

Groundwater

Extended Drought Continues Heavy Impact on Agricultural Economy

Few parts of the California economy are untouched by drought, but no sector is as deeply affected as agriculture. The extended drought, beginning in 2020, has had significant impacts on agricultural production and those businesses and jobs that surround production, processing, and shipping of crops and other goods.

The University of California, Merced and the Public Policy Institute of California (PPIC) recently estimated that in 2021 alone, the drought directly cost \$1.2 billion for agriculture, with a total economic cost of \$1.7 billion.

These costs include increased groundwater pumping costs, increased idled or fallowed acreage, and reduced crop yield due to water shortages. The drought also is estimated to have resulted in the loss of 14,600 jobs.

CALIFORNIA AGRICULTURE: KEY COMPONENT OF ECONOMY

California agriculture is first in the United States in the number of products and the value of those crops, bringing in an average income of \$50 billion annually over the last three years, according to the U.S. Department of Agriculture. The top three commodities in 2021 by value were milk/dairy products, grapes, and almonds. Other top commodities include strawberries, beef cattle, pistachios, tomatoes, and rice.

During a drought, the producer's approach to dealing with water shortages depends on the commodity being grown, whether it is a permanent or annual crop. Annual crops like rice and tomatoes, which are planted anew each growing

season, lend themselves more easily to short-term fallowing. A grower can decide against planting certain fields due to constraints such as water. Growers have less flexibility with permanent crops, like fruit and nut trees and grapevines, in determining year-to-year changes in overall acreage. In these cases, growers must be strategic to preserve their plants and investments. For instance, pistachio trees can take up to 10 years to produce their first nut crop, which means that planning must look beyond a single year or two of conditions.

Many of the agricultural commodities grown in California cannot be grown elsewhere in the nation or simply are of higher quality when grown here. For example, table oranges are grown primarily in California, while other states' oranges are suitable only for juicing. According to the California Department of Food and Agriculture (CDFA), California is the only U.S. producer of plums, olives, nectarines, artichokes, and garlic, as well as almonds and pistachios. Consumers depend on California for high quality and a diverse selection of food.

INTERSECTION OF DROUGHT AND AGRICULTURE

Pressures on the agricultural economy due to the current drought are tied not only to lower-than-normal rainfall, but also to dry climactic conditions. Specifically, heightened evaporative demand means that the air takes more moisture from soil and vegetation (whether a crop or native flora). Thus, plants need comparatively more water to grow. These conditions united in 2021 to make it the year with both the lowest precipitation and the highest evaporative demand in the last 40 years.

Low precipitation naturally translates to reductions in allocations from the state's major water conveyance systems: the State Water Project and the federal Central Valley Project. When reduced allocations are coupled with the increased evaporative demand, growers are faced with significant water shortages. In 2021, the rain patterns meant that the normally water-rich region of the Sacramento Valley was unusually dry. That meant that far fewer rice fields were planted, and farmers who frequently transfer water south were less able to do so.

In times when surface water supplies are low, water users historically have turned to groundwater to make up for losses.

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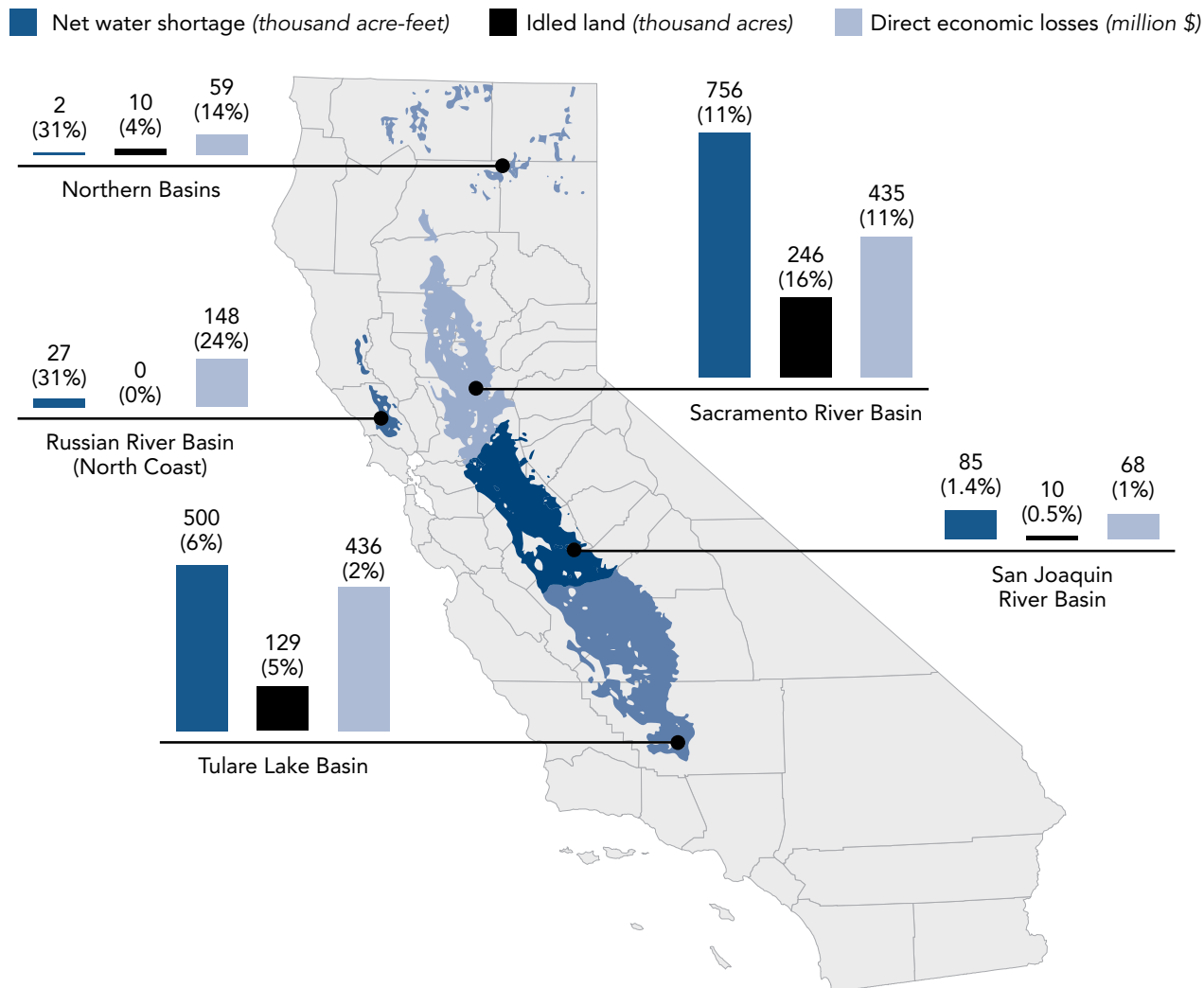
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Major



DROUGHT IMPACT ON CALIFORNIA AGRICULTURE



Notes: Analysis focused on most deeply affected areas of state in 2021. Numbers above bars show values for each variable; numbers in parentheses show percentage of impact with respect to the regional baseline. Net water shortage is reduction in surface deliveries minus groundwater augmentation in 2021 relative to 2002–16. Idled land is relative to 2018. Direct economic losses are lost crop revenue relative to 2018, plus the increase in pumping costs.

Source: Public Policy Institute of California, “Drought and California Agriculture” (April 2022).

In that sense, groundwater in many areas has been viewed as a “savings account” to draw upon in times of shortage. There are areas that are groundwater-dependent for a variety of reasons, including but not limited to hydrology and/or lack of connection to imported water supplies.

As droughts become more frequent and more intense, groundwater supplies often are unable to recover before again being called upon. Even with groundwater replacement, in 2021, California’s agricultural areas experienced an overall net water shortage.

SUSTAINABLE GROUNDWATER MANAGEMENT ACT ADDS TO COMPLEXITY OF CURRENT DROUGHT

The Sustainable Groundwater Management Act (SGMA), passed in 2014, makes water management now significantly different than even during the most recent drought from 2012–2015. Previously, there was little regulation of groundwater use, aside from the standard rule that landowners have the right to use groundwater without harming other users.

SGMA created a new regulatory scheme for the sustainable use and replenishment of groundwater. The focus is on local conditions, where local governments and interested

parties form a Groundwater Sustainability Agency (GSA). The GSA then creates a Groundwater Sustainability Plan (GSP), which must be approved by the state, and which sets forth how groundwater will be monitored and managed to achieve sustainability over time.

LOOKING FORWARD

Local agencies and users currently are near the middle of the initial implementation phase of SGMA. The addition of the SGMA regulatory scheme adds another layer of complexity to agricultural water management in drought years. Even without the drought, full implementation of SGMA will result in more acres fallowed or otherwise taken out of production. This raises questions about how to strategically repurpose land without critically wounding agriculture, disrupting local economies, or causing other unintended consequences.

The amount of land that will be taken out of production also will cause ripple effects on the agricultural economy, jobs, and food security. This drought alone has cost more than 14,000 jobs, according to the PPIC. This figure includes direct agricultural jobs as well as those in industries that provide goods and other services to farming operations. Less acreage in production necessarily means that production will decrease, which may decrease the availability of key crops and increase costs for consumers.

Policymakers should consider carefully a full suite of potential impacts when attempting to address groundwater issues specifically. In addition, it is important to keep in mind that

groundwater conditions (demand, supply and quality) vary throughout the state and sometimes even within the same basin. For that reason, local experts are invaluable resources on the specific challenges and opportunities that exist in various places.

In addition to managing demand on groundwater, elected leaders and regulators should incentivize and streamline options for groundwater recharge. Groundwater recharge and banking projects historically have met regulatory hurdles related to permitting and securing rights to use water for recharge purposes. These are not insurmountable challenges, but will require communication and coordination among a variety of stakeholders to develop a framework that helps secure groundwater supplies for future use while minimizing possible adverse impacts to businesses and communities.

The challenges to the use and reuse of groundwater also heighten the necessity for solutions to surface water shortage conditions. Because groundwater is the savings account for agriculture, ensuring there is sufficient surface water in the state's "checking account" will assist in reducing overdraft. Drought-proof water supplies and improved storage and conveyance infrastructure can help ease the reliance of certain areas on groundwater alone.

CALCHAMBER POSITION

The California Chamber of Commerce supports measured approaches to ensuring that groundwater and surface water are managed in a way that supports the many needs of Californians without damaging the state's productive agricultural sector and local communities dependent on agriculture.



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