



HEARTLAND

HARVEST

From Soil to Oil

Indiana CCA Conference

December 17, 2019

The Process



Preparation

Licensing, genetic sourcing, soil testing and field preparation



Planting

Plant seedlings or clones



Growing

Fertilize and monitor plants



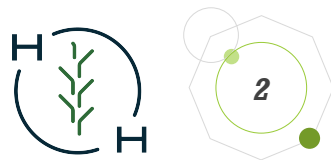
Harvest

Harvest the hemp and dry the biomass



Processing

Extract and isolate compounds for consumer market



Growth Cycle



Vegetative

Initial growth stage of plant.

Light > 14 hours a day



Flowering

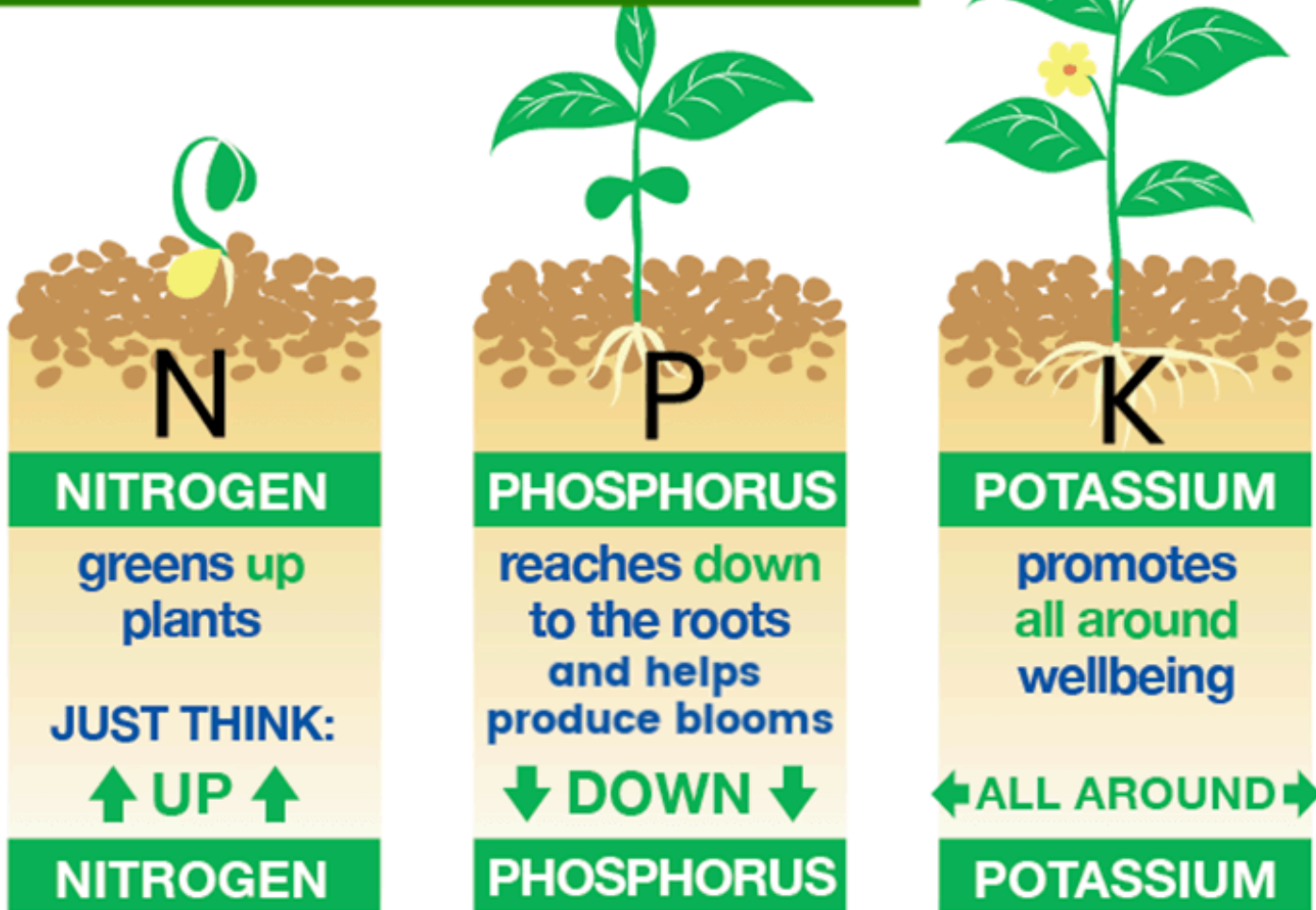
Final stage where plant produces resinous buds.

Light ≤ 14 hours a day



Fertilizer

What do the numbers on fertilizer mean?



Our 2019 Hemp Nutrient Program:

Nitrogen: 55.72 lbs.

Phosphorus: 19.46 lbs.

Potassium: 74.02 lbs.

*Fed through fertigation and foliar

~15 lbs. of micros (incl. kelp/sugar)



Insect and Fungus Threats



A lot of flea beetles.

No real significant damage to our hemp plants. More concerned with neighboring weeds.



Leaf feeders were present in our south field (Vincennes).

Did cause damage and were attracted to the flower.



Powdery mildew is a big concern, considering Indiana's climate.

Did not affect our fields.

The Product



Extraction

Cannabinoids are extracted from the plant material using a solvent.



Purification

Specific cannabinoid is purified to remove unwanted compounds.



Infusion

The purified cannabinoid is then infused with various products and packaged.

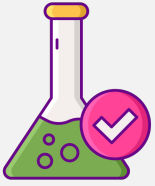




Extraction

- Cannabinoids are extracted from dry biomass using a solvent.
 - Common solvents include:
 - Hydrocarbons
 - Ethanol
 - CO₂
- Extractions occur in a closed loop system in a controlled environment.
 - Prevent contamination
 - Ensure safety
- Every batch is tested to ensure it meets standards before further processing.





Purification

- Crude cannabinoid extract is purified by manipulating temperature.
- Compounds such as plant fats, lipids, and chlorophyll are removed.





Purification

- Purified cannabinoids can be either distilled or isolated
 - Distillation is the process of boiling a solution to separate different compounds by boiling point.
 - Distillate can contain multiple cannabinoids that work together to create a holistic effect.
 - Isolation is the process of targeting a select compound and solidifying it into a pure crystalline form.
 - Isolates are by definition a single compound (e.g. CBD, THC, CBN, CBC, etc)





Purification



Cannabinoid Distillate



CBD Isolate



Infusion

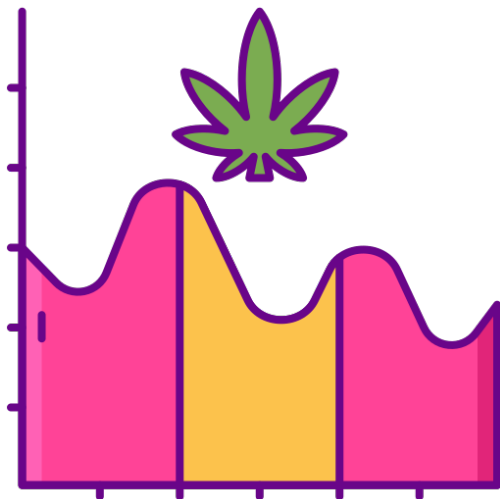
- The purified CBD product (isolate or distillate) is then infused and/ or packaged.
 - Sublingual drops are made by infusing isolate with a carrier oil.
 - MCT oil, hemp seed oil, etc.
 - Topicals are made by mixing isolate with a balm or salve.
 - CBD capsules are isolate mixed with a filler such as powdered MCT oil or rice flour.
 - Vape cartridges are made by mixing distillate with terpenes for flavor.





Consumer Safety

- Know Your Grow!
 - Hemp is a bioaccumulator and will absorb harmful materials if present in the soil.
 - CBD products made with contaminated hemp are dangerous.
- Make sure your hemp is lab tested
 - Labs will provide a Certificate of Analysis (COA) that shows what compounds are present.
 - Many COAs test only for THC, meaning products can contain heavy metals or pesticides





Indiana CCA Conference

Advising Farmers on Legal Considerations in a Heavily Regulated Crop

Adam Kline

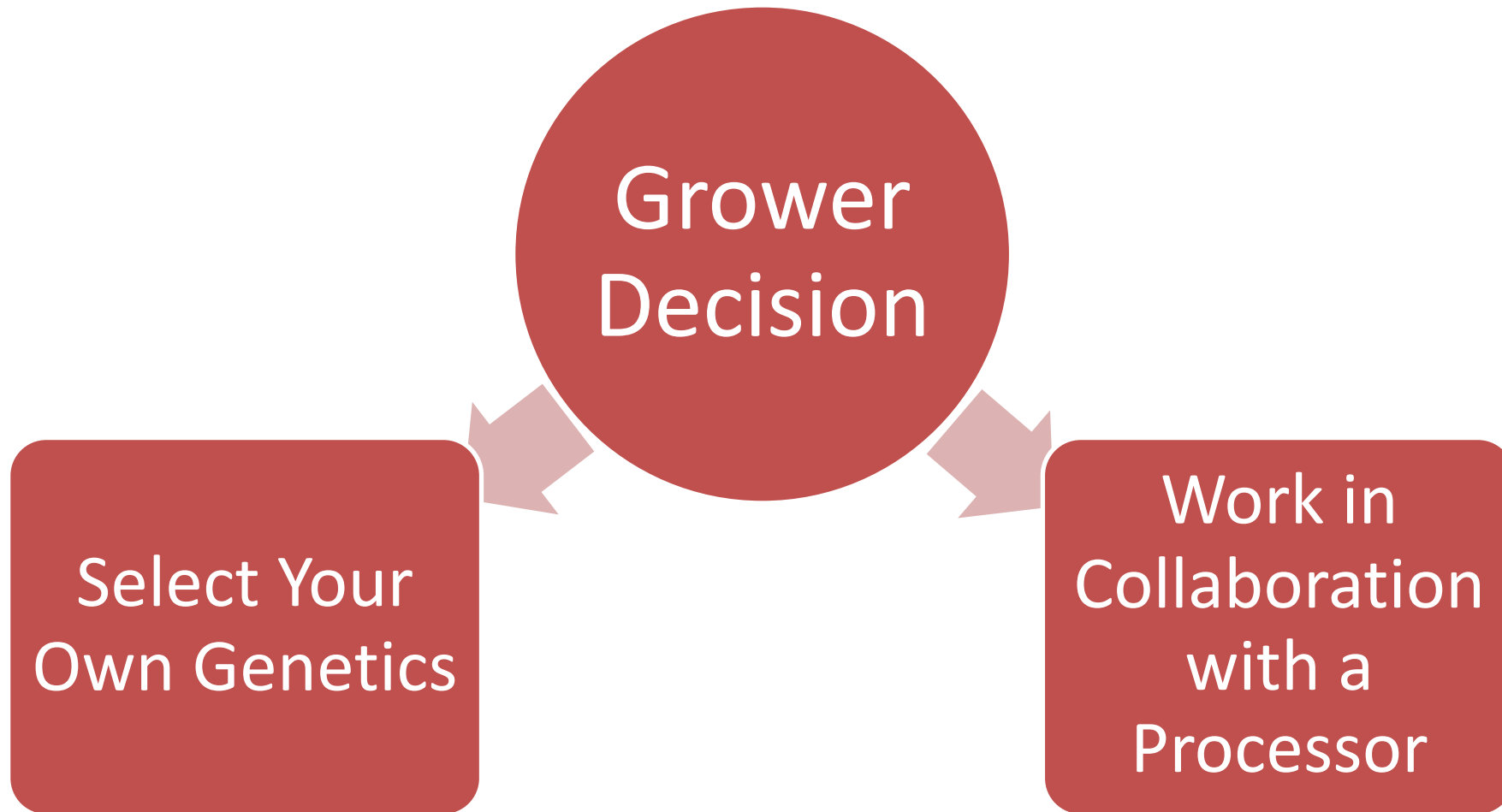
Bose McKinney & Evans, LLP

December 17, 2019

Hemp Contract Lifecycle

Planning	Farming	Post-Harvest
State Licensing	Greenhouse Services	Drying and Milling
Genetic Selection (Material Transfer Agreements)	Guest Labor	Escrow Agreements
Growing Collaboration (Buy-Back Agreements) (Crop Share Agreements)	Custom Harvest	Storage Agreements
Agronomic and Regulatory Consulting	Bill of Lading	Biomass Sales

Genetic Selection



Selecting Your Own Genetics

- Seedlings or Cones?
- Who to buy from?



Selecting Your Own Genetics, cont.

- Material Transfer Agreement (from genetic company)
 - Will not reproduce seed for sale or reproduction
 - Will not use the genetics to create new hybrids
 - Typically a representation about:
 - Different performance in diverse growing environments
 - Results advertised are 'informational only'
 - Always require a damages provision for untimely arrival or poor quality seedlings/clones

Collaborating with a Processor

If working with a processor, there are two main types of contracts:


- Buy-Back Agreements
- Crop-Share Agreements



Buy-Back Agreements

- Grower buys seed from a company with the promise of selling it back at a certain price.
 - Little regulatory assistance or agronomic guidance
 - Pricing Generally: \$ / Percent CBD / lb.
 - Grower is responsible for providing dried biomass
 - This includes: drying, milling, packaging and transport
- Risks:
 - Poor quality or late genetics
 - Failure to buy-back

Crop-Share Agreements

- Processor provides the grower certain resources in exchange for a shared interest in the crop.
 -  Example of Provided Resources: Seed, agronomic and regulatory training, harvest assistance.
 - The share is typically representative of the value provided by each party.
- Risks:
 - Grower does not have control over the genetics
 - At the risk of the processor's competency

Agronomic & Regulatory Consulting

- New growers should strongly consider
- Midwest Hemp Council Agronomic Boot camps
- Best practices for:
 - Fungus, insect, weed pressure
 - Scouting for male plants
 - Monitoring THC levels
 - Working with regulatory agency on timing of testing
 - Harvest timing

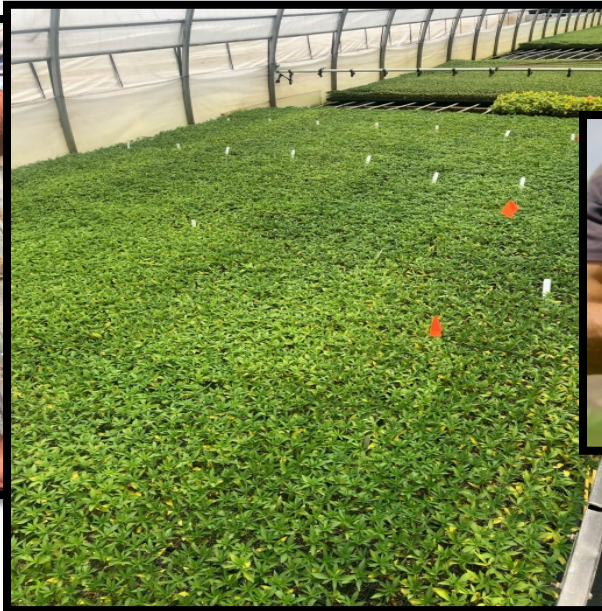
Greenhouse Services

- Key terms to negotiate:
 - Confirm the greenhouse has a research handling license
 - Greenhouse cost per seedling (if seed provided) or clone
 - Delivery dates (multiple waves / distance)
 - Risk of loss



Greenhouse Services, continued

- Materials typically provided to greenhouse:
 - Hemp research license
 - Material handling agreement (from supplier)
 - Planting expectations



Custom Harvest

- What is your end product?
- Is all labor included or do you assist?
- Who is responsible for potential accidents?
- What are harvest timing expectations?
- Are transportation logistics a part of the service?



Bill of Lading

- Document provided by the grower, acknowledged by the carrier, and accepted by the delivery point.
 - Tracks hemp from field to facility
 - Hemp research license should be included
 - Typically printed in triplicate
- 100 template Bill of Ladings.
Feel free to take one and modify it for your operations.

HEARTLAND HARVEST
AGRICULTURAL (ORGANIC) BILL OF LADING
ORIGINAL - NOT NEGOTIABLE

Bill of Lading Number: _____

FROM:

1. Shipper / Generator Location Wabash Valley Hemp, LLC 475 South 125 West Newberry, Indiana 47449 Phone: (765) 493-1016	2. Shipper / Generator Mailing Address (if different)
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TO:

3. Consignee / Facility Name and Address Heartland Harvest Farms, LLC 6750 North 200 West Hartford City, Indiana 47348	4. Notes
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DELIVERED BY:

5. Carrier/Transporter Name and Address Company: Address: City, State, Zip: Phone No.:	6. Carrier/Transporter ID#:
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7. BASIC DESCRIPTION	8. Containers		9. Total Quantity	10. Unit Wt./Vol.	11. Other
	No.	Type			
1. Hemp (baled)				Pounds (lbs.)	Individual bales identified as indicated below or attached.
2.					
3.					

18. Special Handling Instructions, Additional Information, Bale Identification

ORGANIC REQUIREMENT: Trailer has been inspected and determined to be free of contaminants.

Shipper Initials: _____ Driver Initials: _____

By signing below, Shipper hereby declares that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable governmental regulations. As shipper, I hereby certify that the products are fully and accurately described on this shipping document, in proper condition for transport, and that the information contained on the shipping document is factual.

SHIPPER (Print Employee Name)	Signature	Month	Day	Year
CARRIER / TRANSPORTER (Print Driver Name)	Signature	Month	Day	Year
CONSIGNEE / FACILITY Acknowledgement of Receipt (Print Name)	Signature	Month	Day	Year

White Copy: Consignee/Facility Original • Yellow Copy: Consignee to Shipper • Pink Copy: Carrier/Transporter

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Bill of Lading, continued.


Police seize almost 7,000 pounds of cannabis from a truck. But the company that bought it says it's all legal

By [Paul P. Murphy](#), CNN

Updated 6:36 AM ET, Thu February 7, 2019

(CNN) — Idaho State Police says it seized 6,701 pounds of illicit marijuana from a truck passing through the state last month. The Colorado company that bought the plants in Oregon says it's legal hemp. But the truck driver caught in the middle is now facing felony marijuana trafficking charges.

Bill of Lading, continued.

				BOL #: OR to CO 612319	
BILL OF LADING					
PU DATE: 1/23/2019		SHIP FROM			
		HARVEST LOCATION			
		19602 BOONES FERRY ROAD			
		HUBBARD, OR 97302			
		PH#: DAVID - NUTRICO			
DEL DATE: 1/29/2019		DELIVER TO			
		PODS STORAGE			
		21119 E 31ST CIR			
		AURORA, CO 80011			
		PH#: KANGA			
PGK	QTY	Description			LBS.
BAGS	31	HEMP			7,000
TOTAL WEIGHT					7000 LBS.
<small>The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said carrier (the word "carrier" being understood throughout this contract as meaning any own route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interposed in all or any of said property, that every service to be performed hereunder shall be subject to all the conditions set forth in the bill of lading, whether printed or written, herein contained, including the conditions on back hereof which are hereby agreed to by the shipper and accepted for himself and his assigns. Received, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable otherwise to the rate, classification and rules that have been established by the carrier and are available to the shipper, on request, and to all applicable state and federal regulations.</small>					
Shipper Signature		Carrier Signature			
<small>This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.</small>		<small>Carrier, or its duly authorized agent acting on behalf of Carrier, hereby acknowledges receipt of the items herein described on the date hereinafter indicated and assumes responsibility for loss or damage in accordance with 49 USC § 40101.</small>			
Shipper		Carrier		Date	
Consignee acknowledges receipt of the items herein listed in good order unless otherwise noted.					
Consignee		Printed		Date	

BIG SKY SCIENTIFIC

BOSE MEANS BUSINESSSM

Drying and Milling

- Understand what you are getting
 - Drying
 - Conditioning (e.g., milling)
 - Packaging (what specs?)
 - Tracking procedures
 - Refrigeration options (is your processor requiring?)
 - Is the facility insured and/or bonded if there was an accident?
 - What are turnaround expectations?
- Materials you must provide; compensation timing

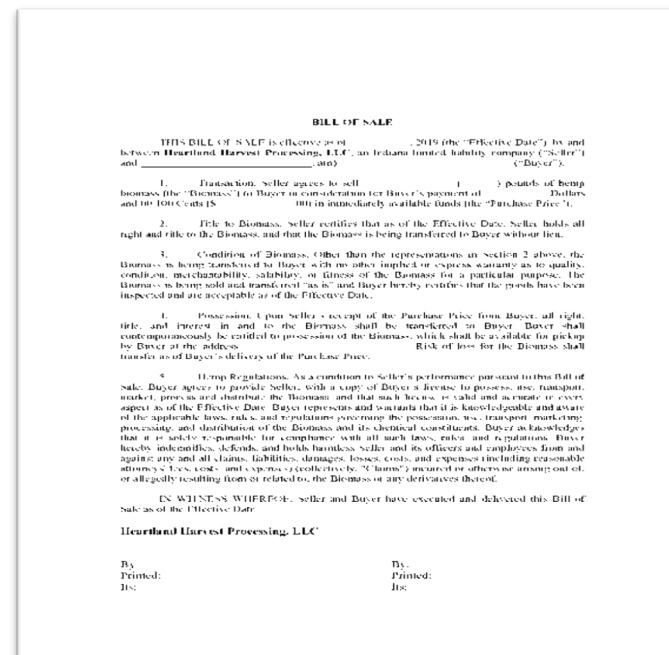
Storage & Escrow

- Option of keeping biomass at a secured facility
- Benefit of escrow services (sometimes offered)
- Added cost if the grower already has storage and trusted buyer or processor relationships.



Biomass Sales

- Legal document is typically a bill of sale
- Describes:
 - Sales Price
 - Unclouded title to the hemp
 - Biomass condition
 - Transfer of hemp possession under current Indiana law requires the buyer provide a copy of its hemp license at the point of sale.



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