

The Planet Liberators

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Eat to Defeat Global Heat

In order to mitigate climate change, we propose a program to encourage members of the community to reduce the consumption of processed and non-organic foods in their diets. An app will be developed to advocate the reduction or removal of meats and processed foods in the diets of community members for health and environmental benefits. This app will also allow users to locate farmers' markets, and receive discounts for said markets. Our app will track users' diets, and calculate their reduction of greenhouse gasses. Revenue generated by the sale of local foods could be used in further initiatives to mitigate climate change.

The second facet of our project includes a partnership between local farmers' markets and schools to encourage the consumption of locally produced organic foods. The students could learn about organic farming methods and the benefits of eating organic produce, incorporating these organic foods into their lunches. This program would be viable in our community, due to the prevalence of agriculture in the area. In fact, our school is very close to an agricultural reserve. Our local high school offers a "global ecology" program which promotes education and awareness pertaining to environmental issues, causing students to be more receptive of the idea of consuming more locally grown goods.

By incorporating locally grown foods into meals, emission of greenhouse gasses is reduced through lessened demands on factory production of fertilizers, meat, and dairy, which amount to almost 20% of total greenhouse gas emissions. According to a study by the Consultative Group on International Agricultural Research, more than 1/3rd of greenhouse gas emissions come from agriculture. Factory fertilizers also pollute water with phosphates which leads to eutrophication, in which nutrients oversupply bodies of water. The excessive nutrients causes explosive growth of algae. Upon their death, oxygen in the water is consumed, leading to hypoxia or anoxia, which is harmful to many aquatic organisms. Additionally, industrial farming practices exhaust the nutrients present in the soil. As a result, the industry is more dependent on utilizing chemical fertilizers, which, then, in turn wash into local bodies of water, causing the eutrophication described above. The effect of fertilizers doesn't stop there, however. Nitrogen present in fertilizers speed up the processed of bacteria in the soil, which emit nitrous oxide. Finally, the production of fertilizers themselves consume oil and natural gas, leading to further carbon dioxide emissions.

Additional greenhouse gasses are emitted through the transportation of fertilizers and foods, and our project would reduce them drastically. A study from the Center for sustainable Systems, School of Natural Resources and Environment reports that diesel fuel consumption amounts to about one fourth of total energy consumption in the US food industry. Additionally, produce grown in North America travels approximately 2,000 km from production source to point of sale, while almost half of fruit sold in the US is imported, as stated in a study from the Leopold Center for Sustainable Agriculture. Food needs to be transported to a variety of locations to go from farm to fork. It originates at the supplier, and is shipped in turn to the

manufacturer, distributor, retailer, and finally the consumer. The journal of Environmental Science and Technology published a study estimating that transportation amount to about half of carbon emissions of fruits and vegetables.

The production of meat is another major source of greenhouse gasses. The Food and Agriculture Organization has estimated that livestock composes about 15% of anthropogenic greenhouse gas emissions. Cows release lots of methane, and meat also requires significantly more energy to produce than plants. Each pound of meat requires 2.07 to 2.24 pounds of corn, and, thus eating plants directly is much more efficient. A study in the Environmental Study and Technology journal reports that red meats are 150% more greenhouse gas intensive than other forms of meat. Although people typically associate cars with being the most intensive source of carbon dioxide, giving up beef is said to reduce the global carbon footprint more than cars.

Our entry will reduce the emissions of greenhouse gasses by raising awareness of the environmental impact of specific diets. Due to the energy and greenhouse gasses expended to transport food, increased consumption of local products would diminish the distance that food would need to travel, and thus, reduce the amount of greenhouse gasses emitted by conventional transportation methods. Additionally, by supporting organic farming methods, the demand of products created by typical farming methods is reduced along with their environmental impact. By educating the community about the environmental impacts of their dietary choices, individuals will become more proactive in their efforts to help mitigate climate change. Driving business to small local farms helps reduce the environmental impact of industrial farming through minimizing transportation distance and pesticide use.

Although the change would be gradual, if the app were fully adapted by the community, the effects would be massive. By buying local foods, the average consumer would reduce greenhouse gas emissions by 4-5%. Substituting just one part of one's red meat and dairy products with chicken, fish, eggs, or vegetables, however, would reduce the greenhouse gas emissions by even more than simply eating local foods. Specifically replacing all beef consumption with chicken, the next greatest source of greenhouse gas emissions after red meat and dairy, for one year leads to an annual carbon footprint reduction of 882 pounds CO₂. Therefore with a more comprehensive switch to locally grown, less carbon dioxide-intensive food, the 882 pounds could increase to more than a ton of carbon dioxide being taken care of. Recognizing the total greenhouse gas emissions is approximately 35000 pounds. This would therefore be equivalent to about 10% of the total emissions being reduced. Overall, in accordance with the previous statistic that 20% of total greenhouse gas emissions come from factory production of fertilizers, meat, and dairy, the approximate reduction of gas emissions from the adoption of our innovation would be 15%.

Through our proposal of a social awareness program and mobile application, users and community members would be able to make a considerable impact in terms of reducing greenhouse gas emissions. The decreased consumption of non-locally sourced produce, processed food, and meats from the efforts of our program would result in a wide variety of environmental benefits. We believe that by making small changes to the diets of our users, we can, together, eat to defeat global heat!