

Factors That Contribute to Extraordinary Stress in Farmers

D. B. Croom¹, A. M. Scheyett², K. B. Yoo³

Abstract

This research aimed to identify the conditions leading to stress in farmers. Rural and agricultural communities face heightened stress levels due to multiple factors, with cumulative negative consequences, as proposed by the Cumulative Stress Model (CSM). This study engaged a panel of experts with lived and professional experiences in an intentional and iterative Delphi process to identify stressors in agricultural communities. Employing the three-round Delphi technique by Turoff and Linstone (1975), this study integrated diverse perspectives and expertise while minimizing biases arising from group discussions or face-to-face interactions. The findings indicate that most stressors, such as farm operating costs, commodity prices, weather, labor shortages, crop/livestock diseases, economic fluctuations, and work-related accidents, were beyond individual control. These stressors can lead to a sense of powerlessness, particularly challenging in communities valuing independence and self-reliance. Furthermore, farm operating costs, commodity prices, weather, labor shortages, and crop/livestock diseases ranked among the top stressors. Debts, loans, and work-related accidents also contributed to stress. Notably, farm operating costs, commodity prices, and weather emerged as the three most highly rated stressors across all categories—lack of control, sudden fluctuations, and farming-related stressors. Addressing these stressors is paramount for monitoring and improving the well-being of agricultural communities.

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Introduction and Problem Statement

Farmers and agricultural workers face disproportionately high rates of mental health challenges, including suicide, depression, anxiety, and psychological distress (Cuthbertson et al., 2021; Pratt, 2022). These challenges stem primarily from uncontrollable factors such as weather, input costs, commodity prices, labor shortages, and government policies (Cuthbertson, 2021), compounded by the physical hazards inherent in farm work. Agriculture ranks as one of the most hazardous professions in the United States, with a constant risk of fatal and nonfatal injuries (The National Institute for Occupational Safety and Health (NIOSH)). Moreover, the unique aspect of farming is that farm families reside and work within the confines of the agricultural operation, increasing the risk of injury to adolescent children when farmers are under significant stress (Stoneman & Jinnah, 2015). Adding to this complexity is the prevailing mental health stigma within agricultural communities, where values of stoicism, individualism, and reluctance to seek help contribute to underreporting stress and emotional distress (Cuthbertson et al., 2021). Consequently, individuals and families in these communities grapple with multiple stressors in an environment that discourages open discussion and support for these issues.

Statement of the Problem

Addressing stress-induced illnesses in the agricultural sector necessitates more than symptomatic treatment based on a general understanding of the causes of stress. To effectively assist Georgia farmers in managing stress, preventing suicide, and treating stress-related illnesses, healthcare professionals and farmer support organizations must pinpoint the underlying sources of stress experienced by these farmers.

Theoretical and Conceptual Framework

Stress is the physical, emotional, or psychological strain caused by difficult circumstances (McEwen & Sapolsky, 2006). Chronic stress can be harmful because the body constantly produces higher stress hormones without allowing recovery time (Cohen et al., 2007; McEwen & Sapolsky, 2006); exposure to chronic stress is more likely to result in permanent changes in a person's emotional, physiological, and behavioral responses (Cohen et al., 2007). Over time, chronic stress can cause significant damage to a person's body and psyche. Of particular impact is the level of empowerment and social support experienced by persons under stress (Rice, 2012). The feeling of powerlessness (such as helplessness in the face of adverse weather events) and the perceived lack of social support exacerbate stress and its impact (Israel et al., 1994).

The Cumulative Stress Model (CSM) developed by Israel et al. (1994) is a theoretical framework that describes how chronic stressors, such as poverty, discrimination, violence, and social disadvantage, can impact individuals such as farmers. The model suggests that exposure to multiple stressors can lead to a "stress pile-up" effect, where stressors accumulate and interact to create a cascade of negative consequences for farmers.

The CSM combines internal and external stress factors into one model. In considering an individual's stress experience, CSM combines environmental factors with the internal factors of powerlessness, lack of social support, and preexisting physical and mental health conditions. Israel et al. (1994) organized these factors into five major elements: (a) the psycho-environmental conditions that lead to stress; (b) the perception of that stress by the individual and community; (c) short-term responses to the stressor; (d) long-term impacts of the stress on health and mental health; and (e) variables that mitigate or alleviate stress include a supportive social network, secure socioeconomic status, and capacity for autonomous decision-making (Israel et al., 1994). In farming, the accumulation of stressors may lead to self-harm and suicide (Bjornestad et al., 2021).

Purpose

The purpose of this study is threefold: (a) to identify the stressors and psycho-environmental conditions leading to stress among farmers in Georgia, and (b) to assess the seriousness of these stressors in the lives of farmers. This research serves as the initial step toward developing Extension-based interventions aimed at addressing the most detrimental stressors identified, enhancing social support, and bolstering community resources to mitigate the adverse effects of chronic stress on farmers in Georgia.

Methods

We used a three-round Delphi technique that Turoff and Linstone (1975) proposed to conduct this study. One of the strengths of the Delphi method is that it allows for the integration of diverse perspectives and expertise while minimizing the potential biases that can arise from group discussions or face-to-face interactions.

Participants

The panel of experts consisted of a purposive sample of individuals in the agricultural industry in Georgia. We used a purposive sampling technique to select participants with the requisite expertise and knowledge to provide informed opinions and recommendations on the topic of interest. Purposive sampling further allowed us to recruit a diverse and well-rounded group of experts with varying perspectives, backgrounds, and experiences related to the research question. Delphi studies often address complex or specialized topics, making it essential to involve experts most relevant to the research question.

Table 1 lists the panelists and their areas of expertise in the industry. To increase accuracy and reliability, we chose 23 panelists. Dalkey (2002), as referenced by Warner and Harder (2020), established that a panel of more than 13 experts yields a Cronbach's Alpha over .90. Of our 23 panelists, nine were male, and 14 were female, 21 were White, and two were Black. It should be noted that most of our panelists lived in rural counties, as defined by the United States Census Bureau (Ratcliffe et al., 2016).

Table 1*Number of panelists and their leadership position or area of expertise*

| Number of Panelists | Leadership Position or Area of Expertise |
|---------------------|--------------------------------------------------|
| 2 | Executive leaders in a commodity association |
| 4 | Rural Extension agents |
| 2 | Agricultural Extension agents |
| 4 | Farmers |
| 2 | Leaders in a non-profit farm organization |
| 4 | Rural stress researchers at a major university |
| 1 | Representative in an agricultural finance agency |
| 1 | Agent in the USDA Farm Service Agency |
| 1 | Mental health care professional |
| 2 | Rural disaster response provider |
| 23 | Total panelists |

We sent an initial invitation to participate to 27 prospective panelists in the fall of 2022. From this initial list, 23 (85%) agreed to serve as expert panelists. We sent the first round of the survey by email in December 2022. The questionnaire asked the panel to respond to a list of 24 variables based on the literature by rating how much stress each caused for agricultural communities. Research studies that drove the questionnaire's development pointed to the pressing need to address elevated stress levels in rural communities, particularly in regions such as rural Georgia, where residents encounter unique challenges. These challenges encompass financial hardships, limited healthcare access, and a scarcity of job opportunities, all contributing to increased stress (Beehler et al., 2021; Mohatt et al., 2021). One of the primary sources of stress in rural areas of Georgia is the pervasive financial hardship experienced by many residents. With poverty rates surpassing national averages, individuals and families frequently struggle to make ends meet, leading to difficulties paying bills and food insecurity (Osinubi & Escalante, 2013).

Additionally, limited access to healthcare and mental health services compounds the problem, as medically underserved rural areas lack sufficient healthcare providers and facilities, leaving physical and mental health issues untreated (Kutek et al., 2011; Osgood & Pink, 2022; Scheyett et al., 2023). Furthermore, the dearth of job opportunities in rural Georgia, stemming from the decline of traditional industries, contributes to feelings of hopelessness and high stress levels (Erwin, 2017; Myers, 2019). Finally, stressors of direct relevance to agriculture, such as weather, input costs, commodity prices, and labor availability, were considered, given the importance of agriculture to the economy of rural communities in Georgia (Smith & Maples, 2023).

We also encouraged panelists to add variables to this list based on their experiences. We placed the items in a Likert-type instrument with responses ranging from 1(no stress) to 4 (severe stress). We utilized a four-point scale because it may be easier for respondents to navigate. With fewer response options, the respondents are forced, in a sense, to make a decisive choice.

Twenty-three (100%) panel members from round one replied to the first round of the survey in mid-December 2022. Following guidelines described by Warner and Harder (2020), we established *a priori* that consensus on items in the first round was achieved when 67% of panelists indicated that the item was a moderate or severe stressor. In round two, sent to panelists on January 10, 2023, we provided panelists with a list of the factors that had attained 67% or more consensus and asked them if they agreed that these factors were moderate/severe stressors (1 = strongly disagree, 4 = strongly agree) and *a priori* agreed that those where 67% or more of panels agreed these were moderate/severe stressors would be retained, and sent on to round three. In round three, sent to panelists on January 30, 2023, we asked panelists how important it was to retain each factor as a significant stressor in agricultural communities (1=not at all important, 4=very important); we also established *a priori* the consensus cutoff at 67%.

Limitations

The Delphi method relies on subjective expert opinions, so findings may not be universally applicable. In addition, our participants were predominantly White and female, so responses may not fully represent the community. Despite these limitations, the study provides valuable insights and a basis for further research and targeted interventions, with the need to interpret results in light of these constraints and address them in future studies.

Findings

Fourteen of the original 24 factors were rated as moderate/severe stressors for agricultural communities by 67% or more of the panelists in the first round of responses. In round two, six factors were retained at the 67% consensus level, and the remaining eight factors that attained 67% consensus were used in round three. Seven of these eight factors attained 67% consensus or higher.

Results of the three rounds of the Delphi process, including the average score for each factor and the number and percentage of panelists who selected each variable at either of the two highest Likert points (3 or 4), are shown in Table 2.

Table 2*Delphi process stress factor results*

| Stress Factors | Round 1 (n=23) | | | Round 2 (n=21) | | | Round 3 (n=23) | | | Final Decision |
|-------------------------------------------------------------------------|----------------|----------|----------|----------------|----------|----------|-----------------------|----------|----------|----------------|
| | M | # 3 or 4 | % 3 or 4 | M | # 3 or 4 | % 3 or 4 | M | # 3 or 4 | % 3 or 4 | |
| Weather | 3.26 | 22 | 96% | 3.55 | 19 | 90% | Retained from round 2 | | | Retain |
| Commodity prices | 3.52 | 23 | 100% | 3.65 | 20 | 95% | Retained from round 2 | | | Retain |
| Farm operating costs | 3.52 | 20 | 87% | 3.85 | 20 | 95% | Retained from round 2 | | | Retain |
| Crop/livestock disease | 3.00 | 16 | 70% | 3.15 | 17 | 81% | Retained from round 2 | | | Retain |
| Farm-related pests | 3.00 | 13 | 57% | | | | | | | Discard |
| Lack of available labor | 3.35 | 20 | 87% | 3.50 | 20 | 95% | Retained from round 2 | | | Retain |
| Poor health | 2.87 | 14 | 61% | | | | | | | Discard |
| Lack of access to healthcare | 2.90 | 17 | 74% | 2.95 | 15 | 71% | 3.17 | 18 | 78% | Retain |
| Lack of health insurance | 2.96 | 16 | 70% | 3.00 | 16 | 76% | 3.13 | 19 | 83% | Retain |
| High rates of COVID-19 | 2.13 | 8 | 35% | | | | | | | Discard |
| Alcohol misuse | 2.70 | 11 | 48% | | | | | | | Discard |
| Opioid and other drug misuse | 2.96 | 15 | 67% | 3.00 | 16 | 76% | 3.09 | 16 | 70% | Retain |
| Work-related accidents | 2.87 | 16 | 70% | 2.85 | 16 | 76% | 3.09 | 17 | 74% | Retain |
| A high proportion of older adults in the community | 2.48 | 12 | 52% | | | | | | | Discard |
| Sudden changes to the local economy (e.g., a large employer shuts down) | 3.09 | 17 | 74% | 3.01 | 16 | 76% | 3.13 | 18 | 78% | Retain |
| Divorce | 2.30 | 10 | 43% | | | | | | | Discard |
| Debts and loans | 3.35 | 19 | 83% | 3.55 | 19 | 90% | Retained from round 2 | | | Retain |
| Poverty | 3.00 | 18 | 78% | 2.85 | 14 | 67% | 2.96 | 18 | 78% | Retain |
| High housing costs | 3.09 | 16 | 70% | 3.10 | 15 | 71% | 2.82 | 13 | 57% | Discard |
| Low high school graduation rates | 2.35 | 11 | 48% | | | | | | | Discard |
| Poor quality housing | 2.78 | 14 | 61% | | | | | | | Discard |
| High unemployment | 2.78 | 15 | 67% | 2.75 | 13 | 62% | 2.87 | 16 | 70% | Retain |
| High number of single-parent households | 2.65 | 13 | 57% | | | | | | | Discard |
| Lack of transportation | 2.78 | 14 | 61% | | | | | | | Discard |

Note. The column labeled "# 3 or 4" refers to the number of participants who chose agreed (3) or strongly agreed (4) on the instrument.

The final list of factors selected by the panel as the most significant stressors in agricultural communities is summarized in Table 3.

Table 3

The final list of stressors, average final score, and round in which selected

| Stressor | <i>f</i> | Round Selected |
|---------------------------------------------------------------------|----------|----------------|
| Farm operating costs | 20 | 2 |
| Commodity prices | 20 | 2 |
| Lack of available labor | 20 | 2 |
| Weather | 19 | 2 |
| Debts and loans | 19 | 2 |
| Lack of health insurance | 19 | 3 |
| Lack of access to healthcare | 18 | 3 |
| Sudden changes to local economy (e.g., a large employer shuts down) | 18 | 3 |
| Poverty | 18 | 3 |
| Crop/livestock disease | 17 | 2 |
| Work-related accidents | 17 | 3 |
| Opioid and other drug misuse | 16 | 3 |
| High unemployment | 16 | 3 |

Conclusions, Discussion, and Recommendations

First, it is essential to note that over half of the stressors involve factors over which an individual would have little or no control—the costs associated with operating a farm, commodity prices, weather, lack of labor, crop/livestock disease, sudden changes to the local economy, and work-related accidents. Given that the impacts of stress are made worse by an accompanying sense of powerlessness and lack of self-efficacy (Braveman et al., 2018; Scheyett et al., 2019), it is essential to recognize the particular toxicity of stressors over which an individual can have little impact. This may be difficult for farmers individuals in agricultural communities, where values such as independence, autonomy, and "pull yourself up by your bootstraps" are held dear (Scheyett et al., 2019).

All but one (labor) of these lack-of-control stressors identified by the panel were also factors where sudden fluctuations or changes in situation are possible—sudden changes in farm costs, commodity prices fluctuations, weather events such as hail storms or tornadoes, the sudden appearance of diseases such as corn rust or avian influenza in crops or animals, sudden changes in local economies, and work-related accidents.

Five factors directly related to farming were rated in the top half of the stressors list —farm operating costs, commodity prices, weather, lack of available labor, and crop/livestock disease. One could arguably add debts and loans to this list since farmers may carry debt from year to year and work-related accidents, given the high rates of accidents associated with farming.

Looking at the list generated by the panel, it is striking that three stressors -- farm operating costs, commodity prices, and weather -- were most highly rated across all three categories. As Waldman et al. (2021) and Yazd et al. (2019) suggest, when the negative attributes of these three factors are present, such as high farm operating costs, low commodity prices, and severe weather, the stress levels of farmers may reach levels where self-harm and suicide are the only solutions that farmers perceive will alleviate the stress. Our findings suggest that attending to these three stressors, in particular, will be important in monitoring the well-being of farmers in Georgia.

The agricultural industry in Georgia plays a significant role in the health and welfare of the citizens in this state (National Agricultural Statistics Service, 2019), and farming is a mainstay in the industry's role. This study reveals critical stressors for Georgia farmers that suggest the need for continual monitoring, perhaps by, but not limited to, state agencies and public health organizations. While we relied on studies conducted in other states to guide the development of this study, we hesitate to suggest that these previous studies have answered the question of what causes stress among farmers. As Conn (2023) notes, the characteristics and demographics of American farming communities are highly varied. For example, Jones and Field (2002) found no evidence of farmer suicide or self-harm in selected farming communities in Pennsylvania. Nevertheless, Bjornestad et al. (2021) found several factors that may contribute to farmer suicide and self-harm in midwestern states. The diverse geographic, economic, social, and demographic characteristics of American farmers call for further research to continually identify and rank the most significant stressors farmers face in their respective locations. Extension programs are tailor-made for local farmers' needs, so we recommend that Extension implement systematic mechanisms to identify high-risk stress factors experienced by farmers. Researchers at the University of Georgia are working to develop a model system designed to predict where stressful conditions are likely to appear within a specific geographic region by combining economic, agronomic, climate, social, health, and emergency services databases and analyzing the data. Once the model predicts the presence of stress in a local area, the Extension Disaster Education Network can be deployed to assist with mitigation and recovery efforts (Extension Disaster Education Network, 2019). Extension can also foster collaboration between local Extension services and community stakeholders, including counseling centers, churches, and public health programs, to develop and implement supportive programs and interventions. These collaborative efforts can offer essential mental health services, financial support, and social resources to help farmers cope with their unique challenges. Implementing these recommendations can enhance farmers' quality of life and mental health.

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