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California Air Resources Board (CARB)
1001 I Street
Sacramento, California, 95814
Submitted Online

Re: Meaningful organic agriculture and pesticide reduction targets must be included in the 2022 Scoping Plan

Dear Ms. Shelby Livingston and Mr. Matthew Botill:

On behalf of the 38 undersigned groups, we thank you for the opportunity to comment on the 2022 Scoping Plan's initial modeling results. We are encouraged to see organic agriculture included in the modeling results for all natural and working lands scenarios. However, the modeling target is low – organic acreage only makes up 30% of total agriculture acreage by 2045 in the "maximum feasible" scenario. Meanwhile, synthetic pesticides are still excluded from current modeling efforts by CARB. **The 2022 Scoping Plan must increase the rate of organic adoption, facilitate reductions in synthetic pesticide and fertilizer use, and provide support to impacted communities in order to reach the state's climate goals while addressing the environmental injustices of our agricultural system.**

We urge CARB staff adopt the following recommendations that are described in further detail below:

1. Establish a target of transitioning 30% of California's agricultural acreage to organic **by 2030** rather than 2045
2. Establish a target of reducing synthetic pesticide use 50% by 2030
3. Analyze and incorporate public health impacts by creating a Community Support Fund that provides direct protections from and prevention measures for pesticide exposure

1. Establish a target of transitioning 30% of California's agricultural acreage to organic by 2030

While only 2.6 million acres, or roughly 10% of agricultural land, in California is in organic production,[1] the expansion of organic acreage is a key climate strategy with public health and biodiversity co-benefits. **The 2022 Scoping Plan should accelerate implementation of organic agriculture with a 2030 timeline because of the public health benefits from reducing synthetic pesticide and fertilizer use and the feasibility of expanding organic agriculture quickly.** Organic production is a known climate strategy that more and more farmers and ranchers are adopting with growing consumer demand. Total sales for processed organic products in California hit a record $35 billion in 2021, more than doubling 2020 sales.[2]

In addition to setting a target of 30% organic by 2030, the 2022 Scoping Plan should include the following ancillary recommendations:

- Establish an organic transition program at CDFA to support underserved farmers' and ranchers' transition to organic.
- Conduct a statewide market analysis of the organic sector to inform farmers and ranchers of organic market opportunities.
- Incentivize institutional procurement of climate-smart organic food.

Organic agriculture enhances carbon sequestration.

- CARB's initial modeling shows that Scenario 1, which assumes 30% of annual cropland in organic production and expansion of healthy soils practices, shows the greatest increase in carbon stocks.[3]
- A UC Davis Long-Term Research on Agricultural Systems study found that after 10 years, organic systems resulted in 14 times the rate of carbon sequestration as the conventional system.[4] After 20 years, organically managed soils sequestered significantly more soil organic carbon than conventionally managed soils.[5]
- Organic farming can result in higher stable soil organic matter compared to conventional, even continuous no-till, conventional farming.[6]
- 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.[7]

Organic agriculture contributes to equitable health outcomes.

- Organic farmers grow crops without synthetic pesticides and fertilizers.[8]
- In California, Latinx children are 91 percent more likely than White children to attend schools with the highest pesticide exposure.[9] This exposure is linked with impaired neurobehavioral development[10] as well as enhanced risk of diabetes[11] and asthma.[12]

Organic agriculture enhances biodiversity.

- Organic farms host on average 50 percent more organisms than conventional farms,[13] particularly natural pest enemies and pollinators.[14,15]
- A comprehensive meta-analysis of 30 years of research concludes that organic farming increases biodiversity by 30 percent compared to conventional farming.[16]

2. Establish a target of reducing synthetic pesticide use 50% by 2030.

We echo the recommendations of the Environmental Justice Advisory Committee and recommend that the 2022 Scoping Plan adopt a synthetic pesticide use reduction target of 50% by 2030, in line with the European Union's Farm to Fork Strategy. Synthetic pesticides contribute to climate change throughout their life cycle, from production[17] to post-application.[18]

Half a dozen CARB Board members have acknowledged the EJAC recommendations and have stated their support for including pesticide reduction strategies in the Scoping Plan.[19]

In addition to setting a target of reducing synthetic pesticide use 50% by 2030, the 2022 Scoping Plan should include the following ancillary recommendations:

- Require emission reductions in fumigant pesticide use[20], the application of which results in significant nitrous oxide (N_2O) and tropospheric ozone emissions and public health impacts.
- Ensure management strategies do not undermine synthetic pesticide use reductions across all landscapes. CARB modeled management strategies that could increase synthetic pesticide use unless organic agriculture and chemical pesticide use reduction are incentivized at the same time. These management strategies include reduced till or no till, which, while they can have benefits for soil health, can increase herbicide dependence on conventional farms for weed control unless integrated weed management practices that reduce synthetic pesticide use are also adopted.[21] CARB staff also modeled herbicide applications in the forestry and grassland sectors as a management strategy under natural and working lands. Chemical herbicide applications should not be considered a climate-friendly management strategy in any landscape. **CARB must include meaningful targets to reduce synthetic pesticide use and adopt organic agriculture to avoid inadvertently or directly incentivizing chemical pesticide use.**

Reducing synthetic inputs enhances soil carbon sequestration.

- Alternative agriculture systems that limit synthetic pesticide use, like organic farming, have been shown to significantly increase carbon stored in soils in California.[22]
- Over-application of synthetic fertilizer can have a negative impact on soil health.[23] The higher nitrogen, phosphorus, and potassium levels in synthetic fertilizer inhibit soil carbon sequestration and significantly reduce soil organic matter.[24]
- Synthetic pesticides can undercut carbon sequestration goals by damaging the soil microbiome and altering critical biochemical processes.[25]

Reducing synthetic inputs helps achieve GHG emissions reduction targets.

- Approximately 20 million pounds of just three fumigants are applied in California every year,[26] and the application of these fumigants are associated with a seven to 100-fold increase in N_2O emissions, which is nearly 300 times more potent than carbon dioxide.[27, 28, 29]
- Producing synthetic fertilizers[30] and pesticides[31] are energy-intensive processes. Roughly 17 percent of California's agricultural pesticide use comes from fumigants, and fumigant production alone uses approximately 500,000 gigajoules of energy per year.[32]

Over application of synthetic inputs exacerbates climate impacts, wastes farmers' money, and undermines ecological and human health.

- Synthetic pesticides are linked to both acute and chronic disease in workers, rural community members, and to impacts on the soil microbiome.[33]
- The over-application of synthetic fertilizer contributes to the health and climate crises; it leaches into drinking water sources, resulting in unsafe drinking water for hundreds of thousands of Californians in agricultural regions that tend to be low-income communities of color. It also contributes to N_2O emissions and ground level ozone formation.[34, 35]

3. Analyze and incorporate public health impacts by creating a Community Support Fund that provides direct protections from and prevention measures for pesticide exposure.

The health impacts of synthetic pesticide exposure will continue to fall primarily on residents of color in California if synthetic pesticide use reduction is not included in the 2022 Scoping Plan.[36] At a minimum, the 2022 Scoping Plan must analyze health impacts of proposed strategies on residents in California as recommended by the Environmental Justice Advisory Committee, particularly on people of color that bear the brunt of many negative air and water quality impacts.

A Community Support Fund directed by the Department of Pesticide Regulation that provides direct prevention and protections from synthetic pesticide use should also be included in the 2022 Scoping Plan. Decisions on how the fund is spent should be left to community members most impacted by synthetic pesticide use. Examples of protections include enforceable buffer zones, indoor home air purifiers/filters, tarping, personal protective equipment and other actions that minimize synthetic pesticide exposure for residents of California.

Thank you for your consideration. We are happy to discuss our recommendations further with CARB staff.

Sincerely,

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References

[1] California Department of Food and Agriculture, California Agricultural Statistics Review 2019-2020, Retrieved from California Agricultural Statistics Review 2019-2020.

[2] California Department of Public Health, Organic Processed Product Registration Program Report, January 2022.

[3] California Air Resources Board, 2022 Scoping Plan Update Initial Modeling Results Natural and Working Lands, Retrieved from 2022 Scoping Plan Update Initial Modeling Results (March 15, 2022) (ca.gov).

[4] 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.

[5] 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.

[6] Geoffrey Davies, Elham A. Ghabbour, and Tracy Misiewicz, "National Comparison of the Total and Sequestered Organic Matter Contents of Conventional and Organic Farm Soils," *Advances in Agronomy* 146 (2017): 1-35, http://dx.doi.org/10.1016/bs.agron.2017.07.003.

[7] Pathak, T. B., Mahesh, M. L., Dahlberg, J. A., Kearns, F., Bali, K. M., & Zaccaria, D. (2018). Climate change trends and impacts on California agriculture: A Detailed Review. *Agronomy*, 8(3), 25.

[8] 7 CFR §205.105(a).

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

[10] Whyatt, R. M., Rauh, V., Barr, D. B., Camann, D.E., Andrews, H. F., Garfinkel, R., . . . Perera, F. P. (2004). Prenatal insecticide exposures and birth weight and length among an urban minority

[11] Lim S., Ahn, S. Y., Song, I. C., Chung, M. H., Jang, H. C., Kyong, S. P., . . . Lee, H. K. (2009). Chronic exposure to the herbicide, atrazine, causes mitochondrial dysfunction and insulin resistance. *PLOS ONE, 4*(4), e5186.

[12] Hernandez, A. F., Parron, T., & Alarcon, R. (2011). Pesticides and asthma. *Curr Opin Allergy Clin Immunol.,11*(2), 90-96.

[13] Bengtsson, J., Ahnstrom, J. & Weibull, A. (2005). The effects of organic agriculture on biodiversity and abundance: a meta-analysis. *J. Appl. Ecol., 4,* 261-269.

[14] *Ibid*

[15] Lichtenberg, E. M., Kennedy, C. M., Kremen, C., Batary, P., Berendse, G., Bonmarco, R., ... Crowder, D. (2017). A global synthesis of the effects of diversified farming systems on arthropod diversity within fields and across agricultural landscapes. *Glob Change Biol., 23*, 4946–4957.

[16] Tuck, S. L., Winqvist, C., Mota, F., Ahnstrom, J., Turnbull, L. A., & Bengtsson, J. (2014). Land-use intensity and the effects of organic farming on biodiversity: a hierarchical meta-analysis. *J. Appl. Ecol., 51*(3), 746–755.

[17] Jones, C. D., Fraisse, C. W., & Ozores-Hampton, M. (2012). Quantification of greenhouse gas emissions from open field-grown Florida tomato production. *Agricultural systems*, *113*, 64-72.

[18] Spokas K., Wang D. (2003). Stimulation of nitrous oxide production resulted from soil fumigation with chloropicrin. *Atmospheric Environment,* 37, 3501–3507. https://doi.org/10.1016/S1352-2310(03)00412-6.

[19] February 24-25, 2022 CARB Board Meeting and March 10, 2022 EJAC-CARB Joint Board Meeting

[20] Fumigants are the most drift-prone, heavily-used and toxic class of pesticides applied on California fields. The 13 fumigants currently in use in California are all pesticide Toxic Air Contaminants. Statute and case law affirm that the California Air Resources Board and Air Pollution Control Districts have primary authority to regulate TAC emissions originating from pesticides after their pesticidal use (i.e. once the pesticide TACs have become waste gasses and entered the ambient air). In *Harbor Fumigation, Inc. v. County of San Diego Air Pollution Control District* the Fourth District Court of Appeal ruled: ". . . DPR's exclusive jurisdiction to regulate a pesticide/TAC 'in its pesticidal use' as being limited to its actual application or use, and after such use DPR has, at best, concurrent jurisdiction over emission of the pesticide/TAC. (§ 39655, subd. (a).) It is DPR's primary purpose to regulate the use of pesticides in a manner safe to human beings and the environment, while it is a primary purpose of ARB and Districts to regulate emissions of TAC's, including pesticides, into the ambient air to protect human beings and the environment."

[21] Penn State. (2021, August 23). No-till production farmers can cut herbicide use, control weeds, protect profits. *ScienceDaily.* Retrieved March 23, 2022 from www.sciencedaily.com/releases/2021/08/210823125646.htm

[22] Tautges, N. E., Chiartas, J. L., Gaudin, A. C., O'Geen, A. T., Herrera, I., & Scow, K. M. (2019). Deep soil inventories reveal that impacts of cover crops and compost on soil carbon sequestration differ in surface and subsurface soils. *Global change biology*, *25*(11), 3753-3766.

[23] Sandeep Kumar and Ekrem Ozlu, "Response of Soil Organic Carbon, pH, Electrical Conductivity, and Water Stable Aggregates to Long-Term Annual Manure and Inorganic Fertilizer," *Soil Science Society of America Journal* 82, no. 5 (September 2018): 1243-1251, doi:10.2136/sssaj2018.02.0082.

[24] TR Ellsworth, SA Khan, RL Mulvaney, "The myth of nitrogen fertilization for soil carbon sequestration," Journal of Environmental Quality 26, no. 6 (October 2007): 1821-1832, DOI:10.2134/jeq2007.0099.

[25] D. Seghers, K. Verthe, D. Reheul, "Effect of long-term herbicide applications on the bacterial community structure and function in an agricultural soil," FEMS Microbiology Ecology 46, no. 2 (November 2003): 139-146, doi: 10.1016/S0168-6496(03)00205-8.

[26] The approximate annual use of 20 million pounds of three fumigants - Metam-Sodium, Potassium N-Methyldithiocarbamate (Metam Potassium), and Chloropicrin - comes from: California Department of Pesticide Regulation, *2017 Pesticide Use Report*, California Department of Pesticide Regulation, (accessed November 2019), https://www.cdpr.ca.gov/docs/pur/pur17rep/17_pur.htm.

[27] K. Spokas and D. Wang, "Stimulation of nitrous oxide production resulted from soil fumigation with chloropicrin," *Atmospheric Environment* 37 (January 2003): 3501-3507, doi:10.1016/S1352-2310(03)00412-6.

[28] K. Spokas, D. Wang, and R. Venterea,"Mechanisms of N_2O production following chloropicrin fumigation," *Applied Soil Ecology* 31, no. 1-2 (2006), https://doi.org/10.1016/j.apsoil.2005.03.006.

[29] K. Spokas, D. Wang, and Venterea. R. 2004. "Greenhouse gas production and emission from a forest nursery soil following fumigation with chloropicrin and methyl isothiocyanate," *Soil Biology & Biochemistry* 37 (2005): 475–485, doi:10.1016/j.soilbio.2004.08.010.

[30] Poobalasuntharam Iyngaran, Stephen J. Jenkins, and David C. Madden, "Hydrogen f N over FE{111}," *Proceedings of the National Academy of Sciences* 108, no. 3 (January 2011): 925-930, https://doi.org/10.1073/pnas.1006634107.

[31] Eduardo Aguilera, Antonio Alonso, and Gloria Guzman, "Greenhouse gas emissions from conventional and organic cropping systems in Spain. I. Herbaceous crops," *Agronomy for Sustainable Development* 35, no. 2 (April 2015): 713-724, https://doi.org/10.1007/s13593-014-0267-9.

[32] The range of energy required for production of some common organic chemicals ranges from 10-70 gigajoules per tonne. While we do not know the precise amount of energy used to produce one tonne of fumigants, approximately 13,600 tonnes of fumigants are used every year in California. A central estimate of energy use per tonne of 35 gigajoules per tonne would indicate that fumigant production alone utilizes approximately 500,000 gigajoules of energy in California. Dan Einstein, Dian Phylipsen, and Ernst Worrell, "Energy use and energy intensity of the U.S. chemical industry," *Lawrence Berkeley National Laboratory* (January 2000), https://escholarship.org/content/qt2925w8g6/qt2925w8g6.pdf.

[33] Sarfraz Hussain, Muhammad Saleen, and Tariq Siddique, "Chapter 5 Impact of Pesticides on Soil Microbial Diversity, Enzymes, and Biochemical Reactions," *Advances in Agronomy* 102 (2009): 159-200, https://doi.org/10.1016/S0065-2113(09)01005-0.

[34] Maya Almaraz, Edith Bai, and Chao Wang, "Agriculture is a major source of NOx pollution in California," *Science Advances* 4, no. 1 (January 2018), DOI: 10.1126/sciadv.aao3477.

[35] Thomas Harter and Jay R. Lund, *Nitrate Contamination in the Salinas Valley and Tulare Lake Basin,* University of California Davis Center for Watershed Science, March 2012. http://watermanagement.ucdavis.edu/files/2214/5886/6964/Harter_et_al._2012_Addressing_Nitrate_in_CA_Drinking_Water.pdf

[36] Cushing, L., Faust, J., August, L. M., Cendak, R., Wieland, W., & Alexeeff, G. (2015). Racial/ethnic disparities in cumulative environmental health impacts in California: evidence from a statewide environmental justice screening tool (CalEnviroScreen 1.1). *American journal of public health*, 105(11), 2341-2348.