Michigan Department of Agriculture and Rural Development

2019 Industrial Hemp Ag Pilot Program Final Report

Introduction

On January 15, 2019, the Michigan Legislature enacted the Michigan Industrial Hemp Research and Development Act (Act). The Act provided the Michigan Department of Agriculture and Rural Development (MDARD) with authority to administer the Act, and among other things, license and regulate the growing and processing of industrial hemp within the state of Michigan. As defined by the Act, industrial hemp is Cannabis (*Cannabis sativa L.)* that has equal to or less than 0.3% 9-tetrahydrocannabinol (THC). Industrial hemp is grown to produce fiber, grain, biomass, as well as non-intoxicating medical compounds such as cannabidiol (CBD).

The enactment of the Michigan Industrial Hemp Research and Development Act was in response to the Agricultural Act of 2014, also known as the "2014 U.S. Farm Bill." The 2014 U.S. Farm Bill authorized state departments of agriculture to implement agricultural pilot programs to study industrial hemp so long as the pilot program's purpose is for agricultural or academic research and the cultivating of industrial hemp is allowed under state law. Thus, the Michigan Industrial Hemp Research and Development Act allowed MDARD to comply with the 2014 U.S. Farm Bill and implement a hemp pilot program.

In April of 2019, MDARD established Michigan's first Industrial Hemp Ag Pilot Program so farmers, processors, and state colleges could grow, handle, process, and research industrial hemp. To comply with the 2014 U.S. Farm Bill, and the Michigan Industrial Hemp Research and Development Act, registered growers and licensed processor-handlers were required to enter into a research agreement with MDARD. Under the agreement, each registered grower or licensed processor-handler was required to submit a research report to MDARD after the end of the 2019 growing season. These reports were collected by an online survey administered by MDARD. The results of the survey submissions are summarized in this report.

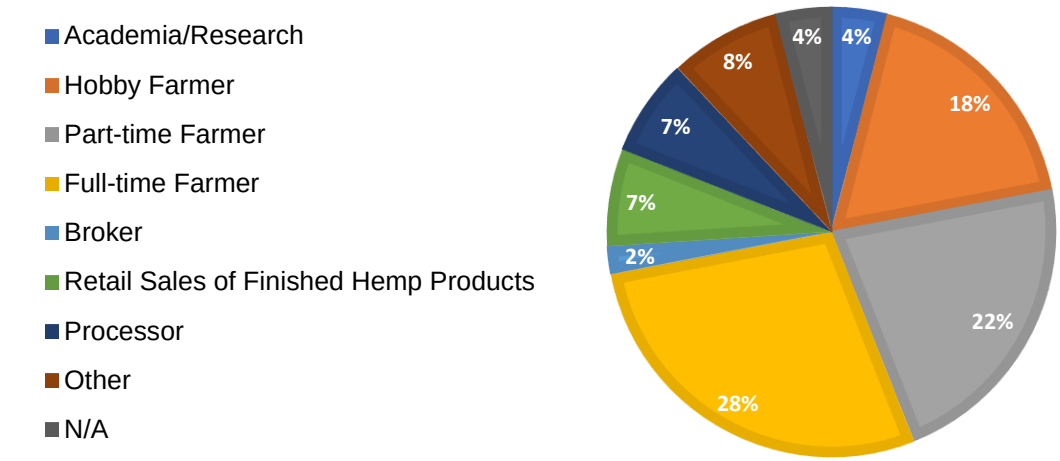
2019 Pilot Program

At the end of the 2019 pilot program, MDARD provided a survey to all registration and license holders (hereinafter licensee's) under the Michigan Industrial Hemp Research and Development Act. MDARD received responses from 514 licensees. Out of the 514 licensees who responded to MDARD's research survey, 165 held hemp grower registrations, 67 held hemp processor licenses, while the remaining 282 held combined grower and processor licenses. As part of the research survey, MDARD asked each to best describe their background. Responses varied from full-time farmers, to brokers, to academic researchers. The most common backgrounds for pilot program participants were full-time farmer at 28% and part-time farmer at 22%. Thus, approximately half of the 2019 pilot program participants consider themselves farmers.

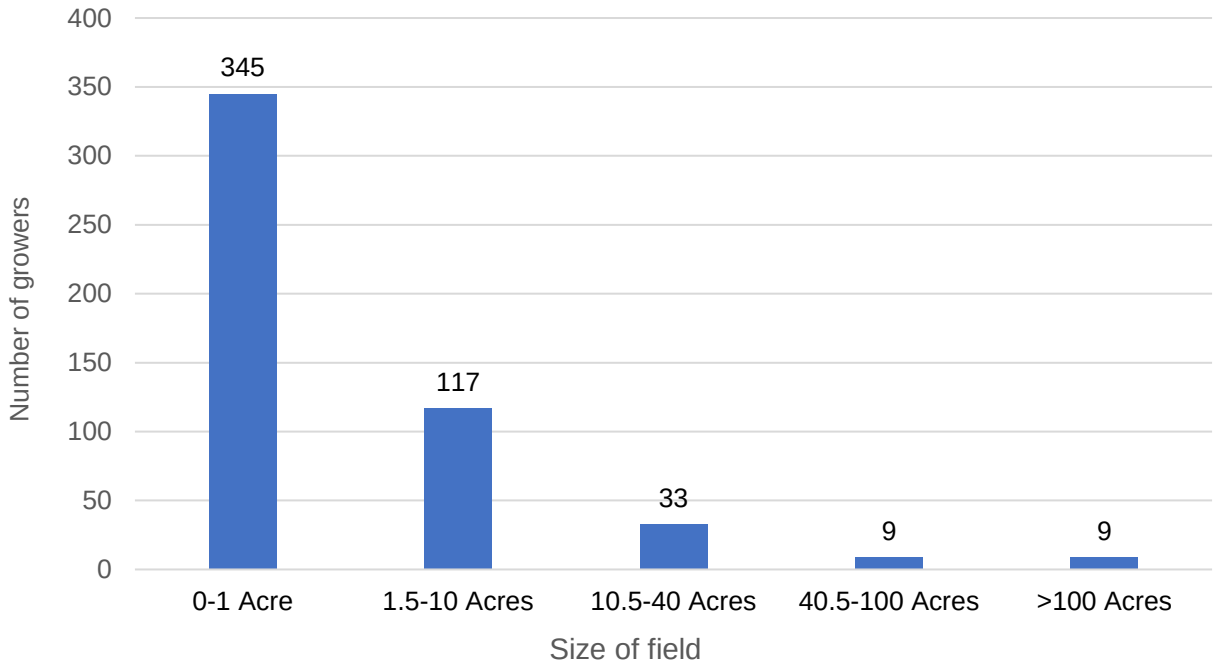
Overall, the 447 registered growers that responded to the survey reported they planted approximately 3,678 acres of hemp outdoors during the 2019 pilot program.

In addition to the planting hemp outdoors, registered growers also reported that together they planted approximately 400,977 square feet (9.2 acres) of hemp indoors during the pilot program. To further study the distribution of the almost 4,000 acres of hemp planted outdoors, MDARD analyzed how many acres each grower planted outdoors and in which counties. Interestingly, most hemp fields across the state were smaller than one acre. However, there was a wide range in the amount of acreage each hemp grower planted, with nine registered growers each reporting planting over 100 acres of hemp.

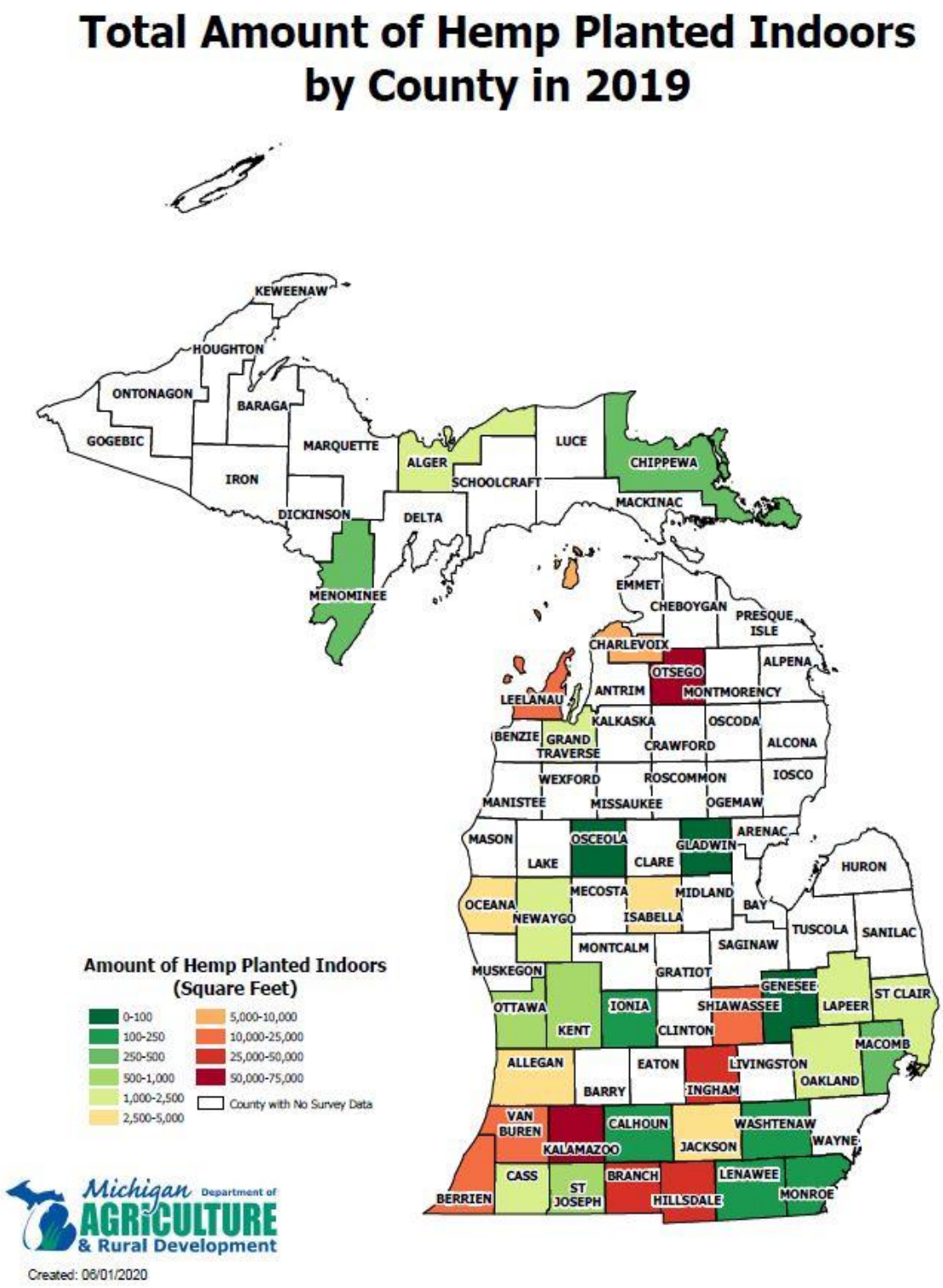
Background of License Holders



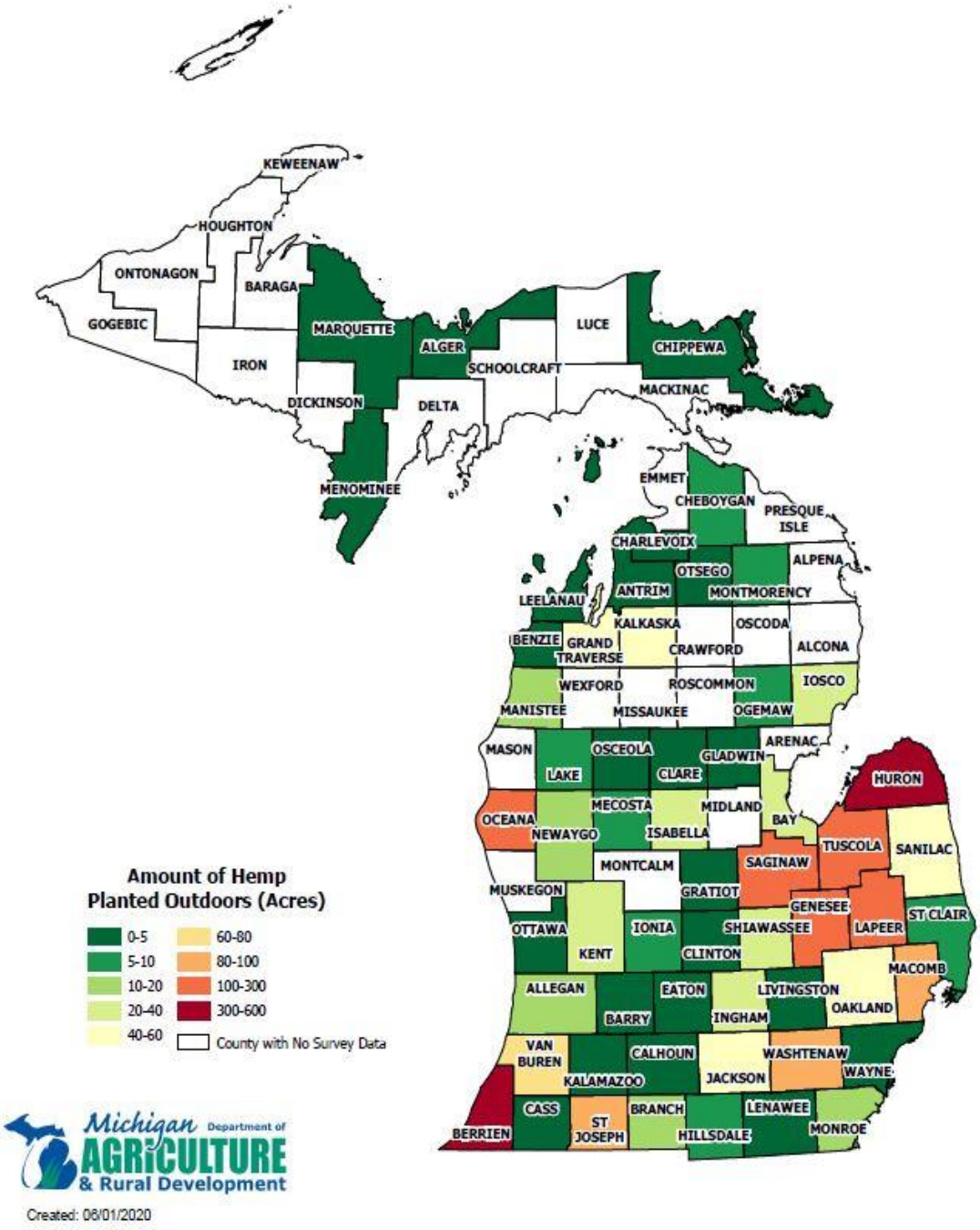
Sizes of outdoor hemp fields



Hemp was planted throughout the state in 2019 with acreage and square footage being reported in 58 of Michigan's 83 counties. The following two graphics identify counties in which hemp was grown, indoors and outdoors.



Amount of Hemp Planted Outdoors by County in 2019



Research Goals

As provided in the 2014 U.S. Farm Bill, the purpose of Michigan's hemp pilot program was to engage in agricultural and academic research.

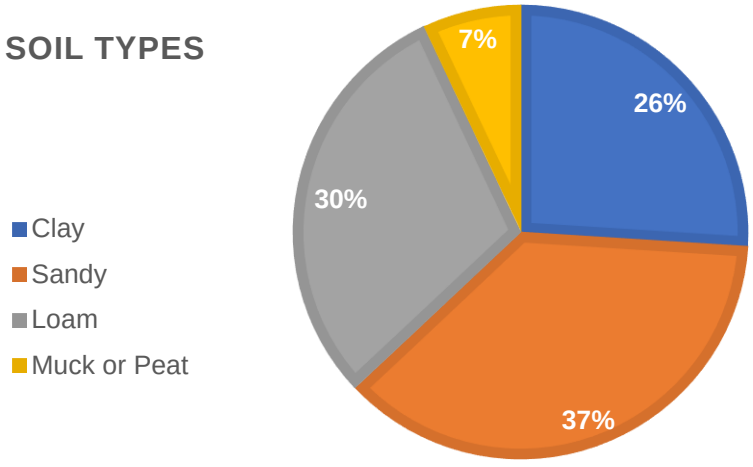
To understand why pilot program participants wanted to study industrial hemp, MDARD's research survey required each participant to select a category that best described their 2019 research goal.

The following list illustrates the percentage of participants who fell into each research goal category:

- Test hemp varieties for seed, grain, fiber and/or CBD production (35%)
- Economic viability from an alternative crop (17%)
- Marketability of hemp/ hemp products (15%)
- Research and test hemp processing methods to create products such as food, hemp seed oil, fiber products, CBD extracts (14%)
- Other (8%)
- N/A (6%)
- Personal use (4%)
- Phytoremediation of my soil (1%)

Planting

The dates of planting for the 2019 pilot program ranged from end of April through July. The most common timeframe to plant hemp was from June 9 through June 22. When planting, growers used numerous planting materials. The most common planting material was feminized seed at 23%. Bulk seed was also commonly used at 22%, while clones and seedlings were used more sparsely, each at 11%.



The average distance between plants was approximately 3 ½ feet. However, growers reported planting distances ranging from 6 inches to 12 feet. The average distance between rows of hemp plants was approximately 4 ½ feet. Similar to research survey responses regarding planting distance, growers also reported a wide range of different row distances from 6 inches to 14 feet. 162 hemp growers reported their soil type was sandy, making it the most common soil type. The second most common soil type was loam, with clay being a close third. Muck or peat was the least common soil type for planting hemp during the 2019 pilot program.

Inputs

Approximately 41% of hemp growers used fertilizer on their hemp plants. The fertilizers utilized by these growers were generally in the form of cow, chicken, or fish manure. However, other growers used fertilizers such as calcium, potassium, gypsum, and nitrogen supplements.

Besides the use of fertilizers, approximately 43% of growers irrigated their hemp fields. This includes the approximately 28% of growers who utilized both fertilizer and irrigation systems during the 2019 pilot program.

Issues Encountered During the Growing Season

Forty percent of hemp growers encountered some type of issue with weeds and 39% of these growers also encountered issues with insects. In total, over a quarter of hemp growers encountered some type of issue with insects, making insects the second most common issue behind weeds. Fifty-seven growers reported also having encountered issues with plant disease. While a small number of growers faced other challenges such as powdery mildew, mold, and animals like rabbit and deer.

Although over 200 growers encountered issues with either weeds or insects, only 38 growers reported that they used any pesticides (including herbicides, fungicide, insecticides, etc.). These 38 growers used various types of pesticides. The more popular pesticides used among these growers were Neem oil, Green Cleaner, and All Per Plus.

In addition to using pesticides, some growers utilized other techniques to control and prevent issues with weeds, insects, and diseases. Numerous growers reported cultivating and tilling their fields as well as using other manual labor techniques such as hand pulling or mowing to combat weed issues.

Of the 447 hemp growers, 276 reported they were able to harvest their crop during the 2019 pilot program. The dates of harvest for these growers ranged from August through November. The most popular month to harvest was October, with 75% of all harvesting

occurring throughout the month. By-far the most common harvest method was to harvest by hand. Over 92% of growers harvested by hand. Only 5% of growers harvested their hemp using solely mechanized methods.

To comply with the Michigan Industrial Hemp Research and Development Act, hemp growers were required to schedule a test of a sample of their crop for THC concentration by a testing facility no less than 15 days before their intended harvest date. This requirement required growers to harvest their hemp crop within fifteen days of receiving the results back from the testing facility. Out of the 276 growers who reported that they harvested hemp in 2019, only 24 growers reported that they were not able to harvest within the 15-day limit allowed by the Act. Furthermore, 75% of the growers who were not able to harvest within the 15-day period stated that weather was the reason that they needed additional days to complete their harvest.

Destroying

Although most hemp growers were able to harvest their hemp crop during the 2019 pilot program, 144 growers reported that they had to destroy at least some hemp in 2019. However, out of the 144 growers that reported destroying hemp, 97 of those growers reported they also harvested hemp during 2019 pilot program. Growers reported numerous reasons for having to destroy hemp. The most common reason among growers for having to destroy hemp was crop failure (44%). However, 27% of those who reported destroying hemp, reported it was because of non-compliant THC levels while an additional 10% destroyed hemp because of a lack of labor. Other reported reasons for destroying hemp included issues with male plants, mold, and mildew.

There was a significant range of the reported amount of hemp destroyed by growers. Some growers reported destroying a few plants, while others reported destroying their entire crop, encompassing hundreds of plants. Growers also used numerous methods to destroy hemp. The reported methods include, but are not limited to, cutting, burning, feeding to farm animals, composting, mulching, and tilling.

Processing

Out of the 514 license holders who responded to MDARD's research survey, 67 held hemp processor licenses, while an additional 282 held combined grower and processor licenses. This means in total there were 349 license holders that were authorized to process hemp during the 2019 pilot program. Approximately 50% of those who were licensed to process hemp reported doing so during the pilot program.

The techniques and amount of hemp processed varied greatly among those who held a processor-handler licenses. Generally, the hemp to be processed was grown by the those who also held the processor-handler license. However, 67 survey responses came from those who solely processed and handled industrial hemp.

Those who solely possessed a processor-handler license generally focused on studying different types of techniques to extract CBD from the hemp plants. Those who possessed both a processor-handler license and a grower license focused on drying the wet plant material, bucking or shucking the plant material, as well as the storage of both wet and dry plant material. In addition to these processing techniques, CBD extraction was also common among those who possessed both types of licenses.

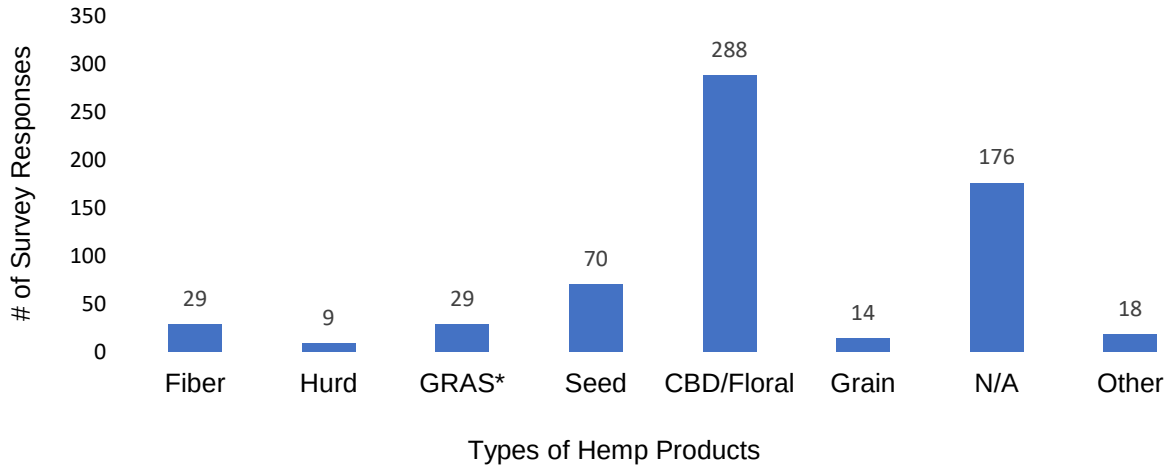
Hemp Markets and Products

Approximately 10% of license holders reported they found a market for their hemp by the time they submitted their responses. However, 18% of license holders responded they had not been able to find a market for their hemp. An additional 35% responded that they were still in the process of finding a market when they responded.

For the license holders that were able to find a market, 68% reported they found a market within the State of Michigan. An additional 30% reported they found a market both inside and outside the State of Michigan, while the remaining 2% reported they found a market outside of Michigan.

Growers harvested hemp so they could use or sell their crop to make various value-added products. The most common type of products that hemp was harvested were for CBD or floral products. However, roughly a third of those who reported harvesting hemp for CBD and floral products also reported harvesting for other types of products such as fiber, seed, and grain. The complete distribution of the different types of products that hemp was harvested for during the 2019 program is shown in the table below. Please note that many survey responses listed multiple types of products within their response.

Industrial Hemp Products



*(Generally Recognized as Safe) food products; hulled hemp seed, hemp protein, hemp flower

2020 Outlook

Approximately 59% of respondents reported they plan on growing hemp in 2020. An additional 20% of the respondents reported that they were undecided as to whether they would grow hemp in 2020. For those who responded that they were planning on growing hemp in 2020, the average amount of acreage that these growers anticipated on planting was 33 acres. For those who responded that they anticipated growing indoors for the 2020 season, the average amount of square footage per grower was just under 10,000 square feet.

In total, respondents reported they anticipated on planting 8,749 acres of hemp outdoors and 424,191 square feet of hemp indoors for the 2020 growing season. This represents an increase in the total amount of outdoor hemp acreage for the 2020 season by approximately 134%. Although respondents anticipate a large increase in the amount of hemp planted outdoors for the 2020 season, they also anticipated a 4% increase in the amount of total square footage of hemp planted indoors for the 2020 season.

With such a significant increase in the projected amount of hemp planted outdoors in the 2020 season, 97 of the respondents reported that they anticipate the need to hire migrant farm workers. Of these, approximately 62% reported they were familiar with the state and federal requirement for housing provided to migrant farm workers. For those who anticipate hiring migrant farm workers and who would like to learn more about the migrant housing requirements, MDARD suggests visiting its webpage on migrant labor housing.[1]

2019 MDARD Laboratory Hemp Testing

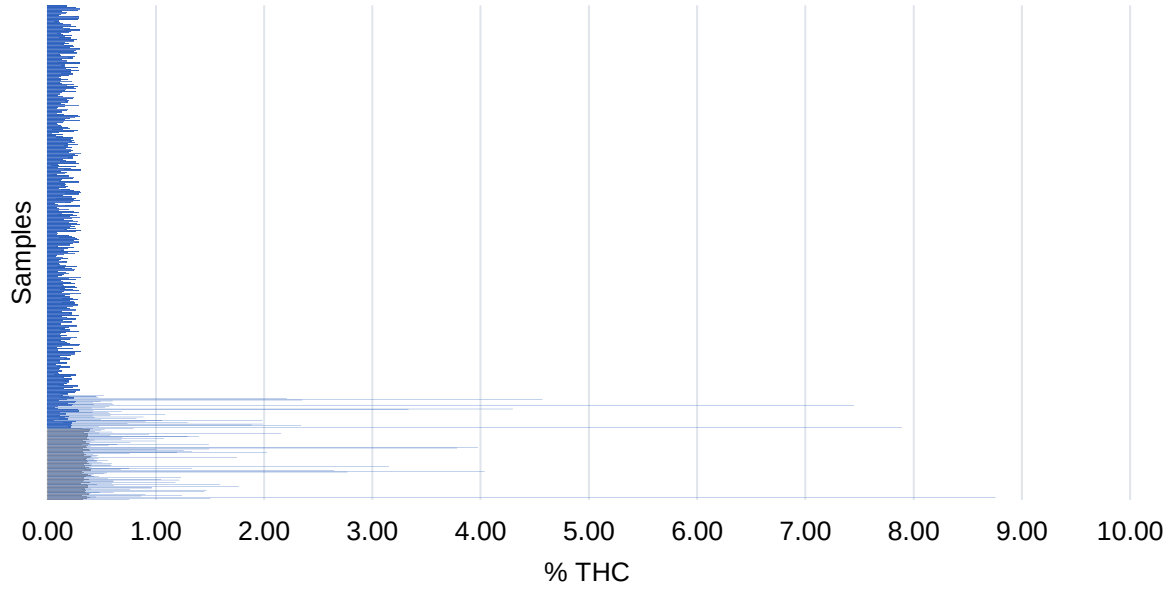
The Industrial Hemp Research and Development Act, Public Act 641 of 2018 required all growers to submit samples of their hemp prior to harvest. The purpose of the sampling was to ensure a compliant concentration (0.3% or less) of THC. All regulatory samples were analyzed by MDARD's Geagley Laboratory.

THC levels were tested in 847 samples. Notable detections were as follows:

- 84.4 % compliance rate
- No THC was detected in 13 cultivars
- 15.6 % found above 0.3% THC
- 10.7 % found above 0.5% THC

[1] For information about migrant labor housing in Michigan, please visit MDARD's webpage at https://www.michigan.gov/mdard/0,4610,7-125-1569_45168---,00.html.

2019 Hemp Testing Results (All)



The most popular cultivars of samples submitted included:

- Cherry
- Youngsim
- Boax
- Wife

2019 Pilot Program Conclusions

The final question of MDARD's research survey asked pilot program participants to share any additional thoughts they had on their experiences during the 2019 pilot program. Many of the participants commented on the labor-intensive harvesting process. Some commented on the importance of networking within the industry. While other participants shared their appreciation for the 2019 pilot program and their excitement to apply what they learned this year during next year's growing season.

MDARD would like to thank the 2019 pilot program participants who responded to the survey. The 2019 pilot program demonstrated great success and allowed MDARD, university researchers, and the agricultural community to gain greater knowledge on cultivating industrial hemp in Michigan. MDARD is looking forward to the 2020 growing season and working with both new and returning program participants.