SLIA

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Agriculture

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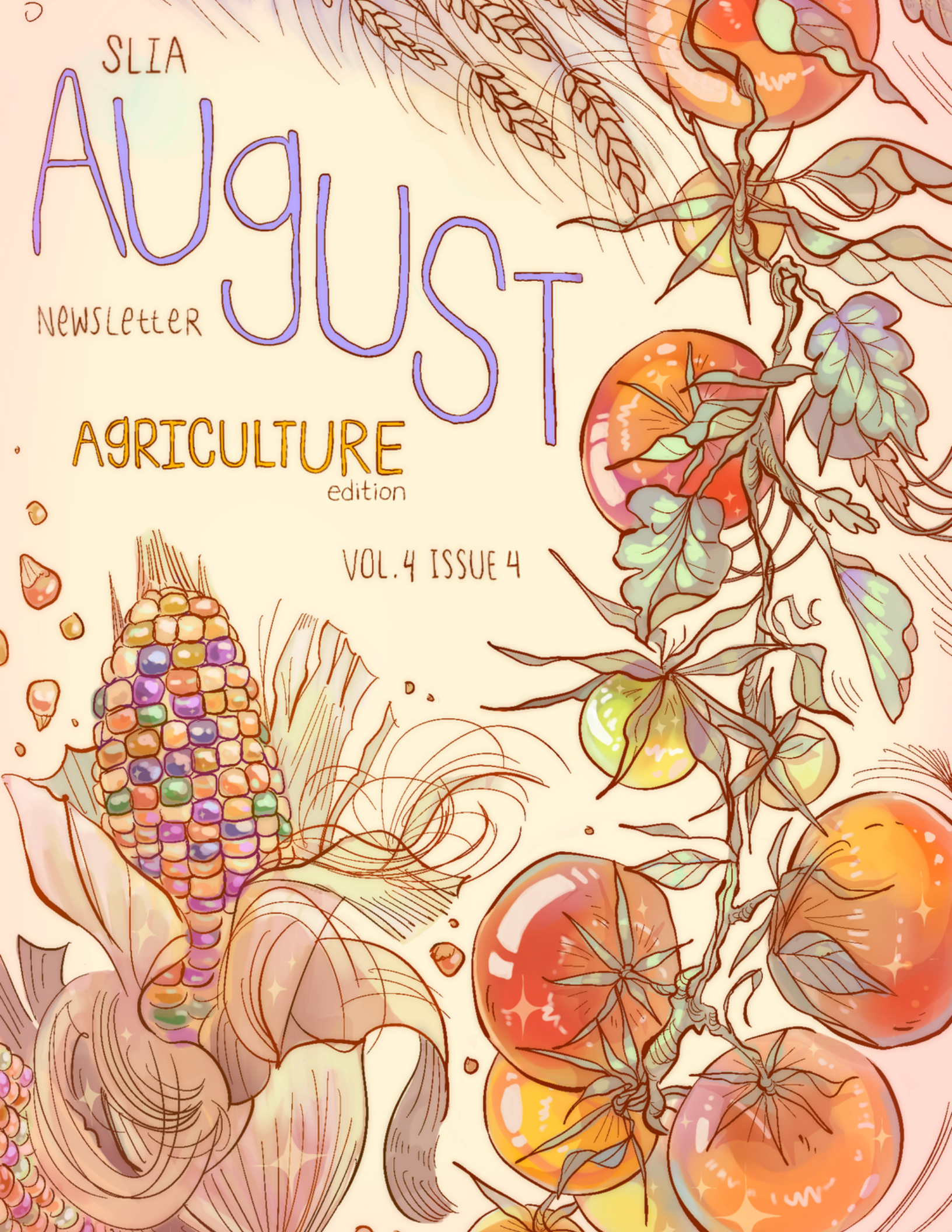

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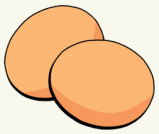
Sustainable Vs. Unsustainable Farming Practices



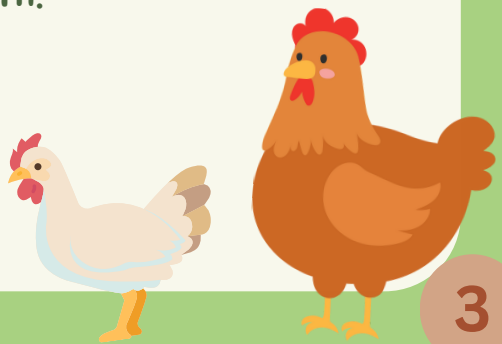
By Alison Chiu

Agriculture makes up a large part of our economy–in fact, agriculture and its related industries account for about $1.264 trillion of the US economy and around 44.3% of American land. Since agriculture is such an influential part of our country, it is important to analyze the impact of agriculture on the environment.

There are stark differences between sustainable and unsustainable farming practices that separate agriculture that is clean and long-lasting from agriculture that results in permanent harm to its environment. According to Farm Management and Greentumble, here are some of the top practices that make farming practices unsustainable and harmful:

1 Using excessive chemicals

While many chemicals may be helpful in producing healthy and abundant produce, such as solvents, fuels, insecticides, herbicides, fungicides, and fertilizers, an excess of chemicals can quickly become an environmental and health hazard. Animals that live near contaminated areas may be affected by toxins, such as those from pesticides or herbicides, that can even cause death.

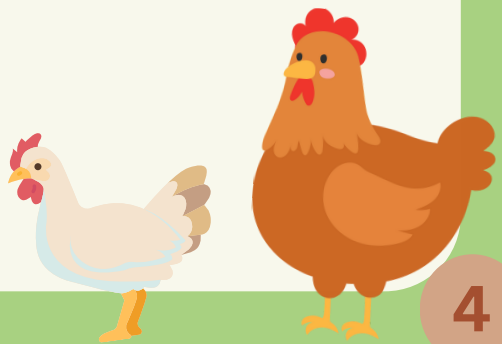


2 Developing monoculture crops

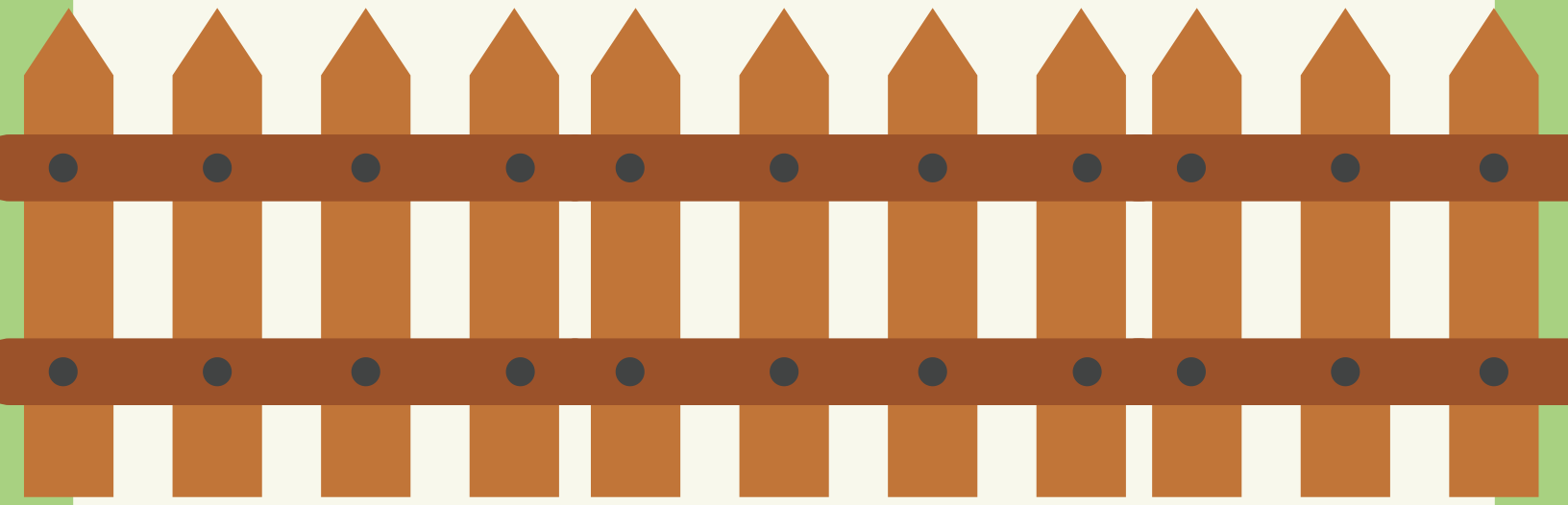
The practice of growing monoculture crops includes the cultivation of just one type of crop for a prolonged period of time on the same piece of land. Supposedly, monoculture crops yield higher levels of efficiency, production, and profit. However, monoculture farming also greatly decreases the diversity of crop fields. This makes combating pests and increasing soil fertility much more complex and lengthy processes. The excess money spent on the health of the soil, plants, and surrounding animals creates even more unnecessary costs that would not have been suffered had diverse-crop farming practices been used instead.

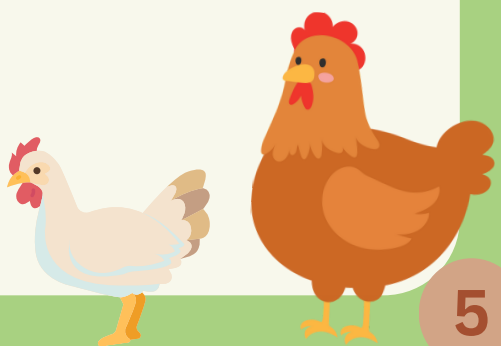
3 Overproducing produce

Many farmers accidentally create too much produce in comparison to consumer demand, causing large amounts of waste. Overproducing produce results in even more unsustainable impacts on farmers. It is much more difficult for farmers to maintain their level of efficiency when they are consistently growing more than needed or demanded by the market. Furthermore, farmers that overproduce are subjecting their soil to unnecessary stress to grow produce that will only be wasted and thrown away.



Despite the adverse effects of unsustainable farming practices, it is important to acknowledge that there are many sustainable farming practices that help farmers provide fresh and healthy produce without harming the environment around them. Some of these sustainable practices include exploring advanced technology and systems that focus on water efficiency, healthy soil, clean air and water, lower carbon emissions, and biodiversity. By combating unsustainable farming practices and using alternatives, farmers and the agricultural sector as a whole can maximize their efficiency in the cleanest way possible.





HOW TO REDUCE FOOD WASTE IN YOUR HOME

BY NICOLO DOLGE

Did you know that every year in the US Americans waste 119 billion pounds of food? That's nearly 40 percent of what we buy! Can you imagine if, just by living in the US, you got that amount of your income taken away? It's a widespread problem; food waste leaves Americans hungry, hurts the economy, and causes environmental damage. However, it's completely avoidable if we stop misusing our resources.

The biggest problems caused by our unused food are social, economic, and environmental in nature. Compared to the 40 percent of food we waste, only 10.2 percent of Americans struggled with food insecurity in 2021. If we could be slightly more efficient with the resources we already have, there would be more than enough for everyone to eat. We have so many public services that help those struggling with food security, including tax-funded government programs like food stamps. When people waste food, they are throwing away money and taxes that could otherwise go right back in their pockets.

Our wasted food not only causes economic losses, but it also has environmental ramifications. Food waste is a large producer of American greenhouse gas emissions, equaling that of 32.6 million cars annually. Most of this comes from methane gas, produced by leftover food in landfills that struggles to decompose. These greenhouse gas emissions contribute to climate change by raising the average global temperature, causing massive species extinctions and creating increasingly volatile weather events. If you live in California, you've seen its effects in the devastating fires and severe droughts we've been experiencing for years. The effects of climate change also put a larger strain on your wallet for air conditioning to beat the heat and air filters to beat the smoke.

The most troubling aspect of the food waste problem is that it grows every day; small, unmoderated actions have aggregated over time into the immense issue we have today. Nearly everyone plays a role in it at restaurants, workplaces, and at home because so many Americans have the wealth and associated privilege that allows them to throw perfectly good food away without needing to worry about the expense. However, people neglect the real costs associated with food waste - for others, for the environment, and even for themselves.

With all that information, you likely understand that we are all involved in the food waste problem, but that also means we can all be involved in the solution. If you want to make an impact, start by reducing food waste in your house. There are many things you can do, like freezing unused food to extend its life or planning meals ahead of time. If you buy something and decide you don't need it, donate it! There are plenty of underprivileged people in America who would really appreciate your extra food. In the event that you have leftover food, there are plenty of apps and services with recipes to make with it. You can also ensure that none of it ends up in the landfill by composting. Composting is when you take leftover food scraps and other organic materials and, either through a municipal waste company or your own backyard, allow it to decompose and turn into nutrient-rich soil for agriculture. Read our "Action of the Month" article on composting for more info.

Many issues like food waste remain unsolved because people don't believe that personal change can make a real difference. In order to spread positive change beyond yourself, try educating others. Help your friends and neighbors understand the impact of wasting food, and coach them on how to alter their habits for the better. This problem will only be solved if we all pitch in, so it's important to inform others and help them participate in the solution with you.

Food waste is both pervasive and incredibly harmful; however, you can be a big part of the solution by making changes in your own life and helping others do the same. This article gives you all the information you need to do both, so start making a real difference (and saving money) today!

GMOs: Adopt or Drop?

By Stacey Ndeke

Have you ever browsed the produce aisle at a supermarket and saw that some of the labels read “Contains GMO,” “GMO Free,” or “Non-GMO”? These labels are showing up more frequently in our stores, and many people are often baffled by the new terms. GMO is an acronym for genetically modified organisms. The FDA (Food and Drug Administration) defines GMOs as products that undergo a process where their DNA is modified using genetic engineering.

Due to GMOs being such a novel term in the past couple of decades, false information about the effects of humans consuming GMOs has spread all over the media. The Breakthrough Institute explains that the failure to educate the general public about GMOs sooner has caused an irreversible bias against them and swayed understanding and public opinions of what GMOs actually are. According to The Breakthrough Institute, “millions, possibly billions, of people have come to believe what is essentially a conspiracy theory, generating fear and misunderstanding about a whole class of technologies on an unprecedentedly global scale.” These conspiracies have real-life repercussions that endanger the lives of many. For example, in 2002, the Zambian government denied the shipment of thousands of tons of produce during a high famine because their president believed that the GMO produce was poisonous.

Genetically modified foods are often at the forefront of many discussions. It is usually a highly controversial topic that affects multiple intersections of our lives, especially in food and agriculture.

According to the FDA, most GMOs are used to help farmers prevent crop loss, resist insect damage, tolerate herbicides, and resist plant viruses. Farmers have found that GMO crops help reduce the amount of pesticides they have to spray on plants as well as the amount of soil that needs tilling, allowing more of the soil to maintain its health and the farmer to use less fuel and labor. Today, genetic engineering also allows

us to enhance the size of the crop, increase its shelf life, and add more nutrients, minerals, or vitamins to certain produce. For example, certain types of GMO apples brown much slower than regular apples, helping to reduce food waste due to the increased shelf life. Similarly, golden rice (rice that is high in beta carotene) was genetically engineered to include a higher concentration of Vitamin A and was given to impoverished communities to help prevent blindness caused by a lack of Vitamin A in their diets. Still, nobody really knows the long term effects of frequent GMO consumption. Other than the occasional allergy development, nothing groundbreaking has been revealed about consuming GMOs and its negative or positive long term effects on the human body.

Once GMOs are introduced into the environment, they can affect everything around them. The benefits that give a potato the ability to grow twice its size may also give the surrounding weeds the ability to grow twice as fast. This unintentional spread of specially modified genes has been an ongoing problem for many farmers in the US. The farmers of Farmers Aid explain that with time, certain genetically modified seeds gave nearby weeds the ability to adapt and withstand glyphosate, a chemical often found in many herbicides. According to Farmers Aid “there are now at least 14 species of glyphosate-resistant weeds throughout the country, and almost double that number worldwide.“ Due to this increased resistance, farmers have to use very toxic pesticides to combat these new weeds, which can introduce diseases to beneficial plants and crops by eliminating their ability to absorb nutrients. This leads to a greater need for soil tilling, ultimately destroying soil health and making the farmland utterly useless for any crops.

It is important to understand the ways in which GMOs have affected us. Reading GMO studies and keeping up-to-date with your local news is a great way to start forming your own opinion on the addition of GMOs in our society. Whether you think they deliver more pros than cons or vice versa, it’s important that we as a society stay informed to fully understand the effects of genetic engineering in our food and agriculture.

August Action of the Month: Composting

BY JOSHUA ODIASE

Composting. It's a word you have most likely heard of before and may even have some experience with. Composting takes your extra food, plants, paper products, and other organic waste and turns them into fertilizer to nourish Mother Earth, converting your trash into nature's gold. It is a sustainable alternative to the traditional method of sending food and other waste to landfills, where it creates the greenhouse gas methane, thereby greatly reducing greenhouse gas emissions from food waste. Composting is also a frugal option, as it lowers your monthly garbage bill by reducing the amount of waste you consume.

Now that you know the benefits of composting, you might be wondering how to go about doing it. A great way to start is by reserving a small bucket for the kitchen and a large container outside for collecting greens (grass clippings, vegetables, and bread) and browns (leaves, branches, and paper). If you don't know what can and can't go in your compost bin, check step three on the Cleaner Contra Costa website's Compost article for more information. To compost, layer the browns and greens you collect into a bucket to enclose it, add water, and flip the bin consistently to allow oxygen into the mix, then sit back and let the microorganisms work.

The only thing you need to get started composting in your own home is a bin. You can either build it or buy one at your local hardware store. For an indoor bin, a 10-15 gallon container that is 12-15 inches deep, wide, and tall is suitable; then just pick a spot in your kitchen or patio. For an outdoor bin, make sure to check your city ordinances as some cities require a compost enclosure while others permit a freestanding pile. Outdoor enclosures should ideally be 3 feet by 3 feet and near a water source that receives moderate sunlight while still having some shade cover. Another option is curbside pickup, which requires keeping a small container in the kitchen to collect food waste and then emptying it into an outdoor container that is picked up by city waste disposal or dropped off at a local composting facility.

Indoor composting bin

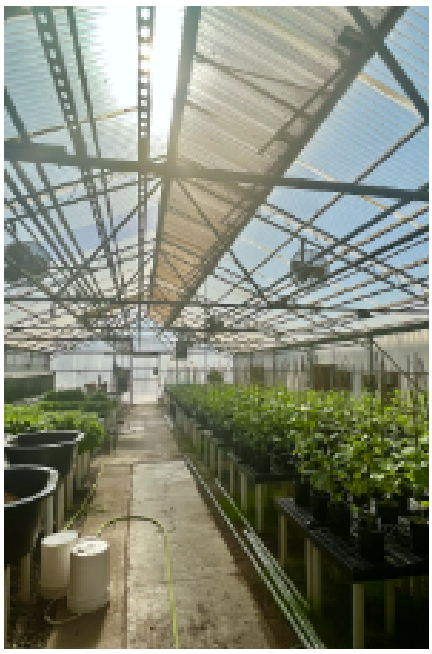
Outdoor composting bins

Composting requires little time and effort; it just takes consistency to add to the pile or bin daily or bidaily. If you want to become more of an expert, here are some tips. Try turning the contents of your bin with a trowel or compost fork once a week to allow oxygen into the compost and create a more suitable environment for the microbes to work in. If your pile smells bad, your compost most likely has too little air or too much moisture and waste for the microbes to work. This is where your trowel comes in. It takes on average 2-4 months to make finished soil; when done, the compost should be a dark, uniform material with an earthy odor. Take this new soil and sprinkle it in your garden. That is the magic of composting- turning waste into soil that can fertilize plants and new life.

So, this August, join the challenge with SLIA by putting together a composting system in your own household. Learn more about this action and get involved by taking a look at the Cleaner Contra Costa Challenge. By taking action together, we can create collective change and prevent excess food waste in our own lives!

Future Foods: Sustainable Aquaculture & Aquaponic Food Production

By Rohan Tyagi Art: Karina Chen



In a world marked by population growth, dwindling resources, and the impact of climate change, there is a growing urgency to find sustainable and efficient ways of producing food. Agriculture is responsible for roughly 20% of global greenhouse gas emissions, and aquaponics reduces that impact. During my time at UC Davis this summer at the COSMOS program, I had the opportunity to explore new approaches to sustainable food production that tackle these pressing issues. Two exciting methods that caught my attention were aquaculture and aquaponics. These innovative systems offer promising solutions to address the challenges we face while also meeting the demand for healthy and nourishing food. The systems come in different sizes and hold immense potential in revolutionizing our perception of agriculture.

To grasp the concept of aquaponics, we need to delve into the world of aquaculture. Aquaculture, which is widely known as fish farming, involves nurturing aquatic organisms like fish, crustaceans, mollusks, and aquatic plants. Aquaculture systems are implemented in indoor and outdoor spaces, with specific measures for filtering water, feeding fish, and controlling temperature. Over the past few decades, this farming method has witnessed remarkable growth due to the rising demand for seafood and declining populations of wild fish. Sustainable aquaculture practices strive to minimize environmental effects while promoting responsible resource utilization. Oftentimes, aquaculture farming

reduces pressure on wild populations, allowing for restorative growth. At UC Davis, aquaculture thrives as an option for cultivating fish, fish eggs, and caviar plentifully and sustainably. I had the privilege of visiting Sterling Caviar, Nimbus Fish Hatchery, and the Bodega Bay Marine Lab – all places that share a common focus on conserving and preserving species that were once on the verge of extinction.

Aquaponics takes aquaculture to the next level by combining fish farming with hydroponics — a method of growing plants in water instead of soil. This integrated system creates a closed loop ecosystem that establishes a mutually beneficial relationship between fish and plants. In aquaponics, fish are raised in tanks or ponds where they produce waste containing nutrients like ammonia. By releasing this waste into the environment, the nutrient-rich water is directed to hydroponic growing beds where plants are grown. Beneficial bacteria then convert the ammonia into nitrates, which act as fertilizer for the plants. The plants in return cleanse the water before it is cycled back into the fish tanks, completing the closed-loop system. At the UC Davis greenhouses, this efficient system is successfully implemented with crops such as dragonfruit, cucumbers, taro and basil, cultivated almost daily for both research purposes and occasional recreational enjoyment!

Sustainable fish farming and the innovative techniques of aquaponics have the power to completely transform our food system. During my time at UC Davis, I witnessed firsthand how adopting these practices can help us tackle the problems of overfishing, depletion of resources, and environmental harm, all while satisfying the growing need for nutritious (and delicious) food. As we strive for a future that prioritizes sustainability, the fusion of aquaculture and aquaponics offers an exhilarating avenue to nourish our planet in an eco-friendly manner.

LOCAL SUSTAINABLE RESTAURANTS

BY SAMRIDDHI PAKHRIN

There are a plethora of ways to help out both your community and the environment. One of the most enjoyable is by supporting sustainable restaurants. Choosing to eat at local and sustainable restaurants has many excellent benefits and is essential to living a fully sustainable life while helping out local businesses along the way!

Here are some of the benefits of consuming food from local sustainable restaurants:

1) You're supporting small businesses in your community and benefiting the people around you and your local economy, as well as supporting farmers, business owners, and producers.
2) When you support local businesses, it helps reduce your carbon footprint and greenhouse gas emissions. Local restaurants are more likely to use ingredients that are grown locally, which means that they don't come from far distances.
3) You're saving money on transportation; you don't have to travel miles for food!
4) Food grown locally has higher nutritional value and lasts longer since the food is fresh longer compared to shipped foods and takes a longer time to ripen.

These are just a few of the many benefits that come with supporting local sustainable restaurants. If you're having trouble finding these sorts of restaurants near you, visit Green Restaurants In California. When looking for eco-friendly restaurants, it's best to find a place that caters to customers eating lower on the food chain, with lots of vegan and vegetarian options. Also be on the lookout for advertisements of farm-to-table food.

As you dine out this summer, make sure to consider each of these benefits. Supporting businesses that are eco-friendly and use food that is grown locally is a simple and easy way to practice sustainability throughout your community!

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Sustainable Contra Costa

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