

Aquaponics as a Mitigator of Nutrient Deficiencies in U.S Urban Food Deserts  
Lisa Niederman  
Class of 2018  
Paula Turkon

The USDA defines food deserts as areas that have no or limited access to fresh fruit, vegetables, and healthy whole foods. Such areas typically occur in low-income areas—urban or rural—where there is a scarcity of grocery stores, farmers’ markets, or other nutritious food providers. Limited access to such food can lead to various nutrient deficiencies and a multitude of health problems. Food desert areas are also likely to disproportionately affect people of color, have a high disabled population, and have limited access to health care and education. My research will examine how lack of access to healthy food and deficiencies in Beta-Carotene (Vitamin A), Ascorbic Acid (Vitamin C), and Folic Acid affect people, specifically women and developing children, in their daily lives and anticipated future. In considering solutions to food desert prevalence, I look to contemplate aquaponics as a potential mend. Aquaponics is a form of sustainable agriculture that combines aquaculture— the farming of fish, and hydroponics— the growing of plants in water with added synthetic nutrients, into a closed-loop system. Fish excrement acts as the fertilizer and nutrient-source for the plants, while plants act as natural water filters for the fish. These systems are compact and can be maintained indoors with limited space, making them attractive options for urban agriculture. For my research I will report the results of a nutritional analysis of collard greens from Ithaca College's aquaponics system compared to the local Wegman’s produce to determine if aquaponic collards are as nutritious as store bought collards. I focus on three nutrients

commonly deficient in inner city women and children: Beta Carotene, Ascorbic Acid, and Folic Acid, and ask how this result affects the desirability of aquaponics systems in urban food desert areas. Is aquaponics a feasible method of addressing nutrient deficiencies and facilitating fresh-food access in American urban food deserts?