



**DIETRICK
INSTITUTE**
Applied Insect Ecology



Rincon-Vitova
Insectaries, Inc.
Biological Solutions for Pest Management

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California Air Resources Board (CARB)

Submitted Online at <http://www.arb.ca.gov/lispub/comm/bclist.php>

Re: Aim for 30% organic acreage; 50% pesticide reduction by 2030

Dear Chair Randolph:

We signed the excellent joint letter written by Pesticide Action Network-North America and Californians for Pesticide Reform calling for more ambition to maximize the benefits from diversified organic agriculture and reduced pesticide use. That letter urges CARB to do the following:

1. **Accelerate the organic agriculture target of 30% of acreage being organically-farmed by 2030, not 2045.** Trends favor meeting that goal by 2030 without added incentives. We can and must achieve at least 80% acreage farmed organically by 2045.
2. **Include a numeric 50% reduction in synthetic agricultural pesticide use by 2030.** Knowledge and experience exists to do this and we must address equity for farmworkers and economic resilience for farmers.
3. **Stop referring to the use of herbicides as “climate smart” strategies for natural lands.** A systemic approach to prevention of invasive weeds is safer as well as more durable.
4. **Further research on pesticides and provide for direct, community-led protections from synthetic pesticide use.**
5. **Stop allowing GHG payments to farmers that use synthetic pesticides.** We add a prohibition on the use of excessive artificial nitrogen fertilizers in excess of plant needs. When a “climate-smart” practice, such as single-species cover cropping OR hedgerows OR low-till are done singly, i.e. not part of an agroecological systems approach involving fertilizer and pest management

inputs, the resulting durable Soil Organic Matter must be questionable and tell us little about the potential for that farm from an agroecological approach. Smart practitioners are building Soil Organic Matter at a scale that is not even in the ballpark of the models. That is the power of a systems approach.

6. **Pay organic and transitioning farmers who are adopting organic pest management in addition to Healthy Soils Program payments.** Skilled, experienced consultants are needed. Workforce development can only happen when growers can pay for expert ecological pest management and organic farming advice. Licensing of Certified Crop Consultants must frame professional expectations in the principles and practice of agroecology that builds on the powerful life forces from complex biodiverse systems. We meet young agroecologists uncomfortable helping conventional farms transition because of unknown toxic exposures. The farmer and the consultants must be paid enough to do what it takes to kick the chemical habit.

The cost to support organic transition is less than the current subsidies to conventional and polluting farmers. Such investments are entirely justified for farm and food system resilience to economic and climate disruption. But transition must be incentivized within a systems approach. California must adopt agroecology in principle and practice.

Carbon sequestration scales faster and more cost-effectively than current models reveal. Community resilience and health benefits are needed as soon as possible. The drawdown goals and targets in AB 2649 (Garcia) of 60,000,000 metric tons of CO₂e per year by 2030, and 75,000,000 metric tons per year by 2035 will protect California farmers from climate and economic impacts.

The Dietrick Institute for Applied Insect Ecology

From our founding in 1996 we have offered training to land managers and practitioners to transition away from toxic inputs to organic methods by focusing on building Soil Organic Matter, plant health care, and the features of ecological pest management for biodiversity conservation and functionality on natural and working lands. We celebrate the six-legged insects, the eight-legged spiders and mites, as well as the earthworms and centipedes. Common poisons and excessive use of soil-damaging fertilizers kill these life-forms (not to mention what they do to waterways, people and other mammals who live or work on and near farms and other toxic landscapes).

There are sensible, proven ways to manage all land biologically. Our institute carries the legacy of the fight against toxic pesticides. It continues to call for much the same kind of courage that achieved the benchmark ban of DDT in 1972. None of the morbidity and mortality from those pesticides was necessary. We are waging the same fight that Robert Van den Bosch described in his epic 1989 memoir, [The Pesticide Conspiracy](#). It is time to simply defund the Green Revolution and toxic agriculture.

The Industrial-Regulatory-Academic Pesticide Complex

There is an immense negative influence on state policy by the agrochemical industry that has knowingly and successfully blinded society to the importance of protecting complex natural systems. Regulators and scientists are consciously or unconsciously captured, thinking inside a box created by chemical propaganda and/or material incentives. This catastrophic phase of human social evolution is closing. Governor Newsom has a sense of it being time to help usher toxic industrial agriculture away to the dark annals of anthropocene ecosystem destruction. Now that global warming is in our faces and a critical mass of decision-makers understands the negative correlation between toxic land management and biological carbon sequestration, we must accelerate the momentum to clean up our nest.

The System: Plants, Soil and Water

Plants require water and are what creates small water cycles. Plants require soil and are what creates soil by the power of the products of photosynthesis moving from above to below ground. Healthy soil practices can hold more available water supporting healthier plants and increasingly healthier soil in a virtuous cycle.

Dependence of all life on the healthy functioning of natural systems is obvious. Each biochemical component and pathway in the system has a job. Policy that aligns with whole systems that respect every known and yet unknown component in the system will generate the greatest systemic return from interventions. Iterative programs and incentives in a systems framework can scale continually increasing capacity for healthy functioning to evolve.

The Boundary between Natural and Working Lands is Blurred from an Insect Ecology Perspective

We focus on insects, spiders and earthworms in ecological food webs, especially the above-ground creatures that move around—the flying insects and the spiders and mites that ride on imperceptible breezes along with their roving predators—the birds and bats, reptiles and mammals. Policies tailored to mainly prioritize “natural” lands discount the potential contributions from species moving in nested food webs between “natural and working” habitats—the farmscape that includes the surrounding landscape. You cannot protect the farm without buffering the migration of pests from natural lands and you cannot protect natural lands by allowing toxic inputs on working lands. The Natural Resources Agency (CNRA) 30 X 30 draft plan shortchanges the potential to impact whole systems by prioritizing “natural” lands and putting protection of biodiversity on farms as a general footnote to the plan with no measurable goal. It is obviously necessary that all the state agencies come together to set measurable and ambitious goals to scale up the transition to organic and scale down the use of toxic inputs through plans that recognize the relationship between food webs that share natural and working land habitats.

Soil Organic Matter (SOM)

The restoration of biodiversity that draws carbon out of the atmosphere to accumulate Soil Organic Matter (SOM) involves plants, small water cycles associated with plants, and support for increasing microbial life in soil food webs. Benefits of SOM:

1. SOM binds water and prevents runoff and evaporation.
2. SOM holds 18-20 times its weight in water and recycles essential nutrients as tillage declines and plants and residue cover the soil. One percent of organic matter increase in soil holds an additional approximately 27,000 gallons of water per acre.
3. SOM can dramatically increase on degraded land in three to 10 years if managers will adopt a complementary suite of conservation practices.

Practitioners Building SOM

There are practitioners who know a great deal about plant selection and the necessity to include multiple species (minimum eight with a mix of legumes, grasses and forbs) in cover cropping and pastures. We know the value of prioritizing native species that are appropriate for each project, be it ecosystem restoration, landscaping, cropping, intercropping, borders and hedgerows, and cover cropping makes a big difference in the time it takes to restore the carbon, other nutrient cycling, and water-holding capacity in any soil.

These approaches often harmonize with the understanding of indigenous people, but are also informed by data-driven practitioners. Agencies must seek out experienced practitioners able to think in systems and connect new dots as our ecosystems change and degrade. Practitioners who know how to do this include those with the consulting firm Advancing Ecological Agriculture (AEA) and Ecdysis Foundation who have both begun working in California.

Regeneration International is another group with global experience in ecosystem restoration (<https://regenerationinternational.org/about-us-3/>). Regen Network (<https://www.regen.network/>) is developing a digital foundation with features that put careful management of complexity at the center of digital technology. The Regen Network infrastructure can educate, guide, verify and register ecological claims and data (EcoCredits) in fungible tokens that are InterBlockchain Communication Protocol compatible on their Regen Ledger. We recommend that programs and funding ensure capacity, alignment with, and support for the work of Regen Network as it scales carbon sequestration on natural and working lands.

Targeting 2045 to achieve 30% increase in organic acreage lacks ambition

Economic incentives are gathering momentum, in part because transition to organic and regenerative systems increase resilience and can be managed to **improve profitability**, particularly in future years as the knowledge to verify EcoCredits in the Regen Ledger expands. With reasonable and justifiable investments it should be easy

to achieve 30% organic acreage before 2030 through incentives that farmers welcome. Everyone now understands that building SOM mitigates risk of flood and drought. It is essential to extend as far as possible the potential for biological carbon sequestration on working lands and incentives for transition to organic. Denmark's Organic Program is an inspiring model of cost-effective incentives with widely recognized benefits.

Technical/Geological Carbon Capture and Storage cannot draw down enough carbon in time

The recent Joint Information Hearing on Carbon Capture and Storage chaired by Assemblymember Muratsuchi showed that CCS has no potential in the timely rescue of earth's living systems. There are land and ocean systems that build biodiversity to increase SOM and/or that save degraded fisheries. Programs must produce rather than compete with food production. Lawrence Livermore Labs discredited itself by claiming, for example, that ethanol is the most cost-effective source for storable carbon. That expert hid the fact that USDA subsidies promote over 30 million acres of corn for ethanol for the Low Carbon Fuel Standard. Resulting toxic industrial agriculture is destroying soils, waterways, aquifers and the Gulf of Mexico. The Low Carbon Fuel Standard has in fact unraveled soil conservation achievements. "The federal Conservation Reserve Program (CRP), which pays farmers to keep some of their land uncultivated, saw the acreage in the program decrease precipitously after 2007 as farmers chose to capitalize on high corn prices [from ethanol demand]. As a result, the carbon storage gained via the CRP was lost to the atmosphere." [Quote from Civil Eats Feb 2022 "How Corn Ethanol for Biofuel Fed Climate Change".] The vision of subsidized corn ethanol then being a commodity moved through pipelines into deep storage for a second round of subsidy is a pipe dream of absurd proportions being heavily pushed by vested interests.

CARB must be accountable annually as proposed in AB 2532 (not every 5 years!)

We are in an emergency. Assemblymember Steve Bennett explains the importance of his bill AB 2532 Scoping plan: state agency, board, and department compliance and implementation: reports as follows: "The window is closing on the time we have to address climate change, so there is new urgency to ensure we're on target to meet our climate goals. We can only do that if we have regular updates to ensure that we're doing all we can do to reduce toxic greenhouse gas emissions. This bill is aimed at providing this crucial information from the appropriate state agencies and departments." We regret that other members of the Assembly did not support this bill.

As an example of accountability, we have noticed that CARB's website no longer explains biological carbon sequestration, distinct from geotechnical carbon sequestration. Now only geotechnical CCS shows up in word searches for biological carbon sequestration. Annual reporting should prevent such a major distraction or what appears to be a derailment without public review.

Conclusion

There are ecosystem restoration leaders with trustworthy data and experience to help design policies that will reduce ecosystem disruption going forward. Policies should

prioritize historically underserved farmers, especially young and immigrant farmworkers who want to farm biologically to meet local organic markets as specified in AB 2649 (Garcia). We must scale the transition on equity as well as ecological restoration. The foundation for higher goals and targets for carbon sequestration on working lands is the use of the existing correlative metrics:

1. Increase percent acreage farmed organically,
2. Reduce or eliminate use of synthetic, broad-spectrum pesticides, and
3. Reduce or eliminate artificial fertilizers in excess of plant needs.

We offer this information and recommendations based on decades of combined study and experience in the field of agroecology and biological pest control to help state agencies release the great potential of natural systems on farmland.

Sincerely yours,

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