Promoting Sustainable Agriculture in Brownsville: Methods and Benefits

Cristian Arroyo, Dillon Heera, Mariah Golphin, Dimitry Jeremie, Ashley Williams, Thembi Fernandez, Ania Trotman, Brandon Santiago, Bryan Mentore, Kidem James, Kionna Miller, Shelton Sheppard, Krystal Wallace, Geena Alleyne, Esther Estavien, Simone Rhinehart

TEACHERS PREPARATORY SCHOOL

Abstract

Our class is looking for ways to make our community more sustainable, and less reliant on processed, commercialized foods. Home grown fruits and vegetables are healthier, and can provide greater nutrition than store bought foods. In addition, we have found that many residents of our community rely heavily on “fast food” and “corner stores” for their meals. These locations lack nutritional foods, or many healthy options. People who eat these foods regularly are likely more susceptible to illness, or disease. By studying the properties of the surrounding soils and light conditions, we can identify good locations for building community gardens where local residents can produce fresh foods, at low cost, and of high nutritional value.

Sunlight

How much sunlight is present in our neighborhood outdoor spaces?

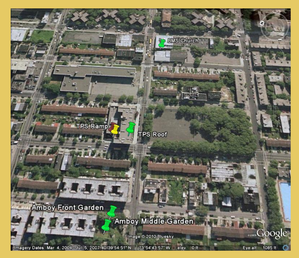
In the sunlight group we try to see how much sunlight do our plants need and which location gets the most sunlight. We collected our data by using a photometer and a GPS to measure light intensity and location.

We expected that the highest amounts of sunlight would be measured from the TPS roof and the Amboy Garden. We also expected to find that moderate amounts of sunlight would be measured from the BMS space. It was expected that the lowest amounts of sunlight would be measured from the TPS garden.

Methods

- Used the photometer to read the intensity of sunlight within different locations in our area.
- Recorded the locations using GPS and mapping software
- Attempted to identify good locations for future gardening projects

Results and Conclusions



Location	Average Sunlight
Front Garden	54.6
Middle Garden	51.275
TPS Ramp	44.175
TPS Wall	19.1
TPS Roof	297.0
BMS Church	65.0

Key: High Light
Moderate Light
Low Light

We determined that based on our data the following areas had maximum sunlight, Amboy garden (front fence) and TPS roof. We found that Amboy garden (Middle bed) had moderate sunlight. Finally we examined Lutheran Church. TPS garden (Ramp Side) had the lowest amount of sunlight.

Soil

What properties of the soil can affect planting?
How can we test the soil for these properties?

Our class tested the quality of the soil to find better places to plant crops. We took samples from different areas around Brownsville and tested them. Using NPK soil kits we were able to test for nitrogen, potassium, and phosphorous. We used a Sensafe soil check to test for lead in the soil. Testing revealed that lead was present at all locations meaning remediation could be needed in order to grow healthy plants. Now that we know the levels of nitrogen, potassium, and phosphorous we can treat the soil to make it suitable for which crops we want.

Methods

1. Collect soil from the first six inches from soil at various locations around the neighborhood.
2. Use Zip Lock bag to collect dirt.
3. Label each bag by number and location.
4. Take note of the description, time, location and date of soil collection.

Samples were tested for concentrations of Lead, Nitrogen, Potassium, and Phosphorus.

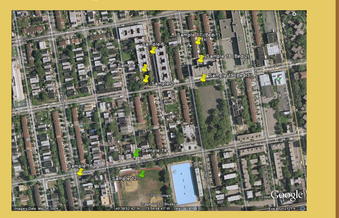
Results

Lead Locations

Color Key:
Present
Low
Medium
High

Nitrogen Concentrations

Potassium Concentrations



Phosphorus Concentrations

- There was measurable lead in the soil around Brownsville.
- We found high levels of potassium in all soil samples.
- We found low to moderate levels of nitrogen and phosphorus.
- Most soil tested as neutral
- Lead detected in the soil likely came from paint and pollution throughout the environment.

Teachers Preparatory School
226 Bristol Street
Brooklyn, NY 11212
(718) 498 - 2605
Research Supported by NSF GK-12 Grant
Email Carmen Simon: CSimon6g@gmail.com

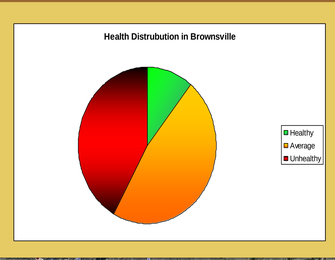
Health

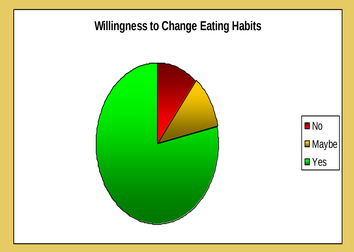
The goal of this experiment was to determine whether the Brownsville residents consume food that is healthy or unhealthy for them. We surveyed the Brownsville residents in order to determine their eating habits and compared them to the Health Food Guide. We found that most residents were not eating healthy, which could explain why the rates of heart disease, obesity and other food related illnesses are so high in Brownsville. Future goals of this project include educating the community about the risks of unhealthy foods and the benefits of eating healthy foods. We are also planning to make healthy organic food more readily available to the Brownsville residents.

Methods

- Find out what people are eating
- Tell people to avoid eating junk food and eat healthier
- It is predicted that people will still stick to their daily diet
- We predicted that they are not eating healthy and will continue eating unhealthy
- We surveyed 52 local Brownsville residents and asked them about their health and their eating habits along with how close they live to a fast food restaurant.

Results





Key: Healthy
Moderately Healthy
Unhealthy

From this research experiment we found that Brownsville is surrounded by fast food restaurants, however Brownsville residents are willing to change their eating habits for the better

General Conclusions

The class has found that many residents in the Brownsville community are not eating well, and are not eating their recommended allowance of fresh produce daily. This is probably because of a lack of locations to buy these foods. We also noted that the rate of disease was high for the neighborhood, also, which could be related to the poor nutrition. The class tested soil at several locations, and found that all of the soils in the area tested positive for the presence of lead, which is toxic to humans. Therefore, before any planting can be done in the community, soils may require some level of clean up. Light intensity in several locations was also tested, and it was suitable in many areas for a vegetable garden. Hopefully, with the success of our Amboy garden as a pilot project, it can be adapted to several locations around Brownsville, to the benefit of all its residents.