



Frequently Asked Questions (FAQs)
Global Agricultural Productivity Report® (2017 GAP Report®):
A World of Productive Sustainable Agriculture

DES MOINES, Iowa (October 18, 2017) – For the fourth year in a row, global agricultural productivity growth is not accelerating fast enough to sustainably feed the world in 2050, says a report by the Global Harvest Initiative (GHI) released today. GHI's 7th annual **Global Agricultural Productivity Report® (2017 GAP Report®): *A World of Productive Sustainable Agriculture*** warns that unless this trend is reversed, the world may not be able to sustainably provide the food, feed, fiber and biofuels needed for a growing, more affluent global population.

Farmers are a key force behind the growth in agricultural productivity over the last 30 years, but they face considerable challenges. **The report provides a focus on the many ways farmers seek to improve productivity and sustainability to meet the diverse needs of consumers today.** The report highlights innovations and practices farmers are using to conserve soil and water, diversify to reduce risks and build stable businesses they can leave to the next generation.

The report also discusses five strategic policy goals that stimulate growth and resiliency in the agriculture value chain, with illustrations from farmer and consumer stories.

BACKGROUND INFORMATION

What is the Global Harvest Initiative (GHI)?

The Global Harvest Initiative (GHI) was formed in 2009 by companies that advocate collaborative solutions to meet the world's rising demand for food and agricultural products through sustainable innovation as world population grows to nearly 10 billion by 2050. GHI serves as a private-sector policy voice for productivity growth throughout the agricultural value chains for food, feed, fiber and biofuels, advancing technologies and practices that conserve natural resources, adapt to and help mitigate climate change and improve people's lives.

Who are the members and partners of GHI?

GHI's member companies are DuPont, Elanco Animal Health, Farmland Partners Inc., John Deere, Monsanto Company, The Mosaic Company and Smithfield Foods. We are joined by consultative partner organizations that share their knowledge and experience in agriculture, conservation, nutrition and the needs of small-scale farmers. Consultative partners include 9b Group, ACDI/VOCA, Congressional Hunger Center, Conservation International, Farm Foundation, Global Alliance for Improved Nutrition, Inter-American Institute for Cooperation in Agriculture, the Inter-American

Development Bank, Purdue Agriculture, The Nature Conservancy, New Markets Lab, Robert B. Daugherty Global Water for Food Global Institute at the University of Nebraska and Supporters of Agricultural Research (SoAR) Foundation.

What is the Global Agricultural Productivity Report® (GAP Report®)?

After the food price crisis of 2007/2008, GHI instituted an annual report that provides a snapshot of progress made to sustainably double global agricultural output (food, feed, fiber and biofuel). Each year at the World Food Prize Symposium in Des Moines, Iowa, GHI releases its GAP Report® and GAP Index™, data-driven measurements that track agricultural productivity growth against growth in global population and food demand. The report highlights how collaborative solutions are being implemented by governments, farmers, agribusiness, NGOs and multilateral institutions to improve agriculture and food value chains and to sustainably feed the world.

KEY TERMS AND CONCEPTS

What is the Global Agricultural Sustainability Imperative?

The GAP Report® outlines the need to make agriculture both more productive and sustainable to meet the needs of nearly 10 billion people by 2050. The rising demand from a growing and more affluent global population will require a near doubling of all agricultural output over 2005 baseline levels. Volatility in economic markets, environmental pressure and climate change, uncertainty about trade agreements and the rise of conflicts in fragile regions of the world are significant challenges to sustainably meet these needs. (For more, see pages 4-5 of report).

What is “sustainability” in agriculture? How does sustainability in agriculture contribute to the United Nations Sustainable Development Goals (SDGs)

Sustainable agriculture must satisfy human needs; enhance environmental quality and the natural resource base; sustain the economic vitality of agriculture; and enhance the quality of life for farmers, ranchers, forest managers, fisherfolk, workers and society as a whole. Sustainable agriculture practices and technologies contribute to many of the 17 UN SDGs by helping to end hunger and malnutrition, by reducing postharvest loss and food waste, by mitigating climate change, and by reducing poverty and promoting good health and strong rural communities. (See pages 6-7 of report).

What is “productivity” in agriculture?

Productivity is not just about producing more food or achieving higher yields. Productivity growth – a measure of output per unit of input – makes the best use of **scarce resources**, lowers costs for farmers, helping them to succeed in today’s competitive business cycle, and supplies food and agriculture

products for consumers at lower prices. Productivity growth is a major determinant of economic expansion and vital for promoting an improved standard of living.

Productivity also frees land, labor, capital and other inputs for use elsewhere in the economy. Improving agricultural productivity is part of a comprehensive strategy to sustainably feed the world, as it reduces impact on precious natural resources while helping to meet the rising demand for food, feed, fiber and biofuels. (See pages 8-9 of report).

How is productivity measured?

The GAP Report® uses a specialized measure, **Total Factor Productivity (TFP)** which is the ratio of agricultural outputs (gross crop and livestock output) to inputs (land, labor, fertilizer, feed, machinery and livestock). **TFP is an indicator innovation in action**; it measures changes in the efficiency with which agricultural inputs are transformed into outputs. **TFP is also an indicator of sustainable resource use**, by showing whether the increased output comes simply from increasing the inputs, or due to better use of existing resources and application of improved products and technologies. This makes TFP a useful guide for farmers and policymakers as they consider future investments in research and development, extension services and agricultural development programs. (See pages 9-11 of report).

FINDINGS OF THE 2017 GAP REPORT

1) Global agricultural productivity growth continues to slow, with significant economic and social consequences.

Global agricultural productivity must increase by 1.75 percent annually to sustainably meet the demands of a growing population that will reach nearly 10 billion in 2050. According to GHI's annual assessment of productivity growth – the **GAP Index™** – **the current rate of growth is only 1.66 percent.** (See page 12)

The rate of annual productivity growth in low-income countries is much lower, **only 1.24 percent.** In just 13 years (2030), **the UN Sustainable Development Goal 2 to double the agricultural productivity and incomes of small-scale food producers will be significantly off track** without immediate action. GHI's analysis also shows that **by 2030, Sub-Saharan Africa will only be able to meet 8 percent of its food demand sustainably**, driving up food prices for poor households and requiring significant imports, food assistance, and opening up environmentally sensitive land for agricultural production. For the lowest-income countries, poor urban households and landless agricultural laborers will bear the brunt of higher food prices and the natural resource impact of agriculture will be profound. (See pages 12-13)

2) Stalled productivity growth also has substantial environmental impacts.

GHI's analysis indicates that in the past decade, **TFP growth in high-income countries continues to stagnate**, sparking concern about long-term sustainable agricultural growth. GHI also analyzed **TFP growth in low-income countries**, and found a troubling trend: **growth in agricultural output is not from productivity, but rather is from land expansion and land-use conversion**, which accelerates carbon release and soil erosion as well as habitat destruction and loss of biodiversity. (See pages 10-11)

3) Why is improving agricultural productivity the right goal?

A large and growing body of sophisticated modeling indicates that world agricultural production of crops and livestock between 2005 and 2050 will need to rise by between 60 and 111 percent, with demand growth particularly strong for ruminant products (cows, sheep). Climate change will also generate higher prices for commodities and if economic growth to cut hunger and poverty continues, there will be a higher demand for agricultural output in the very developing countries where there is presently insufficient agriculture and food production. (See pages 14-15)

4) How can public policies and investments foster a more productive sustainable agriculture system?

Governments, farmers and ranchers, multi-lateral institutions and the private-sector must work together to implement the following **five policy goals** that foster growth and resiliency in the agricultural value chain while helping farmers manage risk and reduce food loss and waste:

(See pages 16-17)

1. Invest in public agricultural research, development and extension

The agriculture sector is heavily reliant on research and development (R&D) and extension programs to deliver innovation to farmers and others in the value chain and are principal drivers of Total Factor Productivity (TFP). Public R&D provides foundational results that the private sector can further develop to improve specific crops, livestock, machinery or food manufacturing industries. Public investments in R&D also build the human talent pipeline for the entire agricultural sector.

2. Embrace, customize and disseminate science-based and information technologies

Policies and smart regulatory systems that support the development, customization and dissemination of these technologies to farmers of all scales and the entire value chain are essential to nearly doubling global agricultural output sustainably by 2050.

- **Biotechnology has delivered value for farmers and the environment; advanced plant and livestock breeding through new methods** has great potential to deliver additional value and further enhance sustainability in agriculture.
- **Efficient irrigation and cultivation technologies** improve water productivity and reduce labor burdens, particularly for women and small-scale farmers, enabling them to increase their output and profitability.

- **Information technology** allows farmers to access vital information on market prices, weather, pests and soil health, and precision agriculture and data management tools help producers reduce costs and conserve scarce resources.

3. Enhance private-sector involvement in agriculture and infrastructure development

Policies can help incentivize private-sector investment in physical and human infrastructures. Road and railroad improvements enable more farmers to get their products to market as well as reduce post-harvest losses along the way. Reliable telecommunications systems provide farmers with timely market information, while access to banking and finance enables them to manage and expand their operations. Policymakers should look for opportunities to leverage public sector investments with private-sector capital and expertise in ways that share risk and generate greater returns than either sector could achieve independently.

4. Cultivate partnerships for sustainable agriculture and improved nutrition

In striving to develop their agricultural economies and reduce malnutrition, governments often seek to leverage partnerships with local and international private businesses, nongovernment organizations, foundations, multilateral institutions and development agencies. The increasing demand for resources from traditional donor countries to address the global refugee crises and to prevent famine in places afflicted by prolonged drought is straining development budgets, making collaboration with private sector essential. For this to happen, development assistance programs must move beyond a “project” mentality and embrace integrated, market-driven approaches that generate inclusive benefits for farmers, processors, retailers and consumers, while striving to increase gender equity and improve nutrition. Developing technical and administrative skills of local populations, businesses and institutions sets the stage for successful long-term development.

5. Foster capacity for regional and global agricultural trade

An enabling policy environment for regional and global trade includes transparent policies and consistently enforced laws and regulations, as well as coherent trade rules across countries. Forward looking, harmonized trade agreements create opportunities to more efficiently move sustainably produced agriculture products to markets that need them, benefitting both the environment and consumers. Since many countries do not have the human or financial capacity to effectively manage regional and global trade opportunities, policies need to focus on building country and regional capacity to facilitate agricultural trade, with an eye toward helping small and medium-scale farmers access larger markets, increase their incomes and expand their businesses. Improvements in trade policies and infrastructure will enable consumers around the world to access a wider variety of foods, as well as staple foods, at competitive prices. And it will help create employment opportunities along the agricultural value chain and in supporting industries.

FARMER AND CONSUMER STORIES FEATURED IN THE 2017 GAP REPORT

The GAP Report® provides detailed examples of how farmers are building a more productive sustainable agriculture system and how public policies can catalyze their practices and investments. The report also highlights the concerns of consumers, who have significant influence over the direction of the good and agriculture system.

Cases include the following:

- **U.S. family farmers growing row crops and raising pork** and who are conserving soil, water and building a sustainable business (pages 20-34)
- **Indian farmers growing cotton and vegetables** who use technology to expand their business and improve the well-being of their family (pages 35-46)
- **A dairy farmer in Kenya** who is building a successful operation and **whose daughter now conducts research on sorghum crops** for improved nutrition and yield (pages 47-53)
- **Consumers in China and Kenya** who are changing their diets and spending patterns and are driving changes in global agriculture (page 47)
- **Vietnamese rice and shrimp farmers** who face climate challenges but who are diversifying their operations (pages 54-59)
- **Cattle ranchers in Colombia** who have adopted a new system of ranching that increases their cattle meat and milk productivity while restoring degraded lands (pages 60-66)

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Additional Resources

- The 2017 GAP Report is **presented at the World Food Prize Symposium** in Des Moines, Iowa and the event is **streamed live online October 18 from 11:00 AM to noon Central Time** at www.globalharvestinitiative.org
- **The GAP Report®** can be found on www.globalharvestinitiative.org.
- **Follow the event on Twitter:** #GAPReport and @Harvest2050

About The Global Harvest Initiative

The Global Harvest Initiative (GHI) is a collaborative private-sector voice for productivity growth throughout the agricultural value chain to sustainably meet the demands of a growing world. Since 2009, GHI has been focused on the importance of agricultural productivity and releases its signature GAP Report®, an annual benchmark of the global rate of agricultural productivity. GHI's growing membership includes DuPont, Elanco Animal Health, Farmland Partners Inc., John Deere, Monsanto Company, The Mosaic Company and Smithfield Foods. GHI is joined by Consultative Partner Organizations from the conservation, university and multilateral development bank sectors. Visit us at <http://www.globalharvestinitiative.org>, Twitter @Harvest2050 <http://twitter.com/#!/harvest2050>, and Facebook <http://www.facebook.com/GlobalHarvestInitiative>.