Motivations for Growing Hemp: Insights from Hemp Production, Disposition, and Income Survey

Fahima Islam and Debanjan Das, West Virginia University, USA
Keywords: Industrial Hemp, Hemp Cultivation, Economic Viability, Farming Practices

The U.S hemp industry faced a heightened federal government restriction from 1970 until 2014 which made the U.S hemp industry almost non-existent (Malone, Trey ; Gomez, Kevin, 2019). The 2014 and 2018 Farm Bills provided a legal foundation for industrial hemp cultivation and generated unprecedented enthusiasm enabling the growth, cultivation, and marketing of industrial hemp in the U.S. The legalization of commercial hemp production in 2018 has fostered growth and was a significant contributor to being the third-largest hemp producer in the world (Hemp Today, 2019).

Hemp is considered a sustainable crop that requires less water and pesticides compared to other crops. Hemp provides a high yield as a fiber crop; from the same acreage, it can produce 250% more fiber than cotton and 600% more fiber than flax (Rupasinghe et al., 2020). Moreover, the versatility of hemp makes it a potentially valuable crop for farmers. Thus, it can motivate farmers to diversify their crop portfolio and mitigate risks associated with monoculture. This high-value specialty crop can be cultivated for either fiber, seed, or cannabidiol (CBD) to enter the market of industrial (Karche & Singh, 2019), nutritional (Krüger et al., 2022), medicinal, and psychotropic (Andre et al., 2016) products. However, there have been some challenges associated with industrial hemp cultivation as well. The absence of data on the size and location of growers, buyers, and competitors, lack of research on agronomic best practices for hemp, and relative profitability with alternative commodities in this fast-developing industry were identified as some significant challenges during the pilot programs (Olson et al., 2020).

The legalization of hemp by the 2018 Farm Bill has created opportunities for many farmers across the U.S. who have started growing hemp for commercial use. Additionally, there has been a significant increase in research into the potential health benefits of hemp-derived products, leading to further growth in the industry. Data from state pilot programs in 2018 reported that U.S. industrial hemp increased from zero acres in 2013 to over 90,000 acres, the highest acreage since 1943 when it was 146,200 acres (Mark, et al., 2020). In 2019, the area registered for hemp production increased to 511,442 acres. However, since the hemp market has seen a steady decline which can be attributed to the lack of market information and overproduction versus lower demand, the U.S.-China trade war. According to hemp benchmark data, about 107,000 outdoor acres were licensed in 2021, down from 580,000 licensed acres, suggesting a more than 80% drop (Quinton, 2021). Despite the fact of finding a rebalance in hemp cultivation, there is an estimated sales increase of cannabis from $25 billion in 2021 to $40 billion in 2026 in the United States, predicting a 73% share of total global cannabis sales (DeAngelo, 2022).

Therefore, it is critical to measure the efficacy of hemp farming as a stable business in the United States. Despite the importance of the crop to the U.S. economy, it did not attract much attention from the researchers. Previously, researchers aimed to measure the knowledge and willingness of organic farmers to adopt industrial hemp (Dingha, et al., 2019), to determine the economic competitiveness of hemp production (Schumacher et al., 2020), to describe financial and regulatory considerations of hemp (Malone & Gomez, 2019) and to compare the environmental performance of industrial hemp relative to its substitutes (Smith-Heisters, 2008). However, little is known about the social and economic aspects of hemp farming. To address this research gap, this study aims to analyze the motivations for hemp growing and to find out if it could be an economically stable business in the United States.

Data were collected from the 2021 Hemp Production, Disposition, and Income Survey conducted by the United States Department of Agriculture (USDA) in March 2023. The target population for the USDA Hemp AP Survey was all farmers in the United States who were licensed to grow hemp in 2021 under the 2014 or 2018 Farm Bill. The survey was conducted in all 50 States. T-test and Chi-square were used to analyze the data. The dependent variables were 1) Total Industrial Hemp harvested, 2) Industrial Hemp Grown for Floral, 3) Industrial Hemp Grown for Grain, 4) Industrial Hemp Grown for Fiber, and 5) Industrial Hemp Grown for Seed. The independent variables were 1) Gender, 2) Age, 3) Primary Occupation 4) Years of Operating Farms, and 5) Price of Harvest.

The descriptive statistics showed that the farmers surveyed were mostly male (82%). Farming was the primary occupation for 52% of the participants, with 58% having 5 years or less experience operating farms, 10% having 6 to 10 years of experience, and 32% having more than 10 years of experience in farm operations. The average age of the participants was 51 years. The majority (90%) of the participants harvesting hemp are Caucasian and White. The total value of hemp fiber production was found to be 17564000 lb. The average value of hemp fiber production was 390311.11 lb. (SD = 1553402.699) with a minimum value of 0 lb. and a maximum value of 9734000. The total value of hemp floral production was found to be 18963977 lb. The total value for hemp floral acres harvested was 17714 with an average value of 393.64 (SD = 653.582) and a range of 2711.

Hemp, Floral, Grain, and Seed harvest were found to be statistically significant with years of farm experience. It was interesting to see that there was significance found between hemp grown for fiber harvest and any of the dependent variables. The Price of Harvest was also found to be statistically significant for Hemp harvest and Grain harvest. Changes in Harvest Prices were found to be a statistically significant predictor for Industrial Hemp Grown for Floral ($t = -1.23$, $p < .01$), Industrial Hemp Grown for Grain ($t = -2.13$, $p < .01$), and Industrial Hemp Grown for Seed ($t = -2.38$, $p < .01$).

The study found that years of farm operation and the price of harvest play an important role in deciding what product type the industrial hemp is grown for. Interestingly, Gender, Age, or Race did not have any impact on the motivations for growing hemp or specific hemp farming. Higher harvesting prices were found to be a motivator for growing industrial hemp for floral, grain, and seed. No Independent variable had any effect on the motivations for growing hemp for fiber. The results also suggest that hemp floral production is influenced by the amount of hemp flora utilized under protection, which is a statistically significant predictor. The study found that an increase in hemp floral utilized under protection led to an increase in hemp floral production. The findings could help hemp farmers and cultivators increase their hemp floral production by understanding the relationship between hemp floral utilization under protection and production. By understanding the value of hemp fiber and floral production, as well as the value of hemp acres harvested, farmers and cultivators can make informed decisions to optimize profitability.

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