Name: Jessica Ssozi
Student Number: UB94950NU104171

Course
Feeding a Warming World

School
Science and Engineering

Major
Nutrition

ATLANTIC INTERNATIONAL UNIVERSITY

February 2026

Table of Contents

Introduction

Hunger is a global problem caused by a combination of conflict, climate change, and economic inequality. Approximately 783 million people worldwide are going hungry and are unable to access enough nutritious food (UN News). Climate change continues to complicate food production, making it more difficult for farmers to grow sufficient crops (World Food Program USA).

As the world's population continues to grow, traditional farming methods alone are no longer sufficient to meet global food demands. Agricultural technology offers practical and sustainable solutions to increase food production, improve efficiency, and reduce waste. According to several global development reports, technological innovation plays a key role in addressing food insecurity (The Borgen Project). By introducing technological innovations in farming, it is possible to address food insecurity while promoting long-term sustainability.

Agricultural Technologies Improving Food Production

One major advancement in addressing hunger is the development of agricultural technologies that improve crop resilience and productivity. Agricultural innovations are being applied whereby crops are grown with less water and are more resilient to pests (World Food Program USA). CRISPR technology allows scientists to edit genes in crops to create drought-resistant and pest-resistant varieties, increasing yields and improving food security (Phoebus Online). These innovations enable plants to grow faster with increased yields.

Precision agriculture is another important technological advancement. It is data-driven farming that uses technology such as drones, sensors, and GPS to measure and respond to field variability. By applying the exact input, such as water or fertilizer, to the exact place where it is needed, waste is reduced and production costs are lowered (The Borgen Project). Drones are used for crop scouting and mapping, while sensors monitor soil health, temperature, and humidity (World Food Program USA).

Hydroponic technology further improves food production efficiency. Hydroponics is a sustainable, soil-free method of growing crops directly in water enriched with essential minerals. Crops grow faster with very high yields in small spaces and use significantly less water compared to traditional farming methods (The Borgen Project). This method allows food to be grown in areas with limited land or poor soil quality.

Sustainable And Community-Based Solutions

In addition to advanced technology, sustainable agricultural practices also contribute to food security. Biological alternatives and improved farming techniques help reduce reliance on chemical fertilizers and improve soil health (World Food Program USA). Organic matter such as animal waste and plant materials can enrich soil and produce better-quality crops.

In Africa, farmers practice mulching to prevent moisture loss and improve soil fertility. These sustainable practices support long-term agricultural productivity and environmental protection (The Borgen Project).

Small-scale farmers are also supported through knowledge-sharing initiatives. Platforms such as digital communication systems allow farmers to receive advice about pests and diseases through mobile technology, even without internet access (Phoebus Online). This guidance helps farmers manage challenges more effectively and improve their yields.

Alternative Proteins And Future Food Solutions

Another way of addressing world hunger is through alternative proteins derived from algae, insects, and plant-based sources (World Food Program USA). Edible insects are recognized as a sustainable and nutrient-rich protein option (The Borgen Project).

In Uganda, where I come from, grasshoppers are a seasonal delicacy and serve as a valuable source of protein and income. Research and experimentation are being conducted to explore how insect farming can be expanded to provide year-round availability. Such technological innovations could also influence the future of food production in extreme environments, including space travel, by providing sustainable and efficient food systems (The Borgen Project). These developments demonstrate how technology can expand food production beyond traditional agricultural environments.

Personal Reflection

In my opinion, technology will significantly improve both the quality and quantity of food, especially in third-world countries where human labor has traditionally been relied upon for food production. With increasing population growth, land fragmentation has become a major challenge. Technologies such as hydroponics reduce the need for large areas of land and extensive labor to produce vegetables.

The present-day population is less interested in traditional agricultural methods and has increasingly moved to towns in search of white-collar jobs. As a result, technologically driven food production systems are becoming more necessary. Personally, I can apply hydroponic technology to improve my income by growing vegetables such as spinach and lettuce for local and international markets. This method can increase yields three to four times higher than traditional farming and enables year-round production of high-quality, pesticide-free crops.

Conclusion

In conclusion, hunger remains a critical global challenge driven by conflict, climate change, and economic inequality. However, agricultural technology provides practical and sustainable solutions to increase food production and improve efficiency. Innovations such as genetic crop modification, precision agriculture, hydroponics, sustainable soil practices, farmer education initiatives, and alternative protein development all contribute to strengthening food security.

While technology alone may not completely eliminate world hunger, it plays a significant role in reducing food insecurity, increasing productivity, and ensuring that growing populations have

access to sufficient and nutritious food. Continued investment in agricultural innovation is therefore essential for building a more food-secure future.

Bibliography

Borgen Project. (n.d.). Global hunger: Tech inventions putting an end to it. https://borgenproject.org/global-hunger-tech-inventions-putting-an-end-to-it

Borgen Project. (n.d.). Meet the organizations using tech to end world hunger. https://borgenproject.org/organizations-using-tech-to-end-world-hunger

Phoebus Online. (n.d.). Technology could end world hunger. https://phoebusonline.com

Suresh, D. S. (n.d.). Technology could end world hunger. Medium. https://medium.com

UN News. (n.d.). With 783 million people going hungry, a fifth of all food goes to waste. https://news.un.org

World Food Program USA. (n.d.). 7 tech innovations changing the global hunger conversation. https://www.wfpusa.org