

Healthy Soils Initiative Proposal

Issue Statement:

California is the nation's leading agricultural production state in terms of both value and crop diversity. Soils are fundamental for crop growth and food production. The importance of soils has been memorialized by the United Nations Food and Agriculture Organization after they recognized 2015 as the Year of the Soil. With limited new arable land that is capable of growing food crops in California and an ongoing drought, it is critical to ensure the soil system is sustainable long into the future, resilient to potential climate change impacts such as variable temperatures and precipitation, and to be able to produce crop yields to sustain a growing local and global population. The term "healthy soils" refers to ensuring that our agricultural soils have adequate soil organic matter (SOM). Increasing the amount of SOM, from its current levels, in soils can provide multiple benefits such as:

- Source of nutrients for plants – SOM contains important nutrients that contribute to plant growth and yields (e.g., nitrogen and sulfur).
- Water retention – SOM has the ability to hold up to 20 times its weight in water.
- Contributes to the environmental fate of synthetic inputs – SOM affects persistence and biodegradability of pesticides and other soil inputs.
- Carbon sink – Stabilized carbon stored in soil serves as a carbon sink, preventing the escape of carbon dioxide and methane greenhouse gases to the atmosphere.
- Soil structure stability and reduced erosion – Soil carbon can combine with the inorganic clay mineral fraction to form structural units called aggregates. Aggregated soils have improved aeration, water infiltration and resistance to erosion, dust control, as well as numerous other benefits.
- At least a quarter of the world's biodiversity lives in the soil.

Conceptual Proposal

Recently, the Brown administration recognized the importance of soil health in the Governor's 2015-16 proposed budget; "as the leading agricultural state in the nation, it is important for California's soils to be sustainable and resilient to climate change. Increased carbon in soils is responsible for numerous benefits including increased water holding capacity, increased crop yields and decreased sediment erosion. In the upcoming year, the Administration will work on several new initiatives to increase carbon in soil and establish long term goals for carbon levels in all California's agricultural soils. CDFA will coordinate this initiative under its existing authority provided by the Environmental Farming Act". Consistent with this initiative, several actions have been identified to:

- Protect and restore soil organic matter (soil carbon) in soils to ensure climate change mitigation and food and economic security
- Identify sustainable and integrated financing opportunities, including market development, to facilitate increased soil organic matter
- Provide for research, education and technical support to facilitate healthy soils
- Increase governmental efficiencies to enhance soil health on public and private lands
- Ensure interagency coordination and collaboration

Short Term Actions (within a year)

- Establish a short- and long-term goal for building soil organic matter in California's agricultural and degraded soils by December 2015. These goals will be established through stakeholder meetings with scientific input (lead CDFA and CalRecycle).
- Establish a soil health initiative coordinator position to facilitate interagency activities including interagency communication, collaborations and to ensure resources optimization and permit streamlining to build soil carbon with carbon-based inputs (lead CDFA).
- Identify critical agronomic and economic research needed to fill knowledge gaps and build mapping tools for increasing soil organic matter throughout the state (lead CDFA).

Administration/Department of Food and Agriculture Work Product

- Identify demonstration projects and contract with University of California Cooperative Extension (UCCE) to begin the cycle of management practice adoption to implement research objectives that meet soil carbon goals (lead CDFA).
- Integrate incentives for improved soil management practices into the Sustainable Agricultural Lands Conservation Program (lead Department of Conservation).
- Encourage organic diversions from landfills to more beneficial uses, including composting facilities, by a tiered tipping fee or complementary mechanism that incentivizes the diversion of organics. (lead CalRecycle).
- Provide healthy soils guidance in the Climate Change Handbook for Agricultural Water Management Planning as well as in public and outreach and education efforts (lead DWR).
- Facilitate discussion on the benefits of compost use when managing nitrogen and include as a separate component in the nitrogen management plans required by the Irrigated Lands Regulatory Program (lead Water Boards).
- Grow CDFA's State Water Efficiency and Enhancement Program to promote soil management practices that improve water retention (lead CDFA).
- Add healthy soils as an Efficient Water Management Practice (EWMP) in the guidebook to assist Agricultural Water Suppliers to Prepare an Agricultural Water Management Plan, and as a co-benefit in water efficiency grant programs (lead DWR).
- Explore opportunities to implement healthy soil management on construction, maintenance and operation plans in DWR (lead DWR).
- Explore with other Agencies opportunities for implementation of healthy soil management on public lands.

Long Term actions (1-5 years)

Identify sustainable and integrated financing opportunities, including market development, to facilitate increased soil organic matter

Develop and fund incentive and demonstration programs with new and existing resources such as Resource Conservation Districts and UC Cooperative Extension, to promote GHG reductions, carbon sequestration, cover crops, crop rotation and organic amendments including compost to build soil carbon, increase water holding capacity and ensure crop yields for food production through on-farm management practices (lead CDFA).

Provide for research, education and technical support to facilitate healthy soils

Identify and secure resources to contract with the appropriate academic institution to develop a user-friendly soil management data base to incorporate research findings and practical applications.

Identify and secure short and long term funding sources to support a robust scientific research program that will fund research on topics such as carbon farming, subsidence reversal, wetland restoration, drainage issues, salt accumulation and multi-benefit farming to support and enhance healthy soils (lead CDFA).

Increase governmental efficiencies to enhance soil health on public and private lands

Increase the generation and use of compost in California to improve soil health, by permitting 100 new composting and anaerobic digestion facilities in California by 2020 (lead CalRecycle).

Ensure interagency coordination and collaboration

Include in the regular coordination between agencies the potential for broader discussions on soil health. Such as: include Healthy Soil Initiative practices to promote groundwater recharge and groundwater quality protection in DWR Sustainable Groundwater Management Program (lead DWR); with the ARB on dust mitigation as a key element in all Climate Change work across Cabinet.