




# SHOULD WE BE FARMING HEMP

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- The background of the slide is the official seal of the United States Department of Agriculture. It features a central shield with a golden sheaf of wheat, a red plow, and a silver shovel. The shield is surrounded by a blue ring with white stars, and an outer ring with the text "DEPARTMENT OF AGRICULTURE" and "UNITED STATES".
- ▶ You can grow Hemp legally in 11 States.
  - ▶ All legal states currently require a license. To acquire that License by going to a hemp production program and getting it approved. You can also get it under a tribal hemp program and the USDA Program which all do the same thing.

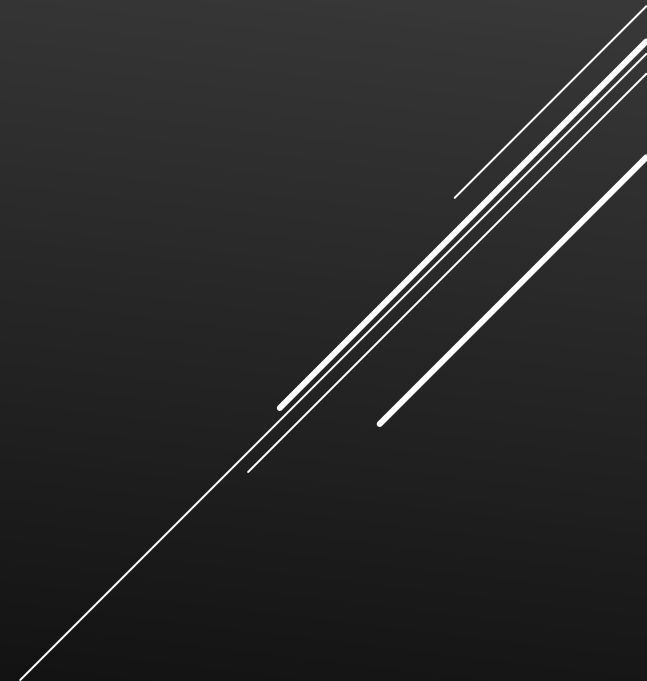
LEGALLY ALLOWED?

A close-up photograph of several bright green hemp leaves. The leaves are serrated and have a prominent central vein. The background is dark and out of focus, making the green leaves stand out. The text is overlaid in the center-left area.

# HEMP COMPARISONS TO TREES AND YUCCA

# WATER CONSUMPTION FOR HEMP COMPARING TO TREES, YUCCA, AND MARIJUANA

- ▶ Hemp On average, cannabis plants consume 22.7 liters or 6 gallons of water per growing season. This growing season typically ranges from June to October or 150 Days.
- ▶ Comparing to trees Which need 6 gallons per 1 inch of the tree's diameter. Taking into account that the normal diameter for a is 20 inches you would need a total of 120 gallons of water to fully grow one tree. This process would also be longer than growing hemp.



- ▶ Yucca is not grown under the same conditions as hemp, Yucca needs a warmer temperature. Yucca usually grows around the springtime while Hemp grows around the month of June to October.
- ▶ Since Yucca is a very drought-resistant plant it does not need to be watered every day. Experts say that watering the plant every 10 to 12 days should be enough for it to fully grow.

# YUCCA

## Hemp

- ▶ Low THC (<0.3%) High CBD
- ▶ Isn't psychoactive
- ▶ Requires minimal care. Adaptable to grow in most climates
- ▶ Medical, body care, clothing, construction, food, plastic, etc...

## Marijuana

- ▶ High THC (5%-35%) Low CBD
- ▶ Psychoactive
- ▶ Grown in carefully controlled atmosphere
- ▶ Recreational, medical

HEMP VS MARIJUANA



# THE MANY USES OF HEMP



HEMP PLANT HAS UP TO 50,000 USES

## STALK

### FIBER



TEXTILES

### HURDS



PAPER



INSULATION



ORGANIC COMPOST



ROPE



ANIMAL BEDDING



FIBER BOARD

## SEEDS

### OIL



COOKING/SEASONING OIL

### SEED CAKE



FLOUR

### HEMP NUT



MILK/DAIRY



DIETARY SUPPLEMENT



BEER



BAKERY



BODY CARE PRODUCTS



ANIMAL FEED



GRANOLA



FUEL



PROTEIN POWDER



PAINT

## ROOTS

## LEAVES/FLOWERS

# USES OF HEMP

Picture from <https://hempfoundation.net/the-usages-of-every-part-of-hemp-plant/>

# BENEFITS

(Sources: NCBI, USDA)

Protects Against  
Oxidative Stress

Supports Immune  
Function

Promotes Skin Health

Relieves Arthritis  
Symptoms

Has a Low  
Glycemic Index

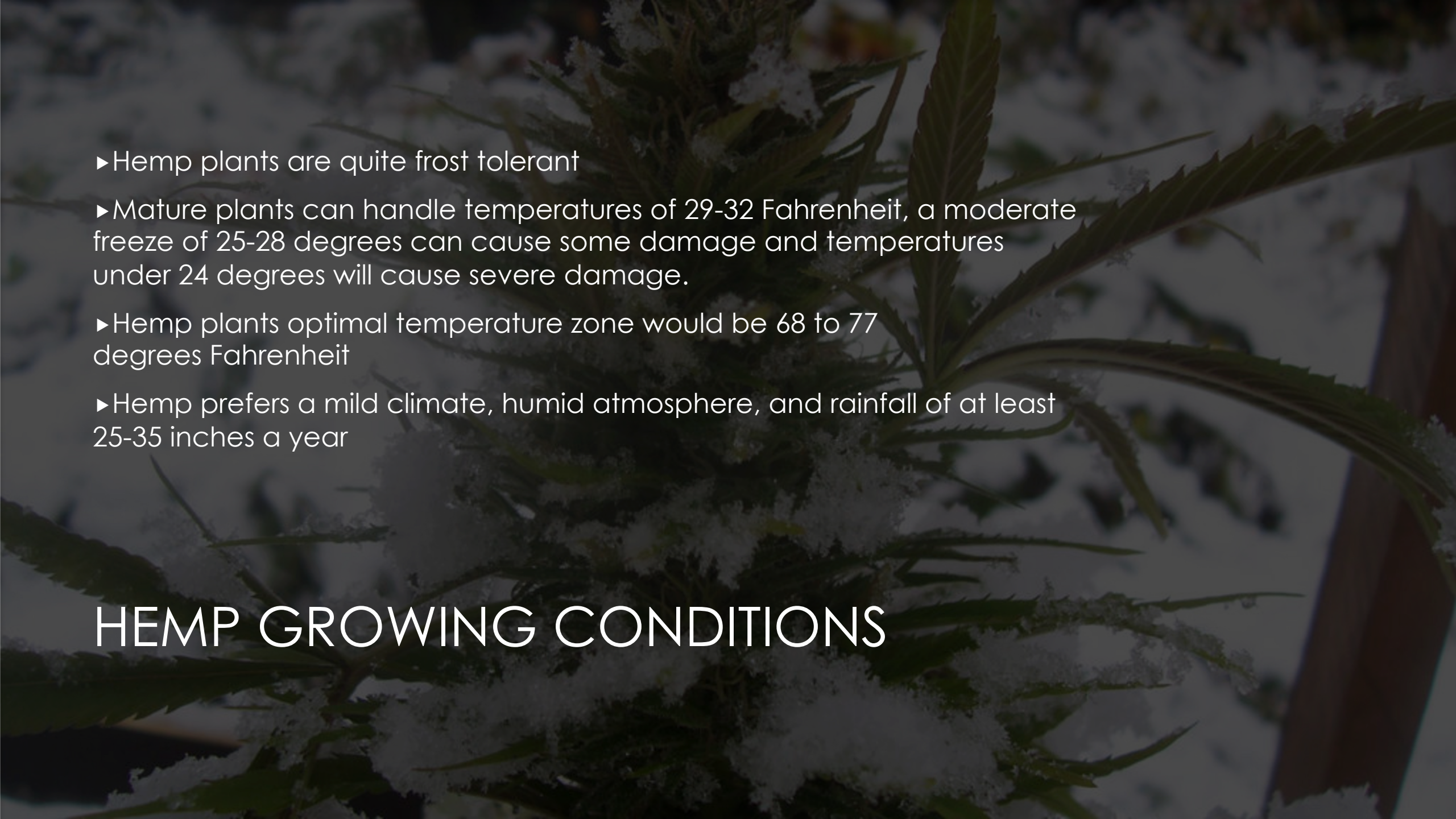


▶ Just like Hemp Yucca could also be used for  
Some of the same resources for example:

- ▶ Rope
- ▶ Milk
- ▶ Clothing
- ▶ Food
- ▶ Paper
- ▶ Insulation
- ▶ Biofuel
- ▶ And Oil

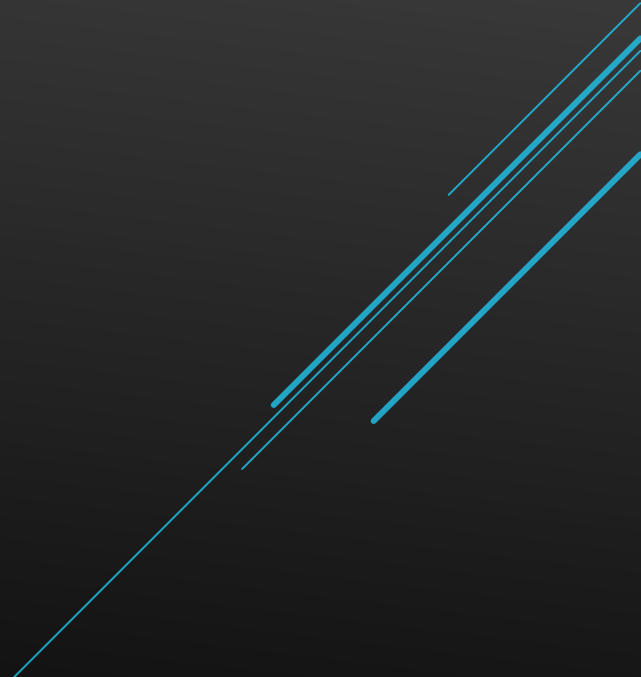
# YUCCA USES



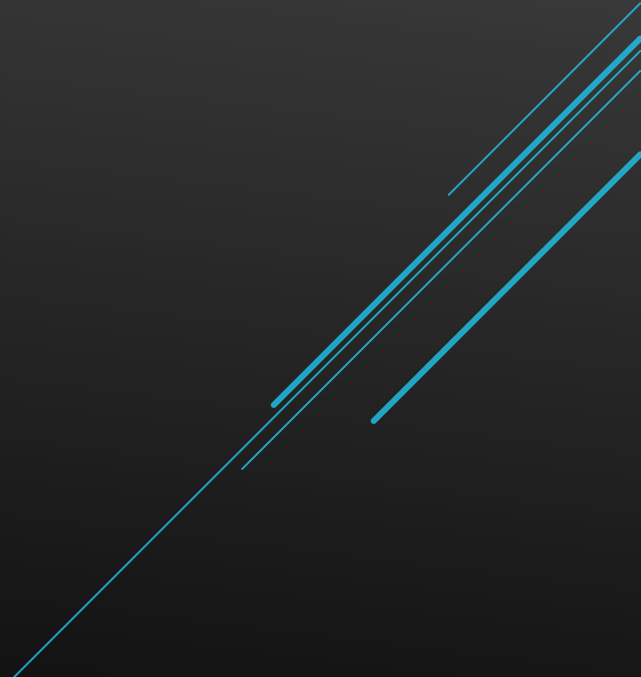
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- ▶ Hemp plants are quite frost tolerant
  - ▶ Mature plants can handle temperatures of 29-32 Fahrenheit, a moderate freeze of 25-28 degrees can cause some damage and temperatures under 24 degrees will cause severe damage.
  - ▶ Hemp plants optimal temperature zone would be 68 to 77 degrees Fahrenheit
  - ▶ Hemp prefers a mild climate, humid atmosphere, and rainfall of at least 25-35 inches a year

## HEMP GROWING CONDITIONS

# CHALLENGES WITH FARMING HEMP

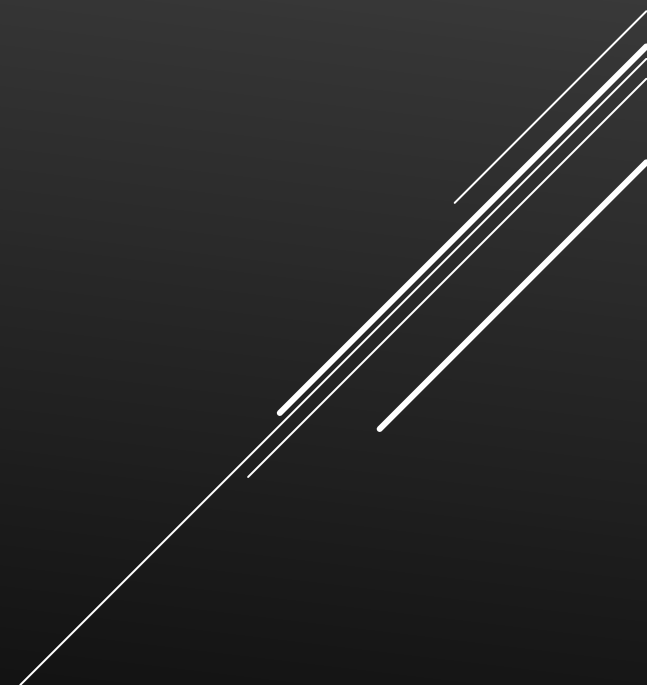
- ▶ **Regulatory Compliance:** Hemp farming is subject to various regulations at both the state and federal levels, and compliance can be complex and costly. Farmers must obtain the necessary licenses and permits, comply with testing requirements for THC levels, and follow strict guidelines on planting, harvesting, and processing.
  - ▶ **Soil quality:** Hemp requires well-draining soil with a PH between 6 and 7.5, which may not be available on all farms. Soil testing and amendments can be costly and time-consuming and may require ongoing maintenance to ensure optimal plant growth.
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- A decorative graphic consisting of several parallel teal lines of varying lengths, slanted upwards from left to right, located in the bottom right corner of the slide.

# CHALLENGES WITH FARMING HEMP CONTINUED...

- ▶ Pests and diseases: like any crop, hemp is susceptible to a range of pests and diseases, including mites, aphids, and fungal infections. Farmers may need to invest in pest management strategies and take steps to prevent contamination from neighboring crops
  - ▶ Market volatility: The market for hemp products can be unpredictable, with fluctuations in demand and pricing. Farmers must be prepared to adapt to changing market conditions and may need to diversify their crop portfolio to mitigate risks.
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- A decorative graphic consisting of several parallel teal lines of varying lengths, slanted upwards from left to right, located in the bottom right corner of the slide.

# SHOULD HEMP BE FARMED IN NEW MEXICO

- ▶ New Mexico is one of the 11 states that legalized hemp production
- ▶ The states arid climate and abundant sunlight makes it a suitable location for hemp farming, as well as its economic benefits for local farmers and communities. Particularly in areas where other crops may not be as profitable or sustainable
- ▶ However, it's important to find suitable soil as well as water availability to grow hemp because even though it doesn't require as much water as a tree it will still need to be watered quite regularly



- ▶ Growing hemp is something we have to start considering if we want to remain habiting earth. Though Selling hemp to companies could bring in potentially money for more Plants.
- ▶ Studies done by growcycle show that the average yield of 1000 pounds of Hemp seeds per acre with a price per pound being \$0.6 and \$0.65. With these calculations you could estimate a sell of \$250 and \$300 Per acre for growing seeds.
- ▶ Growing it for CBD could also sell from \$200 to \$40,000 per acre.

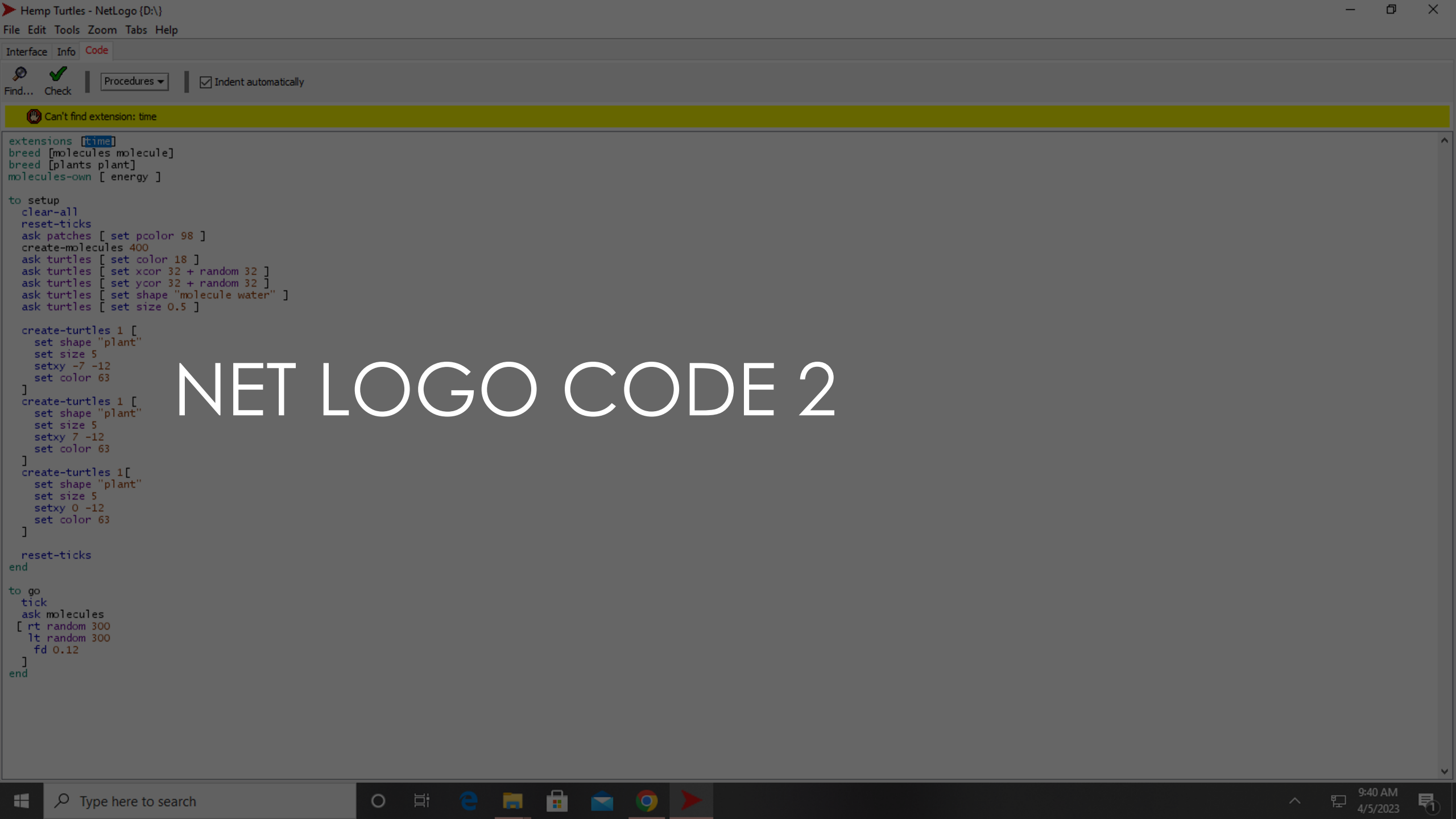
## SELLING HEMP

Can't find extension: time

```
extensions [s]
breed [molecules molecule]
breed [trees tree]
to setup
  clear-all
  reset-ticks
  ask patches [ set pcolor 98 ]
  create-molecules 400
  ask turtles [ set color 3 ]
  ask turtles [ set xcor 32 + random 32 ]
  ask turtles [ set ycor 32 + random 32 ]
  ask turtles [ set shape "molecule water" ]
  ask turtles [ set size 0.3 ]

  create-turtles 1 [
    set shape "tree"
    set size 4
    setxy -7 -12
    set color 63
  ]
  create-turtles 1 [
```

# NET LOGO CODE



Can't find extension: time

```
extensions [time]
breed [molecules molecule]
breed [plants plant]
molecules-own [ energy ]

to setup
  clear-all
  reset-ticks
  ask patches [ set pcolor 98 ]
  create-molecules 400
  ask turtles [ set color 18 ]
  ask turtles [ set xcor 32 + random 32 ]
  ask turtles [ set ycor 32 + random 32 ]
  ask turtles [ set shape "molecule water" ]
  ask turtles [ set size 0.5 ]

  create-turtles 1 [
    set shape "plant"
    set size 5
    setxy -7 -12
    set color 63
  ]
  create-turtles 1 [
    set shape "plant"
    set size 5
    setxy 7 -12
    set color 63
  ]
  create-turtles 1 [
    set shape "plant"
    set size 5
    setxy 0 -12
    set color 63
  ]
  ]

  reset-ticks
end

to go
  tick
  ask molecules
  [ rt random 300
    lt random 300
    fd 0.12
  ]
end
```

# NET LOGO CODE 2

Find... Check | Procedures |  Indent automatically

```

create-pines 1 [
  set shape "plant"
  set size 2
  setxy -7 -14
  set color 63
  set water-level 5
]

create-plants 1 [
  set shape "tree pine"
  set size 2
  setxy 7 -14
  set color 63
  set water-level 5
]

;; plot the initial state
reset-ticks
end

;;Start

to go

  make-rain-fall
  move-water
  ask suns [ show-intensity ]

  ;;
  ask pines [
    adjust-water
  ]

  ask plants [
    adjust-water
  ]
  tick
end

;;; Adjust water

to adjust-water
  ;; If there is a raindrop near the pine with some water
  ;; left in it, then absorb some of that water
  let nearby-raindrops raindrops in-radius 2 with [ location = "pines" and amount-of-water >= 0 ]

  if any? nearby-raindrops [

```

## Net Logo Code 3

... Check | Procedures |  Indent automatically

```

end [plants plant]
end [pines pine]
end [raindrops raindrop]
end [suns sun]

globals [
  bottom-line ;; controls where the ground is

  raindrops-own [
    location
    amount-of-water

  ]

  pines-own [
    water-level

  ]

  plants-own [
    water-level

  ]

  setup
  clear-all
  ;;Create sky and grass
  ask patches [ set pcolor blue - 1 ]
  set bottom-line min-pycor + 1
  c-default-shape raindrops "circle"
  c-default-shape suns "circle"

  ask patches with [ pycor < min-pycor + 2 ] [
    set pcolor green
  ]

  Create sun, plants and tree

  ;; Create the sun
  create-suns 1 [
    setxy (max-pxcor - 2) (max-pycor - 3)
    ;; change appearance based on intensity
    show-intensity
  ]

  create-pines 1 [
    set shape "plant"
    set size 2
    setxy -7 -14

```



- ▶ During this project we had quite a few shortcomings Throughout the year
- ▶ Galligan having a stroke slowed down the progress we made, with no Teacher we were not able to code as much.
- ▶ The whole team ended up getting Covid in the middle of the year Slowing down our process even further.
- ▶ Galligan left Taos High leaving us without a sponsor and no guidance.
- ▶ Since Galligan left all her classes were switched to different periods, breaking us up and not being able to work on it as a group.
- ▶ One of our key research papers ended up getting corrupted, therefore we had to start looking for the research again.

## CHALLENGES

# WORK CITED:

- ▶ <https://draxe.com/nutrition/yucca-root/>
- ▶ <https://www.sciencedirect.com/science/article/abs/pii/S1161030122001241#:~:text=Cold%20temperatures%20and%20water%20stress,and%20adaptation%20to%20climate%20change.>
- ▶ Drotleff, Laura. "Cannabis Requires More Water than Commodity Crops, Researchers Say." *MJBizDaily*, 18 Dec. 2021, <https://mjbizdaily.com/cannabis-requires-more-water-than-commodity-crops-researchers-say/>.
- ▶ Sanchez, Kat. "How to Grow and Care for Yucca." *Gardener's Path*, 26 Mar. 2023, <https://gardenerspath.com/plants/succulents/grow-yucca/>.
- ▶ Sayner, Adam. "How Much Money Can You Make Growing Hemp? A Guide." *GroCycle*, 11 Aug. 2022, <https://grocycle.com/how-much-money-can-you-make-growing-hemp/#:~:text=One%20acre%20of%20hemp%20can,and%20post%20harvest%20processing%20costs.>
- ▶ Wild Interiors. "How to Care for Yucca Cane." *Wild Interiors*, Wild Interiors, 6 Jan. 2020, <https://www.wildinteriors.com/blog/2020/1/6/how-to-care-for-yucca-cane/#:~:text=The%20Yucca%20Cane's%20underground%20rhizome,well%20draining%20soil%20and%20pot.>
- ▶ <https://hempfoundation.net/the-usages-of-every-part-of-hemp-plant/>
- ▶ <https://www.ams.usda.gov/rules-regulations/hemp/information-producers#:~:text=To%20produce%20hemp%20C%20you%20first,of%20your%20hemp%20growing%20facility.>
- ▶ <https://grocycle.com/how-much-money-can-you-make-growing-hemp/#:~:text=Growing%20Hemp%20for%20Seeds&text=The%20average%20yield%20is%20around,acre%20growing%20he mp%20for%20seeds.>