

THE MULTIPLE BENEFITS OF WATER EFFICIENCY FOR CALIFORNIA AGRICULTURE

California farmers have made progress in updating and modernizing irrigation practices, but despite past efforts, great untapped potential remains to use water more efficiently. Water efficiency – defined as measures that reduce water use while maintaining the benefits water provides – has been shown to be a cost-effective and flexible tool to adapt to drought as well as to address longstanding water challenges in California. Moreover, today’s investments in efficiency will provide a competitive advantage in the future and ensure the ongoing strength of the agriculture sector in California.

Water-efficiency improvements offer multiple benefits. Some of the water saved represents new supply that can be dedicated to other uses, and efficiency improvements that do not produce new supply provide other important co-benefits (Gleick et al. 2011). They can, for example, help farmers maintain and even improve crop yields and quality; protect water quality; reduce fertilizer, water, and energy costs; and boost profits. This paper and infographic describe some of these benefits. We conclude that an improved understanding of these benefits, and the strategies to achieve them, expand the portfolio of policies that can be applied to solve key issues of concern in California, including water-supply reliability, conflicts among water users, the risks of droughts, worsening water quality, and ecological degradation.

WATER TERMINOLOGY

The water literature is rife with confusing and sometimes misleading terms about “water use” and “water efficiency.” It is important to clarify the uses of these terms, as different meanings can lead to different conclusions about water-management options. Here, we focus on definitions relevant to the agricultural sector, though similar terms are used broadly across all sectors.

- Water withdrawals** refer to water taken from rivers, streams, and groundwater aquifers. These withdrawals can be divided into two categories: consumptive and non-consumptive uses.
- Consumptive use** refers to water that is unavailable for reuse in the basin from which it was extracted due to evaporation, incorporation into plant biomass, transfer to another basin, seepage to a saline sink, or contamination. These are sometimes referred to as **irrecoverable losses**.
- Non-consumptive use** refers to water that is available for reuse within the basin from which it was extracted, for example through return flows. This water, also referred to as **recoverable losses**, usually has elevated levels of salts and other pollutants.