

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

BOARD ON AGRICULTURE AND NATURAL RESOURCES

**LABOR AND AUTOMATION EFFECTS ON
SOCIAL SUSTAINABILITY AND RESILIENCE IN U.S. AGRICULTURE**

Tuesday, June 29, 2021 (via Zoom)
AGENDA

Noon ET	WELCOME Douglas Jackson-Smith <i>--Introduction and Background</i>
12:10 pm ET	PRESENTATIONS (15 min each): Philip Martin is Professor Emeritus of Agriculture and Resource Economics at the University of California, Davis. <i>Immigration and the Agricultural Workforce</i> R. Karina Gallardo is an Associate Professor, Extension Specialist in the School of Economic Sciences and at the Research and Extension Center of Washington State University in Puyallup. <i>Grower experiences in adopting automation in the Pacific Northwest</i> Manoj Karkee is Associate Professor in the Department of Biological Systems Engineering where he leads the Agricultural Automation and Robotic Lab. <i>What automation can do today and where it is heading</i> Laurens Klerkx is Full Professor at the Knowledge, Technology and Innovation Group, Wageningen University in The Netherlands. <i>The social impacts of automation and thoughts about the roles of automation in “good farming.”</i>
1:10 pm ET	PERSPECTIVES: (10 min each): A.G. Kawamura , Owner, Orange County Produce, LLC Debbie Berkowitz , Program Director for Worker Safety and Health, National Employment Law Project Victor Smith , CEO, JV Smith Companies Armando Elenes , Secretary-Treasurer, United Farm Workers Walt Duflock (invited) , Vice President of Innovation, Western Growers
2:00 pm ET	DISCUSSION WITH MEMBERS OF THE BOARD ON AGRICULTURE AND NATURAL RESOURCES --- Key Observations ---Topics to explore in future webinars
2:30 pm ET	ADJOURN

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

BOARD ON AGRICULTURE AND NATURAL RESOURCES

Tuesday, June 29, 2021

Presenter and Panelist Biosketches

(in speaking order)

MODERATOR

Douglas B. Jackson-Smith is a Professor and Assistant Director of the School of Environment and Natural Resources at the Ohio State University. Prior to joining OSU as part of the Discovery Themes Initiative in August 2016, he was Co-Director of the Program on Agricultural Technology Studies at the University of Wisconsin-Madison, then spent 15 years as a faculty member at Utah State University. Trained as a rural sociologist, his research has explored the dynamics of technological and structural change in the dairy, livestock, and wheat sectors. Dr. Jackson-Smith's research integrates social science theory and mixed methods into interdisciplinary studies of food and agricultural issues, and has published extensively on the drivers and consequences of technological and economic change in the agrifood system. He has also worked extensively on human dimensions of nonpoint water pollution problems, and most recently co-lead an NSF funded project exploring the coupled human-natural system dynamics of water systems in the Intermountain West. He served on two National Academies committees that issued the 2010 report on Sustainable Agricultural Systems for the 21st Century and the 2015 Framework to Assess the Health, Environmental and Social Effects of the U.S. Food System. He is currently a member of the National Academies Board on Agriculture and Natural Resources. He has helped lead several major USDA, NSF, and DOE inter-disciplinary science grants worth over \$25 million with a focus on both rural/agricultural and urban landscapes. He received a BS in Rural Sociology from Cornell University, and an MA in Agricultural Economics and an MS and PhD in Sociology, all from the University of Wisconsin-Madison.

PRESENTERS

Philip Martin is Professor Emeritus of Agriculture and Resource Economics at the University of California, Davis. He received his PhD degree from the University of Wisconsin-Madison in 1975. His research focuses on immigration, farm labor, and economic development. Martin has earned a reputation as an effective analyst who can develop practical solutions to complex and controversial migration and labor issues. In the U.S., he was the only academic appointed to the Commission on Agricultural Workers to assess the effects of the Immigration Reform and Control Act of 1986. He assessed the prospects for Turkish migration to European Union between 1987 and 1990, and evaluated the effects of immigration on Malaysia's economy and its labor markets in 1994-95. In 2001-02, he assessed the options for dealing with unauthorized migration into Thailand. He received UC Davis' Distinguished Public Service award in 1994, and was a member of the Binational Study of Migration between 1995 and 1997.

R. Karina Gallardo is an Associate Professor, Extension Specialist in the School of Economic Sciences and at the Research and Extension Center of Washington State University in Puyallup. She holds a BS in Food Science from the Universidad Nacional Agraria La Molina (Lima, Peru), a Master in Science in

Agricultural Economics from Mississippi State University and a PhD in Agricultural Economics from Oklahoma State University. Gallardo's primary research and outreach program goal is to enhance value-added agribusiness opportunities for specialty crops in the state of Washington. As such, her areas of research are focused on consumer demand analysis and economics of technological change. More specifically, Gallardo is conducting research assessing consumers' preferences for fresh fruit quality, and understanding the profitability and various other factors affecting growers' adoption of new technologies, such as new cultivars, improved pest management systems, and labor enhancing mechanisms.

Manoj Karkee is Associate Professor in the Department of Biological Systems Engineering where he leads the Agricultural Automation and Robotic Lab. Dr. Karkee was born and raised in Nepal, receiving a B.S. degree from Tribhuvan University in Katmandu. He received an M.S. in Remote Sensing and GIS from the Asian Institute of Technology in Bangkok, Thailand, and a PhD in Agricultural Engineering and Human-Computer Interaction from Iowa State University in 2009. Dr. Karkee joined Washington State University (WSU) in 2010 where he leads a strong research program in agricultural automation and mechanization area with a particular emphasis on machine vision and sensing technologies for agricultural automation and robotics. He has been working on numerous sponsored projects in this area, including apple crop load estimation, apple and cherry harvesting, fruit tree and berry bush pruning, blossom thinning, water and nutrient stress monitoring, weed control in vegetable crops, and Big-data based SMART irrigation system for winegrapes. Dr. Karkee currently serves as an Associate Editor of 'Transactions of the ASABE' and 'Applied Engineering in Agriculture', and as a Guest Editor for 'Robotics'. He is the elected chair of Technical Committee 8.1, Control in Agriculture, International Federation of Automatic Control (IFAC) serving the term from, 2017 to 2020.

Laurens Klerkx is Full Professor at the Knowledge, Technology and Innovation Group, Wageningen University in The Netherlands, where he received his PhD, and where his research and instruction spans a wide range of social science topics focused around innovation and change. His work has explored transformative innovation in agri-food systems, digital agriculture innovation, and Innovation policy. He also examines the division of public, private, and industry roles in innovation and explores the dynamics and politics of agenda setting in research and innovation. Laurens has published more than 120 articles in international peer reviewed journals. His work informs policy makers, through contributions to policy oriented publications and direct engagement through invited presentations with organizations like the World Bank, the European Commission, the Food and Agricultural Organization of the United Nations (FAO), the Organization for Economic Cooperation and Development (OECD), and the United Nations Commission for Trade and Development (UNCTAD). Laurens is a member of the editorial board of the international journals Agricultural Systems and International Journal of Agricultural Sustainability, editor-in-chief of the Journal of Agricultural Education and Extension, and associate editor of Agronomy for Sustainable Development.

PANELISTS

A.G. Kawamura is a third generation fruit and vegetable grower and shipper from Orange County, California. His company, Orange County Produce, LLC, operates in the confines of the shrinking urban and rural interface, and includes a 100-acre showcase farm at the Orange County Great Park in Irvine, California. From 2003 to 2010, he served as Secretary of the California Department of Food and Agriculture. A.G. is a Director of Western Growers and also co-chair of Solutions From the Land, a non-

profit organization that collaborates with farmers, ranchers, foresters and stakeholders to implement climate smart land management practices and strategies. In addition to his service on many other projects, he is a former member of the National Academies' Board on Agriculture and Natural Resources.

Debbie Berkowitz is Senior Fellow at the National Employment Law Project (NELP) and Program Director for Worker Safety and Health. She joined NELP in 2015, following six years serving as chief of staff and then a senior policy adviser for the Occupational Safety and Health Administration (OSHA) (2009-2015). Debbie's past positions include health and safety director of the United Food and Commercial Workers Union and the health and safety director of the Food and Allied Service Trades Department of the AFL-CIO. In her current role, Debbie has led NELP's efforts to strengthen federal and state worker safety and health protections, as well as state workers' compensation laws. She is the author of widely cited NELP reports on improving worker safety and workers' compensation systems. Debbie works with national and state partners to develop successful policies and campaigns that improve conditions for vulnerable, low-wage workers in dangerous industries, including temporary workers and those in the meat, poultry, and food industry. Debbie is the recipient of numerous awards, including the American Public Health Association's Alice Hamilton Award. She holds a B.A. from Oberlin College.

Victor (Vic) Smith is President and Chief Executive Officer of JV Smith Companies, a diverse group of operations with farming, cooling and distribution facilities and shipping capacities in Arizona, California, Colorado, and Baja, Mexico. JV Smith Companies farm a number of commodities including conventional romaine, iceberg lettuce, spinach, potatoes, mixed leaf, and organic spring mix, carrots, celery, romaine, and green onions. Vic is on the Board of Directors for Western Growers. He is also a member and previously served on the boards of both the United Fresh Produce Association and the Produce Marketing Association. Vic Smith serves on the Board of Directors of the Equitable Food Initiative (<https://equitablefood.org>), an organization that brings together growers, farmworkers, retailers and consumers to transform agriculture and improve the lives of farmworkers.

Armando Elenes is the Secretary Treasurer for the United Farm Workers (UFW). Armando was born in Sinaloa, Mexico and immigrated to the United States in 1980 at the age of eight with his family. Beginning at the age of 15, he worked in nurseries, dairies and picked peaches and apricots to help provide for his family during the summer months. He attended Hilmar High School in Hilmar and graduated in 1990. He then served his country in the military, spending four years in the U.S. Air Force. After leaving the service, he studied for two years at Modesto Junior College and earned an AA Degree. While at community college he became involved with the UFW's major strawberry organizing campaign on the Central Coast and organized dozens of union supporters to leaflet stores and participate in other actions in the Modesto area. After graduating in 1997, he applied to attend the University of Southern California. Instead, he was asked to serve an internship at the UFW office in Los Angeles as a community organizer. After less than two years, he transferred to the UFW Organizing Department in Delano and continues to work there, focusing on organizing workers in the Central Valley.

Walt Duflock (invited) is Vice President of Innovation at Western Growers, which he joined in 2020. His work is focused on accelerating commercialization and helping AgTech startups scale in a couple of key ag challenge areas, including harvest automation, food safety, and grower trials (of innovations). Prior to joining Western Growers, Walt was Vice President, Marketing at Aptare, and Director of Marketing and Business Development at MerchantCircle. He is a Partner at San Bernardo Rancho, a 10,000 acre

family ranch in Monterey County which operates cattle, row crops, and vineyards. Walt has a Bachelor of Science in Accounting from California Polytechnic State University-San Luis Obispo in 1988 and a Juris Doctor from Santa Clara University School of Law in 1992.