

**CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE (CDFA)
ENVIRONMENTAL FARMING ACT SCIENCE ADVISORY PANEL**

The Lau Family Meat Processing Center Conference Room
California Polytechnic State University
1 Grand Avenue
Stenner Creek Road
San Luis Obispo, CA 93407
October 17, 2019

MEETING MINUTES

Panel Member in Attendance

Jocelyn Bridson, Rio Farms (Chair)
Don Cameron, Terranova Ranch (Member)
Michelle Buffington, CalEPA, CARB (Member)
Thomas Hedt, USDA NRCS (Subject Matter Expert)
Kealii Bright, Department of Conservation (Member)
Scott Couch, CalEPA, State Water Board, (Member)
Jeff Dlott, Sure Harvest (Co-Chair and Member)
Judith Redmond, Full Belly Farm (Member)
Vicky Dawley, Tehama RCD (Member)

State Agency Staff and Presenters

Amrith Gunasekara, Ph.D., CDFA
Carolyn Cook, M.Sc., CDFA
Scott Weeks, CDFA
Michael Wolff, Ph.D., CDFA
Geetika Joshi, Ph.D., CDFA
Andrew Whitaker, Ph.D., CDFA
Thea Rittenhouse, CDFA
Joyce Mansfield, CDFA
Benjamin Nicholson, MBA, CARB

AGENDA ITEM 1 – Introductions

The meeting was called to order at 10:05 AM by Chair Bridson. Panel members introduced themselves. Present at the meeting were all the members noted above under “Panel Members in Attendance.” Two new representatives were in attendance. They were Michelle Buffington representing the California Air Resources Board and Kealli Bright from the California Resources Agency. Chair Bridson reviewed the meeting agenda and introduced Joyce Mansfield who is the Public Affairs Information Officer for the Office of Environmental Farming and Innovation (OEFI) at CDFA.

AGENDA ITEM 2 – Minutes

Chair Bridson introduced the July 18, 2019 meeting minutes. Member Cameron moved the motion to approve minutes. The motion was seconded by Member Scott Couch. The Panel approved the minutes.

AGENDA ITEM 3 – State Water Efficiency and Enhancement Program (SWEEP) Update
Mr. Scott Weeks of OEFI provided program updates on the CDFA OEFI State Water Efficiency Enhancement Program (SWEEP). He provided background information on Proposition 68, the funding source for the most recent solicitation of SWEEP grants. The solicitation period for applications was announced on December 28, 2018 and closed on March 8, 2019. Following administrative and technical reviews, 120 projects were selected for awards in 2019.

Mr. Weeks briefly explained the project types funded by SWEEP, such as moisture sensors, drip-irrigation and micro-irrigation systems. He provided details on the pre-project consultation effort for the 120 projects. 111 projects accepted the award after the pre-project consultation totaling \$9.5 million. Approximately \$3.2 million and 37 projects benefited Severely Disadvantaged Communities as defined by Proposition 68. The 111 projects collectively reduce 36,000 MTCO_{2e} of greenhouse gases over 10 years and would result in 29 billion gallons of water savings over 10 years.

Member Redmond requested clarification on the average grant size for SWEEP in the most recent round. Mr. Weeks noted the average grant amount was \$85,000 per project. He provided the timeline for the second solicitation for 2019.

Member Buffington asked if CDFA provided technical assistance to SWEEP applicants. Mr. Weeks responded that technical assistance was provided to SWEEP applicants. Chair Bridson requested clarification if projects must start their projects by June 15, 2020 and if growers could purchase equipment before that date. It was clarified that no expenses would be reimbursed by the grant should costs be incurred prior to June 15, 2020.

Mr. Weeks noted that 3 Workshops for application assistance would be provided by CDFA in October 2019; located in Glenn, Stanislaus and Kern counties. Additionally, 34 technical assistance providers (TAPs) were available across the State as a resource to SWEEP applicants. Member Bright asked to clarify the gradient of colors on the TAP map. Mr. Weeks explained that lighter shades represent one TAP per county, while darker shades implied greater number of TAPs in the respective county. Member Cameron asked if a list of TAPs be available. Mr. Weeks responded such a list would be made available on the CDFA SWEEP website when the solicitation is posted.

Mr. Weeks provided a demonstration of the application portal, noting that previous round applications could be accessed by applicants and updated based on feedback received by technical reviewers. Member Couch asked to clarify if the process would still be competitive and if a grower correcting their mistakes would guarantee them funding. Mr. Weeks replied that SWEEP is a highly competitive program and all updated applications

would still need to go through the full technical review process.

Member Buffington suggested potential integration of maps for California Climate Investments and Proposition 68 funded projects by CDFA as this would address the issue of multiple funding sources being experienced by multiple agencies. Dr. Gunasekara commented that CDFA would need to evaluate the feasibility of this request.

Chair Bridson questioned if the available dollars for SWEEP should be \$10.5 million after \$9.5 million had been awarded out of the total funding of \$20 million. Mr. Weeks clarified that there are additional costs from total funding that would also be accounted, such as CDFA administrative costs, bond expenses, technical assistance funding, technical review costs, and, verification and monitoring costs. Member Cameron asked if the program was still oversubscribed and Mr. Weeks responded that in the most recent round of funding, SWEEP was oversubscribed by 300%.

AGENDA ITEM 4 – Healthy Soils Program (HSP) August 23, 2019 Workshop

Ms. Thea Rittenhouse, Farm Equity Advisor at CDFA, presented an update on the Public Listening Session for HSP held in August 2019. Purpose of this session was for stakeholders to discuss the big picture perspectives on the HSP. A broader discussion on programmatic goals and outcomes took place. This session was attended by 122 webinar and 21 in-person attendees, which included farmers, agriculture industry representatives, universities, non-profit organizations, State and local government, Resource Conservation Districts. Major topics covered were HSP data and metrics, new ideas for HSP practices, HSP strategic planning and engagement with socially disadvantaged farmers, small-scale and beginning and limited resource farmers.

Member Buffington noted that there were several lessons learned in the workshop and asked how CDFA intended to share this information with other agencies so their programs could also benefit from these findings. Ms. Rittenhouse noted that this workshop was a first step and acknowledged that arranging information-sharing meetings could be a potential step for CDFA.

Member Cameron asked if CDFA will be prioritizing and ranking this feedback and building them into program priorities. Dr. Gunasekara replied that comments could be categorized into two levels – policy and programmatic. While policy level comments were being deliberated by CDFA Executive Leadership, several of the program level comments were being addressed by OEFI.

Chair Bridson suggested that some of the questions relating to program administration process, such as reimbursements should be made into a Q and A resource for grant recipients. She further noted that integration and quantification of environmental co-benefits with GHG benefits is key for the HSP and urged CDFA to partner with CARB, Natural Resources Agency and the State Water Boards to evaluate the data collection and quantification of various air and water quality benefits, and to make this a goal for HSP for the next decade. Dr. Gunasekara acknowledged this need and noted that the CDFA is working with CARB to quantify some co-benefits and integration of HSP projects into the CDFA Ecosystem Services Database. Member Hedt also noted that EQIP is

working on more open-ended application periods which may help better align with HSP in the future.

Member Cameron appreciated CDFA's responsiveness to the public comments. Co-chair Dlott echoed comments made on the quantification of Ecosystem Services and noted that there is a spectrum of services for which metrics are needed.

Member Couch noted that the State Water Boards were starting to look into the status of water quality research and recently established a contract with the University of California, Davis, to study variables in terms of leaching from compost piles. He acknowledged that work on nitrogen balance (applied versus removed) needed longer-term efforts. Chair Bridson noted that farmers are eager to learn what level of nitrogen removal credits can be received for practices such as cover crop planting during winter and compost application; these are currently not quantified.

AGENDA ITEM 5 – HSP Program Updates and Public Comment Period

Dr. Andrew Whitaker of OEFI provided an update on the 2018 solicitation and 2020 funding/program timeline. He summarized the funding sources for the 2018 round and noted that 188 incentives and 21 demonstration applications have been funded.

Dr. Whitaker shared the current program process for the \$28 million in funding appropriated to CDFA for the HSP in fiscal year 2019-20 and noted that a public comment period on the program framework was ongoing until October 23, 2019. A second public comment period on the draft program solicitation documents (Request for Grant Applications or the RGA) would be conducted in late 2019. Public listening sessions were conducted in Orland, Fresno and Sacramento in September 2019. Key public comments were shared with the panel members. Dr. Whitaker also presented the 2020 HSP timeline.

Member Couch requested to clarify the difference between Type A and Type B Demonstration Projects. Dr. Whitaker explained that Type A projects included a mandatory GHG data collection component in addition to outreach and demonstration of HSP practices, while Type B did not. Therefore, the maximum grant award for Type A projects was greater (\$250,000) than Type B (\$100,000).

Member Bright asked if the 2018 projects were widely distributed across the State. Dr. Whitaker responds that the projects were distributed across 46 counties in California. Dr. Gunasekara added that the program incentive over 20 different practices that provided many options for different regions.

Chair Bridson asked what CDFA planned to do with the soil sample data as the soil organic matter (SOM) levels may not show statistically significant changes within a three-year time-frame. Dr. Whitaker responded that the first round of funded projects are expected to be complete in 2020, and would give CDFA the first opportunity to analyze 3-years' SOM data. The decision regarding next steps would be taken after this data analysis was complete.

Member Buffington asked if the program timelines were based on encumbrance and liquidation timelines for the appropriated funds. Dr. Gunasekara responded that the encumbrance and liquidation deadlines totaled 4 years for CDFA, of which approximately 3 years are intended for implementation of funded projects, which coincides with liquidation deadline. CDFA cannot require data collection beyond the 3-year grant, however, farmers and ranchers are expected to be able to discern if they would like to adopt HSP practices in the long-term after the 3-year incentivized trial period through the HSP.

Chair Bridson suggested exploring solutions such as a small grant to pay for soil tests through 5 or 10 years for a sub-set of HSP recipients that may be interested in participating. She noted that SOM content is not scientifically likely to show significant increases within a three-year timeframe and should not be taken as the sole metric to demonstrate program success, recognizing that soil health takes decades to build, and is dependent upon multiple variables including individual practice types and sampling schedule. Member Redmond noted that many farmers may already be collecting long-term SOM data. Co-chair Dlott further questioned if long-term soil health data could be collected by funded demonstration Projects, and if an organization could be funded to establish new demonstration sites, and also continue sampling on previously funded sites. Dr. Gunasekara responded that demonstration projects were not barred from re-applying for new fields, although CDFA was mindful of striking balance in distribution of funds to previously funded applicants and new applicants.

Member Redmond commented on the difficulty in getting attendees to participate in field days and asked if the Technical Assistance (TA) Grant Program could include additional assistance to demonstration grant recipients to get more attendees to visit their farms on field days. Dr. Gunasekara responded that the TA grant program is focused on Incentive Program recipients. Dr. Joshi noted that in many cases, TA grantees and HSP Demonstration Projects grantees are same organizations and there is a need for careful distinction of awarded funds and their utilization for their intended purposes. Dr. Gunasekara further noted that CDFA would evaluate field day attendance data to determine how many grant recipients were able to meet program requirements, and that grant recipients were strongly encouraged to work with other organizations to maximize attendance. Chair Bridson and Member Cameron suggested that CDFA should consider providing a media kit with some slides or other relevant materials covering basic programmatic information for use by Demonstration Projects recipients at conferences and other meetings. Co-Chair Dlott echoed comments by Member Redmond on better ways to increase participation rather than lowering program requirements, further noting that this presented a long-term opportunity for social science research. Research could potentially evaluate outreach data to determine effectiveness and create baselines of most effective outreach. Chair Bridson suggested follow-up surveys to learn what worked best.

Member Redmond mentioned that low prices for compost application practice was a concern. Individual farmers have noted that the funds supplement the costs of the projects, but own investment is needed in most cases. Dr. Gunasekara noted that cost for compost application practice was increased from \$35/ton to \$50/ton from 2017 to 2018 round of HSP. Since the project boundary for estimation of GHG benefits is limited to the farm, the

boundary for project costs needed to be consistent and therefore, cost of transportation of compost to the farm would be outside of the project boundary. Alternatively, the GHG emissions of transportation would need to be considered for the practice, which may overshadow the carbon sequestration benefits of compost application. Compost application remained the most popular practice requested by applicants in terms of both grant monies as well as acres covered.

Chair Bridson invited public comments for Items 1-5.

PUBLIC COMMENTS FOR ITEMS 1-5

In-person Attendees:

Josette Lewis of the Almond Board of California noted that methods to determine longer term trend data of soil carbon was needed and the Specialty Crop Block Grant Program provided an opportunity to do so. She noted that in some cases, industry funding can be leveraged for such studies, and the Almond Board of California has previously funded research studies.

Brian Koloji of Black Swan LLC, a project manager for a funded SWEEP project in Kern County expressed appreciation for climate smart agriculture work in California. He noted that there were no TA providers in Kern County, although they received assistance from UCCE Kern County and other business sources. He suggested that information from the CDFA Grants Awards Procedures should be included in application assistance workshops.

Remote Attendees:

Dr. Pam Krone, an HSP Demonstration Project awardee noted that working with their local RCD, NRCS and UCCE had proved helpful in conducting outreach. She suggested that multiple projects located in the same region should be allowed to collaborate on field days and outreach events to ensure consistent messaging and not over-burdening participating farmers and ranchers with too many events to attend.

Rex Dufour of National Center of Appropriate Technology expressed support for WOR. He noted that this practice will benefit the large acreage of tree perennial crops in California by increasing carbon sequestration and soil quality.

AGENDA ITEM 6 – Technical Assistance Program

Ms. Carolyn Cook of OEFI provided a background of technical assistance at CDFA, which started with USDA funding in 2016, followed by funding from the Strategic Growth Council. She noted that the efforts for technical assistance had evolved rapidly in the past years, and the passing of AB 2377 in 2018 was the latest development. As mandated by this bill, CDFA implemented the Climate Smart Agriculture Technical Assistance Grants in 2019. She provided the program timeline and shared information regarding the online application platform. The program received 26 applicants requesting funding for HSP TA, 1 for AMMP TA and 8 for both AMMP and HSP TA. The applications were currently in review period with awards announcement expected in November 2019. In addition, Climate Smart Agriculture Community Education Specialists had also been appointed at various county

offices of the UC Cooperative Extension to assist applicants. Ms. Cook presented an analysis of the 2018 TA for SWEEP, AMMP and HSP.

Member Dawley noted that SWEEP and AMMP both have vendors as a resource to applicants. This is less common in HSP, however, many agriculture industry representatives were present at the August 23, 2019 HSP Listening Session. She requested to know who they represented. Ms. Rittenhouse responded that most attendees represented specific commodity boards, and companies making biochar and compost, and seed companies.

Member Redmond asked if the EFA-SAP should be hearing more information on the AMMP and if there are commonalities between comments for AMMP and HSP. Dr. Joshi provided context regarding the AMMP, noting that unlike the HSP practices, AMMP practices were focused on reducing methane emissions from manure (rather than carbon sequestration). In the past EFA-SAP meetings, information on the AMMP had been provided to the Panel upon Panel Members' request. However, since the EFA-SAP members do not have expertise in livestock agriculture, programmatic decisions for the AMMP were instead under the purview of the AMMP Technical Advisory Committee which consists of State and Federal Agency subject matter experts.

Chair Bridson noted that it appeared that there may be a reduced number of TA applicants and grants available going forward. Ms. Cook clarified that the previous award process for TAPs was a brief application awarded on a first-come-first-serve basis. The new application is more rigorous and funds a greater range of TA activities. Therefore, the lower number did not represent a lower interest in TA but rather an ability to select organizations that have the capacity and expertise to provide more robust TA.

Chair Bridson inquired what the impact of losing 15-20 TAPs would be, and if it would affect specific regions. Ms. Cook responded that providing TA in different parts of the State was part of the scoring criteria and CDFA expected being able to award applicants that covered greater number of, and, larger regions.

AGENDA ITEM 7 – Whole Orchard Recycling

Mr. Benjamin Nicholson of the California Air Resources Board (CARB) gave a presentation which included the background of how GHG benefits achieved from implementation of specific practices are quantified using biogeochemical models. The HSP uses a version of the USDA's Comet-Planner tool which is based on the DayCent model. CARB uses the Denitrification Decomposition (DNDC) model for quantification of GHGs and has historically focused on NO_x and N₂O emissions.

Dr. Michael Wolff of CDFA subsequently provided background of Whole Orchard Recycling (WOR) modeling work done using the DNDC model. He provided a background of WOR implementation in California, noting that there is an increased tree biomass available in California through forests, and orchards, especially since biomass co-generation facilities are no longer available. In this practice, orchard trees are chipped into 2 inch – 4 inch chips and incorporated into soil up to 6 inches. This practice results in

carbon sequestration since the gradual breakdown of wood serves as a carbon source for soil microbes. Co-benefits include improved water retention, aeration, improved soil structure, dissolved organic carbon in the deep soil profile, lowered leaching and improved nutrient retention. He presented data and results from the research conducted by the Kearny Agricultural Research Center (University of California). Data showed annual increases in SOC in 2010, and in 2019 up to 4.5 feet in the soil. Dr. Wolff shared results from conducting DNDC model runs showing that model projections could be successfully with available field data. He noted that the model projections were conservative relative to field data, and methane emissions from the practice were negligible. Dr. Wolff also presented the co-benefits and proposed HSP implementation requirements for WOR.

Chair Bridson asked if the WOR study cited in the report had been replicated elsewhere. Dr. Wolff noted that WOR had only been studied in the California Central Valley, however, studies on mulching with similar carbon-sequestration mechanism were widely available.

Member Cameron asked to clarify the type of irrigation system used in the study; Dr. Wolff replied that the study employed micro irrigation. Member Hedt asked if the study results accounted for soil carbon sequestration only, or if they included above-ground biomass, and if WOR could be compared to composting of wood chips. Dr. Wolff noted that the report only included soil carbon sequestration, and published literature was not available comparing WOR to composting of wood chips.

Member Cameron inquired if tree pruning's and shed leaves that may be incorporated into the soil were included in the modeling. Dr. Wolff and Dr. Gunasekara responded that these parameters were not included as this was not a common practice, and that the focus of WOR was on handling of dead trees.

Co-chair Dlott asked if regional variation in emission factors were driven by precipitation differences. Dr. Wolff responded that while precipitation was a factor, soil type was a stronger driver of these differences.

Chair Bridson asked if N-leaching was measured in the WOR research study and if ability of wood chips or almond hulls to tie up N leaching could be a benefit for water quality improvements. Dr. Wolff noted that while N-leaching was not measured in the study, this may be a potential benefit in the first few years where an N-immobilization effect from wood chops addition can be observed.

Member Cameron asked if the practice would be allowable to be implemented on different fields within an APN. Dr. Gunasekara responded that CDFG had received public comments regarding this concept and it was being evaluated for all HSP practices in addition to WOR.

Co-chair Dlott asked if biological effects of WOR on tree growth were considered. Dr. Gunasekara noted that this aspect had not been included in modeling.

Member Couch asked if the data on soil water retention and pathogen reduction were available. Dr. Wolff responded in the affirmative.

Member Dawley asked what the changes to this practice in recent times were that make it feasible for farmers to implement widely. Dr. Wolff noted that initially non-portable tub grinders were used, however, the new grinders are portable and produce a consistent size of wood chips, making them an attractive option for orchards.

Co-Chair Dlott asked if this practice would be incentivized by the HSP for all tree crops or specifically for almonds. Dr. Gunasekara noted that CDFA will incentivize this practice for all tree crops as the potential for carbon sequestration through WOR is not limited to almond trees.

Mr. Nicholson of CARB closed the presentation by sharing that CARB will be updating their GHG quantification methodology (QM) to include WOR and accept public comments on the QM. Ben N closed the presentation by sharing CARB will be updating their QM and accepting public comments. CDFA announced that public comments on the WOR Report would be accepted until November 8, 2019.

Member Cameron asked if the work on inclusion of WOR would be completed to allow including the practice for 2020 HSP. Dr. Gunasekara noted that CDFA aimed to include the practice for the next round of HSP in 2020. Member Cameron further asked if the carbon levels of other trees such as citrus or pistachios were very different from almonds. Dr. Wolff responded that there is a narrow range of carbon level for different tree species, and it is not a significant driver of the model outcomes.

Chair Bridson asked if the proposed practice implementation requirements could be expanded to include re-planting with annual crops rather than orchard trees to provide potential benefits for water quality protection. Dr. Wolff responded that this would need to be modeled, as factors such as tillage would come into play. Chair Bridson asked if the 30-60 tons/acre wood chips for application, as noted in the studies cited, should be a requirement for WOR implementation, and if there is a potential for access nutrient buildup when combined with compost. Dr. Gunasekara responded that mature orchards can provide greater amounts of wood chips than this range, and this can be ensured by limiting off-site movement of chipped trees. In practical terms, measuring of tons of wood chips prior to application would be a challenge. He further added that since the practice implementation requirements proposed that WOR be implemented once in 10 years, nutrient overload was unlikely. Member Bright noted that WOR presented a great environmentally beneficial alternative to the business-as-usual scenario of burning of orchard trees and provided air-quality benefits, noting its importance in California in the light of excess tree biomass challenges.

AGENDA ITEM 8 – Public Comments

In-person attendees:

Mr. Brian Koloji of Black Swan LLC expressed support for WOR.

Ms. Josette Lewis of the Almond Board of California appreciated the analysis conducted by CDFA and CARB. She noted that 25,000 – 40,000 acres of orchards are terminated in California at the end of their life span and generate up to 5 million pounds of tree biomass by 2025 per estimates by the Almond Alliance. There was need to find a sustainable

solution. She noted that many of the field sites in the published and ongoing WOR studies are funded by the Almond Board of California. She expressed the support of the Almond Board of California to include this practice under the HSP Incentives Program, noting that CDFA should allow the practice to be implemented on fields meant to be fallowed, which is likely to occur as a result of implementation of the Sustainable Groundwater Management Act (SGMA) to enable groundwater recharge.

Chair Bridson called for the Panel to address the inclusion of WOR in the HSP Incentives Program, an action item. Member Cameron introduced the motion to include WOR. Co-Chair Dlott proposed an amendment to allow the practice to be implemented on fallow lands in addition to re-planted orchards. Upon discussion, Member Cameron introduced the motion to move forward with the inclusion of WOR in consideration of minor comments received until November 8, 2019 and for CDFA to evaluate the inclusion of fallowed lands and share information with the Panel at the next January 2020 EFA-SAP meeting. The motion was seconded by Member Redmond and passed unanimously by the Panel.

Update on CDFA's Public Outreach Activities

Ms. Joyce Mansfield of CDFA introduced herself as the CDFA Public Information Officer for OEFI and shared that CDFA was planning to celebrate Healthy Soils Week in December 2019 to engage with the Governor's Office and the Legislature, in addition to California citizens. She noted that she will be working with OEFI staff to update program outreach materials, infographics, coordinating Spanish translation efforts, OEFI newsletter and assisting with outreach and media kit preparation for use by a wide group of speakers across diverse platforms. She would also aim to ensure OEFI presence at meetings and conferences of significance, such as the World Ag Expo. She shared the handle for new OEFI Twitter account, @CDFAClimateNews and YouTube playlist on CDFA YouTube Channel featuring videos of OEFI grant recipients with the Panel. Chair Bridson appreciated her efforts and suggested that videos be made at HSP Demonstration Projects field days and showcasing cumulative data from three years of funded projects.

AGENDA ITEM 9 – Next Meeting and Location

Dr. Gunasekara announced that the next meeting of the Panel would be on January 16, 2020 in Sacramento. Chair Bridson expressed gratitude to CalPoly San Luis Obispo for hosting the meeting. Meeting was adjourned at 2:40 p.m. by Chair Bridson.

Respectfully submitted by:



Amrith Gunasekara, Ph.D.
Liaison to the Science Advisory Panel