Members of the Cannabis Research Center have been studying water use on cannabis farms since 2017. Our understanding of cannabis cultivation practices and their water demand continues to evolve as new data become available. The analyses provided in this document are exclusive to two of the largest cannabis producing counties in Northern California: Humboldt and Mendocino Counties.

On a regional basis, cannabis water demands represent a small fraction of available surface water supplies in the North Coast, even during the dry season (July-September).

However, because cannabis farms tend to be clustered on the landscape, there are some watersheds for which cannabis water demands represent >10% of available supplies during the dry season.

In these watersheds sampled in Humboldt and Mendocino County (left), nearly all of the cannabis water demand is from unlicensed farms.

Unlicensed cannabis accounts for significantly more cultivated area than licensed cannabis farming and therefore has a much larger water demand footprint. Furthermore, because unlicensed cannabis farms often have little to no water storage on-site, water is extracted from watersheds on demand, which tends to peak in August.

Water demand for unlicensed cultivation therefore exceeds that of licensed cultivation to an even greater extent in the driest time of year when stream flow is lowest.

Providing incentives for farmers to obtain (and retain) licenses and increase off-stream storage for irrigation is one strategy for reducing water extraction during the dry season.

How much water does cannabis use relative to stream flow?

How does demand from unlicensed cultivation compare to that of licensed farms?

Cannabis Irrigation Demand

Total water demand for licensed and unlicensed cannabis farms in sampled Humboldt and Mendocino County watersheds using 2018 data and models from Dillis et al., (2023).
How much water does licensed cannabis use?

In the same sample of Humboldt and Mendocino Counties, irrigation demand for licensed cannabis is estimated not to exceed 4% of available August streamflow in any watershed, even under conditions of no water storage.

If licensed cannabis farms had enough water storage capacity to accommodate at least half of their annual water demand, there would be no watersheds among those sampled exceeding 2% of their estimated streamflow availability. If licensed cannabis farms had storage capacity equivalent to their annual water demand, licensed cultivation would not require more than 1% of available flow in any sampled watershed.


Citation: Dillis, C., Butsic, V., Georgakakos, P., Grantham, T.. 2024. Water Use: Cannabis in Context. Cannabis Research Center, University of California, Berkeley, CA.