Lesson 3 Healthy Plate, Healthy Planet

The Future of Food

Food is the essence of life as it fuels us, brings us together, and connects communities to their cultures. What and how we eat is also crucial in sustaining all life on this planet.

According to the UN population prospects report, by 2050, the global population is expected to increase to around 10 billion. This means that, to feed everyone, it will take 56% more food than is produced in the world today. Unfortunately, there is not enough agricultural land available to provide larger future populations with the kinds of diet people are eating in most countries today.

In addition to this, industrial food systems generate more than one third of all greenhouse gas emissions. The processes we rely on to produce, transport, and store meals and raw ingredients, not to mention the landfills covered with food waste, are speeding up climate change. Animal-based foods, including red meat, milk products, and farmed shrimp, are generally associated with the highest greenhouse gas emissions.

Especially, our meat production accelerates global warming significantly, uses shrinking supplies of fresh water, destroys forests and grasslands, and damages soil.

Basically, we are in a tight bind of our own making. Against this reality, it is vital for us to seek sustainable alternatives to our current diets. Let us explore some ways we could be eating in the near future.

Lab-grown Meat

Lab-grown meat is animal flesh grown inside a laboratory. It is an alternative to red meat obtained by increasingly unsustainable farming practices. Studies show that producing lab-grown meat by using renewable energy would have a significantly lower carbon footprint than raising farm animals and making meat products in the most sustainable way.

This is how lab-grown meat is made. To begin with, lab scientists carefully remove a small number of cells from an animal. Then, they multiply and grow the harvested cells, and they produce real tissue, which is quite similar to conventional meat in terms of texture and smell. In this way, they can transform lab-grown cells into steak, chicken breasts, or hamburger meat. The final product itself is a real cut of meat, ready to be cooked.

Insects

Even though eating insects may seem strange to some people, they have been part of human diets for a very long time. In fact, insect eating is practiced in about 130 countries!

Insects will be important in the fight against hunger and climate change. They use much fewer resources than farm animals to produce the same amount of protein and can be raised on food waste, which makes raising them very cost-effective.

The main barrier to using insects as a source of protein is the negative image they have. Insects are associated with disease and dirt, so manufacturers of insect food products must overcome this to successfully win the public over. One solution has been to change the look of the insects, by drying and grinding them into powder. Rich in protein, insect flour is gaining popularity as a healthier replacement for wheat flour. In addition, insect oils are a promising field; they are already being used in some parts of the world for cooking.

3D Printed Food

3D food printing has the potential to save the environment, while revolutionizing food production; for example, it can convert alternative ingredients such as proteins from insects into delicious meals. The underlying concept for food printing is the same as any other 3D printing. In 3D food printing, various inks – liquid forms of food – are placed one layer at a time to build complex 3D constructs with full textures and customized nutrients.

3D food printing can be readily undertaken in many parts of the globe. Various food inks with adequate nutrients and favorable flavors can be sent to areas that are hard to get to, where food can be printed on site. In this way, 3D printed food with necessary nutrients can be provided for large populations in areas affected by a natural disaster or a crisis developed by humans.

Algae

Algae are the fastest growing plant organisms in nature and a great alternative source of vitamins, proteins, and minerals. Not only full of nutrients, they are also easy to grow and don't take up precious land space as they are grown in water. They can grow in places where normal food crops wouldn't survive and yield much higher productivity than crops grown on land. In addition, they create very rich habitats for plants and animals. On top of that, algae are very good at trapping carbon themselves, which helps slow down global warming.

Individual diets are complex and culturally influenced. It is a huge task to change one's diet to reduce the impact of food on climate, and not everyone can or will take the step forward. However, with the increasing demand for food and its effects on global warming, we ourselves need to start considering bringing changes to our diets. It's time for everyone to be a little more familiar with the unfamiliar.

3과 Read Further

No Sunlight, No Soil
- Indoor Vertical Farming

Perfectly shaped tomatoes grow under purple lighting. Here in the facility, the intensity and timing of light and the nutrients in the water supply are all controlled. This indoor vertical farming facility is able to produce fresh fruit and vegetables all year round.

Vertical farming refers to producing foods in vertically stacked layers integrated into other structures, usually without the need of soil or natural light. Since the plants are stacked above each other, it reduces the amount of space needed to grow crops.

Another advantage of indoor vertical farming is that maintaining the ideal conditions can reduce the time to harvest. "For traditional farming, if the climate is good, you have five to six harvests a year," says the manager of the facility. "In indoor farming, we're now getting roughly 17 harvests out of that same period."

There is also the benefit of a reduced need for water. Any excess water that a plant cannot absorb will drop down to the plants below. The manager says the farm uses 95% less water than farming in a field. "Every time water moves through the system, it's captured and reused."

However, indoor vertical farming has an Achilles' heel: energy consumption. It has been criticized for the high energy input it requires. "Solar power could help bring down energy costs," the manager says. "Large scale farms will have solar panels on each roof. It might support 10 to 15% of our needs."

This farm wants to fill supply chain gaps rather than replace outside fields. "Much of our fruit and vegetables will still be grown under the sun and in soil, which is why it is super important that we also invest in sustainable field farming," the manager says.

The Guardian, No sunlight, no soil – no worries as vertical farming looks stacked with promise