

California State Senate Committee on Environmental Quality

**Testimony at Informational Hearing Regarding
Central Valley Regional Adaptation Efforts to Climate Change Impacts**

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Chair Wieckowski and honorable members of the Senate Committee:

Thank you for holding this very important informational hearing. My name is Tapan Pathak; I am a Cooperative Extension Specialist in climate adaptation in agriculture at University of California Merced. I am honored to give this testimony about climate change adaptation and resiliency efforts in Central Valley through University of California Cooperative Extension.

Central Valley is one of the most productive agricultural regions around the world. It has a unique Mediterranean climate suitable for agriculture and grows more than 230 crops. It is evident that climate has direct influence on agricultural; with changes we have observed over the past and projected changes in future climate poses many challenges for agriculture. Increased temperatures, both minimum and maximum, reduced number of winter chill hours, decreased winter snowpack, earlier timing of snowmelt, and vulnerability to pest and pollinator changes are some of the examples of challenges documented in many published credible resources.

Well-coordinated research and outreach efforts in climate adaptation are extremely important to make California agriculture resilient to climate risks. University of California Division of Agriculture and Natural Resources i.e. UC ANR is conducting a wide array of research and Extension efforts in this area. To provide a brief synopsis, UC ANR is a statewide network of University of California researchers and educators dedicated to the creation, development and application of knowledge in agricultural, natural and human resources. ANR's advisors, specialists and faculty bring practical, science-based answers to Californians. ANR has 200 locally based Cooperative Extension advisors and specialists, 130 campus-based Cooperative Extension specialists, 57 local offices throughout California, and 9 Research and Extension Centers across the state.

I would like to highlight a few climate adaptation efforts that UC ANR has been actively engaged in. US Department of Agriculture established Climate Hubs in February of 2014 to deliver science-based, practical information and program support to agricultural community to support climate-informed decision-making in light of the

increased risks and vulnerabilities associated with a changing climate. There are currently seven climate hubs across the United States and three sub-hubs including one in California. UC ANR is one of the key partners in this important effort and serves on the sub-hub committee as well as on regional southwest Climate Hub team and is actively engaged in regional and local efforts. For example, UC ANR, California climate sub-hub, and UC Berkeley is collaborating jointly on a project of identifying climate information needs of almond growers in Central Valley and utilizing these responses to bridge gap between climate model outputs and farmer decision-making. One of the leading recommendations in CDFR report on Climate Change Consortium for Strategies for Resilience, to which ANR contributed significantly, was to compile a list of grower needs for weather data and forecast products. Outcome from projects such as this one will provide useful information for various climate adaptation efforts.

Another recent example of climate adaptation effort within the ANR is formation of new program team on climate change adaptation. This program team will comprise of not only UC academics but also partners from local, regional, state, and federal entities with a main mission to identify and act on priorities for coordinated research and Extension efforts. This program team will also serve the purpose of building a capacity within the UC ANR to address the issue of climate change in agriculture and natural resources. I am serving as a chair for this program team along with two UC ANR colleagues and our first kickoff meeting is scheduled next month.

Apart from these recent initiatives, UC Cooperative Extension is actively engaged in information on response to climate risks. To help farmers make the best use of the water they have available during exceptional drought condition we have in California, a series of new and updated drought fact sheets has been developed by UC ANR scientists. These peer reviewed fact sheets provide practical strategies for making the best use of available water and can be accessed through this website: http://ciwr.ucanr.edu/california_drought_expertise/droughttips/

Another example of high impact programs that UC Cooperative Extension leads are Master Gardener and Master Naturalist. Among other topics, these programs often include climate change, and drought resistant landscapes in their curriculum. These trained master gardeners and master naturalists then teach others in community about science-based information they learned in class.

One of the most important components of effective climate adaptation efforts is effective communication and translation of science into meaningful actions. The main mission of Center for Climate Communication at UC Merced is to conduct and promote research on communicating climate issues, including climate variability and adaptation. Center organized a couple of workshops on communicating climate issues in agriculture and water resources in past two years and has planned for a series of more workshops in next few years. We invited diverse group of clientele, including farmers, irrigation districts, cooperative Extension, local and state agency,

and private agricultural industry to participate in these workshops. Climate communication was integral part of these workshops and kept interactive to facilitate two-way communication and increased co-learning. Feedback from these workshops suggested that climate communication is of high priority and that more such workshops should be conducted in future.

With that I conclude my testimony. Thank you for this opportunity to provide overview of climate adaptation efforts through UC Cooperative Extension and UC Merced.

Sincerely,



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