

# Global Agriculture: Global population to reach 10bn in 2050, dramatic changes to food supply are needed

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## Abstracts

Global Agriculture: Global population to reach 10bn in 2050, dramatic changes to food supply are needed

### SUMMARY

Current estimates suggest that by 2050 the global population will reach 10bn. With so many mouths to feed, the task of producing more food with the limited resources that we have whilst simultaneously trying to reduce our carbon emissions to protect the environment and the crops we are trying to grow seems almost impossible. However, despite this uncertainty, there are some options and choices available to help deal with problem. These include reducing spoilage, protecting soil, increasing efficiency through technology, fairer distribution of resources, better education, protecting bio diversity and pollinators and bringing farming into unused spaces. But it will take a concerted effort from all of the major agriculture producers in order for it to be possible and without this we will certainly see ever more severe instances of drought, starvation and climate disasters as we move towards 2050.

### KEY HIGHLIGHTS

Even according to conservative estimates from the Food and Agriculture Organization of the United Nations, global agricultural production could easily feed a much higher human population. In theory, even if the world's population strikes 10 billion, feeding everyone will present few difficulties. Yet even now the Food Aid Organization estimates 785 million people do not have sufficient access to food to lead an active life; 12.9% of people in developing countries are undernourished. Wasted food is therefore a very real problem. The ability of

whole populations to feed themselves in a sustainable fashion is under pressure. Some solutions, such as big data analytics, are helping but major problems including consumer and business attitudes persist.

There have been major increases in food consumption across the world since the beginning of the 1960s. As the economic power of consumers rises with the years their demand rises as well, rendering the years to come crucial for the mankind. However, that is not only due to the economic power of the consumers but to the population as well which currently amounts for 7.7 billion. Researchers have predicted that until 2050 the human population will exceed 10 billion, making it nearly impossible to provide food for that amount of people. Now, the increase on the population, including the increase in demand for food, renders crucial the existence of alternative and more sustainable food productions, thus a more sustainable agriculture plan has to take place.

The initiatives of governments have never been more necessary to encourage the agricultural industry to operate in a more productive and sustainable manner, considering the expected enormous growth in the number of mouths to feed over the coming few decades. Government subsidy intervention is crucial in the agricultural industry to encourage producers of essential crops to increase and maintain production, particularly when prices are volatile and potential profits could be reduced. The intent has always been to stabilize markets, help low-income farmers, and aid rural development. However, this is not always the outcome and many subsidy programs have been criticized for heavily funding global agricultural conglomerates over smaller localized and sustainable businesses.

## SCOPE

Examine some of the major issues effecting the agriculture industry

See how some of the industries processes will have to change

Learn where solutions might come from

Understand the potential opportunities that might arise from new technology

## REASONS TO BUY

How large will the global population become over the next few decades?

What will this mean for climate change and the food supply?

Can this situation be meaningfully resolved?

What opportunities are there for companies to supply the solutions?

## Contents

Executive Summary

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Soil Degradation: Problems require solutions to enable land to feed 10 billion

Agricultural Sustainability: Critical to maintaining the ecosystem balance

Agriculture Technology: Innovation takes bite out of global food gap

Government Intervention: New schemes needed to feed a hungry population

Food Wastage: A serious threat to global agricultural sustainability

Supply chain development will help to reduce wastage in transit

Technology is helping to track degradation of food in the supply chain

Consumer demands make feeding an expanding population far harder than it ought to be, but change is occurring

Badly implemented subsidies encourage wasted food production, but when done well help farmers produce more

African nations are developing subsidies to improve farming performances

Climate Change: A major threat for agriculture, unless greenhouse emissions can be reduced

Food production is contributing to climate change, which is simultaneously damaging agriculture

Insect pests are thriving under the rising temperatures, causing losses in crops and their nutritious value

Climate change has made extreme weather more sporadic, forcing crops dependent upon cyclical events to suffer

Soil erosion from extreme weather conditions reduces the fertility of soil, whilst compacting the ground to reduce the quality of water going into the crops

Rising sea-levels cause an increase in flooding, damaging crops with salt water contamination

Droughts are the biggest concern for agriculture by damaging plant life, facilitating insect pests and risking food spoilage during transport

Rising carbon dioxide levels is increasing plant growth, but at the consequence of reducing their nutritious value

Climate migrants are forced to leave their homes because of climate change, congesting areas which are needed to feed the growing population

Soil Degradation: Problems require solutions to enable land to feed 10 billion

Large areas of land have been poisoned, toughening the task of feeding a growing population

Threat of large-scale disease could deter consumers from buying Chinese grown foodstuffs

Desertification causing soil degradation in Africa is straining agricultural production

Farming in areas of deforestation is unsustainable on a long-term basis

Agricultural Sustainability: Critical to maintaining ecosystem balance

Biotechnology and genetically modified crops are a controversial topic

The consequences of genetically modified crops

The implementation of genetically modified crops has to be introduced with extreme caution in developed countries

Genetically modified crops can affect the environment

Efficient agricultural land use: land sparing vs land sharing

Land sparing could increase food production for future generations

Wildlife friendly farming could increase the chances of preserving the animal inhabitants, but it would reduce food production

Water efficiency will not only increase food production but it will decrease the amounts of clean water being used

Improvements in soil health and fertility are needed in order for farming lands to be a sustainable food source for the future

Minimal or zero-pesticide use can boost soil productivity in the long-run

Agriculture Technology: Innovation takes bite out of global food gap

Food Gap - Food production must increase by 2050

Historical agricultural crop yields reflect the potential and limitations of increasingly efficient crops

New technologies to increase food production

Digitization is enabling the quantification of farming

Agricultural Drones will make crop management and production more efficient and effective

Advanced analysis methods are turning agriculture into a precision industry

Advanced biological farming methods will achieve further yield increases for crops

Food loss must decrease by 2050

Digitization within emerging economies will reduce production loss

Blockchain technology has potential to 'leapfrog' existing track and trace infrastructure

Computational learning models will better manage supply chains in real-time, reducing loss

In the developing world, AI will drive improvements in the customer experience, reducing consumption loss

Genetic engineering will lead to healthier and longer-lasting food

Food will become personalized based on healthcare needs

Technology to address the land gap

Access to the digital world will strengthen ownership rights and legal certainty for subsistence farmers

Better techniques to analyze risk will incentivize lending, reduce poverty and shift production to large-scale commercialization

Microcredit as a mechanism for alleviating poverty

The only way is up for modern farming approaches

Lab-grown meat will be a mainstay in future diets

Government Intervention: New schemes needed to feed a hungry population

Agricultural subsidies are intended to increase production of vital crops

Effectiveness of agricultural subsidies has come under scrutiny

Regulate and dismantle multinational agribusiness corporations

Child limitation policies to combat food shortages

Taxes to discourage meat-rich diets

Greater commitment to research & development to improve yields

Promotion of private sector investment

Political mobilization to reduce the prevalence of hunger and malnutrition

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