A SUSTAINABLE MEAL

I. INTRODUCTION

Choosing to eat sustainably can be one of the ways that you can have the biggest positive impact on the global environment. Crop production and other agricultural areas cover a large portion (25-75%) of the earth's terrestrial surface (Millennium Ecosystem Assessment 2005), and agriculture is the largest threat to biodiversity globally. In general, animals take more resources to grow than plants. In addition to the energy used to grow and transport the meat, resources have to be used to grow and transport all of the plants that the animals eat.

Conventional agricultural production generally depends on farm machinery, fertilizers, and pesticides all of which require energy to produce. While these chemicals decrease pest damage and can increase crop yields, they can harm local wildlife, including birds, butterflies, and frogs. In addition, these pesticides can negatively impact the health of the people that work on and live near conventional farms (www.panna.org/drift/). Consumption and handling of pesticides has been linked to health problems such as headache, asthma, sterility, and cancer.

In addition, as the climate changes, the availability of freshwater has declined in many areas around the globe (IPCC 2014). For example, in recent year California has been experiencing extreme droughts. This is problematic because much of our food is grown in California. Some foods such as lettuce use water efficiently, whereas others, such as beef, require massive amounts of water (waterfootprint.org). Growing water in-efficient crops in water-stressed areas exacerbates environmental problems and sparks social conflict.

Finally, the geographical source of our food is very important in determining the environmental impact of our meals. Much of our food is grown in different regions of the country (e.g. wheat, oranges) or world (e.g. bananas, chocolate) and must be transported to local grocery stores. This transportation consumes energy in the form of fossil fuel. Therefore, if a higher proportion of our food is grown and sold locally this will require less energy and reduce our ecological footprint. Where are some sources of locally grown food? Produce sold at farmers' markets is usually local grown, and shopping at these markets supports local agriculture and businesses. Our local farmer's market is Downtown on Erie Street behind the Libby Glass Outlet and operates year round (9am-1pm Dec.-April & 8am-2pm May-Nov) and the Westgate Shopping Center (3p-7p May-Nov)(http://www.toledofarmersmarket.com/). In addition, several grocery stores now feature locally grown produce.

However, with any issue, there are costs and benefits of different agricultural practices. Although we may want to eat food grown locally, the items that we desire may not be available from local sources year-round. Additionally, the cost of organic products at the market is generally more expensive than conventional food – but at what cost? When we purchase something at the supermarket, we do not take into account the externalities – outside costs that do not enter into the price of the product.

There are any number of additional relationships between agriculture, food, and the environment, many of which you will explore in this lab.

References:

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II. LAB EXERCISE

In this lab, you and your classmates will evaluate the environmental impacts of food purchased as general groceries. Following the instructions below, you will first examine the impact of the food presented, and then design a sustainable menu that you can share with your family and friends as your next family or friends. While making your assessments, be sure to consider the following issues: agrochemical (pesticide, herbicide, and fertilizer) use, antibiotic or hormone treatment, on-farm soil practices, distance your food item has traveled from the farm to the lab, refrigeration, farm laborer conditions, store price of product, etc.

The objective of this lab is to gain a certain level of familiarity with the food that we eat, the ways in which our agricultural products are grown, the sources of our food, and the impact that our food choices have on the environment and human health.

Supply list:

1. Groceries and Pictures
2. Computers connected to the Internet.
3. Data sheets

Procedure:

1. Divide the class into 4 groups.
2. Open your "shopping bag" and for each item, fill in the database below.
3. Use information that you find on the Internet to answer each cell on the database.
4. If after about 10 minutes you cannot find a particular piece of information, make a note of that.
5. Discuss your results with your lab group and answer the questions that follow.

Worksheet Exercise: data collection and interpertation

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Define these important terms: *You may use the introduction and the internet to complete this section.*

Organic agriculture (1 pt) – a production system that sustains the health of soils, ecosystems, and people

Natural food (1 pt) - food that has undergone a minimum of processing or treatment with preservatives.

Food miles (1 pt) – a mile over which a food item is transported from producer to consumer, as a unit of measurement of the rule used to do this.

Externality (1 pt) – side effect or consquence of an industrial or commercial activity that affect other parties without this being capteital in the cost of the goods or services involved.

Pesticide drift (1 pt) – the unintentional diffusion of pesticides and the potential negative effec of pesticide application

Water footprint (1 pt) – the amount of fresh water utilized in the production or supply of good and services used by a particular person.

Data table (2 pts):

Item Name	# of ingredients	# of miles traveled	Water Footprint	Contains antibiotics?	Contains hormones?	Agrochemicals were used?	Refrigeration needed?	Type of packaging?	Cost at market
Brown Eggs	1	127	10 galions	No	No	No	yes	cardobil	3:09
Mis vickies	15	1000	a galion	No	No	no	No	plastic	1.00
Spagetti	16	534	1 galion yes	yes	no	no	no	tin can	1.00
Spring water	1	185	16 yes	No	No	No	No	plastic	3.00
corn meal	4	200	11 No	No	No	No	No	cardobil	2.00
Apple	1	10	10 yes	No	No	No	no	non	1.99
Beef	1	757	yes	No	No	No	Yes	plastic	$8
whit milke	1	41	10 yes	~~yes~~	yes	yes	yes	plastic	3
powerodle	12	662	20 yes	No	No	No	yes	plastic	2
steek	1	~~855~~	100 gal	no	no	no	Xes	plastic	15

~~water~~ ~~footprint~~

water footprint of 12 eggs is 636 gallons of water

it produces 53 gallons ~~for~~ one egg.

Questions.

1. What types of information can you easily obtain that relate to the environmental impact of the food items in your shopping bag? (2 pts)

The number of miles traveled and the amount of ingredients the food contains.

2. What types of information were you not able to find? (2 pts)

The hardest type of information to find is the amount of water footprint.

3. What food item in your bag has the largest environmental impact? Why? What item has the least environmental impact? Why? (2 pts)

The food in our bag that had the largest environmental impact is the bag of chips because it had 16 ingrediant and over 6000 miles traveled The apple is the least avsc it has one ingrediant and has 10 mile

4. Do you think that food labeling should change in any way? If so, explain how it should change. If not, explain why you think current labeling is sufficient. (2 pts)

I think labeling should change because it should explain more about the food and what it is used to make it.

Sustainable Meal Menu

Name: _____

In the following space, please list the items that you ate during your most recent meal. *List as much information as possible about each (origin, growing practices used, genetically modified or not, etc.).* (2 pts)

What changes could you make to reduce the impact of this meal? (2 pts)