Growing Food for Nine Billion

Hour One

Introduction

Experts estimate the human population will top at least 9 billion individuals by 2040. Considering this, an increasing amount of attention is being directed towards the question, how will we feed all of these people? When factoring in the already stressed ecological systems of the Earth, climate change, and dwindling fossil fuel resources, this equation grows in complexity. The following TED Talks (www.ted.com) shed light on this question and provide potential pathways for action.

Jonathan Foley: The other inconvenient truth (17:46)

- **Introduction:** In his Ted Talk, Jonathan Foley summarizes the state of the food system, showcasing the negative consequences of large scale agriculture on Earth while asking the big questions: How do we feed the world without destroying it? How do we feed a human population set to hit 9 billion people by 2040 on an ecologically weakened planet undergoing unprecedented (in human history) climate change using fewer fossil fuels?
  - [http://www.ted.com/talks/jonathan_foley_the_other_inconvenient_truth.html](http://www.ted.com/talks/jonathan_foley_the_other_inconvenient_truth.html)

Mark Bittman: What’s wrong with what we eat? (20:03)

- **Introduction:** It is critically important to not only critique how we grow our food but also what food is being eaten by consumers. Mark Bittman does exactly that and shows how what humans eat doesn’t just affect their bodies; it is stressing the planet to its ecological limits! Bittman suggests our addiction to meat is the biggest culprit and we must change what we eat and shift how we value and think about food.

Tristram Stuart: The global food waste scandal (14:15)

- **Introduction:** In addressing how we grow food, it is critically important to also address how much of that food is actually being consumed by humans. In his TED talk, Tristram Stuart illustrates how being critical of the entire life cycle of food is an extremely important first step in understanding what needs to change in the food system. Stuart analyzes the food system and finds that an unfathomable amount of food is wasted. Verifying his conclusions with stunning data, Stuart calls for a more responsible use of global food resources as the first step in addressing food issues.
  - [http://www.ted.com/talks/tristram_stuart_the_global_food_waste_scandal.html](http://www.ted.com/talks/tristram_stuart_the_global_food_waste_scandal.html)

Discussion Qs:

- How do the perspectives in each talk differ from each other and how can they be applied together to solve the problem?
- What does a solution to the problem of growing enough food for a growing population look like to you?
- How can you begin to contemplate and study “Growing Enough Food” on campus?
- How can you get involved on campus?
Growing Food Responsibly

Hour Two

Introduction

You cannot contemplate growing enough food for humans on the planet without considering how this food is grown. Humans have accomplished awesome feats with modern agricultural techniques, effectively thwarting Malthusian predictions of food shortages. However, this has not been without cost. Our agricultural productivity is dependent on monocropping techniques and tremendous amounts of petrochemical inputs to maintain productivity levels. As a result the waterways, lands, atmosphere, and the wildlife of this world have suffered. It is critical for us to grow food in a manner that will balance food production with ecological health.


- **Introduction:** This PEW Charitable Trust article conveys the dangers, real and potential, of antibiotic-resistant bacteria cause by the over application of antibiotics in industrial farm raised animals. The article helps convey how irresponsible applications of farm inputs can have negative consequences on human health and the economy.


- **Introduction:** In this NPR article, Abbie Swanson reports on a large scale US Geological Survey and EPA study that is attempting to determine what agricultural runoff is entering waterways, how that is affecting water quality, and its effect of water life. This article illustrates the uncertainty surrounding the consequences of our current agricultural practices.

Cary Fowler: One seed at a time, protecting the future of food (17:05)

- **Introduction:** In this TED Talk, Cary Fowler explores the loss of crop diversity. Fowler shares a glimpse of what crop diversity once was and what it has become. He then suggests the varieties of wheat, corn and rice we grow today may not thrive in a future threatened by climate change.
  - [http://www.ted.com/talks/cary_fowler_one_seed_at_a_time_protecting_the_future_of_food.html](http://www.ted.com/talks/cary_fowler_one_seed_at_a_time_protecting_the_future_of_food.html)

OR

- **Introduction**: This short FAO article addresses the relatively unknown and under addressed issue of domesticated crop extinction. The FAO estimates 75% of crop diversity was lost between 1900 and 2000. A genetically diverse crop bank has historically been used to cope with environmental stresses including drought, pest and disease outbreaks, and increases in salinity and have been used to create higher-yielding, faster growing crops. Considering the uncertainty surrounding future weather and pest and disease patterns associated with climate change, genetic diversity in domesticated crops is of paramount importance for sustaining a human population estimated to reach 9 billion people by 2040.


- **Introduction**: In this NPR article Marcelo Gleiser explores the link between GMOs and human and ecological health. The facts, there has been little to no scientific evidence suggesting GMOs cause harm when ingested. Citing scientific studies, Gleiser’s article raises an excellent questions, is all of GMOs bad press warranted?

Discussion Qs:

- Is there a right way to grow food?
- What tradeoffs should we consider when we think about reducing the use of harmful, yet effective (in the short run), inputs?
- What tradeoffs should we consider regarding the use or banning of GMOs?
- What can our campus do to address some of the issues outlined above?
- How will our campus begin making the shift from a contributor to the unsustainable food system to a member of a sustainable food system?
Affordability, Accessibility, Processing, Distribution and the Economics of Small Scale Farms

Hour Three

Introduction

The first half of this hour is dedicated to food equity and affordability. Ensuring everyone has access to fresh, healthy food is no easy task but it is a characteristic a sustainable food system should strive towards. As incidences of hunger increase throughout the world, America being no exception, it is becoming more important to understand where fresh food is not available and/or affordable and how to make it accessible in these areas. Increasingly in America these areas are urban centers. The follow articles and TED Talks explore the issue of “food deserts” (areas that lack access to affordable and fresh food) in urban settings. Included are links to businesses that are addressing urbanite access to fresh food.

The second portion of this hour is dedicated to broadly contemplating how small-scale farms work economically and logistically. Do local small-scale farms, farms associated with “sustainability”, make sense economically? How does food from small scale farms get to consumers? Both of these questions are explored in the articles below.


- **Introduction**: This NPR article explores the issues of “Food Deserts”, areas traditionally in urban settings that lack access to markets with fresh produce. Inhabitants are generally minorities and/or low income individuals. This story sheds light on the issues of equitable distribution and accessibility of the food we grow.

Ron Finley: A guerilla gardener in South Central LA (10:46)

- **Introduction**: Ron Finley plants vegetable gardens in South Central LA -- in abandoned lots, traffic medians, and along the curbs. He’s tackling food security issues while beautifying the neighborhood. Finley’s talk shows how urban agriculture can be an extremely powerful tool in tackling social issues as well as dietary ones.

Stephen Ritz: A teacher growing green in the South Bronx (13:42)

- **Introduction**: Similar to Ron Finley’s TED Talk, Stephen Ritz explores how urban agriculture can be used to empower those who traditionally have lacked economic and political power. Ritz uses urban agriculture as a way to engage students and propel them into higher education. This talk shows how growing food can act as a tool for social, economic, and political transcendence.


- **Introduction:** Both of these articles dive into the subject of the economic feasibility of local food. Allington’s piece concludes local food is not sustainable in an economic sense while Shute’s piece illustrates how small-scale farmers account for roughly $5 billion in annual sales and is growing.


- **Introduction:** In this news article, Beth Hoffman unpacks how food grown on small-scale farms gets from the soil to the consumer. The article raises questions as to how distribution services will scale down or emerge from the existing food distribution industry to meet a rising demand from producers and consumers for an efficient distribution service.


- **Introduction:** Hudson Valley Harvest (HVH) is a company that is developing a distribution model for local food. They package and freeze locally grown food only from farms that meet their standards for land stewardship and responsible sale, and distribute the food from the Hudson Valley to New York City. The labeling on the packaging states the farm the food was grown on and how far it traveled from the farm to HVH in Kingston, NY. The business model represents a convenient and more ecologically conscious means to supply fresh food to the general public year round.

**Discussion Qs:**

- How can equitable distribution and affordability of fresh food be ensured? Do you see urban agriculture playing an important role?
- How can our school help ensure the equitable distribution and affordability of food on campus and in the community?
- Considering the contradicting articles, discuss the economic viability of small farms.
The Movement Toward Sustainability

Hour Four

Introduction

Despite the perception that our food system is unsustainable, enlightened individuals are making considerable strides towards creating sustainable business and agricultural models. The TED Talks, articles, and company websites below represent positive steps towards the creation of a sustainable food system. Additionally, they represent a bar for other individuals and businesses to strive towards.

Dan Barber: How I fell in love with a fish (19:02)

- **Introduction:** In this TED Talk, Chef Dan Barber pushes the boundaries on ecologically responsible aquaculture. The Spanish aquaculture farm depicted represents a lofty bar for sustainable food initiatives to strive towards and Barber’s inquisitive journey to find truly sustainable food represents the considerable value shift in the human-food relationship that is necessary if we are to realize a sustainable food system.
- [http://www.ted.com/talks/dan_barber_how_i_fell_in_love_with_a_fish.html](http://www.ted.com/talks/dan_barber_how_i_fell_in_love_with_a_fish.html)

Allan Savory: How to fight desertification and reverse climate change (22:19)

- **Introduction:** In this TED Talk, Allan Savory presents a revolutionary cattle grazing technique that is not only ecologically sustainable, it is regenerative. In an attempt to uncover the effects of Savory’s methods in a controlled experiment, The Nature Conservancy is applying his technique on research grazing plots. While academics and industry leaders alike question Savory’s conclusions, it cannot be denied that a regenerative grazing model would be revolutionary. Considering the compromised health of nearly all of our agricultural ecosystems and the growing threat of climate change, regenerative agriculture is a field that deserves greater research attention.
- [http://www.ted.com/talks/allansavory_how_to_green_the_world_s_deserts_and_reverse_climate_change.html](http://www.ted.com/talks/allansavory_how_to_green_the_world_s_deserts_and_reverse_climate_change.html)


- **Introduction:** This article explores how holistic range management, a calculated cattle grazing technique fathered by Allan Savory, has the potential to be as close to a panacea regarding soil and grassland degradation as you can get but also has its problems and critics. While conventional wisdom suggests reducing the number of cattle/acre, these Midwestern farmers, on Nature Conservancy land, are applying a grazing style adopted from Allan Savory that runs more heads of cattle/acre on the land, mimicking the natural grazing patterns of bison.
Allan Savory’s TED Talk and Luke Runyon’s 2013 news article illustrate that sustainability is not always a clear road. Twists and turns are common and often sustainability initiatives must be tweaked and revised in order to be effective. This represents a critical reminder of the importance of healthy critique.

Arthur Potts Dawson: A vision for sustainable restaurants (08:49)

- If you’ve been in a restaurant kitchen, you’ve seen how much food, water and energy can be wasted there. Chef Arthur Potts-Dawson shares his very personal vision for drastically reducing restaurant, and supermarket, waste -- creating recycling, composting, sustainable engines for good (and good food).
- http://www.ted.com/talks/arthur_potts_dawson_a_vision_for_sustainable_restaurants.html

Marcel Dicke: Why not eat insects? (16:34)

- **Introduction:** Eating insects is a touchy subject in the US. The US food culture has written insects off the menu. Marcel Dicke suggests there’s no logical reason for this. Conversely, there are a plethora of reasons why we should be eating insects. They are cheaper to produce, are more environmentally friendly and more nutritious than beef.


AND


AND


- **Introduction:** Gotham Greens, Will Allen’s Growing Power, and Doucleff’s “Vertical Pink Houses” article are urban agriculture initiatives that showcase how urban agriculture can and does produce a considerable amount of food. These initiatives have implications for the production of food in cities, where over half the world’s population lives.

Discussion Qs:

- Should our campus be considering regenerative agriculture as seen in Dan Barber and Allan Savory’s TED Talks?
- When thinking about “sustainable agriculture”, why is it important we consider what we are sustaining?
- How do you believe Urban Agriculture as discussed in the last three articles can contribute to a sustainable agricultural system? How can it complicate that system?
Final Discussion Qs:

- What do you see as being the most pressing issues associated with the current food system?
- How will our campus begin making the shift from a contributor to the unsustainable food system to a member of a sustainable food system?
- What will be your initial steps to ensure our campus has a sustainable food system?
Additional Food for Thought...

The University at Buffalo’s Dr. Samina Raja, world renowned for her work exploring food security issues in the US and the founder of the only food systems planning research lab in the US, has outlined eight reasons why our current food system is, as she says, “broken”. Additionally, Dr. Raja has provided five ideas for creating sustainable food systems on University campuses. Dr. Raja’s insights are explored in the following text.

What’s wrong?

1. Where are all the processors and distributors?
   - Dr. Raja has metaphorically compared the number of farmers, processors and distributors, and retailers in New York to an “hourglass”. The many farmers in the top portion of the hour glass feed into a very small pool of processors and distributors in the middle, constricting the ability of local produce to get to the many retailers (and subsequently consumers) in the large, bottom portion of the hourglass. This constriction hinders the progress of the local food economy. Food is being grown locally but most is not making it through the very narrow portion of the hour glass (processors and distributors) and therefore must be processed and distributed by other means.

2. Farmers don’t receive enough money!
   - Simply put, farmers only receive 12 cents on the dollar. So, for instance, for every dollar worth of beans that are sold, the farmer that grew those beans receives only 12 cents. This skewed revenue distribution acts not only as a barrier of entry to local markets but also as a barrier of entry to individuals attempting to join the farming side of the local food industry.

3. Where is fresh food distributed?
   - There is an increasingly evident disparity between different races and social classes and the exposure to fresh foods they received. As a generality, a white individual is much more likely to be exposed to fresh foods and less likely to be exposed to traditional “junk foods” whereas a black individual is much less likely to be exposed to fresh foods and much more likely to be exposed to traditional “junk foods”. This trend holds true based on income level as well. The statistically “poor” are much less likely to be exposed to fresh foods and much more likely to be exposed to “junk foods”.

4. Marketing is where the money is.
   - There is a stunning amount of money spent on marketing food in comparison to food education. Just three companies, the makers of Coke, M&Ms and Wrigley gum, spend $371,400,000 in marketing per year whereas the entire food education campaign struggles to reach $300,000,000. This creates an artificial demand for products that your body doesn’t need while simultaneously decreasing the effectiveness of food educational campaigns.
5. Profit over health
   - Amazingly, there is an overarching trend where highly nutritious foods realize low profits whereas low nutrition foods are highly profitable. So, companies are making more money selling food people’s bodies are essentially unable to use than companies selling foods that ensure a healthful body and mind.

6. Detrimental environmental effects
   - Simply put, the practices used to grow food aren’t sustainable in the least. Current techniques are causing biodiversity loss on a continental scale and are generally dependent on large inputs of petrochemicals, herbicides, pesticides and fungicides resulting in non-point source pollution. Amazingly, agriculture and associated activities account for 30% of the world’s carbon emissions. Growing food is destroying the ecological integrity of the planet.

7. Where are the fruits and veggies?
   - People aren’t eating nearly enough fruits and vegetables. This trend is taking its toll on public health. Obesity is now considered an epidemic by the Centers for Disease Control and Prevention. The Surgeon General warns that obese individuals have a 50 to 100% greater risk of premature death than those that are not obese yet US obesity percentages are consistently among the world’s highest.

8. Who is tackling the issues?
   - Well, to answer the question above, no one. No one is taking the responsibility of mending the food system in its entirety. Even with growing movements like Locavore, Organic, and Slow Food, there isn’t enough attention being paid to the system as a whole and the minutia that are so important to a functioning sustainable food system like ample processors and distributors!

**A solution?**

The broken food system can seem overwhelming. However, there are concrete steps you can take to heal our school’s food system. Dr. Raja has outlined five ideas to do just this.

1. Integrate the campus’ food system
   - Take the landscaping budget and use it to plant edible plants around campus. The campus will be beautiful and edible! Edible landscaping also serves as an educational tool for the administration, faculty, students, and community.

2. Demonstrate food sustainability on campus!
   - Secure a considerable amount of land on campus for a farm; not just a garden. The farm is an educational tool and produces a considerable amount of food! In addition to securing land for a farm, acquiring as much food as possible from within 30 miles demonstrates an ambitious and necessary commitment to sustainability.
3. Educate, educate, educate!
   - Education is an amazing tool. However, it can be even more effective if you educate the right people first to ensure the push for a sustainable food system is effective. Dr. Raja suggests educating the administration, faculty, students, and then community, in that order. Decisions are made by the administration and then cascade downward. Gaining administrative and faculty buy in can mean the difference between a successful and unsuccessful sustainable food system campaign.

4. Assessment
   - Assessing the sustainable food system movement on campus is extremely important. An assessment provides crucial information for gauging progress, showcasing improvements, discovering trends, and identifying potential issues. When measuring, make sure you use tangible measurements! Simplicity and clarity are extremely important.

5. Sustaining the sustainable food system?!
   - None of your work will matter if the “sustainable food system” breaks down, rendering it...unsustainable. Make sure there is accountability to the system throughout the administration, faculty, students, and community. This increases the probability that the sustainable food system will become an indispensible part of campus and the surrounding area.

What can you do?

1. Be an informed consumer and support local food producers, processors, and distributors.
   a. Push to leverage our campus’ predictable food purchases and enter into purchasing agreements to buy food that is grown, processed, and distributed locally in an environmentally and socially responsible manner.
   b. Purchase less meat

2. Grow your own food
   a. Work to establish a garden and/or farm on campus to help supplement local food orders. The garden/farm should represent an attempt to balance considerable food production with a robust and healthy garden ecosystem.

3. Promote healthy student eating habit patterns through education and improved on-campus access to healthy and ecologically sustainable foods.
   a. Increase the availability of fresh vegetables and number of vegetarian options.
   b. Purchase/consume meat only to ensure protein requirements (and substitute with ecologically sustainable non-animal protein wherever possible)
Moving Forward

The SUNY Office of Sustainability is working to leverage the predictable food purchases of SUNY institutions to support local agriculture and the processing, manufacturing, distribution, and business centers necessary to create a viable sustainable food system in New York. The Office of Sustainability and participating SUNY institutions are moving forward with “SUNY Commits to New York State Agriculture” with a Pizza Sauce pilot program. The Pizza Sauce pilot entails SUNY institutions agreeing to purchase a fixed amount of pizza sauce made and shipped entirely by local farms and businesses. This pilot allows the Office of Sustainability and participating SUNY institutions to learn from the experience and adaptively manage larger-scale purchasing strategies moving forward. In addition, the pilot serves as a market indicator for local businesses showing a growing demand from a reliable source (SUNY institutions), suggesting the supply should grow (Local farms, processors, manufacturers, and distributors).

If you would like to explore the local food options available to our college please see the Department of Agriculture’s “Farm Fresh Guide” here: http://www.agriculture.ny.gov/AP/FFGSearch.asp.

The Food Sustainability Informational Campaign provided by the SUNY Office of Sustainability.
Questions? Contact Adam Costello at Adam.Costello@suny.edu.