

Santa Cruz County Farm Bureau Ask Laura Column March 2018 (printed April 2018)
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Q: Do you have information about how climate change will affect Central Coast agriculture?

A: There is not a lot of specific or detailed information about how exactly climate change may impact Central Coast agriculture, most notably for the specialty crops that are so important to this area. However, two articles were recently published that provide more information on climate change and the challenges associated with assessing its potential impact. The first article, *Vulnerability of California specialty crops to projected mid-century temperature changes*, was published in the journal *Climate Change* in September 2017 by researchers at the USDA, UC Davis, and New Mexico State University (lead author Amber Kerr). Specialty crops are defined in the article as fruit, nut, vegetable and nursery crops. The second article, *Climate change trends and impacts on California agriculture: a detailed review*, was published in the journal *Agronomy* in 2018 by researchers at UC Agriculture and Natural Resources and UC Davis (lead author Tapan Pathak).

Kerr discusses four specific obstacles to studying climate change and the potential impacts to specialty crops:

1. The diversity of crops and the diversity of cultivation practices associated with each.
2. The uncertainty associated with climate change and future water resources.
3. The interaction of climate with other aspects of agriculture, such as pests and diseases.
4. The uncertainties associated with adapting to climate change, including economic implications.

Pathak discusses various indicators that can be used to evaluate climate change, over time, including changes in temperature, water resources (precipitation, snowpack) and availability, and the frequency and intensity of extreme weather-related events, such as heat waves, droughts and flooding. Kerr looks at crops that may be most sensitive to increasing winter minimum and summer maximum temperatures. Both articles use different models to project or simulate possible changes to climate and impacts to agriculture.

Kerr also discusses some of the crops that are grown in our cool coastal climate that may be negatively affected by rising winter and summer temperatures. For example, strawberry yields may be reduced because of insufficient winter chill hours of plant starts that are grown in the northern part of the state. For lettuce, higher summer temperatures may result in more bolting or bitterness, both of which impact crop quality and marketable yield. In contrast, the production of crops that prefer warmer temperatures, for example tomatoes and melons, may be expanded.

Both articles discuss implications for US, state, and local economies and food security because of California's unique position as the largest producer and supplier of many specialty crops. For those interested in diving into a substantial amount of detail about climate change and California and Central Coast agriculture, the articles have much more information.

Please feel free to contact our office with any other questions you may have.