




VERTICAL FARMING is growing up!

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THE CHALLENGE:

Feed an additional 3 billion people from a finite supply of farmland!

CHEAPER – BETTER – SAFER

Pick Two

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THE SITUATION

- To feed the current world population of 8.1 billion people, we currently farm a landmass the size of South America
- If the world population reaches 9.7 billion by 2050, and we endeavor to feed each human 1,500 calories per day, we would need to add farmland equal to the size of Brazil
- Currently, nearly half of the population is urban
- By 2050, projections are that two-thirds will be urban

Source: United Nations Population Division

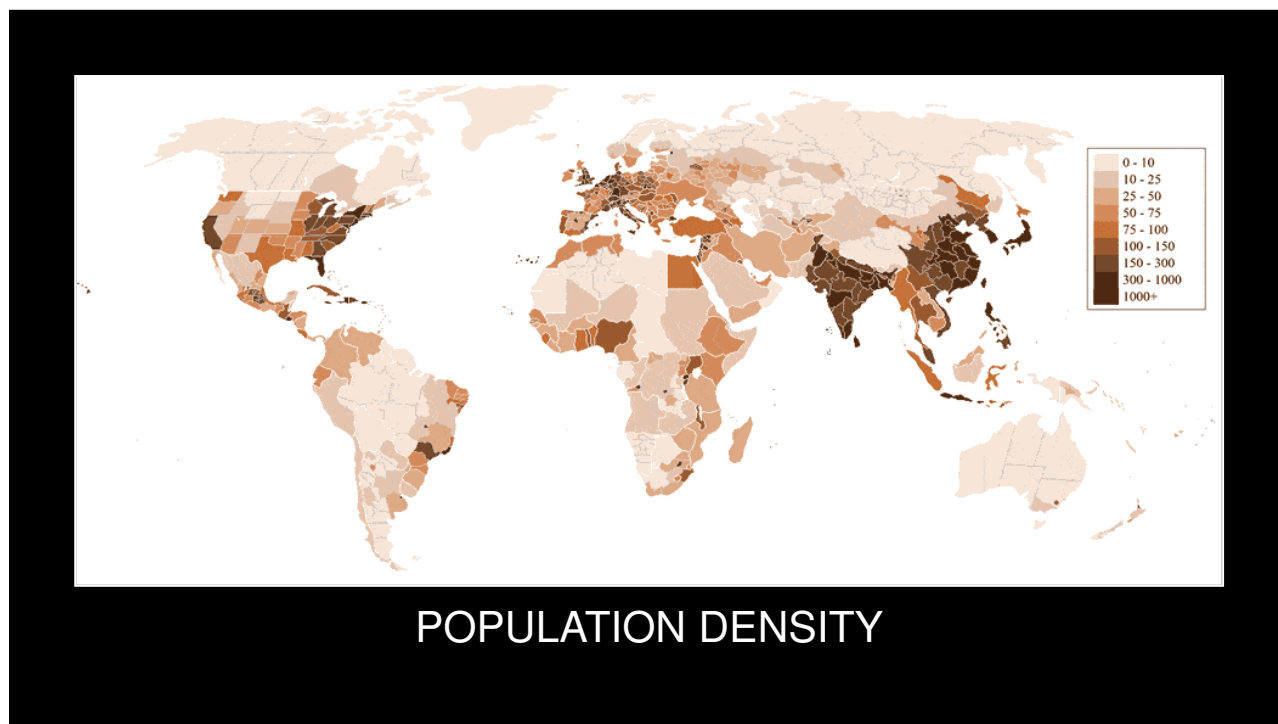
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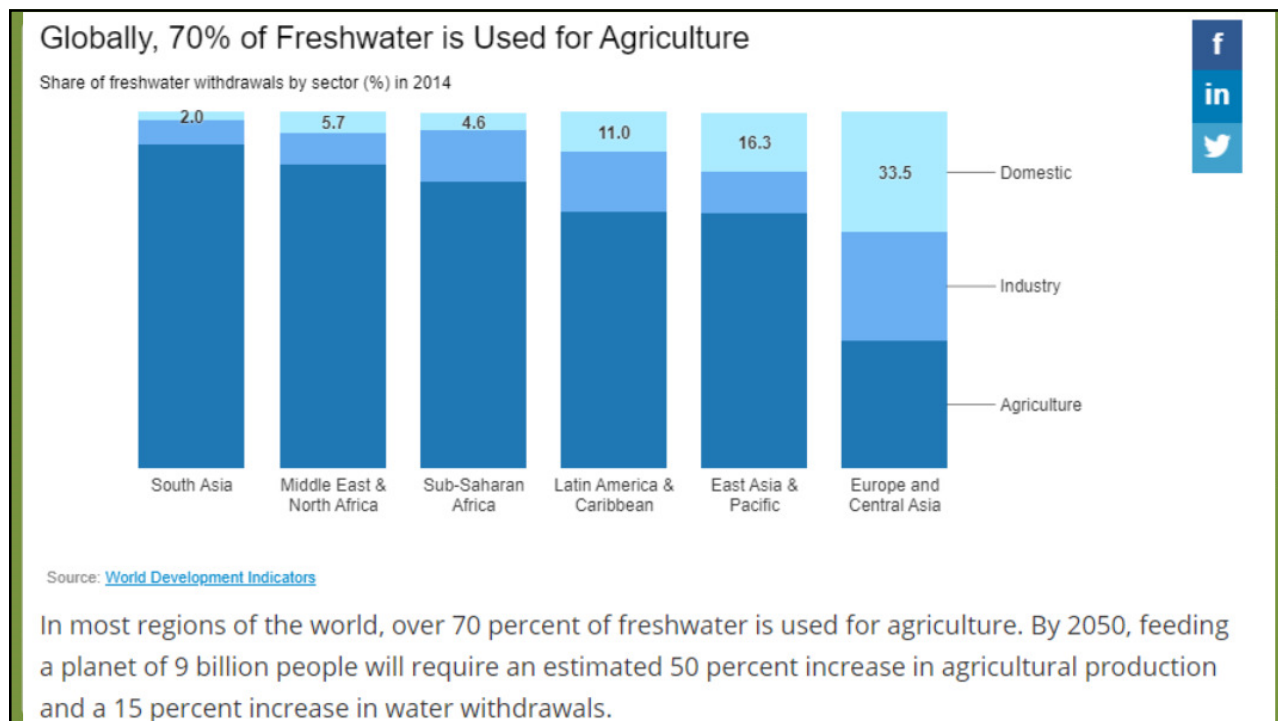
SOME FACTS

- It took all of human history for the world population to reach **1 billion** people, around 1804
- The second billion was achieved in 130 years (1930)
- The third billion was achieved 30 years later (1960)
- The fourth billion occurred in 15 years (1974)
- The fifth billion occurred in 13 years (1987)
- During the 20th century ALONE, world population grew from 1.65 billion to 6 billion
- In 1974, there were roughly half as many people as there are now
- GOOD NEWS – the growth rate is near an historical LOW

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We're all downstream!

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WASTE NOT, WANT NOT

- According to the USDA, over 50% of all crops planted in the U.S. never reach the plate of a consumer
- Worldwide, it is believed that 70% of planted crops never reach the harvesting stage



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OH FARMER, WHERE ART THOU?

- In the 1930s, 6 million people listed their occupation as farmers (including their immediate families)
- Today, just 1.3% of the U.S. population is employed in farming (around 2.6 million people)
- In the 2020 census, “farmer” probably won’t even be listed as an occupation (and yet it was)
- Likely, technology and increased productivity leads to less people being needed



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ENTER THE “VERTICAL FARM”

...the practice of growing crops in vertically stacked layers. It incorporates such other practices as Controlled-Environment Agriculture (CEA), which aims to optimize plant growth and soilless farming techniques such as hydroponics, aquaponics and aeroponics.



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THE BASICS

<https://youtu.be/suYcri3Fzcl>



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TYPES OF VERTICAL FARMS


- Building-based
 - Roof top
 - Side
 - Stand-alone
- Shipping container
- Underground (deep)



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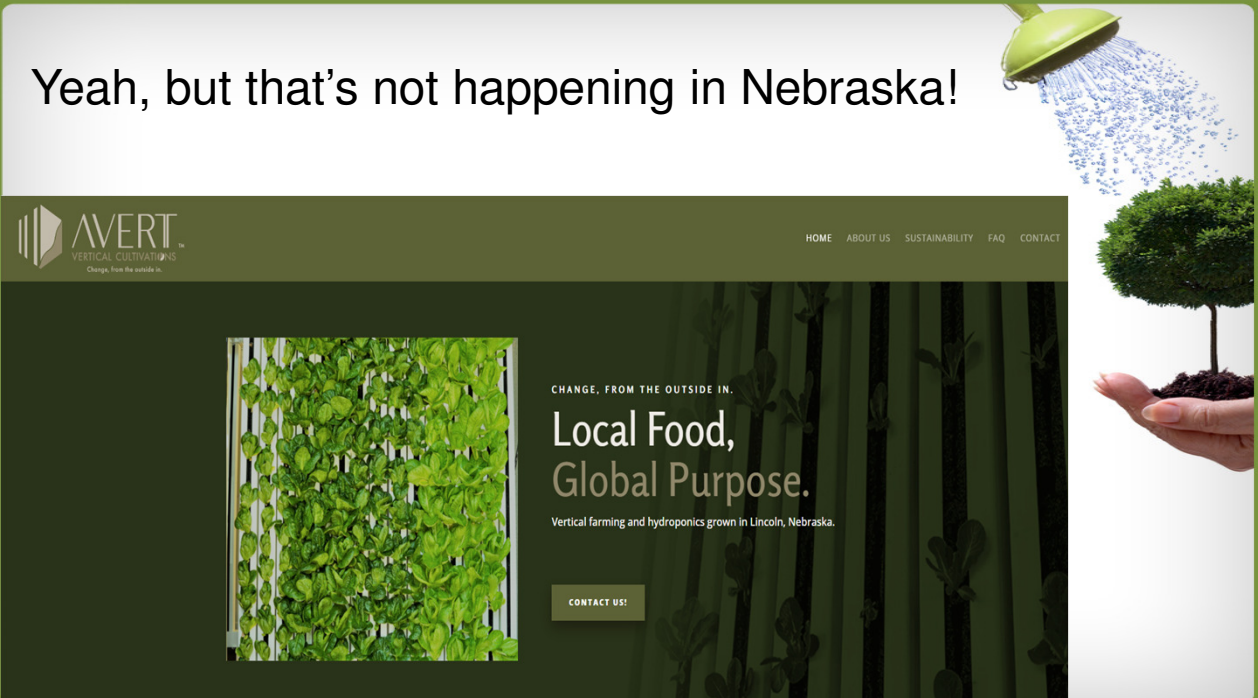
Yeah, but that's not happening in Nebraska!

<https://youtu.be/2DO8eDHMEhM?si=0sNnEO-pFjX4dDFq>

A hand is shown holding a small, perfectly rounded tree with dark soil. A green showerhead is positioned above the tree, spraying a stream of blue water onto it. The background is a plain, light color.

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Yeah, but that's not happening in Nebraska!

A screenshot of the AVERT website. The top navigation bar includes 'HOME', 'ABOUT US', 'SUSTAINABILITY', 'FAQ', and 'CONTACT'. The main content area features a vertical stack of green leafy plants in a hydroponic system. Text on the page reads: 'CHANGE, FROM THE OUTSIDE IN.', 'Local Food, Global Purpose.', and 'Vertical farming and hydroponics grown in Lincoln, Nebraska.' A 'CONTACT US!' button is visible at the bottom.

CHANGE, FROM THE OUTSIDE IN.


Local Food, Global Purpose.

Vertical farming and hydroponics grown in Lincoln, Nebraska.

CONTACT US!

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Yeah, but that's not happening in Nebraska!



OUR MISSION

At FarmBox Foods, we strive to change the way the world farms by connecting communities to sustainably sourced, locally grown food, year-round. With a focus on producing environmentally conscious and future-oriented food systems, we seek to end food inequality with our innovative and eco-friendly farms.

FarmBox Foods
 (800) 946-1723
 info@FarmBoxFoods.com

QUICKLINKS

- Gourmet Mushroom Farm
- Vertical Hydroponic Farm
- Hydroponic Fodder Farm
- Automation software
- In The News
- Container Farm Financing
- Logistics
- Contact Us

JOIN THE LIST!

SUBSCRIBE

© 2024 Hydroponic Container Farms and Mushroom Farms – Farmbox Foods / website by digital warlock

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Caesars Forum LAS VEGAS
 March 11-12, 2024


INDOOR AG-CON

THE **LARGEST** VERTICAL FARMING/CONTROLLED ENVIRONMENT AGRICULTURE GATHERING

IDEAS GROW HERE

Learn from 70+ speakers, including CEOs, growers, academics, investors & other thought leaders.

Network with potential partners, including suppliers, growers, investors, growers



Were you there?

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TEN BENEFITS OF VERTICAL FARMING

1. Increased crop yield due to year-round operation
2. No weather-related crop failures
3. No soil erosion or agricultural run-off
4. Minimal need for chemicals (pesticides, herbicides, fertilizers)
5. Reduced need for water (70-95% reduction) and purification
6. Lower transportation costs and less time to market
7. More control of food safety and security
8. New employment opportunities
9. Reduced spoilage and waste
10. Ecosystem restoration



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Increased Yield



Not at the mercy of nature




Plant any crop, any time,
anywhere




Take advantage of market
conditions – extract the
highest price

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No weather-related crop failures


 Don't have to pray for rain, sunshine, warmth because you control it ALL


 No floods, droughts, tornadoes, hailstorms, hurricanes or high winds


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No soil erosion or run-off

 According to the USDA, "agricultural nonpoint source pollution is the primary cause of pollution in the U.S."

 No soil – nothing to erode or degrade

 Water is recycled in a closed-loop system

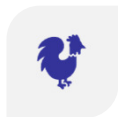
 No damage to surrounding ecosystems and industries (e.g., fishing)

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Minimal need for chemicals



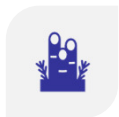
NO UNWANTED
"DINERS" – INSECTS,
MICROBIAL
PATHOGENS, ETC.



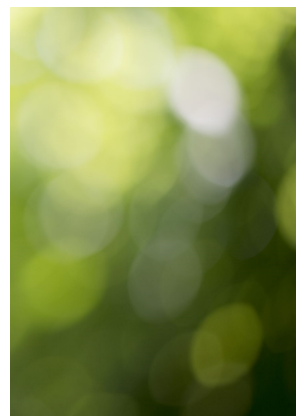
NO WORRY ABOUT E.
COLI OR
SALMONELLA



A "CLEAN"
ENVIRONMENT



PLANTS WILL
RECEIVE NUTRIENTS
NEEDED BY THE
PLANT – AND US



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Reduced need for water and purification



Up to 95% reduction in water
use



Water is recycled in a closed-
loop system



Grey water can be purified
into drinking water

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Less time to market and lower transportation costs



Local is what is being demanded by consumers



Average trip across the country is 1,500 miles



Food begins to degrade the minute it is harvested

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More control of food safety and security



The next terrorist threat?



Construction can ensure safety



Workers will be screened and "cleaned"



Outside we control nothing, inside we control everything

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New employment opportunities

- MANAGERS
- INDOOR CONTROLLED-AGRICULTURE SPECIALISTS
- WASTE-TO-ENERGY SPECIALISTS
- FARMWORKERS FOR PLANTING, MONITORING, HARVESTING, SORTING, SELLING

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Reduced spoilage and waste

- FOOD THAT TRAVELS LESS, STAYS FRESH
- WASTE IS MINIMIZED AND CAN BE RECYCLED

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Ecosystem restoration

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No need for vertical farms to “lie fallow”


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What was cleared to make land farm-able can be restored

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CHALLENGES

- Uneven light when growing in layers
- Use of energy to produce artificial light / heat / air circulation
- Energy consumed to “rotate” crops
- Use of non-renewal energy
- High start-up costs
- Lack of profitability
- Sustainability
- Pollution



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VERTICAL FARMING METHODS

- Hydroponics

Water-based growing method that does not require the use of traditional soil – nutrients are provided to the plant root system via water

CASE STUDIES

<https://www.youtube.com/watch?v=bRyBKWqLzI8>



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VERTICAL FARMING METHODS

- Aquaponics

Combining hydroponics with raising fish, seafood, poultry and other animals in a “closed-loop” system that is sustainable by both and ecologically balanced

CASE STUDY

<https://www.youtube.com/watch?v=hyLbDOMgtcA>



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VERTICAL FARMING METHODS

- Aeroponics

Nutrients are provided not through water, as in hydroponics, but through air, reducing water consumption by as much as 90% versus traditional farming

CASE STUDY

https://www.youtube.com/watch?v=ME_rprRImMM



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VERTICAL FARMING METHODS

- Controlled-Environment Agriculture (CEA)

Greenhouse-based growing areas that control air, temperature, light, water, humidity, CO2 and plant nutrition

CASE STUDY

<https://www.youtube.com/watch?v=8J03YCoysmc>



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INSURANCE IMPLICATIONS

- Property Coverage
 - Buildings
 - Business Personal Property
 - Business Income and Extra Expense
 - Other
- Liability Coverage
 - Premises
 - Operations
 - Products
 - Product Recall
 - Other



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INSURANCE IMPLICATIONS

- Auto Coverage
 - Liability
 - Physical Damage
- Workers Compensation
- Farm
- Inland Marine
- Environmental
- Professional Liability
- Other



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