



EcoFarm Conference 2019

Matt McClain, PhD

PhD in Cannabis Mythology and Psychology

B.S. Industrial Engineering from Vanderbilt

Founder and CEO of Fifth World

Founder of Recreator Hemp Apparel, Consultant to Bastcore

Member of Industrial Hemp Advisory Board w/ CDFA

Regional Manufacturing Advisory Board to Fibershed

And, most importantly, Board of Directors of the CHF

California Hemp Foundation

501c3 focused on Industrial Hemp Production, Education and Research

Steve Sprinkel, Ojai Center for Regenerative Agriculture

Wayne Richman, former Apple Executive, our E.D.

Tony de Veyra, Principal Researcher from Cal Poly Pomona

OCRA signed Master Research Agmt. w/ CHF

CHF signs MOU's with Farmers

In 2018, 7 farmers planted over 250 acres of hemp in California with CHF

How we operate legally in California

SB 566 (California Hemp Farming Act) + AUMA + SB 1409

Under the Established Agricultural Research Institute Exemption

“Established agricultural research institution” means a public or private institution or organization that maintains land for agricultural research, including colleges, universities, agricultural research centers, and conservation research centers.

Where does this leave us Federally?

2018 Agricultural Act (Farm Bill) passed including Federal Hemp Legalization

Each State (even CA) and Tribe is required to submit a State Plan to the USDA

CDFA is finalizing State Plan, as well, as Farmer Registration

Once registration is open, you can register as Seed Breeder or Commercial Grower for \$900 per County per Year

Est. Ag. Research Inst. can voluntarily register as seed breeder, if seeking Federal compliance

2018 Farm Bill

Crop Insurance

Organic Certification

Banking

Federal Grants



## Farm details

Most of the farms were concentrated in Central Coast, 5 @ 5-30 acres

Most of the acreage was in Central Valley

Dioecious seed production in majority of locations, some feminized

Planting density, 2,500 – 5,000 plants per acre

No insecticide, pesticide usage

Not all organic, some locations employed synthetic fertilizers

Bedded, Drip Irrigation, Plastic Mulch in majority of locations



Planted: early-August; photo 10/2





Planted: mid-September; photo taken: 11/27

## Large-Scale Agricultural Pilot

195 Acres in Central Valley

Direct Seeding with Seed Drill instead of Seedlings or Clone Transplants

No Bedding (instead Laser-leveled), No Plastic Mulch

Flood Irrigation vs. Drip Irrigation

Experimental AutoFlower (Day-Neutral) variety

Planting Density closer to 3 ft. x 4 ft. or 3,600 plants per acre.

Ideal for Machine Combining vs. Hand Harvest



195-acre planting



Taproot on direct-seeded Hemp

## Project Issues

Lack of clarity at State and Federal levels

Misconceptions and need for education and communication at local level

Hard to acquire established hemp varieties

Lack of hands-on farming experience with hemp

Little speciality machinery and processing equipment

Threat of inclement weather– fire and flood

Insect and caterpillar pressure

## Yield Data

Determined by planting density and planting date...

If grown exclusively for flower (feminized seed or clone), and planted 2,000 – 3,000 plants / acre, this would yield 1-1,200 lbs. Dried flower / acre.

If grow for seed and flower production (dioecious), and planted 4,000 – 5,000 plants / acre, this could yield 500 lbs. Dried flower / acre and 200 lbs. Seed / acre.

Most of the flower material tested yielded 0.15 – 0.34% total THC and 9.0 – 14.0% CBD. High-CBD varieties largely because we could not import certified varieties.

Late planting dates (Aug - Oct.) resulted in lower yields.



Planted: mid-October; photo taken: 12/26

## Market Data

1 lb. of dried high-CBD* biomass (chaff)	\$50	
1 lb. of high-CBD trimmed flower	\$150	
1 lb. of CBD distillate		\$3,100
1 lb. of high-CBD dioecious seed	\$4,000	
1 lb. of high-CBD feminized seed	\$15,000	

\*High-CBD = 10+% CBD



## What we Learned

Most mature markets are in CBD and Seed (for replanting) production

Grain (seed for food/feed) market still viable at \$1,200+ returns / acre

Both grain and fiber scaling requires accessibility to planting seed and processing

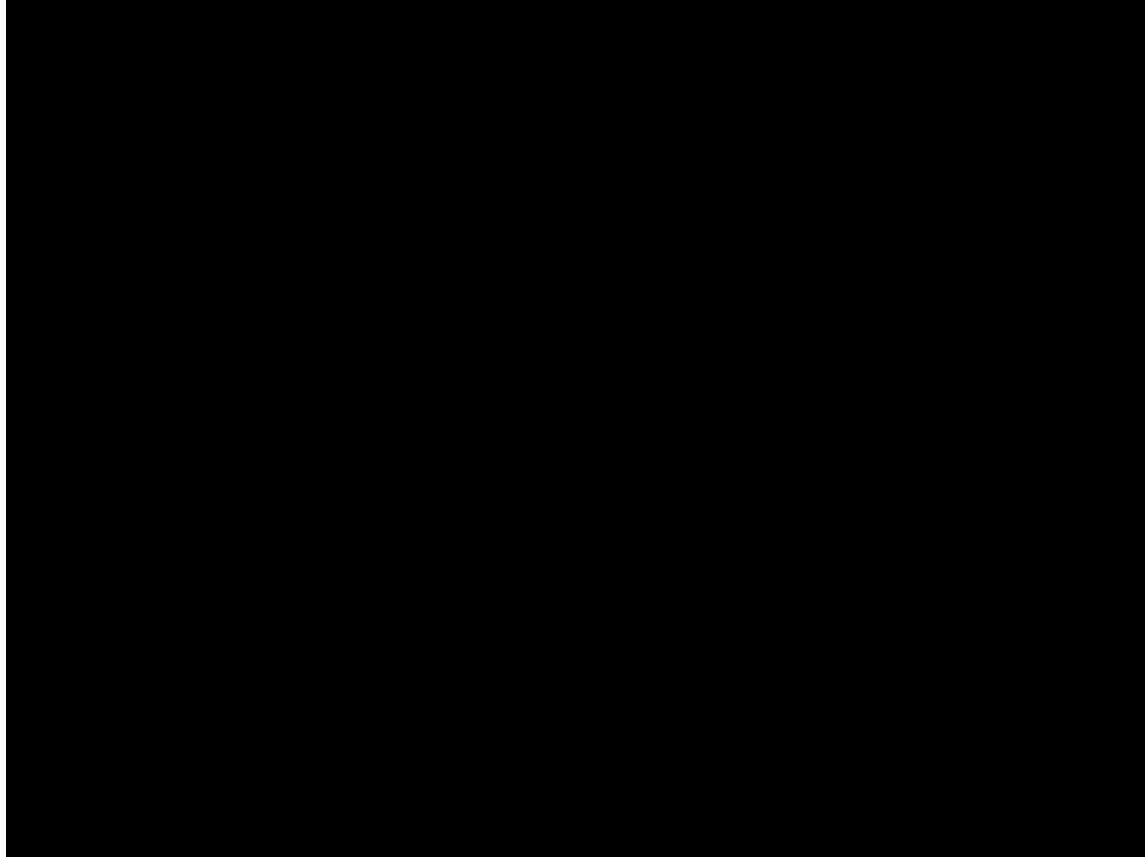
Health and Wellness markets for CBD still growing, ideal for small farms

Federal Legalization has been a big boost in farmer interest

Wind pollinating plant requires distance for breeding (3-5 miles min.)

Bees love male hemp plants

Bees - 11/02



## Some Advice

Stay in Comms with your County Ag Commissioner and local Law Enforcement

Sign up for CDFA mailing list for updates on Registration

Find a niche market: propagation, food products, organic certified

Not everyone can vertically integrate, look at toll processing

Know what is practical and don't get overextended

Lean on other people's experiences

We are in a market bubble, plan for sustainability



Volunteer Hemp; photo taken: 1/11

Interested in working with CHF?

Call (317) 902-1221

Or email [Matsmcclain@gmail.com](mailto:Matsmcclain@gmail.com)