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New report says accelerating global agricultural productivity growth is critical

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IMAGE: THE GLOBAL AGRICULTURAL PRODUCTIVITY INDEX TRACKS GLOBAL PROGRESS TOWARD THE SUSTAINABLE PRODUCTION OF FOOD, FEED, FIBER, AND BIOENERGY FOR 10 BILLION PEOPLE IN 2050. [view more >](#)

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The 2019 Global Agricultural Productivity Report, "Productivity Growth for Sustainable Diets, and More," released today by Virginia Tech's College of Agriculture and Life Sciences, shows agricultural productivity growth - increasing output of crops and livestock with existing or fewer inputs - is growing globally at an average annual rate of 1.63 percent.

According to the report's Global Agricultural Productivity Index, global agricultural productivity needs to increase at an average annual rate of 1.73 percent to sustainably produce food, feed, fiber, and bioenergy for 10 billion people in 2050.

Productivity growth is strong in China and South Asia, but it is slowing in the agricultural powerhouses of North America, Europe, and Latin America.

The report calls attention to the alarmingly low levels of productivity growth in low-income countries, where there also are high rates of food insecurity, malnutrition, and rural poverty.

Agricultural productivity growth in low-income countries is rising at an average annual rate of just 1 percent. The UN Sustainable Development Goals call for doubling the productivity of the lowest-income farmers by 2030.

The GAP Report was released at the World Food Prize in Des Moines, Iowa. Speakers at the GAP Report Launch event included Tim Sands, president of Virginia Tech; Miguel Garcia Winder, undersecretary for agriculture for Mexico; Rose Mwonya, vice chancellor of the Egerton University in Kenya; and Alan Grant, dean of Virginia Tech's College of Agriculture and Life Sciences.

The report calls for a strong focus on countries with high rates of population growth, persistent low levels of agricultural productivity, and significant shifts in consumption patterns -- the primary drivers of unsustainable agricultural practices, such as converting forests to crop and rangeland.

"These productivity gaps, if they persist, will have serious ramifications for environmental sustainability, the economic vitality of the agriculture sector, and the prospects for reducing poverty, malnutrition, and obesity," said Ann Steensland, author of the 2019 GAP Report and coordinator of the GAP Report Initiative at Virginia Tech.

The 2019 GAP Report examines the pivotal role of agricultural productivity in achieving global goals for environmental sustainability, economic development, and improved nutrition.

"Decades of research and experience tell us that by accelerating productivity growth, it is possible to improve environmental sustainability, while ensuring that consumers have access to the foods they need and want," said Tom Thompson, associate dean and director of global programs for the Virginia Tech College of Agriculture and Life Sciences.

Productivity growth is generated by such innovations as precision agriculture technology and improved seeds and best practices for nutrient management and animal health. Attention to ecosystem services, such as pollination and erosion prevention, can increase and sustain productivity gains over time.

The GAP Report looks at the powerful combination of agricultural technology, best farm management practices, and attention to ecosystem services in supporting productivity growth, sustainability, and resilience.

Historically, productivity growth has been strongest in high-income countries, such as the U.S, with significant environmental benefits.

Due to widespread adoption of improved agricultural technologies and best farm management practices, especially in high-income countries, global agricultural output has increased by 60 percent, while global cropland has increased by just 5 percent during the past 40 years.

Between 1980 and 2015, productivity gains led to a 41 percent decrease in the amount of land used in U.S. corn production, irrigation water use declined 46 percent, greenhouse gas emissions declined 31 percent, and soil erosion declined (tons of soil loss per acre) by 58 percent.

Animal agriculture in the U.S. has experienced similar productivity gains, dramatically reducing the environmental footprint of the livestock production. According to Robin White, assistant professor of animal and poultry science at Virginia Tech, if livestock production in the U.S. was eliminated, total U.S. greenhouse gas emissions would decline by only 2.9 percent.

The Global Agricultural Productivity Index tracks global progress toward sustainably producing food, feed, fiber, and bioenergy for 10 billion people in 2050.

In the absence of further productivity gains in Total Factor Productivity, more land and water will be needed to increase food and agriculture production, straining a natural resource base already threatened by climate change.

Unable to afford higher-priced nutrient-dense foods, such as animal proteins and fruits and vegetables, consumers will rely on foods made from cheaper cereal grains for most of their calories, exacerbating skyrocketing obesity rates in adults and children.

The GAP Report describes six strategies for accelerating productivity growth: investing in public agricultural R&D and extension, embracing science- and information-based technologies, improving infrastructure and market access, cultivating partnerships for sustainable agriculture and nutrition, expanding regional and global trade, and reducing post-harvest loss and food waste.

Beginning this year, the GAP Report was produced by Virginia Tech's College of Agriculture and Life Sciences. The GAP Report brings together expertise from Virginia Tech and other universities, the private sector, NGOs, conservation and nutrition organizations, and global research institutions. The report is part of the Global Programs Office unit within the College of Agriculture and Life Sciences that builds partnerships and creates global opportunities for students and faculty.

Productivity data for the GAP Index are provided by the USDA Economic Research Service. The GAP Report is available to view and download at <http://www.globalagriculturalproductivity.org>.

Agricultural productivity, measured as Total Factor Productivity, increases when the output of crops and livestock increases using existing, or less, land, labor, fertilizer, capital, and livestock.

The GAP Report is supported by the Virginia Tech College of Agriculture and Life Sciences and its supporting partners: Bayer Crop Science, Corteva Agriscience, John Deere, The Mosaic Company, and Smithfield Foods.

The GAP Report's consultative partners are ACDI/VOCA, Congressional Hunger Center, Farm Foundation, Global Alliance for Improved Nutrition, HarvestPlus, Inter-American Institute for Cooperation on Agriculture, International Potato Center, The Nature Conservancy, New Markets Lab, Purdue Center for Global Food Security, Supporters of Agricultural Research Foundation, Tanager, and the Daugherty Water for Food Global Institute.

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Media Contact

Zeke Barlow
zekebarlow@vt.edu
540-231-5417

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