

Risk-Induced Stressors for Row Crop Producers

S. Aaron Smith and William E. Maples

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Mental health and managing stress are major concerns in rural communities and for agricultural producers. Peterson et al. (2016) indicated that agriculture was one of five major industry groups with suicide rates higher than the study population. Farm stress can often be traced to one of the five broad categories of risk that agricultural producers face: production risk, market risk, financial risk, legal risk, and human risk (Crane et al., 2013). Many stressors affect all agricultural producers regardless of the commodities produced on their farms; however, some stressors and mitigation strategies are more prevalent in certain agricultural sectors. We explore stressors readily encountered by row crop producers, including weather and climate, uncertain and volatile input and output prices, access to credit, social isolation, compliance with government regulations, succession planning, and labor shortages. We also discuss sources of stress by risk category for row crop producers.

Production Stress

A significant stressor in agricultural production is weather and climate. From preplanting to final sales, weather provides a substantial amount of uncertainty and consternation for crop producers. Crop yields are highly dependent on weather; inclement weather can severely impact production and, consequently, financial performance for crop producers. The 2012 drought, 2019 Midwest floods, and Hurricane Ida are examples of weather events that resulted in substantial production losses for row-crop producers, which increased uncertainty and producer stress (English et al., 2021). Natural events such as hurricanes and windstorms can eliminate a promising production year in just a few hours and devastate farm infrastructure, creating billions of dollars in losses (NOAA National Centers for Environmental Information, 2022). However, weather and climate are not the only sources of production stress.

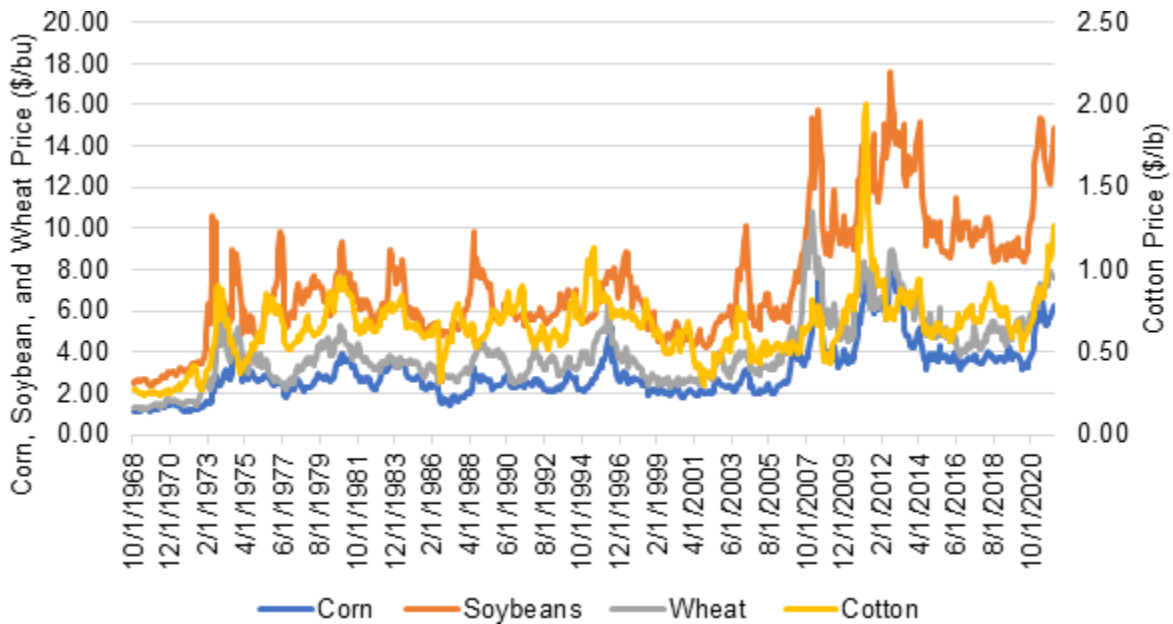
Production stress can occur through adoption of management practices and third-party actions. Herbicide

drift is an example of a production technology or a third-party action that has added significant stress to row crop producers and rural communities. The use of dicamba has been a polarizing technology for rural communities, pitting neighbors against each other and creating production losses due to drift and volatilization (Gunsolus, 2021). Management practices can also create stress for crop producers. Insect, weed, and disease control provide tremendous sources of growing-season production stress. Controlling herbicide-resistant weeds, managing sugarcane aphid infestations, and controlling southern rust are all costly management practices that can reduce production and create stress. In many cases, production stress will also create financial and legal stress for the crop producer. Producers can use tools such as crop insurance, irrigation systems, and production technologies to help alleviate some of the production stress during the growing season.

Market Stress

Economic theory states that producers are price takers. The large number of commodity sellers makes it difficult for one producer to have the market power to influence supply sufficient to change prices. As such, crop producers are subject to market/price changes due to supply and demand, government policies, and other economic influences. The 2020, 2021, and 2022 production years provide prime examples of the volatility and rapid changes in price that row crop producers face. Nearby corn futures swung from a low of \$3.09 per bushel on April 20, 2020, to \$8.13 ½ per bushel on April 25, 2022, a 163% change in price. Markets are uncertain and provide a constant source of stress for crop producers. The dilemma between action and inaction in selling commodities over the course of a marketing year is incredibly stressful for most crop producers. From 1968 to 2022, the greatest month-to-month changes in futures closing prices for corn, soybean, wheat, and cotton were 46%, 58%, 37%, and 53%. For context, imagine a hypothetical salary move of 37%–58% from one month to the next. Even with a well-developed risk management strategy, stress experienced by farmers

Figure 1. Monthly Nearby Commodity Futures Prices, October 1968—January 2022



due to price movements outside their control is substantial.

Price uncertainty can lead to stress over whether operations will be profitable for that year or not. Crop prices are determined through global, national, and local forces, which are outside of producers' control.

Additionally, supply and demand are affected by macro-economic influences (exchange rates, global economic activity, inflation, and interest rates) and government policies (domestic, foreign, and trade policy). Periods of low prices or significant price volatility (Figure 1) can be a major contributor to stress. Extended periods of low commodity prices, such as 1999–2002 and 2015–2020, can provide long-term market-based stress due to financial hardship and equity erosion. Some market stress can be partially mitigated through producer adoption of risk management tools such as crop insurance or futures and options to protect against adverse movements in price and production disruptions. However, crop insurance indemnity payments and safety net program payments will not always cover losses or be realized during periods of low price.

Financial Stress

Financial performance can be a major stressor for all agricultural producers. High input costs, access to credit, and cyclical profitability all contribute to stress for row crop producers. Recent global events have amplified the risk and stress associated with input prices and availability. In 2022, COVID-19 induced supply chain shortages, and geopolitical conflict caused fertilizer prices to increase by 100%–200% compared to levels a year ago. Additionally, due to supply chain disruptions, producers' ability to procure chemicals, fertilizers, and

machinery parts was also uncertain. This uncertainty and elevated input price environment have substantially increased financial stress. The increased cost of production for principal row crops has created an environment in 2022 with the potential for large losses should commodity prices fall.

Changes in input prices can compress margins or eliminate profits even with high prices and good yields. Conditions in 2021 and at the start of the 2022 crop season demonstrate how input prices and availability can create stress. Crop producers are facing a lot of input price stress in 2022. Increased production costs mean that producers are risking substantially more in 2022 than ever before. This increased amount of money invested in a crop will increase concerns over financial losses even if prices and yields remain strong. Since 2013, annual cash receipts from crop production have varied between \$187.9 billion and \$248.6 billion (USDA, 2022). Additional financial stressors for crop producers are access to credit, land acquisition, and negotiation of rental agreements.

Farm Bill programs form the core of the farm financial safety net through Commodity Programs (Title I), Conservation (Title II), and Crop Insurance (Title XI). These programs help producers manage in-season and cyclic changes in the agricultural economy. Understanding and effectively implementing Farm Bill programs can mitigate financial risk and reduce financial stress.

Financial Impact in Rural Communities

Row crop producers, particularly large operations, are highly visible members of rural communities. Production

has become concentrated on large farms for major field crops. For field crops in every census year from 1982 to 2002, the share of land harvested by farms harvesting more than 1,000 acres increased. In 1982, 59.9% of the land was operated by farms exceeding 1,000 acres. This has increased with each Census of Agriculture—61.56% in 1987, 64.27% in 1992, 65.34% in 1997, and 66.83% in 2002 (Key and Roberts, 2007). Producers that farm many acres are well known in their local communities. The land they farm and the machinery required to produce crops are highly visible. In addition to being highly visible members of their communities, they are also often major contributors to the local rural economy. In general, the more rural the county, the more important the economic contribution of row crop agriculture to the community. Farms are a source of direct employment but also indirect and induced economic activity within their communities. Declines in farm profitability can have an adverse economic effect on entire communities. This can result in a perceived obligation, by the producer, to contribute to economic stability, which can increase producer stress.

Legal Stress

Row crop producers must navigate a complex framework of interrelated local, state, national, and international policies and regulations. Legal stress can be associated with trade wars, environmental concerns, counter-party risks, and changing government regulations. The trade war between China and the United States had dramatic implications for U.S. soybean producers. Concerns over environmental regulations such as the Environmental Protection Agency's definition of Waters of the U.S. or restrictions to pesticide use create stress for farmers by complicating production decisions and increasing uncertainty. Loss of weed, insect, and disease technologies due to regulatory actions can limit producer options to mitigate production losses and increase producer stress. Additionally, class action lawsuits to seek compensation for production losses or counterparty defaults are challenging and time consuming for producers to navigate.

Human Stress

Row crop producers often work long hours and are isolated from their family, friends, and communities for extended periods of time, particularly at planting and harvest. For some, this isolation is one of the major benefits of being a row crop farmer. However, isolation can also amplify mental health issues. Many farmers are reluctant to reach out for mental health help when faced with adversity.

Approximately 70% of family farm operators expect their operation to continue past their death, but fewer than 25% have a formal succession plan. Succession planning can be one of the more stressful management decisions for crop producers. Allocating resources to on- and off-farm heirs can be complex, especially while maintaining the financial viability of the farm operation. Determining an allocation of assets between siblings and other beneficiaries often creates confrontational situations with family members with high degrees of stress, particularly for the older generation.

Balancing labor supply has become increasingly stressful post-pandemic. Labor to produce and move the crop to market has become difficult to obtain for many farms. Lack of labor supply can lead to production disruptions—due to failure to apply chemicals/fertilizer in the optimal window) or transporting a crop to market. Managing farm labor is a continual source of stress for many row crop operations.

Discussion and Conclusions

Risks row crop producers face are often sources of stress that can affect mental health for producers and farm families. Mental health and dealing with stress have been part of Extension programming for decades with the roots for many land grant institutions tracing back to the financial crisis of the 1980s. Recent efforts, while still focusing on financial stress, have been expanded to include programming specific to other areas of stress. Removing all stress in agriculture is not possible, but the farm community should continue to strengthen programs that assist farmers and rural communities with mitigating or managing stress based on the needs for the specific agricultural enterprises in the community.

Resources

American Psychological Association: <https://www.apa.org/events/farmer>
Farm Bureau: <https://www.fb.org/related/Rural+Stress>
USDA: <https://www.usda.gov/sites/default/files/documents/farm-stress-resources.pdf>
Succession Planning: <https://farmlandlegacy.tennessee.edu/>
National Agriculture Law Center: <https://nationalaglawcenter.org/>

For More Information

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Author Information: Corresponding Author: S. Aaron Smith (aaron.smith@utk.edu) is Associate Professor, Department of Agricultural and Resource Economics, University of Tennessee, Knoxville, TN. William Elliott Maples (will.maples@msstate.edu) is Assistant Professor, Department of Agricultural Economics, Mississippi State University, Starkville, MS.