CCOF

Advancing organic agriculture through certification, education, advocacy, and promotion.

August 2, 2021

California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: CCOF Comment on 2022 Scoping Plan Update Technical Workshop on Natural and Working Lands

Dear California Air Resources Board:

California Certified Organic Farmers (CCOF) appreciates the opportunity to comment on the 2022 Scoping Plan Update Technical Workshop on Natural and Working Lands (NWL) hosted by the California Air Resources Board (CARB).

CCOF is a nonprofit organization that advances organic agriculture through certification, education, and advocacy. The 3,000 organic farms and businesses we represent in California are on the frontline of climate change. Drought and extreme heat are disrupting crop and livestock production, wildfires are destroying fields and barns, while smoke and ash are contaminating crops and creating unsafe working conditions. As farmers bear the burden of growing food under extreme conditions, farmer-led solutions should be incorporated into the state's climate strategies.

CCOF recommends the NWL strategy set a target of transitioning 30 percent of California's agricultural acreage to organic by 2030. While currently only 2.59 million acres, or roughly 10 percent, of agricultural land in California is under organic management,[1] organic agriculture is the only food production system capable of achieving carbon neutrality with studies showing organic farms to be net sinks of greenhouse gases while non-organic farms are net emitters.[2,3] Transitioning acreage to organic management not only contributes to carbon neutrality, but also promotes a holistic approach to farming with multiple co-benefits and is farmer-led.

Organic is grounded in science and contributes to carbon neutrality

CCOF commends CARB's principle to base policy targets on science and data.[4] Thirty years of peer-reviewed research demonstrates that organic farms sequester carbon and reduce greenhouse gas emissions. Setting a target of transitioning land to organic production is a climate solution grounded in science.

- A UC Davis Long-Term Research on Agricultural Systems (LTRAS) study found that after 10 years, organic systems resulted in 14 times the rate of carbon sequestration as the conventional system.[5] After 20 years, organically managed soils sequestered significantly more soil organic carbon than conventionally managed soils.[6]

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[1] California Department of Food and Agriculture, California Agricultural Statistics Review 2019-2020, Retrieved from California Agricultural Statistics Review 2019-2020.
[2] De Gryze, S., Wolf, A., Kaffka, S. R., Mitchell, J., Rolston, D. E., Temple, . . . Six, J. (2010). Simulating greenhouse gas budgets of four California cropping systems under conventional and alternative management. *Ecological Applications,* 20(7), 1805-1819.
[3] Cavigelli, M., Mirsky, S., Teasdale, J., Spargo, J., & Doran, J. (2013). Organic grain cropping systems to enhance ecosystem services. *Renewable Agriculture and Food Systems*, 28(2), 145-159.
[4] California Air Resources Board, 2022 Scoping Plan Update Technical Workshop on Natural and Working Lands, July 2021. Retrieved from 2022 Scoping Plan Update, Technical Workshop for Natural and Working Lands.
[5] Kong, A. Y., Six, J., Bryant, D. C., Denison, R. F., & Van Kessel, C. (2005). The relationship between carbon input, aggregation, and soil organic carbon stabilization in sustainable cropping systems. *Soil Sci Soc Am J.*, 69, 1078-1085.
[6] Wolf, K., Herrera, I., Tomich, T. P., & Scow, K. (2017). Long-term agricultural experiments inform the development of climate-smart agricultural practices. *California Agriculture, 71,* 120-124.

- UC Davis's LTRAS comparison study shows that after 13 years under organic management, organic plots under conservation and standard tillage stored 131 percent and 135 percent more carbon dioxide equivalents, respectively, than the corresponding conventional plots, which were net emitters of greenhouse gases.[7]
- University of California's in-depth 2018 review of climate science recommends practices implemented by organic farmers, such as crop diversification and cover cropping, because these practices lead to healthy carbon-sequestering soils.[8]
- UC Davis researchers found that organic crop and livestock production practices build long-term soil fertility, creating healthy soils that can store increased levels of nutrients, including carbon.[9]
- All organic producers must graze ruminant animals on pasture for a minimum of 120 days per year[10] while non-organic ruminants may be raised in confined feeding operations. UC Davis scientists found that dairy cow and heifer manure on pasture emits minimal GHGs compared to lagoon storage, liquid slurry storage, and dry lot manure, which together account for 98 percent of dairy manure methane emissions in California.[11]
- Nationally, the largest study comparing organic and conventional soils in 48 states found that organic farms have 13 percent higher soil organic matter than conventional farms. Significantly higher soil organic matter allows organic soils to store more carbon than non-organic soils and provides numerous other climate benefits.[12]
- The Rodale Farming Systems Trial, which is the longest running organic comparison study in the United States, documented that after 22 years, soil organic carbon increased by 15-28 percent in organically managed soils compared to 9 percent in the conventionally managed soils.[13]
- Globally, peer-reviewed evidence shows that organically managed soils hold more carbon and have higher rates of carbon sequestration than soil from non-organic systems.[14]

Organic is holistic with multiple co-benefits

CCOF commends CARB's focus on ecosystem benefits and impacts as a whole.[15] Organic agriculture is a holistic approach to farming that protects public health, promotes biodiversity, and feeds communities. By promoting multiple co-benefits, transitioning land to organic aligns with Executive Order N-82-20, which compels CARB and other state agencies to "[p]romote healthy lands that provide multiple benefits including improved air quality, reliable water supply, thriving communities, and economic stability."[16]

Public Health

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[7] De Gryze, S., Wolf, A., Kaffka, S. R., Mitchell, J., Rolston, D. E., Temple, . . . Six, J. (2010). Simulating greenhouse gas budgets of four California cropping systems under conventional and alternative management. *Ecological Applications, 20*(7), 1805-1819.

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Agronomy, 8(3), 25.

[9] Suddick, E. C., Scow, K. M., Horwath, W. R., Jackson, L. E., Smart, D. R., Mitchell, J., . . . Six, J. (2010). The potential for California agricultural crop soils to reduce greenhouse gas emissions: a holistic evaluation. *Advances in Agronomy, 107,* 123-162.

[10] Rinehart, L., & Baier, Ann. (2011). Pasture for organic livestock: understanding and implementing the national organic program (NOP) pasture rule. *U.S. Department of Agriculture, Agricultural Marketing Service.* Retrieved from https://www.ams.usda.gov/sites/default/files/media/NOP UnderstandingOrganicPastureRule.pdf.

[11] Kaffka, S., Barzhee, T., El-Mashad, H., Williams, R., Zicari, S., & Zhang, R. (2016). Evaluation of dairy manure management practices for greenhouse gas emissions mitigation in California. Final Technical Report to the State of California Air Resources Board

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[15] California Air Resources Board, 2022 Scoping Plan Update Technical Workshop on Natural and Working Lands, July 2021. Retrieved from 2022 Scoping Plan Update, Technical Workshop for Natural and Working Lands.

[16] Executive Order N-82-20 (6)(a).

- Organic farmers grow crops without synthetic pesticides.[17] By prohibiting synthetic pesticides, organic agriculture contributes to more equitable health outcomes. In California, Latino children are 91 percent more likely than White children to attend schools with the highest pesticide exposure.[18] This exposure is linked with increased cognitive problems such as attention deficit disorder,[19] lower memory and intelligence,[20] and impaired neurobehavioral development,[21] as well as enhanced risk of diabetes[22] and asthma.[23]
- Meta-analyses consistently find that organic crops have higher levels of vitamins, minerals, and antioxidants [24,25,26,27,28,29] that are important for human health and significantly lower levels of pesticide residues than conventional foods.[30]
- Use of antibiotics and hormones is prohibited in organic production.[31] Studies show that organic farms harbor fewer antibiotic resistant microbes than their conventional counterparts[32,33] and that organic meats are less likely to be contaminated with antibiotic resistant bacteria than conventional meat products.[34,35,36]
- Organic farmers must use practices that maintain or improve natural resources, including water quality.[37] A Washington state study on organic, conventional, and integrated apple production showed that nitrate leaching was four to six times higher in the conventional than the organic plots.[38] A Michigan study comparing conventional and organic row crop production showed that, after 12 years, organically managed plots had 50 percent less nitrate leaching and over twice the nitrogen use efficiency (yield per unit of nitrogen fertilizer) as the

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[17] 7 CFR §205.105(a).

[18] California Environmental Health Tracking Program. (2014). Agricultural pesticide use near public schools in California. Sacramento, CA: California Department of Public Health.

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[31] 7 CFR §205.603.

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[37] 7 CFR §205.200.

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conventional plots.[39] Similarly, an extensive Midwest study using high-level water monitoring systems found 50 percent fewer nitrate losses under organic grain production.[40]

- A UC Davis study documenting unhealthy levels of nitrate in California's groundwater recommends that research focus on replacing synthetic fertilizers with organic fertilizers, along with agricultural management practices that reduce nitrogen inputs and improve crop nitrogen efficiency.[41]

Biodiversity

- Organic farming practices support diverse populations of beneficial birds and insects that prevent and control pest outbreaks, thereby reducing reliance on pesticides.[42,43,44,45] Extensive global analyses demonstrate that organic farms support higher populations of beneficial insects and bird species than conventional farms. Organic farms host on average 50 percent more organisms than conventional farms,[46] particularly natural pest enemies and pollinators.[47,48]
- Organic farmers are required to implement practices that maintain or improve biodiversity.[49] A comprehensive meta-analysis of 30 years of research concludes that organic farming increases biodiversity by 30 percent compared to conventional farming.[50] Similarly, another comprehensive meta-analysis shows that organic farming significantly increases populations of beneficial insects, birds, and soil-dwelling organisms, as well as non-bird vertebrates (mammals, reptiles, etc.) and plants.[51]

Food Security

- International scientists recently determined that if food waste and demand for livestock products are reduced, then organic agriculture can feed 9 billion people by 2050.[52] In another global analysis comparing 293 organic and conventional crops, scientists found that current organic yields could supply at least the minimum calories per day, if not more, needed to sustain a growing worldwide population.[53]

Organic is farmer-led

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[39] Snapp, S. S., Gentry, L. E., & Harwood, R. (2010). Management intensity – not biodiversity – the driver of ecosystem services in a long-term row crop experiment. *Agriculture, Ecosystems, & the Environment, 138,* 242-248.

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[47] *Ibid*.

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[49] United States Department of Agriculture, Agricultural Marketing Service, Guidance: Natural Resources and Biodiversity Conservation, 2016. Retrieved from https://www.ams.usda.gov/sites/default/files/media/NOP%205020%20Biodiversity%20Guidance%20Rev01%20%28Final%29.pdf

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Farmers and ranchers named 27 recommendations to support organic agriculture during CDFA's farmer- and rancher-led climate change solutions listening sessions.[54] Creating a target to transition 30 percent of California's agricultural acreage to organic by 2030 aligns with this farmer input and achieves the mandate set by Executive Order N-82-20 to incorporate stakeholder input into the 2022 Scoping Plan process.[55]

CCOF supports the organic farmer and rancher-led recommendations from the report:

1. Pay for certification and inspection fees for farmers transitioning to organic practices.
2. Provide free consultations with experienced experts for farmers and ranchers who want to transition to regenerative and/or organic. Consultants should have years of hands-on experience informed by data and science, besides University of California (UC) Cooperative Extension.
3. Build markets for farm products with the highest carbon sequestration. Scaling organic labeling and requiring public kitchens to buy 60% organic are two ways to do this.
4. Develop and expand the Fertilizer Research and Education Program (FREP) scope, to include manures. Similar to FREP, conduct research and provide recommendations for improving nutrient management using organic sources of nutrients, such as manures.
5. Incentivize farmers to achieve or transition to regenerative organic certification.
6. Promote programs advancing climate change solutions, such as California Certified Organic Farmers (CCOF), Agricultural Services Certified Organic (ASCO), Sustainability in Practice (SIP) and the Irrigated Lands Regulatory Program (ILRP).
7. Research and quantify the benefits of transitioning from conventional to organic farming practices.
8. Support experiments to identify strategies for maximizing microbial productivity and soil biodiversity, for example long-term, large-scale trials on organic farms using multi-species cover crop blends (with a minimum of eight species suggested by previous studies) plus compost.
9. Look to the USDA National Organic Program as an existing farmer-led solution
10. Research and publish case studies of self-identified successful organic farmers that include economic breakdowns and explanations of choices and decisions the farmer made. Highlight and recognize in these case studies the quantitative and qualitative outcomes and benefits of on-farm solutions to the farmer, on-farm biodiversity, and adjacent land uses and ecosystems.
11. Provide funding or cover start-up costs through HSP for transitional organic certification. Organic has a market-based premium built in to incentivize adoption. The challenge is growers must go through a three-year transition period to convert to organic. That process must be funded by the grower (and any Healthy Soils programs which they may qualify for). Only after this transition period can the grower start recouping their investment. For open field crops, being made by many California famers while also providing significant funding, technical assistance and other support to help California farmers transition away from agricultural reduce the use of synthetic pesticides. o three years can seem like an eternity to have more expensive farming methods without the financial support.
12. Waive certification and inspections fees and provide consultation on organic farm plans, to get a bigger return on investment for carbon sequestration compared to incentivizing siloed practices like HSP is doing using COMET-Planner.
13. Support farmers in the transition to organic farming practices. Current pesticide-dependent farming practices are not addressing the increase in pest impacts as a result of climate change.
14. Compensate farmers for the fees for organic transition, certification, and inspections (the Pennsylvania Farm bill provides an example of this approach). Paperwork requirements and certification costs are some of the biggest barriers to adopting and maintaining organic farming practices.

[54] California Department of Food and Agriculture, Farmer- and Rancher-Led Climate Change Solutions Listening Sessions, February 2021. Retrieved from CDFA Farmer and Rancher Led Climate Solutions Summary (ca.gov).
[55] Executive Order N-82-20 (8)

15. Offer free or subsidized consultation to develop an organic farm transition plan for those interested in transitioning (the Pennsylvania Farm bill provides an example of this approach).
16. Subsidizing transition to organic farming (covering expenses related to development of organic plans, ensuring no farmer has to pay for organic certification, providing a full day or two of free transition assessment/services, etc.).
17. Working with other government entities to support public procurement from small-and medium-sized California organic farmers, especially from socially disadvantaged farmers.
18. Add an incentive program for adoption for integrated or organic pest management practices to have a more holistic and comprehensive approach to climate change resiliency.
19. Develop something similar to the NRCS cost-share program to support farmer transition to organic practices.
20. Improve the HSP modeling tool to include farmers who want to do whole orchard recycling, compost and cover crop on the same field. Funding has been denied to farmers for these three practices because of the limitation of HSP modeling for organic carbon inputs to soils. This was a lost opportunity for HSP.
21. Review the results of Dr. Horwath's research at UC Davis that concludes that the metric of organic was a better predictor of carbon sequestration compared to no till and cover crops. Adopt policies in accordance with those findings
22. Work with CARB to reduce prerequisites that may be a barrier to investments for scaling transition to organic farming practices.
23. Find ways to overcome the restrictions that limit organic farmers' ability to recycle into organic systems. Food waste and brewery waste grain would be good examples of this.
24. Allow transitional organic or organic certification to be a qualification for HSP funding, rather than requiring farmers to resubmit the same information as that program.
25. To sequester carbon, require public kitchens to buy a steadily increasing amount of organic. For example, 10% by 2025 and 10% more each year until 50% by 2028.
26. Promote organic farming by implementing a buy-local policy for State-funded public kitchens.
27. Encourage "systems" and not "practices"; research shows organic blocks using cover crops sequester more carbon than any other combinations of practices.

While transitioning land to organic production is a climate solution, there are barriers. To transition agricultural land, farmers cannot apply prohibited inputs to the land for three years prior to their first certified organic harvest. Farmers do not receive the premium organic price during the three-year transition and can experience yield losses and higher operating costs as the soil adjusts to biological management and the farmer learns about and invests in new production and marketing practices.

Based on CCOF's experience supporting organic transition, we have determined four aspects of a successful transition program. First, financial assistance to provide some stability during the transition when costs can increase from new production methods. Second, farmer mentorship to allow transitioning farmers to learn from and witness the success of organic farmers. Third, technical assistance in key areas, including agronomy, financial literacy, recordkeeping, and marketing. Fourth, new markets waiting for organic products.

A thoughtful transitioning program is a smart investment that not only brings the state closer to carbon neutrality but also creates healthy communities and ecosystems. Thank you for the opportunity to comment.

Sincerely,

Rebekah Weber
Policy Director