



Thursday, Nov. 17, 2011

Prepare for climate change

By Peter Van de Water
and Rosie Burroughs

This week, the Intergovernmental Panel on Climate Change will release a new report that will give us a global view of how prepared we are to withstand extreme weather events.

The report has been long in the making, but couldn't come at a more appropriate time. Globally, 2011 has brought us record-breaking floods, droughts, wildfires, hurricanes and temperature extremes -- and the United States has received a heavy dose of every one of these devastating events.

This year might have been defined by weird weather, but scientists tell us that climate change is increasing the risk of extreme weather events happening with greater frequency.

What does this mean for Central Valley agriculture? As the Sierra snowpack diminishes and spring temperatures arrive earlier each year, the valley will have to cope with more severe flood events in the spring, leaving competition for water in the summer because areas will dry sooner.

Scientists predict that up to two-thirds of the valley's chill hours -- the amount of time nut and fruit trees need to spend in cooler temperatures in order to produce -- may be gone by the end of the century. This will take a huge toll on nuts, grapes, stone fruit, avocados and some wine grape varieties. As temperatures shift, so will pest and disease patterns, requiring farmers to change practices

California's livestock sector, which accounted for nearly \$8 billion in revenues in 2009, has its own set of climate stresses to deal with.

When temperatures rise or there isn't enough water, animal productivity goes down because of increased mortality, decreased appetite, decreased milk and egg production and decreased reproductive fitness.

In fact, extreme heat already costs America's dairy, beef, swine and poultry industries a collective \$1.7 billion each year. The devastating impacts of this year's drought in Texas -- which has already cost the agriculture and cattle industries well over \$5 billion and driven some producers out of business -- should be a wake-up call.

It's clear that we cannot afford to delay preparing for the impacts of climate change on California agriculture, a \$37 billion economy and the largest food producer in the country. The impacts of climate change are already upon us. Furthermore, the continued prosperity of California agriculture isn't just a state issue; it affects the entire country, with ripples spreading around the globe.

State policymakers are starting to grapple with climate adaptation. This week, the state Board of Food and Agriculture hosted a forum on climate change and extreme events for agriculture stakeholders, and next month, Gov. Jerry Brown will host a conference on confronting climate change.

Though these conversations are a good beginning, there's an urgent need to make bold plans and find the resources needed to support California agriculture in its necessary transition to greater resiliency.

Farmers and ranchers in the Central Valley already cope with uncertainty, variable weather and water shortages, and have always adapted with remarkable resourcefulness.

There are lessons to be learned and innovative producers to turn to for leadership and solutions for adapting to climate change and also for reducing greenhouse gas emissions. Some examples of how farms can adapt to this new weather reality and, in some cases, reduce their emissions footprint, include developing renewable energy on farms (for example, using agricultural waste products for biomass); installing on-farm water storage systems; increasing soil organic matter to sequester carbon, increase soil fertility and improve water retention; and diversifying crops to increase resilience to variable conditions.

But farmers alone cannot prepare California's agriculture industry for the extreme weather impacts of the future. And there's too much at stake to leave it to individual innovation. A coordinated and well-resourced response is essential. More research is needed to identify the best farming practices for adapting to climate change. More technical assistance is needed to convey these practices to producers. And programs must be put in place to support farmers and ranchers in developing more resilient systems. It's only by forging partnerships among scientists, producers, agricultural professionals and policymakers that we will rise to this high-stakes challenge.

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