

Permaculture at The Island School: Conducting a Comprehensive Food Audit to Establish an Environmentally and Socioeconomically Sustainable Food System

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Introduction

Permaculture is a form of sustainable agriculture which attempts to mimic naturally sustainable ecosystems. As the global population continues to rise, food security is becoming a pressing issue. Many countries are facing food insecurity, which is defined as “the limited or uncertain availability of nutritionally adequate and safe foods” (S.A. Andersen, 1990). In The Bahamas, roughly 90% of food is imported due to the nation’s scant natural resources and agriculturally poor soil. Global food systems must be improved and made more sustainable to support the millions of people struggling to obtain healthy food. This research examines food systems at The Island School in Cape Eleuthera, The Bahamas, determining how food insecure the campus is through a comprehensive food audit. The Island School is a product of its immediate environment in terms of food insecurity. However, The Island School as an institution knows very little about the origins and environmental impacts of the food served in the dining hall. Therefore, this information will provide a basis of knowledge for future campus planning in the area of permaculture, ultimately ensuring that The Island School’s food system is as sustainable as possible. At the start of the research, it was hypothesized that The Island School has high food insecurity, high food miles, and a high carbon footprint.



Fig. 1: A typical meat option available at the dining hall for dinner.

Data Collection

Company	Item	Quantity	Weight (g)	Carn/ Veg	Food Group	1 st source	2 nd source
Ottimo	Olives	1 can	2.175 kg	Veg	Vegetables	Spain	Texas

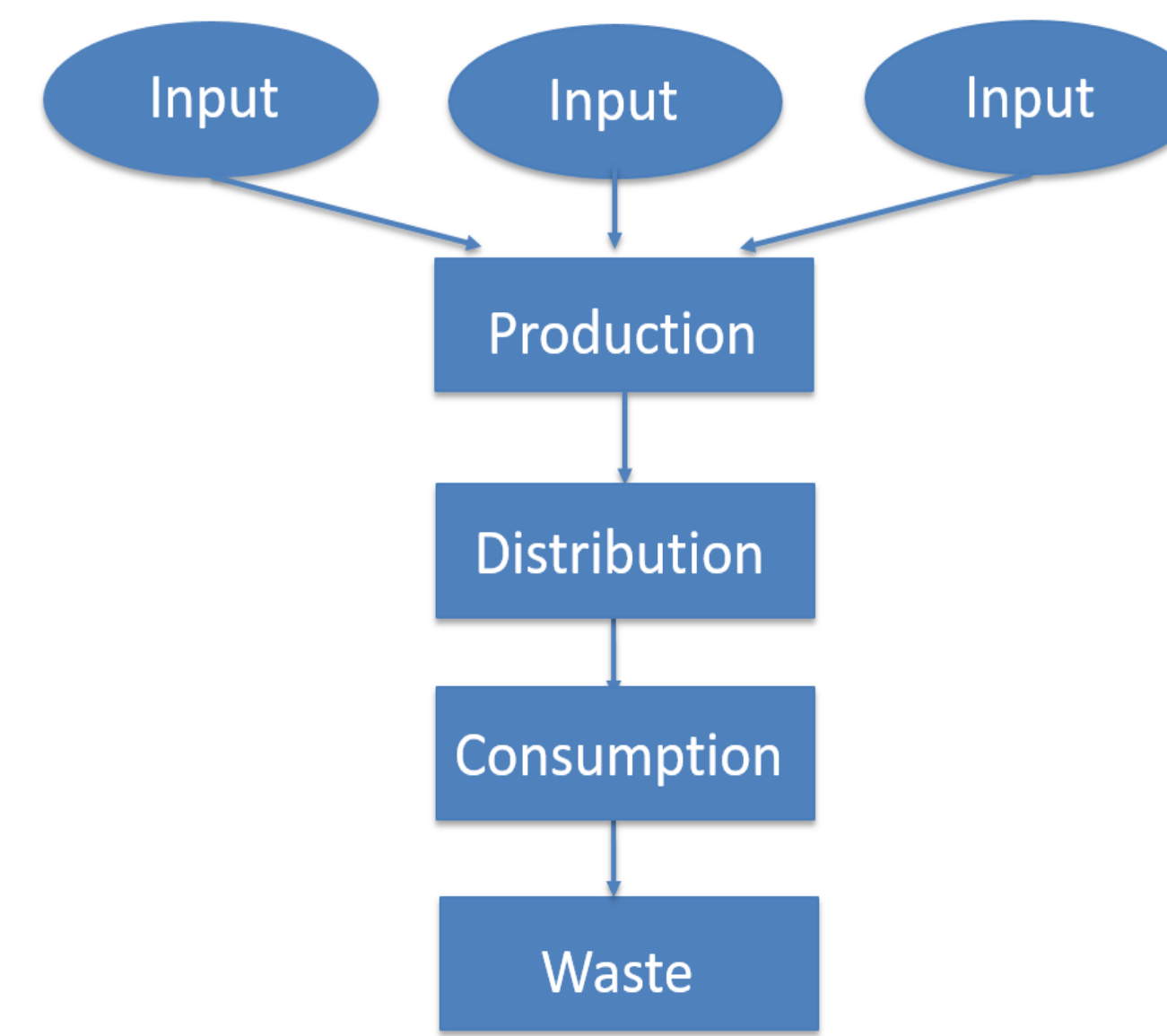


Fig. 4: Once the data was collected, it was compiled into a spreadsheet as shown above.



Fig. 5: An EIO-LCA takes into account the emissions of all parts of a food product throughout its lifetime. This includes the emissions of all its inputs, the inputs of those inputs, and so on. It also includes any emissions given off during the consumption, production, and waste phases of the product’s life time.

2016 Statistics

ORIGIN OF DINING HALL FOODS

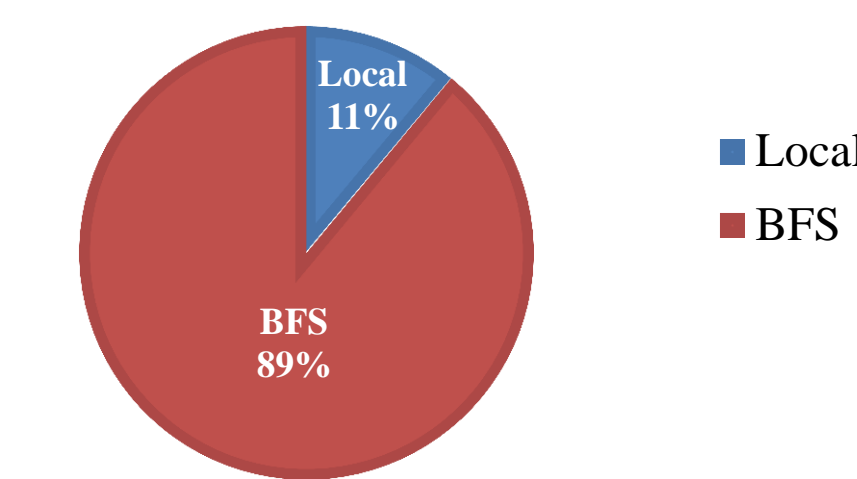


Fig. 8: This is a chart showing how much of The Island School’s food is produced locally and how much is ordered from Bahamas Food Service (BFS).

In the fiscal year of 2016...

- 3.7 kg (8.16 lbs.) of CO₂ per person were produced per meal.
- 732.4 tons of CO₂ were released in total.
- The total food miles were 1,889,300 km (1,173,956.6 miles) per ton of food moved.
- 91 tons of food were ordered for campus.

Guiding Questions

1. Where does The Island School’s food come from and what are its environmental implications?
2. What defines a sustainable food system on the island of Eleuthera?
3. What are the current food demands on campus and how does The Island School meet them?
4. How will this research impact future campus planning?

Methods

In order to complete a total food audit for the Fiscal year of 2016, a complete analysis of the dining services food budget was conducted. To do this, the research advisors helped the team by reading and digitizing hundreds of receipts from the past year, as well as going into the kitchen and recording key statistics about 9 separate meals. Once all the data was collected, an EIO-LCA, or Economic Input Output Life Cycle Assessment, was used to discover the carbon footprint of different food groups.



Fig. 2: In addition to reading through receipts, the team also went into the kitchen and weighed every ingredient of a given meal.



Fig. 3: After recording data about the components of each meal, data was plugged into a master spreadsheet.

Results

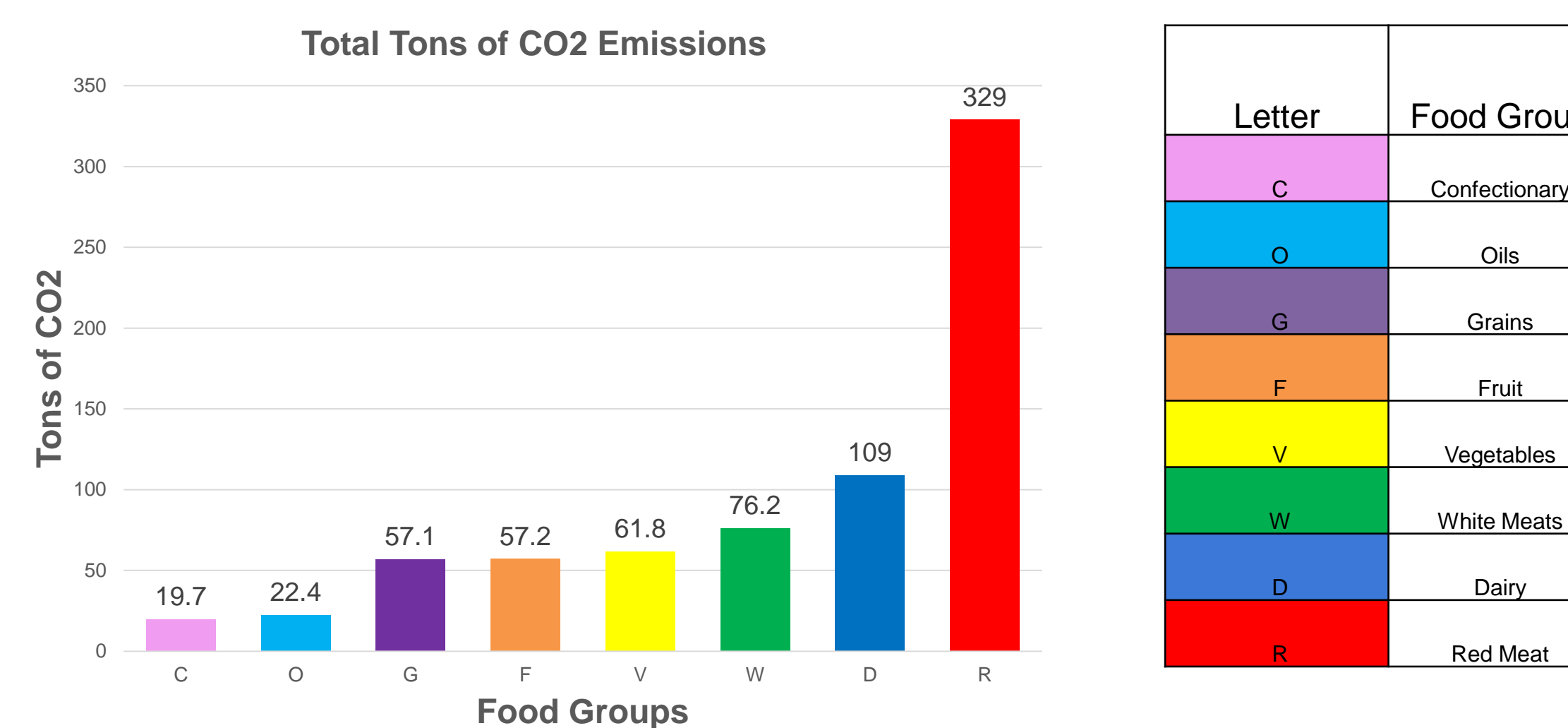


Fig. 6: The results of the EIO-LCA illustrate that red meat and dairy have the highest carbon emissions.

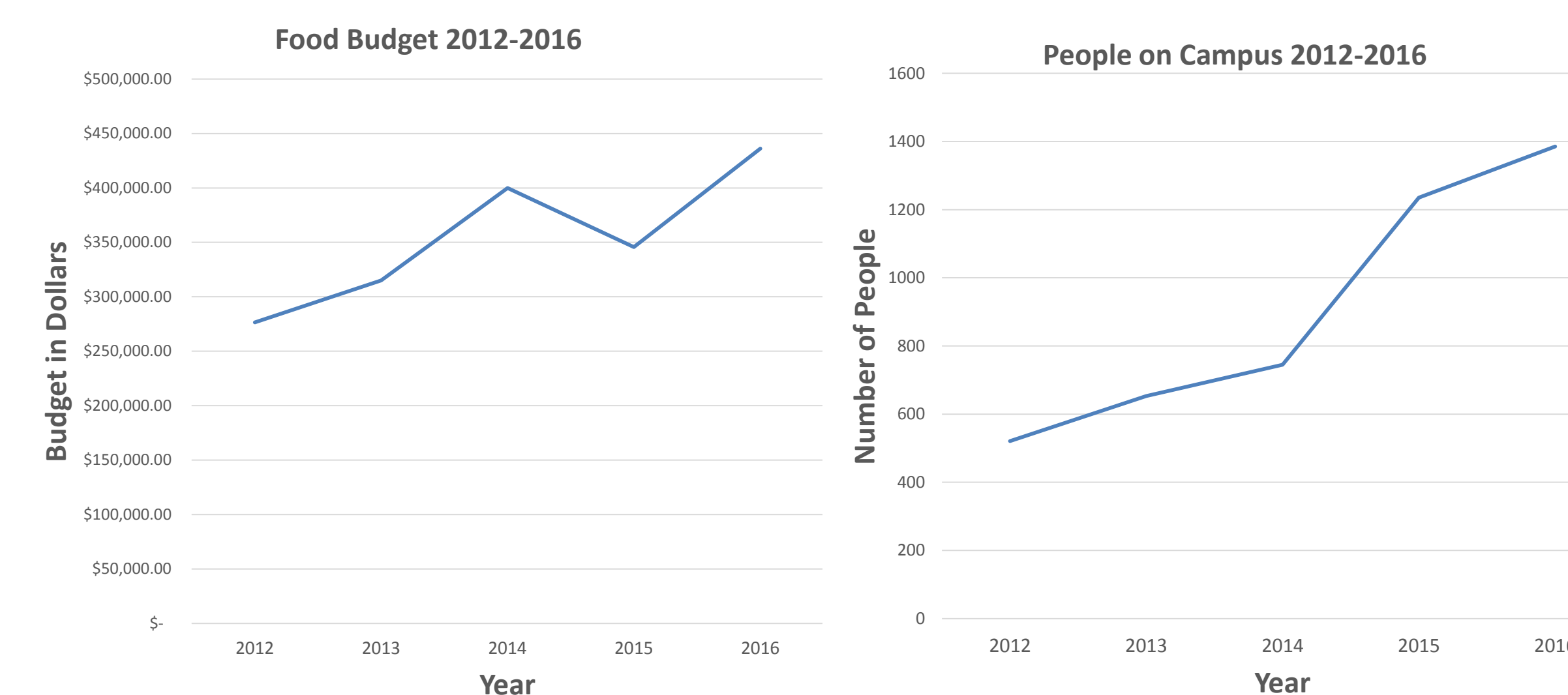


Fig. 7: There is a positive correlation between the food budget and number of people on campus over the past 5 years.

Discussion

The results from the study provide groundbreaking information about The Island School’s food system. The food audit supports the hypothesis that The Island School’s campus has high food miles, a high carbon footprint, and high food insecurity. The amount of food that the campus consumes and the percentage of the food that produced locally were determined. This information is essential for further research and campus planning. The data collected from the three food audits shows the current food demands on campus. As the campus grows, it is essential to accurately predict the growing needs of the community. This research also will inform ideas such as expanding the farm and aquaponics system, collaborating with non-profits and local growers, and allocating more money to local products. All of these are initiatives that The Island School can take to develop more sustainable food systems and decrease its carbon footprint and food miles. A more immediate solution is to make minor changes to eating habits overall. One idea is to start Meatless Mondays on campus, which is a small step to decreasing the overall carbon footprint. All of these plans will help make The Island School more food secure and sustainable going forward.



Fig. 9: The Island School receives food every Tuesday morning, via boat, from Nassua. The food is then delivered by road to The Island School thus increasing the carbon footprint and food miles.

Literature Cited

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