Hemp in Indiana –
Eyes Wide Open

Don Robison
Office of Indiana State Chemist – Seed Administrator

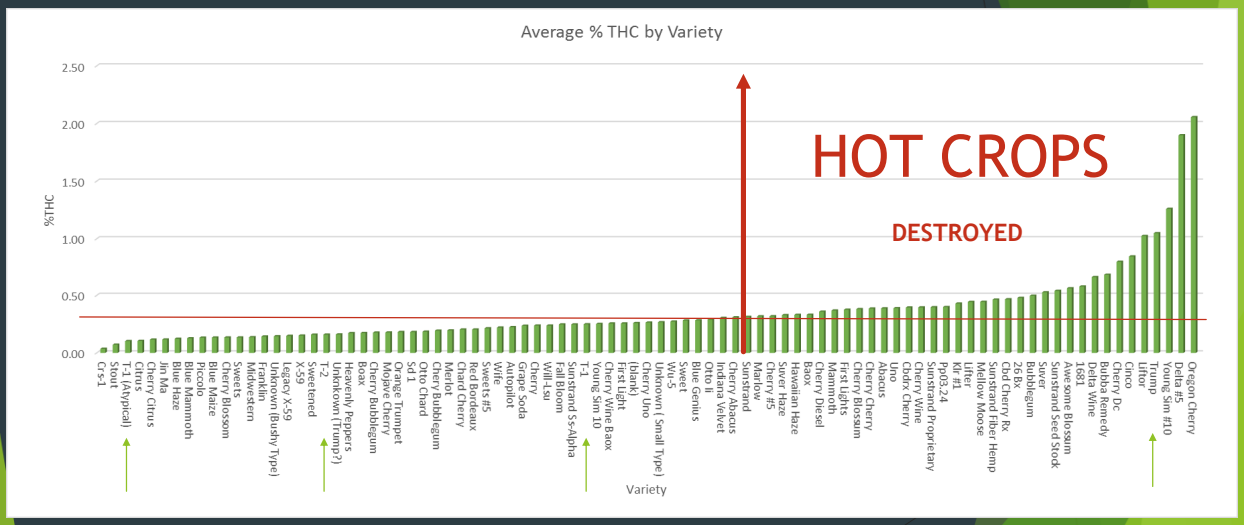
Hemp in Indiana – Growing data -2019

- OUTDOOR – 72% of crop
- 5300 acres planned
- 4200 acres planted
- 3300 acres harvested
- Destruction due to high thc, bad stand or weed pressure make up the difference in planted and harvested
- Compare to over 11,000 acres planned in 2020 from same growers

31 acres average

- INDOOR – 28% of crop
- planted 353,482 square feet

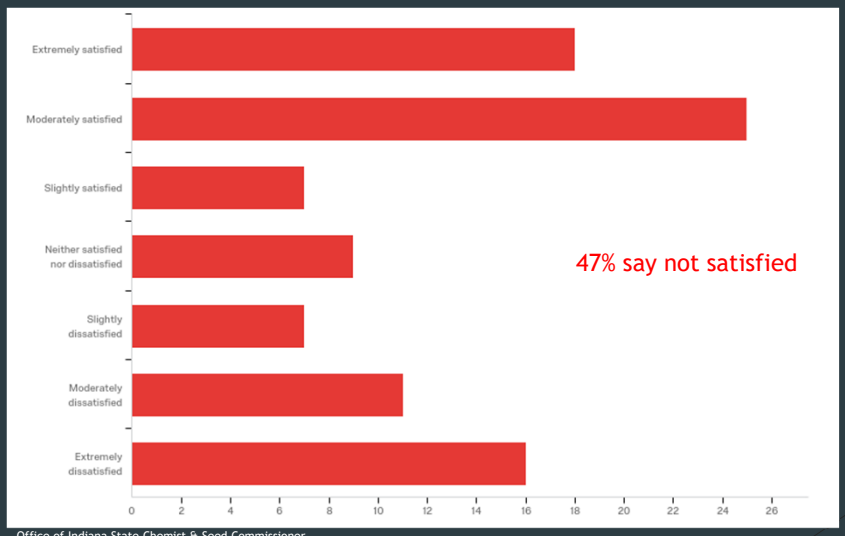
4300 ft2 average



Germination Tests on Hemp 2016-2019

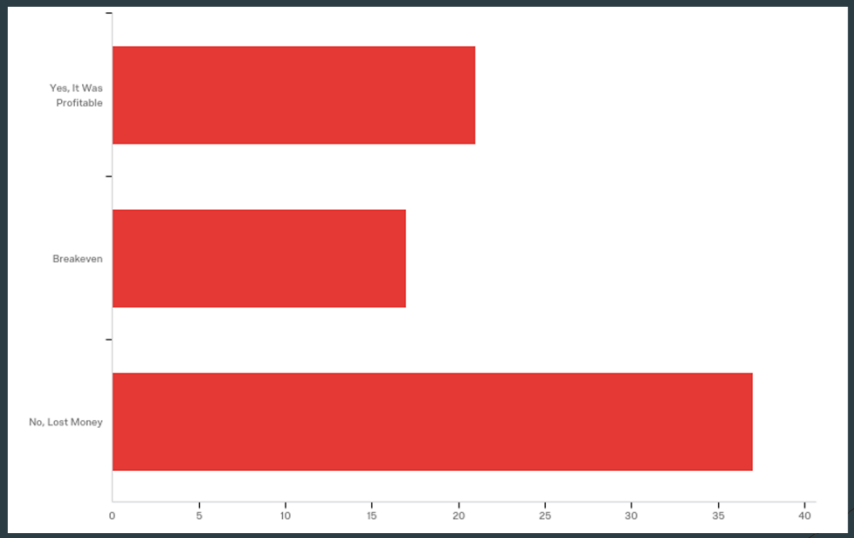
- 49 Germination Tests in 2019, 100+ total
- First year seed? Around 70-75% germination.
  - Playing with pre-chill on a study for AOSA – Association of Official Seed Analysts
- Average germination rate from all years and all varieties? 56%
- Some was part of a four year study of what holds germ and what doesn't.
- When in doubt? Ask for the Seed Lab Report and call the lab to verify

Q27 - How Satisfied Were You With Your Source of Hemp Seed, Transplants or Starts?

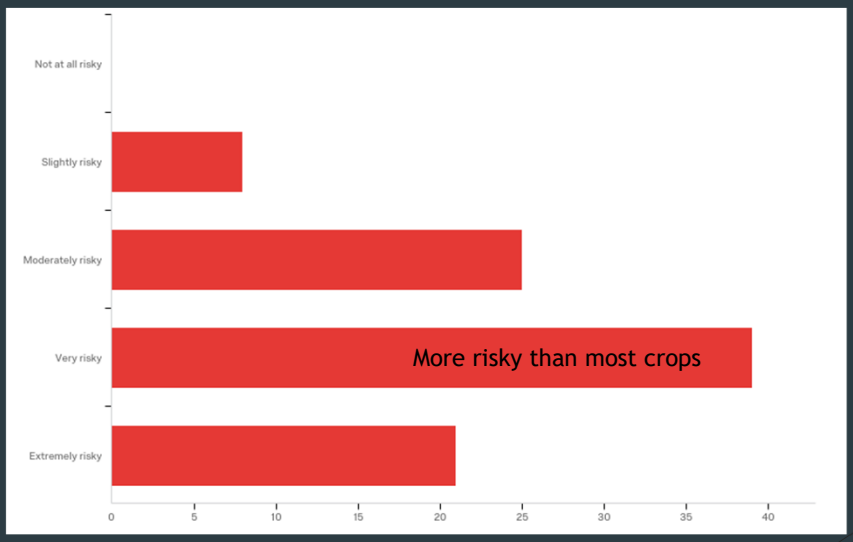


47% say not satisfied

Q41 - Was 2019 a Profitable Hemp Crop For You?



Q61 - To what extent do you think the hemp market is risky



Q36 - If You Will Grow Hemp Outdoors In 2020, Which of the Following Will You Grow? Select all that apply

#	Answer	%	Count
1	Fiber?	21.21%	42
2	CBD?	52.02%	103
3	Grain?	9.60%	19
4	Seed?	12.12%	24
5	Other	5.05%	10
	Total	100%	198

Take Homes from 2019

- There is much to be learned about growing hemp in Indiana.
- Learning can be very expensive. Need to see this crop as a cautious investment, nothing about hemp is guaranteed.
- We are learning about farming hemp, about performance of hemp varieties, we are learning from other states, we are learning from each other.
- We NEED more infrastructure – and it must be balanced with production. Buyers and sellers need to make purposeful contractual understandings to make this system grow into a thriving enterprise.
- We need to closely manage every part of hemp from growing, to monitoring, to processing, to marketing, to investing -

So How Did We Get Here?

- 2014 Farm Bill legalized hemp for research purposes.
- States determined what that meant.
- Indiana took a conservative approach and said it was University / College research only.

2018 Farm Bill (selected key provisions)

- Removed hemp from Schedule 1 drug status and from definition of marijuana in federal law.
- Moved hemp from DEA (Department of Justice) oversight to USDA oversight with requirement for new rules and recognition of state programs.
- Did not remove current hemp research law until 1 year after USDA adopts final rules.
- Did not change status of marijuana, CBD, CBN, etc. Under the FDA Food, Drug, Cosmetic Act. This applies to human and animal foods.

USDA Rules

- 0.30% THC or lower with measurement of uncertainty
- Above 0.5% is submitted to DEA as a negligent growing operation
- Sample and test every planting date of every variety
- OISC would have to hire 27 new *inspectors*
- *Put in multiple more labs*
- *Hire multiple new chemists*
- *Not feasible*
- Some are already telling USDA to take over the state plans

Indiana State Plan

- Submitted December 26, 2019
- Minimums
- Licensing
- Fees
- Sampling and Testing
- USDA can approve or deny within 60 days

State Plan Approvals

- Twenty Six States as of April 1, 2020

2020?

- Research Only Again – software, no state plan approval, etc, etc, etc
- USDA Interim Final Rules are out
  - Over 4000 comments during extended comment period – ended January 29, 2020
  - Indiana Plan Submitted by End of 2019 – USDA has 60 days to approve
  - **Total THC**, Test 15 days prior to harvest, test all fields,
  - Could be March before Indiana Plan is approved, or later
  - Must sample every planting of every variety, **not fiscally possible**
  - Only DEA Approved and ISO 17025 Labs can test the crop, **there is not capacity in US**
  - Many areas that conflict with Indiana State Law 15-15-13
  - Why we went with a blended program of research only again in 2020

Indiana Legislation – IC 15-15-13

- Brings language to Indiana law to conform with new federal law.
- Decarboxylation? What is it?
  - A process of converting THC-A to THC.
    - Brownies? Smoking hemp? Heat is a way to convert THC-A into THC.
  - Delta 9 THC? YES! But, need to read the whole law…
  - AFTER Decarboxylation it is all Delta 9 THC
    - *15-15-13-12-(3) Establishing necessary testing criteria and protocols, including a procedure for testing, using post decarboxylation or other similarly reliable methods, delta-9-tetrahydrocannabinol concentration levels of the hemp produced.*

OISC Administrative Rule

- Emergency Rules are in place as of January 2, 2020
- Licenses will be required of anyone who is conducting the activities that are regulated. OISC focus is agronomic and field to processor (raw materials).
- Hemp that is grown in Indiana without a license is the same as marijuana.
- Back ground checks -eventually federal fingerprint background checks. For now, that system is not working so we are doing Indiana State Police Portal checks
- Fees will be required to support the program - have surveyed other states' fees:
  - Non-refundable registration fee $750?
  - Licensed will include: Growers, Handlers, and University employed researchers.

Minimum Requirements For Space

- SECTION 52. (a) Growing hemp plants or possessing hemp material in quantities less than the minimum is a violation of this rule.
-
  - 20 contiguous acres minimum (grain/seed/fiber).
  - 1 acre outdoors (contiguous) minimum for CBD
  - 2,000 square feet, or a minimum of one thousand five hundred (1,500) plants (for production of clones), or 300 mature plants for cannabinoid production.
  - Agricultural hemp seed breeding farm – not to exceed 5 acres

License Application - Grower/Handler

Office of Indiana State Chemist & Seed Commissioner

All applications are to be completed using the fillable form below.
Paper applications WILL NOT be processed.
Sign the form using the "Fill & Sign" tool in Adobe Reader.

General Information For Grower or Handler License Applicants:

If you are applying for a business license, a responsible part must be listed under Applicant Full Legal Name. The address should be that of the business.

If this is an application for an individual, the address should be the individual's private residence.

Business Name:
Applicant Full Legal Name:
Legal Mailing Address:
City: **State** **ZIP Code:**
Telephone Number: **Email address:**
Last four of SSN: *(Last 4 digits of social security number for Applicant or responsible business party. May be used in obtaining background check.)*

License Application – Grow Sites

Each individual growing, drying and processing site must be reported separately in the sections below.

Growing Site Information
Provide total acres or square footage being used strictly for the growing of hemp - numeric only. Latitude and Longitude must be in decimal format and contain all positions returned from the mapping program used and should be taken from the center of the field or structure. https://www.latlong.net

Growing Site 1: Unique name or identifier of site
Indoor grow? Outdoor grow? Variety Acres/Sq. Ft
Purpose: Other (specify)
County Latitude (decimal) Longitude (decimal)
Does this variety have a history of running hot in Indiana? (See website for information) Yes No

Purpose options: Seed Oil, CBD Oil, Fiber, Edible Grain, Certified Seed, Other (Specify)

Growing Site 2: Unique name or identifier of site
Indoor grow? Outdoor grow? Variety Acres/Sq. Ft
Purpose: Other (specify)
County Latitude (decimal) Longitude (decimal)
Does this variety have a history of running hot in Indiana? (See website for information) Yes No

Growing Site 3: Unique name or identifier of site
Indoor grow? Outdoor grow? Variety Acres/Sq. Ft

Statement Attesting the Crop is Sold, LOI or Processing it Yourself

I attest that all crops listed above are sold with a buyers agreement, a letter of intent or that I will be processing the crop myself. ☑

Seed Label vs Certificate of Analysis

- Seed Label gives results of seed quality tests such as:
- Germination, Purity, Noxious Weed Seed, Seed Count
- Complete test is less than $30
- Needed for seed labeling

- Certificate of Analysis gives results based on plant cannabinoid, metals and pesticide tests
- Look for TOTAL THC!
- Complete test is over $100, with heavy metals and pesticides can be $300
- Needed for crop sale

What are the current numbers for 2020?

- 233 Licenses – 206 of those are growers.
- 8600 acres outdoor grow
- 1.67 million square feet indoor grow

- Limit of 300 growers in 2020. Looks doubtful we will hit the limit

Pesticides approved for use for 2020

- A small list
- Efficacy? Questionable

Section 3 EPA Registered Products Acceptable for Use on Hemp and Registered in Indiana

OISC Product ID	Company Name	Product Name	EPA Reg Number
2019085216	Marrone Bio Innovations	REGALIA BIOFUNGICIDE	84059-3
2018083267	Marrone Bio Innovations	REGALIA CG BIOFUNGICIDE	84059-3
2018083084	Marrone Bio Innovations	STARGUS BIOFUNGICIDE	84059-28
2016080206	GENERAL HYDROPONICS	GENERAL HYDROPONICS PREVASYN INSECT REPELLANT/INSECTICIDE	91865-1
2019084738	GENERAL HYDROPONICS	GENERAL HYDROPONICS PREVASYN INSECT REPELLANT / INSECTICIDE 2	91865-1
2016080207	GENERAL HYDROPONICS	GENERAL HYDROPONICS EXILE INSECTICIDE/FUNGICIDE/MITICIDE	91865-2
2019085092	GENERAL HYDROPONICS	GENERAL HYDROPONICS DEFGUARD BIOFUNGICIDE/BACTERICIDE1	91865-3
2016080208	GENERAL HYDROPONICS	GENERAL HYDROPONICS DEFGUARD BIOFUNGICIDE/BACTERICIDE	91865-3
2017080722	GENERAL HYDROPONICS	AZAMAX BOTANICAL INSECTICIDE/MITICIDE/NEMATICIDE1	91865-4

25(b) Minimum Risk Pesticide Products Acceptable for Use on Hemp in Indiana

OISC Product ID	Company Name	Product Name	OISC 25B Number
2014076760	BONIDE PRODUCTS INC	BONIDE BURNOUT FAST ACTING WEED & GRASS KILLER CONCENTRATE	4-25B-20
2014075459	BONIDE PRODUCTS INC	BONIDE MAIZE WEED PREVENTER READY TO	4-25B-19
2016079566	DR EARTH CO	DR EARTH PURE & NATURAL FINAL STOP VEGETABLE GARDEN INSECT KILLER	999999-25B-5
2016079572	DR EARTH CO	DR EARTH PURE & NATURAL FINAL STOP VEGETABLE GARDEN INSECT KILLER	999999-25B-11
2016079564	DR EARTH CO	DR EARTH PURE & NATURAL FINAL STOP WEED & GRASS HERBICIDE	999999-25B-3
2016079568	DR EARTH CO	DR EARTH PURE & NATURAL FINAL STOP YARD & GARDEN INSECT KILLER	999999-25B-7
2016079570	DR EARTH CO	DR EARTH PURE & NATURAL FINAL STOP YARD & GARDEN INSECT KILLER CONCENTRATE	999999-25B-9
2017081117	GARDENS ALIVE!	WOW! WITHOUT WEEDS PRE-EMERGENT WEED CONTROL FOR LAWNS AND GARDENS 9-0-0	56872-25B-20
2008066324	JH BIOTECH INC	SAFERGRO ANT OUT NATURAL ANT/INSECT KILLER RTU	68573-25B-1
2014076718	JH BIOTECH INC	SAFERGRO BIOREPEL NATURAL INSECT	68573-25B-9
2008066326	JH BIOTECH INC	SAFERGRO MILDEW CURE NATURAL POWDERY MILDEW FUNGICIDE RTU	68573-25B-2

25(b) Minimum Risk Pesticide Products Acceptable for Use on Hemp in Indiana

OISC Product ID	Company Name	Product Name	OISC 25B Number
2008066327	JH BIOTECH INC	SAFERGRO PEST OUT NATURAL INSECTICIDE & MITICIDE RTU	68573-25B-3
2008066325	JH BIOTECH INC	SAFERGRO WEEDZAP NATURAL BIODEGRADABLE NON-SELECTIVE HERBICIDE	68573-25B-4
2016080213	KEMIN INDUSTRIES INC	TETRACURB CONCENTRATE	8596-25B-1
2005060211	KTI DIRECT	MOLEXIT	999999-99999
2014075869	LIQUID FENCE CO	ECOLOGIC GARDEN INSECT KILLER	72041-25B-25
2014075870	LIQUID FENCE CO	ECOLOGIC GARDEN INSECT KILLER	72041-25B-24
2014075875	LIQUID FENCE CO	ECOLOGIC HOUSEPLANT & GARDEN INSECT	72041-25B-26
201207355	MOTOMCO	TOMCAT MOLE & GOPHER REPELLENT LIQUID	3240-25B-2
2019084806	P F HARRIS MANUFACTURING COMPANY LLC	HARRIS DEER & RABBIT REPELLENT SPRAY	3-25b-5
2017082173	PACIFIC SHORE HOLDINGS INC	NATURE-CIDE ALL-PURPOSE COMMERCIAL CONCENTRATE INSECTICIDE	90395-25B-3
2019085259	SAFER INC	SAFER BRAND WEED PREVENTION PLUS	42697-25B-3
2010068464	ST GABRIEL ORGANICS	HOLY MOLEY MOLE REPELLENT	63191-25B-1
2018085257	UNITED COMPOST & ORGANICS INC	BUSHDOCTOR FORCE OF NATURE INSECT REPELLENT (CONCENTRATE)	71996-25B-1
2018085258	UNITED COMPOST & ORGANICS INC	BUSHDOCTOR FORCE OF NATURE MITICIDE (CONCENTRATE)	71996-25B-2
2019084573	VIC WEST IMPORTERS	GRANDPA GUS'S CINNA-MINT SCENTED MOUSE REPELLENT POUCHES	93142-25B-3
2019084573	VIC WEST IMPORTERS	GRANDPA GUS'S MOUSE REPELLENT POUCHES	93142-25B-2

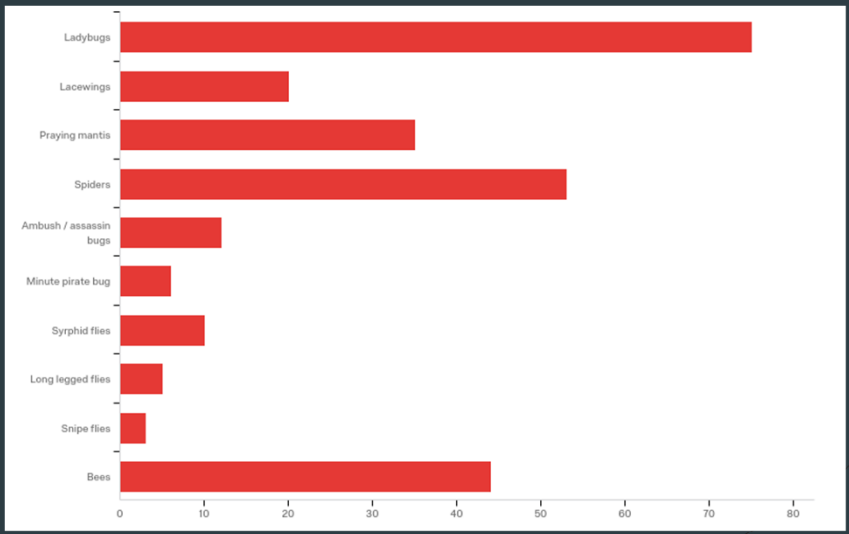
Q68 - What were the main leaf feeding chewing insects you observed in your crop? Select all that apply

#	Answer	%	Count
1	Fall armyworm	34.18%	27
2	Yellow striped armyworm	22.78%	18
3	Variegated cutworm	21.52%	17
4	Flea beetles	21.52%	17
	Total	100%	79

Q70 - What were the main insects that suck fluids that you observed in your crop? Select all that apply

#	Answer	%	Count
1	Aphids	31.55%	53
2	Potato leafhopper	7.14%	12
3	Lygus bugs	2.38%	4
4	Stink bugs	20.83%	35
5	Thrips	8.33%	14
6	Whiteflies	7.14%	12
7	Spider mites	16.67%	28
8	Hemp Russet mites	5.95%	10
	Total	100%	168

Q71 - Which of the following beneficial insects/spiders did you observe in your crop? Select all that apply



Q61 - Check all root rot diseases that you saw in your crop

#	Answer	%	Count
1	Pythium	36.00%	9
2	Rhizoctonia	12.00%	3
3	Fusarium	4.00%	1
4	Unknown	48.00%	12
	Total	100%	25

Questions??

Don Robison, MBA. Seed Administrator, Office of Indiana State Chemist

drobiso@purdue.edu