

2445 Organics

As of June 2020, the 12 month CPI for food increased by 4.5%, broken down by two categories, “food at home” and “food away from home”, which have increased by 5.6% and 3.1% respectively (era.usda.gov). With the CPI for fruits and vegetables at an increase of 2.3%, growing food at home is the healthiest and most economically sound choice. By utilizing 24:45 Organics’ technology, you can grow high yields of nutrient dense, organic fruits and vegetables as local as your own home.

Medical Costs to the U.S. Economy

Eating out too often can lead to the consumption of unhealthy and/or cancer causing foods, as well as overconsumption considering the size of most U.S. restaurant servings. Poor eating habits, whether due to low income or personal preference, contribute massive costs to the U.S. healthcare system. Heart disease and stroke are the leading causes of death in the U.S., costing the healthcare system \$199 billion per year in addition to \$131 billion in lost productivity on the job. While obesity affects almost 1 in 5 children and 1 in 3 adults, it can easily lead to diabetes, heart disease, and certain cancers, which only add onto the \$147 billion a year medical care costs at the hands of obesity. By growing food ourselves and changing or instilling healthier eating habits, we can try to reduce or flat out avoid the \$327 billion in medical costs and lost productivity due to diabetes in the U.S., as estimated in 2017 (cdc.gov).

Incidentally, medical care costs increased by 11.6% between 2015 and 2019 (ers.usda.gov). When consumers substitute quality for convenience, they forego not only fresher, locally sourced food, but health benefits as well. What one consumes can directly affect health, whether that be negatively or positively. With greens grown in nutrient dense soil, indoors and year round, the threat of a recall is eliminated and the growing season becomes year long.

While American consumption of fruits and vegetables has increased since 1970, the average U.S. diet still falls short of the amount recommended in the 2015-2020 Dietary Guidelines for Americans. Despite recommendations, the consumption of meat, eggs, nuts, and grains in 2017 was well over the recommended amount (ers.usda.gov). Low income families have less access to fresh affordable fruits and vegetables, leaving cheap, calorie-high, and unhealthy yet seemingly convenient products in affordable range.

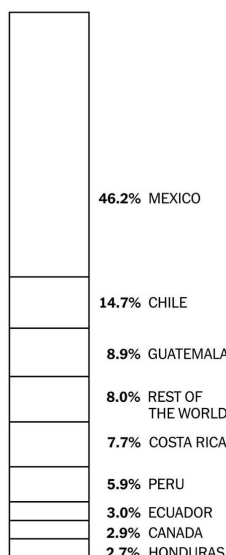
If we don't make a switch towards a plant based diet and continue the current trends of meat consumption, it could cost the global economy up to \$1.6 trillion, and between \$197 billion to \$289 billion for the U.S. economy alone by 2050 (pnas.org). This doesn't include the lost labor and medical costs previously mentioned.

Trade/Imports

As far as trade goes, agricultural imports have grown at a faster rate than exports since 2016, with agricultural imports increasing by 4% annually on average since 2000 (ers.usda.gov). This means more of our produce comes from other countries than we grow here for ourselves. More specifically, ½ of all the fresh fruit Americans buy/consume

A bounty from Latin America and beyond

Sources of imported fruit (fresh or frozen) by value, in 2016



and close to ⅓ of fresh vegetables

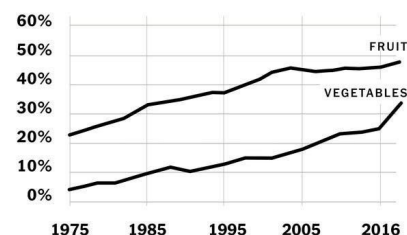
come from other countries, mostly located in Latin America and Canada. In fact, the amount of imported fresh fruit eaten in the U.S. increased from 23% in 1975 to 53.1% in 2016, while the respective amount of imported veggies rose from 5.8% to 31.1% (nytimes.com). The reasons for these imports are simple: increased availability and out-of-season produce. These imports are often significantly cheaper than their domestic counterparts, which leads to lowering of domestic prices due to the high competition from abroad.

"I generally have more confidence in domestic than imported organic." -Michael Pollan, author of *In Defense of Food*, *The Omnivore's Dilemma*, *Food Rules*, etc.

24:45 Organics' Super Grown System gives us the ability to grow locally, within reach of the community that it's feeding. Our year round grow system eliminates the need for seasonal imports. Anyone anywhere can grow with our technology, meaning we can begin to grow domestically again, reducing transportation costs to both the environment and the economy.

A steady rise in imports, over four decades

Percentage of total U.S. sales of fresh fruit and vegetables



Food Miles

When eating domestically grown produce, food still travels long distances even within the country. Although grocery stores across the U.S. ship in organic produce, much of the nutritional value, as well as freshness, is lost in transit. With crop production focused in California and the Midwest (if not internationally), produce must still be shipped across and all over the country among truck fumes, quickly deteriorating in quality.

Although nearly 98% of U.S. farms in 2018 were family farms, most value of production occurs on large farms. The number of farms has steadily decreased since its peak of 6.8 million farms within the U.S. in 1935 (ers.usda.gov). Despite decreases in the number of U.S. farms, farm land has not decreased, leading to large factory farming. Crop production is concentrated in California and the midwest and crops account for the largest share of the value of U.S. agricultural production.

Food miles refer to the distance food travels from its origin to the consumer's plate. For food items of one ingredient such as produce, food miles are calculated by considering the weight of total food items transported and the distance traveled. A more advanced formula for calculating food miles also takes into account greenhouse gas emissions from transit.

Fruits and vegetables are perishable goods; they bruise easily and become damaged in transit, thus losing shelf life before they even reach store shelves. Some effects can't be seen, but rather tasted. For example, fruit loses acidity over time affecting taste, and levels of vitamin C decline in addition. Though it may be slightly fresher, produce flown in via air travel tends to be much more expensive and the pollution and carbon emissions associated with air travel outweigh most of the benefits. Not only do more food miles increase the overall carbon footprint associated with growing and transportation, but food quality decreases as well.

Traceability

Speaking of imports, according to a 2015 report by the FDA, 9.7% of imported vegetables samples and 9.4% of imported fruit samples violated federal standards for pesticide residues. This is in comparison to 3.8% and 2.2% respectively of domestically grown vegetables and fruit. With the mass reduction of food miles, one of the greatest benefits of indoor growing is full traceability; we have the ability to watch our food grow and know where it came from. In 2018, the federal Centers for Disease Control and Prevention reported 6 deaths, 128 hospitalizations, and 300 infections, all

Papayas, sure, but also squash

Percentage of fresh produce grown outside the U.S. in 2016

99.9%	BANANAS
99.9%	LIMES
99.9%	MANGOES
99.9%	PINEAPPLES
97.7%	PAPAYAS
95.6%	ASPARAGUS
85.9%	AVOCADOS
82.1%	KIWI FRUIT
79.0%	ARTICHOKES
78.0%	BLACKBERRIES
75.2%	GARLIC
74.2%	CUCUMBERS
64.7%	SQUASH
60.2%	BELL PEPPERS
57.2%	BLUEBERRIES
57.2%	TOMATOES
56.9%	EGGPLANT
50.0%	GRAPES

of which were traced to romaine coming from traditional farms. The implementation of 2445 Organics' grow technology completely avoids this route by growing within a sterile environment, free of pests and outside interference.

Environmental Benefits of Indoor Farming

Environmentally, indoor vertical growing is the clear sustainable choice for future agriculture. With year round yields, no matter the season, food is constantly growing. There is no off season and you can proficiently sustain your own lifestyle and eating habits, good for both health and budget. Furthermore, there's no travel time from farm to plate, whereas produce usually travels about a week or two or 1500 miles before it's put on grocery store shelves. With 24:45 Organics' grow technology, your food can't get any more local! There's no need for long distance transportation nor heavy farm equipment, thus eliminating most carbon emissions produced by traditional farming.

Indoor growing means higher yields and fewer losses, all while growing locally. Over half of the country's land is currently being used for agricultural production. By growing vertically indoors on our grow systems, less land is used and used more efficiently, producing greater yields than field grown produce. In 2018, agriculture accounted for about 10.5% of U.S. greenhouse gas emissions. These emissions have increased by roughly 10% since 1990, making total greenhouse gas emissions 3.7% higher. Furthermore, though it represents a small share of U.S. land, urban land has tripled in area since 1949 (ers.usda.gov). With more and more movement towards cities and urban areas, agricultural hubs become farther and farther away. By growing indoors, we can provide farms/microfarms centrally located in urban centers, thus supplying fresher food and greater employment opportunities for the area.

Food Security/Accessibility

In 2018, 1 in 7 households with children experienced food insecurity. Food insecurity rates are highest among single mother households and households with incomes below the poverty line. In 2018, households in the lowest income quintile spent an average of \$4,109 on food while households in the highest income quintile spent an average of \$13,348 on food (ers.usda.gov). To put that into perspective, that's 8.2% of income spent of those in the highest income quintile versus a whopping 35.1% of income for those in the lowest income quintile.

According to a 2018 study, by replacing animal-based products with plant-based products in the U.S. diet, an additional 350 million people could be fed with the resulting food created (weforum.org). Not only that, but all the food that's currently grown for mass animal consumption could instead be feeding those who are currently going without. Going plant-based, furthermore, growing produce vertically indoors, saves more space and land, feeds more people, and produces food more efficiently than our current food system.

24:45 Organics provides nutrient dense food at your fingertips! By growing indoors in cycles, harvestable food is always available. Instead of growing outside and risking pollution, runoff, and adverse weather effects, we create the perfect microclimate in which our produce thrives. Not only are our crops more predictable, but they come with complete traceability and less unnecessary water waste. Bring food security to your establishment with 24:45 Organics Super Grow System!

Community Through Farming

Health aside, farming is a great community builder, as proven time and time again. Food is something we can all relate to as an integral part of our lives. We use food for sustenance, comfort, ritual, celebrations, and so many other aspects of daily life. While more and more of the growing population moves towards urban centers, the prospect of local, farm fresh food becomes more and more distant. With 24:45 Organics' indoor grow technology, we can reuse old and empty buildings in urban areas, bringing the farm right to your city.

A 2002 study on the Community Supported Agriculture model reported that several participants had no prior farm ties nor experience with agriculture (joe.org). Despite the lack of direct links to local farming, the CSA created a space for newcomers and others new to agriculture. The greatest disadvantage the study mentions is land scarcity, both due to unavailability or unaffordability, in both rural and urban areas. The 24:45 Grow Technology utilizes and in a sense creates space. With land base being scarce, our grow system provides more grow area on a smaller land base while getting greater yields due to both the technology and ability to grow food 365 days a year. Furthermore, a model like this, or a model more like our own results in increased profitability by bypassing the broker or middle man in the traditional farm to market model. There is a mutual benefit to both farms and consumers in models like these, producing a sense of community and connection to our food sources.

In 2019, only 36% of American adults aged 25+ had a bachelor's degree, while 90.1% had only a high school diploma (nces.ed.gov). It is becoming increasingly hard for those without degrees to obtain jobs, especially jobs that pay a liveable wage. Because of the simplicity of our grow system, anyone can learn how to grow using 24:45 Organics' technology. Employment opportunities are abundant with no education requirement. No prior experience or knowledge of farming is needed as we train everyone ourselves.

Our technology is more than just a means for production. We implement grow areas in schools, prisons, nursing homes, rehabilitation centers, and anywhere else we're needed. By growing food in-house, food costs can be supplemented or replaced with home grown produce. Furthermore, those who care for the plants develop gardening and farming skills, learn about sustainability, healthy eating habits and gain a closer relationship with food in general, as well as where it comes from.

Our approach to modern indoor farming is cheaper than traditional farming for multiple reasons. Farmers can afford to pay fair wages while still turning a profit. Additionally, lack of expense of big farm machinery such as tractors, machine breakdowns, diesel, gasoline, and oil keep costs down.

Utilizing the 24:45 Organics technology makes it easier to obtain year round, nutrient dense produce that depleted soil doesn't give.



USDA
United States Department of Agriculture Economic Research Service
[Ers.usda.org](https://ers.usda.org)

CDC
[Cdc.gov](https://cdc.gov)

CDC Report

<https://www.washingtonpost.com/business/2019/11/19/indoor-farming-is-one-decades-hottest-trends-regulations-make-success-elusive/>

World Economic Forum

Weforum.org

<https://www.weforum.org/agenda/2018/12/vegetarianism-is-good-for-the-economy-too/>

National Center for Education Statistics

Nces.ed.gov

https://nces.ed.gov/programs/digest/d19/tables/dt19_104.10.asp

Proceedings of the Nation Academy of Sciences of the United States of America

Pnas.org

<https://www.pnas.org/content/early/2016/03/16/1523119113>

Journal of Extension

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<https://www.joe.org/joe/2002june/a3.php>