I've watched us change our farming practices from furrow irrigation...to sprinklers to drip irrigation systems and now we are experimenting with soil-less farm systems...



...Farmers are always willing to invest in some new technologies that give us a more predictable outcome in our fields. We recognize that early adoption and adaptation to new ideas and new concepts is not always rewarded. In fact in many countries the governments create regulatory and political obstacles to change...and of course there are many different opinions and agendas at work trying to advance ideas of what is safe or politically correct that spill into the policy world of agriculture. For the farmer who is just trying to stay in business, it's hard enough to deal with the challenges of changing climatic conditions. Farmers throughout the world need help, support and understanding from the public and government sectors...that is to say, from all those who eat!

We can already appreciate that the key requirements for a vibrant agricultural future revolve around the wise management of life systems and natural resources. Our human endeavor to create a productive landscape is not new...



That vibrant future is manifest in the successful cultivation that goes on throughout our world. As an urban farmer I know that I need to be more resourceful and willing to think outside of the box. . One of my favorite Mark Twain quotes is: “You can’t trust your judgment when your imagination is out of focus”.

Here in British Columbia, Canada...100 years ago the wife of an industrialist who was mining limestone for cement...decided that she couldn’t bear the thought of leaving a gaping hole where the strip mine had been...and began a lifetime’s work of passion restoring and transforming that strip mine into one of the great botanical collections of the world...Butchart Gardens.

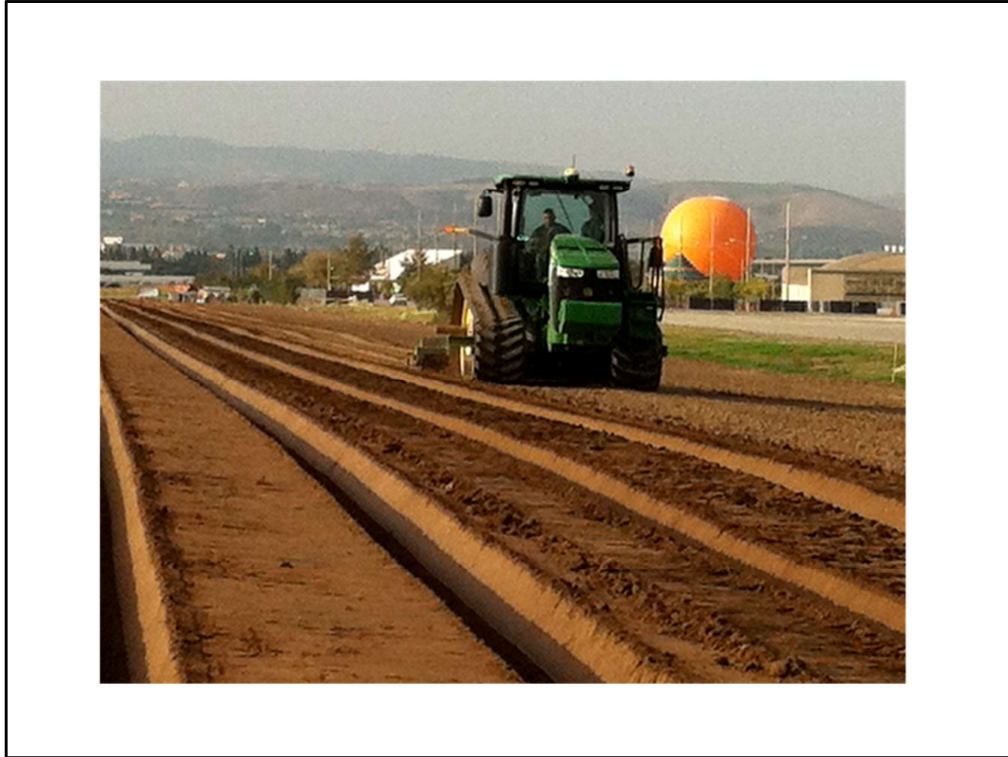


Beauty is in the eye of the beholder...and this looks like a beautiful strawberry field to me! When we look through that different lens and see new potential ...we can understand that our imagination, when it is informed with what's possible, will carry us forward into this new age of agricultural abundance.

So now this is the former El Toro Marine Base Golf Course abandoned for several years...and now repurposed by my farming company in 2014.



As an edible landscaper, it is exciting to see the possibilities of repurposing of land for food production. Here, an abandoned military airport can support a significant amount of agricultural activity. In my urbanized region of Orange County, it's hard to find 40 acres of new farmland...and yet all over the world in urban and peri-urban locations there are significant opportunities for agriculture to literally take root. If the weeds are growing well...so can any planting of fruit or vegetable!



Satellite technology and soon to arrive driver-less tractors may be just around the corner for some...but for others they might be decades away. Agriculture today is big and small, organic and conventional, soil focused or soil-less. It exists at different stages for different commodities in different regions of our planet...and is in constant evolution. There is no one preferred system...but it is preferred that all of them remain successful if we are to thrive in the future.

For millennia, we measured our food production capacity in square feet...



But now, when you look at things through a different lens, your vision changes...you see things as you've never been able to see before. Definitions and absolutes change...and the human landscape suddenly becomes open to new, creative interpretations.



With new and old thinking, what you thought was impossible becomes...feasible! And what we think is feasible becomes a reality much faster than ever before. Our world is suddenly transformed. We must embrace these new opportunities for dynamic, innovative agricultural activity!

But...it's important to not get too carried away with the transformative possibilities of how to feed a planet. All systems, big and small, organic, conventional, biodynamic or controlled environment have their place in a resilient world of abundance.

When non-farmers try to pick winners and losers through politics or press...I become very uncomfortable! Because usually those opposed to change have ulterior motives driving their agendas. And sometimes through fear, ignorance or envy people are just not prepared to embrace something new and different...



This is not a Wok with vegetables...this is looking through a modified 55 gallon barrel with plants growing hydroponically along the internal wall revolving around a specifically modified and moderated light source. This revolutionary design by Omega Gardens and others like it has inspired many countries...and companies to look at novel ways to augment their food supplies with something more innovative, efficient and predictable.



Now we can envision models of production yielding nutritionally dense fruits and vegetables in magnitudes of cubic feet...produced year around, no longer vulnerable to seasonal changes and extreme weather events.

In fact the quest for a more predictable and nutritious food supply is what this symposium should be all about. We can talk about the weather. We can talk about astronomical anomalies. We can talk about threats of nuclear war. But when do we talk about a new age of agriculture, the challenges to global food security and the daunting task of feeding the world?



Governments understand that if their populations are not healthy and are not fed...then dissent and chaos are soon to follow. That's why countries and companies around the world recognize the importance of investing in their agricultural future.

China and Saudi Arabia have been investing tremendous capital into agricultural resources as they worry about disruptions in how they will feed their populations or the vulnerability of over-relying on imported foods.

In a different dimension of the food chain, Amazon just bought Whole Foods as the paradigm of customers visiting retail stores is changing. Trying to figure out not only what's for dinner but how to get it to you is an expanding model. The use of readily available "do it yourself" systems to produce your own home or neighborhood supply of food is beginning to get really interesting!



Yes we hear about all kinds of new ways to produce food from 3-D printing to “robot farms” and Petri-dish filet mignon. We have new smart tools like drones and robotics, new and improved precision systems of aquaponics, aeroponics and hydroponics. Advanced and revolutionary systems for heating and cooling are now available that maintain perfect temperatures using 80% less energy. This indoor vertical hydroponic micro-green system from Urban Produce uses @80% less water than an open field. That efficiency ratio allows for the use of an atmospheric water harvester that supplies all of its purified water needs instead of being connected to a filtered supply of municipal water.

But as we mentioned earlier we can't turn our backs on the fundamentals. We can get lulled into the false comfort of expecting that our “new” food supply is safe and secure...yet it is actually as vulnerable as ever!



To produce a crop we need reliable soils or substrates...we need major and minor nutrients, we need dependable high quality water systems...we need crop tools to address the ever-present diseases and insects that would attack our crops...and we must have highly skilled labor. And when we forget to arrange for these and other important agricultural elements...the age old consequence kicks in and we can experience food system failure.



So, yes the abundance that comes from innovation in our time is staggering! The explosion of growth in the hydroponic tomato industry for example, shows how indoor innovators now produce over 50% of the vine ripe tomatoes in America.

But don't think these systems are not without their challenges as hydroponic growers faces catastrophic disease and water quality issues the same as the open field farmer...and may even be more vulnerable to a disruptive events like an earthquake, a tornado...or a cyber attack that shuts down all the automated hi-tech systems in a production facility. The point is, while we try to work through our predictable problems...we can never promise a flawless harvest. But our goal is to improve the predictability of our efforts...



Yes there are new ways to plant, produce, harvest, process, package, cool and deliver all kinds of foods. More importantly, there are new ways to envision communities built around a permaculture theme of achievable off-grid interdependence where the nexus between energy, water and food... operationally occurring in a no-waste environment... is entirely possible and scalable today using available techniques and maturing technologies from off the shelf! We can build new innovative neighborhoods...smart communities...and smarter farms.



At the same time we can re-adapt the buildings and infrastructure that exists in every city of the world. The resilience of our global food systems rely on vigilance, discipline and mutual cooperation from all of our stakeholders...in other words...everyone who eats! Ultimately, we must readjust and realign our vision and imagination as we recognize that a new age of Agriculture is emerging and accelerating. We must maintain, strengthen and improve upon our capacity to feed everyone on this planet of ours...and with that capability and capacity we will finally find the will to create and embrace a world without hunger.



The UN Sustainable Development Goals provide us with a destination for humanity by the year 2030. Here in this last slide, a repurposed military housing site reminds us that the transformation of our world is possible... everyday...when we believe in a better reality and work towards an achievable common vision. Believe in agriculture in all its different dimensions...let the farmers excel in their good work. After all...successful farming sustains humanity!

Thank you for letting me share some experiences around the culture of agriculture and for embracing a world of abundance for all.