



July 6, 2009

## As world warms, farms must adapt

*By Maxine Burkett*

"Water, water, everywhere, but not a drop to irrigate!" Perhaps not a direct quote from the Rime of the Ancient Mariner, but it does sum up Hawai'i's drought predicament highlighted by The Advertiser's June 25 story, "Drought alters farm strategies." For those of us closely watching how climate change may play out in our Islands, the article provided an important preview of one of the largest threats — dry islands amid an ocean of water — that a warming globe poses to Hawai'i's people. After all, in an age of such uncertainty over the speed and severity of change, there are few more important issues than how we will continue to feed ourselves.

Of course, one cannot directly connect a single drought event to climate change. But scientific studies indicate Hawai'i and the Pacific islands are particularly vulnerable to increasing global temperatures and more frequent extreme weather events. Together, these trends are likely to shift traditional rainfall patterns and worsen the cycle of droughts punctuated by damaging downpours.

Like the current drought, continuing shifts in weather patterns due to climate change will significantly affect our food supply and ability to farm in the Islands. Increasing water stress and flooding events can reduce yields, impact infrastructure, and ultimately decrease agricultural production. Of greater long-term significance, shifting rainfall patterns will greatly alter our soils. Drought and flooding events will impact soil structure by diminishing nutrients and organic matter, as well as deposit soil from agricultural fields onto our struggling reefs. The cascading effects of climate change include alterations in the feeding behavior of pests and insects, potential impacts to pollinators and reproductive changes in livestock. Left unchecked, climate change impacts threaten to debilitate our local agricultural economy just as it's beginning to show new signs of life.

It is critical that Hawai'i begin to explore and invest in well-planned adaptation strategies that protect our agricultural sector. The Center for Island Climate Adaptation and Policy at UH-Manoa is focused on creating a sustainable, climate-conscious future for Hawai'i by pulling together the latest interdisciplinary research and policy recommendations from a team of academic specialists in UH Manoa's Planning, Ocean Science, Hawaiian Studies and Law departments, among others. Whether planning for a climate-ready agricultural policy, or infrastructure design along our changing coastline, ICAP taps the best scientific information available to help decision-makers improve long-term projects.

For the agricultural sector, ICAP believes that the only route to long-term food security is through adoption of critically-needed climate adaptation policies. Many adaptation options are extensions of existing risk-management practices, while others require more wholesale changes to current systems. For example, moves toward diversified and sustainable agriculture are key. A mix of different crops and varieties in one field is a proven and highly reliable farming method to increase resilience to erratic weather changes. Other relatively inexpensive changes include shifting planting dates, utilizing integrated pest management practices, and restoring soils through no-till practices and cover-cropping. As the current drought highlights, water conservation policies are also vital to sustaining crop productivity. Hawai'i farmers may need to increase rain-fed farming, capture greater amounts of rainwater, re-build a network of reservoirs and irrigation ditches, and adopt drip irrigation systems where possible.

By putting climate adaptation solutions on the table now, Hawai'i has an opportunity to effectively manage creeping climate risks in the coming decades. As an island community, we need to recognize the root causes of our resource scarcities and move intelligently to adopt policy solutions that protect

our children's ability to live on these islands. The first lesson we learn as kids at the beach is to always keep one eye on the ocean. Turning our backs on the coming wave of climatic changes risks our well-being and our children's ability to provide for themselves.

*Maxine Burkett is the director of the Center for Island Climate Adaptation and Policy at the University of Hawai'i. She wrote this commentary for The Advertiser.*

---