



LOCAL PRODUCE

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2011

NYSERDA EMEP  
Presentation

MORE INFO: [GOTHAMGREENS.COM](http://GOTHAMGREENS.COM)



**Sustainable Controlled Environment Agriculture:  
An Agricultural Model for a Changing World**

**NYSERDA EMEP Conference**

**November 16, 2011**

**Albany, New York**

**Viraj Puri**

**Co-Founder & CEO**

**Gotham Greens**











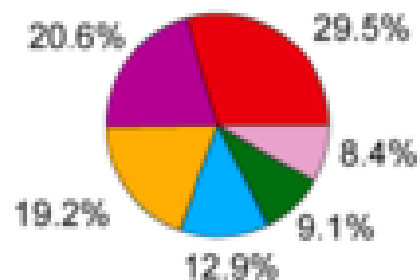
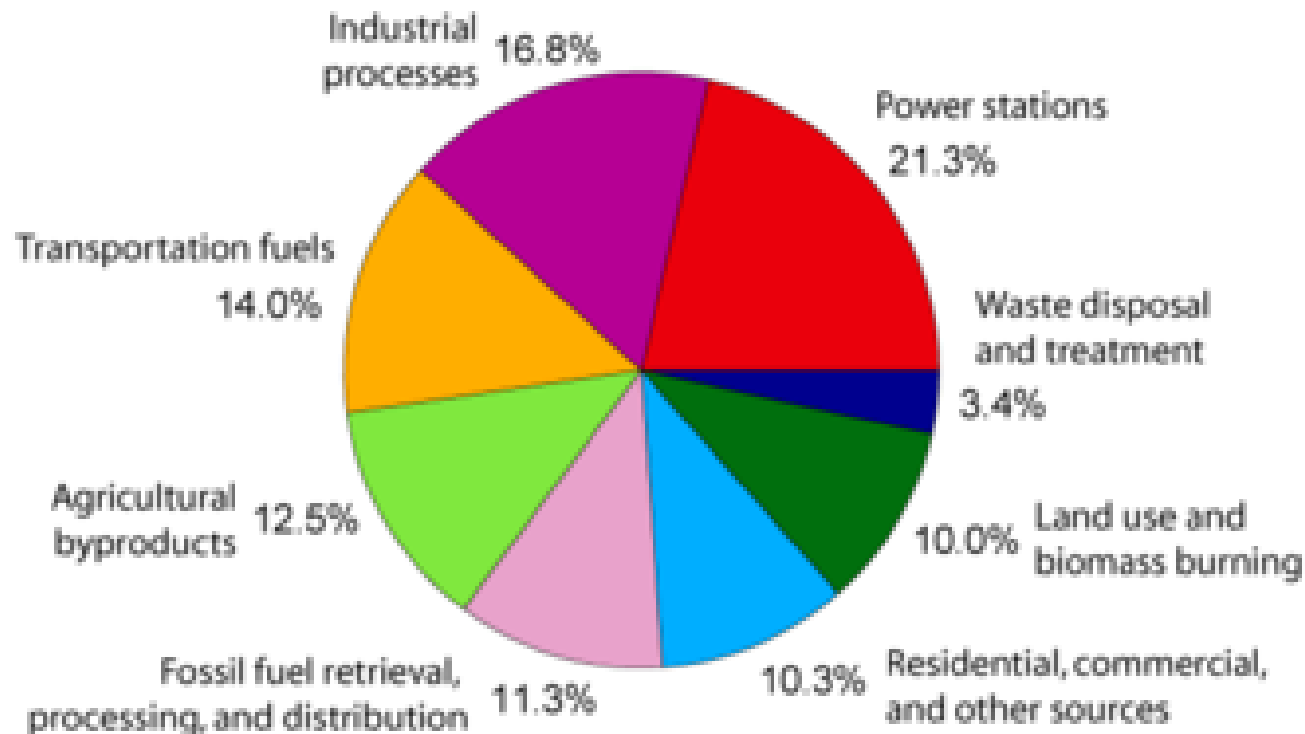




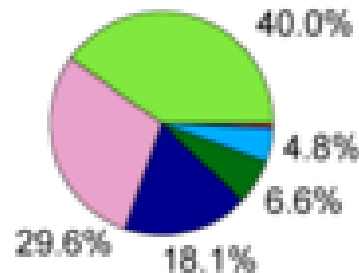




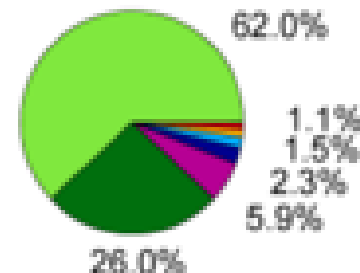
# Annual Greenhouse Gas Emissions by Sector



**Carbon Dioxide**  
(72% of total)

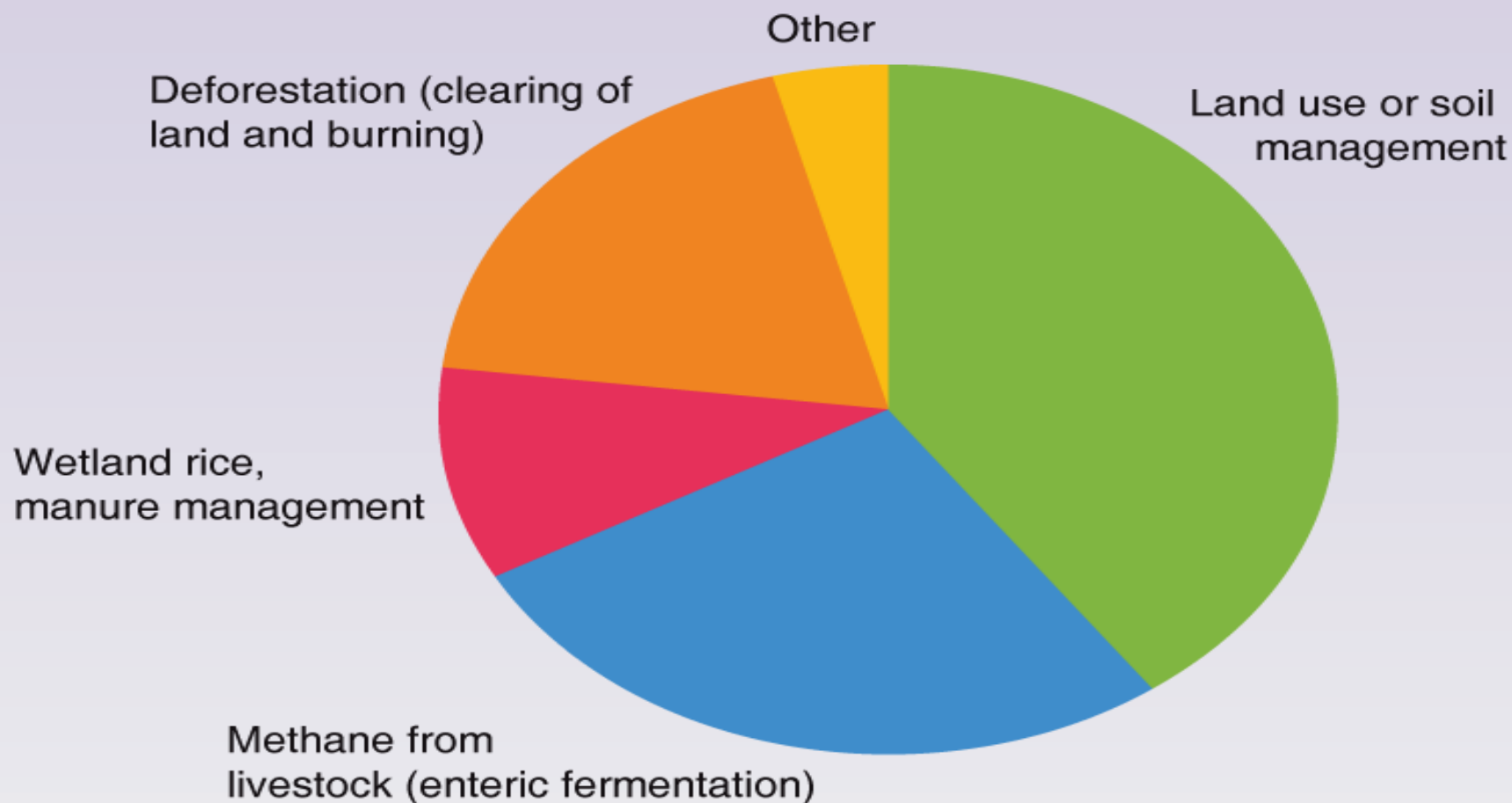


**Methane**  
(18% of total)



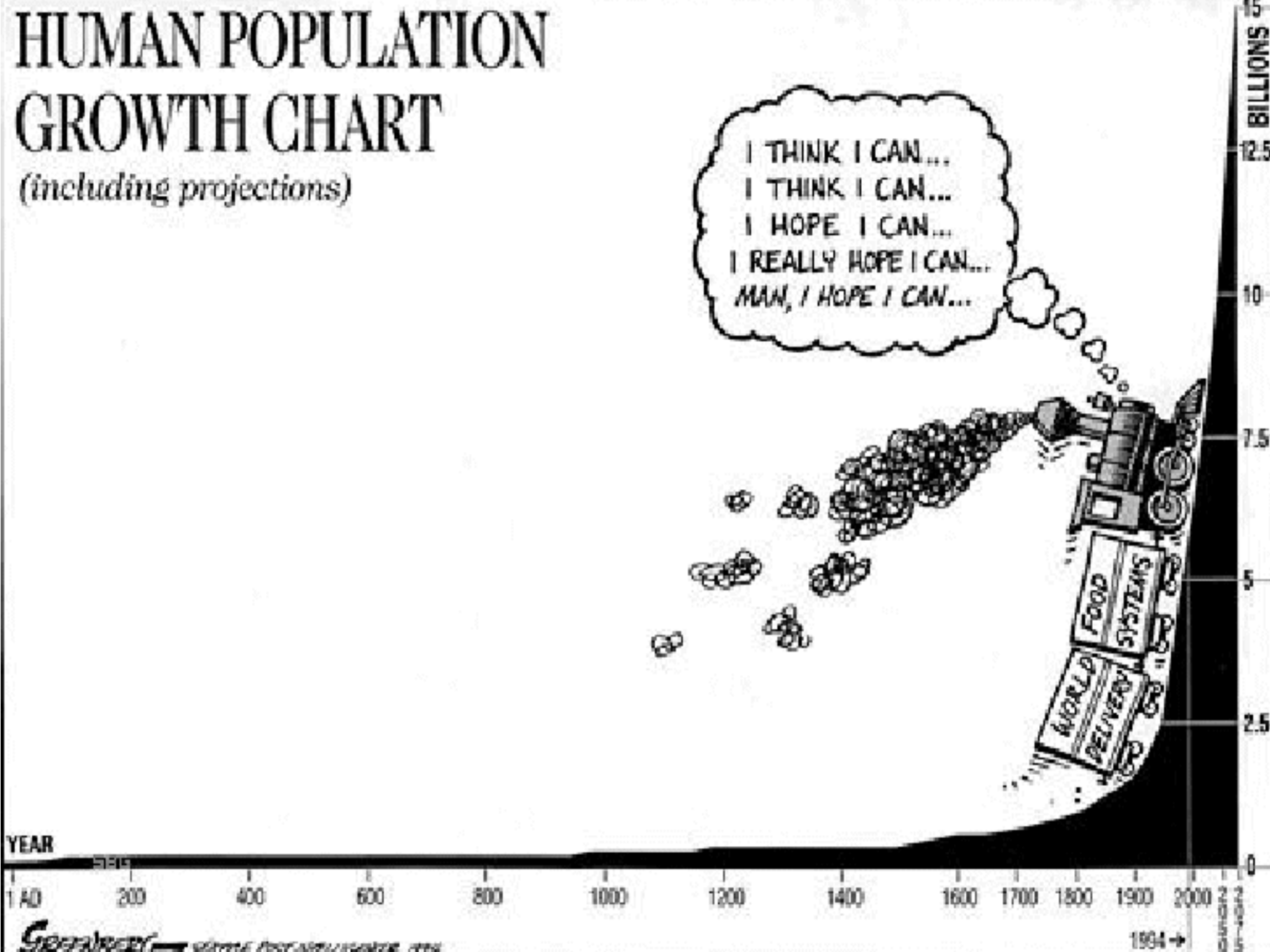
**Nitrous Oxide**  
(9% of total)

# Greenhouse gas emissions from agriculture and land use



# HUMAN POPULATION GROWTH CHART

(including projections)


















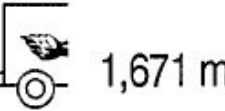








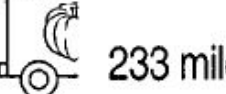


# Average distance by truck to Chicago Terminal Market\*

(Continental U.S. only)

# States  
supplying  
this item

% Total  
from  
Mexico

Grapes	   	2,143 miles	1	7
Broccoli	   	2,095 miles	3	3
Asparagus	   	1,671 miles	5	37
Apples	  	1,555 miles	8	0
Sweet Corn	 	813 miles	16	7
Squash	 	781 miles	 Each truck represents about 500 miles of distance traveled	43
Pumpkins		233 miles		0

\* Information for this chart is based on the weighted average source distance, a single distance figure that combines information on distances from production source to consumption or purchase endpoint. For these calculations, USDA Agricultural Marketing Service arrival data for 1998 were used to identify production origin (state or country). Distances from

production origin to Chicago were estimated by using a city located in the center of each state as the production origin, and then calculating a one-way road distance to Chicago using the Internet site Mapquest ([mapquest.com](http://mapquest.com)). Estimations do not include distance from the Chicago Terminal Market to point of retail sale.

Graphic design by Matt Miller

Source: Leopold Center for Sustainable Agriculture

















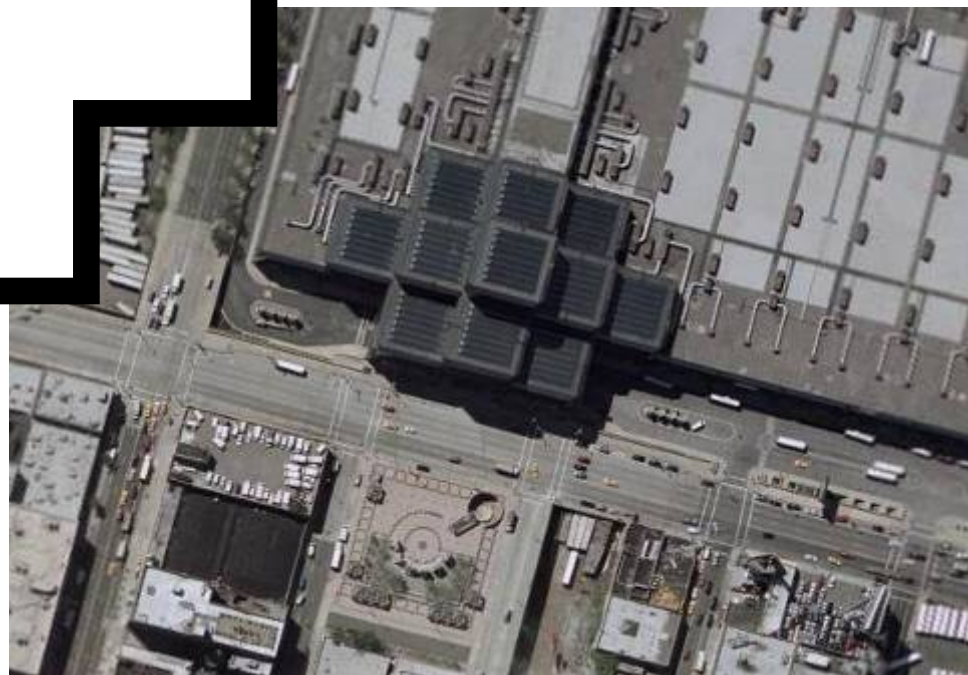




Greenhouse Cultivation  
Arizona



Vacant rooftops  
New York City





**BRINGING NEW YORKERS LOCAL, SUSTAINABLE PRODUCE  
GROWN IN THE HEART OF NYC**









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## Key Environmental Features

1. Saves land. Vegetable yields are about 20 times the typical yields of field agriculture.
2. Saves water. Recirculating irrigation consumes five to ten times less water than field agriculture.
3. Protects rivers. Recirculating systems eliminate fertilizer runoff to surface waters.
4. Reduces pollution. Urban greenhouses eliminate the use of fossil fuels in tractors and trucks.
5. Recovers rainwater. The roof can be designed to capture rainfall, reducing storm overflow.
6. Improves food safety. Integrated pest management does not require chemical pesticides.
7. Increases the use of renewable energy in urban areas.
8. Reduces waste. Waste heat from buildings can heat the greenhouse.
9. Cools buildings. A cover of vegetation mitigates the urban heat island effect, even under glass.
10. Combats global warming. Up to 1.5 kg of CO<sub>2</sub> emissions can be mitigated for each kg of vegetables produced in a sustainable urban farm.



## Energy Monitoring

- Energy Use:
  - Metered kWh
  - Metered Therms
- Energy Production
  - Solar PV Output
- Transportation and Distribution
  - Fuel Use
  - Mileage
- Embodied Energy
  - Not being calculated at this time



## Products

- Leaf Crops
  - Lettuce varieties
  - Leafy Greens: swiss chard, spinach, arugula, etc
- Culinary Herbs
  - Basil, Parsely
  - Cilantro, Mint
- Vine Crops
  - Tomatoes, Cucumbers, Peppers
  - Beans and Squash

## Barriers to Entry

- Specialized Technical Skills:
  - Plant Science
  - Engineering
- Regulatory Novelty
  - Zoning and Building Permits
  - Leases
- Building Constraints
  - Roof suitability
- High Costs
  - Start up capital
  - Utility Costs



THE CITY OF NEW YORK  
OFFICE OF THE MAYOR  
NEW YORK, NY 10007

I am pleased to offer my support for Gotham Greens Farms' efforts to build New York City's first commercial-scale hydroponic rooftop farm in Jamaica, Queens.

This outstanding project, which would generate a year-round supply of fresh, pesticide-free produce, is consistent with several key goals of *PlaNYC*, our long-term plan to create a greener, greater New York, including: reducing fuel use and air pollution from trucks, minimizing our City's carbon footprint, and capturing stormwater to protect local water quality. And by relying on cost-effective and commercially proven technologies, it is also consistent with *PlaNYC*'s practical approach to sustainability.

With its ambition to be a stand-alone business, not dependent on subsidies or special treatment, Gotham Green embraces New York's entrepreneurial tradition at its best—and demonstrates that going green is a smart business strategy. I look forward to the project's implementation and success. All the best.

Sincerely,

A handwritten signature in black ink, reading "Michael R. Bloomberg".

Michael R. Bloomberg  
Mayor



NATURAL RESOURCES DEFENSE COUNCIL  
THE EARTH'S BEST DEFENSE

“Gotham Greens’ innovative approach to growing food in NYC using rooftop greenhouses and best practices for minimizing energy and water usage is something we will be following closely. This is an exciting, cutting edge venture and if successful, will result in significant environmental benefits while serving as a business model for the rest of the world.”

Ashok Gupta,  
*Senior Energy Economist*  
*Program Director – Air and Energy Group*



## ***Gotham Greens Wins The First Annual NY Green Business Competition***

**Brooklyn, NY (May 15, 2009)** – The New York [Green Business Competition](#) is proud to announce the winners of the first annual competition at an awards ceremony that took place on May 14th at the Brooklyn Borough Hall. Gotham Greens, a company creating NYC's first commercial scale, rooftop hydroponic farm, took the grand prize while e.c.o. Incorporated and DBA took second and third places respectively.

Over 300 invite-only green business leaders, city officials, sponsors, and media watched the five competition finalists present their business plans to an esteemed panel of judges and guests. Judges decided the winning companies shortly after the presentations.

**The Green Business Competition attracted over 70 New York state green start-ups to compete for prize packages worth over \$30,000 in investment capital, office space at Green Spaces, and other business support.**

The first place winner received a package valued at \$25,000, which includes \$8,000 in investment capital, one rent-free year at Green Spaces, and marketing, legal and financial services. The second place winners received \$1,000 and a similar prize package valued at \$5,000. The third place winner received a prize package valued at \$1,000.



EVERYDAY DEAL



# LOCAL

**GOTHAM GREENS  
BROOKLYN, NY**

Gotham Greens is a New York City based company dedicated to growing the highest quality vegetables and culinary herbs. Gotham Greens' premium quality, pesticide-free vegetables and herbs are grown in sterile rooftop greenhouses using clean, renewable energy.



EVERYDAY DEAL

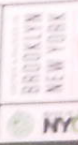


## Red Sails Red Leaf



## Red Sails Red Leaf

Notes:  
Tender, delicate and mildly sweet, Red Sails Red Leaf lettuce contains high quantities of vitamins A and K, plus important antioxidants beta-carotene and lutein. The word "local" is defined from NY, which is later for sale referring to the same entity that.



**LOCAL** CONVENTIONAL  
**Red Sails Red Leaf**  
Grown in Brooklyn, NY  
by Gotham Greens,  
Treat Right Times  
**\$3.99 EA**

# LOCAL

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EVERYDAY DEAL

**EVERYDAY DEAL**  
Dark Red-Organic  
Baby Lettuces  
\$3.99

DEAL



LOCAL

from Greenpoint,  
Brooklyn

Gotham  
Greens

4-30 miles from here

Located on a building rooftop  
in Greenpoint, Gotham Greens first  
greenhouse facility combines  
advanced horticultural and  
engineering techniques to  
optimize crop production,  
quality and production  
efficiency. The climate  
controlled facility grows  
premium quality produce  
all year-round.





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SUSTAINABLE PRODUCE  
GROWN IN THE HEART OF NYC**

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