

Food security problems

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A convergence of factors has made food security one of the most important global issues. An increasing population wants a more varied diet, but is trying to grow more food on less land with limited access to water, all the time facing increased costs for fertilizer, and fuel for storage and transport.

There are many factors that affect food production. The post-war 'second agricultural revolution' in developed countries, and the 'green revolution' in developing nations in the mid-1960s transformed agricultural practices and raised crop yields dramatically, but the effect is leveling off and will not meet projected demand. At the same time, many other factors are having severe impacts on food production: water stress and desertification is reducing the amount of arable land; many pests are becoming resistant to insecticides, but many of the most effective chemical agents are now banned under environmental regulations; underdeveloped infrastructure means that losses increase further during transport and storage; consumption patterns are changing and developing nations such as India and China have an increased appetite for meat, and climate change is bringing new microbial diseases to food-growing regions along with more extreme and unpredictable weather patterns.

Estimates vary, but around 25% of crops can be lost to pests and diseases, such as insects, fungi and other plant pathogens.

Even after food is grown, stored and transported, serious losses can occur, and in developing nations where 'plentiful' food is wasted.

Farming accounts for 70% of the world's use of fresh water that is globally extracted for human use.

Climate change associated with agriculture is also a global issue. Agriculture is a significant contributor to global warming. It should be noted that climate change will benefit agriculture in some ways: extra CO₂ in the atmosphere will lead to plants fixing more carbon, and global warming will also lead to huge swaths of land becoming more suitable for agriculture. However, global warming will also lead to huge swaths of land becoming less suitable for agriculture. It is estimated to account for 10-12% of total greenhouse gas (GHG) emissions.

Many of the issues highlighted are global problems. Meeting the world's food security challenge will require a multi-national, collaborative effort to integrate the best research from science, engineering and socioeconomics so that technological advances can bring benefits where they are most needed.

References

1. http://en.wikipedia.org/wiki/Food_security