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Urban Agriculture: An Environmental and Moral Imperative

**An honors thesis presented to the
Department of Geography and Planning,
University at Albany, State University of New York
in partial fulfillment of the requirements
for graduation from The Honors College.**

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Abstract

As we live in a society completely dependent on oil and its products, the contradictions within this self destructive system begin to unfold. Petroleum, its acquisition, and the products created with it, have been proven to cause unmanageable effects on a worldwide scale. As our natural resources become more finite, contributing to global and local inequities through widespread competition, the need for change is apparent. By introducing local farming initiatives, the creation, distribution, and usage of these products becomes obsolete through the elimination of demand and necessity. Sustainable urban agriculture is therefore presented as a tangible solution to the problem at hand. Local governmental policy remains the best and most effective way to work toward change for a future in sustainable agriculture.

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Table of Contents

Abstract.....	2
Acknowledgments.....	3
Introduction.....	5
A Petroleum Based Culture.....	6
Environmental Implications.....	6
A Burden to Humanity.....	9
The Need for Change Within Agriculture.....	11
What’s Wrong With the Current System.....	12
The Alternative of Sustainable Agriculture.....	13
Urban Areas for Agriculture.....	15
Urbanization and Demand.....	15
Opportunities in Cities.....	17
The Next Steps Toward Sustainable Urban Agriculture.....	21
Local Government Initiatives.....	21
Conclusion.....	23

Introduction

During a time when an energy crisis is looming, the environment is suffering, and wealth disparities across the globe are ever increasing, people are looking for new and viable solutions to create a sustainable future. I believe that an integral part to achieving this future lies in urban agriculture. The cost-preventative nature of our current industrial agricultural system has been proven, presenting the apparent socioeconomic and environmental need for sustainable food systems. Petroleum, its acquisition, and the products created with it, can no longer be disputed as one of the most detrimental pollutants with unmanageable effects on a worldwide scale. These negative, uncontrollable externalities are especially evident as our natural resources become more finite, contributing to global and local inequities through widespread competition. By introducing local farming initiatives, the creation, distribution, and usage of these products becomes obsolete through the elimination of demand and necessity. Not only can sustainable urban agriculture provide massive reduction of pollutants in cities, it is capable of stimulating economic and community growth. These efforts contribute to a much greater cause, the fight for equal access to healthy foods and food security regardless of income. In my thesis, I seek to explain the level of environmental sustainability that urban agriculture can achieve, as well as its potential economic and health benefits to the population at large.

A Petroleum Based Culture

Since the dawn of industrialization, the world has become increasingly dependent on petroleum as capitalism persists in its tireless mission of expansion. The current system of industrial agriculture has created intensive demand for oil and its products, contributing to the continuation of its extraction and production. This relentless process of oil drilling has exhausted our resources and damaged our environment given its unsustainable methods in practice. As oil itself becomes more scarce, the environmental degradation caused by its acquisition has become more intensive and impossible to manage. Furthermore, the all-consuming nature of the petroleum industry has caused massive, widespread global and local inequalities. To understand the implications of a culture dependent on a food system centered around petroleum usage, further effectual analysis is presented.

Environmental Implications

It is no secret that acquisition of oil is one of the most harmful human endeavors on the environment. From the very beginning of the process, when land is surveyed for potential wells, to the ultimate end, when petroleum products find their way to waste, the oil industry promises extreme consequences to all sectors of the Earth.

To begin the process of oil exploration, potential reserves are mapped out. Once identified, the drilling of test wells begins at the given locations. The creation of such wells is made possible by the creation and construction of various access roads, platforms, and pipelines to the area. If oil is discovered, more intensive wells drilling follows along with greater access-providing infrastructure (O'Rourke/Connolly, 594). This drilling process alone

includes risks of land and water contamination, as well as ecological consequences due to corrosive pipelines, abandoned waste pits, burning natural gas, spills, accidents, and pervasive illegal dumping. The various chemicals which are released throughout the drilling process have the resulting potential to destroy entire ecosystems (rainforestfoundation.org). Furthermore, given the expanding territory the industry seeks to exploit, the exploration for oil is beginning to pervade even the most remote areas. This means that all of the extremely heavy equipment needed for drilling must be transported into these otherwise undeveloped spaces, necessitating the creation of roads and platforms. This infrastructure is possible only through processes of deforestation and land erosion, in order to clear out the massive areas needed for its construction (O'Rourke/Connolly, 594).

The environmental damage from drilling continues with the resulting massive amounts of contaminated water, production of toxic waste, and air pollution caused. The water used in the process of extraction and drilling is filled with heavy metals and toxins through its consistent exposure to various chemicals. It is then improperly disposed of and released back into the environment to contaminate land and water sources. The generated drilling and associated wastes are left in exposed waste pits threatening any animals that may come in contact with them, and the emissions from the equipment used throughout the process pose a constant threat the air quality overall (O'Rourke/Connolly, 594-5). The amount of damage done just at the very first stage of the process should be enough to halt its existence. However, because of lack of documentation and publication of data, as well as the distance of occurrence from a politically active population, the atrocity continues.

Not only does the exploration for and extraction of oil have a multitude of negative environmental externalities, the issue of its transport is not without conflict. Given the distance between oil wells and the locations in which oil and its products are widely consumed, there is a need for a damaging system of delivery. This includes using petroleum product itself to fuel some mechanisms of delivery. Employed are tankers, barges, trucks, and pipelines to deliver the product, all of which are at risk for inevitable leaks and spillage along the way.

The harmful environmental impacts do not stop at exploration, extraction, or transportation. In order to create products such as gasoline, heating oil, motor oil, asphalt, propane, and numerous other, the oil must be transformed into a useful state. To do this, it is separated, converted and refined by thermal cracking. Anything not converted into product or caught by the pollution control methods of the refineries is hazardous waste and toxic chemicals that go directly into the environment, polluting the air, land and water. The chemicals released through dumping, leaks, emissions, contaminated waters, and everything else contribute to acid rain, cause fires and explosions, and ruin aquatic ecosystems by the amount of toxins that are introduced. (O'Rourke/Connolly, 603-4). Currently, there are very few preventative measures in place either from the government or the private sector because of the profitability of the industry. The only feasible way to curtail the continuation of these effects is for demand of petroleum and its products to subside. This leads to a closer look at the in-depth damage done from these harmful pollutants, on the level of production and

consumption, and the populations and lives most greatly affected by a petroleum based culture.

A Burden to Humanity

Petroleum culture not only presents a clear and extremely threatening danger to the environment, but to humankind. At any given point in the process, there are innumerable health and safety risks that are being posed to various populations. Unfortunately, these effects deploy the greatest burden on those who take no part in the demand for oil.

Perhaps most tragically, this first and foremost includes the indigenous groups and communities living in exploratory mining regions. Since their existence is so connected to the lands they inhabit and the ecosystems that sustain them, the destruction and pollution of their land and water is impossible for them to manage. Deforestation to build access roads makes them vulnerable to more outsiders causing further disruption. As the lands and waters they have lived off of for thousands of years become poisoned by the effects of the oil drilling process, they are forced to either risk exposure to the deadly chemicals or they will have to abandon their homelands. If they continue to farm and fish lands and waters poisoned by oil extraction, these indigenous populations face toxic ingestion, symptoms of which include skin rash, chronic headaches, vomiting, as well as potential long term damage to the liver, kidneys, nervous system, and brain (rainforestfoundation.org). These people have no choice but to be sickened or uprooted by the pollution they have taken no part in causing.

The second group most adversely affected by petroleum culture and its damage are the groups of workers in each branch of the oil sector. Those who work at drilling and extraction sites face occupational hazards because of stresses associated with their physical locations, the constant threat of fires and explosions on the sites, the effects of exposure to various toxic chemicals, and the general day to day tasks involved (O'Rourke/Connolly, 596). To support the petroleum culture therefore becomes a way of supporting an entire job sector that is put in constant danger of injury and death. Some of the effects are not only felt by those who work at the facilities, but the groups living in close proximity to them.

These populations, those who are increasingly affected by the side-effects and the pollution of petroleum culture because of their physical locations are mainly low-income minority groups. With little political organization and few resources, these are the areas most quickly taken advantage of by oil companies in the production and distribution aspect of the industry. Because of such structural limitations to speak out against it, these are the areas that corporations build pipelines and house their service stations, refineries, and storage facilities. It is these places where exposure to gasoline, its additives, diesel exhaust emissions, and other pollutants is obviously the greatest. The public health risks this poses because of various carcinogenic compounds within these factors are numerous, and include diseases such as bronchitis, pneumonia, lung disease, and psychosis along with an increased risk of cancer. The relationship between the proximity of communities to refineries and cancer rates in these areas have been proven, showing specifically that it is the low-income,

minority communities most apt to have refineries are the places most affected (O'Rourke/Connolly, 605-6).

Less specifically locationally, human health issues are posed by any area that endures an oil spill. In the aftermath of a spill, communities are faced with the challenge of the contamination of their drinking water, and/or fish (O'Rourke/Connolly, 601). Many spills can take years to clean up, and even after they have been addressed the effects of the pollution caused may continue to last. Even less pin-pointed are the effects of the industry's pollution on the atmosphere in general. We all need to breathe, and the constant pollution of our air supply will eventually pervade everyone's space, even those who are the owners and operators of the system. If humans are to survive on this planet, one way to induce effectual changes is the abolishment of our petroleum based culture.

The Need for Change Within Agriculture

While the effects on the environment and on humankind are becoming harder to ignore as they become more visibly detrimental, there is an obvious need to look for alternatives to our current methods of living. One of the largest and most influential in this regard is the industrial agricultural system. Today's intensive system of chemically driven food production heavily sustains the need for petroleum products. Additionally, the practices and principles of industrial farming on their own are causing further damage to society and the environment. Agriculture is obviously a necessary practice, but with change, its use

methods as a system have the potential to play a large role in the effort towards increased sustainability.

What's Wrong With the Current System

The current system of food production in the field of industrial agriculture clearly lines up with the ideals of the capitalist system it thrives under: to create the greatest profit in the cheapest possible way. These methods applied to agriculture are impossible to sustain because of the growing population and diminishing resources. Therefore, the continued usage of this method of agricultural production has serious limitations.

The current agricultural system plays a large part in the demand for petroleum products, thereby contributing to the extreme amounts of pollution produced by the process and the resulting environmental effects. Fossil fuels are required by the creation and acquisition of fertilizers and pesticides, manufacturing and operation of farm equipment, irrigation techniques, and the processing, packaging, and transport of food. This kind of dependence on a nonrenewable resource exemplifies that the industrial food system faces inevitable collapse. With a growing scarcity of fossil fuels, the price of it and its products will rapidly escalate causing industrial agriculture to become entirely cost-prohibitive.

Furthermore, because of agriculture's intensive use of land, water, and human labor, the sector provides the greatest threat to biodiversity. This impending risk of entropy in the simplification of ecosystems also makes continuation of the current system impossible. The

industry has began the “structural simplification” of the environment by replacing biodiversity through the cultivation and domestication of limited amounts of plants and animals (Kopali). The result of this lack of biodiversity presents a major problem to the question of sustainability. By causing such an extreme imbalance in biospheric entropy, almost every aspect of industrial agriculture continues to support the destruction of the environment to an extreme degree. Part of this simplification involves the use of monoculture crops, whose production again entails the usage of petroleum products, further contributing to the detrimental demand for oil. The failures of industrial agriculture extend to its destruction of a system filled with opportunities to connect to the Earth, not destroy it. Because of its goals of maximum production and large scale profits, combined with a neglect of sustainable methodology, the process of industrial farming has continuously eliminated the farmers with the greatest connection to their land, the greatest wisdom of its best use, and the greatest desire to manage it properly.

The Alternative of Sustainable Agriculture

Through analysis of the failures and effects of the industrial agricultural system, it is evident that an alternative food system structure is needed. By producing food in a way that does not contribute to the demand for petroleum or contribute to the destruction of the planet, sustainable farming methods are the answer to environmental preservation and protection of the public health. Not only is sustainable agriculture in practice actively defending biodiversity, it promises a food system that incorporates economic improvements through community based initiatives.

Broadly defined, sustainable agriculture is “the production of food, fiber, or other plant or animal products using farming techniques that protect the environment, public health, human communities, and animal welfare. This form of agriculture enables us to produce healthful food without compromising future generations' ability to do the same” (sustainabletable.org). The system’s goals reveal an inherent connection and place in the fight against a petroleum based culture. If put into practice, sustainable farms may be a key factor towards creating widespread social justice in the form of food security and food access. Sustainable agriculture is part of the necessary transition of our society from oil dependence to independence by the remaking of food systems. With an agricultural method enforcing a rededication to the restoration of soil health, the need for the energy inputs of irrigation, synthetic inputs, and machinery use may be reduced. Sustainable agriculture also presents the opportunity to create diverse, polyculture farms with biological synergies that store energy through their position within nature’s larger system, and therefore allows an opportunity for the restoration of the connection between humanity, community and the land (Kirschenmann).

Urban Areas for Agriculture

Urban areas and their capacity for agricultural development has become increasingly relevant to moving towards a sustainable future in food production. This is due to the rapid

rate of population growth in cities, or urbanization, the concentration of economic activity within urban centers, and the objective and inevitable connection between urban demand, resource consumption, and waste production on a global scale (McGranahan & Satterthwaite, 244).

Urbanization and Demand

Trends in increasing urbanization contribute to the extension of the already massive amount of economic activity concentrated in cities. This economic sector directly corresponds to the high demands for natural resources in these areas, leading to the extremities of industrial waste created. Urban centers are the location of the vast majority of the entire world's economic activity. Subsequently, cities become the places with the highest rates of waste production.

The demand for goods and services of the middle and upper income population groups who live and work in these urban centers is high and continues to grow. This rate of demand sets a precedent for the amount of resources used in production, and the amount of waste output from those processes. This causal relationship determines the high proportion of greenhouse gases both in cities as the main production centers, and rural areas whose purpose of production is to service the growing and constant urban demand. This is specifically relevant to the production and transportation of electricity, fossil fuels, oil, and farm products. Because of the direct relationship between the urban and rural landscapes in this manner, the degree of environmental management practices enforced within cities,

regarding both efficient resource usage and waste reduction policy, is correspondent to the measure of quality of life in both rural and urban centers (McGranahan & Satterthwaite, 244). By changing patterns of production and consumption within urban areas through a change in agricultural practice, there is potential for widespread benefits of sustainability worldwide.

On the other side of the spectrum, urbanization causes a different type of demand. A social demand to provide for the growing population of the poor. As worldwide population expansion occurs, the amount of people living in urban areas will without doubt follow a continuous growth trend into the future. With that, cities will continue to amass large populations of poor and low-income peoples who are facing unmet needs (McGranahan & Satterthwaite, 244). These demands do not contribute to the petroleum culture, but present a question of social accountability and bring attention to the need for a change in the system to address such an expansive problem. Widespread poverty has significant implications for the worldwide economy as a whole, and its persistence in urban areas threatens the vitality and success of cities altogether as areas become increasingly destitute.

Opportunity in Cities

Just as it presents challenges, the high density structure of an urban environment also provides opportunities. Creation of sustainable practices may be advantageous within cities

because of the high concentration of both people and production. Per capita resource use is decreased, while potential waste reduction, reuse and recycling initiatives are much more attainable. Environmental management becomes severely less expensive and easier to maintain when centralized, rather than when it is more widespread across rural areas. Even among middle and high income cities and countries, those within similar income brackets living in suburban and rural areas have a much higher rate of resource consumption than those living in cities (McGranahan & Satterthwaite, 250). This proximity for minimization of resource usage and maximization of enforced sustainable practices can be produced and fully effective in the implementation of urban agricultural systems. One of the most essential aspects of urban agriculture is its ability to fight against the petroleum culture and the injustices it incurs. By localizing food production, urban farms cut out the pollution caused by product transport methods. This decrease in demand plays a major part in the overall effort towards the transition.

By eliminating the costs of transportation, healthy, organic foods become more accessible and more affordable. Those who were marginalized because of limited access to supermarkets and health foods now have the opportunity to join a community dedicated to providing its members with necessary nutritional food sources. Not only does urban agriculture set the foundation for resistance to the petroleum culture, it provides opportunity for community growth, both socially and economically. Through participation in the agricultural process, people have the chance to become connected to the food they eat and the land it is grown on, allowing them a greater understanding and respect for the

environment. Social cohesion through participation is especially valuable in urban areas where people are often separated by economic and societal barriers. Urban agriculture presents a unique societal opportunity for people to become part of a larger community effort. By joining a Community Land Trust, people are able to participate in their own food production leading to a much greater awareness of how food gets to their table and a better respect for the land that provides it. People are afforded the opportunity to eat locally grown, healthy, affordable foods.

The ideals, goals, and framework of urban agriculture allow communities the opportunity to take control of their food sources and afford them a chance to participate in the process. In this way, urban agriculture has the potential to change societal structure in a meaningful and democratic manner. Since the entire system revolves around sustainability, it promotes an atmosphere inherent of the concept. This includes equality no matter societal circumstance, social justice, environmental justice, and the strive towards access to healthy foods. This system provides food security that is much needed, especially in today's globalizing, urbanizing world. As communities are able to grow together through the commonality for basic human rights that urban farms provide, they will be able to empower themselves and learn from each other.

This type of action being taken within cities has the potential to lead to social coherence, and with common goals these groups will be able to attain widespread political change as their knowledge and will to participate expands. Urban agriculture has the

potential to create this change because of the ideals it is founded upon and the inclusion that its principals create. When people have a place to come together where they feel safe, comfortable, and prepared to share thoughts and ideas, change is possible. Because of this, community land trusts and community supported agriculture may become some of the most important political factors of our time.

Not only are urban farms an influential social and political actor, they are a promising mechanism of economic growth for communities at large. In many urban areas, there are various abandoned, empty neighborhoods which have felt the devastating effects of global economic downfall and repercussions of changing economic policy throughout time. Urban agriculture has the potential to turn that around. By converting abandoned lots into small community farm lands, the area becomes a center that the community feels ownership towards because they are a part of it. Therefore the space will be cared for, creating a safe place for participation. This type of vitality within a community is so important to its livability. If a population is given something worth caring about, they will care for it, and it in turn will provide beneficial social value. When a community has the opportunity to work towards something they know they will benefit from, they will.

The Radix Ecological Sustainability Center in downtown Albany is a wonderful example of the way that urban agriculture has the potential to change lives. The once abandoned lot is now a small farm and greenhouse which is part of an effort to promote sustainability through education and practice within an urban community. Their focus

remains of food security, health, and intentions of soil remediation for sustainability at large. By giving tours, teaching workshops, and talking to people who drop by, the center creates a learning community of people connected through the basic human need of nutrition. The realization of the fact that we are all essentially made up of the same things, and so need the same things to survive may perhaps be one of the most unifying epiphanies a person could make. Having personally shown people around after their curious eye or an eager child leads them to approach the gate, I can attest to the addition to a city's community that places like urban farms can give.

Humankind does not survive on bread alone. We, as people within an ever cyclical and changing universe, have a basic need that includes more than that. We need to be nourished, not just fed. This comes from healthy, natural foods, grown from non-toxic soils and produced in non-toxic ways that play no part whatsoever in the destruction of the Earth that provides us with them. But this need extends further than that, into nourishment of the soul, which happens through the inspiration and encouragement we find in one another as human beings, and that we find from the Earth, as we begin to identify and connect ourselves with it. This is something so much more valuable with the monetary rewards of a capitalist system which encourages competition and measures individual worth by success or failure in the market. The practice of sustainable, urban agriculture will join together current diverse populations and strengthen communities through development, while increasing social capital and food security for future generations.

The Next Steps Towards Sustainable Urban Agriculture

Local Government Initiatives

Local governments rather than the federal government are better equipped to implement successful local farming initiatives because food access is both a community and culturally based issue. Input from local populations is necessary for expansion of access through councils and food policy initiatives such as re-zoning for farming. Urban agriculture has the potential to increase food security, while ensuring availability and affordability to communities if practiced. Incentivizing farmer's markets, providing resources and publicity, and establishing community based food systems needs to be in the hands of local municipalities who know the best way to address the needs of their residents.

Changing the current approach to food system policy has the potential to incorporate sustainable methods of healthy-food access. This is primarily important because of the directly associated social and economic effects that can potentially be addressed as well. Various food policy reforms have been being put into place as governments begin to recognize the need for increased attention to the issue. However, as programs begin to surface it is becoming quite clear that the most success is to be found in action at the local level, not federal. The federal government trying to address, define, and fund programs for an issue that is so area specific is largely ineffective. For example, the United States Department of Agriculture attempted to combat the pervasive issue of food deserts (Broad Leib, 329-333). However, their attempt to define the term itself presented issues in accurate representation of the areas truly in need due to inaccurate measurements of food access or

availability. Should the federal government instead choose to empower and support local efforts than combat the problem with themselves, resources would perhaps be better put to use. Local governments have the opportunity to work closely with the community, the body of people who know best what they are in need of and the possibilities of how to implement successful programming. By learning the intricacies of a community food system, policy is more likely to be able to respond to specific needs and better identify where their efforts will be most effective. Local definitions of food deserts are therefore better suited to help successful programming than the more generalized approach at the federal level.

By creating community specific definitions at the local level to identify food deserts in the most needed urban areas, local municipalities would be able to provide effective policy. Most importantly, programs to facilitate incorporation of the input of the community would be possible. This is an intricate part of the process because of the cultural differences that exist within communities. Different habits of food production, consumption, and distribution play an integral role in deciding the methods and approach to determining appropriate policy. Especially in urban areas, localized policy focused on cultivation methods is necessary to increase healthy food access, availability, and affordability (Broad Leib, 330). Further advantages to local policy initiatives include the ability to increase access through changes which will encourage the expansion of urban agricultural practices. By amending zoning laws to permit community gardens and urban farms, policy changes give residents the opportunity to create a localized food system that will increase food security and access. Not only will these community based systems be an asset to the vitality

and livability of urban areas, they can become means to economic growth, and inevitable reductions of current levels of pollution (Broad Leib, 338-340).

Conclusion

Albert Einstein once defined insanity as “doing the same thing over and over again and expecting different results.” The results of immersion in the petroleum culture have proven themselves to be unsustainable through the progressive and ultimate destruction of our planet. To continue down this path, is to continue an already failed system. The need for sustainable agriculture is real, as are the benefits promised by urban agriculture. If as a society, using local thinking to change policy, we are able to recognize a foundational cultural shift, we will be able to recreate places as ones we want to live in. This promise for a equitable, truly democratic society will need to start by the reconnection of humankind to the Earth we belong to, and to one another. These connections are possible through the microcosm of this societal structure urban agriculture can provide.

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