DEPUTY CHIEF CONSULTANT
VICTOR FRANCOVICH
COMMITTEE SECRETARY
NICOLE WILLIS

Assembly
California Legislature

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0089
(916) 319-2084
FAX: (916) 319-2184

ASSEMBLY COMMITTEE ON AGRICULTURE
ROBERT RIVAS, CHAIR
ASSEMBLYMEMBER, THIRTIETH DISTRICT

Environmental Farming and Innovation

Informational Hearing

On February 10, 2021, the Assembly Committee on Agriculture held an informational hearing to explore programs and issues related to Environmental Farming and Innovation in California. The committee heard from six panelists, including the Secretary of the California Department of Food and Agriculture (CDFA), farmers, a carbon sequestration academic expert, and a regenerative agriculture advocate. The panelists discussed CDFA's Climate Smart Agriculture programs, the cost of farming in California, how various agricultural commodities are developing enhanced sustainable farming practices, the need to incentivize more environmental farming, and practical paths to help California achieve greater agricultural land conservation and greenhouse gas reduction goals.

I. HEARING AGENDA

Wednesday, February 10, 2021

1:30 p.m. to 3:30 p.m.

State Capitol, Room 4202

Welcome and Introduction

- Chair, Robert Rivas
- Vice Chair, Devon Mathis

Panel 1: Overview of CDFA's Environmental Farming and Innovation Programs

- Karen Ross, Secretary of CDFA

Panel 2: Environmental Farming in California

- Jason Mraz, Avocado Grower
- Christine Gemperle, Almond Grower
- Doug Beretta, Organic Dairy Operator

Dairy Panel 3: Current Research and Future Goals

- Dr. William R. Horwath, Chair and Professor of Soil Biogeochemistry, Dept. of Land, Air and Water Resources, University of California Davis
- Kat Taylor, TomKat Ranch Founder and Impact Investor

II. HEARING SUMMARY

Overview of California Environmental Farming and Innovation Programs

Many California farmers engage in practices that contribute to the well-being of their surrounding ecosystems, air quality, and wildlife habitat. Agriculture also plays a pivotal role in preserving open space that is vital to the environment.

The Cannella Environmental Farming Act of 1995 (CEF Act), requires the Department of Food and Agriculture (CDFA) to establish and oversee an environmental farming program to provide incentives to farmers whose practices promote the well-being of ecosystems, air quality, and wildlife habitat. The CEF Act requires CDFA to convene a Scientific Advisory Panel on Environmental Farming to provide advice and assistance with respect to environmental farming issues.

CDFA's Office of Environmental Farming & Innovation, created to serve California by supporting agricultural production and incentivizing practices resulting in a net benefit for the environment through innovation, efficient management and science, is the result of the CEF Act. Current programs include the Healthy Soils Program (HSP), Alternative Manure Management Program (AMMP), State Water Efficiency and Enhancement Program (SWEEP), and the Dairy Digester Research & Development Program (DDRP).

Secretary Ross discussed the origins of CDFA's Office of Environmental Farming & Innovation. Beginning with California Agricultural Vision, CDFA looked at how to help California agriculture adapt to challenges facing agriculture, from regulations and water supplies to urbanization and climate change. One key idea recommended was to incentivize grower adoption of technologies and practices for improved water management, which includes use of water meters, soil moisture sensors, on-farm water storage, and ground recharge where possible. In 2014, this led to the creation of CDFA's first incentive program, SWEEP.

SWEEP helps growers implement water efficiency irrigation systems driven by technology innovations. Since it is funded by the Greenhouse Gas Reduction Fund or California Climate Investment Program, CDFA has had to ensure the program reduces greenhouse gas while saving water. The program has been very popular amongst growers with an oversubscription rate of almost 300%. California's 828 SWEEP projects cover 133,578 acres from north to south and will reduce 800,773 metric tons of CO2e greenhouse gases over 10 years. SWEEP saves about 37.5 billion gallons of water per year.

AMMP and DDRP are programs that reduce greenhouse gas emissions in dairy and livestock operations. These programs have funded a combined 236 projects that have reduced greenhouse gases by 2.3 million metric tons per year. They also provide renewal energy and reduce odor.

CDFA's Healthy Soils Program has both an incentives component as well as demonstration projects. Incentives are offered in the form of financial assistance for implementation of conservation management that improve soil health, sequester carbon, and reduce greenhouse gas emissions. Demonstration projects showcase California farmers' and ranchers' implementation of healthy soils practices. HSP currently has 580 incentive projects and 66 demonstration projects that cover a total of 58,148 acres located throughout the state and help sequester carbon, improve soil health, and reduce greenhouse gases by some 112,279 metric tons per year.

Secretary Karen Ross stated: *California farmers and ranchers are on the frontlines and leaning into climate change solutions and sustainability, and I commend them for their innovation and leadership*. *The agricultural sector has been actively scaling up adoption of climate-smart practices as a result of the state's effective use of incentives that encourage implementation of science-based practices. The state has also supported the funding of technical assistance providers to ensure farmers with operations of all sizes and all regions have access to climate-smart programs, and I am very excited for the next chapter to include farmer- and rancher-led climate solutions.*

Committee Member's Question for Secretary Ross.

Assemblymember Mathis – *Are there concerns with renewable gas entering pipelines and what conversations are being had with the Air Resources Board in keeping credits for vehicle fuels and maintaining renewable natural gas models for local fleets*?

Sec. Karen Ross – *Don't have an answer to this question, but this is a part of a larger conversation being had and we realize that dairy wants to be a part of Cal power and the diesel fleets they see going up and down I-5. All programs are going through the pipeline rejections to ensure safety. Very important that we look for information on how*

to keep from disrupting current program funds and working with dairy farmers with regards to reduction in greenhouse gas emissions and improving management practices on dairy farms.

Assemblymember Mathis – *Has there been any changes in the program through CARB relating to upgrading engine types for instance from old diesel to new diesel and if so how is thing program doing?*

Sec. Karen Ross – *This is the most popular program because of the immediate effect on air quality we've seen and the support of the central valley. From all I have heard this is working very well! We do not want to see an interruption in funds because it is accomplishing reduction in greenhouse gas emissions. The Governor has included additional funds in the budget for this program*.

Chairman Rivas – *How many other states have similar programs to what is being offered in California?*

Sec. Karen Ross – *Oklahoma currently has a Healthy Soils Program. Iowa offers a Cover Crop Program to address nitrate problems in their soils. No other states have invested as much as California and it's important to continue our work with the USDA to make their current farm methodology tool work for our specialty crops in California. In this state we cost share with our farmers to reduce greenhouse gas emissions and we measure it and quantify it and assign years of practice to go with it. We would also love to leverage private sector dollars in the future as well.*

Assemblymember Wood – *Are there additional programs for farmers and ranchers for grazing? If we can graze overgrown areas we can reduce the impact of wildfires*.

Sec. Karen Ross – *We already fund rotational grazing as part of the Healthy Soils Program. Vegetation management as well is very important and needs to be happening. These topics will continue to be part of the conversations for enhancing programs in the future.*

Farmers Environmental Farming in California

Mr. Mraz, an avocado grower and singer/songwriter from Oceanside, discussed the California avocado industry, including its economic impact, costs of farming in California, and the environmental benefits of avocado production. California farmers grow over 90% of the total domestic avocado production. California has nearly 2,000 commercial avocado farmers who farm on about 54,000 acres. Many of California's avocado farmers come from multi-generational family farms, and the average grove size is between 20-30 acres. California's avocado annual production averages between 200-

400 million pounds, and is grown primarily in the counties of San Diego, Riverside, Ventura, Santa Barbara, and San Luis Obispo.

ECONOMIC BENEFITS**:** California avocado farmers have an average farm-gate value of $383 million per year based on the last 10 years. For 2020, California avocado farmers and packers employed nearly 15,000 Californians and generated $1.5 billion in economic output. Labor income totaled $667 million, and almost $41 million in indirect business taxes was generated by growers and packers.

COST TO FARM IN CALIFORNIA**:** California avocado farmers' input costs are significantly higher than offshore farmers. Water costs can run high, with an average yearly cost of $6300 per acre and labor hourly rates average $18 or more per hour. Farmers are continuing to face rapidly increasing local, regional, and state regulatory compliance costs. As with any business, farmers must make a profit to remain viable. Unlike most businesses, farmers are price takers not price setters.

ECOSYSTEM SERVICES BENEFITS**:** A recent report examined the wide range of ecosystem benefits California avocado production contributes to California's environment and communities. These benefits include serving as a hedge against the spread of wildfire, carbon sequestration, erosion control, open space preservation, and improved air quality.

Preliminary research has shown that avocado groves have a net sequestration of carbon. Once an avocado grove is planted, no tilling occurs -- and most trees remain in the ground for 30, 40, or even 50 years or more*. "The trees in my grove have outlived the previous owner, and I expect the trees I just planted to outlive me!"* An avocado grove creates natural leaf litter, which decomposes into the soil, helping to regenerate into healthy soils that sequester carbon and create a beautiful landscape.

Mr. Mraz closed by stating: *As I have shared, California avocado growers are already part of building resilience to climate change, and it is important that we find a way to be recognized for our existing contributions. With your support, and avocado farmers working in cooperation with the California Air Resources Board (CARB), together we can develop a protocol that establishes carbon sequestration credits for both established and newly planted trees.*

Ms. Gemperle, an almond grower from Ceres, discussed the almond industry's 2025 goals. Three years ago the Almond Board's members and senior staff met to carve out a new path for the industry, one that recognized our changing climate and world and kept

us two steps ahead instead of catching up. They wanted to be part of the solution. That meeting resulted in 4 goals:

1) Reducing the amount of water to grow a pound of almonds by 20%,
2) Increasing the adoption of environmentally friendly pest management by 25%,
3) Reducing our dust at harvest by 50% and,
4) Becoming a zero waste industry with not only the hull and shell becoming valuable co-products but with the woody biomass from the trees used for environmental friendly purposes.

Historically, the woody biomass from orchard removal was burned. In recent years it was sent to cogeneration plants offering one option in which to utilize the shredded orchards. Farmers could mitigate the cost of the orchard removal with the revenue it generated. Cogeneration is being phased out. Now after years of Almond Board funded research to recycle whole orchards, studies have shown that not only is carbon sequestered but the water holding capacity of the soil is increased by up to 20%. Ms. Gemperle stated, "*For a grower like me that was not just a selling point but a no-brainer and possibly a game changer in water challenged areas."* Projects to recycle whole orchards can be funded by HSP.

The almond industry has already been reducing its water use per pound of nuts over the last years as a majority of farmers have switched from flood to micro-sprinkler, drip or sub-surface irrigation. Now, there are farmers who have never flooded their orchards. Precision irrigation using tree biology, computer technology, and advanced equipment combined with the increased water holding capacity creates an opportunity for water savings. As to her own farm, Ms. Gemperle explained: *Over the last 20 years our farm has used NRCS grants to change from flood to micro-sprinklers but now we are turning to the SWEEP program to help us improve further. Having a cost share has allowed us to put in an efficient irrigation system we might have postponed or foregone. It makes the formidable doable. Without grants we would not have put in two soil moisture monitoring stations which inform our decisions.*

In closing, Ms. Gemperle stated: *Everyone will have their own unique combination of what gets them closer to the 2025 goals which we monitor in our sustainability program. It is also important to understand there are tradeoffs, a grower may choose an ultra-efficient irrigation system that saves water and reduces herbicide use, but also reduces the ability to have a cover crop outside of the rainy season. Another grower may choose cover crops knowing extra tractor hours will be required to manage it. These are examples of the decisions we make every single day. Small farms face different*

challenges than larger ones but we are all challenged. One thing we do have in common is that every single almond farmer in California has invested financially through their crop assessment in the research and the work being done to create change. Our investment does not stop at the research but continues on to the development of "Best Management Practices" which are then brought to growers and put to use. We are always looking to the future.

Mr. Beretta, an organic dairy operator from Sonoma County, discussed the operation of his dairy, early environmental work on the dairy, CDFA's AMMP and SWEEP programs, and the need for incentives to help dairymen enact environmental programs.

The Beretta Family Dairy is in its 4th generation. In the late 1960's, the dairy installed manure capture ponds and turned waste into on-farm fertilizer. By the early 1980's it used a state grant to improve the irrigation system to further divert manure and run off. The dairy went organic in 2006 and later worked with the City of Santa Rosa on a nutrients offset project.

Beretta Family dairy applied for and received a AMMP project grant. Once completed, the project will use automated sweepers to collect, separate and dry the manure. The dry manure will be used as animal bedding. The project is multi- beneficial to the dairy: saving labor and othercosts, while also reducing methane and diesel. The use of a technical assistance advisor was essential for the success of the project. While there were some issues with fund distribution for the project, the overall process for the AMMP Program went well.

In closing, Mr. Berretta stated: *As a third generation dairyman, I would like people to understand that farmers are true environmentalist. By farming, we have saved open space to sequester carbon for years, just farming the land and growing pasture for our animals. But if regulations continue to be put on agriculture someone will need to pay the bill or there will need to be a change in how milk is priced. We have no way to increase our pay price to cover these costs. Our price is set through the Federal Marketing Order. We are price takers.*

Committee Member's Questions for Mr. Mraz, Ms. Gemperle and Mr. Beretta

Assemblymember Mathis – *Can you dive into the added administrative costs for applying for different grants with everything coming down from the state level? It is one thing to have funds available and another thing to have to travel or apply for funding. This means leaving your farm or ranch unattended possibly.*

Doug B. – *We were lucky in that we have a new dairy specialist through the UC extension in our area that helps us with application processes. We also have three RCD's in our area of Sonoma/Marin County that assist, but there are costs involved and these are added into their budgets. It may be helpful in the future if technical assistance is added into grants being careful of course with who is suggested to help as they may charge high fees.*

Christine G. – *A lot of family growers were handed down the farms and are not making a profit – they are working additional side jobs to cover expenses. This makes it even harder to find time to apply for grants. To apply for the Healthy Soils Program grant was a person's whole job – and yet the Air Resources Board grant application was very easy and I think should be looked at as a model for other grants – to make it easier.*

Jason M. – *Had I known the economic pressures I may have thought twice about having a farm. Luckily, I do not have to apply for grants or loans. In order to make my farm economically viable I've had to diversify my crops and go to specialty crops.*

Assemblymember Wood – *What are you paying the state to graze land?*

Doug B. – *We had a grazing agreement with the State, but something changed and we ended up needing to go out to bid for the contract. The bidding processes was crazy – 20 page application, requiring $3 million liability policy, and a walk through. Luckily, I was the only one in the walk through so I was able to bid low and got the contract. It was around $5,000 for the three month period of grazing; which in time has reduced to $1,000.*

Assemblymember Wood – *What are the benefits of the crops you are growing?*

Jason M. – *More crop production in the same amount of space and little additional labor or water needed. I've also geared towards local produce that is not offered and now I grow bananas and coffee in between my avocados.*

Chairman Rivas – *Do you have cover crops as well?*

Jason M. – *Yes, we also grow cover crops like stinging nettle and other useful weeds that actually reduce the amount of weed pulling we need to do.*

Assemblymember Levine – *What has the reception been for your other crops and the local impact?*

Jason M. – *There was never a real market for local coffee, the economic benefit just wasn't there and until it picks up it is expensive. If more farmers grow an interest for coffee growing, we will see the prices go down.*

Assemblymember Levine – *What has been your greatest challenge on your scale of farming?*

Doug. B. – *Water quality has been our biggest issue. We have hired a person to sample over 60 sites and then give these samples to the Water Resources Board. Environmental groups still continue to believe we are not doing enough to stop the pollution of our waters. We definitely continue to pay high water quality fees.*

Assemblymember Levine – *How did you factor in the risk for doing more environmental farming?*

Doug B. – *We had a great partnership with the Nutrient Offset Project to utilize waste water. They need to continue to get offset credits to put the money back into plans to meet water quality regulations. If they aren't getting these credits, then we may not receive our irrigation water. Working on these types of partnerships makes it beneficial on the management side of farming.*

Assemblymember Levine – *How do you talk to the first generation farmers about current farming with all of the scientific advances in farming?*

Christine G. – *My father came from Switzerland in the 70's and the farming there was very clean. He understands that the new techniques and is very impressed with these new advances. He brings historical information to the table. We also talk about the use of less water and pesticides that the first generation farmer used. He is excited to see where California farming goes.*

Current Research and Future Goals

Dr. William Horwath discussed the University of Davis's long-term carbon sequestration experiments that have been on-going for the last 30 years. The best carbon sequestration results have come from land that used compost and cover crops, with lesser results from various other methods of farming (till, no till, no-til with cover crop, cover crop). It's important to understand that the cover crop and compost treatments much be done yearly, otherwise lower or no soil carbon will be sequestered.

Other that carbon sequestration, Dr. Horwath explained that the adoption of micro-irrigation by California farmers has dramatically reduced N2O emissions compared to older flood irrigation practices. Furthermore, one of the best ways to reduce greenhouse gas emissions related to agriculture is to slow the conversion of farmland to suburban and urban use. By preserving farmland, the emission of GHGs is up to 70 times less than if the land was converted to development.

Dr. Horwath stated that a significant expansion of carbon sequestration in US farmlands is inhibited by the following:

- Cost of carbon sequestration via USDA Natural Resource Conservation Service (NRCS) programs is $32 and $442 per ton of CO2, avg. $183 per ton.

- Large transactional costs (i.e., equipment, labor, cover crop seed, etc.)
- Sequestration verification is difficult and expensive, and there's a need for better and cheaper testing.
- Need for more farmer technical assistance.
- Farmer resistance to government regulation due to cost.

In closing Dr. Horwath stated: *Any amount Soil C sequestration retained or sequestered is a win-win! Soil carbon management improves water retention, crop yield stability, food security and ecosystem services and more*.

Kat Taylor, [identify her], discussed the research that has been at TomKat Ranch and in conjunction with soil scientists around the state on the benefits of Regenerative Agriculture. Regenerative Agriculture is farming and grazing practices that, among other benefits, reverse climate change by rebuilding soil organic matter and restoring degraded soil biodiversity – resulting in both carbon drawdown and improving the water cycle. It can also have positive impact on crop yield and help BIPOC farmers become more profitable.

Regenerative Agriculture aligns with Governor Newsom's 30 by 30 Executive order, which sets a goal of conserving 30% of California's lands and coastal waters by 2030. Regenerative practices on working lands is crucial for achieving climate and biodiversity goals.

Regenerative Agriculture mitigates climate change and provides plentiful co-benefits, including: beneficial economics, biodiversity, water quality/quantity, food system resilience, racial & social justice, soil health and fertility, climate stability, health & wellness, and animal welfare.

Regenerative practices protect and improve the resilience of conservation and working lands by rehydrating and cooling soils with diverse groundcover and crops. It also improves local water cycles, and addresses and mitigates risk from catastrophic events, such as wildfire, flood and drought. Regenerative agriculture makes working lands a key climate solution. By using just 4 of the 28 regenerative practices suggested by USDA NRCS (prescribed grazing, nitrogen management, cover crops, and no till framing), the United States could meet it 2050 carbon reduction goals. The Carbon Cycle Institute estimates that a 1% increase in the soil organic matter of just California's croplands could sequester 334 MMT CO2e (nearly 12x the expected 2030 GHG reduction shortfall) and increase annual soil water holding capacity by 1.5M acre-feet (Equivalent to the amount of water used by 2.25 million home in California).

In closing, Ms. Taylor suggested the following ways to increase Regenerative Agriculture

in California:

- Scale Recognized USDA NRCS Practices with Public Incentives:
    - Promote USDA NRCS climate-beneficial practices through expanded public incentive programs like the Healthy Soils Program and CA Food for CA Kids Program.
    - Support universal regenerative organic school meals.
    - Set regenerative management goals on public lands.
    - Create and offer crop insurance products that recognize increased resilience and lower volatility of regenerative agricultural practices.
- Scale Recognized USDA NRCS Practices with Private Incentives
    - Support private incentive programs like ecosystem service markets and NGO efforts like Zero Footprint and Growing the Table.
    - Create and promote land lease models that support and reward regenerative agriculture.
    - Incentivize regenerative financial tools (eg better interest rates, higher loan to value, etc.).
    - Streamline compost production regulations to minimize green waste in landfills and grow healthy soils.
    - Update food safety regulations to promote livestock integration in farms and orchards.
- Provide Enhanced and Consistent Access to Professional Technical Assistance to Support Adoption and Innovation

Committee Member's Questions for Dr. Horwath

Assemblymember Mathis – *Do you have any data on microclimates and reduction in temperatures?*

Dr. Horwath – *The data used was developed under flood irrigation techniques – evapotransformation that led to cooling both from plant and soil. Now with the micro irrigation technique – water efficiency is higher and there is less evaporation – plant respirations is the same. Irrigating can cool soil. Nighttime temperatures are higher vs daytime temperatures. Overall, temperatures are warming. Tree crops are also effected by the higher temperatures.*

PUBLIC COMMENTS

K. Rude from Ventura wrote:

> "*Stop allowing the use of Warning and Danger label pesticides in CDFA programs. No more Roundup on HSP grantee farms. It is an antibiotic, destroying soil carbon biology. Included in the Governor's budget is a proposed change to the pesticide mil fees, tiered by toxicity level. The Administration is now thinking in the right direction.*
>
> *Besides organic, investments should support experienced 'Lighthouse Farmers' in other words peer to peer farmer learning. Right now HSP policy excludes the most experienced farmers, because they have already been doing the practices rewarded in Comet Planner before CDFA started paying for them. First invest in organic, and then support community-based learning from those who have been doing it so that their know-how spreads*."

R. Whitehurst from Ventura made the following statement:

> **Let's feed our neighbors vs feeding the world:** *The allusion to feeding the world in the first line of the background document is alarming. "We need to feed the world" has been used to rationalize using excessive chemical fertilizers and spraying toxic pesticides. We can't use organic farming practices because they are less productive (untrue) and we need to feed the world. Who gave us the mandate to feed the world? Certainly not the farmers in the receiving countries who can't cover their cost of production when competing with subsidized imported food. Certainly not the farm workers sickened by high nitrate levels in their drinking water and pesticide toxin load in their bodies. Certainly not the neighbors down wind and downstream from the farms that suffer from dust, polluted air and water. The carbon footprint of the food when it arrives in another country is unacceptable in our world facing climate chaos. The transport of drought limited water in produce going out of our state has to be questioned by our community. The degradation of our community resource of productive fertile land with toxic pesticides and synthetic nitrogen fertilizers is leading us on a downward spiral of ecological, economic and social decay.*
>
> **Five things to grow a plant:** *We need just five things to grow a plant. They are air (CO2), water, sunlight, soil, and a seed or cutting. There are thousands of fertilizers and pesticides sold to farmers to "help" them grow a crop. None of them are necessary. I propose adopting agroecology as the political, economic and social policy of CDFA. We can train farmers to return to their high status of primary producers of energy and value vs being cogs in the gear of industrial*

agriculture, mere consumers of Ag inputs, tractor drivers, and processors of animals.

Biologically based farming: *I am a bug farmer. I produce beneficial insects and help farmers control pests using the principles of biological control, in other words, working with nature. As a pest control advisor, I know that pests can be managed using biological methods and focusing on plant health – biologically focused IPM or ecologically based pest management (EBPM). It is time to drop the charade that we need chemicals to produce our food, fiber, medicine. After WW2 we hammered our swards into plowshares – we converted nerve gas to pesticide and nitrate for explosives to nitrate fertilizer. We now have a clear vision of the destruction of our soil, degraded rural communities, poor quality food, and poor health of our population, from the use of chemical fertilizers and pesticides in an industrial agriculture. We now face an existential imperative to rapidly transition to a biologically based agriculture (call it what you may) that is socially just, builds community, and increases life in the soil every year. Let's start building to a future that is survivable.*

J. Detrick of Ventura made the following statement:

We wholeheartedly welcome this hearing and the excellent staff report. We use the term agroecology (not mentioned) as a way to look at all of these aspects as a system. It includes the environmental farming practices mentioned, such as for Integrated Pest management that starts with pest and disease prevention. And incentives for low emissions equipment. CARB must establish uniform statewide incentives for electric tractors now.

It includes the growing of above and below ground biodiversity -- Chico State is a wonderful resource. It encompasses economic sustainability and grower and farmworker well-being that requires markets. The organic standard is the best tool now to connect those farmers to people who want a baseline of no synthetic chemicals and efforts toward biodiversity.

Everyone on or near farms and consuming products from farms wants to be safe from toxic inputs and dust. A regenerative system excludes toxic inputs and mitigates dust by ensuring soil is covered and not tilled. We see no pathway to scale these environmental benefits to 30% of farms without scaling organic production by helping build markets for organic with a similar goal of at least 30%.

Denmark is advancing environmental agriculture by investing in organic. The nation requires that public kitchens buy 60% organic food. Even if only our schools had to buy 30% organic, this would build momentum for farmers to scale the development of regenerative farming systems. Organic certification and inspection in Denmark is free. Their organic extension experts give one day of consultation for free for farmers thinking about going organic. It is ridiculous to charge organic farmers extra to develop the kind of farming we all want while we subsidize and help market and export products from farms that degrade and pollute.

Portion of submitted testimony from the Natural Resource Defense Council:

"*Science show us that agriculture can and must be a part of the climate solution. California has listened to the science by investing in programs like the Heathy Soils Initiative, the Biologically Integrated Farming Systems Program, Sustainable Lands Conservation Program, and the State Water Efficiency and Enhancement Program. These programs incentivize farmers, rancher and private landowners to adopt agricultural practices that reduce greenhouse gas emission. Beyond these program, regenerative and organic farming practice – like cover cropping, continuous cover, planting diverse species, no-till and a reintegration of animals into cropland - sequester carbon, increase water retention and infiltration, reduce the use of chemical inputs, increase pollinator habitats, and save farmers and rancher money. These practices are way of farming in harmony with nature that helps restore and regenerate ecosystems. Incentivizing these practices is only the first step towards transformative systematic agriculture changes."* [NRDC Letter]

POLICY CONSIDERATIONS

Scale up already existing voluntary incentive programs funding.

All of the programs within the Office of Environmental Farming & Innovation (HSP, SWEEP, AMMP and DDRP) are oversubscribed, some up to 300%. The limits on the programs are due to the amount of funding available from the Greenhouse Gas Reduction Fund (GGRF). To scale up these programs, the state will need to increase GGRF funding to the programs or find other sources of funding. This could include onetime funding from bonds, public/private partnership funds or looking to the federal government for additional funding.

In the Governor's proposed budget, HSP will receive $15 million for each of the next two years, and SWEEP will receive $20 million for each of the same years. While this is

helpful, there will still be a greater need for these programs than there are funds. AB 1500 (E. Garcia) is a climate resiliency bond that, among other things, will give CDFA $150 million for various CDFA programs. SB 45 (Portantino) is proposing $90 million for these same programs. At the current funding level, these bonds could fund CDFA's programs for 3 to 6 years. [ALSO MENTION OUR BOND – AB 125.]

Create new incentives to encourage greater transition to organics.

California has more than twice as many certified organic farms than any other state, according to the most recent USDA Agricultural Census numbers. The Census shows that 3,335, or nearly 4.7%, of California's farms are certified organic.

Transition from conventional to organic farming creates many challenges; it takes at least three years to become certified organic. Organic or transitioning farmers cannot use synthetic fertilizers and can only use approved pesticides. Such products are often more expensive and less familiar to the farmer. During this time, the farmer must comply with organic growing requirements but cannot sell products as organic. These financial challenges can discourage many farmers from converting to organic practices.

As organic practices tie in very closely to many of California's climate reduction goals, the state could develop a fund to help farmers during the transition to organics. Furthermore, use of the states purchasing power to buy more California organic products would provide further financial incentive to transition to organics.

Increase technical assistance by funding UC Co-operative Extension, local resource conservation districts and Ag related non-governmental organizations.

Several of the panelists mentioned the help received from technical assistance advisors in working on CDFA's Climate Smart Ag programs.

Farmers, particularly first-generation farmers, rely on technical assistance from government agencies, non-profit service providers, and other farmers to help them learn best practices. Farmers reported, however, that the current state of technical assistance is limited in availability, scope, and cultural relevance. Small and moderately-scaled producers, including many women and socially disadvantaged farmers and ranchers, who cannot afford consultants, are especially in need of greater support to improve their participation in CDFA's Climate Smart Agriculture programs.

Improved delivery of technical assistance to farmers and ranchers, including outreach and education, project design, grant application assistance, and project implementation, ensure that a greater diversity of producers successfully participate in the Climate Smart

Agriculture programs. Increased technical assistance for farmers and ranchers will also improve the overall impact of the Climate Smart Agriculture programs.

With the passage of AB 2377 (Irwin) in 2018 at least 5% of the budgets from the three Climate Smart Agriculture programs administered by CDFA—Healthy Soils Program, SWEEP and AMMP—are earmarked specifically for technical assistance grants, including 25% set-aside for socially disadvantaged farmers. If California scales up Climate Smart Agriculture programs, there will be a need for more technical assistance, especially for small and diverse farmers and ranchers.

Work on better tools to measure carbon sequestration and set up a carbon market for farmers and encourage a carbon market for farming.

Both Dr. Horwath and Kat Taylor mentioned the need to measure carbon sequestration accurately. Dr. Horwath stated, "Sequestration verification is difficult and expensive and the variability is very large." Accurate carbon sequestration measuring tools for agriculture could help lead to access to carbon offset markets for farmers.

For farmers and ranchers to provide carbon offsets for greenhouse gas emitters, farmers and ranchers must be willing to make long-term, or even permanent, changes in not only practices but perhaps whole systems of production. These changes also need to provide verifiable changes that result in true offsets of greenhouse gas emissions. The issues of verifiability and permanence are critical to the success of agriculture's role in the cap-and trade system and the ultimate reduction of greenhouse gas emissions.

President Joe Biden has said he plans to support regenerative farming as a key tool in the fight against climate change. He plans to do that through a series of solutions. Notably, his administration has proposed a carbon market. At its simplest, carbon markets would pay farmers for the carbon they sequester in their soil.

The state could help fund research for measuring agriculture carbon sequestration, in order to open up a more incentives for farmers to move towards carbon natural farming.