

# A Introduction to CBD Hemp Production

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Industrial Hemp Production Workshop  
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Sterling, IL

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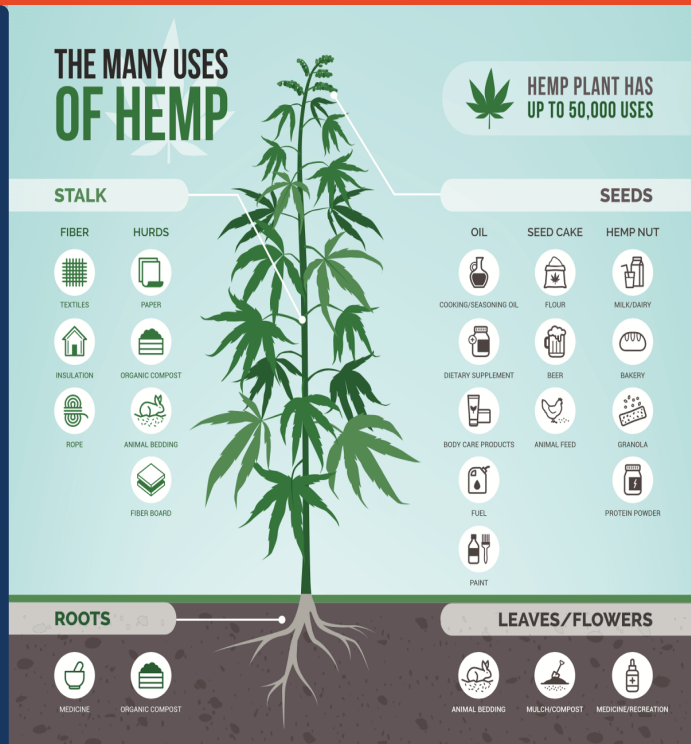
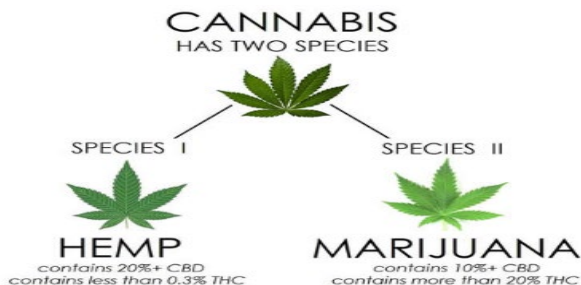
# Talking Points

- Taxonomy and Morphology
- Types of Hemp
- Hemp Production
- Hemp Processing and Applications
- Legislation/Registration



# Industrial Hemp

- *Cannabis sativa*
  - *Hemp vs Marijuana*
- Dicotyledonous Plant
- Primarily Dioecious
- Hemp is Photoperiod Dependent
  - Short-Day
  - 10-12 hours darkness



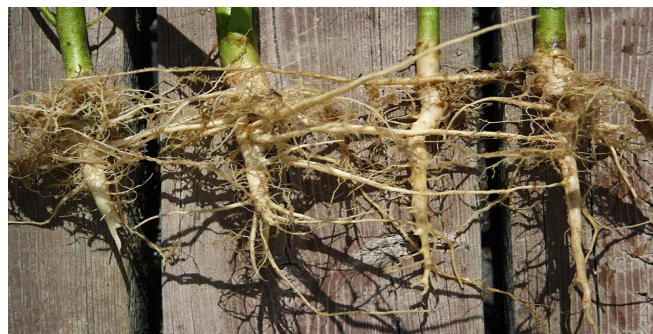
# Considerations

- **Soil Type:** Well-drained
  - **pH Range:** 6.0-7.5
  - **Soil Temperatures:** >50°F
  - **Planting Depth** 1/4- 3/4 in.
  - **Optimum Air Temperature:** 66-77°F
  - **Moisture Requirement:** >10-15 inches
  - **Plant AFTER** a rain, **NOT BEFORE**
- **Field Selection:**
    - Highly Productive
    - Low weed pressure
    - Well-drained
  - **Planting Rate:** Depends
  - **Planting Method:** Depends



# Growth Stages

- **Germination:** 24-48 hours
- **Emergence:** 4-10 days
- **Slow Growth:** Day 1-30
  - $\frac{1}{4}$  -  $\frac{1}{2}$  inch per day
- **Rapid Growth:** Day 30-60
  - 1-3 inches per day



<http://www.hemptrade.ca/eguide/background/the-hemp-plant>

# Pests: Weeds

- One of the most significant pests of hemp
- Field Selection is critical
- Find situations that reduces weed pressure
  - Use of soil amendments
- Weed control during first 30-Days is critical
- Possible mechanical control



# Growth Stages

## Reproductive Phase

- **Reproduction:** Day 60-90
- **Maturity:** Day 100-110
- **Harvest:** Day 110-130
  - September/October



Grain Field Nearing Flowering



Male Plant



Female Plant

# Pests: Disease and Insects

- Insects

- European Corn Borer
- Japanese Beetles
- Grasshoppers
- *Spider Mites*
- *Aphids*
- *Whiteflies*



- Disease

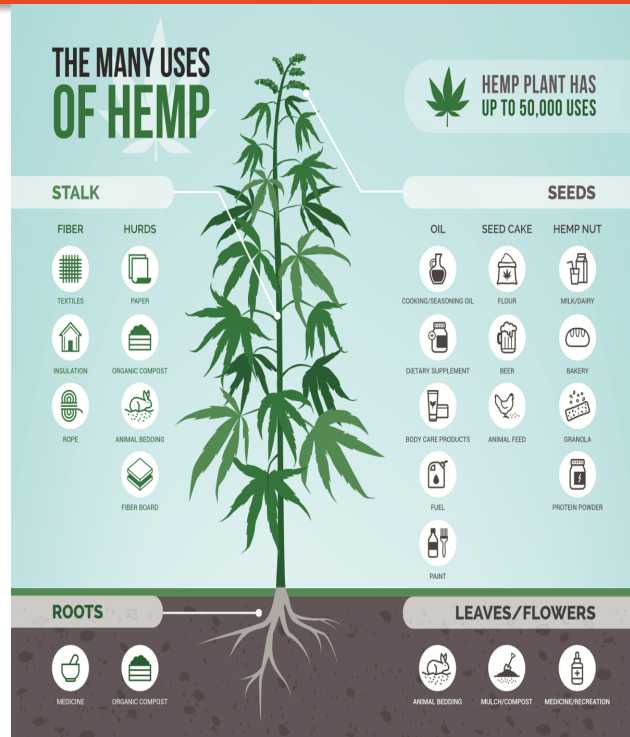
- White Mold
- Gray Mold
- Septoria
- Powdery Mildew
- Downey Mildew





# Hemp Production Systems

- Grain
  - Small Grains (Wheat)
- Fiber
  - Forages (Hay)
- CBD
  - Specialty Crops (Tomatoes)



# CBD Hemp

- **Planting Stock:**  
Transplants
- **Planting Method:**  
Transplanter
- **Planting Rate:** 1000-2000 plants/acre
- **Harvest Method:** Hand
- **Post Harvest:** Plants are hung to dry in drying sheds or warehouse



# Cannabidiol (CBD)

- CBD is found within the oil/resin glands (trichomes) **NOT** in the seeds
  - Flowers and leaf material
  - **Males MUST** be culled
- CBD is not psychoactive
- CBD is extracted from the plant material
  - Supercritical CO<sub>2</sub>
  - Butane/Propane
  - Alcohol/Ethanol



Closeup of female cannabis flower

# Cannabinoids

- Cannabis hemp contains at least 85 types of cannabinoids
  - Including CBD and THC
- Bind to receptor sites throughout our brain and body (65 cellular targets)
- Different cannabinoids have different effects depending on the receptors they bind to
- **May** help treat symptoms of many medical conditions
  - Mood/Eating/GI disorders
  - Neurological disorders
  - Pain/Sleep disorders

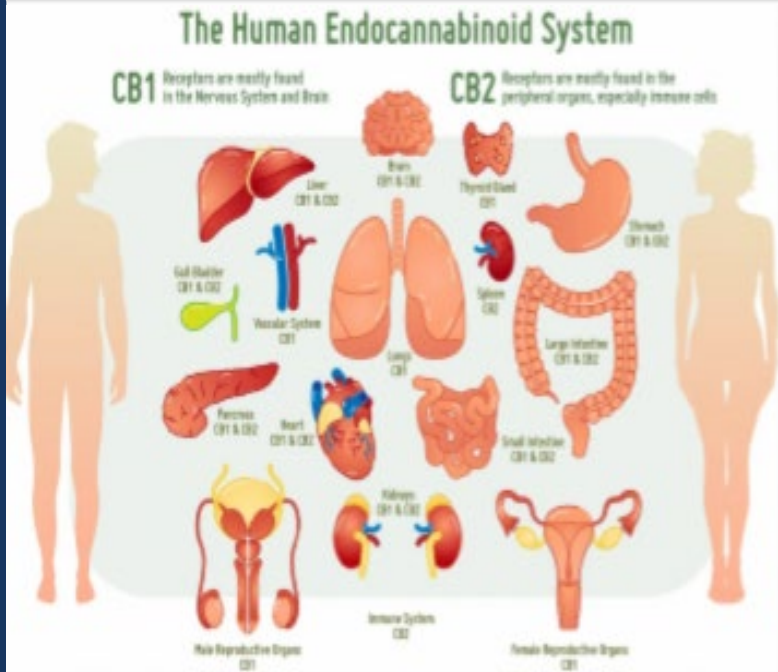


Image Credit: SatiMed USA









July 13<sup>th</sup>



August 5<sup>th</sup>





August 21<sup>st</sup>



August 21<sup>st</sup>





September 14<sup>th</sup>



September 14<sup>th</sup>









# Pests: Disease and Insects

## Eurasian Hemp Borer





# White Mold



# CBD Storage/Drying



October 7<sup>th</sup>



# CBD (Specialty Crops)

- Most lucrative area of hemp production
- Hemp-derived CBD is available in many forms, concentrations due to processing strategies



Full spectrum  
~10% CBD

Concentrated and filtered  
~25% CBD

Isolate powder  
~99% CBD



Image Credit: [hempmedspx.com](http://hempmedspx.com)

# Summary

- Field selection is important
  - Well drained soils
  - Highly productive, low weed pressure fields
  - Organic – Best to follow sod-forming legume
- Think of ways that promote rapid emergence and seedling growth
  - Good fertility
  - Good seedbed preparation
- Harvest grain heads only to reduce fiber wrapping
- Consider cleaning grain after combining
- Move grain to aeration bins immediately after harvest
- CBD Production is LABOR intensive

# General Provisions

- No person shall cultivate hemp in the state without an License
- No person shall process processor/handler registration
- All licensed persons in the state must provide “research” information
- Licensed cultivators are responsible for procuring seeds, clones, transplants or propagules for planting
- All seeds, clones, etc., shall be certified under the Association of Official Seed Certifying Agencies (AOSCA) standards and guidelines for industrial hemp OR contain a Certificate of Analysis (COA) which shows it tests below 0.3% THC threshold
- Licenses and registrations cannot be transferred or assigned, in whole or in part, to another business, individual or other entity

# General Provisions – cont'd

- No land area may contain cannabis plants or parts of cannabis plants
- Minimum land area for cultivation shall be a contiguous land area of  $\frac{1}{4}$  of an acre for outdoor cultivation and 500 square feet for indoor.
- Each noncontiguous land area shall require a separate application fee
- Licensee info may be shared with law enforcement without notice
- Any violations by a licensee or registrant may be subject to administrative action



# Draft Rules

- Apply!
- Background Check – forms supplied by the IDOA
  - No person convicted of any felony, drug-related misdemeanor, or crime of dishonesty in the 10 years prior to the date of application shall be eligible for license/registration
- Within 30 Days, IDOA will either approve or deny application
  - If approved, submit license fee for each noncontiguous land area and each indoor cultivation operation
  - List varieties and acreage to be planted, along with COA
  - Any changes to the licensee's cultivation plan must be approved by the Dept.

# Draft application process –Grower/Processor

- Applicant must provide the following:
  - Name and address of the applicant;
  - Type of business or organization;
  - Business name and address (if different than information provided)
  - Legal description of land area, including GPS coordinates
  - A map of the land area on which you plan to grow hemp, showing boundaries and dimensions of growing area
  - The application fee of \$100
  - Registration fee
    - 1 year→ \$375
    - 2 year→ \$700
    - 3 year→ \$1000

# Research information

- Pre-Harvest Report – at least 30 days prior to harvest
  - Expected harvest dates and locations of each variety of industrial hemp
  - Notify Department if the harvest dates change in an excess of 5 days
- Final Report – no later than February 1 of each year
  - Total acres or square fee of industrial hemp planted
  - A description of each variety planted and harvested
  - Total acres or square feet harvested; and
  - Total yield in the appropriate measurement, such as tonnage, seeds/acres, etc. OR any other measurement approved by the IDOA

# Inspection and sampling

- All licensees are subject to inspection at the discretion of the IDOA
  - An “agent” must be present
- Dept. shall provide 5 business days’ notice to inspection
- A representative of sample MAY be taken by IDOA or approved laboratory personnel.
  - Producer is responsible for payment
- All plants are subject to sampling and testing to verify that delta-9 THC concentration does not exceed 0.3% on dry weight basis
  - Exceeding 0.3% and is not retested at the request of the licensee will be destroyed
  - Plant will be destroyed if retested and still “hot”
    - Methods for destroying crops have yet to be determined
- Must wait for results before processing and/or transportation of industrial hemp