

# *Why Vertical Farming*



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Presented by

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*University of Maryland Conference Center 2012*

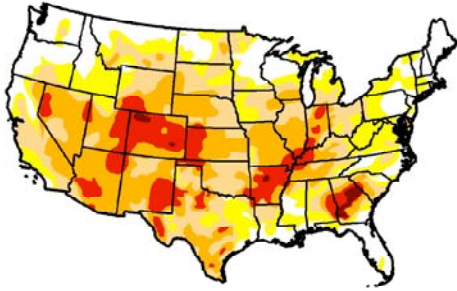


# ***Pressing Issues***

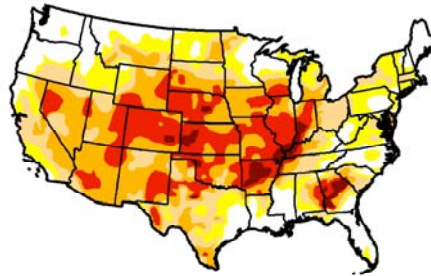
- A. 7 billion mouths to feed
- B. Climate changes are altering the agricultural landscape
- C. Food borne illnesses are on the rise
- D. Drinking water is becoming scarce in many places
- E. More crops are failing due to plant pathogens and insect pests
- F. Half of the world goes to bed hungry every night
- G. Half of the world harbors 80% of the intestinal worm infections

Many of these issues have had a negative impact on crop production

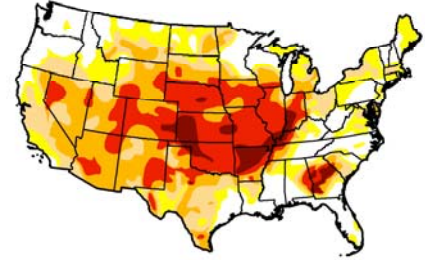
# ***U.S.A. Drought 2012***



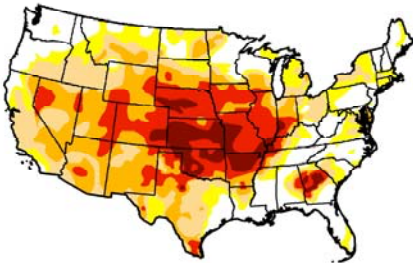
July 10



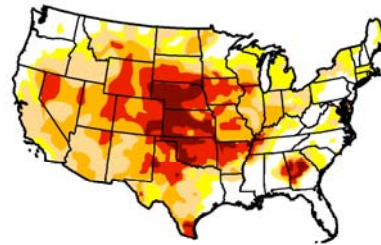
July 24



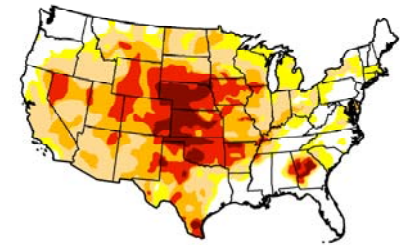
August 7



August 21



September 4



September 18

***Estimated \$20 billion in crops lost in 2012  
due to drought\****

Corn

Soybeans

Wheat

Sorghum

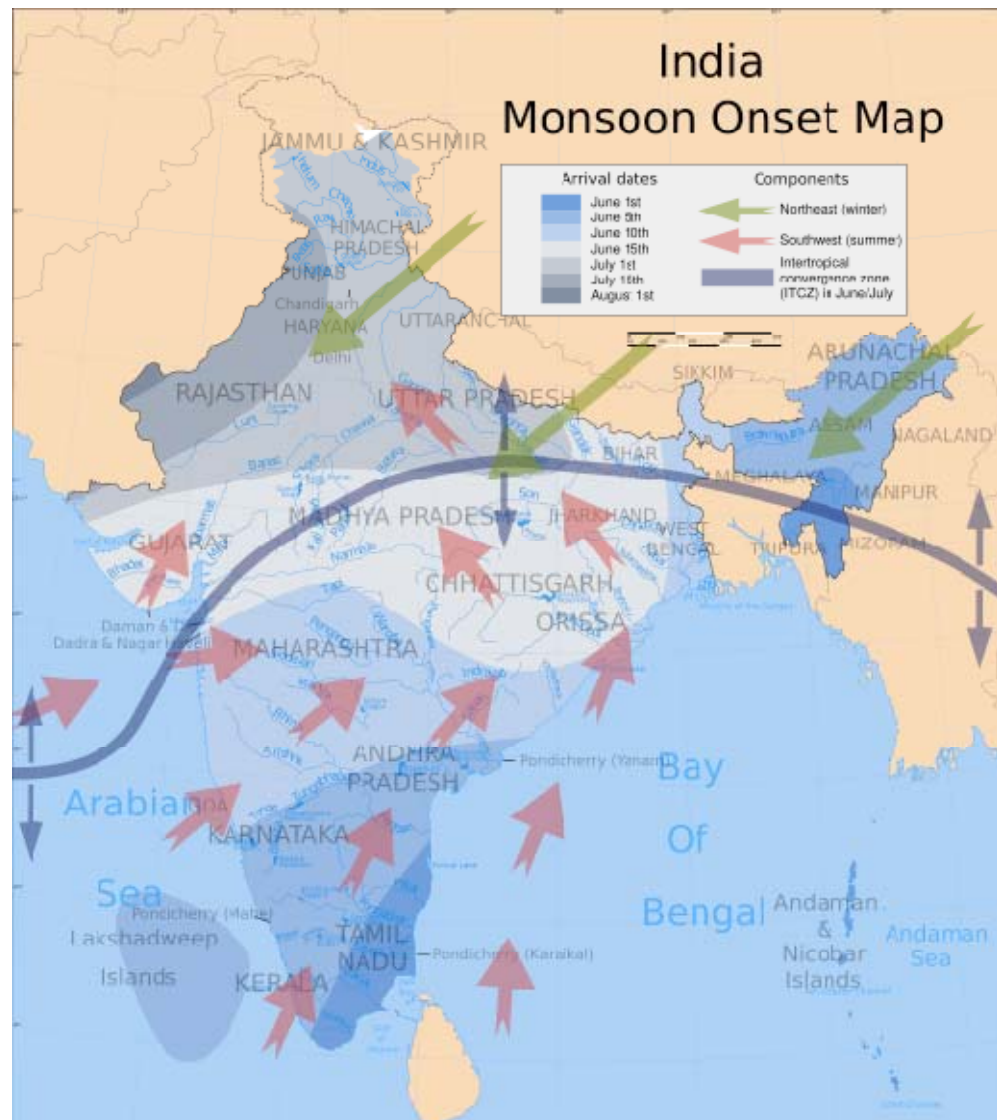
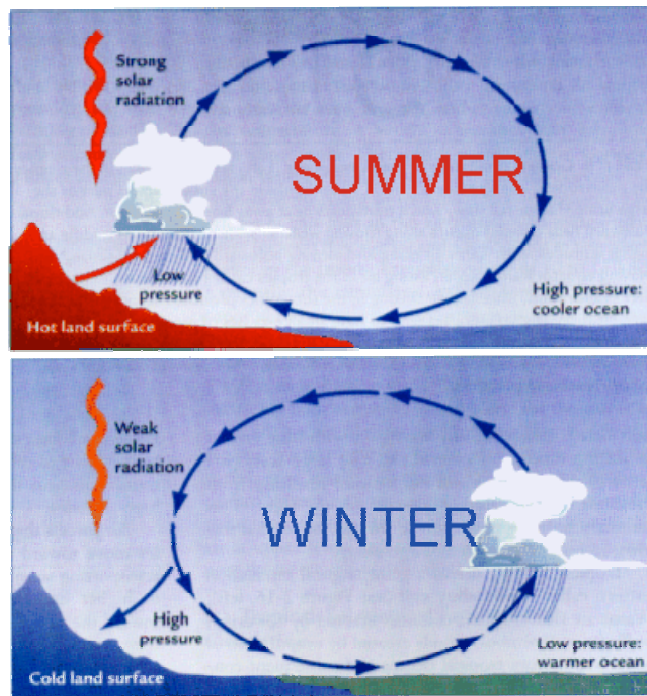


\*USDA



# Monsoons and India

*“Too much, too soon”*



## Wheat Rust



## Rice Blast

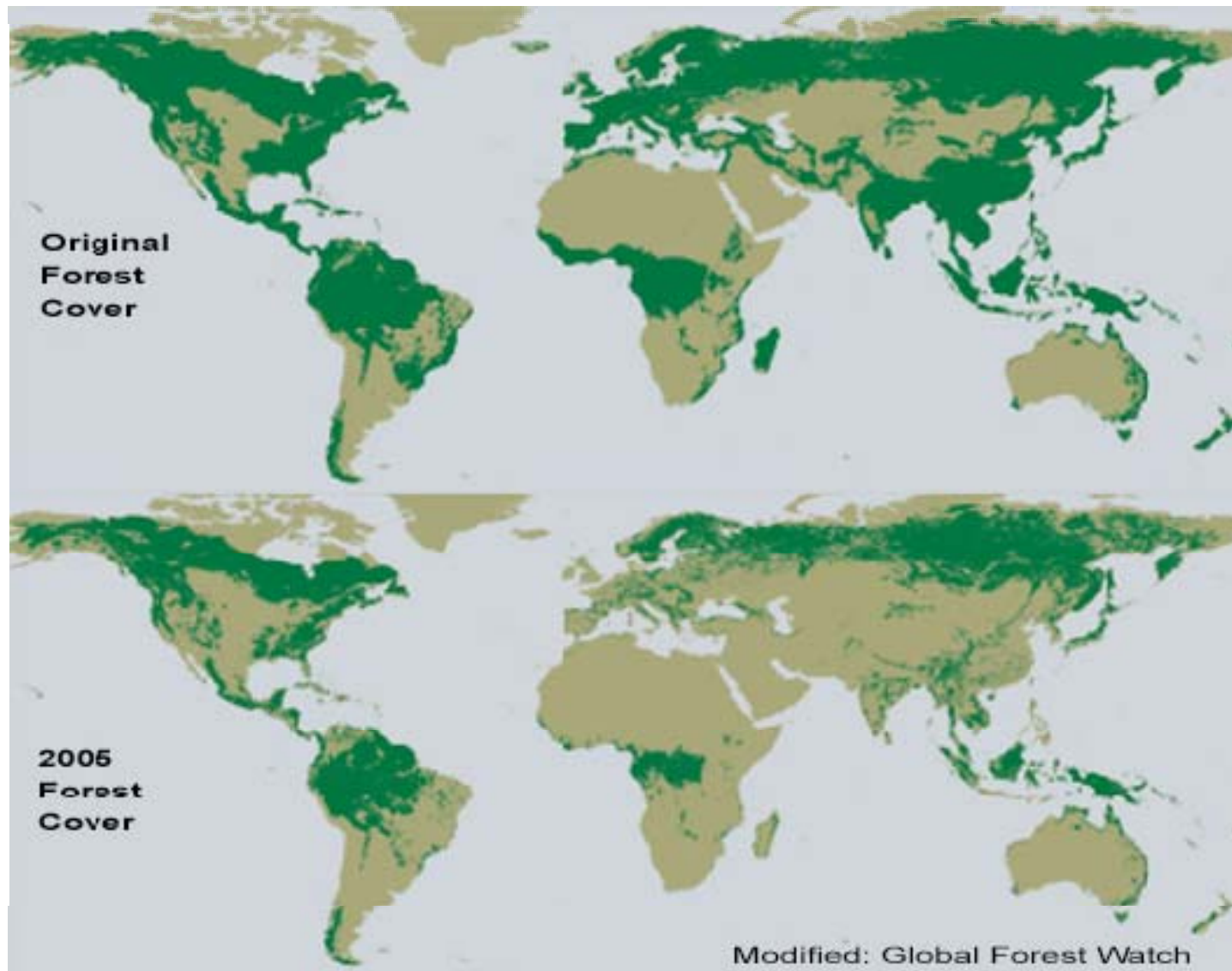


125 million tons of: Potatoes, rice, wheat, corn, soybeans  
destroyed per year\*

\*FAO statistic

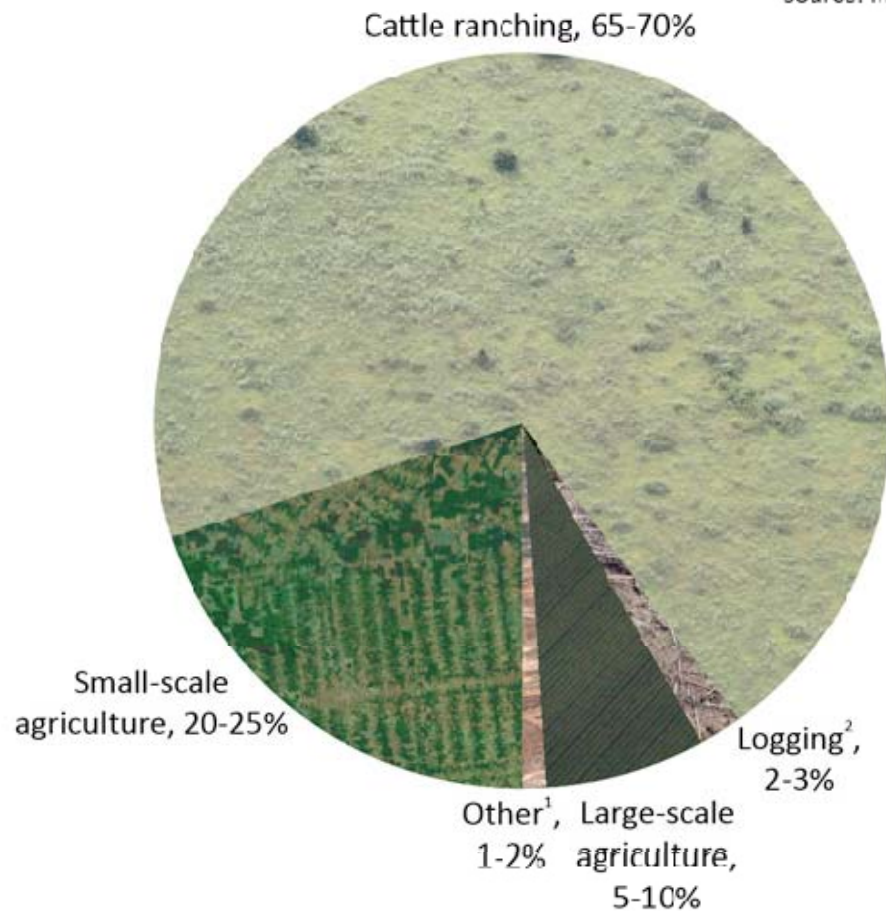


# ***Deforestation***



## Causes of Deforestation in the Brazilian Amazon, 2000-2005

source: mongabay.com



Share of deforested land ultimately converted for extensive agriculture<sup>3</sup>



1) Other includes fires, mining, urbanization, road construction, dams; 2) Logging generally results in degradation rather than deforestation, but is often followed by clearing for agriculture; 3) Data from Holly Gibbs 2009

## ***More issues:***

Food Miles

Crop loss due to shipping and storage

Winter

No soil (Middle East, Iceland, Australia)

Floods



**Confluence of Mississippi and Missouri Rivers, August 1993. Extensive floods in the Mississippi River Basin during the spring and summer of 1993 caused \$20 billion in damages. (Photograph, Srenco Photography, St. Louis, Mo.)**

Alternatives to traditional agriculture abound



# Some Are Outdoors





# Urban Indoor Farming Is On The Rise



Gotham Greens Headquarters. Brooklyn, New York

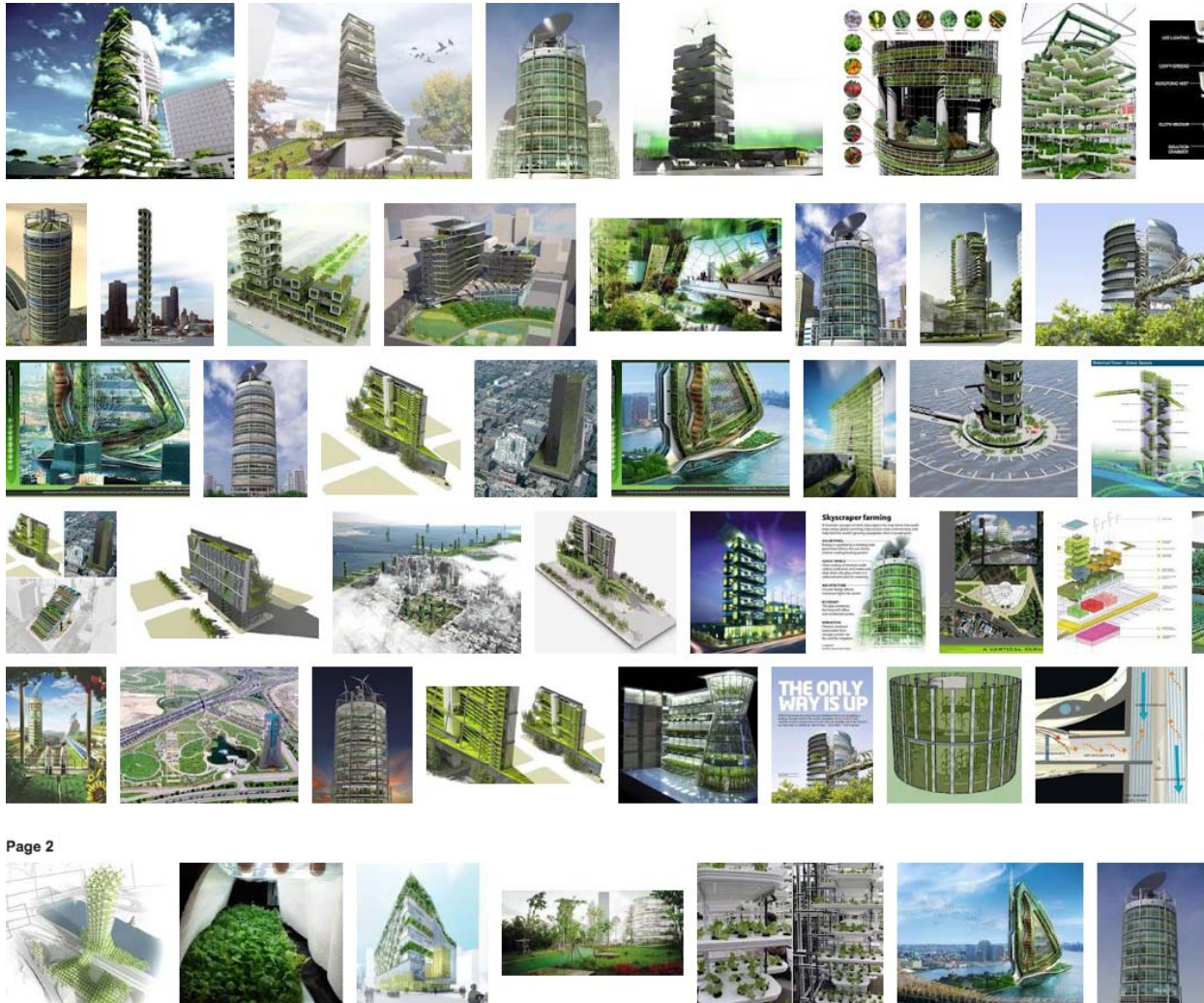
So, why not increase production by going vertical?



This idea has become viral







7,610,000 “hits”, Sept. 20, 2012

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The Vertical Farm Project - Agriculture for the 21st Century and ...

www.verticalfarm.com/

Vertical farms, many stories high, will be situated in the heart of the world's urban centers. They offer the promise of urban renewal, sustainable production of a ...

Agriculture for the 21st - Growing Concerns - Learn More - Get the LED Out

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Vertical farming - Wikipedia, the free encyclopedia

en.wikipedia.org/wiki/Vertical\_farming

From Wikipedia, the free encyclopedia. Jump to: navigation, search. **Vertical farming** is a concept that argues that it is economically and environmentally viable to ...

Architectural precedence and ... - Advantages - Technologies and devices - Plans

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Images for vertical farm - Report images

Vertical farming: Does it really stack up? | The Economist

www.economist.com/node/17647627

Dec 9, 2010 – WHEN you run out of land in a crowded city, the solution is obvious: build upwards. This simple trick makes it possible to pack huge numbers of ...

New Interest in Vertical Farms for Urban Areas - NYTimes.com

www.nytimes.com/2008/07/15/science/15farm.html

Jul 15, 2008 – The idea of a “vertical farm” has captured the imagination of several architects and city planners who envision skyscrapers as farms.

HowStuffWorks "Will there be farms in New York City's skyscrapers?"

science.howstuffworks.com/.../issues/vertical-farming.htm

Vertical farming is a method of large-scale farming in an urban environment. Learn about the benefits of a vertical farm and vertical farming technology.

Newark Vertical Farm

www.weberthompson.com › Portfolio › On The Boards

The Newark Vertical Farm represents not only the next generation for Urban ... More than just a Vertical Farm, it is a research and development program for ...

28, 700,000 “hits”, Sept. 20, 2012



***Until finally some were built***



# ***Vertical Farms***

Korea

Japan

Singapore

Sweden

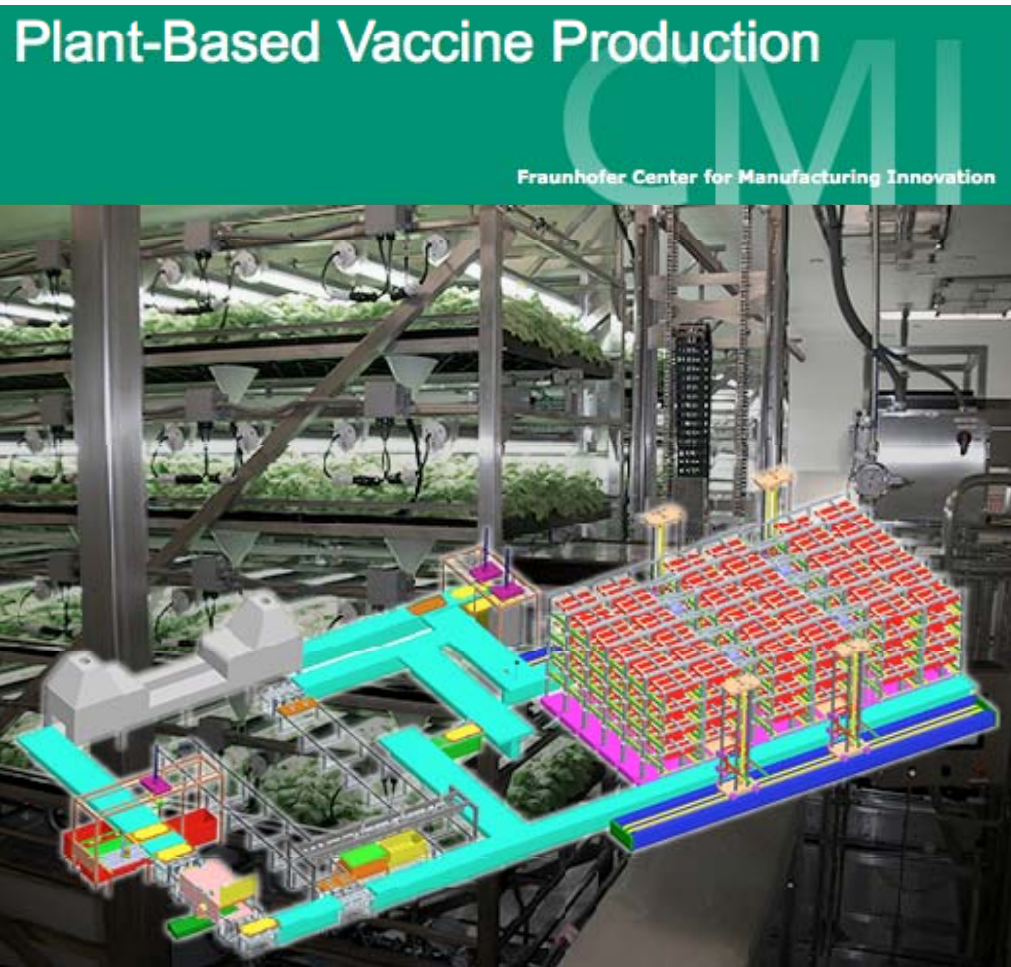
U.S.A.



***.....and its not all about food!***



Lumitex LEDs



Texas Plant-Expressed Vaccine Consortium  
San Antonio, Texas

***The more we farm vertically, the less outdoor farming will necessary***



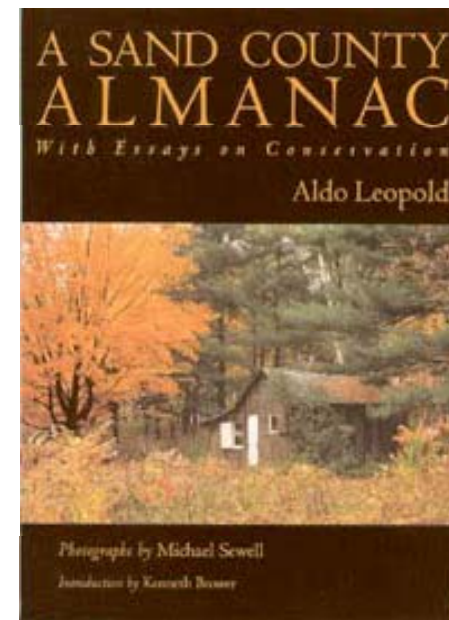
# Fewer outdoor farms means more hardwood forests can grow back



Hubbard Brook Project

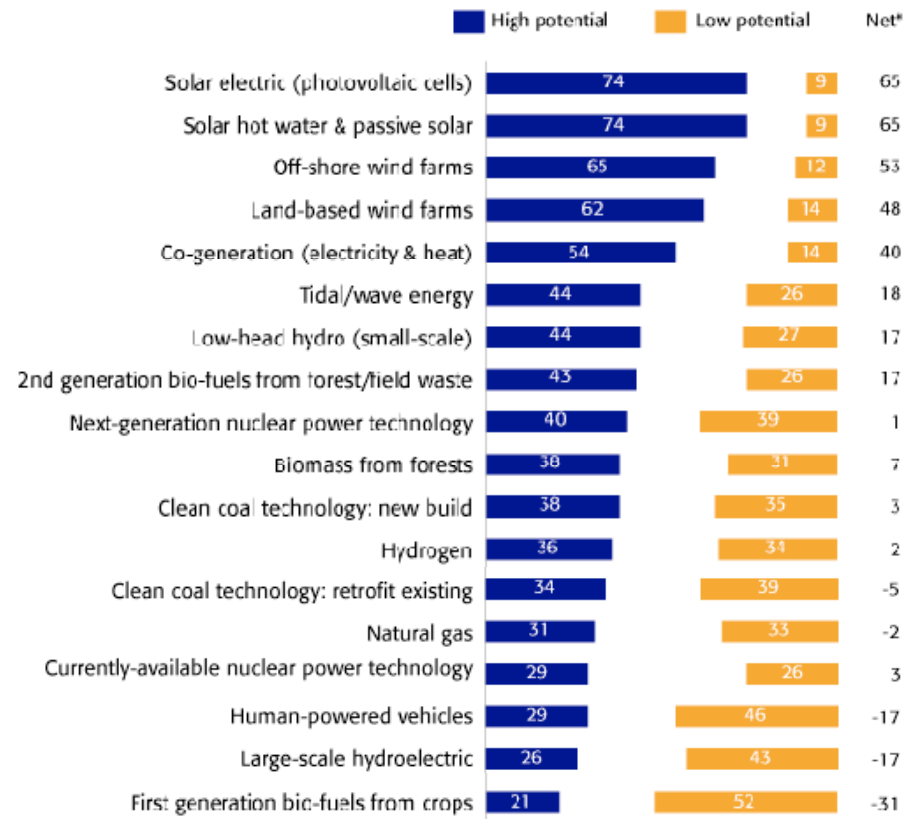


DMZ



## Rating Energy Technologies' Potential to Lower Atmospheric Carbon Levels

<sup>1</sup>High Potential (4+5)" vs <sup>2</sup>Low Potential (1+2)," Over Next 25 Years



\*High potential (4+5) minus <sup>2</sup>Low potential (1+2)"

The white space in this chart represents "average potential (3)" and "DK/NA."



Because,.....

...in the end,...



...its all..





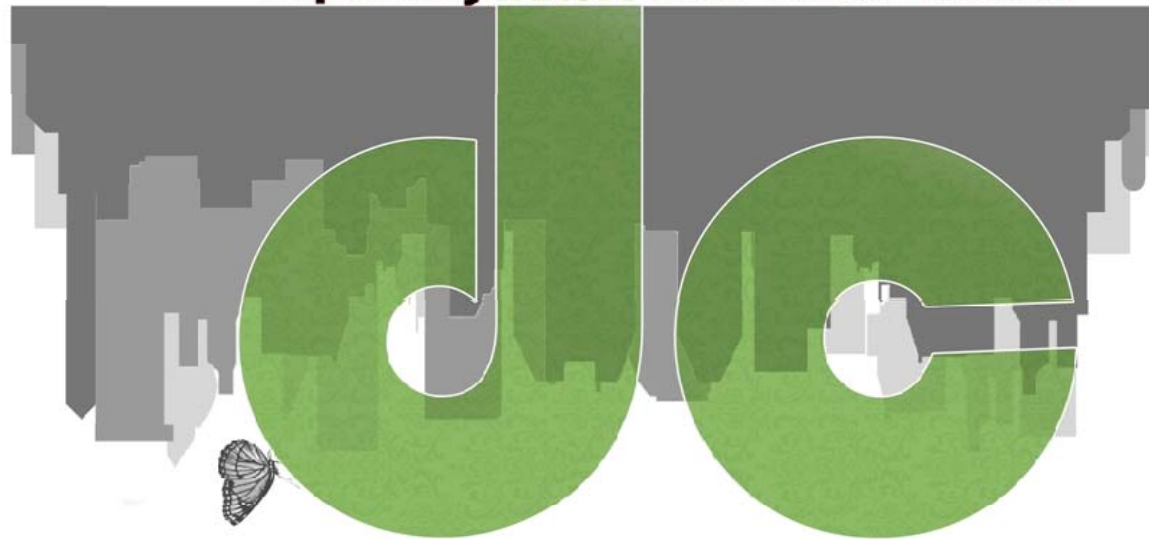


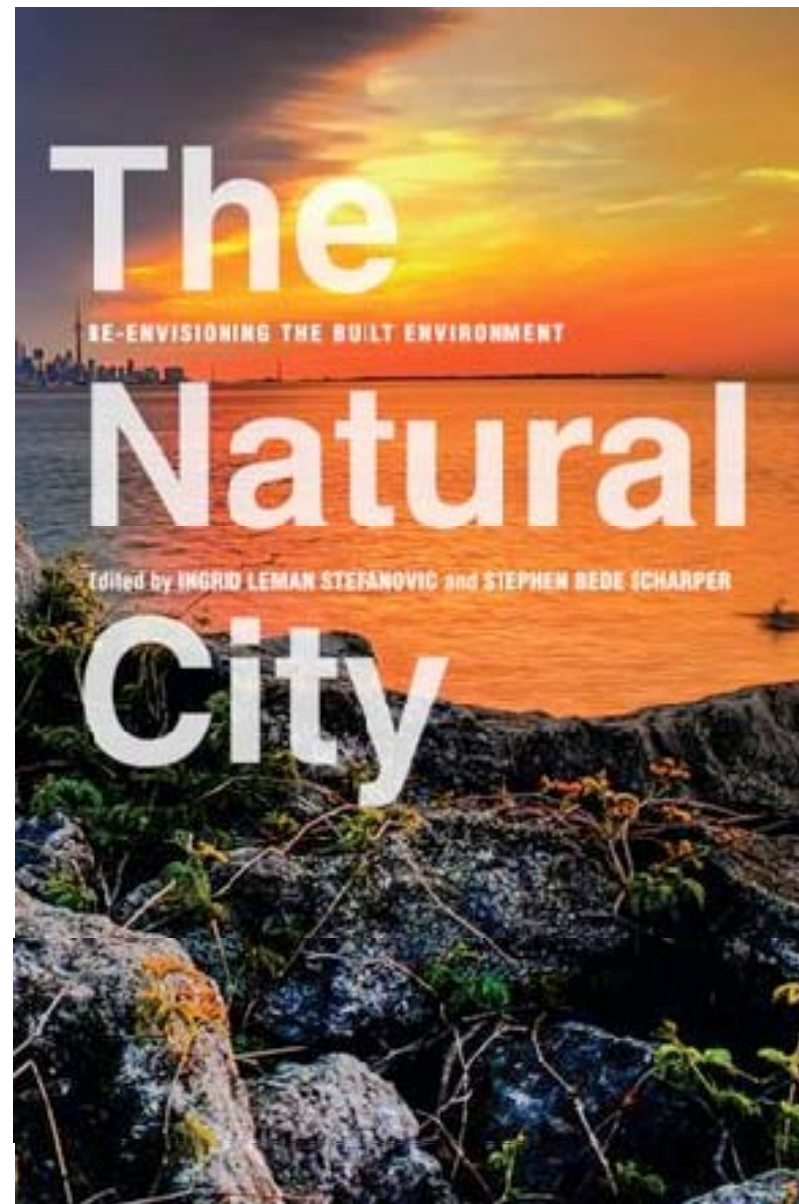
...about...





emphasizing **nature** in the built environment





The

RE-ENVISIONING THE BUILT ENVIRONMENT

Natural

Edited by INGRID LEMAN STEFANOVIC and STEPHEN BEDE SCHARPER

City





**A COMMUNITY  
OF POSSIBILITIES**



What do we still need to learn in order to make vertical farming  
an affordable reality?

That is the theme of this conference!

***Thank You***