



CCOF
FOUNDATION

ROADMAP TO AN
ORGANIC CALIFORNIA

Policy Report

2020

Stakeholders engaging in policy discussions at Paicines Ranch in Paicines, California.

PHOTO COURTESY OF Liz Birnbaum

COVER PHOTO COURTESY OF Liz Birnbaum



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ABOUT CALIFORNIA CERTIFIED ORGANIC FARMERS

California Certified Organic Farmers (CCOF) is an organic certification agency and farmer-driven member organization that was founded in 1973 by California farmers. CCOF envisions a world where organic is the norm. In 2003, CCOF formed the CCOF Foundation to provide training and financial assistance for organic producers and professionals, to educate consumers, and to support the next generation of organic farmers. For more information about the CCOF Foundation visit www.ccof.org/foundation.

ABOUT THE ROADMAP TO AN ORGANIC CALIFORNIA

The *Roadmap to an Organic California* is a first-of-its-kind research project that investigates how organic is a solution to California's toughest challenges. Part one, the *Benefits Report*, analyzes over 300 peer-reviewed scientific studies to document how organic benefits the economy, environment, and society. Part two, the *Policy Report*, presents organic as a strategy to ensure California's climate resilience, economic security, and health equity. The two-part project showcases how organic is integral to California's future.

The *Benefits Report* and the *Policy Report* can be downloaded as PDFs at www.ccof.org/roadmap.

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METHODS

The authors developed policy recommendations based on scientific and policy research and outreach, which included discussions with diverse experts on health, justice, the environment, climate, business, and agriculture. In 2019, CCOF held professionally facilitated focus groups where key stakeholders provided feedback on draft policy recommendations. CCOF incorporated feedback from stakeholder sessions, external reviewers, and other outreach into the final recommendations. In this report, CCOF strove to recommend policies that do not replicate historical oppressions and inequities.

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Executive Summary

Organic agriculture is a solution to some of the greatest threats facing California—from climate change and economic insecurity to health inequities. By building healthy soils that store carbon and water, by creating jobs and reinvesting dollars into local economies, and by providing healthy food and protecting the environment, organic is critical to securing California's future.

California is facing a climate crisis.

What are the threats?

- Hotter temperatures, more frequent and severe heat waves and wildfires.
- Limited water supplies and water contamination.
- Disruption of the normal functioning of ecosystems.

How is California impacted?

- All people and sectors are threatened; frontline communities are most vulnerable.
- Human health is already suffering.
- Water and food security is jeopardized.
- Economic impact is staggering.

Why is organic a solution?

- Organic agriculture creates healthy soils that help farms adapt to new climate challenges.
- Organic farms are resilient, conserving water that can be tapped during drought.
- Organic soils sequester carbon.

How to realize organic's full potential:

- Integrate organic into California's climate strategy.
- Invest in popular water efficiency programs.
- Invest in organic research and technical assistance.
- Conserve California's farmland.

California is facing economic insecurity.

What are the threats?

- High cost of living and housing.
- Unprecedented income inequality.
- Root cause of social and environmental inequities.

How is California impacted?

- California has the highest poverty rate in the nation.
- Inequity is deepened.
- Food security is threatened by farmers going out of business.
- Public health is imperiled.

Why is organic a solution?

- Organic farms and businesses can reduce poverty.
- Organic agriculture creates jobs.
- The organic sector continues to grow and create economic opportunity.
- Organic farms recirculate dollars within their communities.

How to realize organic's full potential:

- Foster a strong organic market.
- Invest in farmworkers.
- Integrate organic into economic development planning.
- Support organic farmers to comply with regulations and maintain viability.

California is facing health inequities.

What are the threats?

- Living and working in polluted environments.
- Lack of access to healthy food.

How is California impacted?

- Frontline communities experience inequitable health outcomes.
- Soaring health care costs.

Why is organic a solution?

- Organic farming prohibits synthetic pesticides and antibiotics that contaminate foods and the environment.



Organic farms
nourish bees and
wildlife alongside
humans.

**PHOTO COURTESY
OF Liz Birnbaum**

- Organic farming provides healthy soils and clean water.
- Organic food is highly nutritious.

How to realize organic's full potential:

- Expand organic to all communities.
- Support children's health with organic food and farming.
- Promote organic food as medicine.

Science demonstrates that organic agriculture can combat climate change, strengthen the economy, and protect human health. This is the roadmap to make it happen.



Foreword

How would you feel if 100 percent of California's agricultural land was farmed organically?

Imagine what it would be like if every county had an abundant and clean water supply. Envision living in a state where farmworker families did not experience higher risks of cancers, neurological disorders, and respiratory disease. Picture communities where every parent, regardless of socio-economic status, could provide their children with fresh, healthy foods.

The *Roadmap to an Organic California: Policy Report* explains why we must increase the amount of land farmed organically in California in order to promote climate resilience, economic security, and health equity. Each chapter details how transitioning farmland to organic production addresses today's most pressing crises—from extreme weather events to loss of topsoil to food insecurity for millions of Californians. Most importantly, the report offers nearly 40 well-researched and thoroughly vetted policy recommendations that build on the work of our allies.

Sound daunting? Don't be discouraged. The good news is that, with this report, we now have an agenda to create an organic California. The better news is that we will get it done together. With focus and in partnership, we will cultivate a healthier, more equitable, and prosperous California.

A handwritten signature in cursive script that reads "Kelly Damewood".

Kelly Damewood

CEO, CCOF



Organic sheep are used to regenerate California's rangelands at Paicines Ranch.

PHOTO COURTESY OF Liz Birnbaum

Introduction

Investing in an organic California has never been more important.

- Climate change accelerates the degradation of our environment. We are on track to run out of topsoil—a vital component for combatting climate change and a necessary ingredient to grow food—before the end of the 21st century.
- Californians face economic insecurity; many families must choose between buying healthy food and paying the rent.
- Health inequities endanger Californians. Low-income residents are unfairly exposed to unhealthy environments with toxic chemicals and polluted waters. And today, diet-related disease is a leading cause of death and disability in the United States.

Tackling climate change, economic insecurity, and health inequities is a tall order, but three decades of science show that organic is a solution. To understand the role of organic in building a healthier, more resilient, and prosperous California, CCOF reviewed hundreds of scientific studies on organic food and farming in the *Roadmap to an Organic California: Benefits Report*. The evidence demonstrates that by building carbon-sequestering soils, supporting community development, protecting the environment, and producing nutritious foods, organic is critical to California's future.

- Organic farming is vital to reversing climate change and safeguarding food security.

- A strong organic market drives sustainable community development.
- Organic farmland and organic foods are fundamental to protecting human health.

Since organic certification became federally regulated in 2002, organic has grown from a \$3 billion industry into a \$53 billion market force, growing faster than all other sectors of the food industry. Organic farmers have pioneered many of today's best agricultural practices, including the climate-smart practices that reduce greenhouse gas levels in the atmosphere and make farms better adapted to extreme weather. Despite this ingenuity, organic agriculture makes up just 4 percent of California's farmland.

During this pivotal moment of climate, economic, and health threats, how can California leverage organic agriculture to create sustainable communities? The *Roadmap to an Organic California: Policy Report* outlines the critical next steps to develop organic as a tool to combat California's toughest challenges. These recommendations are based on comprehensive research and stakeholder input on healthy, justice, the environment, and agriculture.

Meeting the challenges of our time requires urgent and large-scale action. Nations across the world are scaling up organic agriculture as part of comprehensive plans to invest in resilient economies and food security. As the leading organic state in the nation, California is well-positioned to expand its own organic sector. Organic farming offers California a bright future—from healthy soils up to the healthy communities that depend on them. It is time for us to invest in this practical and effective solution.

Certified Organic: What Does it Mean?

What is Organic?

Organic is a holistic approach to farming that emphasizes healthy soils and communities as much as the bottom line. Organic farmers have developed innovative, science-based practices to grow food and fiber without synthetic pesticides or methods that degrade the environment. Organic certification is backed by federal law and every organic product is traceable from the farm to the grocery store.

ORGANIC

- 

PROVIDES HIGHER LEVELS OF VITAMINS, NUTRIENTS, & ANTIOXIDANTS
- 

RAISES ANIMALS WITH LOW STRESS & PREVENTATIVE HEALTH CARE PRACTICES
- 

CONSERVES & PROTECTS WATER
- 

ENHANCES ECOSYSTEM SERVICES
- 

BUILDS HEALTHY SOILS
- 

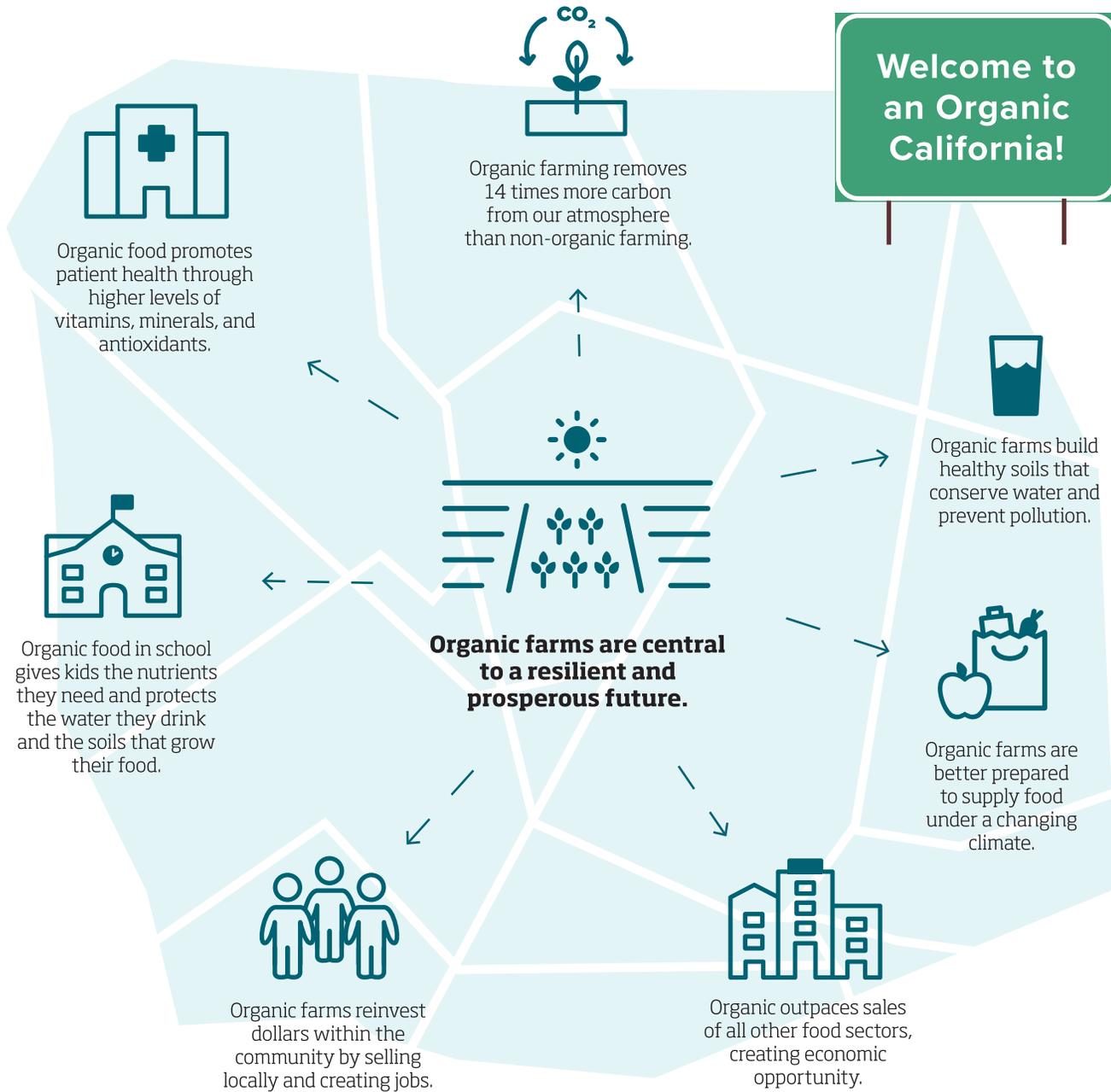
PROTECTS WILDLIFE, BEES, & BUTTERFLIES

NOT ORGANIC

- 3,000+ ARTIFICIAL FLAVORS, COLORS, & PRESERVATIVES**
- GMOS**
- 550+ SYNTHETIC LIVESTOCK DRUGS**
- MONOCULTURE**
- GRAIN-BASED DIETS**
- ANTIBIOTICS & HORMONES**
- CONFINED ANIMALS**

Sources:
National Organic Program, 7 CFR §205.1–205.699 (2019).
Organic Trade Association. (2019). National list of allowed and prohibited substances.

Organic builds healthy communities from the soil up to the economy.

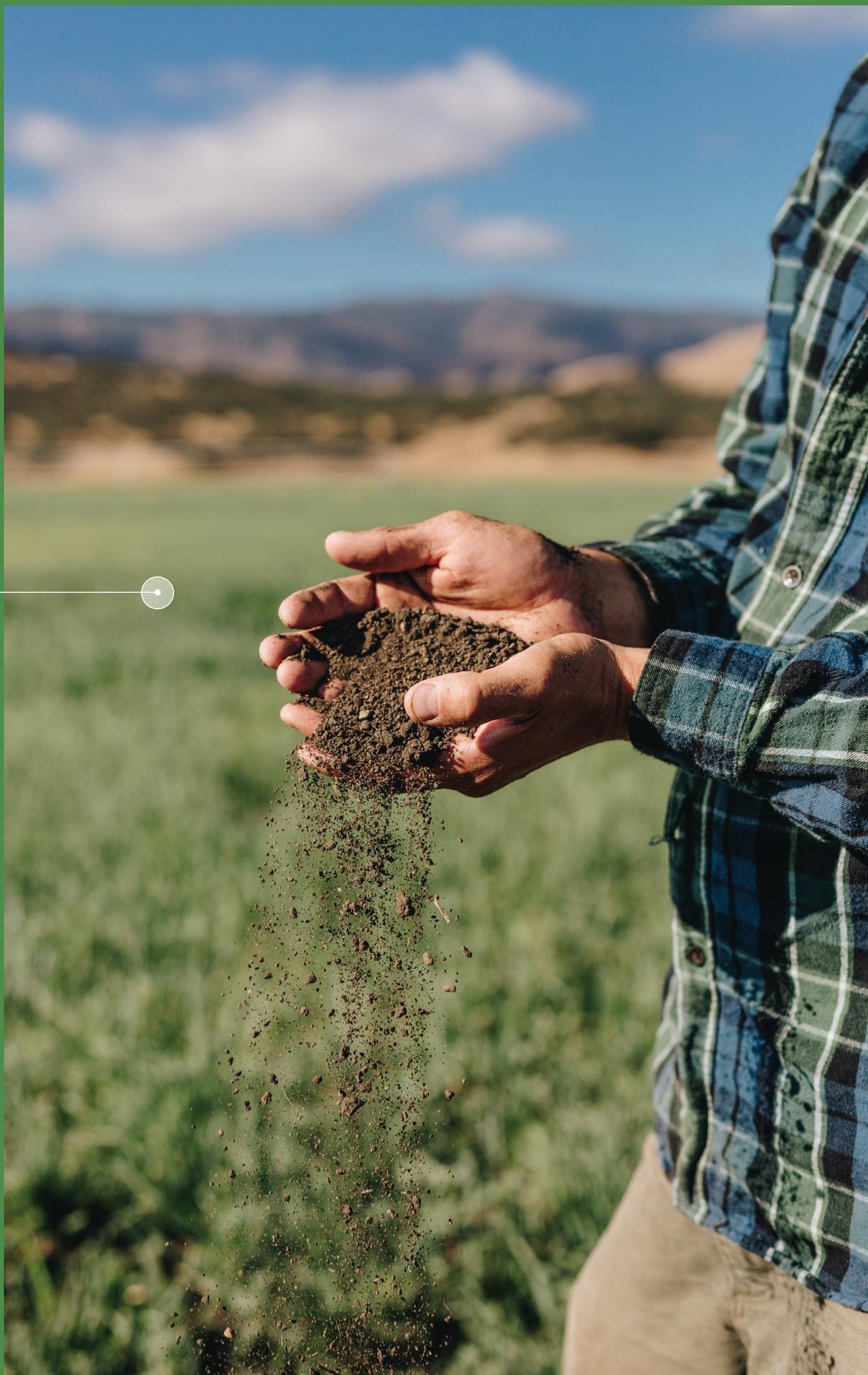


Learn More About the Scientific Benefits of Organic

Learn more about the benefits of organic agriculture in the *Roadmap to an Organic California: Benefits Report*, a comprehensive review of hundreds of scientific studies about the impact of organic. Read the full *Benefits Report* at www.ccof.org/roadmap.

There are millions of microorganisms beneath organic fields hard at work storing carbon in the soil.

PHOTO COURTESY OF Liz Birnbaum



Climate Resilience

ORGANIC COMBATS CLIMATE CHANGE

ROADMAP TO REALIZING ORGANIC'S FULL POTENTIAL

Combat Climate Impacts Through
Healthy Soil

Support Organic to Secure
California's Water Supply

Invest in Organic Research and
Technical Assistance to Build Farm
Resilience

Conserve California's Dwindling
Farmland to Maximize Carbon
Sequestration



Organic farmers create healthy soils by planting cover crops and avoiding synthetic fertilizers.

PHOTO COURTESY OF Liz Birnbaum



California is Facing a Climate Crisis

California is facing a climate crisis. California's climate has always been variable, with periods of drought followed by periods of greater rainfall.¹ However, climate change is creating what scientists describe as precipitation whiplash between extreme dry and wet seasons,² in addition to more frequent and severe heat waves, wildfires, and rising sea levels.¹ The impacts on people, food and water security, and the economy are inequitable and devastating.

Climate change threatens the health of all Californians.

The California Department of Public Health (CDPH) has declared that climate change is a serious health threat and that communities are already impacted. The 2006 heat wave killed over 600 people³ and resulted in 16,000 emergency department visits,⁴ and similarly high temperatures are projected to occur at least once annually in coming years.⁵ Moreover, climate change interrupts the normal functioning of ecosystems that provide essential

resources for human health, like clean water and air, fertile soils for growing food, and natural buffers that temper the impacts from wildfire, flooding, and drought.⁶

Climate change impacts are inequitable.

Frontline communities—often people of color, immigrants, indigenous people, farmworkers, and people in low-income and rural areas—are more vulnerable because of systemic inequities in decision-making power and resource distribution⁷ that have left these communities exposed to environmental toxins and climate impacts.⁸ Hotter temperatures increase the risk of death³ and premature birth⁹ for Black Californians, while destructive wildfires cause outsized impacts to low-income Californians, including farmworkers, due to lack of bilingual emergency information, loss of wages and housing, and lack of insurance and funds to rebuild.¹⁰

Climate change puts water and food security at risk.

Warmer temperatures jeopardize water supplies by diminishing California's snowpack, intensifying variability of rain patterns, and causing seawater intrusion into groundwater.¹¹ Groundwater overdraft and contamination are particularly alarming because 85 percent of Californians rely on groundwater for their water supply.¹² Water constraints and other climate impacts¹³ also threaten food



Climate change threatens the drinking water of 85 percent of Californians.



es that reduce greenhouse gas levels in the atmosphere and make farms better adapted to extreme weather. A rigorous body of evidence demonstrates that organic agriculture is uniquely positioned to combat climate change and protect food security for future generations.

Organic farms build healthy soils.

Healthy soils are critical to climate change mitigation with the world's soils capturing up to 25 percent of annual fossil fuel emissions.^{29B} Certified organic production is the only farming system where federal law requires farmers to maintain or improve soil health.²⁶ Healthy soils are indicated by high levels of soil organic matter (SOM), a component of soil where living microbes break down plant and animal materials into plant foods and stored nutrients, including carbon.²⁷ Long-term comparison trials across the United States show that organic farming significantly increases SOM.^{28, 29, 30, 31, 32} One of the largest studies comparing organic and conventional soils in 48 states found that organic farms have 13 percent higher SOM than conventional farms.³³ Significantly higher SOM allows organic soils to store more carbon than non-organic soils and provides numerous other climate benefits.^{27, 34, 35}

Organic farms are resilient.

An important strategy for improving agricultural resilience in the face of climate change is protecting water resources.³⁶ Organic farms conserve water by building healthy soils, high in SOM, that act like a sponge to absorb and store water. SOM holds 18 to 20 times its weight in water.³⁷ A UC Davis study found that after 20 years, organic soils absorbed and retained water more efficiently than conventional soils.³⁸ The water efficiency of organic systems is an important adaptation strategy because organic crops can produce higher yields under drought conditions by accessing water stored in soils.³⁹ Creating resilient farms is key to ensuring water and food security.¹³

Organic farms and ranches sequester carbon.

Organic crop and livestock management builds healthy soils that capture and store carbon.³³

security by disrupting crop yields.¹⁴ California's fruit and nut trees are especially vulnerable to changing temperatures,¹⁵ and studies project reduced grape, walnut, stone fruit, and dairy production.^{16, 17, 18} The impact is widespread because California provides more than half of all domestic fruits and vegetables,¹⁹ which are critical to a healthy diet.²⁰

The economic impact of climate change is staggering.

The 2006 heat wave cost California \$1 billion in milk and cattle losses,²¹ while the 2012-2016 drought resulted in estimated losses of \$3.8 billion²² and 21,000 jobs.²³ Ten of the most destructive wildfires in California's history have occurred since 2015.²⁴ By the middle of the 21st century, climate change costs associated with human mortality and damage from drought, flooding, and sea level rise are estimated at tens of billions of dollars annually in the United States.²⁵

Organic is a Solution

Organic farming is a climate solution. Organic farmers have pioneered many of today's climate-smart farming practic-

**SOIL ON ORGANIC FARMS
CAN STORE
14 TIMES
MORE
CARBON
THAN SOIL ON
CONVENTIONAL FARMS.**



- **Organic farms sequester carbon.** Organic farming builds soils with more SOM,^{28, 29, 30, 31, 32, 40} which enables organic soils to capture and store more carbon.³³ In general, studies show organic farms to be net sinks of greenhouse gases while non-organic farms are net emitters.^{41, 42} In California, a UC Davis study showed that after 10 years, organic systems resulted in 14 times the rate of carbon sequestration as in the conventional systems,²⁸ and after 20 years this trend continued.³⁸
- **Organic ranches sequester carbon.** Organic livestock production sequesters carbon through grazing practices. Federal organic standards require ranchers to graze livestock on organic pasture for at least 120 days per year.⁴³ Studies show that grazing leads to sequestration of carbon in the soil,⁴⁴ particularly under grazing systems that allow animals to graze for precise amounts of time in small pastures.⁴⁵ Some research indicates that grazing may increase emissions of the greenhouse gas methane; however, overall emissions are lower in pasture systems used for organic production compared to confined systems that are often used for non-organic production.⁴⁶

Roadmap to Realizing Organic's Full Potential

As concern over environmental degradation and climate change continues to grow, consumers have turned to organic as a solution.^{47, 48, 49} Organic farms and ranches cultivate resilient crops and livestock by building healthy soils and conserving water. Recognizing the value of organic agriculture, consumers have driven the expansion of the organic sector from \$3 billion to \$53 billion in two decades.⁴⁷ However, despite the booming market, just 4 percent of California's agricultural land is organic.^{50, 51} A lack of integration of organic into the state's climate programs and underinvestment in organic technical assistance and farmland conservation have stymied the organic sector. To foster climate resilience, California should remove barriers to the expansion of organic agriculture.

Combat Climate Impacts Through Healthy Soil

Healthy soils are the linchpin in mitigating climate change and adapting to extreme weather. Healthy soils capture and store carbon, bring down CO₂ levels in the atmosphere,^{28, 29, 30, 52} reduce reliance on fossil fuel-based pesticides and fertilizers, reduce soil erosion, improve drought and flood tolerance, and increase soil fertility.^{34, 35, 38, 53, 54} Despite long-term research that demonstrates that organic systems build healthy soils, California's policies do not recognize organic agriculture as a healthy soil and climate strategy. The draft 2019 Natural



Organic sheep are used to regenerate California's rangelands at Paicines Ranch.

PHOTO COURTESY OF Liz Birnbaum

Organic farmers are regenerating our soils.

and Working Lands Climate Change Implementation Plan, which outlines California's plan to expand natural and working lands as climate mitigation and adaptation tools,⁵⁵ does not identify organic agriculture as a priority area of investment. Moreover, the state's suite of climate-smart agriculture programs aimed at building soil health, conserving water, and developing innovative climate solutions does not seek to bring more farmers into organic production.⁵⁶ Connecting organic agriculture to healthy soil initiatives is critical to advancing California's climate strategy.

RECOMMENDATIONS

Include organic in the Healthy Soils Program (HSP).

HSP, a key climate-smart agriculture program, provides funding to farmers to implement practices that build soil health. While many of the practices funded by HSP are widely used in organic systems, HSP does not include organic as a healthy soils practice. California should add an organic option to HSP that would fund farmers to develop their organic system plans—a critical component to becoming certified organic—in conjunction with implementing healthy soils practices.

Include an organic expert on Fertilizer Research and Education Program (FREP) boards.

FREP provides funding for research and education on fertilizers, including organic fertilizers.⁵⁷ Researching organic fertilizers is critical because synthetic fertilizers are linked to potent greenhouse gas emissions.^{58,59} To ensure that organic practices are incorporated into fertilizer research

and education, California should require an organic expert sit on the FREP Advisory Board and Technical Advisory Subcommittee.

Invest in research to understand the soil health benefits of “stacking” on organic farms.

In order to meet the healthy soil requirements of organic certification, organic farmers implement a full menu of soil-building practices.²⁶ Preliminary research shows that utilizing multiple soil-building practices (“stacking”) can result in better overall soil health, including increased carbon storage,⁶⁰ which helps mitigate climate change. California should invest in research to more accurately quantify the climate benefit of stacking multiple healthy soils practices.

Support Organic to Secure California's Water Supply

Conserving water is a critical strategy to safeguard California's water supply and adapt to climate change. Reduced snowpack, widespread freshwater contamination from rising sea levels, and extreme drought and flooding jeopardize the state's water resources. In California, agriculture typically uses one-third of surface water supplies to irrigate crops each year.⁶¹ In dry years, however, agricultural usage has exceeded 50 percent of total usage.⁶¹ One consequence of this heavy agricultural use is the depletion of groundwater resources.⁶¹ Supporting organic is a key strategy to conserve water resources because organic

CCOF Foundation Future Organic Farmer Grant recipient Mauricio Gonzalez aspires to have his own organic agriculture business.

PHOTO COURTESY OF CCOF



agriculture builds healthy soils that improve water-use efficiency, which prepares California for an uncertain water supply in the future.

RECOMMENDATIONS

Reinstate funding for the State Water Efficiency and Enhancement Program (SWEEP).

SWEEP awards grants to farmers and ranchers to improve irrigation and energy efficiency. Over the last five years, the program has helped farmers and ranchers prevent 79,000 metric tons of CO₂ emissions annually.⁶² SWEEP was widely used by organic producers, with 11 percent of grants awarded to organic farmers and ranchers in 2018.⁶³ Despite its popularity, SWEEP was not funded in the 2019-2020 state budget. California should reinstate funding at a minimum of \$40 million annually.

Invest in Organic Research and Technical Assistance to Build Farm Resilience

Research and technical assistance are critical tools for understanding how farmers can grow food under increasingly variable and extreme weather conditions. Investment in research and technical assistance, which is linked to greater water conservation⁶⁴ and agricultural productivity,⁶⁵ is an important tool as Californians face water and food insecurity. However, public funding of agricultural research has steadily declined, dropping 33 percent from 2003 to 2013.⁶⁶ In general, the organic sector has received limited government funding for research.⁶⁷ The scarcity of technical information is a barrier to organic adoption,⁶⁸ which means the state is not capitalizing on the climate

The 33 percent decline of public investment in agricultural research is a missed opportunity to refine organic practices that help combat climate change.

benefits of organic farming.³⁸ The 2018 Farm Bill authorizes the first-ever baseline funding for organic research and technical assistance with an annual investment of \$50 million starting in 2023.⁶⁹ This federal support, however, is not matched at the state level.

Despite being the top organic-producing state,⁵⁰ California invests minimally in organic agriculture. A 2012 assessment found that the University of California system ranked in the third tier in providing organic education, research, and technical assistance, behind public universities in Colorado, Michigan, Georgia, and Vermont.⁷⁰ Only 4 percent of staff within the Division of Agriculture and Natural Resources of the University of California identify organic as an area of expertise.⁷¹ The dearth of investment in the organic sector represents a missed opportunity to build on the resilience of organic farms and refine practices that help farmers produce higher yields in a changing environment.

RECOMMENDATIONS

Invest in on-the-ground organic farm extension specialists.

The University of California's research and technical assistance arm, UC Cooperative Extension, notably hired a specialist dedicated to organic agriculture.⁷² However, greater investment in extension is crucial to expanding organic acreage and creating farms that are resilient against more variable and extreme weather. Studies from Europe show that investing in organic extension incentivizes more farms to transition to organic.⁷³ The state invested \$4.1 billion in the UC system in the 2019-2020 budget.⁷⁴ California should include funding for at least one organic specialist position at each of the nine UC Research and Extension Centers in future state budgets.

California's Farmer Equity Act

Generations of discrimination against socially disadvantaged groups, including African Americans, Native Americans, Latinos, and Asian Americans has resulted in disproportionate barriers to farming and a legacy of injustice.⁹⁰ Starting in the late 18th century, settlers from around the world colonized California, stealing the lands that California Indians tended and cultivated.^{75, 76} Throughout the 19th and 20th centuries, laws such as the Chinese Exclusionary Act of 1882, the California Alien Land Law of 1913, and the Internment Acts of 1942 barred farmers of color from owning land, while the USDA withheld critical loans and assistance.⁷⁷

Today, socially disadvantaged farmers continue to face inequities in access to land, technical assistance, and other resources necessary to farm in California.⁷⁸ For example, according to the USDA Census of Agriculture, socially disadvantaged farmers in California receive substantially less federal assistance than their White counterparts.⁹¹

In recognition of the barriers facing socially disadvantaged farmers, the California Legislature passed the Farmer Equity Act in 2017.⁹¹ This law requires that the California Department of Food and Agriculture (CDFA) guarantee the inclusion of socially disadvantaged farmers and ranchers in the development, adoption, and implementation of food and agriculture laws, regulations, policies, and programs.⁹¹

Include an organic expert on the Integrated Climate Adaptation and Resiliency Program's Technical Advisory Council (TAC).

The state's comprehensive climate strategy, the Integrated Climate Adaptation and Resiliency Program, includes a centralized database of climate resilience resources.⁷⁹ The TAC, which includes representatives from a range of sectors, coordinates state, regional, and local climate adaptation, develops tools and guidance, and informs state-led climate programs.⁸⁰ California should include an organic expert on the TAC to ensure the climate benefits of organic agriculture are integrated into state, regional, and local resilience efforts.

Provide climate adaptation tools and training that account for the unique needs of socially disadvantaged farmers.

Climate has presented farmers and ranchers with new challenges, including wildfires, limited water, reduced winter chill hours, and new pests.¹³ Farmers and technical service providers need additional training and tools to adapt to these changes.⁸¹ Socially disadvantaged farmers are disproportionately impacted by climate change and do not have equal access to technical assistance and resources to adapt.⁷⁷ California should invest in climate adaptation tools and training for farmers and technical service providers, with an emphasis on addressing the needs of socially disadvantaged farmers.

Conserve California's Dwindling Farmland to Maximize Carbon Sequestration

Farmland loss jeopardizes California's climate strategy. The state loses an estimated 50,000 acres of farmland each year,⁸² leaving a current agricultural land base of 24.5 million acres.⁵¹ Land farmed organically accounts for 4 percent, or 1.1 million acres.^{50, 51} The skyrocketing value of land in California has left farmland vulnerable to development pressure, because land is often worth more for its development potential than for its agricultural value.^{83, 84, 85} Farmers seeking to retire or exit the industry often receive a higher price by selling to developers rather than farmers.^{79, 80, 81} The loss of farmland to development clashes with the state's climate strategy of conserving working lands⁵⁵ and exacerbates climate change because an acre of urban land emits 70 times more greenhouse gases than an acre of farmland.⁸⁶ Moreover, converting productive topsoil into pavement or buildings permanently removes the land's capacity to capture and store carbon.⁸⁷ While all farmland loss is a missed opportunity to combat climate change, organic farmland warrants additional protection because of the extent to which organic practices build healthy soils and mitigate climate change.

URBAN LAND

EMITS 70 TIMES MORE GREENHOUSE GASES THAN FARMLAND.





Certified Organic Hydroponic Systems in Arid Regions

As water prices continue to rise and extreme weather conditions persist, some organic growers have implemented hydroponic and container-based systems to grow crops in areas prone to drought. Growers report that they can save 40 to 70 percent more water compared to in-ground systems, and some growers report up to 90 percent water savings with three to five times higher crop yields.^{88, 195}

The USDA National Organic Program (NOP) allows for the certification of hydroponic and container-based systems when the grower can demonstrate that they comply with the organic standards. Some practices certifiers look for in verifying compliance include the presence of biodiversity, such as beneficial plantings and hedgerows; incorporation of cuttings and trimmings into compost and other nutrient cycling practices; water capturing and runoff prevention; and evidence that the grower is maintaining or improving the health of the soil under and around the containers.

Learn more about policy on hydroponics on Page 39.

RECOMMENDATIONS

Maintain consistent funding for the Sustainable Agricultural Lands Conservation (SALC) Program.

Through agricultural conservation easement grants,⁸⁹ which are voluntary land restrictions that prohibit development but allow agricultural activities,⁹⁰ SALC has permanently protected 90,700 acres of agricultural lands that were previously at risk for development. This farmland conservation has reduced greenhouse gas emissions, curbed urban sprawl, and maintained a land base where organic management could be adopted.⁹¹ California should continue to invest in SALC.

Require reporting on organic in the Sustainable Agricultural Lands Conservation (SALC) Program.

SALC should include total acreage managed organically in its outcome reporting to show the additional climate and broader environmental benefits of organic agriculture. In addition to reporting on organic acreage, SALC should incorporate SOM measurements in the equation used to calculate total greenhouse gas reduction from agricultural conservation easements. Using actual SOM measurements, rather than estimates, will improve the equation's accuracy and will demonstrate the improved soil health of organic farms.

Include organic certification in the California Farmland Conservancy Program (CFCP).

CFCP provides grants to support agricultural conservation easements and to implement practices that promote long-term sustainability, such as protecting water resources, stabilizing streambanks, and safeguarding natural areas.⁹² Although organic farming is a proven strategy to improve soil health and protect water quality, CFCP does not consider organic certification when making grants. California should add organic certification to the list of eligible sustainability practices for CFCP grants.

Archi's Acres is a hydro-organic operation based in Escondido, California.

PHOTO COURTESY OF Archi's Acres

Grocery stores that provide organic produce are part of a vibrant community.

PHOTO COURTESY OF Xi Xin



Economic Security

ORGANIC FOSTERS STRONG COMMUNITIES

ROADMAP TO REALIZING ORGANIC'S FULL POTENTIAL

Support Organic Markets to Bolster
Economic Security

Invest in a Workforce That Sustains
the Organic Sector's Job Growth

Invest in Organic Agriculture
to Propel Urban and Rural
Development

Support Organic Farmers to Build
Local Economies



The farmers' market in Santa Cruz, California boosts the economy by keeping food dollars recirculating through local businesses.

PHOTO COURTESY OF CCOF



California is Facing Economic Insecurity

California has the world's fifth largest economy.⁹³ Nonetheless, many Californians face economic insecurity. The state has the highest poverty rate in the nation,⁹⁴ and approximately 3.5 million Californians receive federal assistance to meet the basic need of buying food.⁹⁵ Economic insecurity is a root cause of many social and environmental challenges that threaten California's people and economy.

Economic insecurity is widespread.

According to the California Poverty Measure, one in three Californians lives in poverty or near poverty.⁹⁶ The state's poverty rate is the highest in the nation due in large part to the high cost of living and housing in California compared to the average earned income.⁹⁵ To address economic insecurity, California spent \$155.4 billion on social safety nets in 2015.⁹⁷

Economic insecurity exacerbates inequity.

Income inequality is at its highest in the state's history, with a pay disparity almost double today what it was

in 1980.⁹⁸ Asian and White families in California earned \$114,000 on average in 2017, while Black and Latino families earned average incomes of \$70,000 and \$60,000 respectively.⁹⁶ Income inequality means many families face financial hardship; it also compounds social disparities. Low-income people in California are more likely to live in polluted environments, lack access to healthy foods, experience worse health outcomes, and have fewer job opportunities.^{99,100}

One in three Californians lives in poverty.

Economic insecurity threatens food security.

Thin margins threaten the viability of farms and California's future food production. Economic pressure is driving farms to consolidate or go out of business and is preventing the next generation of farmers from accessing land and starting farming businesses.^{51,101,102} Farmers today receive only 18 cents for every dollar consumers spend on food, compared to 40 years ago when farmers received 40 cents for each dollar spent.^{103,104} Low prices⁵¹ combined with rising costs of production^{51,105} resulted in 58 percent of California's farms operating with net losses in 2017.⁵¹

Economic insecurity threatens public health.

Financial factors such as income, cost of living, and socioeconomic status play a big role in shaping health.¹⁰⁶ A higher income is correlated with a lower likelihood of disease and premature death.¹⁰⁷ In Los Angeles, residents in wealthier neighborhoods have up to 15 years longer life expectancy compared to their poorer neighbors,¹⁰⁸ while in San Francisco the life expectancy gap between White people and Black people is nearly 10 years.¹⁰⁹

Organic is a Solution

Organic is an economic solution. Organic agriculture can reduce poverty, create jobs, and support struggling rural and urban communities throughout the state. By fostering economic security, the organic sector supports equity, food security, and public health.

Organic food and farming businesses can reduce poverty.

Agricultural economists have found that organic hotspots—counties with high levels of organic business activity whose neighboring counties also have high organic activity—lower county poverty rates by as much as 1.6 percentage points and raise median household income by over \$1,600.¹¹⁰ The study verifies that these benefits resulted from organic activity by controlling for external factors

that affect county economies. Additional analysis of USDA data finds that areas with clusters of organic businesses have 4 percent lower county poverty rates and \$9,000 higher median incomes than areas with few organic businesses.¹¹¹ By contrast, non-organic agricultural hotspots do not impact poverty rates or household income.¹⁰⁹

The organic sector creates jobs.

From organic seed farms to snack manufacturers and meal kit delivery companies, the organic supply chain is growing every year and creating stable jobs. Agricultural economists observe that areas with high levels of organic activity are associated with lower unemployment rates.¹⁰⁹ Thirty percent of organic businesses hired additional employees in 2018, while only 7 percent reported having reduced employment.⁴⁷ By applying a multiplier of 28,000 jobs for every \$1 billion in retail sales¹¹² to California^{50, 113} and national organic sales data,⁴⁷ it is estimated that the organic sector now creates 450,800 jobs in California and 1.5 million jobs nationally.

The organic sector creates urban and rural economic opportunities.

The organic sector creates economic opportunity throughout the state because organic farming, manufacturing, and sales continue to grow. In 2018, organic food sales increased by 6.3 percent, well above the 2.8 percent growth in all food sales.⁴⁷ California leads the nation in organic farms, crop and dairy sales,⁵⁰ and organic processed food production¹¹² and has the opportunity to meet rising domestic and global demand for organic products.⁴⁷

Organic Reduces Poverty

Organic businesses build community wealth by reinvesting dollars within the community. A nationwide study found that organic businesses cause a 1.6 percent decrease in poverty. In comparison, the federal anti-poverty programs SNAP and WIC reduce poverty by 1.5 percent and 0.1 percent respectively.



ORGANIC

1.6%

DECREASE IN POVERTY



SNAP

1.5%

DECREASE IN POVERTY



WIC

0.1%

DECREASE IN POVERTY

Sources: Marasteanu, I., & Jaenicke, E. (2018). Economic impact of organic agriculture hotspots in the United States. *Renewable Agriculture and Food Systems*, 1-22. Organic Hotspots FAQs. (2019). *Organic Trade Association*.

Organic farms support local economies.

Organic farms, through local food sales, stimulate economies more than conventional farms. While only 5.5 percent of farms nationwide sell directly to consumers,¹¹⁴ 39 percent of organic farms make direct sales.^{115, 116} Studies show that local food sales increase local and regional gross domestic product more than nonlocal sales^{117, 118} because they reinvest dollars within the community¹¹⁷ and generate downstream employment.^{117, 119}

Roadmap to Realizing Organic's Full Potential

Over the last several decades, California's trendsetting culinary culture has developed alongside the organic farming sector. Today, Californians' appetite for fresh, locally sourced, and organic food¹²⁰ has helped make California the number one organic state in the nation.⁵⁰ While communities with thriving organic businesses have benefited from local investment and job growth, this increased economic security is constrained because California's organic farmland is limited. The lack of investment in market opportunities and inadequate support for farmworkers and organic farms have hindered the organic sector. To foster economic security, California should remove barriers to the expansion of organic agriculture.

Support Organic Markets to Bolster Economic Security

Organic agriculture is a proven economic stimulus that strengthens communities. However, while organic farmers are highly productive¹²¹ and innovative,¹²² they struggle to access markets. The food system has largely consolidated,^{123, 124} leaving California's organic farmers with fewer options for selling their products and less bargaining power to attain acceptable prices.^{121, 123} In addition, organic farmers can face challenges transporting food from farms to markets because of limited regional distribution infrastructure.^{79, 125, 126, 127, 128, 129, 130}

Once a farmer's products arrive at the grocery store, it is essential that consumers understand and trust the organic label. Since 2002, when the organic standards were developed, the organic sector has grown tremendously.⁴⁷ To expand the benefits of organic to all communities, the National Organic Program (NOP) must continue to uphold transparency and improve the organic standards. Expanding market opportunities for organic farmers and preserving the integrity of the organic label are investments that will strengthen California's communities.

RECOMMENDATIONS

Include organic as part of California's farming identity.

One way that California's farms are promoted is through the Buy California Marketing Agreement ("California Grown"), which is a collaborative marketing agreement between CDFA and all commodity groups (state- or federally authorized crop promotion programs) that choose to take part.¹³¹ This marketing agreement helps provide stable markets for its members by funding research and regu-

39 PERCENT OF ORGANIC FARMS MAKE DIRECT SALES, WHICH REINVEST DOLLARS LOCALLY AND FOSTER ECONOMIC SECURITY.



Hodo Soy produces their organic tofu in Emeryville in the San Francisco Bay Area.

PHOTO COURTESY OF Jen Siska

lating quality and sales of agricultural products.¹³² Despite growing consumer demand for organic, the marketing agreement has not explicitly promoted organic farms.¹³³ California should include organic as part of its farming identity under California Grown.

Investigate solutions to connect organic farmers with large-scale buyers.

Businesses that aggregate and distribute organic food can connect organic farmers with large-scale buyers like hospitals and universities.¹³⁴ Because individual farmers often cannot meet the volume and consistency requirements of large buyers, regional distribution and aggregation systems are key to accessing large markets.¹²⁵ However, CDFA reports that the state's current distribution systems are a primary barrier to effectively transporting healthy organic foods from farms to consumers.¹²⁶ Therefore, California should investigate solutions to regional distribution barriers to help organic farms meet the growing demand of large-scale buyers for organic products.

Explore organic market opportunities in Mexico.

Mexican growers are embracing the organic market and now supply fresh organic produce, such as tomatoes, berries, cucumbers, and melons. California-based organic

growers have also expanded their growing operations into Mexico to help supply year-round organic produce. However, Mexico does not yet have a strong organic consumer market, and growers export most of their organic crops to California and the United States. To continue to grow demand and support local food economies, the Governor's Office and CDFA should promote organic agriculture on trade missions and collaborate with Mexican businesses and authorities to support an organic market in Mexico.

Invest in integrity at California farmers' markets.

An ongoing challenge at farmers' markets is product supplementation, which is when farmers purchase crops that they sell as their own. This fraudulent practice negatively impacts farmers who only sell what they have grown. In response, CDFA is building a statewide database to allow for information sharing across California's 750 certified farmers' markets and to ensure that farmers who engage in fraud are penalized at all markets. To maintain and expand farmers' markets as a selling opportunity for all farmers, including organic farmers, CDFA should prioritize completing and launching the database.

The hard work and expertise of farmworkers powers organic farms.

PHOTO COURTESY OF Mano



Protect the integrity of the organic label.

Strengthening the processes and practices within the NOP is a fundamental way to maintain organic integrity. See Page 39 for detailed recommendations on protecting organic integrity.

Invest in a Workforce That Sustains the Organic Sector's Job Growth

A strong workforce reduces economic insecurity for farmers, farmworkers, and their families. Unfortunately, high labor costs and worker shortages top the list of concerns for California's farmers.^{79, 135, 136, 137} For over a decade, California farmers have struggled to find and retain workers¹³⁸ and have reported crops rotting in the fields without workers to harvest them.¹³⁹

One underlying reason for farm labor shortages is that many farmworkers lack adequate and affordable transpor-

tation and housing.^{134, 140} Ninety-five percent of farmworkers must travel from off-farm housing to their farm jobs¹⁴¹ but the majority do not own a vehicle.¹³⁹ Available transportation is often unreliable and costs a significant portion of the day's wages.¹³⁹ In addition, a shortage of affordable housing and disrepair of existing housing have led to crowded and unsafe living conditions.¹³⁹ In areas with high farmworker populations, such as Kern, Fresno, and Monterey counties, farmworkers face housing costs over half their annual incomes.¹⁴² Lack of affordable transportation and housing in farming regions creates hardship for farmworkers and exacerbates farm labor shortages.

Immigration status is an additional barrier to a secure agricultural workforce. A majority of farmworkers in California do not have legal documentation.¹⁴³ Since 1986, federal immigration policymaking has primarily focused on immigration enforcement and border security rather than creating a legal workforce.¹⁴⁴ One consequence is a rapidly aging labor force without an influx of a younger generation of farmworkers.¹⁴⁵ Recently, increased immigration law enforcement and a general hostility toward immigrants have created a climate of fear among undocumented workers.¹³⁴ These policies threaten the well-being



California is home to 30 percent of our nation's farmworkers.

agricultural workforce because increased security empowers farmworkers to pursue work opportunities.¹⁵⁰ This, in turn, stabilizes the agricultural economy by enabling workers to meet the labor needs of farmers throughout the country.¹⁵¹ Congress should grant a pathway to citizenship to support the well-being of farmworker families and ensure farmworkers are able to meet the demands of the growing organic sector.

and livelihood of farmworkers¹⁴⁶ and add financial risks that jeopardize the viability of farm businesses.^{134, 147} Insufficient transportation, unaffordable housing, and immigration status disempower farmworkers from pursuing employment created by the organic sector.

RECOMMENDATIONS

Invest in farmworker transportation and housing.

Investing and expanding safe and affordable transportation and housing, including securing permanent funding for California Vanpool Authority and existing farmworker housing programs, will enable farmworkers to pursue farm jobs.^{139, 148} California should expand the state's public transportation programs and invest increased and permanent funding in existing farmworker housing programs.¹³⁹

Grant a pathway to citizenship for the current agricultural workforce.

Many farmworkers today live in fear of deportation and family separation.¹⁴⁹ Agricultural organizations throughout the nation have called for legal status for the existing

Invest in Organic Agriculture to Propel Urban and Rural Development

Organic agriculture creates opportunities for economic development in both urban and rural communities in California. As the fastest growing sector of the food industry, organic offers opportunities throughout the organic supply chain, from farming to manufacturing to retail. In urban areas, organic farms and businesses build community wealth through skills and job training, nutrition education, and employment opportunities for local residents, particularly youth.¹⁵² In rural communities, organic agriculture drives development because organic farms, more than their conventional counterparts,^{113, 115} recirculate and reinvest food dollars within their regions.^{114, 116, 117} Despite these economic benefits, the value of organic agriculture is not fully understood and organic is not incorporated into economic development planning at the state or local level. For example, the Governor's Office of Business and Economic Development does not highlight organic agriculture in any of its programming.¹⁵³ Lack of investment in organic farms and businesses represents a missed opportunity to bolster community development throughout the state.

A new generation of Americans are starting organic farms and businesses. CCOF Foundation Future Organic Farmer Grant recipients James, Sunyoung, Margaret, and Eliza aspire to have careers in organic.

PHOTO COURTESY OF CCOF



RECOMMENDATIONS

Examine the true cost of food in California.

Food labels like certified organic guarantee transparency, but many foods have hidden social and economic costs, including contaminated drinking water, antibiotic-resistant diseases, and unhealthy labor conditions. Additionally, there are a host of social and economic costs related to inequitable food access.¹⁵⁴ Because these types of impacts are often addressed with public funds,^{155, 156} California should investigate the true cost of food to understand how different types of farming impact consumers and the state's economy.

Develop a framework to connect organic urban farmers with city-owned land.

One of the greatest challenges facing urban farmers is access to land.^{157, 158} At the same time, most cities own land that is vacant and unused and may be appropriate for farming.¹⁵¹ For cities with contaminated land or limited

land access, organic hydroponic and container-based systems provide opportunities to grow organic foods without risk of pesticide exposure to nearby residential communities.²⁹⁶ California should establish a framework that encourages cities to integrate public land for organic urban agriculture into general plans, redevelopment plans, and other economic development planning efforts.

Streamline requirements for organic businesses.

The organic food and beverage sector contributes \$13.2 billion to California's economy¹¹² and supports organic growers. One business, Amy's Kitchen, purchases organic crops from a variety of farms comprising 225,000 acres of organic farmland throughout the country.¹⁵⁹ Despite their economic value, organic businesses face slow and time-consuming state registration and oversight processes.¹⁶⁰ California should update and streamline the requirements for organic businesses.

Investigate organic agriculture as a strategy for rural development.

Emerging research documents that organic agriculture can help alleviate poverty.^{109, 110} This has significant implications for the state's rural economies.¹⁶¹ California should support research to better understand the economic benefit of organic agriculture as a tool for revitalizing rural communities.

Support Organic Farmers to Build Local Economies

Organic farming bolsters local economies by keeping dollars in the community. However, a lack of access to land and capital, along with redundant and costly regulations, have threatened the viability of organic farms. Farmers lose valuable time filling out redundant paperwork for multiple state agencies¹⁶² and use their limited resources to comply with expensive requirements.¹⁶³

In addition to costly regulations, a significant challenge facing organic farmers is how to transfer land from retiring farmers to the next generation. In a California survey, 73 percent of farmers reported not having the money, time, or expertise to create a succession plan.¹⁶⁴ This is particularly problematic because a majority of the farming community is within retirement age.⁵¹ At the same time, most new farmers do not inherit land and lack financial resources and access to the capital needed to pay the high prices of California's farmland.^{121, 165, 166, 167} Ensuring the viability of organic farms by addressing regulatory burdens and supporting access to resources for succession will support strong local economies.

RECOMMENDATIONS

Streamline reporting requirements for organic farmers.

Duplicative reporting requirements are particularly burdensome to small and mid-scale operations, who must comply with regulations stemming from at least 28 different state and federal laws overseen by numerous regulatory agencies.¹⁶⁸ The Governor's Office should enhance coordination across state agencies and allow information sharing to reduce redundant reporting requirements.

Support farmers to comply with food safety regulations.

Over the past decade, the federal government has increased food safety requirements for farmers. USDA is developing a cost-share program to support farmers who

are shouldering the cost burden of adhering to this new set of requirements. To ensure the new program addresses the needs of organic agriculture, USDA should consult with organic farmers in the development of the cost-share program.

Invest in technical assistance and education on farmland transition.

Retiring and beginning farmers, including organic farmers, require additional assistance to navigate the process of transferring farmland. California should invest in technical assistance, education, and programs to help retiring farmers transfer their assets to the next generation of farmers and ensure farmland remains in production.

Expand access to capital for new organic farmers.

Agriculture is capital intensive. New farmers face particular challenges accessing capital because of low returns during a farm's startup phase and other lending risks associated with agriculture.^{121, 164, 169} The USDA's Advisory Committee on Beginning Farmers and Ranchers reports that lack of access to capital is the top obstacle facing new farmers.¹⁶⁸ Community development financial institutions that provide loans to low-income entrepreneurs are a key part of stimulating development in economically distressed communities.^{170, 171} California should increase access to capital for beginning organic farmers by expanding the lending capacity of community development financial institutions that provide low-interest loans to farmers.

CALIFORNIA CAN CULTIVATE A NEW GENERATION OF FARMERS THROUGH SUPPORT WITH:

- ✓ Land transfer planning
- ✓ Legal services
- ✓ Farm financing
- ✓ Land tenure education
- ✓ Programs to ensure farmland remains in production

Organic tomatoes contain higher levels of health-boosting antioxidants than conventional tomatoes.

PHOTO COURTESY OF Lois Berry



Health Equity

ORGANIC PROTECTS PEOPLE AND THE PLANET

ROADMAP TO REALIZING ORGANIC'S FULL POTENTIAL

Expand Organic to Provide
Communities with Healthy
Environments and Healthy Food

Expand Organic to Provide Children
With Healthy Environments and
Healthy Food

Expand Organic to Provide Patients
with Healthy Environments and
Healthy Food



Families with access to fresh organic fruits and vegetables have lower rates of diet-related diseases.

PHOTO COURTESY OF Maya Hull



California is Facing Health Inequities

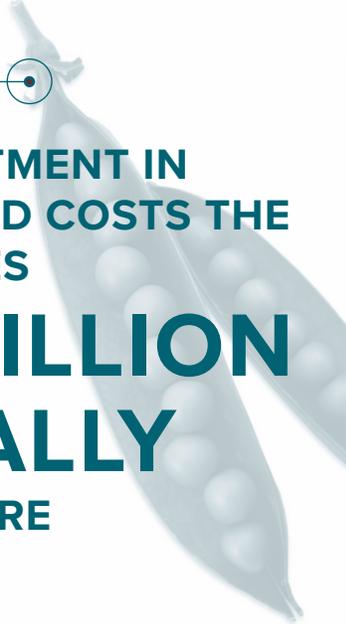
California faces systemic and costly health inequities.¹⁷² Structural racism¹⁷³ and discrimination mean that frontline communities—often people of color, LGBTQ communities, indigenous peoples, and low-income communities—experience unjust social conditions, such as lack of access to healthy environments and healthy food, that cause avoidable and inequitable health outcomes.^{174, 175} Unhealthy environments caused by climate change,³ occupational hazards, exposure to toxic substances, and pollution result in 23 percent of death worldwide.¹⁷⁶ Beyond polluted environments, a significant contributor to poor health is lack of access to healthy food.¹²⁶ In the United States, four of the ten leading causes of death—heart disease, cancer, stroke, and diabetes—are attributed to poor diet.¹⁷⁷ Unhealthy diets consist of energy-dense, nutrient-poor foods and low fruit and vegetable consumption¹⁷⁸ in addition to contamination by pesticides,¹⁷⁹ antibiotics, and hormones.¹⁸⁰ Polluted environments and poor diet result in health inequities that are detrimental to Californians and the economy.

Health inequities impact frontline communities.

Throughout the United States, chronic disease tends to be more common, diagnosed later, and to result in worse outcomes for people of color and people in low-income neighborhoods.¹⁸¹ In California, Latino children are 91 percent more likely than White children to attend schools with the highest pesticide exposure,¹⁸² and Latino and low-income communities face disproportionately higher rates of drinking water contamination.¹⁸³ Low-income communities also have less access to healthy foods and face disproportionately high rates of diet-related diseases.¹²⁶ Children in low-income families have higher risk of cardiovascular disease, diabetes, and other illnesses associated with limited access to healthy foods.¹⁸⁴ Emerging research also points to correlations between income inequality and risk of antibiotic-resistant diseases.¹⁸⁵

Health inequities are costly.

The state spends millions of dollars each year to remediate polluted environments that cause health disparities.^{154, 155} Child exposure to environmental hazards costs California over \$254 million annually.¹⁸⁶ Meanwhile, underinvestment in healthy food costs the United States \$160 billion annually in health care costs.^{153, 187} One study found that more than 30 percent of medical expenses incurred by Latino, Asian, and Black patients were due to health inequities and amounted to more than \$230 billion over three years.¹⁸⁸



UNDERINVESTMENT IN
HEALTHY FOOD COSTS THE
UNITED STATES

\$160 BILLION
ANNUALLY

IN HEALTH CARE
EXPENSES.

Organic is a Solution

Organic agriculture helps create healthy environments free from pesticides, polluted water, and antibiotics and provides healthy food. By protecting environmental and nutritional health, organic farming contributes to more equitable health outcomes.

Organic agriculture helps create healthy environments.

By prohibiting the use of synthetic pesticides¹⁸⁹ and antibiotics¹⁹⁰ and by requiring that farmers prevent soil and water contamination,²⁶ organic systems contribute to an environment that safeguards public health.¹²⁰

- **Organic farmers grow crops without synthetic pesticides.**¹⁹¹ Since organic farmers do not use synthetic chemicals to control pests, weeds, or diseases, they aim to create a balance of beneficial plants, animals, and microbes that work together to keep crops healthy, as in nature.¹⁹² Organic farming practices center on the basic principle of feeding the soil rather than the crop,²⁹⁷ which reduces the need for pesticides.^{193, 194, 195} In contrast, non-organic practices focus on managing a regimen of synthetic inputs to feed the crop directly,^{196, 297} requiring high pesticide use. California's reliance on synthetic pesticides continues to grow; the number of pounds applied to California fields in 2016 was higher than any year since 1998 and is also the highest in the nation.¹⁹⁷
- **Organic farmers raise livestock without antibiotics.** By prohibiting the use of antibiotics and requiring farmers to provide livestock with year-round access to the outdoors,¹⁸⁹ the organic standards drive farmers to use natural methods to support animal

Healthy Food is More Than What We Eat

Historically, healthy diets were defined by simply the nutritional quality of foods and the quantity of food intake.^{198, 199} Today, leading health professionals have expanded the definition of healthy diets to include food that has high nutritional quality and is the end result of a food system that conserves natural resources, advances social justice and animal welfare, builds community wealth, and fulfills the food and nutrition needs of all eaters now and into the future.²⁰⁰

By examining health impacts from both diet and agricultural production, this approach recognizes that human health is impacted by all parts of our food system, from farming and food processing to labor practices, pricing, and access.

Foods produced using synthetic pesticides are not part of a healthy diet because they expose workers and consumers to pesticide-related diseases, pollute drinking water, create greenhouse gas emissions, and threaten capacity for food production in the future.

Animal products produced using routine antibiotic treatments are not part of a healthy diet because antibiotic use on farms is a major driver of an epidemic of antibiotic-resistant diseases.

Using this comprehensive lens to look at healthy diets reveals how deeply connected human health is to how food is grown. Therefore, policies that support organic agriculture are key to improving overall health for all communities.

Organic foods should be available at key food sources in low-income communities, like corner stores.

PHOTO COURTESY
OF Ray Heins



health, including grazing their herds and choosing appropriate breeds for the region's conditions.¹⁸⁹ This protects medically important²⁰¹ antibiotics for human use and does not contribute to the dangerous rise of antibiotic-resistant illnesses.²⁰² Studies show that organic farms harbor fewer antibiotic-resistant microbes^{203, 204} and organic meats are less likely to be contaminated with antibiotic-resistant microbes than conventional meats.^{205, 206} In addition, organic production bans over 500 synthetic drugs that may have environmental and human health impacts that are used in conventional livestock production.^{178, 207, 208}

- **Organic farmers build healthy soils and protect water quality.** Organic farmers are federally mandated to maintain or improve natural resources, including soil and water quality.²⁶ By building healthy soils that absorb water, organic farms reduce the risk of leaching nutrients like nitrogen, a major source of pollution from agriculture.²⁰⁹ A recent UC Davis study demonstrated that soils on certified organic farms in Yolo County lost minimal nitrogen while achieving high yields.³⁴ Additional studies have demonstrated four to six times less nitrate leaching in organic orchards²¹⁰ and 50 percent less nitrate leaching in organic crop production compared to conventional crop systems.²⁸

Organic food is healthy.

Meta-analyses consistently find that organic crops have higher levels of vitamins, minerals, and antioxidants^{211, 212, 213, 214, 215, 216} important for human health and significantly lower levels of pesticide residues than conventional foods.²¹⁷ Organic meat and dairy have healthier nutritional profiles—more beneficial omega-3 fatty acids, more antioxidants, and higher mineral content—be-

cause organic livestock are fed a grass-based rather than grain-based diet.^{218, 219, 220, 221} In a recent study, residues of growth hormones in conventional milk were 20 times higher than in organic milk and the majority of conventional milk samples tested positive for residues of antibiotics.²¹⁷ Additionally, organic processed foods are made with fewer than 100 processing aids and additives compared to over 3,000 allowed in conventional foods.^{222, 223} A number of the food additives prohibited in organic cause adverse health outcomes that range from cancer²²⁴ to reproductive disorders.²²⁵ Organic food can play a key role in improving public health.

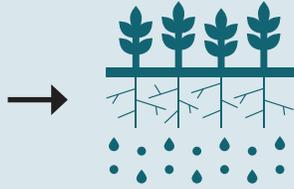
Roadmap to Realizing Organic's Full Potential

Today, the majority of Americans purchase organic food.²²⁶ Consumers cite numerous reasons for choosing organic over conventional foods, including avoiding toxins from pesticides, hormones, and antibiotics;⁴⁷ the perception that organic food is higher quality; and to avoid processed foods and artificial ingredients.²²⁵ Too few communities have access to the environmental and nutritional benefits of organic because only 4 percent of California farmland is under organic management. Insufficient investment in healthy environments and healthy food has contributed to inequities and limited the growth of the organic sector. To foster health equity, California should remove barriers to the expansion of organic agriculture.

Water Quality & Public Health



Organic farming builds healthy soils



Organic soils store more water and nutrients



This protects California's waterways



Safer water for 40 million Californians

Expand Organic to Provide Communities with Healthy Environments and Healthy Food

California's communities, especially communities of color, low-income, and rural communities, suffer from preventable diseases related to food production. On farms, nitrate leaching from livestock waste and fertilizers threatens water quality and endangers human health. Drinking water contaminated by nitrates is shown to cause a range of health ailments, including digestive and respiratory complications in infants and, at higher levels, cancer in adults.²²⁷

In communities, lack of access to healthy food, particularly fresh fruits and vegetables, jeopardizes human health.¹²⁶ Research shows that eating fruits and vegetables is associated with a reduced risk of many chronic diseases and is key to good health.²²⁸ Low-income neighborhoods in Los Angeles typically have only half as many full-service grocery stores as affluent areas, though they have three times as many convenience and liquor stores.²²⁹ Without grocery stores nearby, families must rely heavily on corner stores, which primarily sell processed products, for their food shopping.^{126, 230} Supporting organic production and expanding access to organic foods in low-income communities are an important part of countering health inequities.

RECOMMENDATIONS

Protect water quality by supporting organic farms in the Irrigated Lands Regulatory Program (ILRP).

ILRP establishes requirements for farmers to protect human health and water quality by reducing harmful nitrate leaching from agricultural lands.²³¹ However, organic farmers, already federally mandated to protect water quality, face significant challenges with the high costs of compliance. As one example, the State Water Board estimated that increased monitoring, reporting, and tracking of new ILRP requirements in the Eastern San Joaquin River watershed would result in a 210 percent increase per acre in compliance costs to growers.²³² Despite the significant water quality and health benefits of organic agriculture, ILRP does not distinguish between organic and conventional farms. California should protect water quality by creating separate requirements for organic farmers under ILRP that recognize the lower risk of nitrate leaching from organic farms.

Expand access to organic foods in corner stores.

Healthy corner store programs like CDPH's Healthy Retail Recognition Program and CDFA's Farm to Fork Healthy Stores Refrigeration Grant Program are successful at increasing healthy food sales at corner stores in Los Angeles²³³ and across the state.^{234, 235} However, corner store owners still face unique barriers to procuring^{126, 236} and selling healthy foods, including organic foods.^{229, 234, 237, 238} Ninety-eight percent of owners involved in healthy corner store projects report that their greatest need is technical assistance to increase the availability of healthy, local foods.²²⁹ California should expand investment in technical assistance so that organic foods are available at key food sources in low-income communities.

Support access to organic food by expanding funding for nutrition assistance programs.

For 4.7 million adults and 2 million children who are food insecure in California,²³⁹ federal assistance to buy food is key to their health.²⁴⁰ CalFresh, known federally as the Supplemental Nutrition Assistance Program or SNAP, helps low-income people buy the food they need,²⁴¹ and the Market Match Program matches every dollar spent at a farmers' market with an additional dollar to spend on California-grown fruits and vegetables.²⁴² While Market Match has been highly successful at providing low-income shoppers with access to fresh organic food,²⁴³ it was only offered at 267 out of California's 750 certified farmers' markets²⁴⁴ in 2018.²⁴² California should expand state investment in CalFresh and the Market Match Program.

Expand Organic to Provide Children With Healthy Environments and Healthy Food

California's children suffer from preventable diseases related to food production. In farming communities, residents have 69 times the risk of poisoning from exposure to pesticide drift than in other regions,²⁴⁵ which is especially dangerous for children.¹⁷⁸ Children exposed to synthetic pesticides face higher risk of cognitive problems such as autism spectrum disorders,^{246, 247} attention-deficit disorder,²⁴⁸ lower memory and intelligence,^{249, 250} and impaired neurobehavioral development,²⁵¹ as well as increased risk of diabetes,²⁵² asthma,²⁵³ and weight issues.²⁵⁴ Unhealthy environments associated with agriculture perpetuate serious health inequities.

For children in frontline communities, unhealthy diets cause higher rates of preventable illness.²⁵⁵ A poor diet during childhood development increases risk of obesity, diabetes, decreased muscle mass, and numerous chronic diseases later in life.²⁵⁶ One of the biggest barriers to a nutritious diet is lack of affordable and available healthy foods.¹²⁶ Children of color and children of low-income families in California have less access to healthy foods than White children due to significantly higher poverty rates in Latino, Black, and Asian households²⁵⁷ and low availability of healthy foods in low-income neighborhoods.¹²⁶ Incentivizing organic farming and expanding access to organic food are important for protecting the health of all children.

RECOMMENDATIONS

Support farms near schools and childcare facilities to transition to organic.

While the Department of Pesticide Regulation bans the application of pesticides within one-quarter mile of schools and daycare facilities from 6 a.m. to 6 p.m., Monday through Friday, research shows this distance is likely insufficient.²⁵⁸ Epidemiologic studies conducted in California show negative health impacts caused by synthetic pesticides applied further than one-quarter mile from the study population.^{257, 259, 260} California should incentivize farms near schools to transition to organic production because organic agriculture prohibits the use of synthetic pesticides.

Support California-grown organic food in school meals.

School lunch is a key opportunity to increase children's access to healthy foods and reduce preventable diet-re-

4.7 MILLION ADULTS &
2 MILLION CHILDREN
ARE FOOD
INSECURE
IN CALIFORNIA.





California should incentivize farms near schools to transition to organic production.

PHOTO COURTESY OF Sharon Willis

In California, Latino children are 91 percent more likely than White children to attend schools with the highest pesticide exposure.

lated diseases. More than half of California's children rely on school lunch for 35 to 50 percent of their daily calorie needs,²⁶¹ and for a majority of children, the meals they eat at school are their primary source of nutrition.²⁶² School lunch also offers the opportunity to increase food education. To ensure children have access to highly nutritious food, California should provide a reimbursement to school districts for serving California-grown organic food in school meals and for providing student education linking how food is grown with a healthy diet.

Expand access to organic for low-income women, infants, and children.

The federal program Women, Infants, and Children (WIC) is an important nutrition program that is shown to boost child health.²⁶³ Over one million Californians participate in WIC, and nearly 60 percent of infants born in the state are eligible at birth.²⁶⁴ Under the program, states determine what types of foods are eligible for purchase using WIC funds.²⁶⁵ Currently, California restricts WIC recipients from purchasing organic milk, eggs, bread, and other staples.²⁶⁶ California should increase state funding for WIC and allow WIC recipients to purchase organic options for all WIC food categories.

Expand Organic to Provide Patients with Healthy Environments and Healthy Food

California's patients suffer from preventable diseases related to food production. On non-organic farms, the routine, nontherapeutic use of antibiotics has contributed to the upsurge in infections resistant to antibiotic treatment.^{198, 267, 268, 269} Eighty percent of all antibiotics sold in the United States are for conventional livestock production. Most of these antibiotics are designated medically important because they are crucial for treating infections in humans.¹⁹⁷

In U.S. hospitals, 1 in 3 patients is malnourished upon arrival.²⁷⁰ A 2019 study estimated that if Medicare and Medicaid partially subsidized healthy food prescriptions they would prevent 3.3 million cases of cardiovascular disease and save \$100 billion in health care costs to the nation.²⁷¹ Moreover, adequate nutrition is shown to mitigate 85 percent of chronic diseases and disabilities among older adults.²⁷² Increasing state investments in organic production and expanding access to organic foods in health care can protect the health of vulnerable patient populations.

The Ceres Community Project's organic meals improve patient health and lower healthcare costs.

PHOTO COURTESY OF Penny Wolin Photography for Ceres Community Project

OPPOSITE PHOTO COURTESY OF Liz Birnbaum



RECOMMENDATIONS

Expand organic meat availability to prevent antibiotic resistance.

Organic is the only label that guarantees that livestock have been raised without the use of any antibiotics or hormones.²⁰³ However, expanding production of organic meat is limited by the lack of necessary infrastructure.^{273, 274, 275, 276, 277, 278, 279} Consolidation of the meat industry has reduced California's federally inspected slaughterhouses from 69 in 1970²⁸⁰ to 32 in 2018²⁸¹ and most are operating at capacity^{273, 274} or are located too far away to be cost-effective for producers.^{272, 273, 274, 275} California should support infrastructure for organic meat production and consumption in order to combat antibiotic resistance.

Support health care organizations to purchase California-grown organic food.

Hospital food programs can play a critical role in improving health outcomes by serving patients nutritious and organic foods. Kaiser Permanente, which spends approximately \$52 million on food each year,²⁸² has committed to procuring 100 percent of its food from local farms that use sustainable, including organic, practices by 2025.²⁸³ Kaiser's approach recognizes that investment in healthy, locally grown, and organic food is tied to improved health

for people and the planet.^{284, 285} However, most hospitals struggle to procure and prepare healthy organic foods due to cost^{286, 287, 288} and logistical challenges, including connecting with local organic producers.²⁸⁵ California should invest in developing more efficient distribution systems to connect health care organizations with local organic producers and meet the growing demand for organic.

Encourage innovative "food is medicine" approaches.

Healthy food prescriptions and medically tailored meals are key to improving health outcomes while reducing health care costs to the state.²⁸⁹ Research shows that tailoring meals to the nutritional needs of patients results in a 50 percent reduction in hospitalizations, 16 percent net health care cost savings, and 50 percent increase in medication adherence compared to patients not provided with tailored meals.²⁹⁰ California is currently piloting a Medically Tailored Meals Program that includes meals made with California-grown organic foods.²⁹¹ This \$6 million investment is predicted to save the state a net \$7.8 million in health care costs.²⁹⁰ California should expand pilots for healthy food prescriptions and medically tailored meals and include an incentive for California-grown organic food.²⁶⁹



Organic Integrity

Integrity is the central tenet of the organic sector. Any agricultural product sold, labeled, or advertised as organic in the United States must be produced in compliance with the federal Organic Foods Production Act of 1990 and the USDA National Organic Program (NOP), which sets and enforces the organic standards. Producers agree to adhere to specified practices, to use only approved inputs, to operate under a production plan reviewed annually by an organic certification expert, and to undergo a physical inspection annually. In exchange, producers are allowed to label and sell their products as certified organic, a claim legally reserved only for those who meet the requirements of the federal organic certification program.

The integrity of the organic label must be maintained throughout the supply chain, from farmers, ranchers, and processors to distributors and retailers. Farms and businesses who choose organic certification are rewarded in the marketplace with a premium price paid by consumers who value the rigor, transparency, and integrity of the organic standards and label. Maintaining the integrity of the organic program and consumer faith in the label are central to the success of the organic sector.

RECOMMENDATIONS

Fund the NOP and enforce strong organic standards.

The 2018 Farm Bill authorized landmark wins for organic agriculture, including up to \$24 million per year in discretionary funding for the NOP by 2023.²⁹² It also required USDA to increase oversight of the entire organic supply chain. Congress should release the full amount of authorized funds and provide clear oversight over the NOP.

Clarify organic standards for hydroponic and container-based systems.

NOP allows for the certification of hydroponic and container-based systems when growers can demonstrate compliance with the organic standards.²⁹⁷ There is some disagreement about whether hydroponic systems should be certified organic. On one hand, certified organic hydroponic producers rely on biological activity and nutrient cycling in their systems; on the other hand, hydroponic producers do not use soil. To ensure transparency and uphold organic integrity, NOP should continue to clarify how the standards apply to hydroponic systems and implement an organic hydroponic label.

Develop a guidance document to bolster the soil fertility standard.

The soil fertility standard requires organic farmers and ranchers to maintain or improve soil organic matter.²⁶ In 2016, the NOP released a guidance document on how farmers and ranchers could meet the requirement to maintain or improve the natural resources of their operations.²⁹³ Similarly, the NOP should strengthen the soil fertility standard by developing a guidance document specifically detailing how farmers can maintain and improve soil health.

Establish state organic cannabis programs that are equivalent to the NOP.

As a result of recently passed state laws, CDFA and CDPH must establish certification programs for cannabis that are comparable to the NOP.²⁹⁴ These agencies should develop cannabis programs that are equivalent to the organic standards to ensure organic producers can harmoniously add cannabis certification to their organic certification.²⁹⁵

Join us on the road to an organic California.

PHOTO COURTESY OF Adrian Smith



Conclusion

Let's Hit the Road to an Organic California

The time is ripe for California to invest in an organic future. The urgency of addressing our greatest threats, from climate change to economic and health inequities, demands building on what we know works. Organic agriculture, with its capacity to mitigate climate change, stimulate local economies, and create healthy communities, is a solution. CCOF has listened to health, environmental, justice, and farming stakeholders to create our bold vision for California's future. We know that we are not alone and that collaboration is vital to success. We are ready to pull on our boots and get to work to advance our roadmap of change. Will you join us?

Become an organic advocate and partner with us as we advance the recommendations in this report.

Visit www.ccof.org/roadmap for more information.

Glossary

Agricultural conservation easement: A deed restriction landowners voluntarily place on their property to limit development and protect agricultural land for growing food.

Antibiotic resistance: The ability of microbes, like bacteria and fungi, to defeat antibiotics that were designed to kill them. When antibiotic-resistant microbes are present in humans, they can cause illnesses that cannot be treated with antibiotic medications.

Carbon sequestration: When plants capture carbon dioxide in the atmosphere and convert it to stored carbon in the soil.

Climate adaptation: Adjustments to social, industrial, and ecological systems to help them function under new climate conditions.

Climate mitigation: Reduction of the greenhouse gas emissions that cause climate change.

Climate resilience: The ability of social, industrial, and ecological systems to withstand, recover from, and adapt to climate change.

Climate-smart agriculture: Agricultural management that increases farm resilience to climate change by reducing greenhouse gas emissions and adapting to new environmental conditions.

Farmer: Refers to agricultural producers, including crop, livestock, dairy, fiber, and other types of producers.

Fertilizer: A substance containing essential nutrients for plant growth that is applied to plants or the soil. In general, natural fertilizers like compost and animal manures are allowed in organic and synthetic fertilizers are prohibited.

Food is medicine: Medical food and nutrition interventions to treat, manage, and prevent disease.

Food security: Consistent access to enough food for an active and healthy life, according to the USDA. Requires the sufficient production of nutritious foods and stable access to the resources needed to obtain food.

Frontline community: A community more vulnerable to and more impacted by social, environmental, and economic threats because of historical and systemic inequities in decision-making power and resource distribution.

Healthy soils: Soils that sustain plant and animal growth, maintain or enhance water and air quality, and support human health. High SOM is an indicator of soil health.

Net emitter: Refers to soils, farms, or other systems that release more carbon dioxide into the atmosphere than they absorb.

Net sink: Refers to soils, farms, or other systems that absorb more carbon that they release into the atmosphere.

Nitrate leaching: When nitrogen-based fertilizers applied to farm fields run off the land and into water sources.

Organic business: Refers to businesses engaged in the organic supply chain after the product leaves the farm, including organic food manufacturers, processors, handlers, retailers, and restaurants.

Pesticides: Any substance used to kill, repel, or control plants, animals, and diseases. Includes herbicides for controlling weeds, insecticides for controlling insects, fungicides to prevent the growth of molds and mildews, and rodenticides for controlling rodents. Pesticides can be made of natural or synthetic substances. In general, natural pesticides are allowed in organic and synthetic pesticides are prohibited.

Rancher: Producers that use grazing practices to raise livestock, such as cattle or sheep, for meat or wool.

Socially disadvantaged farmer or rancher: As defined in California's 2017 Farmer Equity Act, a socially disadvantaged farmer or rancher is a member of a group or groups subjected to racial, ethnic, or gender prejudice, including African Americans, American Indian and Native Americans, Alaskan Natives, Hispanics/Latinx, Asian Americans, and Native Hawaiians and Pacific Islanders.

Soil organic matter (SOM): An important component of soil consisting of living microbes breaking down plant and animal materials and storing these nutrients, including carbon, for soil fertility. SOM is key to building and maintaining healthy soils.

ABBREVIATIONS

CCOF: California Certified Organic Farmers

CDFA: California Department of Food and Agriculture

CDPH: California Department of Public Health

CO₂: Carbon dioxide

NOP: National Organic Program

NOSB: National Organic Standards Board

SNAP: Supplemental Nutrition Assistance Program

SOM: Soil organic matter

USDA: United States Department of Agriculture

WIC: Special Supplemental Nutrition Program for Women, Infants, and Children

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Want to dig deeper into the research?

Download a digital version of this report for click-able hyperlinked references at www.ccof.org/roadmap!

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