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November 7, 2025

The Honorable Karen Ross
California Department of Food and Agriculture
1220 N Street
Sacramento, California 95814

Subject: Climate Resilience Strategy for California Agriculture Comment

Dear Secretary Ross,

On behalf of UC San Diego's Scripps Institution of Oceanography, I appreciate the opportunity to provide comments on the draft Climate Resilience Strategy for California Agriculture (RSA). As a leading institution in advancing earth and climate sciences, Scripps Institution of Oceanography values collaborative efforts that strengthen science-based policy and offers the following comments to identify shared priorities and opportunities for partnership.

Strategic Priorities
The RSA identifies one of its Strategic Priorities as the following: "Drive next-generation talent and tools—Support workforce development programs". The California Nevada Applications Program (CNAP) at Scripps Oceanography is supporting this effort by working with community college faculty at Kern Community College District to integrate climate information and tools into the classroom. The project's goal is to provide a trusted, reliable source of local climate information and apply it to agricultural education. The partnership has enabled a conduit of information between climate research and agriculture practitioners that has enhanced understanding and allowed students to understand the connections between climate and agriculture.

Chapter 2. Ensure a Water System for Food System Resilience in a Hotter, Drier Future
2.1.2 Support monitoring capabilities to improve our understanding of drivers of change.
The Department of Water Resources Atmospheric Rivers Research Program partners with Scripps' Center for Western Weather and Water Extremes (CW3E) to develop state-of-the-art weather forecasting tools, such as the Weather and Research Forecasting model for the West (West-WRF) and machine learning methods, that improve forecasting of these extreme events. CW3E and other Scripps scientists are participating in field campaigns to collect observational data that feeds models to improve forecasts. The goal is forecasting tools tailored to the West to increase the resilience of water supplies, users, agriculture, and other water needs. Specifically, more accurate forecasts are used by reservoir managers, through forecast informed reservoir operations (FIRO), to strengthen water supply reliability, improve flood management, increase carbon-free energy generation, and improve instream flow to enhance more favorable fisheries habitat. Furthermore, inflow forecasts constrained by snowpack observations alone are not accurate enough to support water management decisions. CW3E is supporting Upper Colorado River drought contingency planning through soil moisture observations to better predict how much precipitation and snow melt will make their way into reservoirs. In addition, CW3E is working with the UC San Diego Soil Health Center at Scripps Institution of Oceanography to identify microbial amendments to improve the water holding capacity of upland soils to

support better inflow forecasts. Advanced monitoring capabilities such as these are critical to ensuring accurate water predictions for agricultural end users.

2.1.3 Coordinate across agencies to develop new groundwater use and recharge strategies.
Improved AR predictions and continued FIRO implementation help inform the State's groundwater recharge and aquifer replenishment efforts through initiatives like DWR's Flood-MAR program. Timed flood mitigation releases allow for strategic routing of high flows for recharge purposes, without increasing flood risk. For example, a Prado Dam pilot study showed FIRO could provide up to 23,000 acre-feet of groundwater recharge, which is enough water for over 180,000 people in a wet year.

Chapter 3: Support Agricultural Workforce Wellbeing and Health
3.1.4 Implement programs that build and improve infrastructure in rural agricultural communities to better support resilience to extreme weather events.
Coarse-scale results from global climate models must be localized for California's complex coast and terrestrial landscape. Scripps scientists have developed LOCA (Locally Constructed Analogues), a statistical downscaling method designed to simulate the intensity of extreme weather events with better accuracy than previous approaches. A large ensemble of the LOCA downscaled climate simulations was used in California's 4th Climate Assessment and in the National Climate Assessment. Scripps and its academic partners have developed a 3km high-resolution climate downscaling model for relevant climate variables, which are reflected in the upcoming Fifth California Climate Assessment and include temperature, precipitation, wind speed and direction, and surface solar radiation. These data can be used to identify the probabilities of extremes in the future to develop adaptation approaches to help maintain the safety of the agricultural workforce.

Chapter 8. Boost Biodiversity on Farmlands
8.2.4 Expand science that addresses uncertainties around biodiversity, agriculture and climate.
The UC San Diego Soil Health Center at Scripps Institution of Oceanography (Soil Health Center) has developed innovative microbial biostimulants to improve soil biodiversity and crop production, enabling more sustainable and climate resilient agriculture. The *Soil Biodiversity in California Agriculture: Framework and Indicators for Soil Health Assessment (2023)* developed by the Environmental Farming Act Science Advisory Panel is an important step toward integrating soil biodiversity into statewide soil health strategies. As the RSA notes, efforts to manage and assess soil biodiversity remain in early stages and advancing this work will require sustained research, collaboration to guide management and policy. The Center directly addresses this need through novel sampling and sensor technologies that allow tracking of biodiversity, biological soil processes, and climate.

Chapter 10. Advance Climate Smart and Healthy Soil Practices
10.1.2 Facilitate the adoption of climate-smart and healthy soils practices by farmers, ranchers, and private landowners.
The Soil Health Center serves as a keystone for soil health research, education, and outreach in Southern California by leveraging expertise on soil quality and connected ecological and human health through the lens of social science. One of the central themes of the Center is investigating the social, cultural, and ethical implications of implementing innovative soil and crop management practices. The Center also supports demonstration grants to directly fund farmers and researchers and evaluates soil management practices to promote adaptability to climate change. Through both farmer engagement, education, and research, the Center is creating a network of K-12 and undergraduate experiences that both facilitate student interaction with farms, while also empowering farmers, ranchers, and private landowners to publicize their climate-smart and healthy soil practices.

<u>In Conclusion:</u>
California's climate resilience leadership is critical given uncertain federal funding. To realize the Strategic Plan vision, the State must establish reliable funding mechanisms to support science-based decision-making,

helping ensure the resilience and vibrancy of California's critical agricultural economy. Thank you for the opportunity to comment. Scripps sincerely appreciates CDFA's climate leadership, and we look forward to continued collaboration.

Sincerely,

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cc: Kathleen Ritzman, Associate Director
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