

Land Use in Cannabis Agriculture

Where are farms? Are they environmental threats?

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Since 2014, members of the Cannabis Research Center have been documenting the expansion of cannabis agriculture, first in the North Coast, and more recently to other regions in the state. Using a combination of satellite data and publicly available databases we have documented the location of over 10,000 permitted and non-permitted cultivation sites in California. While our database does not cover the entire state, it has provided several insights into land use in cannabis agriculture.

On what type of land is outdoor cannabis grown?

Cannabis is grown on agricultural and non-agricultural zoned land. Cannabis farms use many different growing techniques – from planting directly in the ground, to growing inside of pots with imported soil on concrete foundations. Therefore, cannabis can be grown both on agricultural land and in areas that would otherwise be unsuitable for farming, such as in forest or industrial sites. Currently, most cannabis in the North Coast is grown in areas not zoned for agriculture, while farms on the Central Coast are more likely to occur in agricultural lands

Historically, cannabis was often grown in remote forested landscapes in Northern California. In the traditional growing areas of Humboldt and Mendocino Counties many cannabis farms still operate in forested areas, often in natural clearings or in patches where forests have been manually cleared. Yet, the overall amount of forest clearing caused by cannabis farming is low relative to forestry operations. New regulations in these counties, and in others, encourage cannabis farmers to create new farms on agricultural land rather than in forest lands.

So far, cannabis is not replacing traditional agricultural crops on agricultural land. There are 27 million acres of cropland in California and cannabis occupies approximately 2,000 acres. Even under scenarios of rapid expansion, there is little evidence that cannabis in California will limit the state's ability to produce other agricultural commodities.

Cannabis farms often occupy medium sized parcels. Most cannabis farms, permitted and not, are located on parcels less than 40 acres, but greater than five acres. *Why?*

- Many counties limit the size of cannabis farms. Therefore, large parcels are not required. For instance, in the North Coast, most cannabis farms are under 1 acre.
- In many parts of the state, rural land which has historically been preferred for cannabis cultivation, was subdivided into smaller parcels in the 1950's and 1960's. These small parcels provide adequate room for growing at relatively low costs.

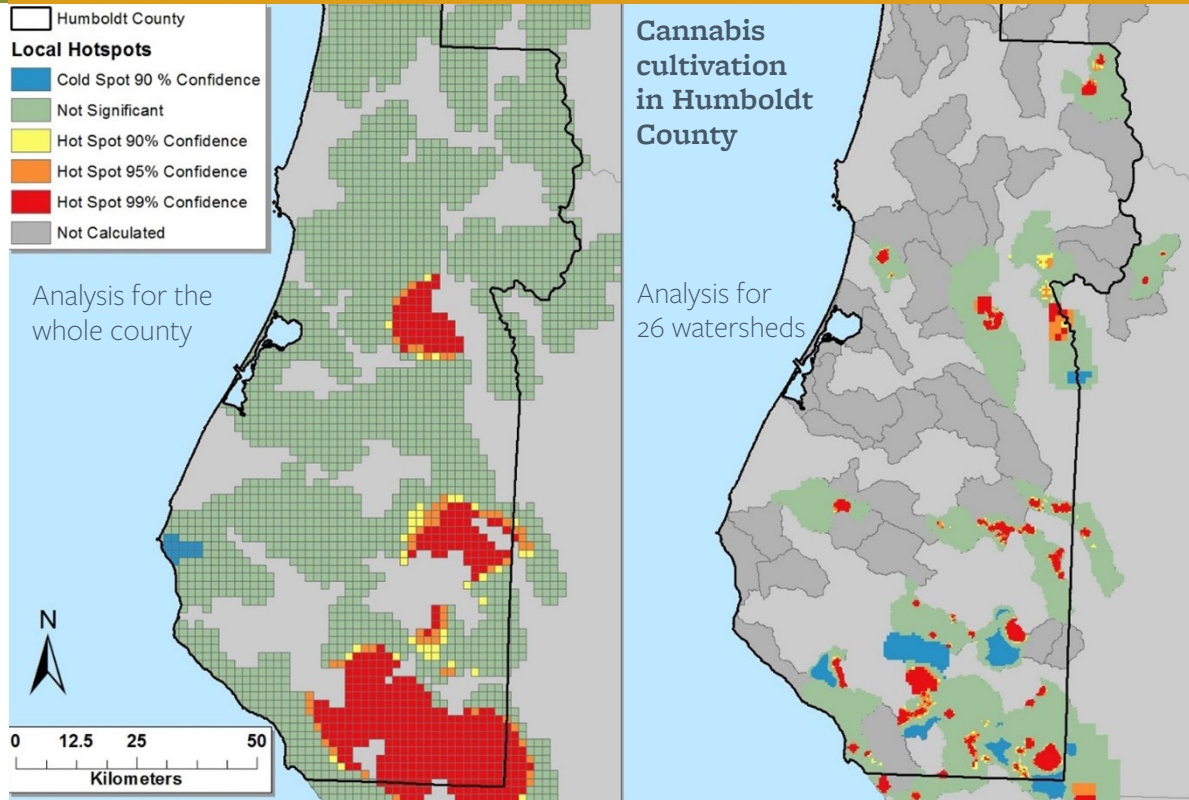


Top: Cannabis farm on a forestry block

Bottom: Cannabis farm on zoned agricultural land (photo: lu_sea/shutterstock)

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Cannabis farms cluster in “hotspots” at different scales.

Hotspots (in red) can be found in certain parts of counties (left figure) as well as in certain parts of an individual watersheds (right figure).

Are there environmental impacts of land use decisions in cannabis agriculture?

The location of farms can increase risk to the environment, but these risks can be managed. Traditionally many cannabis farms were located in areas of potential environmental risk — in remote forested areas, on steep slopes, far from paved roads, and near salmon-bearing streams. Farming in such areas can increase the risk to the environment from erosion, stream dewatering, and forest clearing. Yet, the small size of many cannabis farms also suggest that with appropriate management techniques, farms in these locations may be able to prevent or reduce many environmental impacts.

Clustering of farms produces environmental trade-offs. Our research has shown that cannabis farms tend to cluster in the landscape, leading to environmental trade-offs. On one hand, clustering farms may lead to easier regulation and keep adverse impacts contained in small geographies. On the other hand, clustering may amplify impacts, for example if there are a high number of water diversions on a single stream. Overall, whether clustering has positive or negative environmental impacts depends on the scale of analysis and type of impact.

For more information, visit: crc.berkeley.edu or contact vanbutsic@berkeley.edu

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