

# **THE FUTURE OF FOOD**

**New Ideas About Eating**



Toney Allman



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**For more information, contact:**

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# CHAPTER ONE

## How the World Gets Its Food

The world's food comes primarily from farming, fishing, and the raising of livestock. Experts warn that traditional practices in each of these areas may fall short of future food needs while also depleting the land and water that yield all of this food.

### Crop Farming

Crop farming, for example, is dominated by large-scale agriculture. Whether run by corporations or families, large-scale farming generally entails more than 1,000 acres (405 ha) of cropland and the use of intensive agricultural practices. It is a highly productive farming method. Large-scale family farms in the United States account for 42 percent of agricultural production each year, even though they represent only 10 percent of family farms. Large farms owned by corporations account for another 11 percent of production. Large-scale farms outperform small-scale farms worldwide in efficiency, profitability, and the abundance of crop yields. They are able to produce more food per acre than any small farm can accomplish because they can take advantage of industrial methods, techniques, and technologies to achieve the best results.

Intensive farmers plant multiple crops each year on the same acreage, which necessitates extensive use of fertilizers, pesticides, herbicides (weed killers), and highly efficient



agricultural machinery to plant, maintain, irrigate, and reap the crops. Intensive, large-scale farming also typically means monoculture or monocropping. This means planting the same crop on the same land year after year. Intensive farming on a large scale has been a huge success story in one sense. It is feeding much of the world abundantly. Just fifteen plant crops today provide 90 percent of the world's food energy needs, and just three crops—wheat, corn, and rice—account for 66 percent of this, providing the staple foods for 4 billion people.

This success story, however, has come with a cost. The FAO explains, “Agricultural production is limited by the increasing

*Large-scale farms produce more food per acre than small farms, thanks, in part, to modern machinery.*



**“Agricultural production is limited by the increasing scarcity and diminishing quality of land and water resources.”<sup>5</sup>**

—Food and Agriculture Organization  
of the United Nations

scarcity and diminishing quality of land and water resources. . . . Climate change is increasingly affecting yields and rural livelihoods, while agriculture continues to emit greenhouse gases.”<sup>5</sup> Most of the world’s land suitable for farming is already in use and at capacity. Intensive monocropping degrades and depletes the soil of nutrients. Pesticides and fertilizers pollute the land and water and contribute to greenhouse gas emissions, as does farm machinery. The world’s few staple crops are extremely vulnerable to climate changes that may lead to crop failure as temperatures rise or water supplies fail. All of these factors make today’s large-scale farming unsustainable and incapable of feeding future generations.

## **A Better Way**

The nonprofit Union of Concerned Scientists says, “A growing number of innovative farmers and scientists are . . . moving toward a farming system that is more sustainable—environmentally, economically, and socially. This system has room for farms of all sizes.” All agricultural practices can be improved, whether the farm operates on just a few acres or is a huge corporate enterprise. Farmland can be protected and even enhanced in several ways. The Union of Concerned Scientists explains further, “Environmental sustainability in agriculture means good stewardship of the natural systems and resources that farms rely on. Among other things, this involves:

- Building and maintaining healthy soil
- Managing water wisely
- Minimizing air, water, and climate pollution
- Promoting biodiversity.”<sup>6</sup>

Many organic farmers in the United States practice sustainable farming. In addition to shunning the use of pesticides and herbicides, they concentrate on improving the soil by using a no-till system. Tilling degrades the soil by disturbing the micro-organisms that feed plants, destroying deep roots that hold soil in place, and causing erosion. Levi Lyle is an Iowa organic no-till farmer. Instead of plowing and tilling his fields to prepare them for planting, he plants cover crops of cereal rye. Then he uses a piece of machinery called a roller crimper to squash the cover crop flat. Lyle explains, “It lays down and serves as a mat thick enough to inhibit weed growth, providing an excellent herbicide

## **A Sustainable Hog Farm**

Jan and Steve Petersen run a family farm in Decatur, Michigan, where they are committed to protecting the land for future generations and raising animals humanely. Their hay and corn crops are grown following sustainable agriculture practices, and their hogs are raised naturally and unconfined. The Petersens say, “Pigs spend their entire lives in pastures, with metal Quonset huts for shelter. We have always rotated pastures and crops, using mostly organic practices. We rotate pastures and crops and never allow livestock near the creek that runs through our farm.” The farmers keep their water resources unpolluted by animal waste, use pig manure to fertilize their crops, and maintain natural wild, wooded areas on the farm to benefit wildlife. The Petersens are pleased that people in general are becoming more and more interested in how their food animals are raised, even if it means their meat costs a little more. The Petersens love all the land of their farm and are determined to protect it and avoid overusing or depleting the soil of nutrients. They say, “We always hope the wildlife appreciates our commitment to avoid farming the whole place into the ground.”

Quoted in Katherine Walla, “Farming Better Isn’t Enough: We Need to Protect Land,” Foodtank, 2018. <https://foodtank.com>.

**“We need to find ways to reduce the strain on the environment.”<sup>7</sup>**

—Levi Lyle, Iowa organic farmer

alternative. Cereal rye is also great for soil health and nitrogen uptake.” Lyle plants his cash crops of soybeans or corn directly into the matted cover. He says that this system both eliminates soil erosion and is profitable. He argues for all farmers, “We need to find ways to reduce the strain on the environment.”<sup>7</sup> He is building healthy soil and reducing the chemicals that pollute the earth.

In Australia the double issues of regular, prolonged droughts and intensive farming methods have left farmers struggling with repeated complete crop failures. To combat this, the nonprofit Mulloon Institute promotes a system called natural sequence farming, with the goal of returning water to farmlands and making them sustainable. In 2013 the institute started the Mulloon Community Landscape Rehydration Project, which involves twenty-three farmers along more than 31 miles (50 km) of Mulloon Creek, a devastated, badly eroded, mostly dry creek bed. Together the project leaders and farmers are building “leaky weirs” across the creek, using rocks, fallen tree limbs, and other natural debris to slow but not stop the trickle of water running down the creek. This makes some of the water seep into the landscape on either side of the creek, where the farmers plant reeds, blackberries, and other weed plants. They plant willows, too, which most farmers consider nuisance trees. The roots of these native Australian plants sink deep into the soil, providing stability against erosion.

As the surrounding land and creek return to their natural state, the earth begins to act like a natural sponge that soaks up water. As time passes and the “sponge” fills up, the water slowly seeps back toward the creek, where some remains, even during dry periods. Side branches form with flowing water that spreads across the agricultural acreage. Peter Andrews, one of the founders of



the Mulloon Institute, explains, “All we’ve done is reproduced what was a natural process in Australia’s landscapes. We’ve been able to get water into the floodplains which sustains the landscape in a drought.”<sup>8</sup>

In 2019 the project was awarded a \$3.8 million government grant to continue its work and establish a scientific basis for expanding natural sequence farming in Australia. Gary Nairn, chair of the Mulloon Institute, says, “We want to say to farmers and governments that we have a solution—we have a way to rehydrate and regenerate the Australian landscape and make our landscapes more resilient to extreme climatic conditions.”<sup>9</sup>

## Livestock Farming

Some of the farmers living along Mulloon Creek raise livestock as well as crops, and they are discovering that their grazing lands are benefiting from natural sequence farming, too. Sustainable practices are just as important for raising livestock as they are for raising crops. Conventional large-scale intensive livestock rearing,



*Intensive livestock farming concentrates on raising large numbers of animals, such as these pigs, in confined spaces.*

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