



**Fueling
Change
Begins Within**



CENTER FOR
PRODUCE SAFETY

| 2023 ANNUAL REPORT

ABOUT CPS

We are a unique partnership:

The (501)(c)(3) nonprofit Center for Produce Safety brings together diverse leaders from industry, government, and science and academia. This CPS community works collectively toward the common goal of enhancing fresh produce food safety.

That's all about the science:

CPS funds credible, independent research worldwide that provides science-based produce safety solutions that can be implemented in the real world.

Knowledge closes the loop:

CPS then transfers that knowledge and tools to industry and other stakeholders through our annual Research Symposium, [website](#), webinars, guest columns in key trade press outlets and other outreach.



From the Chair

Fueling change begins within

We're breaking annual report rules to bring you breaking news.

Customarily, our reports convey Center for Produce Safety's accomplishments from the previous year. When we launched a new brand identity and a new website in mid 2024, it seemed unseemly to hold that news for a year.

CPS's previous website had been quite the workhorse, but we were often finding we needed it to do more. Updating the website presented a logical opportunity to also refresh our brand.

Our new brand marries two core CPS principles: science and collaboration. In the new logo art, some see links in a chain, others see outreached hands. I see both.

The new website will better help CPS achieve the third part of our produce safety mission: Fund science, find solutions, *fuel change*. As our primary, 24/7/365, global communications channel, our site helps CPS transfer science-based solutions to industry, to put into action.

We look forward to having you take the new website for a test drive! It features a much-expanded database of CPS-funded research, with much more searchable content. It's better organized, to more quickly find what you're looking for. And it adapts to your screen, large or small.

Now back to regular annual report programming. We traditionally dedicate much of our report to recognizing those who make CPS accomplishments possible: our generous contributors and volunteer leaders. You are central to every part of our mission. Thank you for your commitment to CPS, and to fresh produce food safety. It is my honor to serve alongside you.

Want to join our ranks? [Contact us](#).

Joe Pezzini

Chair, CPS Board of Directors

Taylor Farms Senior Director of Agricultural Operations



“Thank you for your commitment to CPS, and to fresh produce food safety. It is my honor to serve alongside you.”

Joe Pezzini

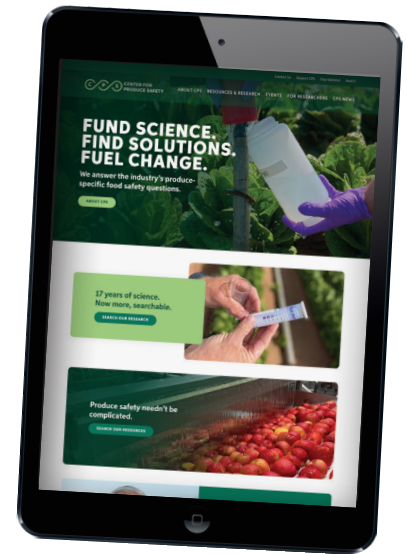
2023 Year in Review

CPS fuels change, now and future

Produce safety is constantly evolving. So in 2023, Center for Produce Safety evolved too, in some key ways.

We strengthened our science foundation

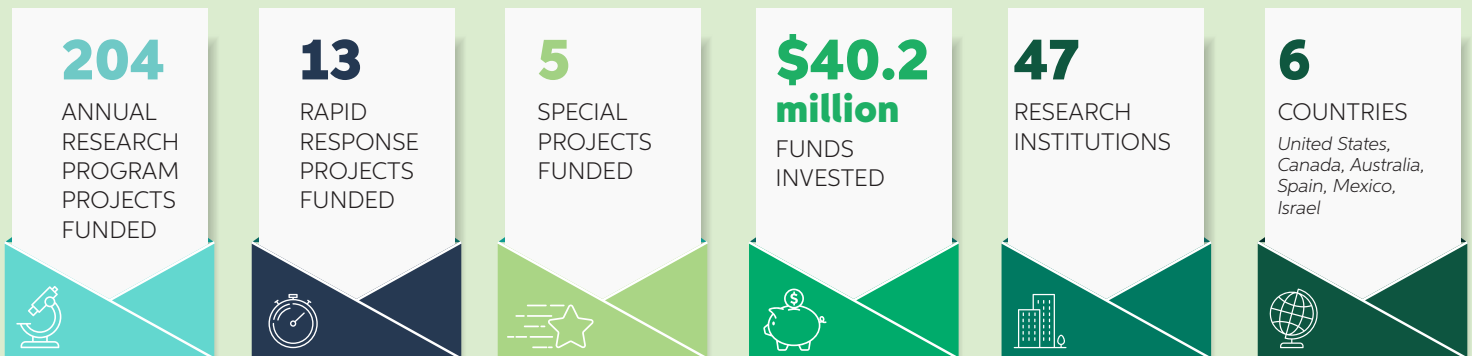
- **Updated research priorities:** CPS’s Technical Committee invested hundreds of hours to create a new approach to inform researchers’ proposals. This [extensive guide](#) to key produce-safety hazards and risks helped researchers design projects to best inform and direct industry.
- **New research launched:** CPS funded 10 new studies in 2023, investing \$2.8 million to research topics including agricultural water risk, equipment sanitation, enteric viruses and flooding. More CPS volunteers improved researchers’ proposals, helped keep projects on track, and planned the annual CPS Research Symposium to convey learnings to industry.
- **More researcher guidance:** Every CPS-funded researcher is now assigned an Industry Advisory Council – a team of industry experts who oversee their work, offering advice and assistance as needed to keep that work on track.



We strengthened foundations for the future

- **A new brand identity:** Our new logo – debuting in this report – marries core CPS principles of science and collaboration. Brand trimmings visually depict CPS’s mission.
- **A new website to help fuel change:** The heart of the new site is an expanded, more searchable research database. We’ve added more produce safety resources. The site’s responsive design adapts to viewers’ screen size.

CPS BY THE NUMBERS as of Jan. 1, 2024



2023 SPOTLIGHTS

CPS volunteer leaders periodically byline articles in key trade media outlets, reporting CPS research and other news. We excerpted four 2023 articles here, voices from across our supply chain, reporting on CPS’s diverse impacts. Read all our recent articles at www.CenterforProduceSafety.org.

Listeria don’t read textbooks, so act accordingly

What does produce safety look like at Dole Fresh Vegetables? Collaboration. Our food safety and quality assurance team works closely with our operations teams to identify issues and solve problems. When we traced a 2021 *Listeria monocytogenes* outbreak to harvest equipment, we brought growers, harvesters and equipment manufacturers together to collaborate to improve harvest sanitation.

Lm is produce safety’s most common enemy; because of our history with it, it’s important for us to stay ahead of related research.

An advisor used to say microorganisms don’t read textbooks, so they don’t know how we think they should behave. Clemson’s Paul Dawson, Ph.D., proved that’s true of *Lm* (and *Salmonella*). We knew they persist in wet conditions; he found they can persist on dry packinghouse surfaces, after the season is over. Dawson’s research validates the importance of keeping an open mind during investigations, and having a rigorous dry-area sanitation program.

DFV’s sister companies import fruit, so I’ve noted University of California, Davis [findings](#) that *Lm* can survive (though not grow) on waxed fruit; pathogen loads decreased more on waxed than unwaxed fruit over time. This demonstrates the importance of preventing waxes, waxing equipment and surfaces from becoming cross-contamination vectors.

While some CPS projects may not involve your industry, project results may apply. Texas A&M’s Alejandro Castillo, Ph.D.’s, [study](#) of avocado dry storage and sanitation should be applicable to our vegetable operations.

Spain’s Pilar Truchado, Ph.D., is [testing](#) whether bacteriophages – viruses that target specific bacteria – can control *Lm* on leafy greens (pictured). We know bacteriophages work against pathogens; let’s figure out how they fit into produce safety.



Pilar Truchado, Ph.D., is studying whether bacteriophages can control Lm in leafy greens processing. Image source: Dr. Truchado.

A longer version of this article first appeared in [Produce Processing](#). CPS thanks our media partner for helping us reach a larger industry audience than we can reach on our own.



Amy Parks, Ph.D., is director of global food safety and quality assurance governance and regulatory compliance for Dole Food Company, and a member of CPS’s Technical Committee.

“While some CPS projects may not involve your industry, the results may.”

Amy Parks

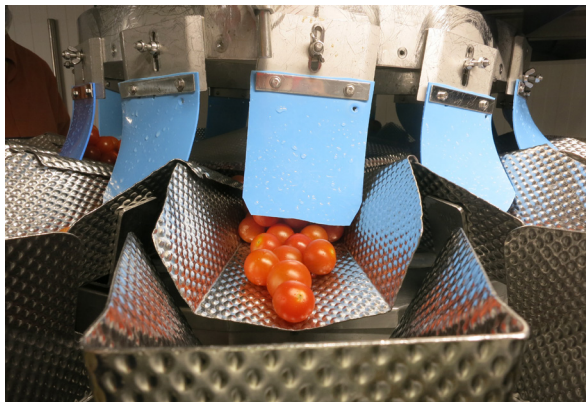


Testing, learning are key to produce safety

Taylor Farms sees produce safety as two worlds: compliance, and test and learn. Compliance confirms we are doing everything we say we're doing – and that means we are always testing, learning, measuring, evolving.

We support Center for Produce Safety because while we can effect a lot of change on our own, we can't do it all. We look to CPS to go broader, and to engage with academia. CPS is unique in the role industry has in designing and facilitating CPS research.

We are at the mercy of the raw material we bring in. So I look at CPS projects even if they're not directly related to our business.



European fresh produce processors granted access to a team led by Dr. Allende, Ph.D. from CEBAS-CSIC's Microbiology and Quality of Fruit and Vegetables Group to study listeria prevalence and interventions in their facilities. Image source: Dr. Allende.

is agricultural water. These projects could validate how we comply with the Food and Drug Administration's forthcoming produce ag water rule – and could impact food safety.

And we want to look at more integrated, multiple, co-dependent produce safety interactions. We know there are more dynamic interfaces going on than one-to-one food safety causations. I know that a nearby herd of cattle is a risk; what's the risk when cattle are far away, and how does that risk change with conditions?

CPS also continually looks at better ways to communicate research findings. Our vision is that when any industry member is asked why they are doing what they are doing, they can answer, "Because we have science-backed, published CPS research."

A longer version of this article first appeared in [Produce Processing](#). CPS thanks our media partner for helping us reach a larger industry audience than we can reach on our own.



Drew McDonald is Taylor Farm's senior vice president of food safety and quality. He is a CPS board director, and chairs the Technical Committee directing CPS's research program.

“Our vision is when any industry member is asked why they are doing what they are doing, they answer, ‘Because we have science-backed, published CPS research.’”

Drew McDonald

“Think like *Salmonella*”

Trevor Suslow, Ph.D., is a key figure in fresh produce food safety; he recently moved to emeritus status with University of California, Davis. We took the occasion to talk to him about produce safety’s evolution, and evaluating related research.

Q What makes for good research to you?

A Produce safety is being as inclusive as possible. It’s understanding your specific hazards and risks. It’s attending to the details of the details, across the supply chain. It’s drawing on available knowledge, even if it’s not from your region, commodity or business model.

Successful research doesn’t just say “look how bad this is”, but rather “here’s the science on how to deal with [that science], and how to figure out if it applies to you.”

Center for Produce Safety research has great directional value, showing what we should do – or stop doing. CPS played a tremendous role after the 2006 *E. coli*/spinach outbreak, consolidating stakeholders and shaping a different mission, emphasizing solution-driven, applied-answer research across the supply chain.

Q What advice do you have for evaluating research results?

A Think like pathogens. Look beyond superficial stereotypes about their behavior, at how they adapt, survive and die.

Don’t forget *Salmonella*. There are 2,500+ known types. It is probably best at surviving and growing under stress – in the environment, on produce, and in our facilities. Once it adapts, *Salmonella* tolerates heat, freezing, pH extremes and sanitizers.

After outbreaks involving dry-bulb onions, that industry partnered with CPS to identify production practices contributing to *Salmonella* contamination, and how to reduce that risk. [Projects](#) by Joy Waite-Cusic, Ph.D. (see *photo below*), and Vijay Joshi, Ph.D., have them thinking like pathogens – and crops. Waite-Cusic reports overhead irrigation resulted in more prevalent, persistent *E. coli* contamination (used as a surrogate) than drip irrigation.



Oregon State University’s Joy Waite-Cusic, Ph.D., is studying the effects on *E. coli* contamination of overhead versus drip irrigation. Image source: Trevor Suslow, Ph.D.

Both projects are relevant to other produce, and production conditions. Once completed, we’ll better understand how *Salmonella* interacts with fresh produce and environmental conditions, and have safer options from breeding to processing.

Q What’s the call to action here?

A Leaders should develop and empower their food safety professionals, to understand how to dissect research and figure out the “so what”. Watch for the positive side, but also red flags. CPS has created a really amazing network of different experts – you don’t have to figure this out alone.

A longer version of this article first appeared in [Produce Processing](#). CPS thanks our media partner for helping us reach a larger industry audience than we can reach on our own.



Trevor Suslow, Ph.D., is professor of applied research and Extension, emeritus, at University of California, Davis.

“CPS has created a really amazing network of different experts – you don’t have to figure this out alone.”

Trevor Suslow

5 reasons you should help CPS research

Fresh produce doesn't have a kill step, so we have to minimize food safety hazards. The more we know, the better we can protect our customers, our companies, the industry – we're all tied together.

The Giumarra Companies' produce safety responsibilities include keeping up with the science, meeting regulatory and customer requirements, and supporting our operations and growers. Food safety inspections can be nerve-wracking; we go where needed to ensure our people are prepared. Giumarra has been involved with Center for Produce Safety since its inception. CPS funds produce-specific food safety science, finding solutions and fueling change.

Here are key reasons every industry company should engage with CPS.

1 Keep up on new science.

For example, our industry has become good bacteriologists, but isn't experienced with viruses. At CPS's 2023 Research Symposium, Georgia's Malak Esseili, Ph.D., reported on new tools to study norovirus's survivability in leafy greens and ag water.

2 CPS science can improve your business operations.

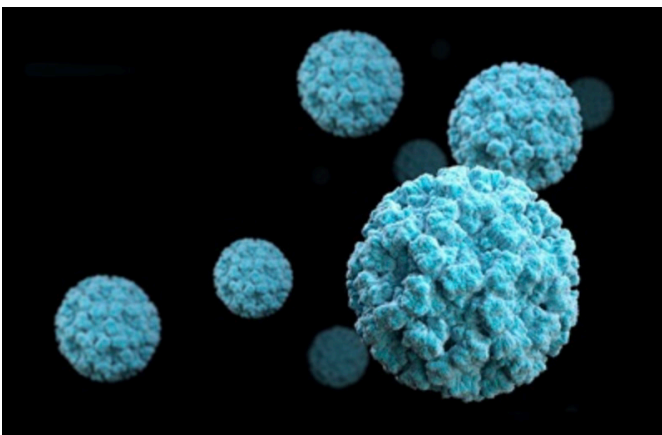
After Laura Strawn, Ph.D., recommended cleaning field packing food-contact surfaces at day's end to limit microbial growth overnight, Giumarra changed our sanitation schedule for our table grape vineyards. That one project increased our efficiencies for no money down, no heartburn.

3 Help direct future research.

Responding to industry, CPS has Texas A&M's Alejandro Castillo, Ph.D., researching how *Listeria monocytogenes* moves around avocado dry-packing operations. Is it different than operations that wash produce? These projects help us develop best practices.

4 Help CPS researchers find solutions.

CPS pairs researchers with industry advisors – I am an advisor on Dr. Castillo's project. CPS researchers know science; they might not know our industry. Sharing our expertise helps them.



Noroviruses cause half of U.S. foodborne illnesses annually.
Image source: Centers for Disease Control and Prevention.



Walter Ram is corporate vice president of regulatory for The Giumarra Companies, and a member of Center for Produce Safety's Technical Committee. Giumarra President Tim Riley is a CPS board director.

“Consumers expect our products to be safe and wholesome. Center for Produce Safety drives that improvement. You can help.”

Walter Ram

5 Engage with experts.

CPS's Technical Committee is a diverse group of professionals that includes Food and Drug Administration, informing their regulations and enforcement policies.

Consumers expect our products to be safe and wholesome. CPS drives that improvement. Contact CPS to volunteer – as a research advisor, to vet research proposals, or to join me on the Technical Committee.

A longer version of this article first appeared in Produce Processing. CPS thanks our media partner for helping us reach a larger industry audience than we can reach on our own.

2023 FINANCIALS

Your funds fuel produce safety change

Funds in: Center for Produce Safety is funded by diverse public and private sources. Industry funds come from across the whole fresh produce supply chain, from farm, packer and processor, to grocer and foodservice. Public funds come from grants made by major specialty crop-producing states.

Funds out: The vast majority of CPS's funds are spent on sponsoring produce-specific food safety research, and on transmitting key learnings to the many and varied stakeholders of produce safety.

The 2022 shortfall was covered with funds reserved from previous years' net gains.

	2022	%*	2023	%*
INCOME:				
■ Research	\$3,568,425	84%	\$4,249,221	83%
■ Operational (G&A and Fundraising combined)	376,768	9%	520,104	10%
■ Symposium	310,814	7%	360,379	7%
■ Other programs	13,520	0%	19,948	0%
Total Income	\$4,269,527	100%	\$5,149,652	100%



EXPENSES:				
■ Research	\$3,777,033	84%	\$4,429,669	86%
■ Operational (G&A and Fundraising combined)	308,315	7%	327,265	6%
■ Symposium	359,156	8%	342,443	7%
■ Other programs	43,729	1%	25,310	0%
Total Expenses	\$4,488,233	100%	\$5,124,687	100%
Net Income	(\$218,706)		\$24,965	



* Percentages may not total 100% because of rounding

In accordance with the Federal Uniform Guidance Requirements for Federal Awards, our 2023 Year End Financial Statements, Independent Auditor's Report and accompanying Federal Reports and Schedules are publicly available on CPS's website at www.centerforproducesafety.org.

CONTRIBUTORS

CPS's research program is made possible by generous contributors from across the fresh produce supply chain. CPS also receives substantial grants from governments of major specialty crop-producing states including California Department of Food and Agriculture, Washington State Department of Agriculture, Florida Department of Agriculture and Consumer Services, and Texas Department of Agriculture.

As of December 31, 2023

Diamond Level Supporters, \$1,000,000+

Taylor Farms
Western Growers

Platinum Level Supporters, \$500,000 - \$999,999

Dole Fresh Vegetables/Dole Food Company
California Citrus Quality Council
Fresh Express

Gold Level Supporters, \$250,000 - \$499,999

California Fresh Fruit Association
Sysco
Tanimura & Antle
Washington State Tree Fruit Association

Silver Level Supporters, \$100,000 - \$249,999

Lipman Family Farms
California Cantaloupe Advisory Board/California Melon Research Board
JV Smith Companies
Promotora Agrícola El Toro
Western Precooling
Grimmway Farms/Cal-Organic
Wawona Frozen Foods
McEntire Produce, Inc.
Calavo Growers, Inc.
Costco Wholesale
Driscoll's
Florida Fruit & Vegetable Association
The Giumarra Companies
GreenGate Fresh
iFoodDecisionSciences, Inc.
Markon Cooperative, Inc.
Mexican Hass Avocado Importers Association
Mission Produce, Inc.
organicgirl, LLC
Pacific International Marketing
Robinson Fresh
Steinbeck Country Produce
The Produce News

Bronze-Plus Level Supporters, \$50,000 to \$99,999

International Fresh Produce Association
The Oppenheimer Group
Bayer
Bonduelle Fresh Americas
California Avocado Commission
DiMare Fresh
GoodFarms
H-E-B
L&M Companies
Meijer
New York Apple Association
The Wegman Family Charitable Foundation
Food Safety News

Bronze Level Supporters, up to \$49,999

Church Brothers Farms
Coastline Family Farms, Inc.
Little Bear Produce
Texas International Produce Association
Duda Farm Fresh Foods, Inc.
Georgia Fruit & Vegetable Growers Association
International Paper
Vesta Foodservice
Diversified Restaurant Systems, Inc.
Florida Tomato Committee
Food Safety Net Services (FSNS)
Pasquinelli Produce Co.
IEH Laboratories & Consulting Group
Tyger Sales and Marketing, LLC
Wish Farms
National Watermelon Association
Azzule/PrimusLabs
Blue Book Services, Inc.
Primus Labs
Pacific Ag Pak, Inc



Center for Produce Safety research has empowered industry to implement lifesaving practices that yield safer products for consumers to enjoy. As we learn and apply outcomes from new CPS research, industry operations and consumer safety will continue to improve.”

Charles Leftwich
Sysco Corporation
CPS board director, contributor

CPS BOARD OF DIRECTORS

These volunteer leaders keep Center for Produce Safety laser focused on our mission: fund science, find solutions, fuel change.

As of Dec. 31, 2023

*Executive Committee members

Joe Pezzini, Chair*
Taylor Farms

Bret Erickson, Secretary*
J & D Produce, Inc.

Mark Powers, Treasurer*
Northwest Horticultural Council

Scott Angle
University of Florida

Samir Assar
U.S. Food and Drug Administration

Jim Brennan
SmartWash Solutions

Tony DiMare
The DiMare Company

Natalie Dyenson*
International Fresh Produce Association

Amy Gates
ALG Unlimited

Thomas Green
IPM Institute

Craig Hedberg
University of Minnesota School of Public Health

Jorge Hernandez
The Wendy's Company

Michael Joyner
Florida Fruit & Vegetable Association

Larry Kohl
Retail Business Services, the services arm of retail group Ahold Delhaize

Isabelle Laberge
Canadian Food Inspection Agency

Charles Leftwich
Sysco Corporation

Jim Lugg

Drew McDonald
Taylor Fresh Foods

Carter McEntire
McEntire Produce

Dave Murray*
Andrew & Williamson Fresh Produce/Good Farms

Stephen Patricio
Westside Produce

Dave Puglia
Western Growers

Timothy Riley
The Giumarra Companies

Michael Spinazzola
DRS, Inc.

Michael Taylor

Craig Wilson
IEG Laboratories and Consulting Group

Matthew Wise
Centers for Disease Control and Prevention

Timothy York
California Leafy Greens Marketing Agreement



“Fresh produce safety directly impacts public health, and fueling change in produce safety is essential to our industry’s continued success. CPS findings have driven systemic change, led to regulatory reform and fostered safer fresh produce, which has enhanced trust in the food supply chain. Our grower members directly benefit.”

Mike Joyner
Florida Fruit & Vegetable Association
CPS board director, contributor



“Working with CPS is very rewarding. There is a real focus on translating research into real-world actions. And I have benefited from feedback from some of the industry’s smartest people.”

Abby Snyder, Ph.D.
Cornell University
CPS-funded researcher

CPS TECHNICAL COMMITTEE

Our multidisciplinary Technical Committee provides the necessary scrutiny and tight controls needed to ensure funded research projects are practical, measurable and translatable. Throughout the year, this group queries industry about their biggest food safety challenges, then packages those burning questions into an annual call for pre-research proposals.

As of Dec. 31, 2023

Drew McDonald, Chair
Taylor Fresh Foods

Cassidi Amos
Bolthouse Farms

Rebecca Anderson
GlobalGAP

Megan Arnold
Robinson Fresh

Karleigh Bacon
McDonald's Corporation

Tony Banegas
Bonduelle – Ready Pac

Alexandra Belias
McEntire Produce

Jim Brennan
SmartWash Solutions

Donna Lynn Browne
Naturipe Farms LLC

Jennifer Clarke
California Leafy Greens Research Board

Kinsey Clishe
North Bay Produce

DeAnn Davis
Western Growers

Suresh DeCosta
Lipman Family Farms

Pascal Delaquis

Jessica Dyszel
BrightFarms, Inc.

Thea Eubanks
organicgirl

Robert Gravani
Cornell University

Emily Griep
International Fresh Produce Association

John Gurrisi
Fresh Express

Maha Hajmeer
California Department of Public Health

Tim Jackson
U.S. Food and Drug Administration

Jessica Jones
Chick-fil-A

Lianna Kelly
U.S. Food and Drug Administration

Andreas Klieber
Quality Associates

Susanne Klose
Church Brothers Farms

Greg Komar
California Leafy Greens Marketing Agreement

Sharan Lanini

Jim Lugg

Morgan Madison
Florida Fruit & Vegetable Association

Johnny Massa
Comgro

Jennifer McEntire
Food Safety Strategy

Michael Menes
True Organic Products

Danielle Mesa
H-E-B

Matt Miles
Allan Brothers

Bob Mills
RSM Food Safety

Anne Morrell
Columbia Fruit Packers Inc.

Joelle Mosso
Western Growers

Gurmail Mudahar
Tanimura & Antle

Takashi Nakamura
Del Monte Fresh Produce N.A., Inc

George Nikolich
George Nikolich Consulting, Inc.

Monica Noble
80 Acres Farms

Courtney Parker
Gallo



“We value our participation in CPS. It is critical to invest in meaningful research priorities, and to adapt best practices and preventive measures as sound science prescribes. CPS connects researchers, regulators and industry personnel for a collaborative approach to developing that science.”

*Megan Arnold
Robinson Fresh
CPS Technical Committee,
contributor*

Amy Parks
Dole Food Company

Walter Ram
The Giumarra Companies

Angie Ramirez
Triangle Farms, Inc./JV Farms Organic, LLC

Joan Rosen
JC Rosen Resources

Vicki Scott
Scott Resources

Rusbelina Silva
4Earth Farms

Stacy Stoltenberg
Hygiena

Will Strand
Rainier Fruit Company

Steve Strub
Wegmans Food Markets

Derek Tweedy
Domex Superfresh Growers

Rebecca Unwer
Walmart

Rich Walsh
ECOLAB

From the Executive Director

Unlock the value of volunteering with CPS

Have you noticed volunteers often say they gain more from their experiences than they contribute? That's what volunteering with Center for Produce Safety offers: an opportunity to invest in yourself, while making a meaningful impact on our industry.

Why volunteer with CPS?

CPS funds research that addresses critical issues within the produce sector, developing practical, real-world solutions. To achieve this, we need your insight. Here's how you can make a difference:

- **Review research proposals:** Your industry experience is invaluable in shaping the direction of CPS research. As a volunteer, you'll evaluate proposals to ensure they answer pivotal industry questions, and can be implemented in the real world. You don't need to be a scientist – just bring your expertise and willingness to help!
- **Join an Industry Advisory Council:** Starting in 2023, each CPS-funded researcher is paired with an industry advisory team. As a council volunteer, you'll help keep researchers' projects on track and provide essential advice when needed, ensuring their work truly benefits our industry.
- **Host researcher tours:** Whether virtual or in-person, offering a tour of your operations provides researchers with a firsthand look at industry practices. This exposure helps them design studies that meet produce safety needs.

Ready to get Involved?

Let's grow together. Start your volunteer journey with us today!
For more details, contact me at bonnie@centerforproducesafety.org.

Bonnie Fernandez-Fenaroli

CPS Executive Director



“CPS funds research that addresses critical issues within the produce sector, developing practical, real-world solutions. To achieve this, we need your insight.”

Bonnie Fernandez-Fenaroli



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