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Is California agriculture ready for climate change?

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California is at the leading edge of addressing climate change. But with an agricultural sector that accounts for more than 10 percent of all U.S. production, the state isn't doing enough to protect crops from climate change – or to use farmland as a buffer against it.



Eric Luse / The Chronicle

Agriculture relies to an extent that it's hard to overstate on inherited knowledge of what the weather does when in a particular place, and climate change is turning those assumptions on their head. The effects on food crops, the people who grow them and all of us who eat them could be immense.

A new report put out by California Climate and Agriculture Network (CalCAN) highlights a few: More rain in the fall and less snow in the winter will reduce the available water supply during the main growing season of late summer and early fall.

The state's farmers already thirst for water, and limits on the wet stuff cost them an average of \$200 million annually. But under climate change, the annual cost will increase fourfold by 2050.

Yes, warmer temperatures will initially extend the growing season and increase crop yields in the near term, but over the long-term, the longer growing seasons exhaust resources and decrease yield.

And, yes, food crops love carbon dioxide – but so do weeds and pests. Under climate change, crops grown will be eaten by insects *at twice the rate* that they are now.

Fascinatingly, a consensus is beginning to emerge that sustainable farming practices will prove more resilient to the effects of climate change and will do a better job of feeding the planet's growing population – which is exactly the opposite of what the Big Ag would have you believe.

The CalCAN report looks for these benefits. But the UN Special Rapporteur on the Right to Food, Olivier de Schutter, has no bias toward sustainability. And in a recent report, de Schutter made



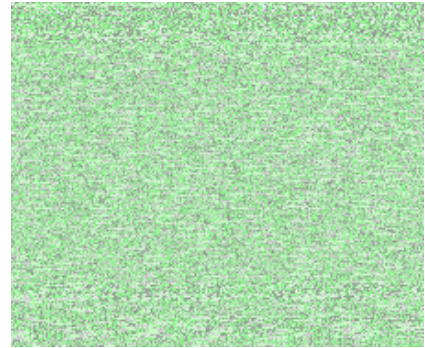
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Cameron Scott brings you dispatches from the environmental battlefield.
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the case that sustainable methods outperform conventional methods in regions where the hungry live and are more resilient to shocks of the sort the changing climate will bring.

"We won't solve hunger and stop climate change with industrial farming on large plantations," the de Schutter said in a press release. "The solution lies in supporting small-scale farmers' knowledge and experimentation, and in raising incomes of smallholders so as to contribute to rural development,"

In California, the CalCAN report notes, sustainable practices increase soil fertility, offsetting the effects of climate change. They also reduce soil erosion, improving farm land's resilience to extreme weather. They improve water filtration through the soil, reducing the need for water and minimizing the effects of floods. Finally, sustainable practices provide increased habitat for beneficial insects, reducing pests without pesticides.

In other words, there's good news and bad news: California isn't ready for large-scale agricultural adaptation — like abandoning some crops in some regions — but at least we've got a head start on sustainable farming.

Posted By: [Cameron Scott](#) (Email, Twitter, Facebook) | April 08 2011 at 02:03 PM

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waterguruguy 9:33 AM on April 11, 2011

"...but over the long-term, the longer growing seasons exhaust resources and decrease yield..."

really?

wrong on so many levels

WATER is the limiting factor when you grow rice in the desert, right?

and water issues CAN be solved...

but ALL politicians want this resource limited...

why?

MONEY and REGULATIONS

therefore, they get paid to dole out the rights...period

the price rises on an impacted resource

god-forbid we address storage concerns and antiquated reservoirs...or discuss desalinization...

let the climate change, and those that can not adapt, move away...

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ilikeitwarm 2:02 PM on April 9, 2011

I don't buy the premise that the state isn't doing enough or that farms can do anything about climate change. The report is just so much conjecture anyway. However, the primary issue about water may have some merit. We do need more storage.

Farmers have been adapting to climate change ever since there were farmers. But climate change in the Valley is not coming anytime soon. It may get a little colder during the next 20 years and there may be more crop damage due to freezing, but nothing that hasn't happened before. From the report citations: Baldocchi, D., and S. Wong. 2008. Accumulated winter chill is decreasing in the fruit growing regions of California. Climate Change. 87: 153-166.

There has been no long-term trend for temperatures or show in the Southern Sierra; no climate change. However, there has been climate change, warming, in the San Joaquin valley caused by irrigation and crops. The report says agriculture accounts for only 6% of GHG emissions. If you include GHG (water vapor) from irrigation and from the crops it is much higher than that. Climate change in the Valley was caused by agriculture not CO2.

John R. Christy and Justin J. Hnilo, 2010. CHANGES IN SNOWFALL IN THE SOUTHERN SIERRA NEVADA OF CALIFORNIA SINCE 1916. Reprinted from ENERGY & ENVIRONMENT VOLUME 21 No. 3 2010. (pdf) <http://wattsupwiththat.com/2007/02/13/irrigation-most-likely-to-blame-for-central-california-warming/>

The report's citation for water supply says that if the warming resumes there will be change snowmelt runoff timing. But again mostly conjecture. From the report: Some research has "suggested" that snowmelt runoff "could" occur up to two months earlier than current averages. Rauscher, S., J.S. Pal, N.S. Duffenbaugh, M.M. Benedetti. 2008. Future changes in snowmelt-driven runoff timing over the Western US. Geophysical Research Letters. 35: L16703. But that will not happen anytime soon if ever.

The issue is storage no matter when the precipitation or runoff occurs. If there is heavy rain and earlier snowmelts reservoir operators will release stored water earlier to avoid flooding. But doesn't that mean the reservoirs will be full? So what's the problem?

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solana 7:50 AM on April 9, 2011

Thank you for the CalCAN reference. I checked it out and there is so much information there that is useful to my family as small time growers of food for our family and a bit more for sharing with neighbors and canning, dehydrating etc. for the winter months. We got our inspiration from stories our grandparents told us about the Victory Gardens of WWII that so many families had. Even in winter we keep a big barrel of kale for fresh greens.

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indoorcamping 3:48 PM on April 8, 2011

How did an article on optimizing agriculture during changing climate get you all worried about population growth? Are you worried there won't be enough illegal immigrants to pick your strawberries?

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dreamer 2:37 PM on April 8, 2011

So why are we talking climate change but avoiding any discussion of a FACT (data proven, we all see it, no doubts there) like the dangers of population increase?

If the population were smaller (like it was in say, 1960) we could all adapt WAY easier to climate change, assuming that consumption would be reasonable and not out of control like it is now.

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dreamer 2:34 PM on April 8, 2011

Sustainability equals zero population growth. California pop growth is a bit slower than it was, but still high, and yes, driven by immigrants' high birthrates and illegal immigrants. Just a fact, it's a fact whether anyone thinks is PC or not PC.

As long as population keeps growing, our ag and water and housing problems will only increase.

The natural wilderness lost, the wildlife going extinct, indeed the good ol' ranch and farm are giving way to big corporate ag or to corporate developers of uninspired McMansions for the masses.

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