



Ag Decision Maker

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The opportunities and challenges with industrial hemp

By Chad Hart, extension economist, 515-294-9911, chart@iastate.edu

Over the past several years, as row crop prices declined and then stayed lower, farmers and landowners across the nation have searched for alternative crops that might offer profits and improve the financial bottom line. With the passage of the 2014 and 2018 farm bills, industrial hemp became one of those possible alternative crops. The 2014 farm bill established industrial hemp (hemp with a

tetrahydrocannabinol [THC] concentration of 0.3% or less) as a potential crop, separating it from its illegal relation, marijuana. The 2018 farm bill removed hemp from the list of controlled substances and established hemp as an agricultural commodity, including the provision of crop insurance for hemp. While the farm bills cleared federal hurdles for hemp, it is still up to each state to pass laws legalizing the crop and to submit a plan to the United States Department of Agriculture (USDA) outlining the state regulations and laws guiding hemp production, testing, licensing, and transport. Iowa has passed a law to legalize hemp and our state plan was accepted by the USDA on March 20th.

in the case of food products and the Association of American Feed Control Officials (AAFCO) in the case of feed products. Currently, hemp seed and hemp seed oil can be utilized in food products. There are currently no approved uses for any form of hemp as a feed ingredient. Hemp seeds can be crushed, like soybean, to produce oil. The hemp seed oil has industrial and cosmetic applications, such as soaps and shampoos. Hemp fiber can be used in paper, textiles, fabrics, and various construction materials. As the fiber is flexible, yet durable, it has potential as a substitute for fiberglass. While the seed and fiber offer several potential markets,

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Handbook updates

For those subscribing to the handbook, the following updates are included.

Computing a Cropland Cash Rental Rate – C2-20 (4 pages)

Flexible Farm Lease Agreements– C2-21 (4 pages)

Farmland Value Survey, REALTORS® Land Institute – C2-75 (2 pages)

Please add these files to your handbook and remove the out-of-date material.

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Hemp is a versatile crop. It can be grown for seed, fiber, or oil. Hemp seed has potential as a food or feed product, but the food or feed products must be approved by regulatory agencies, the Food and Drug Administration (FDA)

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there's another aspect of hemp that has attracted the most interest due to its potential value. Cannabidiol, or CBD, is a non-psychoactive compound that can be extracted from hemp in oil form. CBD oil is not hemp seed oil. CBD oil can be extracted from various parts of the hemp plant, but the most concentrated form is captured from unpollinated hemp flowers. Rough estimates suggest it takes 20 pounds of hemp flower to produce a pound of CBD oil. CBD oil is generally sought after, as users believe it has medical applications, relieving pain and reducing symptoms for a variety of ailments. However, there is scant research to back up those claims and any medical applications (beyond use in topical or cosmetic applications, such as lotions or skin creams) would require FDA approval.

The production process and chosen variety for hemp depends on the targeted market. For the fiber market, producers would choose hemp varieties that can be planted densely, so the plants can be bunched together, forcing the plants to utilize most of their growth cycle to maximize the stem of the plant. For the seed market, planting density would be reduced to maximize seed growth. For CBD production, plant density is reduced even further, to allow the hemp plants to bush out and maximize flower production. Given the desire for hemp flowers for CBD extraction, the male plants are removed to avoid pollination. CBD production in outdoor facilities can be challenging due to the potential for cross-pollination from wild hemp that can often be found growing in ditches and wilder areas across the state.

Given my training, I'm better equipped to address the marketing opportunities and challenges for hemp. Hemp production opportunities and challenges are better addressed by agronomists and plant physiologists. The marketing opportunities for hemp have revealed themselves in a variety of ways. A few clothing lines, such as *Patagonia*, have introduced hemp clothing items. Several companies, including Mercedes and BMW, have explored using hemp fiber as insulation or as a natural strengthening agent in construction and building materials (example: hemp-concrete, concrete with hemp fibers mixed in). But many folks have concentrated on the potential for food, feed, and health products, especially from CBD and other chemical compounds from hemp. And you've likely seen hemp and CBD products in grocery

stores, convenience stores and assorted other shops over the past couple of years, targeting the food and health markets. The problems are that many of the applications were just test runs or, in some cases such as with CBD products, illegal markets. As was mentioned earlier, while hemp seed oil is legal for food products, CBD oil is not. The availability of CBD products on store shelves has definitely led to confusion in the marketplace and created the illusion that all potential products that can be created from hemp are legal.

To me, the biggest challenge for anyone exploring hemp, either as a producer or as a landowner with a tenant possibly producing hemp, will be to secure a marketing channel. For the vast majority of Iowa's agricultural production, there are numerous markets where producers can sell their crops, animals, and associated products. For hemp, that is not the case. Currently, there are no organized hemp markets in Iowa. In fact, there are no hemp processors in Iowa. This is not the type of market where you should take a Field of Dreams approach ("If you grow it, processors will come") as production costs can be extremely high and the approval process for hemp, and especially CBD, products could take considerable time. The market conditions for hemp in many of the states that moved before Iowa show that the development of hemp markets takes time. See, for example, these stories in *Forbes*, *Harvest Public Media*, and the *Hemp Industry Daily*. Before you or your tenant put a hemp seed or clone in the ground, you better know where your markets are, or better yet, have a contract with a processor already in place. You (and your tenant, in the case of a landowner) also need to understand the potential legal and marketing challenges if your hemp crop is tested and found to exceed the 0.3% level for THC. Who pays for the destruction of the crop? (Answer – you do.) What are the legal ramifications if your crop exceeds the THC limit? (Answer – if you exceed the allowable 'negligent violation' level, criminal charges could be filed.) Given the currently ever-changing legal and regulatory scene for hemp, it would make a great deal of sense to review any hemp business prospects with an attorney.

At the publication of this article, neither CBD extraction nor processing is legal in Iowa. There is a bill in the Legislature that would make it legal, but

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with the legislative shutdown due to COVID-19, we do not know when the Legislature will reconvene again. And, if the bill does pass and is signed into law, regulatory requirements will be put in place, making the processing site equivalent to a licensed food processing facility. If you grow for cannabidiol it is likely that the 2020 crop will need to be transported out of Iowa for extraction. Hemp prices are like hemp processors – hard to find currently. But the general trend reported in the hemp industry is lower. PanXchange has created a hemp price index, based on prices they have found in three of the largest hemp producing states (Colorado, Kentucky, and Oregon). That index has fallen by 84% from July 2019 to January 2020. At least three Kentucky processors (Atalo, GenCanna, and Sunstrand) have filed for bankruptcy in 2020. It is tough to create new markets, especially when the product faces significant legal and logistical challenges. While in the long run I believe that hemp will develop as a fruitful crop for some producers in Iowa, the short-term prospects are dim for most who will pursue hemp this year. The few who will be successful will need

to do a lot of homework and preparation to produce and market their crop. That homework includes knowing who you will sell to and how well they are set up financially. As the bankruptcies in Kentucky highlight, just because they're processing today, it doesn't mean they'll be processing tomorrow.

The agricultural economy has been rough the past few years. Traditional crop returns have not been strong and farm incomes/balance sheets have been in decline. Producers and landowners are searching for alternative crops that offer any prospects for profitability. We've seen these types of agricultural "rushes" before: emus, ostriches, Jerusalem artichokes, Aronia berries, etc. It's not that these products did not have a market. It's that these markets were overhyped and initial production overexceeded (in some cases, greatly) what the market could bare. Hemp is setting up to have a similar path. A few folks will be successful with the crop, but many will likely see hemp as a flame-out, a lot of cost sunk into a crop with no real opportunity for returns.



Hog producers limited in short-run to change production

By Lee Schulz, extension livestock economist, 515-294-3356, lschulz@iastate.edu

Some businesses can adjust production based on input costs and expected sale prices. An ethanol plant, for example, can react relatively quickly to a significant decrease in the price of ethanol by reducing production, or idling completely. As ethanol prices increase, ethanol plants can respond by boosting output. Many business in the manufacturing sector are likewise able to respond to input and output prices. There is a cost to scaling production, but the business decision does exist for many firms.

Biology, however, prevents hog producers from instantly responding to price changes. The timeline for pork production – from farm to retail – is about 10 months. Gestation (pregnancy) is 3 months, 3 weeks, and 3 days. Farrowing (birth to weaning) is 3 weeks. The nursery stage is 6 to 8 weeks and growing and finishing is 16 to 17 weeks. This is even longer

when considering the production of breeding stock. It takes about 32 weeks, from birth to breeding age, before a gilt (a female hog that has not farrowed – that is, given birth) is ready to reproduce.

This extended timeframe makes it difficult to change the direction of pork production quickly. Producers make decisions to expand or contract production before feed and hog prices are known. Biological lags mean that pork consumed today is based on production decisions made 10-18 months ago.

The Iowa/Minnesota barrow and gilt weighted average carcass base price for all purchase types averaged \$67.58 per cwt in 2019, up from \$64.37 in 2018. Composite formula and cash 10-12 pound early weaned pigs average \$43.51 per head in 2019, up \$3.59 or 9.0% from 2018. Similarly, 40 pound feeder pigs averaged \$60.58 per head, up

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\$6.14 or 11.3% from 2018. These prices provided above breakeven returns for many hog producers, especially during seasonally high price points.

In January 2020, lean hog futures suggested a higher annual price in 2020 than in 2019. Much of this optimism was predicated on global pork demand. Passage of the USMCA and the signing of trade deals with Japan and China (Phase 1), provided positive fodder on trade. The protein deficit caused by the African swine fever outbreak in China and other parts of Southeast Asia continues to create opportunity for exporting countries to fill the void and provide opportunities for back-filling other partner country demand needs. Kansas State University, calculated the US retail pork demand index for January 2020 at 97, which was the 11th highest monthly level in the past 10 years. Early 2020 domestic pork demand was strong.

Then the coronavirus (COVID-19) pandemic exploded. The shock wave surged through China, Asia, Europe and into the US. Lean hog futures plummeted. The pork industry plus US and global economies, plunged into uncharted waters. One huge longer-term question is the overall impact on domestic and international pork demand. Another is how loss of income in places hardest hit by COVID-19 will curtail demand.

Short-run actions to manage the epidemiology of COVID-19 could significantly impact pork supply chains. Care for animals is essential. Work by farmers and veterinarians needs to continue. Meatpackers, feed delivery, and other service providers play critical roles. How business is conducted has changed. Costs are higher. Ample unknowns persist about the timing, severity, and aftermath of COVID-19 and the short-, medium-, and long-term impacts on the pork industry.

What is certain is that due to the biologically determined timeline of pork production, extreme fluctuations in hog prices make it ever more difficult for producers to gauge which way the market price will be heading when their hogs are ready to be sold. And, for the near-term, it is important to remember that a lot of hogs and pigs are on the ground and that supply cannot simply be turned off. Hogs are not a storable commodity like grains.

On March 26, USDA's National Agricultural Statistics Service released its Quarterly Hogs and Pigs report based on producer surveys (Table 1). The report continues the storyline of record production. Every March report since 2015 has set new quarterly records for the all hogs and pigs inventory and market hog inventory. Pork production in 2020 is projected to total 28.985 billion pounds, up 4.9% year over year according to the March USDA World Agricultural Supply and Demand Estimates.

Through the first two months of 2020 federally inspected hog slaughter totaled 22.43 million head, up 6.6% from January and February 2019, according to USDA's monthly Livestock Slaughter report. March hog slaughter was estimated up 11.1% compared to a year ago, based on the daily data.

The robustly higher slaughter may indicate that producers are pulling some hogs forward out of fear of even lower cash prices. If so, slaughter weights should be lower. Average carcass weight of producer-sold barrows and gilts for the week ending April 3 dropped to its lowest value of the year at 213 pounds, almost a pound below the same week in 2019. That dip does not indicate hogs are being pulled forward.

Year-to-date actual slaughter numbers do not align with projections made from inventory estimates in USDA's December 2019 Hogs and Pigs report. USDA routinely revises previous inventory estimates when hard data, in this case slaughter numbers, become available. In March, USDA raised the estimate of the December 1, 2019 all hogs and pigs inventory by 1.32 million head or 1.7%. The breeding herd was raised 10,000 head or 0.2% while the market hog inventory was raised 1.31 million head or 1.8%. USDA revised the number of sows farrowed during June-August 2019 up by 95,000 litters (3.0%) and boosted the June-August pig crop by 1.055 million pigs (3.0%). They upped the number of sows farrowed during September-November 2019 by 81,000 litters (2.6%) and hiked the September-November pig crop by 906,000 pigs (2.6%).

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Table 1. USDA Quarterly Hogs and Pigs Report Summary

	United States			Iowa		
	2019	2020	2020 as % of '19	2019	2020	2020 as % of '19
March 1 inventory *						
All hogs and pigs	74,661	77,629	104.0	23,700	24,600	103.8
Kept for breeding	6,349	6,375	100.4	1,030	980	95.1
Market	68,313	71,254	104.3	22,670	23,620	104.2
Under 50 lbs	21,373	22,221	104.0	5,510	5,920	107.4
50-119 lbs	19,168	19,853	103.6	7,510	7,530	100.3
120-179 lbs	15,001	15,581	103.9	5,630	5,640	100.2
180 lbs and over	12,771	13,598	106.5	4,020	4,530	112.7
Sows farrowing **						
Sep – Nov ¹	3,205	3,247	101.3	570	540	94.7
Dec – Feb ²	3,099	3,158	101.9	530	520	98.1
Mar – May ³	3,133	3,119	99.6	530	510	96.2
Jun – Aug ³	3,275	3,134	95.7	550	510	92.7
Dec – Feb pigs per litter	10.70	11.00	102.8	11.20	11.25	100.4
Dec – Feb pig crop *	33,163	34,734	104.7	5,936	5,850	98.6

Full report, <https://downloads.usda.library.cornell.edu/usda-esmis/files/rj430453j/ff365q57t/r781x112v/hgpg0320.pdf>

* 1,000 head; **1,000 litters; ¹ 2018 and 2019; ² December preceding year; ³ 2020 intentions.

For these pig crop revisions, USDA did not revise their original estimates of pigs per litter or breeding herd inventory, as is their standard operating procedure. They have statistical modeling reasons for this. If the size of the pig crop is revised and pigs per litter do not change, then the revised sows farrowed becomes the revised pig crop divided by the initial pigs per litter. Thus, USDA adjusts the pig crop to align with hog slaughter roughly six months later, and then sets sows farrowed equal to the revised pig crop divided by the original estimate of pigs per litter. This makes forecasting changes in sows farrowed easier. But, it doesn't make forecasting hog slaughter easier or more accurate. Being able to correctly anticipate slaughter numbers is very important to price forecasting.

The US inventory of all hogs and pigs on March 1, 2020 was 77.629 million head. This was up 4.0% from March 1, 2019, but down 1.3% from December 1, 2019. On December 1, 2019 the breeding herd was 6.471 million head. Three months later on March 1, it was 6.375 million head, or 1.5% lower. That's

a decline of 96,000 breeding animals in 13 weeks or a 7,385 head drop a week. While down from December, the March 1, 2020 breeding herd was still up slightly (0.4%) from March 1, 2019.

Through the first 12 weeks of the year, sow slaughter was up 7.6%, averaging more than 4,300 head a week higher than in 2019. Also, many herds may not be retaining as many gilts as normal. Still, it's too early to speculate if producers are putting projects on hold or abandoning plans to build any new sow units.

The March 1, 2020 market hog inventory, at 71.254 million head, was up 4.3% from last year. This was 2.941 million head more than a year ago. Dividing that by 22 to 25 weeks (157 to 176 days) for nursery, growing, and finishing production, equates to about 117,000 to 131,000 higher hog slaughter per week. The 180-pound and over category was up 6.5%. Those hogs have already come to market. So the biggest slaughter surge is over. The remaining market hog categories averaged 3.8% above a year ago. They'll come to market from now through August 2020.

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The December-February pig crop, at 34.734 million head, was 4.7% above a year ago. The pig crop is ultimately a function of the quarter's sows farrowed and the quarter's number of pigs per litter. Sows farrowed were 1.9% larger than a year ago, but the litter rate came in 2.8% higher than a year ago.

Last December, USDA surveyed hog producers and reported expected March-May 2020 sows farrowing to be up 0.4% from the spring of 2019. In March, USDA asked producers for updated March-May farrowing intentions. The results were not much different than three months earlier-14,000 (0.4%) fewer sows expected to farrow than in spring 2019. Data collected for the survey reflected market conditions in the weeks leading up to and the first half of March 2020. Likely much of the pessimism flowing from the COVID-19 situation had yet to take hold.

Hog producers reported June-August farrowing plans down 141,000 litters or 4.3% lower than the same quarter in 2019. At first glance this may look like a sharp decline, or a significant sign of contraction. But remember, USDA's latest report revised June-August 2019 sows farrowed up by 95,000 litters. Sows farrowed in June-August 2020 of 3.134 million, with commensurate pigs per litter, would still provide the second largest, only to last year, June-August pig crop.

Commercial slaughter and price forecasts

Table 2 contains the Iowa State University price forecasts for the next four quarters and the quarterly average futures prices based on March 26, 2020 settlement prices. The futures price forecasts are adjusted for a historic Iowa/Southern Minnesota basis. The table also contains the projected year-over-year changes in commercial hog slaughter.

Table 2. Commercial hog slaughter projections and lean hog price forecasts, 2020-2021

	Year-over-Year Change In Commercial Hog Slaughter (percent)	ISU Model Price Forecast, Negotiated IA/So MN (\$/cwt)	CME Futures (3/26/20) Adjusted for All Producer Sold Purchase Arrangements IA/So MN Basis (\$/cwt)
April-June 2020	4.27	61-65	62.19
July-September 2020	4.01	64-68	64.84
October-December 2020	2.14	54-58	55.79
January-March 2021	-1.19	59-63	61.01

To say this year so far has been tumultuous for the pork industry would be putting it mildly. At a time like this it is important to reflect on and recognize the unwavering resilience of producers and all throughout the supply chain for ensuring a continuous, safe, and wholesome supply of pork for consumers. The heroes in the entire US food supply chain should be commended.



Suicide prevention program available virtually to agribusiness community

By David Brown, Human Sciences Extension and Outreach, 515-298-1505, dnbrown@iastate.edu

Farming can be stressful in the best of times. Financial worries, unpredictable weather, unpredictable commodity prices, plant pests, livestock diseases and isolation all contribute to farmers' anxiety. And now Iowa's rural communities and families are coping with the unpredictability and imposed isolation produced by the COVID-19 pandemic.

In response to this additional uncertainty, Iowa State University Extension and Outreach will be offering seven online "Question. Persuade. Refer." programs beginning Tuesday, April 14, said David Brown, behavioral health specialist with Iowa State University Extension and Outreach. QPR is a suicide prevention program that teaches participants three steps to help save a life from suicide.

Just as people trained in CPR and the Heimlich maneuver help save thousands of lives each year, people trained in QPR learn how to recognize the warning signs of a suicide crisis and how to question, persuade and refer someone to help.

ISU Extension and Outreach will offer QPR at a variety of dates and times to meet the busy schedules of the agribusiness community. Each program will last for one hour. Those dates and times are as follows:

- Tuesday, April 14, at 12 p.m.
- Wednesday, April 15 at 10 a.m.
- Tuesday, April 21 at 12 p.m.
- Tuesday, April 28 at 12 p.m.
- Wednesday, April 29 at 10 a.m.
- Tuesday, May 5 at 12 p.m.
- Wednesday, May 6 at 10 a.m.

Agribusiness professionals, agriculture lenders and bankers, veterinarians, vet techs, commodity group members and producers can register at no cost for any of these programs.

To [register](#), go to www.extension.iastate.edu/humansciences/QPR. These programs will be offered online via Zoom. For more information, feel free to contact David Brown, dnbrown@iastate.edu.

Other resources

Iowa Concern, offered by ISU Extension and Outreach, provides confidential access to stress counselors and an attorney for legal education, as well as information and referral services for a wide variety of topics. With a toll-free phone number, live chat capabilities and a website, Iowa Concern services are available 24 hours a day, seven days per week at no charge. To reach Iowa Concern, call 800-447-1985; language interpretation services are available. Or, visit the [website](#), www.extension.iastate.edu/iowaconcern/, to live chat with a stress counselor one-on-one in a secure environment. Or, email an expert regarding legal, finance, stress, or crisis and disaster issues.

Finding Answers Now. As Iowans deal with disruptions to their families and communities, this [website](#), www.extension.iastate.edu/humansciences/disaster-recovery, provides information to help them cope with concerns about stress and relationships, personal finance, and nutrition and wellness.

211 is a free, comprehensive information and referral line linking Iowa residents to health and human service programs, community services, disaster services and governmental programs. This service is collaborating with the Iowa Department of Public Health to provide confidential assistance, stress counseling, education and referral services related to COVID-19 concerns.

COVID-19 Resources

While in-person events remain on hold, ISU Extension and Outreach, including Ag Decision Maker, remains committed to serving Iowans. A few resources are included below, and more will be added as needed to the [AgDM Blog](https://blogs.extension.iastate.edu/agdm/2020/04/06/covid-19-resources-for-agriculture/), <https://blogs.extension.iastate.edu/agdm/2020/04/06/covid-19-resources-for-agriculture/>.

[Iowa State University](https://web.iastate.edu/safety/updates/covid19), <https://web.iastate.edu/safety/updates/covid19>

[ISU Extension and Outreach](http://www.extension.iastate.edu/disasterrecovery/recovering-disasters), www.extension.iastate.edu/disasterrecovery/recovering-disasters

[ISU Center for Agricultural Law and Taxation](http://www.calt.iastate.edu/covid-19-resources), www.calt.iastate.edu/covid-19-resources

[ISU Extension and Outreach Human Sciences, Finding Answers Now](http://www.extension.iastate.edu/humansciences/disaster-recovery), www.extension.iastate.edu/humansciences/disaster-recovery

[ISU Extension and Outreach Agriculture and Natural Resources Specialists](http://www.extension.iastate.edu/ag/anr-staff-directory), www.extension.iastate.edu/ag/anr-staff-directory

Questions regarding on-farm decisions on crop and livestock farms are often unique to the needs of the individual operation. **Your extension specialists remain available during this time.**



We are here **to help!**

IOWA STATE UNIVERSITY
Extension and Outreach

Iowa Concern Hotline
800-447-1985

24/7 confidential phone support

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Internet Updates

The following Voiced Media and Decision Tools have been updated on www.extension.iastate.edu/agdm.

2018 Farm Bill Payment Estimator by County for ARC-CO and PLC – A1-33 (Decision Tool)

Five Steps to Formulate Workforce Contingency Plans in the COVID-19 Setting – C1-84 (3 pages)

Farmland Return Versus Stock Market – C2-79 (Voiced Media)

Substitute Decision-Making: Who Can Make Decisions When You Cannot? – C4-54 (Voiced Media)

US - China Agricultural Trade under Phase-One Trade Deal and Coronavirus (Voiced Media)

Current Profitability

The following tools have been updated on www.extension.iastate.edu/agdm/info/outlook.html.

Corn Profitability – A1-85

Soybean Profitability – A1-86

Iowa Cash Corn and Soybean Prices – A2-11

Season Average Price Calculator – A2-15

Ethanol Profitability – D1-10

Biodiesel Profitability – D1-15

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