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Status of Industrial Hemp Pilot Program

Plant Protection Division

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Introduction

Provisions added to the 2014 Farm Bill (Public Law 113- 79) defined industrial hemp for the first time under federal law and granted state agricultural departments the authority to develop research pilot programs to study the growth, cultivation, or marketing of industrial hemp. While the federal Controlled Substances Act currently recognizes no distinction between industrial hemp and marijuana, the Farm Bill has defined industrial hemp as *Cannabis sativa* L. with a delta-9 tetrahydrocannabinol (THC) content of 0.3% or less.



Female industrial hemp plant

The Minnesota Industrial Hemp Development Act (IHDA), Minnesota Statues 18K.01- 18K.08, became law at the conclusion of the 2015 legislative session. The law provides a framework for commercial industrial hemp production in Minnesota following approval by the federal government. The Minnesota IHDA also provided for the development of a research pilot program, as defined by the Farm Bill, to be administered by the Minnesota Department of Agriculture (MDA) under Minnesota Statute 18K.09.

In 2016, MDA established a pilot program for researchers and farmers to grow industrial hemp in Minnesota. Interested participants applied, registered with the state, and obtained hemp seed through MDA's Drug Enforcement Administration (DEA) Schedule I Importer registration. There were 7 pilot participants who grew 38 acres of industrial hemp. To comply with the parameters set up by the 2014 Farm Bill, Minnesota's pilot growers were required to report agronomic, processing, and marketing findings at the end of the growing season. Those findings are summarized in this report.

2016 Season

The MDA received 8 applications from prospective pilots between January and April of 2016. As part of the application process, growers were required to provide Bureau of Criminal Apprehension (BCA) background checks for all persons that would handle seed, a detailed map of the growing site, a statement of financial solvency, a statement of support from local law enforcement, a plan for cultivation and processing, and stated research goals/deliverables. Of the 8 applications received, 7 went on to become licensed pilot producers and grow industrial hemp.

The MDA obtained a Schedule I Importer registration in February of 2016. All industrial hemp seed was ordered by the pilot participant from either Canada or Ukraine, and imported into the U.S. under MDA's import permits. Once the seed went through customs, it was shipped to the MDA Lab Building, where it was received by Lab Operations. Operations verified seed shipments, labeled each hemp seed bag, and entered it into MDA's Laboratory Information Management System (LIMS) database. Pilot growers were required to retrieve their seed orders within 48 hours of delivery to MDA. Operations filed all permits, shipping, and receipt documentation to comply with DEA protocol. A total of 1,565 pounds of industrial hemp seed was imported and planted in Minnesota in 2016.

The pilot participants planted 38 acres throughout the state. These fields were located in Benton, Crow Wing, Dakota, Fillmore, Pine, and Washington Counties.

Regulatory Compliance

Each field was sampled within 30 days of harvest by MDA inspectors—a total of 17 samples. To take a sample, the inspector randomly selected 30 plants per field, cut the top 6 inches of the plants, and removed all stems. The remaining plant material was taken to Legend Technical Services Laboratory in St. Paul for a full cannabinoid analysis. All samples tested well below the 0.3% delta-9 THC threshold. The average delta-9 THC content for the samples was 0.0026%.



MDA inspectors sampling fields

Figure 1: Average Cannabinoid Concentration for 2016 Hemp Samples

	Delta-9 THC	THCA-A	CBD	CBDA	CBG	CBN	CBC
Average Concentration	0.0026%	0.0330%	0.0085%	0.5983%	0.0021%	0.0018%	0.0026%

Research Goals

Pilot participants were required to state research goals on their applications in order to comply with the IDHA's purpose of expanding knowledge of industrial hemp growth, cultivation, and marketing for Minnesota. The pilots cited a range of goals, generally related to agronomic, marketing, and economic viability issues. The following is a summary of the various goals of the pilot producers:

- Gather agronomic data and analyze cultivation methods, fertilizer requirements, pest burden, etc.
- Determine average yield for grain, oil, and fiber.
- Determine the highest-producing grain and fiber cultivars for Minnesota.
- Analyze the Cannabidiol (CBD) and other phytochemical composition of industrial hemp.
- Find existing markets for hemp products, and determine how to process hemp and create products.
- Outline the costs and benefits to hemp production in Minnesota.

Results

All pilots were required to provide the requested agronomic, processing, and marketing data by January 15, 2017. Those results are summarized in this section. Out of the 6 hemp fields planted in 2016, 4 were considered successful, and 2 had a stand failure. The stand failures were attributed to extremely heavy rains after planting and insufficient planting methods. Growers harvested a total of 24 acres, mainly for grain and oil processing. Some farmers were considering options for processing the remaining fiber, but fiber was not the primary harvested material.

Planting- Most pilots drilled their seed in 7 inches rows, with ¹/₄ to ¹/₂ inch spacing. They generally followed Canada's recommended seeding rate of 25 to 35 pounds per acre. The pilot participants were required to plant, process, or otherwise destroy all of their seed; they were not allowed to carry any over to the following year. As a result, some growers seeded thicker than they normally would have. Two producers seeded their fields by hand, they both experienced stand failure.

Inputs- None of the growers reported applying pesticides. Three of the 6 producers applied fertilizer to their fields—this did not appear to have much measurable effect. No other inputs or irrigation were applied.

Pest Burden- None of the pilots reported insect or disease problems. In general, weeds were suppressed by the dense growth pattern of the hemp plants. Only one grower reported significant weed infestation, but did not indicate that it affected yield. MDA inspectors reported seeing very little insect, disease, or deer damage and low weed pressure as a result of the close row spacing.

Harvest- The average plant height at maturity was 46.5 inches (3 feet, 10.5 inches). The dates of harvest ranged from September 30th to November 8th.

Seed was harvested by combine for all of the fields that reach stand maturity. The average yield for cleaned seed was 1,334 pounds per acre. Only one pilot harvested and baled fiber, with plans to sell to a fiber processor. This producer reported fiber yield of 1.07 ton per acre.



Industrial hemp field in bloom



Harvested hemp grain

Research Goals- The stated goals for each pilot producer were generally met. The growers were permitted to submit an MDA report template to fulfill the research requirement of the pilot program. The farmers that experienced stand failures did not meet their goals, but still reported their findings. All 2016 pilot growers are planning to participate in the pilot program again in 2017.

2017 Season

The MDA started admitting applications for pilot program participants in November 2016. As of mid-January 2017, MDA has received 11 applications and approved 10. Most of these applicants are new to the program. The application window is open until February 24, 2017. We expect to have significantly more industrial hemp acreage in 2017. As of January 31, the proposed acreage stands at 503 acres.

Dr. George Weiblen at the University of Minnesota has been doing feral hemp and cannabis genetics research for several years, and in 2016 was conducting this research under the MDA pilot program. In 2017, Dr. Weiblen and his team will continue the feral hemp research, and will also conduct agronomic hemp variety trials for the MDA pilot program. Twelve of the highest-yielding oilseed varieties from Canada will be tested for suitability in Minnesota. These trials will occur at 5 locations—at the U of M's St. Paul campus, the U of M experiment stations, and the White Earth Tribal College.

The 2017 application process is less complicated than it was in 2016. Applicants must submit the 2 page application, BCA background check, and a detailed map of their proposed fields. MDA is also currently renewing its Schedule I Importer registration.

Outreach

MDA staff went to Colorado in August and September 2016 for Industrial Hemp Regulatory and National Hemp Research meetings. Representatives from over 30 states, DEA headquarters, national grower groups, individual farmers, and a variety of hemp researchers were present. MDA staff co-presented "Organic Farming of Industrial Hemp" at the Organic Conference in January 2017 along with two 2016 pilot producers. There was also a half-day meeting scheduled for January 24th for all past and future Minnesota hemp producers and processors. This will potentially become an annual event for the industry to exchange ideas, gather information, and get updates on the industrial hemp pilot program.

Plant Protection hired a full-time Industrial Hemp Program Coordinator in November 2016. One responsibility of this position is to field the many questions on the program. The MDA industrial hemp program webpages were updated in December 2016 to provide more detailed information.

For More Information

- www.mda.state.mn.us/industrialhemp
- www.mda.state.mn.us/plants/hemp/industhempquestions.aspx
- www.revisor.mn.gov/statutes/?id=18K