

DRAFT

# California Agricultural Vision



Progress Report

Fall 2016



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Draft

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## **Greetings from the California Secretary of Food & Agriculture**

Ag Vision remains a testament to the wide range of opportunities California's farmers and ranchers have within our state. It is a strategic plan for the future of the agricultural sector that fosters collaboration and encourages bold policy action to maintain a robust and vibrant farming community. The progress that has been made over the last six years is inspiring; however, there is much more work ahead. We know we face shifting demographics and a more diverse political atmosphere, the passage of new laws and regulations and the dynamics of economic and market conditions – in addition to a prolonged drought and a changing climate – all of which make our work even more challenging. California farmers and ranchers produce the best quality products under the most stringent environmental and worker health and safety requirements of any of their competitors. How we quantify the public benefit of our work to sustain our California farm and ranch lands and help our fellow citizens and consumers connect the contribution of California agriculture to their improved quality of life and aspirational California lifestyle is paramount to our continued success.

California agriculture's strength is its diversity. As we continue the work of Ag Vision, I look forward to enhancing our collaboration and identifying ways to expand our efforts to promote the value that farming and ranching has for all Californians.

Karen Ross  
Secretary  
California Department of Food and Agriculture

## **From the President of the State Board of Food & Agriculture**

Over the past six years, *California Ag Vision: Strategies for Sustainability* has directly and positively influenced the course of California agriculture. From the critical issues of climate induced drought and significant water shortage, to reducing food insecurity and food waste, *Ag Vision* has provided a roadmap that farmers and policy makers alike have used to adjust to a changing world. It has been an honor and privilege to work with stakeholders from across our state to ensure that every Californian has access to a safe, healthy and sustainable food system.

Craig McNamara  
Sierra Orchards  
President, California State Board of Food and Agriculture

### **Credits & Acknowledgements**

This report was researched and written primarily by Virginia Jameson, Deputy California Director of American Farmland Trust. Serena Unger, AFT Senior Planner & Policy Associate, and Edward Thompson, Jr., AFT California Director, also contributed to the report.

American Farmland Trust wishes to thank the original Ag Vision Advisory Committee members and others who generously provided the information on recent initiatives compiled in this report.

American Farmland Trust is a nonprofit 501(c)3 organization dedicated to protecting farmland, promoting sound farming practices, and keeping farmers on the land. AFT has been active in California since 1983. For more information, visit our website at [www.farmland.org/California](http://www.farmland.org/California).

## Introduction

Much has transpired since *California Agricultural Vision: Strategies for Sustainability* was released in 2010. The product of deliberation among hundreds of stakeholders within and outside the industry, that vision for the future of California agriculture highlighted 12 major challenges facing the state's producers and outlined near and long term strategies for addressing them. Guided by the vision, the State Board of Food & Agriculture, the California Department of Food & Agriculture and many organizations concerned about agriculture have been pursuing initiatives, policies and on-the-ground practices intended to guarantee that California agriculture – and everyone who depends on it – will continue to thrive. This report, compiled by American Farmland Trust at the request of the State Board, attempts to capture the progress that has been made toward fulfilling that vision over the past six years. Though it charts considerable progress on many of the original Ag Vision strategies, our report was necessarily limited by the breadth and diversity of California agriculture and the people and institutions that comprise it.

### Ag Vision Initiatives

1. Improve Access to Safe, Healthy Food for All Californians
2. Ease the Burden of Regulation on Agriculture While Maintaining Health, Safety and Environmental Standards
3. Secure an Adequate Supply of Water for Agricultural Purposes
4. Assure a Strong Labor Force through Fairness to Agricultural Workers and Employers
5. Effectively Detect, Exclude and Control Invasive Species
6. Adopt a Policy of Conserving Agricultural Land and Water Resources
7. Expand Environmental Stewardship on Farms and Ranches
8. Promote Renewable Energy and Substitutes for Fossil-Based Inputs
9. Assure Agricultural Adaptation to Climate Change
10. Promote robust Regional Markets for All California Producers
11. Cultivate the Next Generation of Farmers and Ranchers
12. Promote Agricultural Research That Anticipates 21<sup>st</sup> Century Challenges

Meanwhile, it bears mentioning that several trends have significantly amplified some of the key challenges identified by Ag Vision. The now four-year long drought, possibly prolonged and exacerbated by climate change, has significantly limited agriculture's water supplies in many areas of the state. U.C. Davis researchers documented the idling of more than a half million acres of farmland in 2014 and 2015, costing the state's agriculture industry and related businesses something on the order of \$5 billion. The reduction in water supplies was accompanied by the permanent loss of some 200,000 acres of farmland since 2010.

Agricultural labor shortages also appear to be worsening as a result of still unresolved national immigration policy and competition from employers in other industries as the recession has abated. Recent changes in the minimum wage and overtime compensation policies have created additional challenges for an affordable agricultural labor supply. New environmental, health and safety regulations, including a comprehensive groundwater management law, continue to put additional pressure on producers. And despite a slight downturn during the recession, the permanent conversion of agricultural land to urban uses continued apace.

The following sections elaborate on recent trends and highlight examples of progress toward the Ag Vision goals and objectives.

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## Progress Toward the Vision

### 1. Access to Healthy Food

#### *Vision*

All Californians have access to healthy food, understand the importance of meeting the U.S. dietary guidelines and have fundamental knowledge about how food is grown and prepared for the table.

Consumers have a California food supply at the highest possible level of safety using best management practices that protect California's unique natural resources.

#### *Ongoing Challenge*

Some progress has been made toward the initial 2010 vision of ensuring that all Californians have access to healthy food. The objective of eliminating fingerprinting as a condition of eligibility for feeding programs was achieved, and significant headway was made in the amount of food donated to the state's food banks by farmers: 150 million tons were donated in 2016, nearing the goal of 200 million tons. However, there is still a long way to go; one in eight Californians are still food insecure. Although the proportion of eligible residents who receive CalFresh benefits has slightly increased since 2012 (to 66 percent), California is still 47<sup>th</sup> in the nation for participation rates. There are still administrative barriers to access due to lack of coordination between county providers and outdated computer systems.

There also remain significant regulatory barriers to procuring donations of dairy products, and there is less incentive for producers to donation products that are nutritionally important but less perishable, such as nuts. The ongoing drought will likely increase the number of unemployed farmworkers, many of whom will need food assistance.

#### *Objectives*

Eliminate fingerprinting as a condition of eligibility for feeding help programs.

Increase producer donations to the state's food banks.

#### *Progress*

- In 2011, the passage of AB 152 created a 10 percent tax credit for donations of fresh fruits and vegetables to California food banks. This new credit, combined with the standard charitable giving tax deduction, has made donation more profitable than selling to secondary markets. Additionally, a change allowing the donation to be calculated as a wholesale value rather than an inventory value has made documentation easier and increased the participation among small growers.

- The passage of AB 6 eliminated the requirement that food stamp recipients be fingerprinted. Since then, the rate of reliance on CalFresh has increased. However, undocumented immigrants are still ineligible, as are seniors and people with disabilities who receive social security benefits, with the end result being that the share of Californians in poverty is higher than the share receiving food assistance.
- Although the federal dollars left on the table as a result of low participation have decreased from \$3.7 billion per year, \$2.9 billion is still lost. It is estimated that those additional benefits would generate \$5.2 billion in additional economic activity each year for California's agricultural and retail communities.
- CDFA's newly created Office of Farm to Fork (2014) is charged with increasing access to healthy foods for underserved communities and schools in California. The Office of Farm to Fork's Farmer Marketplace website offers farmers the opportunity to post products and connect directly with school food services to increase the amount of California grown and produced foods served in schools.

<http://cafarmersmarketplace.com/>

## 2. Regulatory Balance

### *Vision*

An updated regulatory system recognizes and fosters ecosystem services provided by working farms and ranches and encourages the sustainability of our food supply.

### *Ongoing Challenge*

Over the past few years, unfortunately, the regulatory burden on farmers has increased, in large part because of unexpected events including ongoing drought, record high temperatures, and new scientific revelations, as well as new ambitious State climate goals. There are new well testing and waste-water discharge requirements, new truck inspections, additional heat illness prevention laws, heightened scrutiny of emissions, increased wildlife protections, new stream diversion reporting requirements, and more restrictions on pesticides and herbicides, to name a few examples. It remains critical that we improve regulations and their application in ways that balance the economic viability of agriculture with achievement of the public benefits regulations were intended to secure.

### *Objectives*

- Reduce regulatory conflict, duplication, inflexibility and cost to producers, both in dollars and time.
- Promote cost-effective innovation in achieving the objectives of regulations.

- Assure greater accountability of regulators for fair and even treatment of the regulated as well as to the public.
- No reduction in environmental quality, labor standards or other public benefits of existing regulations, with the hope of increasing these benefits by making it easier for agricultural producers to comply with applicable regulations.

### *Progress*

- Sustainable Conservation successfully worked with the National Oceanic and Atmospheric Administration, the California Coastal Commission and the California Department of Fish & Wildlife to simplify permitting for habitat restoration and erosion control projects to improve water quality and the health of fish and wildlife populations.

<http://www.suscon.org/AnnualReport/2015AnnualReport/restoration.html>

## **3. Adequate Water Supply**

### *Vision*

A reliable water supply and conveyance system assures adequate quality and quantity of water to meet the needs of California and to sustain agriculture's prominence as a global food producer.

### *Ongoing Challenge*

Since the 2012 progress report was released, California has been beleaguered by a protracted drought that has significantly decreased the amount of available water. Though the drought has brought it into sharper perspective, the challenge is actually much broader. Agriculture is facing increasing environmental competition for water, as well as the predicted impact of climate change on both the amount and timing of water deliveries.

It is difficult to define "normal" precipitation in California, as multi-year wet and dry periods are historically common. In the past, however, water storage enabled agriculture to withstand wild swings in precipitation. But new environmental regulations have led to increases in the quantities of water released from reservoirs to rivers and the Delta in order to protect threatened and endangered species, leaving significantly less water for farming. In spite of these changes, the endangered fish species have not recovered, likely due to multiple factors such as the historical channelization of, and illegal diversions from the delta, an increase in invasive predatory species, toxins from urban runoff and pesticides from agricultural runoff.

In 2014, Governor Brown called for a 20 percent voluntary reduction in water use in urban areas, while agriculture south of the Delta received zero percent of its supply allocations

from the Central Valley Project, and 0-10 percent from the State Project. Urban dwellers seemed largely unaware that farmers had already faced significant cutbacks and there was significant media criticism of agriculture for its use of 80 percent of the state's developed water. The agricultural allocation from the Central Valley Project south of the Delta was zero again in 2015, and only 10-20 percent from the State Project. Farmers increased their reliance on groundwater by more than 50 percent causing subsidence in some places, and made expensive purchases from water districts. The Department of Water Resources reported that 40 groundwater basins are in overdraft, and that water tables have dropped 50-100 feet below historic levels. At least half a million acres of farmland were fallowed in 2015, with more expected to come, particularly south of the Delta, where farmers received only 5 percent of their allocation in 2016.

Going forward, USDA predicts that continued drought conditions will affect fruit, nut, cotton, and rice production. Additionally, a study by the U.S. Geological Survey and The Nature Conservancy released in May 2016 found that, if past patterns of land-use persist in California, water needs will surpass anticipated supply by 2062. These patterns include the development of 40,000 acres per year of farmland and an associated increase in the proportion of water consumed by urban uses, and the expansion of orchards and vineyards. Finally, an impending decision on whether to prevent the diversion of more than 40 percent of water from the San Joaquin River could soon have major impacts on the supply of water for agriculture, with positive effects in some places and negative effects in others.

Finally, the California Nitrogen Assessment, released in August 2016, found that 419,000 tons of nitrogen leach into groundwater each year, and that 88 percent of it is from cropland. This nitrogen is accumulating in the groundwater of agricultural communities, increasing health risks for those who rely on aquifers for their water supply.

<http://waterinthewest.stanford.edu/groundwater/overview/index.html>

<https://www.usgs.gov/news/changing-california-land-uses-will-shape-water-demands-2062>

<http://bit.ly/2alPpO8>

<https://ww2.kqed.org/science/2016/08/19/the-biggest-california-water-decision-youve-never-heard-of/>

### ***Objective***

Assure an adequate supply of affordable water of acceptable quality to meet agriculture's future needs while accommodating reasonable urban needs and improving environmental quality.

### ***Progress***

- In 2014, Governor Brown signed into law the Sustainable Groundwater Management Act (SGMA), which aims to achieve sustainable groundwater management in

California by 2042. SGMA requires the designation of groundwater agencies that will set ground water sustainability goals and then have the authority to use a variety of tools including metering, pumping restrictions, and fees to meet those goals.

- In 2015, the legislature passed AB 1390, which is intended to streamline groundwater basin adjudication processes. Provisions of the bill will encourage early settlement and avoid disruption of local groundwater planning procedures. The bill also provides clear rules on proper service of process to all overlying landowners, and efficient identification of groundwater-basin boundaries.

[https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201520160AB1390](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB1390)

- The State Water Efficiency and Enhancement Program (SWEET), developed in 2014, is designed to achieve the dual goal of agricultural water savings and greenhouse gas emissions reductions. The program is expected to save an estimated 37,490 acre-feet of water in its first three rounds. According to the Sacramento Bee, 38 percent of California farmers used low volume irrigation methods, including drip irrigation, in 2010. This is up from 15 percent in 1991.
- Also in 2014, Californians passed Proposition 1, the California Water Bond, which authorized \$7.5 billion in bonds for state water infrastructure projects to improve water quality, fund watershed protection projects, increase storage capacity, water recycling, and flood management projects and activities. Of that amount, \$2.7 billion will go to water storage, although the money has not yet been awarded for spending. Another \$1.8 billion will go to watersheds and flood management, \$900 million will go to groundwater sustainability, \$725 million to water recycling, and \$810 million will go to regional water security projects.

<http://bit.ly/2cwWb1P>

- Pajaro Valley Management agency net metering – water rebate program creates financial incentives for landowners to put at least 100 acre-feet of stormwater back into the ground, helping to replenish aquifers.

<http://bit.ly/2cdjn3u>

- Aquifer recharge – Farmers, together with Sustainable Conservation, UC Davis, the Almond Board of California, and Lawrence Livermore National Laboratory, began a series of pilot projects to use farmland for aquifer recharge projects. This strategy has the potential to replenish up to 1/3 of the annual overdraft in the San Joaquin Valley.

<http://www.suscon.org/AnnualReport/2015AnnualReport/groundwater.html>

## 4. Strong Agricultural Workforce

### *Vision*

Agriculture is a highly desirable green career of choice and will have a stable, well-educated and trained workforce.

### *Ongoing Challenge*

The need for immigration reform in California, far from accomplished, has in fact intensified. The New American Economy found that between 2002 and 2014, the number of full-time equivalent field and crop workers in California dropped by at least 85,000 people, despite an increasing hourly wage, and progress on health and safety assurances for workers. The decline has been attributed to a combination of the recent recession, which reduced the availability of jobs overall, and a crack-down by the U.S. government on illegal immigration from Mexico. While there have been attempts to create a state authorized immigration program, federal approval is required and has thus far been withheld; though in June 2013 the U.S. Senate passed S. 744, the Border Security, Economic Opportunity, and Immigration Modernization Act, which would have allowed for increased immigration and provided a pathway to citizenship for currently undocumented immigrants, the House refused to move on it. It is estimated that currently, 63 percent of the existing labor force is unauthorized under current immigration laws, up from approximately 50 percent in 2012. Reform of these laws is still desperately needed to alleviate a shortage of farm labor that is putting stress on the harvest and processing of California's crops.

<http://n.pr/1I0UYfl>

<http://bit.ly/1RNxhWt>

New legislation increased the state minimum wage 50 percent from \$10 to \$15 per hour, to be phased in through 2022. Another bill, now on the Governor's desk, would reduce the hourly threshold for overtime pay for farmworkers from 10 to 8 hours per day and from 60 to 40 hours per week. Similarly, a new Federal overtime law, which will take effect December 1, 2016, will decrease the threshold at which workers qualify for overtime pay to \$47,476. All of these measures are likely to increase the cost of farm labor and possibly lead to a reduction in the workforce as growers seek to further mechanize their operations.

[https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201520160SB3](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB3)

[https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201520160AB1066](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB1066)

[http://www.nytimes.com/2016/05/18/business/white-house-increases-overtime-eligibility-by-millions.html?\\_r=0](http://www.nytimes.com/2016/05/18/business/white-house-increases-overtime-eligibility-by-millions.html?_r=0)

### *Objective*

Secure a sustainable agricultural workforce by decriminalizing agricultural workers and employers, and by providing a better quality of life for workers, employers and the communities they serve.

### *Progress*

- SB 1087, signed in 2014, mandates sexual harassment training for supervisors and employees to occur at least once every two years.

[http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201320140SB1087](http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB1087)

- Changes to the Cal/OSHA heat illness prevention regulation went into effect in May 2015. The changes require, among other things, that shade structures be available and easy for employees to reach, that fresh, cool water be as close as practicable to where employees are working, and that employees who are experiencing heat illness be monitored.

<https://www.dir.ca.gov/dosh/documents/Heat-Illness-Prevention-Regulation-Amendments.pdf>

- SB 674, which took effect on January 1, 2016, ensures that all immigrant crime victims in California will have equal access to immigration status through the U visa, which is granted to undocumented immigrants who help law enforcement try to catch criminals.

<https://www.ilrc.org/sites/default/files/documents/sb-674-infographic.pdf>

## **5. Curtail Invasive Species**

### *Vision*

Natural and agricultural resources are protected from plant and animal diseases by preventing the entry and establishment of invasive species and diseases.

### *Ongoing Challenge*

On average, California acquires 6 new invasive species per year, and financial losses to exotic pests exceed \$3 billion annually. Non-native, invasive species now affect 20 million acres of California agricultural, forest and wild lands, posing a threat to our food supply and ecosystems. As global trade expands, infestations of new invasive species occur every year. The cost of controlling them is increasing and now approaches a half billion dollars annually. Yet the potential cost to the \$54 billion California agriculture industry of failing to

control invasive species is much greater. State funding for invasive species exclusion and control has continued to decline, requiring farmers to pay for more eradication procedures. However, when stakeholders work closely together, as in the case of the successfully eradicated European grape vine moth, the results can be excellent.

Asian citrus psyllid and the Huanglongbing (HLB) citrus greening disease it carries continue to present a serious challenge for the citrus industry. HLB is incurable and fatal to citrus trees, and has tremendous negative potential. The industry and state continue to monitor the situation.

### ***Objectives***

Increased detection, exclusion, control and eradication of invasive species through a comprehensive strategy that emphasizes exclusion as the most cost-effective and publicly-supported approach.

Sufficient financial resources for all these approaches, plus research on new low-impact solutions.

Understanding and support from public and environmental organizations for responsible control measures.

### ***Progress***

- The CDFA Statewide Plant Pest Prevention and Management Program is a comprehensive plan for the prevention and management of agricultural plant pests in California. In 2014, CDFA completed its Statewide Program Environmental Impact Report (PIER). The PEIR will provide an up-to-date, transparent, and comprehensive evaluation of CDFA's activities, and serve as an overarching CEQA framework for implementation. As part of the process, CDFA plans to implement a CEQA tiering strategy, a checklist tool and guide for project-level CEQA compliance and integration of new pest programs and management techniques. The PEIR evaluates all activities included under the Statewide Program, from promulgation of quarantine regulations to rapid-response eradication activities. The PEIR's CEQA tiering strategy allows CDFA to incorporate new technologies as they become available and adapt the program to future needs. Based on comprehensive human health and ecological risk assessments conducted as part of the PEIR analysis, the PEIR also provides for additional, science-based protections for agricultural workers and the environment.

<https://www.cdfa.ca.gov/plant/peir/>

- Since 2011, a total of four 21<sup>st</sup> Century Invasive Pest Management Symposia have been held by CDFA. The sessions allowed for open discussion about how CDFA can better collaborate on preventing, preparing for, responding to and recovering from invasive plant, insect and disease detections. The Goals of the Symposium were to

(1) explore 21st century invasive pest management challenges and possible improvements to CDFA policies and procedures, and (2) to foster communication and understanding among the diverse people involved in California's food and agricultural systems.

<https://www.cdfa.ca.gov/plant/21stCenturySymposia/index.html>

- In 2013, CDFA established a Healthy Pollinators Working Group to bring interested parties together to create shared understanding about the key issues, challenges and opportunities surrounding pollinators in California, and to generate ideas and strategies that focus on improving pollinator health. Participants at the working group meetings have an opportunity to learn about innovative solutions and to share their ideas about how to improve pollinator health through collaboration and partnerships.

<https://www.cdfa.ca.gov/plant/pollinators/HealthyPollinatorsWorkingGroup.html>

- California Department of Fish and Wildlife enacted the annual “California Invasive Species Week” in 2013. The goals of the California Invasive Species Action Week (CISAW) are to increase public awareness of invasive species issues and promote public participation in the fight against California's invasive species and their impacts on our natural resources.

<https://www.wildlife.ca.gov/Conservation/Invasives/Action-Week>

- In federal fiscal year 2016, USDA’s Animal and Plant Health Inspection Service allocated \$12.3 million to California from the 2014 Farm Bill to prevent the introduction or spread of plant pests and diseases that threaten specialty crops and the environment in California and across the nation. This funding is being used to increase exclusion, detection, control and research activities associated with invasive pests such as exotic fruit flies, Plum Pox Virus, Phytophthora ramorum, polyphagous shothole borer, and brown marmorated stinkbug. Over \$3 million will be used to support the very successful Dog Team program.

<http://plantingseedsblog.cdfa.ca.gov/wordpress/?p=10316>

- In August 2016, Agricultural officials from CDFA and USDA, in cooperation with county agricultural commissioners, have declared the European grapevine moth (EGVM) eradicated from California and have lifted quarantine restrictions. The collaborative strategies used by the EGVM eradication project will be a model for addressing future pest incursions.

[https://www.cdfa.ca.gov/egov/Press\\_Releases/Press\\_Release.asp?PRnum=16-030](https://www.cdfa.ca.gov/egov/Press_Releases/Press_Release.asp?PRnum=16-030)

- In December, 2014, the California Invasive Plant Council assisted with the production of the “Bioinvasions in a Changing World: A Resource on Invasive Species-Climate Change Interactions for Conservation and Natural Resource Management” report. This document addresses the broader framework of invasive species management and climate change adaptation as tools to enhance and protect ecosystems and their natural resources in the face of these drivers of change.

[http://www.cal-ipc.org/resources/pdf/BioinvasionsinaChangingWorld\\_Dec2014.pdf](http://www.cal-ipc.org/resources/pdf/BioinvasionsinaChangingWorld_Dec2014.pdf)

- CDFA has created a smart phone application for invasive species. The [Report-A-Pest](#) app can be used on both iPhone and Android. The app provides the ability to photograph and report suspected harmful pests to state and local agricultural officials. Using camera and GPS technology, the app provides invasive species specialists with valuable sighting information.

## 6. Land & Water Conservation

### *Vision*

Agricultural land resources are conserved to maintain California’s thriving agricultural economy and healthy ecosystems.

A reliable water supply and conveyance system assures adequate quality and quantity of water to meet the needs of California and to sustain agriculture’s prominence as a global food producer.

### *Ongoing Challenge*

Since 1984, California has lost nearly a million-and-a-half acres of agricultural land to urban development, half of which were prime farmland. The productivity of hundreds of thousands of additional acres is at risk because of problematic water supplies. Despite this, the state has no definitive goal, policy of strategy for conserving its irreplaceable farmland and the water essential to its productivity.

### *Goals*

Assess the future land and water needs of California agriculture.

Adopt a statewide policy of conserving agricultural lands and water resources.

### *Progress*

- The state Strategic Growth Council, Air Resources Board and Department of Conservation launched a new program (the Sustainable Agricultural Lands Conservation Program) to finance the purchase of agricultural conservation easements using cap-and-trade revenue, based on the premise that avoiding conversion of farmland to urban uses

prevents up to 70-fold increases in per acre greenhouse gas emissions documented by U.C. Davis researchers. Nearly \$45 million has been distributed through two annual cycles of this program, permanently protecting more than 33,000 acres. This is the largest state investment in agricultural land conservation in nearly two decades.

- Regional strategies for the conservation and management of agricultural and natural resources are under consideration in both the San Joaquin Valley and the Bay Area. Called “greenprints,” these strategies begin with a comprehensive inventory and assessment of the resource base and, after an extensive process of input from interested groups, officials and the public, will establish principles and recommend optimal strategies to balance and harmonize competing uses of resources.
  - The San Joaquin Valley Greenprint was created as a voluntary, stakeholder driven project to help the eight counties of the San Joaquin Valley create long-term environmental and economic sustainability in the face of these challenges. It serves as a resource that can inform land use and resource management decisions in the Valley, emphasizing the importance of crafting regional solutions because economic and environmental challenges and decisions often cross jurisdictional boundaries. Phase I of the SJV Greenprint project compiled and evaluated a large collection of publicly funded maps and data that portray the Valley’s water, agricultural, and ecological resources to create a single repository of information. The SJV Greenprint website) provides an interactive mapping portal to create maps and explore conflicts and solutions related to the Valley’s natural resources and non-urban spaces. Phase I concluded with the publication of a “State of the Valley” report to tell the story of the San Joaquin Valley, a unique, geographically large, resource-rich, and growing region that faces both challenges and opportunities with impacts ranging from local to national significance. Phase II is currently underway, focusing on pilot projects to demonstrate the project’s mapping resources can be used for resource management. Three pilot projects are being conducted by American Farmland Trust, Sustainable Conservation and the Sequoia Riverlands Trust.  
<http://sjvgreenprint.ice.ucdavis.edu>
  - In the Bay Area, the Bay Area Open Space Council, The Nature Conservancy, Greenbelt Alliance, and American Farmland Trust, in partnership with GreenInfo Network, are collaborating to create a Bay Area Greenprint. The Greenprint will be a data-driven regional planning support tool designed to influence the selection of areas planned for development through increased availability of information that articulates the full range of social and environmental benefits of the Bay Area’s natural and working lands. This work aims to assist agencies, decision-makers, and funders in land use, natural resource, and infrastructure sectors in the nine-county Bay Area. The Greenprint will provide the science and conceptual framework for combining the best available data on natural resources and working lands and

will make these data readily available to agencies and their consultants in order to identify areas where high values exist for multiple benefits. In this way, the Greenprint will serve as a decision support tool, helping regional jurisdictions and others evaluate public benefits and tradeoffs associated with land use and transportation development scenarios. The Greenprint is currently in design phase and will pilot projects in winter 2016-2017.

- In February 2011, the California Supreme Court let stand a decision by the state Court of Appeal upholding the legality of a Stanislaus County program that requires developers to preserve an acre of farmland for every acre they convert to a non-agricultural use. This kind of agricultural land mitigation program is becoming increasingly popular among local governments.

<http://www.agalert.com/story/?id=1645>  
<http://www.cp-dr.com/node/1665>

- In July 2011, Governor Brown signed AB 1265, a bill that authorizes counties to revise the term for Williamson Act contracts from 10 years to nine years – a 10 percent reduction in the length of contracts under which landowners agree not to develop their property, in return for retaining 90 percent of the property tax relief offered by the act. Since the property tax relief program was adopted in 1965, the state has reimbursed participating counties their foregone property tax revenue. But those payments, known as subventions, became a frequent bargaining point in state budget talks and were eliminated last year. That caused some counties to consider discontinuing the Williamson Act. The new law is intended to encourage counties to maintain the Williamson Act, which helps keep farms and ranches in agriculture.

<http://tribwekchron.com/2011/07/gov-brown-sgns-bill-to-preserve-williamson-act/>

## 7. Environmental Stewardship

### *Vision*

Consumers worldwide view California as the supplier of the highest quality and most nutritious food products using the most sustainable practices.

An updated regulatory system recognizes and fosters ecosystem services provided by working farms and ranches and encourages the sustainability of our food supply.

### *Ongoing Challenge*

California farmers and ranchers are working to enhance environmental quality and reduce the impact of food production on air, water and living systems. In the past four years, the industry has been presented with new challenges with regard to water quality and quantity.

Despite existing regulations, nitrogen contamination in California water and air continues to be a problem. In 2016, the UC Davis Agricultural Sustainability Institute released The California Nitrogen Assessment. The seven-year, multi-institutional assessment identified how much nitrogen enters the state, where it is used, and its eventual fate. The report identified agriculture as the major source of California's nitrogen, and noted that on average, only half the nitrogen applied to fruit and vegetable crops is absorbed by the plants, and only a quarter of that fed to animals becomes meat or dairy products. The excess nitrogen leaks into soil, groundwater, and air, contributing to health and pollution problems. The report highlights practices that farmers and ranchers can use to reduce nitrogen loss. See <http://asi.ucdavis.edu/blog/posts/uc-sarep/california-nitrogen-assessment-shows-the-state-of-the-science-on-nitrogen-use-and-pollution>.

### ***Objectives***

Documentation of existing environmental stewardship efforts by producers and their benefits to all Californians.

Widespread adoption of beneficial management practices that improve farm viability and the agricultural economy as well as the environment.

Adequate public financing of stewardship practices and ecosystem benefits that do not necessarily result in economic returns in the marketplace.

Avoid adoption by supply chain purchasers of multiple, conflicting systems for evaluating environmental performance by agricultural producers.

### ***Progress***

- In 2012, the California Department of Food and Agriculture (CDFA) Environmental Farming Act Science Advisory Panel developed the Qualitative Assessment Model (QAM) in order to illustrate the environmental benefits from various management practices implemented by growers and ranchers, and to educate a wide audience about the net social, economic, and environmental benefits and tradeoffs of implementing management practices.

<https://www.cdfa.ca.gov/oefi/ecosystemservices/qamodel.html>

- In 2013, CDFA launched an Ecosystem Services Database, which allows users to access a database of nearly 400 farms and ranches to peruse the environmental stewardship and conservation practices of those enterprises. Ecosystem Services in agriculture are defined as "the multiple benefits we gain from farming and ranching including crop and livestock production." The information contained in this database is collected from farm and ranch websites and on-line case studies and is updated annually. The database is designed to show and communicate to a wide audience the many social and environmental benefits offered by growers and ranches in

California, including food production. The database can be searched by key word and categories as well as through an interactive map.

<https://apps1.cdfa.ca.gov/EcosystemServices/>

- In 2013, American Farmland Trust published a portfolio of case studies showcasing outstanding examples of environmental stewardship by California farmers and ranchers. The portfolio was widely distributed and is available digitally on the California Association of Resource Conservation Districts website. Under a Specialty Crop Block Grant, AFT is now working on a second set of case studies focusing on how growers overcame obstacles to BMP adoption.

[http://carcd.org/profiles\\_in\\_stewardship.aspx](http://carcd.org/profiles_in_stewardship.aspx).

- In 2013, the Nitrogen Tracking and Reporting Taskforce was convened by Secretary Karen Ross to identify an appropriate nitrogen tracking and reporting system. The Taskforce included stakeholders from academia, environmental advocates, regulating agencies, and agricultural organizations. The Taskforce was charged with identifying intended outcomes and expected benefits of a nitrogen mass balance tracking system in nitrate high-risk areas, identifying appropriate nitrogen tracking and reporting systems and potential alternatives, "that would provide meaningful and high quality data to help better protect groundwater quality." Through several meetings, presentations by subject matter experts and discussion, the Task Force members came to general agreement on several components of an effective nitrogen tracking and reporting system.

[https://www.cdfa.ca.gov/oefi/nutrientmanagement/ntrstf\\_info.html](https://www.cdfa.ca.gov/oefi/nutrientmanagement/ntrstf_info.html)

[http://www.swrcb.ca.gov/press\\_room/press\\_releases/2013/pr022013.pdf](http://www.swrcb.ca.gov/press_room/press_releases/2013/pr022013.pdf)

- In 2015, Secretary Karen Ross established the Office of Environmental Farming & Innovation (OEFI), which is designed to serve California by supporting agricultural production and incentivizing practices resulting in a net benefit for the environment through innovation, efficient management and science. There are four programs under this new office, including the Dairy Digester Research and Development Program, the Healthy Soils Initiative, the State Water Efficiency Enhancement Program, and the Office of Pesticide Consultation and Analysis.

<https://www.cdfa.ca.gov/oefi/>

- In September 2016, California legislators passed SB 859, which authorized CDFA to establish and oversee the Healthy Soils Initiative, and allocated \$7.5 million in Greenhouse Gas Reduction Funds to the program. The Healthy Soils Initiative, seeks to increase carbon storage and reduce greenhouse gas emissions from agricultural lands.

[http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=201520160SB859](http://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB859).

- The State Water Efficiency Enhancement Program (SWEEP) provides financial assistance to implement irrigation systems that reduce greenhouse gases and save water. So far, just under \$18 million has been distributed through the program.

[https://www.cdfa.ca.gov/oefi/sweep/docs/SWEEP\\_TotalFundedProjects.pdf](https://www.cdfa.ca.gov/oefi/sweep/docs/SWEEP_TotalFundedProjects.pdf)

- In 2013, American Farmland Trust conducted a survey and held focus groups on the barriers to best management practice adoption. The study found that the cost of new irrigation and nutrient management BMPs was the major obstacle to their adoption, followed by grower concern that they could suffer a reduction in crop yield or quality. The difficulty of accessing trustworthy information on how to implement the practices and to minimize the economic and agronomic risks was another major barrier identified by the focus groups. Improved productivity, tax credits to offset costs, risk management tools and higher market prices for crops grown using environmentally friendly BMP were among the incentives growers said would encourage them to adopt such practices. However, many California growers were skeptical about or unfamiliar with government cost-share programs that have been a traditional way of funding BMP. The report includes a number of recommendations for encouraging more specialty crop growers to adopt irrigation and nutrient management BMP. However, farmer-to-farmer networks have been found to be an effective means of encouraging the implementation of new practices.
- In 2016, the NRCS, Western United Dairymen, California Farm Bureau, and the California Audubon Society celebrated success in their collaboration on the protection of endangered tri-color blackbirds, which often colonize farm fields. One-hundred percent of the birds were protected by providing farmers with a small financial incentive of \$600/acre to delay their harvests until the fledglings hatched and moved on.

## 8. Renewable Energy from Farms

### *Vision*

California agriculture is a leader in providing renewable energy resources.

### *Ongoing Challenge*

In 2015, Governor Brown called for California to ramp up its renewable energy goals from one-third by 2020 to 50 percent by 2030. Agriculture in California, as elsewhere, is heavily dependent on fossil-derived inputs, including fertilizers, pesticides and diesel fuel for irrigation pumps and farm equipment. The substitution of alternative energy sources, particularly those that can be produced on the farm, is vital to meeting California's climate

goals, and to keeping agriculture competitive and environmentally friendly. There has been progress on this issue as new programs have been developed to incentivize the production of renewable energy on farm, though significant challenges remain.

The dairy industry is faced with one such challenge; by 2030, the industry will be required to capture 75 percent of its methane. At present, there are only 13 methane digesters in production, and the Air Resources Board wants to expand that number to between four and six hundred. The costs are high (about \$2 million per digester), the technology is new, and there is little familiarity with the operations and maintenance of the equipment. Dairy operators are being asked to foot the cost of connecting to the grid, another significant cost. Another disincentive is the length of the contracts with the utilities, which are only for ten years and may not justify the capital investment.

Perhaps the most significant resource crisis California is currently facing is that of excess dead biomass. As a result of the drought, farmers bulldozed thousands of acres of orchards, which need to be disposed of, and at least 66 million conifers are standing or fallen dead in the Sierra Nevada, presenting a major risk of catastrophic wildfire. The Governor has declared a state of emergency and created a tree-mortality task force to help mobilize resources for the removal of fallen and dying trees in the Sierra, but current air quality rules prevent open burning of the on-farm woody biomass. Currently, there are about 30 direct-combustion biomass facilities in production in operation in California with a capacity of 640 megawatts, less than half the capacity available during the industries' peak in the 1980's, when 60 biomass plants turned woody waste into about two percent of California's electricity. Biomass energy is more expensive to produce than either natural gas or solar, which disincentivizes utilities from purchasing it.

<http://www.fs.fed.us/news/releases/forest-service-survey-finds-record-66-million-dead-trees-southern-sierra-nevada>

<http://www.latimes.com/business/la-fi-biomass-closing-20160101-story.html>

### ***Objectives***

Achieve the maximum feasible substitution of renewable energy and other renewable inputs for fossil-derived energy and inputs now used by agriculture.

Increase agricultural economic productivity while reducing greenhouse gas emissions and improving air quality.

### ***Progress***

- The CA/Federal Dairy Digester Working Group, a federal-state interagency task force convened by the California Department of Food & Agriculture, U.S. Environmental Protection Agency and U.S. Department of Agriculture is actively working to consolidate permitting requirements for methane digesters on dairy farms. These facilities convert what would otherwise be greenhouse gases from livestock manure into

renewable energy to power farms and export to the electric grid. Recommendations of the CA/Federal Dairy Digester Working Group were completed in 2013.

[https://www.cdfa.ca.gov/oefi/ddrdp/docs/Statement\\_of\\_Principles.pdf](https://www.cdfa.ca.gov/oefi/ddrdp/docs/Statement_of_Principles.pdf)

- In 2014-15, CDFA appropriated \$12 million from Greenhouse Gas Reduction Fund (California Climate Investments) and developed the Dairy Digester Research and Development Program (DDRDP) to provide financial assistance for the installation of dairy digesters in California, which will result in reduced greenhouse gas emissions. CDFA awarded 6 projects a total of \$11.1 million in 2015.

<https://www.cdfa.ca.gov/oefi/ddrdp/>

- Dairy Biogas for Freight Vehicles – In 2016, a state interagency consortium released a draft California Sustainable Freight Action Plan, which intends to cut the use of petroleum-based fuels. Heavy-duty trucks are a prime target for electrification and natural gas engines and other renewable fuels. The plan identifies use of biogas from dairy waste for fueling freight vehicles in the San Joaquin Valley, and identifies a cluster of dairies located in Kern County as one of the pilot projects.

<http://www.casustainablefreight.org/>

- In February 2016, the SB 1122 BioMAT program became operational. SB 1122 (2012, Ch 612) requires that each of California’s three large investor owned utilities (IOUs; PG&E, SCE, and SDG&E) must procure a share of the statute’s 250 MW requirement based on the ratio of each utility’s peak demand to statewide peak demand, of which 90 MW have been allocated to the dairy & agricultural waste sector for small-scale projects (up to 3 MW).

[https://www.pge.com/en\\_US/for-our-business-partners/floating-pages/biomat/biomat.page](https://www.pge.com/en_US/for-our-business-partners/floating-pages/biomat/biomat.page)

- Solar Siting: In 2015, Berkeley Law’s Center for Law, Energy and the Environment partnered with Conservation Biology Institute and Terrell Watt Associates to develop a new process to find “least-conflict” lands in the eight-county San Joaquin Valley region. The project team convened leaders from the agricultural, conservation, and solar PV development communities, and included tribes and key agencies. The group worked with CBI’s online mapping platform, called Data Basin Gateway ([sjvp.databasin.org](http://sjvp.databasin.org)) to identify 470,000 acres of ideal, non-controversial land for solar PV development. That acreage, which is roughly equal to 5 percent of the entire Valley study area, could provide 94,000 megawatts of renewable power – greater than all combined current in-state generation capacity and enough to power as many as 23 million homes in California — just from the San Joaquin Valley.

<https://www.law.berkeley.edu/research/clee/research/climate/solar-pv-in-the-sjv/>

- CDFA’s State Water Efficiency and Enhancement Program (SWEEP) provides funds to agricultural operations to incorporate renewable energy into irrigation systems with the purpose of reducing GHG emissions. So far, just under \$18 million in Greenhouse Gas Reduction Funds have been distributed under the SWEEP program.

[www.cdfa.ca.gov/oefi/sweep](http://www.cdfa.ca.gov/oefi/sweep)

- USDA’s Rural Energy for American Program (REAP) provides funding for ag renewable energy projects. Currently, grants of between \$2,500 and \$500,000 are provided for renewable energy; efficiency grants of between \$1,500 and \$250,000 are available. The program provided \$63 million in grants in 2015.

<http://www.rd.usda.gov/programs-services/rural-energy-america-program-renewable-energy-systems-energy-efficiency>

## 9. Adaptation to Climate Change

### *Vision*

California agriculture has adapted to changes in climate and maintained its competitive advantage in the global food production system.

Agriculture will help meet California’s climate change goals through innovative management practices and technologies that recognize the unique opportunities in agriculture to reduce greenhouse gas emissions.

### *Ongoing Challenge*

Few sectors of the California economy will be as affected by a changing climate as agriculture, and no state in the union has set more ambitious targets for addressing the issue. While climate mitigation targets are set and updated annually, the agricultural industry has begun to prepare for the changes in the climate which are already occurring. The state is already experiencing reductions in water supplies, fluctuations in the frequency and timing of precipitation, increases in plant heat stress, decreases in night time chill and shifts in pollinator life cycles. While contributing to greenhouse gas reduction, agriculture has begun to develop strategies to adapt to the recent changes in conditions and those yet to come.

### *Objective*

Assure that all sectors of California agriculture can adapt to the most likely climate-related changes in seasonal weather, water supply, pests and diseases and other factors affecting agricultural production.

## *Progress*

- CDFA Climate Change Consortium - In 2012 The California Department of Food and Agriculture (CDFA) convened the Climate Change Consortium, a diverse group of individuals involved in California specialty crop agriculture, to identify specific climate change adaptation strategies for growers. The group produced a final report in 2013 that contained twenty-five recommendations to improve resiliency in California specialty crop sectors, including crop breeding to select for varieties that are resilient to heat spells and low-chill winters, altered planting and harvesting schedules, and management practices that provide cooling to sensitive crops such as shade structures, intercropping, or spray materials.

[https://www.cdfa.ca.gov/oefi/climate/climate\\_change\\_consortium\\_info.html](https://www.cdfa.ca.gov/oefi/climate/climate_change_consortium_info.html)

Since 2013 CDFA has relied on the recommendations from the Climate Change Consortium to inform additional climate resilience initiatives including the Safeguarding California Plan, The Safeguarding Implementation Plan, California Fourth Climate Change Assessment, and President's Taskforce on Climate Preparedness.

- Safeguarding California & Safeguarding Implementation Plan:  
<http://resources.ca.gov/climate/safeguarding/>
- California Fourth Climate Assessment - Several research needs identified by CDFA's Climate Change Consortium were included in the Fourth Climate Assessment Request for Proposals in December 2015.  
<http://resources.ca.gov/climate/fourth/>
- President's Taskforce on Climate Preparedness and Resilience  
<https://www.whitehouse.gov/administration/eop/ceq/initiatives/resilience/taskforce>
- CDFA has increased collaborative efforts on an international scale regarding Climate Smart Agriculture. Delegations visited Israel and the Netherlands to promote information sharing regarding management practices that can alleviate the impacts of climate change. In summer of 2016, CDFA in partnership with the Netherlands, kicked off a webinar series that highlights impacts and the actions taken around the world to adapt.  
<https://www.cdfa.ca.gov/climatesmartag/>
- Sustainable Agricultural Land Conservation Program - California's Strategic Growth Council was appropriated funding from the Greenhouse Gas Reduction Fund for local communities to invest in planning that protects valuable agricultural land, to

permanently protect land with agricultural easements, and to incentivize farmers for practices that reduce greenhouse gas emissions. The program focuses on land at the urban edge, which in California, includes some of the best prime irrigated farmland that will likely be most resilient to climate change.

#### [Sustainable Agricultural Lands Conservation \(SALC\) Program Overview](#)

- In 2015, Governor Brown announced the launch of the Healthy Soils Initiative, which seeks to increase the proportion of soil organic matter (SOM) in California soils. Conserving soil and building SOM increases carbon storage and water-holding capacity, improves nutrient use efficiency, and decreases nutrient run-off and erosion, all of which are important strategies for building climate resiliency.

[https://www.cdfa.ca.gov/oefi/healthysouils/docs/Short\\_Term\\_Actions.pdf](https://www.cdfa.ca.gov/oefi/healthysouils/docs/Short_Term_Actions.pdf)

## 10. Promote Regional Markets

### *Vision*

California agricultural policies encourage and foster diverse agricultural production systems to meet a variety of market demands.

### *Ongoing Challenge*

Consumer demand for locally-sourced fruits, vegetables and other foods is growing rapidly. According to USDA, local food sales totaled at least \$12 billion in 2014 and could hit \$20 billion by 2019. In California, consumers and businesses alike have joined the “farm-to-table” movement, which emphasizes access to local, fresh, in-season produce. This movement has the potential to offer growers an opportunity to diversify their revenue streams while capitalizing on their distinct competitive advantage in serving the dietary needs of their communities. Farmers’ markets, farm-to-school and other farm-to-institutions have a large potential to boost local economies and open up markets for local healthy food.

### *Objective*

Take full advantage of regional marketing opportunities within the state, particularly those that capitalize on the growing public demand for locally-sourced food.

### *Progress*

- In October 2015, Governor Jerry Brown signed California Nutrition Incentives Act into law. The Act, AB 1321, allows low-income people to become part of the market for fresh local products by obtaining funding from USDA to provide incentives for food stamp recipients to shop at farmers’ markets. The Federal Farm Bill of 2014 set aside \$100 million for this purpose through the Food insecurity Nutrition Incentive (FINI) program. AB 1321’s Market Match Program will be a valuable tool

to both increase access to healthy food options for CalFresh recipients, as well as support our farmers' markets, and local farmers.

<http://asmdc.org/members/a19/news-room/press-releases/governor-signs-bill-to-help-families-on-food-stamps-buy-healthy-food-at-farmers-markets>

- As a result of the Direct Marketing Ad-Hoc Committee, AB 224 (2013-2014) established a registration program for producers marketing via Community Supported Agriculture. This state registration provides the producer “approved” status, bringing them into compliance with the California Department of Public Health requirements.
- In 2013, Policy Link, The Food Trust and Reinvestment Fund created the “Healthy Food Access Portal” to maximize the impact of these new opportunities and better support communities seeking to launch local food retail projects. The Healthy Food Access Portal harnesses a vast array of data and information to support the successful planning and implementation of policies, programs, and projects to improve access to healthy foods in low-income and communities of color. The Portal is designed to help people access resources related to healthy food access policy efforts, funding opportunities, and successful retail strategies.

<http://healthyfoodaccess.org/get-started>

- As of December 31, 2015, California FreshWorks (a project of the California Endowment and Capital Impact Partners) has disbursed 48 loans and grants totaling \$58 million to various projects aiming to create healthy food access in underserved communities across the state. These projects include grocery stores, mobile food operators, farmers' markets, a food business incubator, and several intermediary lenders that provide microloans to smaller food enterprises to increase the availability of healthy food in areas that were previously food deserts.

[http://cafreshworks.com/wp-content/uploads/2016/06/Freshworks-Food-Access-Report\\_WEB2\\_FINAL.pdf](http://cafreshworks.com/wp-content/uploads/2016/06/Freshworks-Food-Access-Report_WEB2_FINAL.pdf)

- In February 2015, San Francisco Bay Area Planning and Urban Research (SPUR) released their “Healthy Food Within Reach” report. Based on their research and findings, SPUR offered policymakers a framework for improving food access and recommendations on how to prioritize their efforts going forward. The research area included the nine-county Bay Area, with a specific interest in San Francisco, San Jose and Oakland, the region's three central cities.

[https://www.spur.org/sites/default/files/publications\\_pdfs/SPUR\\_Healthy\\_Food\\_Within\\_Reach.pdf](https://www.spur.org/sites/default/files/publications_pdfs/SPUR_Healthy_Food_Within_Reach.pdf)

- Food Tank, in partnership with the Sacramento Convention & Visitors Bureau, Farm-to-Fork Program, and University of California- Davis will host the 1<sup>st</sup> annual Farm Tank Conference in Sacramento, CA in September 2016. This is the second in a series of three two-day summits in 2016 which will bring together some of the world's most impactful food system leaders. The event will include researchers, farmers, chefs, policy makers, government officials, and students who will come together for interactive panels on topics that include food transparency, food tech, sustainable protein, infrastructure, and food business, among other topics.

<http://foodtank.com/events/2016/09/22/1st-annual-farm-tank-summit-sacramento-ca>

## 11. Next Generation of Farmers & Ranchers

### *Vision*

Agriculture is a highly desirable career of choice and will have a stable, well-educated and trained workforce.

### *Ongoing Challenge*

The farm population in California, as elsewhere, is aging. USDA's Economic Research Service reports that ten percent of all farmland in the United States will change hands by 2019. Though a number of beginning farmer training programs have been started in recent years, significant barriers to the intergenerational succession of California farms and ranches remain. While there are increasing numbers of farmer training programs in the state, there continue to be barriers to entry into farming, including the increasingly high cost of land, estate and inheritance tax laws that make it difficult and expensive to transfer land and businesses from one generation to the next.

### *Objectives*

Assure that California farms and ranches can and will be passed to the next generation of qualified, committed owner-operators.

Train and equip the next generation of young and beginning farmers in agronomic, economic and environmental stewardship skills.

### *Progress*

- In 2016, the exemption amount under federal estate tax law increased slightly to \$10.9 million for assets jointly held by a couple, and to \$4.45 million for an individual. This will relieve some of the stress on California farm families, whose assets tend to be higher than the national average because of the higher value crops grown in the state.

- In February and March of 2016, CDFA staff engaged with Rio Linda High to discuss ag-related careers in State Services through the Sacramento County Office of Education/Capital Region Academies for the Next Economy (CRANE)'s Agriculture Pathways program.

<http://www.cranepathways.org/>

- In 2012, The Center for Land Based Learning's first California Farm Academy class graduated. Each year thereafter, the academy had held a seven-month program that provides an intensive overview of what it takes to succeed as a farmer. Students learn and practice basic crop planning and production, soil science, pest management, irrigation methods and other field and greenhouse work, as well as the business aspects of running a farm successfully.

<http://landbasedlearning.org/farm-academy>

- In April 2016, The Center for Land Based Learning executed a pilot job training and entrepreneurship development course called The Central Valley Youth Employment Program. The course was for youth ages 18-24, living in rural communities in the greater Sacramento and Fresno regions. The program was intended to help prepare young adults for jobs in the agriculture industry and provide support for entrepreneurs. There were classes of students in two regions, North Valley and South Valley.

<http://landbasedlearning.org/youth-employment>

- In early 2016, UC Cooperative Extension (UCCE) Sonoma and UCCE Marin began holding "FARMING 101" workshops, in which experienced farmers, ranchers, and business specialists share a broad range of practical skills that aspiring and beginning farmers and ranchers need to know. The program also offers mentorships.

[http://ucanr.edu/sites/BFRSOCO/Farming\\_101/](http://ucanr.edu/sites/BFRSOCO/Farming_101/)

- The Growing Roots project was initiated in 2014 by UCCE, UC Berkeley, Sustainable Agriculture Education, the National Center for Appropriate Technology, and the Alameda County Resource Conservation District. Growing roots hosts workshops in ten northern California counties to help farmers and ranchers with business, marketing, food safety, value-added processing and ecological farming. So far approximately 200 people have participated in the program.

<https://growingroots.berkeley.edu/>

- The Agriculture and Land-Based Training Association (ALBA) was incorporated in 2001. ALBA provides opportunity to farm workers and other aspiring farmers with bilingual classes on organic farming, marketing business skills, access to land, and connections to markets for organic produce. ALBA has partnered with Hartnell

Community College so that participants in its Small Farmer Education Program can receive college credit. Graduates of the program can enter into an apprenticeship program, which provides farmland, equipment, and irrigation.

<http://www.albafarmers.org/programs/>

- California Farmlink helps farmers with two or more years of experience find farmland and develop strong written agricultural lease or purchase agreements.

<http://www.californiafarmlink.org/find-land>

## 12. Agricultural Research

### *Vision*

Research and extension of research stimulates innovation and adaptability to keep California's agri-food system the world's most productive, profitable and environmentally sound.

### *Ongoing Challenge*

California producers have stayed competitive by being early-adopters of cutting-edge research, new technologies and best practices. Unfortunately, public sector funding hasn't kept pace with private money when it comes to research, and private research tends to be industry and issue specific, and focuses on putting out fires rather than looking at the big picture.

The University of California's Division of Agriculture & Natural Resources (UC-ANR) has played an indispensable role in this. It is critical that it continue to do so, but tight budgets are putting pressure on its capacity. Since the development and launch of ANR's strategic vision 2025, the division has identified five major initiatives that seek new resources and new ways of partnering within and outside UC to find solutions for California. These initiatives include invasive species, healthy families and communities, sustainable food systems, and water quality, quantity, and security.

### *Objective*

The State Board and University of California should collaborate to identify the most critical research and extension needs and assure that the financial and academic resources are available to carry out those needs.

### *Progress*

- Several research needs identified by CDFA’s Climate Change Consortium were included in the Fourth Climate Assessment Request for Proposals in December 2015.  
<http://resources.ca.gov/climate/fourth/>
- In 2016, CDFA awarded \$225,909 to a research project titled “Converting Manure to Reduce Greenhouse Gas Emissions, Minimize Environmental Impacts, and Enhance the Economic Feasibility of Dairy Operations.”  
<https://www.cdfa.ca.gov/oefi/ddrdp/>
- A research project titled “Converting Manure to Reduce Greenhouse Gas Emissions, Minimize Environmental Impacts, and Enhance the Economic Feasibility of Dairy Operations” was awarded \$225,909 by CDFA in 2016.  
<https://www.cdfa.ca.gov/oefi/ddrdp/>
- The FREP program has been investing in pioneering fertilizer research focused on agronomic efficiency in the management of nutrients, precision irrigation and fertigation practices, and soil, crop, and fertilizer interactions. See <https://www.cdfa.ca.gov/is/fldr/frep/index.html> A few examples of this research include:
  - CropManage is a decision making model that was developed by UC Cooperative Extension and funded by CDFA FREP. CropManage assists growers by calculating rates and timings for nitrogen application and irrigation. It is also a useful data storage platform. CropManage now supports eight major Central Coast crops, and 11 more are being developed as an expansion to the software. Studies show that growers using this software reduced average nitrogen use by 33% and water use by 20% in lettuce without yield penalty. Currently there are about 900 registered users of CropManage.
  - Another FREP-funded research project that was conducted by UC Cooperative Extension explores taking advantage of the nitrate in irrigation water as a plant nutrient. Accounting for this nitrogen reduces inputs from other sources and losses of nitrogen to groundwater. Research results show that crops can take up nitrate from irrigation water even at small concentrations, and a pound of nitrogen from irrigation water nitrate is equivalent in its plant nutrient efficiency to a pound of nitrogen from a synthetic fertilizer. In some cases, growers can save 37 to 55 pounds of nitrogen per acre by accounting for the nutrient in irrigation water.
  - Currently, leaf samples for perennials are collected in mid-summer to evaluate the nitrogen status of trees. A FREP-funded project conducted by UC Davis examined and developed a new protocol for the use of early-season (Spring) leaf sampling which allows growers to better anticipate crop

demand and adjust fertilizer application accordingly. This technique increases fertilizer efficiency and is being practiced for almonds and pistachios. FREP and UC Davis are extending this technique to pears, walnuts and prunes.

- The West Side Research and Extension Center (WSREC) through the University of California, Division of Agriculture and Natural Resources identified opportunities for new areas of research or expansion of existing research in the San Joaquin Valley. Research areas of regional or statewide interest that are perceived as having high potential for future support and success at WSREC include new crop introductions, conservation tillage systems research, irrigation water management, crop stress and salinity research, including cultivar screening for drought and salinity resistance and tolerance, and continuing work in disease and pest management.

<http://recs.ucanr.edu/files/203805.pdf>

- The Sierra Foothill Research and Extension Center (SFREC) identified key opportunities to increase support include expanding the role SFREC plays in managing long-term baseline monitoring efforts and databases that are of interest to a number of stakeholders, improving transparency in how resources are allocated and developing clear resource allocation guidelines, particularly for projects that require a significant amount of center resources.

<http://sfrec.ucanr.edu/files/184678.pdf>

- The Hansen Agricultural Research and Extension Center identified additional research needs in Ventura County to engage researchers to develop projects (physical, biological, policy, etc.) that examine issues related to the interfaces between agriculture, open space, urban environments, and between conventional and organic farming.

<http://harec.ucanr.edu/files/230279.pdf>

- The South Coast Research and Extension Center identified opportunities to further develop UC ANR's research efforts in urban agriculture and the interfaces between urban settings, agriculture, and natural environments, with particular focus on invasive pests and water resource issues related to climate change.

<http://screc.ucanr.edu/files/197987.pdf>

- CDFA conducts an annual competitive solicitation process to award Specialty Crop Block Grant Program (SCBGP) funds to projects that enhance the competitiveness of California specialty crops. In 2015, CDFA awarded \$19.7 million in 2015 SCBGP funds.

[https://www.cdfa.ca.gov/Specialty\\_Crop\\_Competitiveness\\_Grants/](https://www.cdfa.ca.gov/Specialty_Crop_Competitiveness_Grants/).