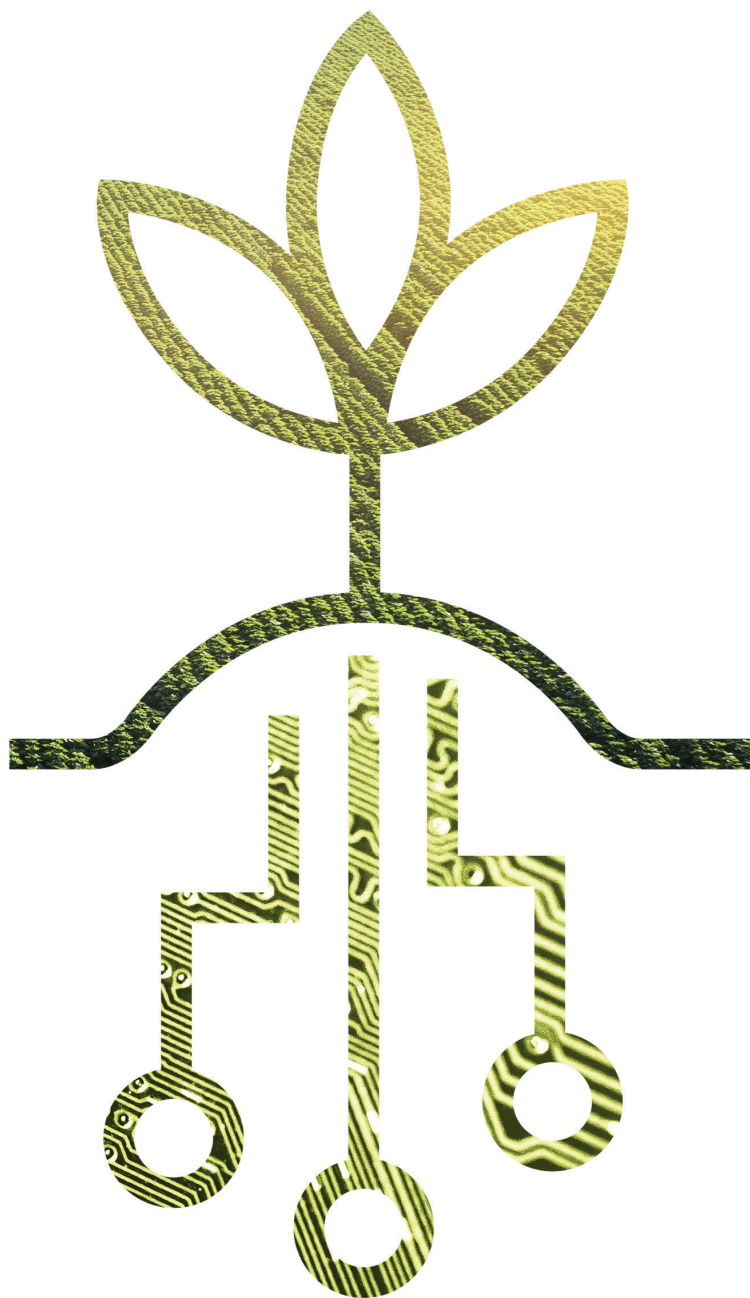




THE ROOTS OF  
**AGRICULTURAL** **PRODUCTIVITY**  
GROWTH

FEDERAL RESERVE BANK OF KANSAS CITY | AGRICULTURAL SYMPOSIUM | MAY 24-25, 2021

# THE ROOTS OF AGRICULTURAL PRODUCTIVITY GROWTH



Farmers have continued to find new ways of producing agricultural commodities.

For many years, the adoption of new technologies and modernized farming practices have allowed producers across the world to generate more output with their available resources. These far-reaching gains in productivity have been crucial in satisfying the needs of a growing population. Moreover, despite concerns about slower productivity growth in other sectors of the global economy and unprecedented challenges from the pandemic of the past year, productivity in agriculture has continued to increase in many regions and across numerous commodity groups.

The 2021 Agricultural Symposium, “The Roots of Agricultural Productivity Growth,” will explore the key drivers of the persistent growth in agricultural productivity, linkages to other industries, and environmental considerations. The topic was originally planned for 2020 but was delayed due to the pandemic. Disruptions connected to the pandemic and wide fluctuations in agricultural markets have underscored the importance of further research and discussion surrounding productivity, and the vulnerabilities of production, when assessing longer-term conditions in agriculture and related industries.

## AGENDA MAY 24, 2021

### 1:15 p.m. – 1:30 p.m. WELCOMING REMARKS

*Host:* **Nathan Kauffman**  
Vice President, Economist and Omaha Branch Executive, Federal Reserve Bank of Kansas City

### 1:30 p.m. – 2:45 p.m. SESSION 1: THE DRIVERS OF AGRICULTURAL PRODUCTIVITY GROWTH

This session will explore the overarching factors behind agricultural productivity growth, barriers to growth, and which inputs are generating the strongest gains.

*Speaker:* **Philip Pardey**  
Professor and Director, International Science and Technology Practice and Policy (InSTePP) Center, University of Minnesota

*Discussant:* **Keith Fuglie**  
Economist, Economic Research Service, U.S. Department of Agriculture

*Panelist:* **Larkin Martin**  
Chief Executive Officer, Martin Farm

*Panelist:* **Kimberly Ratcliff**  
Manager, Caney Creek Ranch; Owner, Farm to Freezer Meat Co.

*Moderator:* **Cortney Cowley**  
Economist, Regional Research, Federal Reserve Bank of Kansas City

### 3:00 p.m. – 4:15 p.m. SESSION 2: THE ROLE OF TECHNOLOGY AND DATA

This session will discuss how technology and the use of data will affect future prospects of agricultural productivity growth.

*Speaker:* **Terry Griffin**  
Associate Professor and Cropping Systems Economist, Department of Agricultural Economics, Kansas State University

*Discussant:* **Gregory Graff**  
Professor, Agricultural and Resource Economics, Colorado State University

*Panelist:* **John Raines**  
Chief Commercial Officer, The Climate Corporation

*Panelist:* **Deanna Kovar**  
Vice President, Production and Precision Ag Production Systems, Deere & Company

*Moderator:* **Alison Felix**  
Senior Policy Advisor, Economic Research, Federal Reserve Bank of Kansas City

### 4:30 p.m. – 5:30 p.m. KEYNOTE ADDRESS

*Speaker:* **Esther L. George**  
President and Chief Executive Officer, Federal Reserve Bank of Kansas City

## AGENDA MAY 25, 2021

### 8:30 a.m. – 9:00 a.m. KEYNOTE ADDRESS

*Speaker:* **Ertharin Cousin**  
Distinguished Fellow, Chicago Council on Global Affairs; Visiting Scholar,  
Stanford University's Center on Food Security and the Environment

### 9:15 a.m. – 10:30 a.m. SESSION 3: SUPPLY CHAIN SPILLOVERS

This session will explore the ways in which agricultural productivity affects, or is affected by, businesses in other segments of the agricultural supply chain.

*Speaker:* **Sergio Lence**  
Professor and Marlin Cole Chair of International Agricultural Economics, Iowa State University

*Discussant:* **Heidi Schweizer**  
Assistant Professor and Extension Specialist, North Carolina State University

*Panelist:* **Jim Pillen**  
Founder and Owner, Pillen Family Farms/DNA Genetics

*Panelist:* **Seth Post**  
Regional General Manager, CGB Enterprises

*Moderator:* **Chad Wilkerson**  
Vice President, Economist and Oklahoma City Branch Executive,  
Federal Reserve Bank of Kansas City

### 10:45 a.m. – 12:00 p.m. SESSION 4: ENVIRONMENTAL LINKAGES

This session will discuss the linkages between environmental conditions and agricultural productivity, and implications for food security.

*Speaker:* **Wolfram Schlenker**  
Professor, Columbia University

*Discussant:* **William Martin**  
Senior Research Fellow, International Food Policy Research Institute

*Panelist:* **Julie Borlaug**  
Vice President, Inari Ag

*Panelist:* **Gabe Gusmini**  
Chief Executive Officer and Co-Founder, The Plant Pathways Co. Inc.

*Moderator:* **Nicholas Sly**  
Assistant Vice President, Economist and Denver Branch Executive, Federal Reserve Bank  
of Kansas City

### 12:15 p.m. – 12:45 p.m. CONCLUDING DISCUSSION

*Host:* **Nathan Kauffman**  
Vice President, Economist and Omaha Branch Executive, Federal Reserve Bank of Kansas City

## SPEAKERS, DISCUSSANTS AND PANELISTS

### ***Julie Borlaug, Vice President, Inari Ag***

Ms. Borlaug is vice president for external relations for Inari Ag, a biotech seed company, and president of the Borlaug Foundation. The foundation continues the legacy of Ms. Borlaug's late grandfather, Norman E. Borlaug, who received the 1970 Nobel Peace Prize for his work preventing mass hunger and starvation.

Before joining Inari, Ms. Borlaug had positions at Texas A&M University's Borlaug Institute for International Agriculture and Texas A&M AgriLife Research.

### ***Ertharin Cousin, Distinguished Fellow, Chicago Council on Global Affairs; Visiting Scholar, Stanford University's Center on Food Security and the Environment***

Ms. Cousin is a distinguished fellow of global food and agriculture at the Chicago Council on Global Affairs and a visiting scholar at Stanford University's Center on Food Security and the Environment. She also is founder and chief executive officer of Food Systems for the Future, a nutrition impact investment fund.

From 2012 until 2017, Ms. Cousin led the United Nations World Food Programme and in 2009 she was confirmed as the U.S. Ambassador to the U.N. Agencies for Food and Agriculture in Rome. She also was executive vice president and chief operating officer of America's Second Harvest, now Feeding America.

### ***Keith Fuglie, Economist, Economic Research Service, U.S. Department of Agriculture***

Mr. Fuglie is an economist with the Economic Research Service, U.S. Department of Agriculture. His research focuses on the economics of technological change and science policy for agriculture.

Mr. Fuglie also has worked with USAID's Bureau of Food Security and as senior staff economist for the White House Council of Economic Advisers. He was lead author of the 2019 World Bank Report, "Harvesting Prosperity: Technology and Productivity Growth in Agriculture," and the 2012 volume, "International Agricultural Productivity: An International Perspective."

### ***Gregory Graff, Professor, Agricultural and Resource Economics, Colorado State University***

Mr. Graff is a professor of the economics of innovation and entrepreneurship in the Department of Agricultural and Resource Economics at Colorado State University. His research looks at the economics and public policy of technological innovation and entrepreneurship in the agricultural and food industries, both regionally and globally.

Mr. Graff writes about intellectual property rights, technology transfer, startups, venture capital, and other aspects of innovation up and down the agricultural value chain, with expertise on innovation and intellectual property in genetics and biotechnology. Mr. Graff and his family own and operate Laughing Buck Farm near Fort Collins, Colorado.

***Terry Griffin, Associate Professor and Cropping Systems Economist,  
Department of Agricultural Economics, Kansas State University***

Mr. Griffin is associate professor and cropping systems economist in the Department of Agricultural Economics at Kansas State University, specializing in farm management and agricultural technology. He also is treasurer of the International Society of Precision Agriculture.

For his work in advancing digital agriculture, Mr. Griffin has received the 2014 Pierre C. Robert International Precision Agriculture Young Scientist Award, the 2012 Conservation Systems Precision Ag Researcher of the Year, and the 2010 Precision Ag Award of Excellence for Researchers.

***Gabe Gusmini, Chief Executive Officer and Co-Founder, The Plant Pathways Co. Inc.***

Mr. Gusmini is chief executive officer and co-founder of The Plant Pathways Co. Inc., a startup plant breeding venture. Mr. Gusmini has more than 20 years of experience in global organizations and launching commercial seed varieties.

Mr. Gusmini previously had research and development leadership positions at PepsiCo and Syngenta.

***Deanna Kovar, Vice President, Production and Precision Ag Production Systems, Deere & Company***

Ms. Kovar is vice president of Production and Precision Ag Production Systems within John Deere's Agricultural and Turf Division. She leads a global team of experts focused on unlocking value for the agriculture industry through equipment and technology solutions.

In her 20 years with Deere, Ms. Kovar has had many roles in sales, marketing, customer support and product development in the United States and globally and is knowledgeable about bringing precision ag technology to market.

***Sergio Lence, Professor and Marlin Cole Chair of International Agricultural Economics, Iowa State University***

Mr. Lence joined the Department of Economics at Iowa State University in 1993, where he is professor and Marlin Cole Chair of International Agricultural Economics and director of undergraduate programs. His research interests span risk management, asset pricing, derivatives, commodity price analysis, and productivity.

Mr. Lence is a member of the editorial board of *Applied Economics Perspectives and Policy*, associate editor of *Agricultural Economics*, and the *Journal of Agribusiness in Developing and Emerging Economies*. He teaches agricultural economics, financial economics, and leads study abroad courses focusing on the marketing channel for agricultural commodities in different countries.

***Larkin Martin, Chief Executive Officer, Martin Farm***

Ms. Martin manages her family's farm in Alabama, raising corn, cotton, soybeans and wheat. She also is chair of the Farm Foundation, director of the Soil Health Institute and chairman of Servico, a cotton ginning and agricultural services business.

Ms. Martin is a past chairman of the Federal Reserve Bank of Atlanta board of directors and of The Cotton Board. In 2012, Ms. Martin was selected as an Eisenhower Fellow. She also previously had jobs with the U.S. Treasury Department and Arthur Andersen.

***William Martin, Senior Research Fellow, International Food Policy Research Institute***

Mr. Martin is a senior research fellow of the International Food Policy Research Institute (IFPRI). His recent research focuses on the effects of shocks such as food price changes, food policy reforms, COVID-19 and macro shocks on poverty and food security in developing countries.

Before joining IFPRI in 2015, Mr. Martin spent six years as research director for agriculture for the World Bank. He began his career at the Australian Bureau of Agricultural Economics before moving to the Australian National University and the World Bank.

***Philip Pardey, Professor and Director, International Science and Technology Practice and Policy Center, University of Minnesota***

Mr. Pardey is professor of Science and Technology Policy at the University of Minnesota, and director of Global Research Initiatives for the College of Food, Agricultural and Natural Resource Sciences (CFANS). His career has focused on enabling data driven innovation in the food and agricultural sectors worldwide.

Mr. Pardey also directs the university's GEMS Informatics Center. GEMS brings together CFANS and Minnesota Supercomputing Institute personnel to develop and deploy computational systems that address complex problems to unlock innovation in the agri-food sector.

***Jim Pillen, Founder and Owner, Pillen Family Farms/DNA Genetics***

Mr. Pillen is founder and owner of Pillen Family Farms, a large Nebraska-based family-owned grain merchandising and swine genetics company founded in 1993. The operation provides expertise in all phases of producing pigs, from breeding to finishing. In 2003, the company purchased DNA Genetics.

Mr. Pillen was elected to the Board of Regents for the University of Nebraska in 2012 and re-elected in 2018, serving as chairman in 2020.

***Seth Post, Regional General Manager, CGB Enterprises***

Mr. Post is the regional general manager for CGB Enterprises, one of the largest grain companies and exporters in the United States. Mr. Post has direct oversight of trading, operations, strategic planning, budgeting, as well as employee development and safety training and compliance functions for the region, which consists of 30 elevators across four states.

Mr. Post has been in the industry for 16 years—the last eight at CGB—and has had various roles in trading, operations, origination and executive leadership.



***John Raines, Chief Commercial Officer, The Climate Corporation***

Mr. Raines is chief commercial officer at The Climate Corporation, the digital farming arm of Bayer Crop Science. Mr. Raines leads sales, account management, marketing and customer service and support for the company's digital farming product.

Prior to his current role, Mr. Raines worked at Monsanto, where he led the development of U.S. advocacy campaigns on behalf of farmers and local community outreach efforts for farmers and ag youth. From 2002 to 2007, he had several leadership roles at Monsanto, including general manager for the company's business units in Australia, New Zealand and the Philippines.

***Kimberly Ratcliff, Manager, Caney Creek Ranch; Owner, Farm to Freezer Meat Co.***

Ms. Ratcliff is manager of Caney Creek Ranch, a diversified operation in Texas started by her parents. She started with the ranch in 2007 after working as a branding specialist for Bloomberg in New York City. She manages and helps operate the business of producing registered Charbray Cattle.

In 2016, Ms. Ratcliff started Farm to Freezer Meat Co., a provider of ranch-direct beef purchased from Caney Creek Ranch. In 2008, she founded 100 Ranchers Inc., a community-based organization serving the needs of agricultural producers.

***Wolfram Schlenker, Professor, Columbia University***

Mr. Schlenker is a professor at the School of International and Public Affairs (SIPA) and The Earth Institute at Columbia University. He also is a research associate at the National Bureau of Economic Research. He studies the effect of weather and climate on agricultural yields and migration patterns, how climate trends and the U.S. biofuel mandate have influenced agricultural commodity prices, and how pollution affects both agricultural yields and human morbidity.

Mr. Schlenker is co-director of both the Center on Environmental Economics and Policy at Columbia and the Energy & Environment Concentration at SIPA. He also is a member of the board of reviewing editors at Science.

***Heidi Schweizer, Assistant Professor and Extension Specialist, North Carolina State University***

Ms. Schweizer is an assistant professor and extension specialist at North Carolina State University. In addition to teaching and conducting research, Ms. Schweizer is a cooperative extension specialist, addressing topics that intersect both freight and agricultural market needs in North Carolina.

Ms. Schweizer's research focuses on the contributions of the freight transportation system to agricultural marketing and food supply chain resiliency.



## FEDERAL RESERVE BANK OF KANSAS CITY PARTICIPANTS

### ***Esther L. George, President and Chief Executive Officer***

Ms. George is president and chief executive officer of the Federal Reserve Bank of Kansas City. She represents the Tenth District on the Federal Open Market Committee, which has authority over U.S. monetary policy. Prior to her appointment as president in 2011, she had been the Bank's chief operating officer.

Ms. George leads a workforce of more than 2,000 employees at the Bank's Kansas City office and Branches in Denver, Oklahoma City and Omaha. She also is host of the Bank's annual Jackson Hole Economic Policy Symposium.

### ***Cortney Cowley, Economist, Regional Research***

Ms. Cowley is an economist in the Regional Affairs Department of the Federal Reserve Bank of Kansas City. Her current research focuses on agricultural finance, commodity markets, farm management and natural resource economics and policy.

Ms. Cowley, who joined the Bank in 2015, also writes for the Tenth District Survey of Agricultural Credit Conditions and Agricultural Finance Updates.

### ***Alison Felix, Senior Policy Advisor, Economic Research***

Ms. Felix is a senior policy advisor at the Federal Reserve Bank of Kansas City. She is responsible for briefing President Esther George on economic and business activity in the Tenth District. Ms. Felix conducts research on issues related to public finance, labor dynamics and regional growth trends.

Ms. Felix, who joined the Bank in 2007, recently was vice president and Denver Branch executive where she conducted research and outreach related to the economies of Colorado, Wyoming and northern New Mexico.

### ***Nathan Kauffman, Vice President, Economist and Omaha Branch Executive***

Mr. Kauffman is vice president and Omaha Branch executive of the Federal Reserve Bank of Kansas City. He is the Bank's lead economist and representative in Nebraska, the principal expert in agricultural economics and host of the annual Agricultural Symposium. Mr. Kauffman also briefs President Esther George on regional economic and business activity.

Mr. Kauffman, who joined the Bank in 2012, oversees several Bank and Federal Reserve efforts to track agricultural economic and financial conditions. He speaks regularly on the agricultural economy to industry audiences and the news media, including providing testimonies at both U.S. Senate and U.S. House Agriculture Committee hearings.

***Nicholas Sly, Assistant Vice President, Economist and Denver Branch Executive***

Mr. Sly is assistant vice president and Denver Branch executive of the Federal Reserve Bank of Kansas City. He is the Bank's regional economist and its representative in Colorado, Wyoming and northern New Mexico. Mr. Sly works closely with the Branch's board of directors and also briefs President Esther George on economic conditions in the Denver region.

Prior to joining the Bank in 2015, Mr. Sly was an associate professor of economics at the University of Oregon.

***Chad Wilkerson, Vice President, Economist and Oklahoma City Branch Executive***

Mr. Wilkerson is Branch executive of the Federal Reserve Bank of Kansas City's Oklahoma City Branch. He is the Bank's lead officer and regional economist in Oklahoma and is responsible for briefing President Esther George on economic trends in the state.

Mr. Wilkerson joined the Bank in 1998 and was appointed Branch executive in 2006. His research focuses on developments in key industries in the region, including energy and manufacturing. He also supervises several business surveys.

