

Cannabis and the environment: What lawmakers must consider

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Berkeley Cannabis Research Center

Cannabis Research Center

The CRC promotes interdisciplinary scholarship on the social and environmental dimensions of cannabis. Through scientific research and engagement with community, government, and academic entities, we advance understanding of cannabis in socio-ecological systems at local, national, and global scales. We seek to inform public dialog and contribute to the development of prosperous, equitable communities and healthy environments.

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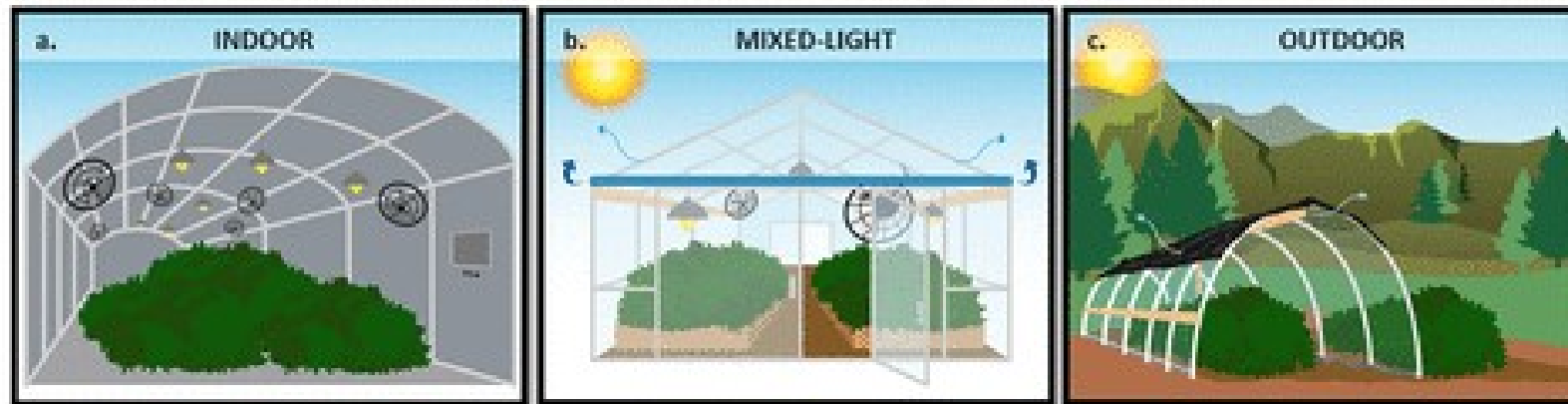


Our Vision

<https://crc.berkeley.edu/>

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Cannabis and the environment



Closed system
Higher energy inputs
Low permeability
Municipal water sources
Urban land use

Open systems
Lower energy inputs
High permeability
Rural water sources
Rural land use

Indoor cultivation (a) relies on the artificial provision of water, soil medium, nutrients and energy (e.g., to power lights and control temperature and odor). Indoor facilities are typically integrated within municipal power/water/sewage systems, which may facilitate waste management and monitoring of resource-use.

Mixed-light systems (b) combine elements of indoor and outdoor production. Natural sunlight is the primary source of light in greenhouses, although additional light manipulation at different times of the year requires additional energy sources. Mixed-light systems can be connected to municipal water systems or use similar sources as outdoor systems, and odors are vented externally (perimeter arrows in b). Plants are typically grown on imported soils and use of fertilizer or compost amendments is common.

Outdoor cultivation (c) operates similarly to other agricultural crops: energy needs are met through sunlight, water is sourced locally through rainfall, stream diversions, springs, wells and/or storage. Plants are grown either on local or imported soils, and nutrients can be added through fertilizers or composts.

Chemical use in cannabis

What chemicals (fertilizer/ herbicide/pesticide) used in production, with largely be determined by what health and safety testing regime.

In California, health and safety testing largely prohibits legal cannabis farmers from using non-organic methods.

Cannabis farmers have proved effective at meeting these high standards

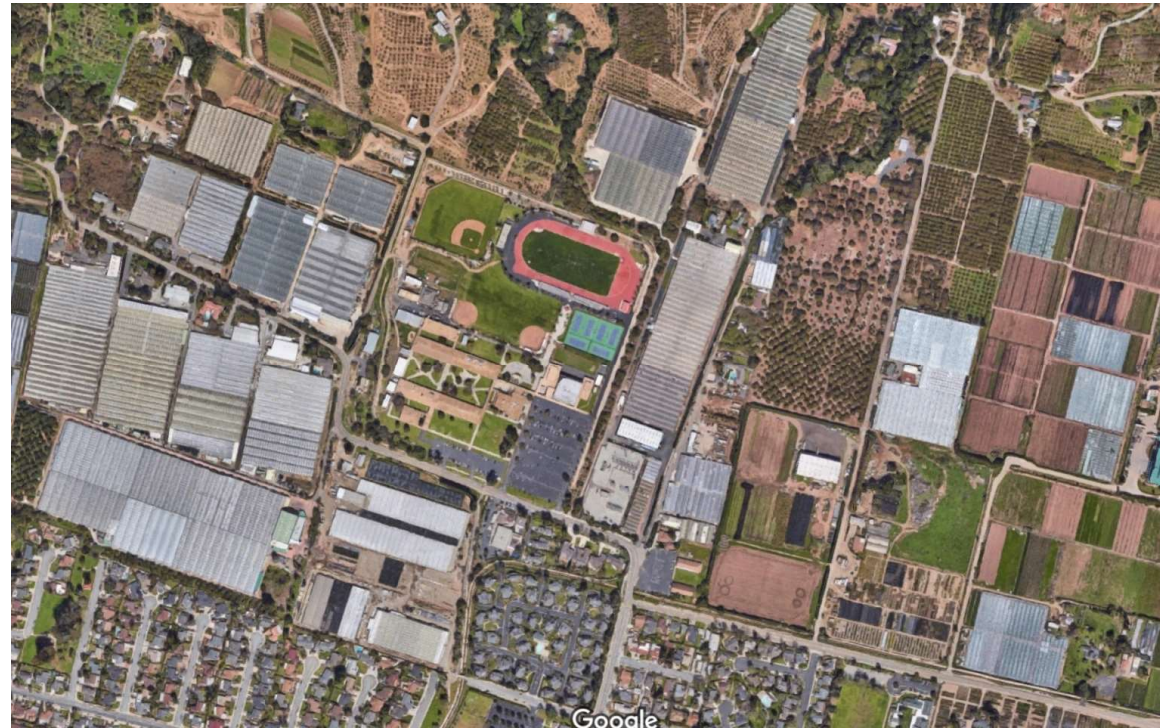
Lawmakers must consider whether chemicals should be regulated at farm or at lab.

Cannabis as a nuisance

Odor

Siting near
homes/schools

Lawmakers must
decide if right to farm
legislation applies to
cannabis. Is cannabis
an ag crop?



Cannabis energy use

Indoor cannabis can have a massive energy use

Cannabis can limit municipalities ability to meet GHG goals.

Lawmakers must decide if they want to regulate electricity for cannabis differently than other industries.



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Local Control

In California, local government has strong controls on cannabis production

- Has the ability to develop local land use ordinances
- Has the ability to cap number of permits – for environmental reasons.
- Can totally ban cannabis production outright – case in most of California.

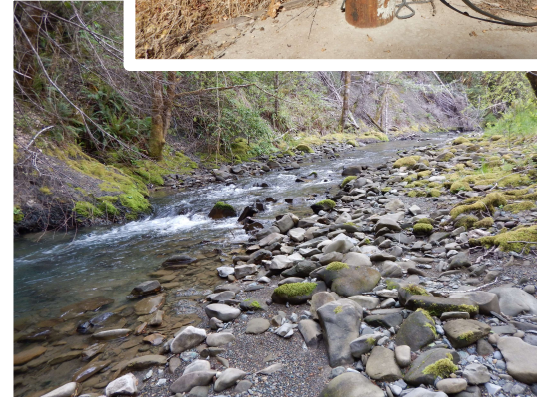
Lawmakers must decide who will control permitting.



Water issues

- Timing of irrigation water extraction is heavily dependent on a cannabis farm's:
 - Water Source
 - Storage Capacity
- Groundwater extraction peaks in August
- Surface water extraction can be more uniform year round

Lawmakers must decide if cannabis is agriculture or something else.



Policy has tradeoffs

Higher standards increase cost and incentivizes non-permitted production

Large farms are better able to meet high cost of regulations

Lawmakers must find balance between incentivizing legal production and having high standards

