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URBAN AG NEWS

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Jeffrey Orkin

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URBAN AG NEWS

The Urban Ag News Team

Chris Higgins
Editor in Chief

David Kuack
Technical Writer

Alicia Morcillo
Graphic & Web Designer

Mike Branch
Web Developer

Cameron Muilenburg
Videographer

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Urban Ag News is an ***educator*** providing content through a variety of different media. Through its educational efforts, including its online quarterly magazine and blog, Urban Ag News seeks to provide its users with a basic understanding of the industry and to **keep them informed** of the ***latest technologies***.

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The Julie + Michael Tracy Family Foundation is dedicated to addressing challenges facing young adults with autism. With RUSH University Medical Center providing oversight, we have created a supported passage to a fully integrated, urban community life. At the center of JMTF's Urban Autism Solutions is a residential living program with the goal of promoting socialization, psychiatric stability, and a strong sense of community while supporting adults in advancing their independence as well as vocational and educational achievements.

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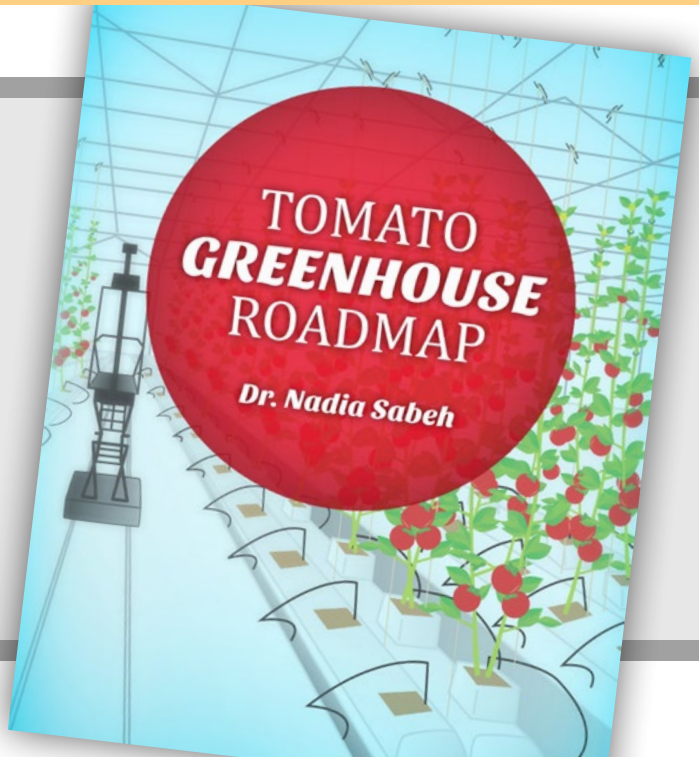

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the greenhouse project
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Watch these videos of how students are learning, planning, and pledging to make the world more sustainable and a better place.

minnesota looks to expand local food opportunities

Photo courtesy of Karl Hakanson, University of Minnesota Extension

From community gardening to developing more food distribution outlets, people in both urban and rural areas of Minnesota are expanding their involvement in the local food movement.

By David Kuack

<< Karl Hakanson (right), who is University of Minnesota Extension Educator for Hennepin County, said within Minneapolis more people have gotten involved with community gardening which enables them to grow more of their own food. He said some people who have gotten good at growing their own food are starting to market some of it.

Minneapolis with the adjoining city of St. Paul form the Twin Cities, which is the 14th-largest metropolitan area in the United States. The cities' metropolitan area has nearly 4 million residents.

Karl Hakanson, University of Minnesota Extension Educator for Hennepin County, of which Minneapolis is the county seat, said he has had to broaden his definition of agriculture since taking his current position in February 2014.

"Most of my career has been in conventional ag—regular farming," Hakanson said. "I've had to broaden my definition to focus on food. I have been involved lately with the whole issue of food equity and the access to healthy, real food. That also involves having access to land. If people want to have community gardens or develop urban farming, just like people in rural areas, they have to have access to land, which is a big deal."

Hakanson said the land for urban farming is expensive and hard to obtain and sometimes it's not available even if people can afford to purchase it.

"Minneapolis has a launched a Homegrown Minneapolis website where interested parties can find available lots to lease for urban farming," he said. "The problem is the lots may be available for a year or two. This can make it hard to have any kind of permanence. But it is getting better for people who are trying to find vacant lots to do urban gardening."

ASSISTING WITH URBAN AG ISSUES

Hakanson said within Minneapolis more people have gotten involved with community gardening which enables them to grow more of their own food.

"Some of these people may have gotten better at growing their own food that they consider marketing some of it," he said. "The Homegrown Minneapolis Food Council began operating in 2012 as a resource for all of the activities involved with urban agriculture. The council deals with issues, statutes and regulations related to the city. It also offers various resources for businesses

including starting a local food business and business financing. Council members include some urban farming businesses that are trying to succeed commercially including some CSAs (community-supported agriculture)."

Hakanson said the council is a good resource for all kinds of urban farming activities.

"The council was instrumental in allowing urban gardeners to tap into fire hydrants so water for gardening could be metered like it is for regular household usage," he said. "The council also worked to have the regulations changed regarding people being able to sell their produce from leased city lots and to put up signs to advertise available produce. A recent change is that signs can now be up for 75 days."

FINDING BUSINESS OPPORTUNITIES

Greg Schweser is associate director of local foods and sustainable agriculture for the Regional Sustainable Development Partnerships, a program that is part of the University of Minnesota Extension. Located in St. Paul, Schweser said the program he is involved with works with groups outside of the seven-county metro area.

"We bring university resources to community groups, organizations and individuals who have great research ideas in sustainable development," Schweser said. "We work in the areas of sustainable agriculture and local foods, clean energy, natural resources and tourism. An example of what we do is there may be a group of people who want to do a field trial with hoop houses to see what vegetables varieties grow best. They'll apply to get a research grant through The Regional Partnerships and we will be able to assist them with a faculty horticulturist, students and extension personnel to get those research projects up and going. A lot of the work that I

Greg Schweser, associate director of local foods and sustainable agriculture for the Regional Sustainable Development Partnerships, said the program he is involved with works in the areas of sustainable agriculture and local foods, clean energy, natural resources and tourism.

Top photo courtesy of Greg Schweser; middle and bottom photos courtesy of Karl Hakanson, University of Minnesota Extension

do involves obtaining grants and doing grant projects focused on local food and agricultural issues."

Schweser said about 30-40 percent of the RSDP projects are food-related. Other projects are related to natural resources, clean energy and tourism.

"A lot of small scale growers work with our group," he said. "The farther these growers are from the metro area the less likely they are to sell into that market. Unless growers have a large scale production system, it's not going to be easy for them to market in the metro area. For that market, growers need to have a method of transportation and storage. There are some growers who specialize in one of two things and sell directly into the metro market."

Many of the growers Schweser works with are producing and selling in their local communities. He said more than 50 percent of small specialty crop growers are women.

"Each of the rural producers has to have a variety of different marketing streams," he said. "Most of them do, including CSAs, farmers markets, direct-to-wholesale to a local grocery store or food co-op or school food programs. These growers don't want to be in a situation where a farmers market closes down and that is their only customer."

Minneapolis has launched a Homegrown Minneapolis website where interested parties can find available lots to lease for urban farming.

Photo courtesy of Karl Hakanson, University of Minnesota Extension

Homegrown Minneapolis Food Council began operating in 2012 as a resource for all of the activities involved with urban agriculture. The council deals with issues, statutes and regulations related to the city.

Left photo courtesy of Karl Hakanson; right photo courtesy of Greg Schweser, University of Minnesota Extension.

SOLVING MARKETING CHALLENGES

Schweser said most rural growers have their own individual marketing plan.

"There are very few systems where growers can produce a crop and not have to worry about how to sell it once it's ready to harvest," he said. "They have to find a place for it and that can be work. That is one of the things that a lot of producers are worried about. How to sell their products for a price that they can stay in business. Once that is figured out more people will be able to get into this local food movement."

Schweser said RSDP has been involved with several marketing projects.

"One project in Brainerd, Minn., enabled a farmer to set up a food hub that helps around 100 farmers market locally in area counties," he said. "RSDP has done a number of farmers markets projects helping people set up their markets and determining what is the best type of products to offer, how to display the products and how much to sell their products for to make a profit. RSDP has also worked with the Minnesota Department of Agriculture to develop local marketing labels."

Schweser said RSDP is currently working with a group at Kansas State University on a project involving rural grocery stores.

"We are looking at how to deliver local foods into rural grocery stores in Minnesota," he said. "We are trying to identify ways to handle the produce in a way that will make it last longer and look better. And then determine how to get more consumers into the stores to buy this kind of produce."

For more: Karl Hakanson, University of Minnesota Extension, Hennepin County Environmental Services, (612) 596-1175; khakanso@umn.edu. Greg Schweser, University of Minnesota Extension, Regional Sustainable Development Partnerships, (612) 625-9706; schwe233@umn.edu.

David Kuack is a freelance technical writer in Fort Worth, Texas; dkuack@gmail.com.

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JOB LAYOFF KICK STARTS VERTICAL FARMING VENTURE

by David Kuack

LANDSCAPE ARCHITECT JEFFREY ORKIN NEVER PLANNED TO START HIS OWN VERTICAL GROWING OPERATION, BUT A JOB LAY OFF AND A PASSION FOR SUSTAINABILITY LED TO THE LAUNCH OF GREENER ROOTS FARM.

After six years of college and landing a position with a large architecture and engineering firm in Nashville, Tenn., Jeffrey Orkin thought his career as a landscape architect was ready to take off. Then the recession hit. In 2009, after only 1½ years of employment, Orkin found himself jobless with limited prospects in his field.

Orkin partnered with his similarly unemployed friend Cliff Jones to start their own company called Landscape Solutions. The company is focused on design-build for residential and commercial outdoor spaces.

"We focus on how sustainable landscapes can contribute to the development of a healthier community," Orkin said. "We are using native plants, rain gardens, bioswales and things other than typical high-demanding ornamental landscapes."

Focus on food

While Orkin's main focus is on sustainable landscaping he also has a personal interest in extending his sustainability commitment to food production.

"I was living in a downtown fourth floor condominium trying to grow my own food," Orkin said. "The only option at the time was to grow indoors on my windowsill using hydroponics. I started using a system developed by the Windowfarms Project, which got its start with a Kickstarter campaign.

In 2011 Orkin expanded from his windowsill plantings to a 4-foot wide by 12-foot long storage unit. He said that didn't work real well because the unit lacked any kind of climate control.

The next move was to the roof of his 12-story condominium building.

"I discovered a 130-square-foot room on the roof of the building I was living in," he said." It was an unused utility room. I negotiated with the building management to rent me the room for a very reasonable rate. The room had a really tall ceiling which enabled me to grow using vertical farming with three different levels. That was in December 2012."

In order to purchase the equipment he needed to set up his vertical farming facility, Orkin established the Urban Hydro Project.

"I did a Kickstarter campaign that helped to fund the build out and allowed me to test different crops and the other things necessary in a commercial hydroponic system. Urban Hydro Project was where the commercial business got its start. It was really the research and development arm of where I have transitioned to now."

Expanding again

Orkin has made a major production expansion by leasing a 6,000-square-foot warehouse that is about 5 miles outside of downtown Nashville. The new business venture is called Greener Roots Farm.

"I have divided the warehouse and curtained off a 3,000-square-foot grow room," Orkin said. "I'm only about one-third of the way built out. Initially it was all I could afford. I am operating two vertical systems with space for two more. The warehouse production system is completely different than the one I was using in the condo building utility room.

"The warehouse has a completely new production design. It is a vertical set up with five levels of growing that maxes out at about 13 feet. I have a total of about 2,000 square feet of growing space that only occupies 224 square feet of floor space as it is currently built."

Orkin is also renting 1,200 square feet of the warehouse space to Nashville Grown, a food hub that aggregates food from local growers and distributes it to area restaurants, grocery stores and schools.

Orkin said one of the biggest issues when moving to the larger facility was thinking through how to scale the system.

"This included everything from water volume and structural concerns with water weight," he said. "We had to think through whether or not the warehouse's existing HVAC system had the capabilities to do what we needed it to do. There were facilities considerations as far as the height, cooling, and where the water is coming from and where it is draining to."

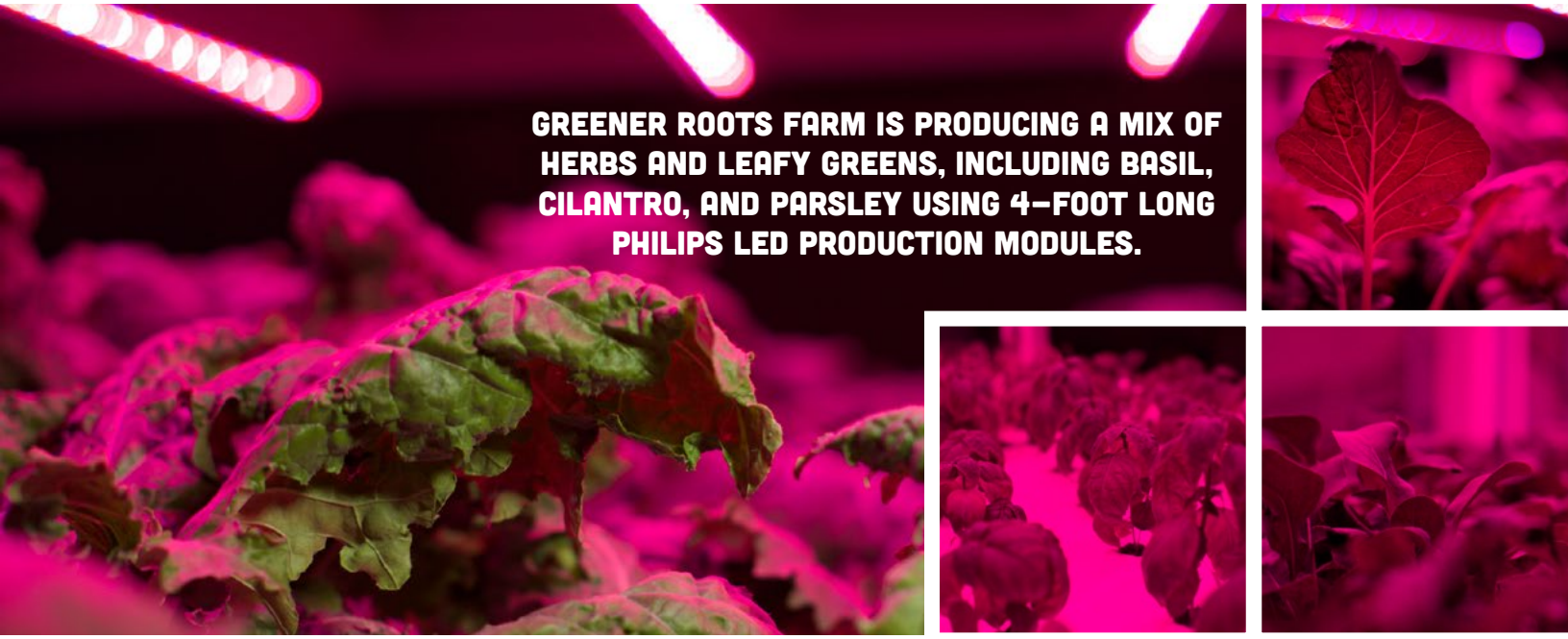
Everything from seed sowing to harvest takes place in the warehouse. Orkin is using 4-foot long Philips LED Production Modules in the production system.

Maximizing crop production

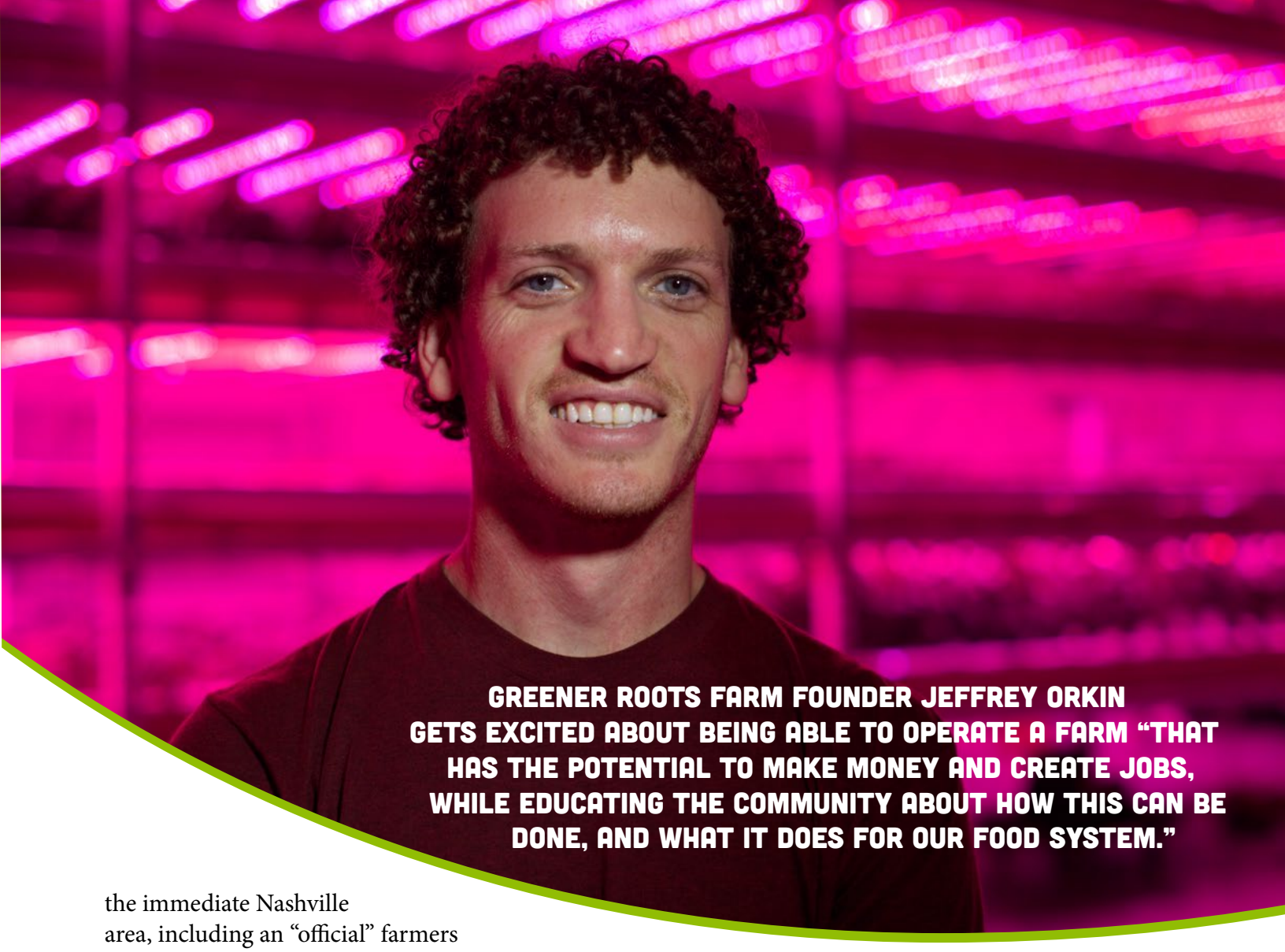
Orkin is producing a mix of herbs and leafy greens, including basil, cilantro, and parsley. He said he doesn't have a major specific product.

"I signed a lease in April 2014 on the warehouse and we spent several months on build out," he said. "The first seeds were planted on July 19. The crop mix allows me to provide some diversity and selection to the different restaurants that are purchasing from me. In the future there may be some direct to consumer sales at farmers markets. Right now I prefer being able to sell a larger volume in one delivery."

Orkin said there are numerous farmers markets in



GREENER ROOTS FARM IS PRODUCING A MIX OF HERBS AND LEAFY GREENS, INCLUDING BASIL, CILANTRO, AND PARSLEY USING 4-FOOT LONG PHILIPS LED PRODUCTION MODULES.



GREENER ROOTS FARM FOUNDER JEFFREY ORKIN GETS EXCITED ABOUT BEING ABLE TO OPERATE A FARM "THAT HAS THE POTENTIAL TO MAKE MONEY AND CREATE JOBS, WHILE EDUCATING THE COMMUNITY ABOUT HOW THIS CAN BE DONE, AND WHAT IT DOES FOR OUR FOOD SYSTEM."

the immediate Nashville area, including an "official" farmers market as well as several neighborhood markets. "I don't doubt that I eventually will carry many of my products to a farmers market on a regular basis," he said. "Selling to restaurants I don't harvest the plants unless they're sold. It's nice to be able to harvest for a restaurant customer and know that the crop was freshly harvested just an hour earlier."

Orkin also said he shouldn't have an issue with supplying local grocery stores year-round.

"I am really passionate about sustainability," he said. "The one thing that kind of wears on me at retail is the amount of packaging that is required. Right now it's nice to be able to put 4 pounds of product in one bag for a restaurant instead of placing that same 4 pounds in all of the 5-ounce clam shells that would have to be filled for grocery sales.

"I am trying to have the biggest impact on the local food scene that I can. I'm trying to produce and deliver the freshest local food that I can. Also, I have to figure out where I can be the most successful as a business."

Excited about future opportunities

When Orkin started the Ultra Hydro Project he never expected the business to expand to the size it has.

"When my friend Cliff Jones and I started this business, we never planned to do it for as long as we have," Orkin said. "It wasn't necessarily our dream job. Although we have infused our passions into every aspect of the business, we can and do have a lot of fun with it. At the onset, however, it was something that we were able to do to make

some money. It has just continued to grow."

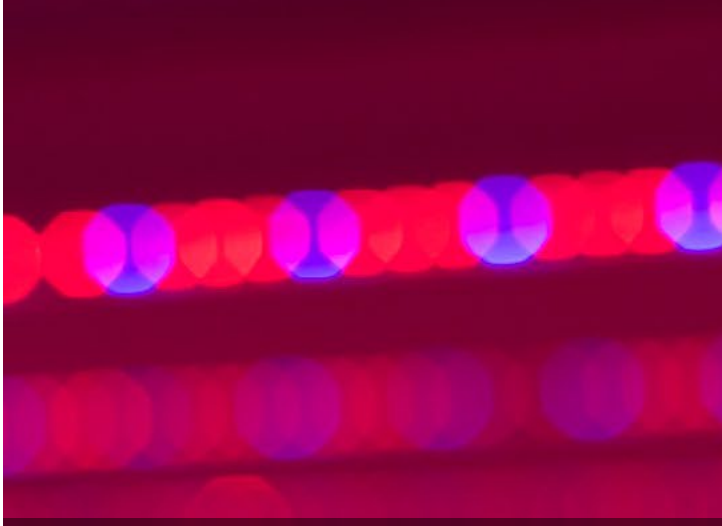
During the process of setting up the business Orkin went back to school for an MBA degree focusing on sustainability.

"A part of the degree program resulted in me going to California for a food security summit," he said. "My mind was open to food security issues, the importance of local food and educating people about local food. Ultimately, I developed a passion for creative, innovative agriculture as it relates to augmenting the local food movement. I saw growing indoors as a way to remove seasonality when it comes to crops that in many instances are being shipped from thousands of miles away when there is this ability to grow it indoors.

"This concept of local food production presented a very interesting challenge. There is a lot of local food production going on, but not a lot of it necessarily makes money. For me the challenge is combining all of these factors. I want to be able to operate a farm with a business model that has the potential to make money and create jobs, while educating the community about how this can be done, and what it does for our food system. That gets me excited!"

For more: Greener Roots Farm, info@greenerroots.com; http://greenerroots.com.

David Kuack is a freelance technical writer in Fort Worth, Texas; dkuack@gmail.com.



GREENER ROOTS FARM IS LEASING A 6,000-SQUARE-FOOT WAREHOUSE WHICH IS CURTAINED OFF WITH A 3,000-SQUARE-FOOT GROW ROOM CONTAINING A VERTICAL PRODUCTION SYSTEM.

THE PRODUCTION SYSTEM CONSISTS OF ABOUT 2,000 SQUARE FEET OF GROWING SPACE THAT ONLY OCCUPIES 224 SQUARE FEET OF FLOOR SPACE.

BASED IN NASHVILLE, TENN., GREENER ROOTS FARM IS WORKING TO HAVE A MAJOR IMPACT ON THE LOCAL FOOD MARKET. THE COMPANY HAS INCORPORATED AN INNOVATIVE AND SUSTAINABLE APPROACH TO PRODUCING LEAFY GREENS AND CULINARY HERBS.

PROUD SPONSOR

Benefitting:

Deardorff Family Farms in Oxnard, Calif., donated a salad bar to Sequoia Middle School in Newbury Park, Calif., on Oct. 15, 2014. The donation was part of the Tour de Fresh four-day fundraising cycling event. The company was a silver sponsor of the event.

Tom Deardorff II, president at Deardorff Family Farms, who attended the launch of the salad bar at the school said he was amazed by the response of students.

"Kids began to back up one behind the other in the two lines going to the salad bar," Deardorff said. "It was awesome. They were smiling and joking and asking if they could use the big food trays instead of the small trays. They went for it hard and fast and kept coming.

"I could hear the staff saying, "We need more salad. We need more kiwi." Kids were chomping on carrots and loving every bite. In the end, it was probably a 65/35 split with 65 percent of the kids choosing to go through the salad bar line."

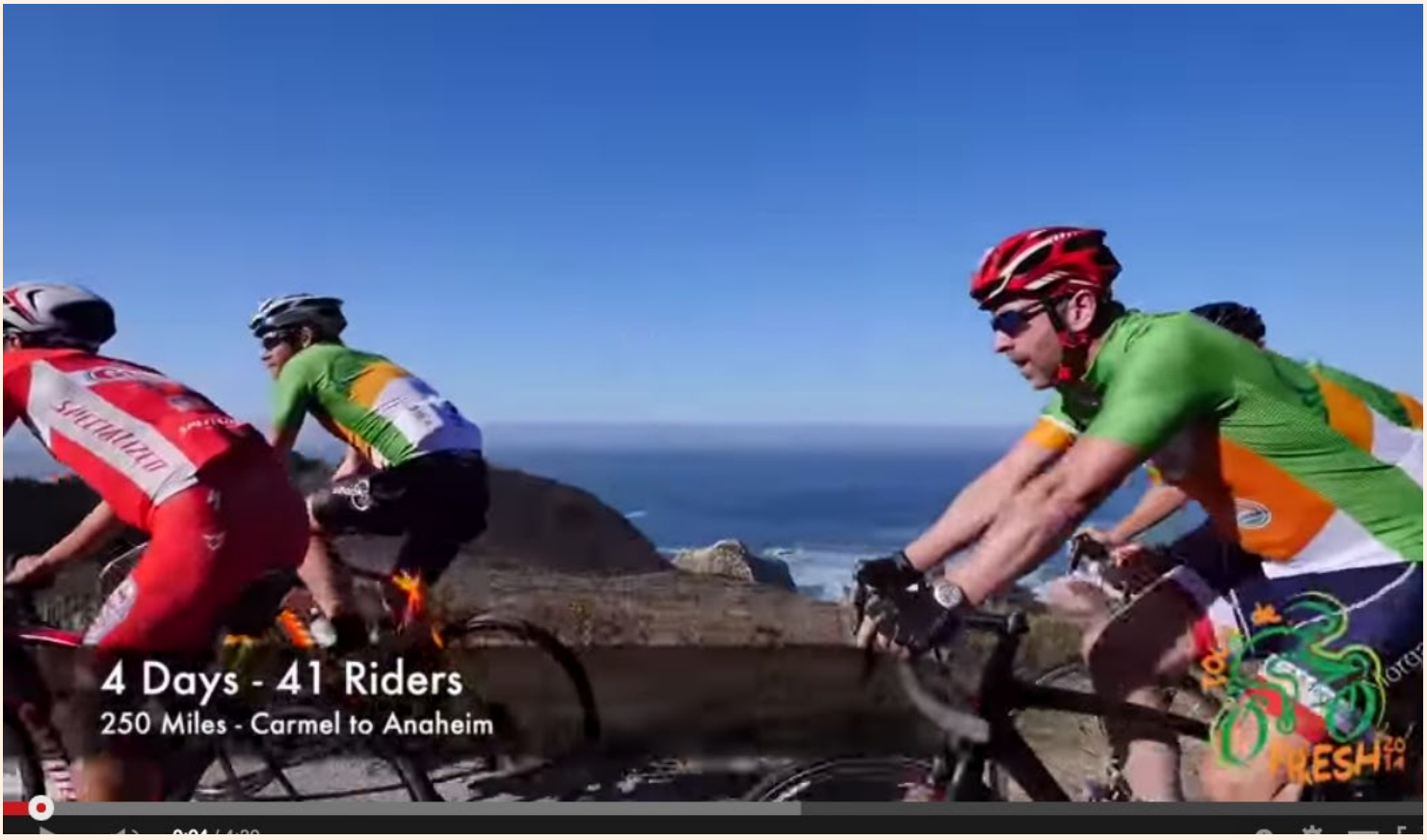
Tour de Fresh exceeds fundraising goal

Tour de Fresh was the first collaborative fresh produce industry event that raised funds for the United Fresh Start Foundation's Let's Move Salad Bars to Schools campaign. The goal of Tour de Fresh and its participants was to raise $120,000 to privately finance 40 new salad bars in school districts across the country. The foundation exceeded its fundraising goal and raised $124,303, ensuring more than 40 schools will receive salad bars.

The inaugural Tour de Fresh started in Monterey, Calif., on Oct. 13, and ended 275 miles later in Anaheim. The event aimed to bring awareness to the LMSBTS program originally founded by Food Family Farming Foundation, National Fruit and Vegetable Alliance, United Fresh Produce Association Foundation and Whole Foods Market in support of First Lady Michelle Obama's "Let's Move! Initiative."

For more: Deardorff Family Farms, (805) 487-7801; http://www.deardorfffamilyfarms.com.
Tour de Fresh, http://www.tourdefresh.com.

Ron Cramer and Chris Higgins at Deardorff Family Farms.



ROB BAAN - INNOVATION - KOPPERT CRESS

A great video on innovation and entreprenuership. We thought you would enjoy!

GREEN INNOVATION BY SHOWA DENKO

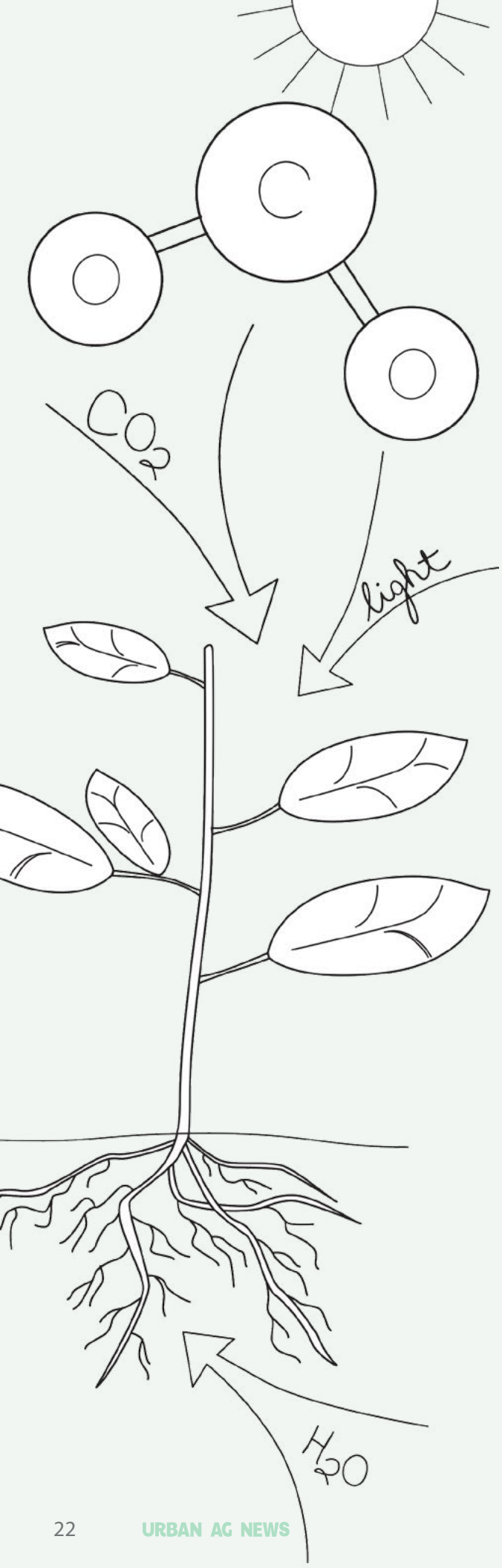
100% LED light source systems can provide benefits to leafy vegetables production: better taste, pesticides free, space efficiency as well as faster and predictable harvest. SHOWA DENKO and Prof. Shigyo from Yamaguchi University came up with an advanced technique, the SHIGYO method; they focused on one of the useful applications of LED which is the most suitable light source to control wavelength. By combining red and blue LEDs, they succeeded to grow lettuce much faster than using existing lighting systems. They are hoping to apply this method to other vegetables in the future.

The benefits of supplemental CO_2 are worth the cost

Urban Ag Products coverage of the use of supplemental CO_2 in Issue 7 continues in this issue with discussion about CO_2's benefits and the cost of using it.

By David Kuack

The benefits of supplemental carbon dioxide (CO_2) on greenhouse crops are easy to quantify. Faster production times, higher yields and larger fruit are some of the results of incorporating CO_2 into the greenhouse atmosphere to optimize plant growth.



Greenhouse crop consultant Marco de Bruin at de Bruin Greenhouse Consulting never worked in a greenhouse operation that didn't use supplemental carbon dioxide (CO_2).

"I have grown a variety of tomatoes including, tomato on the vine, grape tomato, cluster tomato, Roma tomato, as well as cucumber, sweet pepper, lettuce and basil," de Bruin said. "Supplemental CO_2 was used in all of the facilities I have worked in. The modern glass and plastic greenhouse operations being built today all have CO_2 systems in them.

"In traditional glass greenhouses there can be a lot of air exchanges that occur through the roof. That can help to reduce the temperature and humidity in the greenhouse, but it can remove CO_2 from the greenhouse as well. The roof vents start to function like a Venturi drawing the air and CO_2 out of the greenhouse."

de Bruin said it is best to distribute supplemental CO_2 between the leaves of the plants.

"Growers will install lay-flat tubing in the greenhouses, particularly with row crops like tomatoes, peppers and cucumbers," he said. "CO_2 is then injected into the greenhouse environment, particularly into the microclimates around the plants."

de Bruin said the growth response to supplemental CO_2 is similar regardless of the crop being grown.

"CO_2 is one of the building blocks for photosynthesis," he said. "A grower always has to have the supplemental CO_2 in combination with light, whether that is sunlight or supplemental light. If there is no light then there is no point in using supplemental CO_2. So at night no supplemental CO_2 is dosed into the greenhouse."

AVOIDING PLANT STRESS

de Bruin said the ideal levels of CO_2 in the greenhouse vary with the crop, but they vary more due to the growing environment.

"During the summer when plants are actively growing, the CO_2 level in a greenhouse can drop from ambient 380-400 parts per million to 50-100 ppm in a very short period of time," he said. "The sunlight intensity, the temperature and the humidity in the greenhouse

are factors that are extremely important. If plants are stressed and their stomata, which take up CO_2, are closed, then CO_2 dosing should be greatly reduced or even stopped since there is no benefit to the plants under these conditions. A grower needs to make sure that the temperature and humidity levels are appropriate for dosing CO_2 to maximize the rate of photosynthesis. The dosing level is very dependent on stress factors."

de Bruin said there are certain times of the day and certain times of the year when a grower should actually reduce the dosing level of CO_2 due to the stress level on the plants.

"Heat stress is a combination of radiation and a grower's ability to maintain the climate in the greenhouse," he said. "Once the greenhouse starts to heat up and the grower starts to ventilate, some of the CO_2 and a lot of the humidity is being pushed out. Humidity is the major driver in transferring the heat out of the greenhouse. As the humidity is lost, the plants start to transpire faster which increases the humidity. When the evaporation level gets too high for the plants to maintain, the stomata start to close and CO_2 is no longer taken up by the plants. At that point, the CO_2 is going straight out of the greenhouse. If a grower can keep his plants from undergoing stress, then CO_2 can be dosed up to the most efficient level for both the plants as well as for the grower's pocketbook. There are some really high tech greenhouses that are able to go to an extremely high level of CO_2 before they encounter this stress situation."

de Bruin said the level of CO_2 can go as high as 1,000 ppm, but the rate of payback starts to flatten off after a grower achieves CO_2 levels of 700-800 ppm.

"It is possible to achieve additional production above this rate, but it becomes a question of whether or not it is feasible," he said. "Dosing capacity requirements go up, investment requirements go up and at the end of the day there is a certain price limit as to what a grower can receive for the product sold, whether his crop is tomatoes, peppers or cucumbers. How much a grower doses CO_2 is determined by the cost of the CO_2 and the selling price of his product."

During the summer when plants are actively growing, the CO_2 level in a greenhouse can drop from ambient 380-400 parts per million to 50-100 ppm in a very short period of time.

Photos courtesy of Marco de Bruin, de Bruin Greenhouse Consulting.

SOURCES OF SUPPLEMENTAL CO_2

de Bruin said the most common way for introducing supplemental CO_2 into greenhouse vegetable and ornamental crops is to dose the flue gases from the boiler, which contain CO_2.

"Basically the flue gases from the boiler are rerouted through the greenhouse so that the plants can filter out the CO_2," he said. "Some of the CO_2 will still leave the greenhouses, but 100 percent of the CO_2 would have been lost into the atmosphere if the flue gases would have been allowed to go out the chimney.

"What growers have done to use the CO_2 is to install a heat storage tank. While they are producing heat they store it in an insulated water tank. They then can use the flue gases that come off of the boiler during the day when the sun is shining and the plants are actively using CO_2. A computer system regulates the heat from the storage tanks to go into the greenhouses as needed. This can allow the boilers to turn off at night if no extra heat is needed. These boiler systems are very efficient."

de Bruin said growers can also use unit heaters, some of which are combined heaters that allow a grower to dose CO_2 in the greenhouse as well as using the flue gases that the heaters produce.

"In regards to noxious gases, the unit heaters and boilers that I've seen in most growing operations are designed to have extremely low NOx (nitrogen oxides) and burn very clean," he said. "These are monitored very carefully."

de Bruin said for growers who are going to have to heat their greenhouses regularly with either unit heaters or boilers, it makes sense to use the CO_2 in the flue gases. He said since propane costs three

CO_2 DOSING SYSTEMS LIKE THESE FROM ZANTINGH B.V. CAN TRANSPORT FLUE GAS CONTAINING CO_2 FROM NATURAL GAS-FIRED BOILERS TO GREENHOUSE PRODUCTION AREAS.

A GROWER NEEDS TO MAKE SURE THAT THE TEMPERATURE AND HUMIDITY LEVELS IN THE GREENHOUSE ARE APPROPRIATE FOR DOSING CO_2 TO MAXIMIZE THE RATE OF PHOTOSYNTHESIS. THE DOSING LEVEL IS VERY DEPENDENT ON STRESS FACTORS INCLUDING TEMPERATURE AND HUMIDITY.

Marco de Bruin at de Bruin Greenhouse Consulting said supplementing with CO_2 enables a grower to produce 20-30 percent higher yields. Installing the equipment to dose CO2 to raise ambient levels to 400-500 ppm is a very quick payback.

times as much as natural gas, a grower could quickly make a case for using liquid CO_2 instead.

"If a grower is located in the South or on the coastlines the heating requirements may be considerably less," he said. "In these locations, using liquid CO_2 or a combination of flue gases and liquid CO_2 could be more economical as well. With the liquid CO_2 set ups, growers lease the tanks and the evaporator units. There are several companies that specialize in greenhouse applications that deliver a complete package."

de Bruin said growers can figure they will harvest 20-30 percent higher yields when they dose CO_2 versus relying on ambient CO_2.

"If a grower is going to produce 20-30 percent higher yields, installing the equipment to dose CO_2 pays off quickly," he said. "Going from ambient CO_2 levels to 400-500 ppm is a very quick payback."

For more: de Bruin Greenhouse Consulting, (507) 451-0701; Marco@deBruinGreenhouseConsulting.com; http://www.deBruinGreenhouseConsulting.com.

Editor's note: For more information on the use, benefits and costs of supplemental carbon dioxide see "Carbon Dioxide in Greenhouses" Factsheet from the Ontario Ministry of Agriculture, Food and Rural Affairs.

David Kuack is a freelance technical writer in Fort Worth, Texas; dkuack@gmail.com.

The underground documentary that became a massive grassroots success, FRESH is the embodiment of the good food movement.

FRESH began as a grassroots effort for a grassroots movement, and it's been tremendously exciting to see the movie spread like wildfire. Within a month of our launch in April 2009, we received over 20,000 visitors and hundreds of screenings were organized. Today, FRESH is a community of over 100,000 advocates for healthier, more sustainable food, a film that's used all over the world as a platform to raise awareness and connect people to solutions in their community. But that's not good enough.

We want to make fresh food on every plate the norm, not the exception. We want to reach 1 million people: gardeners, doctors, politicians, teachers, eaters. Not just because that would be a nice boost to our ego (mine especially!), but because we believe that FRESH can truly help get us to a tipping point, when sustainable food will no longer be just a niche market.

LED SYMPOSIUM

DEVELOPING LED LIGHTING TECHNOLOGIES AND PRACTICES FOR SUSTAINABLE SPECIALTY-CROP PRODUCTION

February 20, 2015
The University of Arizona - CEAC
Tucson, AZ

This one day symposium is organized by the University of Arizona Controlled Environment Agriculture Center(CEAC) in conjunction with the USDA SCRI (specialty crop research initiative) LED project members from Purdue University, University of Arizona, Michigan State University, Rutgers University and industry partner Orbitec. The objective of this SCRI LED research group is to enable specialty-crop growers working in protected environments to successfully transition from traditional horticultural lighting sources to LED technologies. The symposium will provide SCRI LED project members and other nationally recognized research groups the opportunity to bring the latest information, understanding, and assessments of the use of LEDs in horticulture through oral presentations.

THREE MAJOR TOPICS COVERED IN THIS SYMPOSIUM WILL BE:

1) Plant responses under sole-source LED lighting,
2) Plant responses under supplemental/photoperiodic LED lighting in greenhouses, and
3) LED technology development, evaluation, and economics.

TENTATIVE PROGRAM:

THURSDAY, FEBRUARY 19, 2015
3PM – TBA: Facility tour & reception

FRIDAY, FEBRUARY 20, 2015
8AM – 5PM: One day LED symposium

Note: Online participation is available

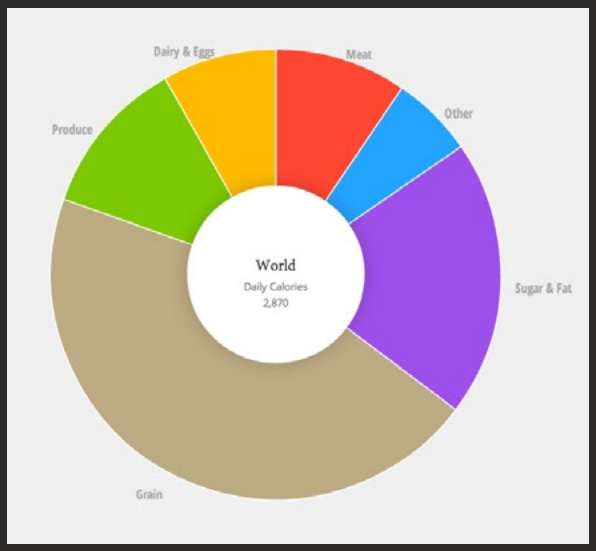
For more information, please contact: Chieri Kubota (ckubota@email.arizona.edu or 520-626-8833)
Symposium Information will be updated in the following website: http://leds.hrt.msu.edu/meeting/

What the World Eats

We want to share this great report from National Geographic with you.

Check out daily diets and meat consumption from all around the world and how they vary.

NATIONAL GEOGRAPHIC



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x = independently organized TED event

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Hort Americas is very happy to be a sponsor of UrbanAgNews.com. We feel that it is important for our industry to grow through the exchange of known information and creative ideas. We encourage everyone to get involved!

Hort Americas is proud to be a supplier of LED Grow Lights (including the Philips GreenPower Horticultural LED line) as well as numerous other products important to the commercial hydroponic, horticulture and agriculture industries. Those products include lines like Smithers-Oasis Horticubes, Grodan Rockwool, Riococo Hydroponic Coir products, Bato products and Orchid Mixes and Substrates from Hort Americas and Slingerland.

To learn more about supplemental lighting such as LED Grow Lights, High Pressure Sodium and other horticultural lighting options please contact:

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