

A S T E R
F A R M S

Sustainability Report

2020



Produced by Aster Farms

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A WORD FROM OUR CEO

Sustainability is part of our company's DNA. From no-till regenerative agriculture to opting for glass instead of plastic packaging, we believe in leaving a small footprint but making a big impact.

As a smaller scale agricultural product, cannabis cultivators are in a unique position to employ regenerative practices and lead the way in sustainable farming. This is particularly important given the history of cannabis cultivation during prohibition, wrought with environmental damage - from illegal pesticide use to diversion of water bodies.

Sustainability is also about building sustainable communities through inclusive hiring, supporting local organizations focused on equity, and creating career paths, not just jobs. The war on drugs and racist foundations of cannabis prohibition have devastated communities and families. Cannabis operators today have the responsibility to right these wrongs.

At Aster Farms we are committed to sustainability - in our farming, in our products, in our culture and in our communities. We pledge to continuously examine our practices across all aspects of our business.



Julia Jacobson
CEO & Co-Founder
Aster Farms





INDUSTRY OVERVIEW

6,002

TOTAL
CULTIVATION
LICENSES IN CA.

1,513

TOTAL
CULTIVATION
ACRES IN CA.

1.3M

TOTAL
OUTPUT
IN LBS IN CA.

1,043

LICENSED
RETAILERS AND
DELIVERIES IN CA.

The total production of U.S. cultivation (illicit + legal) in 2019 was estimated to be 29.8 million pounds

WATER USE: 2020

Commercial agriculture uses approximately 80% of California's "developed" water. Cannabis cultivation only accounts for 0.003% of that water used. Nevertheless, it is imperative to factor water conservation into commercial cannabis cultivation operations, especially in a state susceptible to drought like California.

Aster Farms utilizes three sources of water; an on-site well, a licensed diversion from a spring, and a 400,000g agricultural (ag) pond. The ag pond fills with rain and spring water during the winter and is supplemented by the well during dry months. See below for facts about our water use.

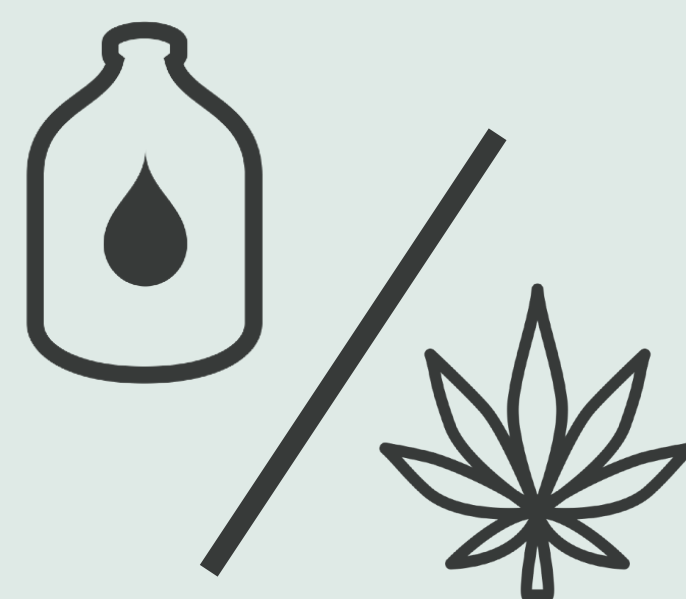
ASTER FARMS: 33K SQ. FEET OF OUTDOOR CANOPY



730K
GALLONS
H2O USED



2,300 LBS OF
FLOWER
PRODUCED



317 GALLONS
USED PER LB
OF FLOWER
PRODUCED

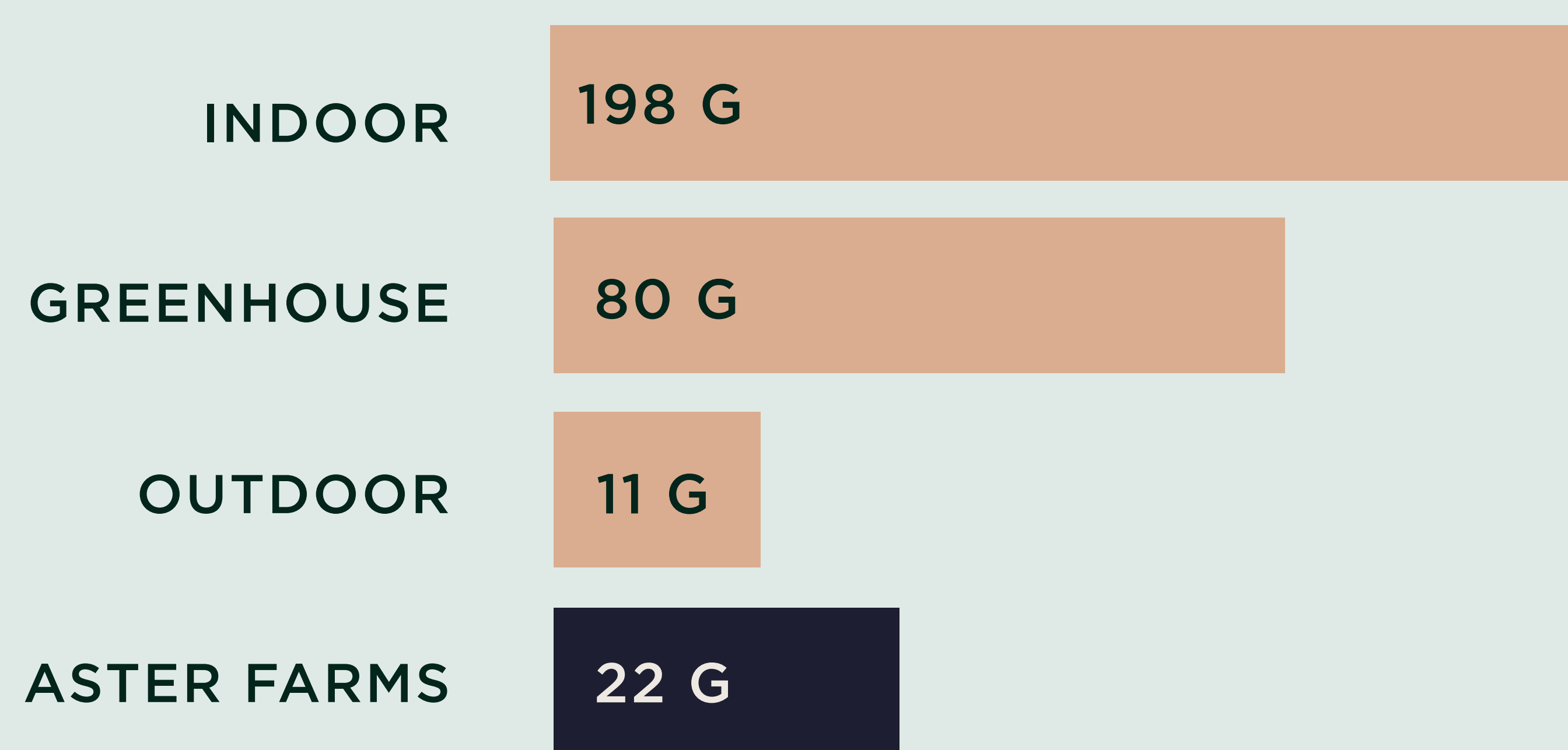


2.5 GALLONS
USED PER 1/8
JAR OF
FLOWER



0.7 GALLONS
USED PER 1
GRAM PREROLL

AVERAGE GALLONS USED PER SQFT CULTIVATION



WE BELIEVE OUR WATER USE WAS ABOVE THE AVERAGE DUE TO OUR HIGHER AND DRIER CLIMATE, AGED IRRIGATION AND LOWER THAN EXPECTED YIELD

SINGLE SERVING COMPARISONS



330 GALLONS PER
1/3 LB OF BEEF



1 GALLON
PER ALMOND



25GALLONS PER GLASS
OF WINE

INCREASING EFFICIENCIES

To increase water delivery efficiencies, we are upgrading the irrigation system, replacing drip lines and relining the ag pond to reduce water loss from leaks. To reduce water evaporation once water is delivered to the plants, we have implemented two strategies - covering the ground around the plants with straw to protect the moist soil from the sun and watering at night when less evaporation occurs.

HOW WE PLAN TO MONITOR

When compared to wine, beef and nuts, cannabis only uses a fraction of the water but is still a significant draw on underground streams and aquifers. According to the Ag Water Stewardship, devoting land to building ag ponds helps minimize the impact and contributes positively to overall watershed management. Our 400,000g ag pond acts not only as storage for irrigation but also as fire protection. Our well is equipped with a water meter which records number of gallons used and we have installed an additional meter on our processing facility to separate the data on water used for cultivation vs other operations.



UP NEXT | GREENHOUSE GAS EMISSIONS

GREENHOUSE GAS: 2020

Agriculture accounts for 10% of greenhouse gas (GHG) emissions in the United States. According to a study conducted by Colorado State University, greenhouse gas emissions from indoor and greenhouse cannabis cultivation have officially exceeded the coal mining industry in Colorado. Eww!

Aster Farms strives to keep our greenhouse gas emissions low by practicing no-till farming, sourcing locally (within 50 mile radius), buying in bulk and repurposing materials onsite. The less deliveries, less time on the road and less we purchase, the less CO₂e we are responsible for. See below for facts about our CO₂e emissions.

ASTER FARMS: 33K SQ. FEET OF OUTDOOR CANOPY



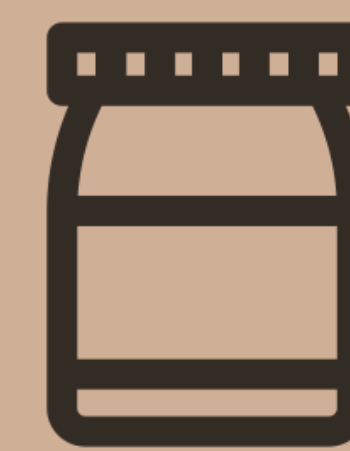
20K Kg OF CO₂e PRODUCED BY ASTER FARMS



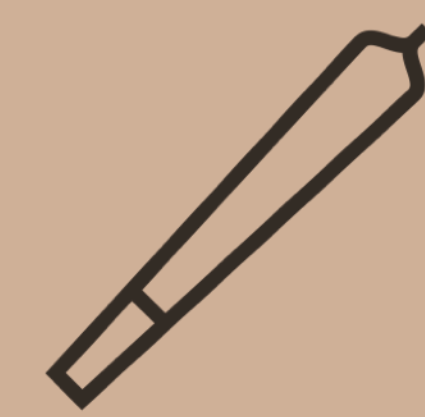
2,300 LBS OF FLOWER PRODUCED



9 Kg OF CO₂e PER LB OF FLOWER



0.07 Kg OF CO₂e PER 1/8 JAR



0.02 Kg OF CO₂e PER 1G PREROLL

AVERAGE CARBON INTENSITY BY GROW (Kg CO₂e/POUND)



18K OF 20K KG PRODUCED WERE CAUSED BY EMPLOYEE MILEAGE COMMUTING TO WORK



AVERAGE INDOOR GROW = 1K Kg OF CO₂e PER POUND OF FLOWER



INDUSTRY AVERAGE OF CO₂e GENERATED PER JOINT = 1.5 Kg CO₂e



ONE GALLON OF GAS = 9 Kg OF CO₂e

2021 EXPECTATIONS

Aster Farms will be expanding our outdoor cultivation footprint by 70,000 sqft. That means about 2,500 more cannabis plants which are among the best plants on the planet for carbon sequestration. However, we are increasing our greenhouse footprint which will add to our total CO₂e output.

THE LONG TERM PLAN

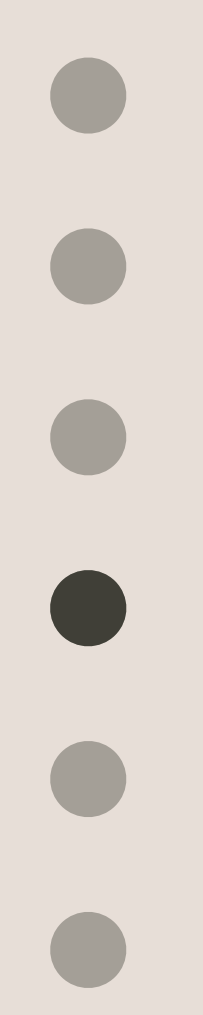
Aster Farms is focused on reducing GHG emissions by creating a more efficient supply chain, increasing our solar reliability and continuing to develop our soil. We have already begun taking our post-harvest processing and packaging in-house and have intentions to add additional solar over the next twelve to eighteen months.

Aster Farms is also exploring carbon offset programs.



UP NEXT | SOLID WASTE

SOLID WASTE: 2020



Solid waste consists of non-organic matter which gets hauled to landfills and recycling centers, and organic matter like sticks, stems and stalks of the cannabis plant.

As expected, we compost all of our “green waste” on site and once ready, mix it back into the soil to feed the plants. For non-organic solid waste we do our best to minimize by purchasing in bulk and choosing glass over plastic for our packaging. For example, we prevented 729 plastic soil bags from arriving at our farm by having our potting soil delivered in a dump truck. Moral of the story? Buy more bulk! See below for facts about our solid waste generation.

ASTER FARMS: 33K SQ. FEET OF OUTDOOR CANOPY



12.4 CUBIC YARDS OF NON-ORGANIC WASTE



2,300 LBS OF FLOWER PRODUCED



0.005 CUBIC YARDS OF SOLID WASTE PER LB OF FLOWER

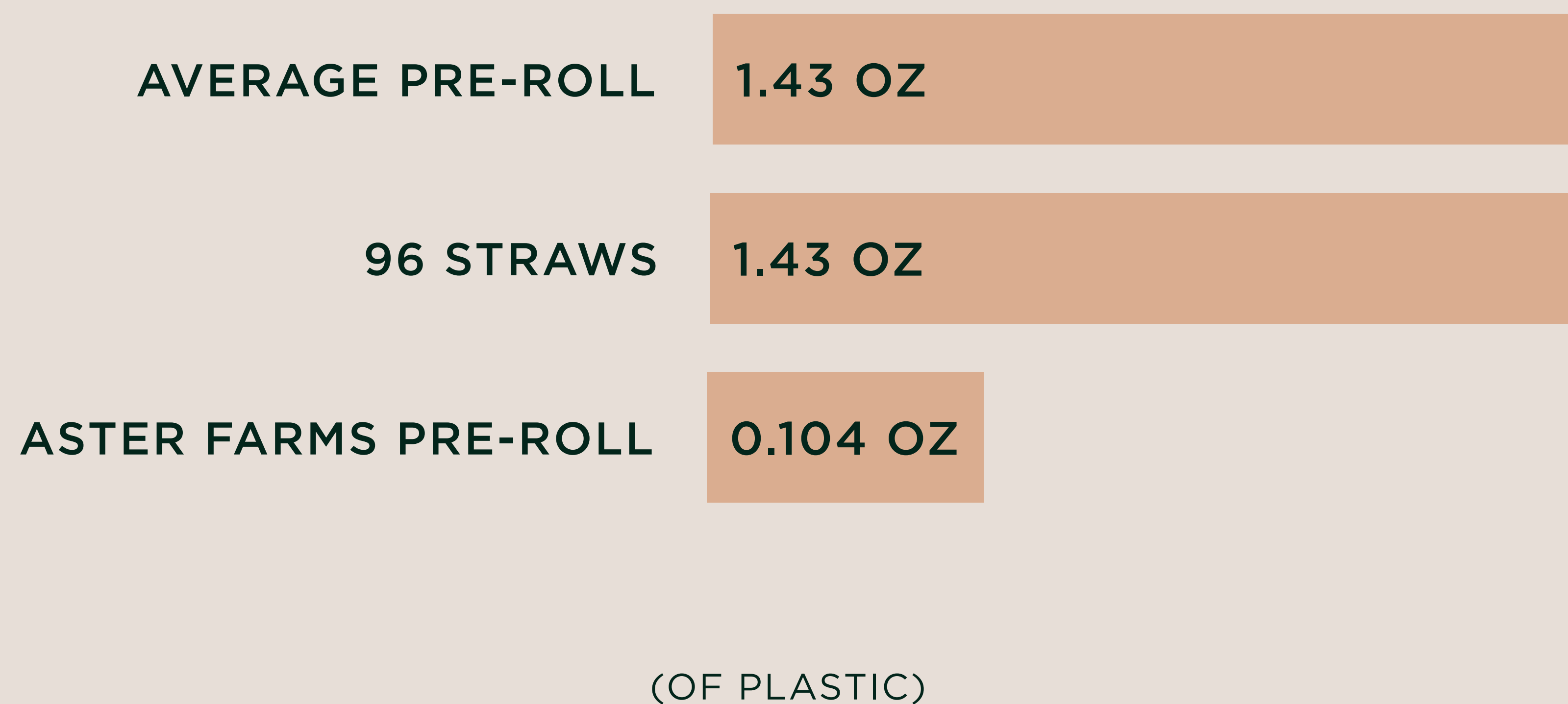


0.00004 CUBIC YARDS OF SOLID WASTE PER 1/8 JAR



0.00001 CUBIC YARDS OF SOLID WASTE PER 1G PREROLL

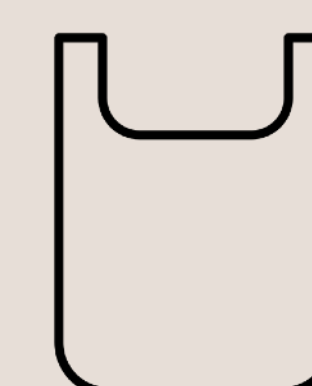
PLASTIC PACKAGING WASTE



AVG AMERICAN TOSSES 4.4 LBS WASTE PER DAY



40 BILLION PLASTIC UTENSILS TOSSED PER YEAR



100 BILLION PLASTIC BAGS TOSSED PER YEAR

2021 EXPECTATIONS

More waste is an unfortunate byproduct of growth, so as we continue to scale our operation we will create more non-organic waste. That said, we will work towards keeping our per lb metric at or below our current rate. We will also continue to recycle and buy in bulk.

When it comes to packaging, we are making strides in reducing plastics and mylar. Our new pre-roll pack will now come in an airtight, child resistant tin, so will no longer need a mylar bag which is one of the industry's worst adoptions.

REGULATORY CHALLENGES

The most challenging part of solid waste reduction stems from regulatory aspects of operating in the legal cannabis market. The millions of track and trace tags issued to cultivators, the millions of zip ties needed to secure the tags to the plants, and the need for child resistant packaging are all flagrant offenders when working towards sustainability. We hope to see advancements in packaging technology as well as more eco-friendly implementations for the track and trace programs.



ENERGY USE: 2020

Legal cannabis cultivation in the U.S. consumes an estimated 1.1 million megawatt hours (MWh) of electricity annually; enough to power 92,500 homes for a year. When you include the illicit market that number jumps to 4.1 million MWh, which is roughly equal to the total electricity generated annually by the Hoover Dam. We all have to do better.

At Aster Farms we utilize a combination of PG&E grid and solar power. Our light deprivation greenhouse and processing facility are connected to the grid, while our well and irrigation pumps are solar powered. See below for some facts about our energy consumption.

ASTER FARMS: 33K SQ. FEET OF OUTDOOR CANOPY



3,363 KW/H
CONSUMED
AT ASTER FARMS
IN 2020



2,300 LBS OF
FLOWER
PRODUCED



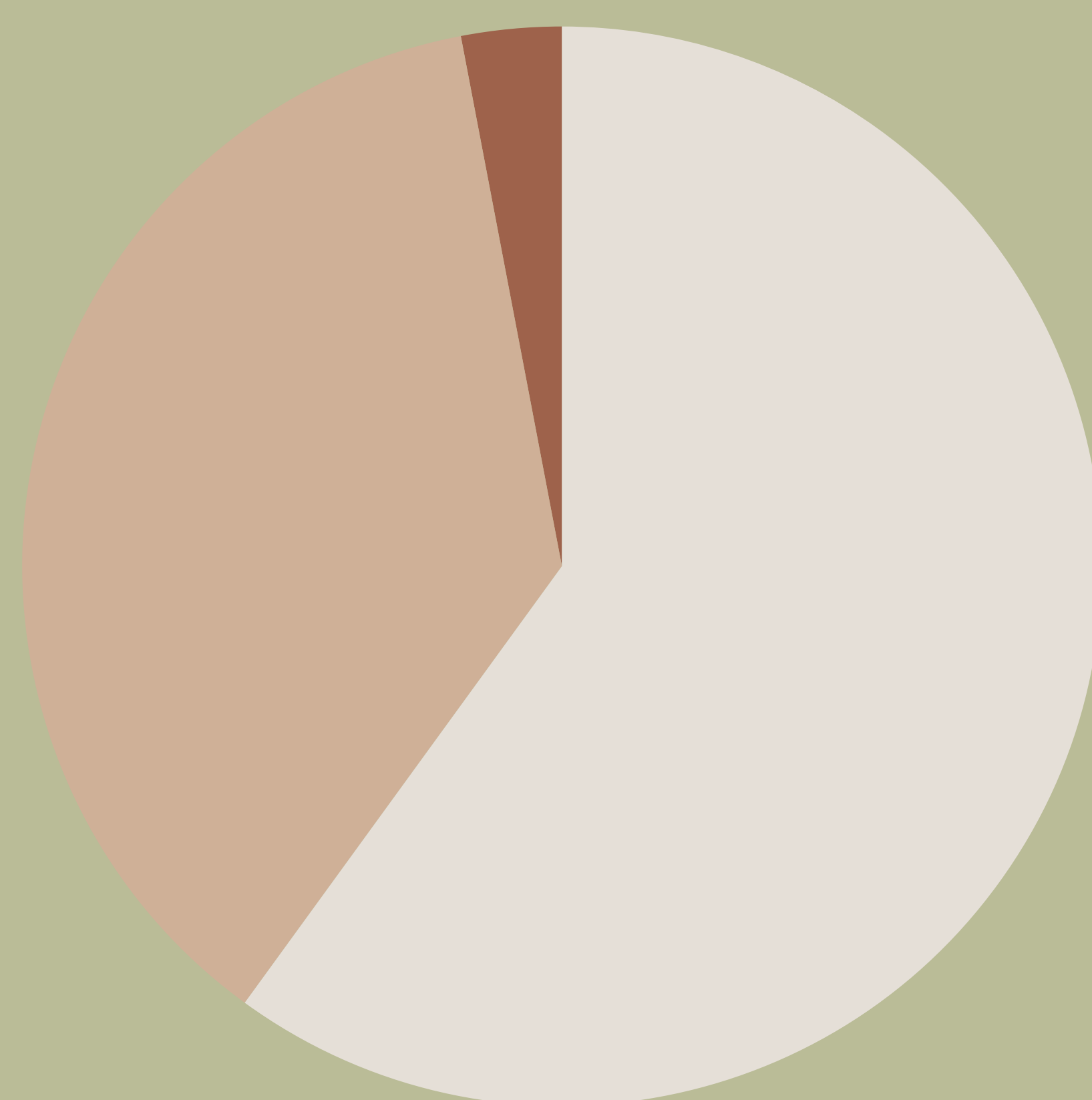
1.46 KW/H
PER LB
OF FLOWER



0.01 KW/H
1/8 JAR



0.003 KW/H
PER 1G
PREROLL



% OF TOTAL CANNABIS INDUSTRY
ENERGY CONSUMPTION BASED ON
GROWING TECHNIQUE



AVERAGE INDOOR
GROW = 2500 KW/H
PER LB OF FLOWER



AVG. HOUSEHOLD
CONSUMPTION
= 30 KW/H PER DAY



TO PRODUCE
1 PAIR OF JEANS
= 1.5 KW/H

2021 EXPECTATIONS

At Aster Farms we will be expanding our cultivation footprint by 71,800 sqft in 2021. Only 1,800 sqft of the expansion will pull from the grid power. The remaining 70,000 sqft of expansion will be supported by solar power. 2021 will be our first year of operating in light deprivation greenhouses. We understand this will be a significant draw and intend to transition to a solar supported system in the future.

HOW WE PLAN TO MONITOR

Aster Farms plans to install a meter on our light deprivation greenhouses to monitor the energy use from those specific operations. We believe that by separating this data, we may be able to take a more informed approach to reducing our grid use and replacing with renewable energy.



SUSTAINABLE COMMUNITY: 2020



We are female-owned, inclusively-focused and bring a dedicated set of values to our business that we hope can make a difference.

In 2020, we worked closely with Success Centers in SF and OUR Academy, please look them up. We gave our expertise to their organizations, workshopped with and mentored equity applicants in the industry and also supported with donations. We worked closely with equity retailers in The Bay Area. We hired BIPOC, veterans, LGBTQ+, people with criminal records. And we will continue to do so. Full stop.

That said, there is always more to do.

DONATIONS MADE IN 2020:

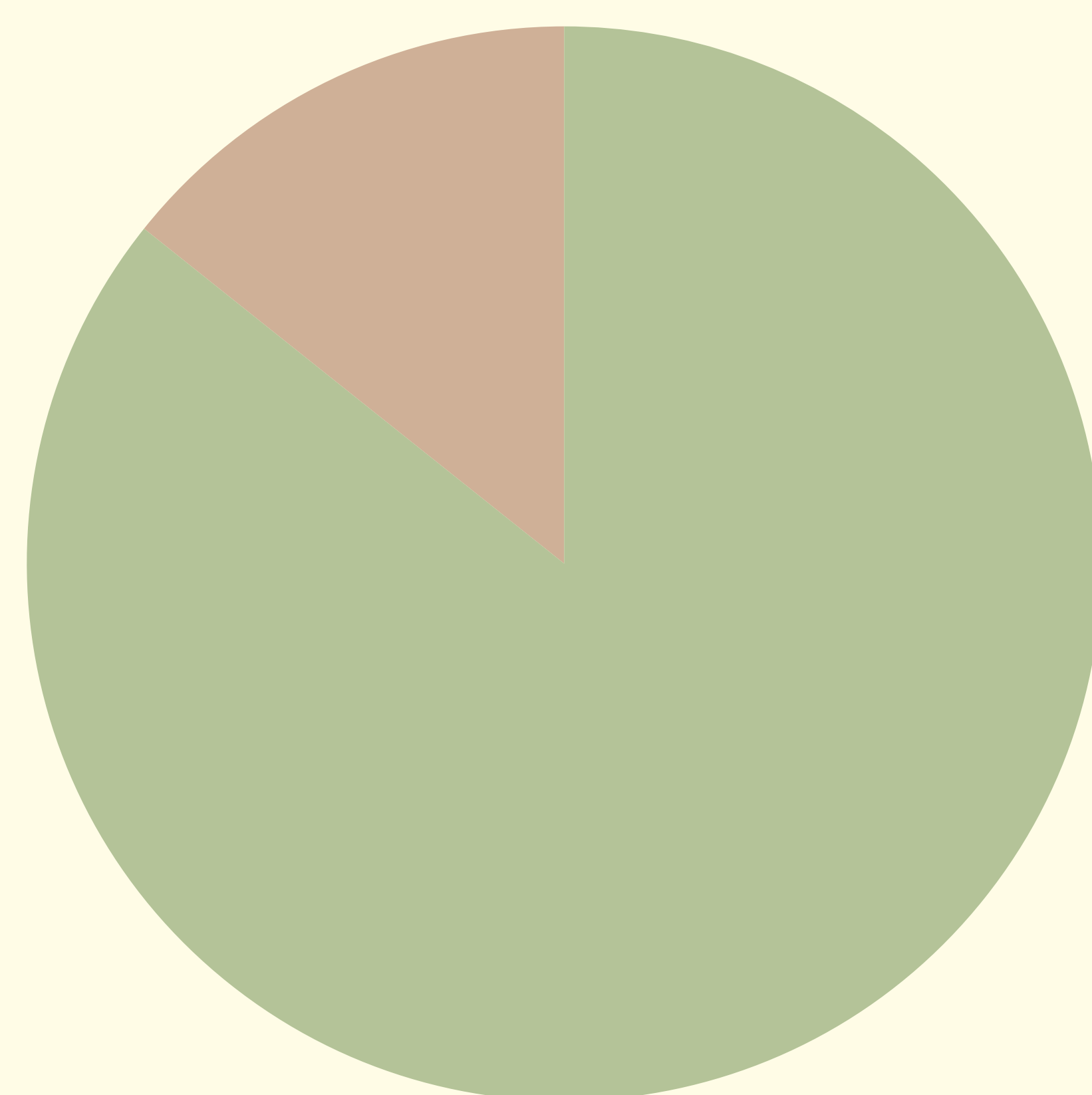
OUR
ACADEMY

SUCCESS
CENTERS

EQUITY
FIRST
ALLIANCE

MOVEMENT
FOR BLACK
LIVES

HIRING 2020:



2020 NEW HIRE
DEMOGRAPHICS

- 1X WHITE MALE
- 6X FEMALE, LGBTQ+, BIPOC AND/OR VETERAN

WORK TO DO:



40,000 STILL
INCARCERATED
FOR CANNABIS
CONVICTIONS



LESS THAN 5%
OF CANNABIS
BUSINESSES ARE
BLACK-OWNED

Thank you

For questions or comments please email
info@asterfarms.com



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