Motivations for Growing Industrial Hemp: Farmers, Producers, Policymakers, Retailers, Consumers, and Communities (Stakeholders)

Statement of Issues and Justification

Industrial hemp (*Cannabis sativa*) has been an important crop throughout human history. For centuries, hemp has been a source of fiber and oilseed used worldwide to produce a variety of industrial and consumer products (Johnson, 2018). Industrial hemp also has the capacity to grow in a multitude of different climates, altitudes, soils, and weather conditions.

Global production of industrial hemp is small and was relatively stable until the recent worldwide interest in CBD oil. Industrial hemp competes for acreage with locally and regionally important food and feed crops but is still not currently considered a major crop in any country or region of the world. There is some demand for hemp as a sustainable natural fiber, hemp seeds and protein as a food ingredient, and hemp extracts for cosmetics and food, but CBD oil has been the primary source of demand growth (Johnson, 2018).

The USA is the largest importer of hemp products, obtaining most of its seed and fiber from Canada and China, respectively (Cherney and Small, 2016). The Agricultural Act of 2014 (2014 Farm Bill) allowed State departments of agriculture and institutions of higher education to legally grow and cultivate hemp for purposes of research or to license growers in their State for these activities. The reintroduction of industrial hemp through State pilot programs showed potential for a crop last commercially produced in the United States in the 1950s. U.S. industrial hemp acreage reported by State pilot programs increased from zero in 2013 to over 90,000 acres in 2018 (Hemp Industry Daily, 2019).

The 2018 Farm Bill addressed many of these challenges highlighted by the pilot programs and authorized subsequent regulations to address them (Malone and Gomez, 2019). The numbers of planted acres and participants in the U.S. industrial hemp industry increased rapidly under the pilot programs, and industrial hemp can now be grown legally in nearly every State. While the U.S. industrial hemp industry grew rapidly and commercial hemp production was legalized by the 2018 Farm Bill, the industry's long-term economic viability is uncertain.

Nationally, the number of producers reported to have approved hemp licenses increased from 292 in 2014 to 3,852 in 2018, although many of these producers are small, with an average cultivated area under 20 acres (Sterns, 2019). Because of various legal and logistical issues, such as lack of appropriate seeds, uncertainty in production methods, and other factors, not all the licensed producers planted hemp or planted as many acres as they had licensed. However, the number of approved licenses more than doubled between 2017 and 2018, showing a growing interest in hemp production (Mark and Snell, 2019).

Three main categories of industrial hemp use are food from hemp seed, fiber from hemp stalks, and oil from the flowers and seeds. There is also a market for hemp "hurds," which are the inner layer of the stalk that can be used for animal bedding or insulation. Hemp fiber is used for

making fabric, paper, and rope, while the seeds can be eaten or used as a feed ingredient for animals. Seeds can also be crushed for hemp oil, an ingredient in soap, cosmetic products, and industrial oils, such as biofuels, paints, and solvents. Industrial hemp can be used for hundreds of consumer products and industrial inputs, including paper, construction materials, automotive parts, packing materials, bioplastics, fabrics, and bioenergy, but the magnitude of demand for these uses is unknown.

The policy situation is fluid and expected to change at the state and federal levels over the coming years. Due to the longstanding federal policies that made the cultivation of industrial hemp illegal, the supply chains, processing, and manufacturing facilities necessary to create market-ready products need to be reestablished in the United States. The difficulty in finding current market information on sale prices and demand makes any projections of the long-term profitability of industrial hemp a real challenge for potential growers. Hemp producers should carefully identify which industrial hemp product(s) and sales channels are available before starting production, secure any necessary permits prior to production, and ensure that production is done in accordance with state and federal laws. There is also domestic and global competition in the industrial hemp marketplace.

The establishment of a USA hemp industry may impact global commerce by reducing hemp imports from exporting countries. As consumer demand for organic and environmentally sustainable products increases, there is a potential for the significant growth of the world hemp market. The economic dynamics of this multifaceted emerging market will create both opportunities and significant threats and risks for farm profitability. Market dynamics will change quickly, especially during the development of a new industry, as producers enter and increase production and demand patterns shift. Hemp is an international market and competition with alternative crops for acreage, relative competitiveness, market transparency, and the ability to manage regulatory and market risks will determine patterns of development in the emerging U.S. hemp industry.

There is little peer-reviewed economic analysis of industrial hemp available. Most of the economic literature that does exist discusses hemp fiber and grain products and was written before CBD oil became a major product category. There are significant gaps in the current economic and market literature. There is also a significant need for more farm-level enterprise research and research-on-demand for particular products to determine the profitability of industrial hemp for various uses (grain, fiber, and CBD or other extracts) and by regions. Significant market research gaps also include international competitiveness and trade, processing alternatives, and market organization and structure.

Collaboration across states is needed to: 1) understand the motivations of stakeholders of growing industrial hemp across regions, 2) research consumer demands for enterprises and hemp products, 3) determine policy implications for hemp products and stakeholders, 4) research market dynamics for enterprises and hemp products, and 5) develop collaboration and research plans for efficient use of resources, and foster multi-institutional and cross-disciplinary research.

Related Multistate Research Project

S1084: Industrial Hemp Production, Processing, and Marketing in the U.S project can be described as a closely related complimentary multistate project. The *S1084* project objectives are centered around **agronomic practices** (determine the productivity of hemp through different functions), **crop quality** (analyze plant material), **genetics** (identify genes for advanced traits), and **economics** (evaluate crop value for different uses). Whereas our project objective is centered around the **stakeholders** involved in hemp products, impacts of **policies** on hemp product markets, **value-added** hemp products (e.g., CBD oil, hemp fibers), and **socioeconomic** barriers to entry into the hemp market. We believe our research outcomes would complement the S1084 research project.

In sum, there are few commonalities with S1084 research project. When looking closely at the S1084 project we found that most of it is related specifically to the agronomical practices of hemp crop. There are is still an existing gap in assessment of the stakeholders involved in the hemp product supply chain, market demand of hemp products, or the socio-economic barriers for growing hemp, therefore the impending need for our project. We do identify S1084 as a complementary project and we hope to strengthen the connection with the S1084 project, to expand the impact of the projects. We will collaborate with members of other projects in specific publications and other project outputs when appropriate.

Proposed Objectives

1. Investigate the socio-economic constraints/challenges for growing industrial hemp.
2. Analyze the benefits and costs, to producers, consumers, and other stakeholders of growing industrial hemp and hemp products using both theoretical approaches and empirical research.
3. Determine economic impacts of the federal and state policies on industrial hemp and hemp products.
4. Evaluate the economic and social contributions of hemp products to its stakeholders such as farmers, producers, retailers, consumers, and communities.
5. Identify and evaluate emerging value-added markets and analyze the competitiveness of hemp products.

References

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