

Commitment to farming persists amid declining farmer satisfaction

Jean R. Francois[✉], Kelli J. Russell^{*}, Mykel R. Taylor[✉]

Department of Agricultural Economics and Rural Sociology, Auburn University, 4036 Haley Center, Auburn Univ, AL, 36849, USA

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ABSTRACT

Researchers have increasingly documented associations between agricultural stress and poorer farmer satisfaction and well-being. However, less attention has been paid to how agricultural stress relates to other responses, including commitment to continuing in agriculture and livelihood adjustments. Using 2025 pilot data from the Alabama Farm Poll, we examine associations between economic, production, policy, and social stressors and farmer satisfaction, commitment to farming, and livelihood adjustments. Linear regression models show that stressors across all four dimensions were consistently associated with lower farmer satisfaction, with social stressors exhibiting comparatively greater relationships across models. In contrast, associations between stress and commitment to farming were weaker and less consistent. Farmers also reported a range of livelihood adjustments, including postponing investments, reducing expenditures, increasing off-farm work, and modifying household consumption patterns. These findings indicate that declines in farmer satisfaction do not necessarily correspond to proportional declines in commitment to remaining in agriculture and that farming households often manage stress through ongoing livelihood accommodations.

1. Introduction

Farming is widely recognized as a stressful occupation with implications for both the continuity of farm operations and the well-being of farm families (Becot et al., 2025; Kearney et al., 2014; Proctor and Hopkins, 2023). Farmers routinely navigate multiple and often overlapping pressures, including economic uncertainty, production challenges, policy changes, environmental variability, and family or community demands (Francois et al., 2025; Kearney et al., 2014; Purc-Stephenson et al., 2024). These pressures may elicit multiple responses, including farmers' evaluations of their farming and life circumstances, their commitment to farming as an occupation, and the adaptive livelihood strategies they adopt (Abdulai et al., 2022; Gao and Arbuckle, 2024; Lecegui et al., 2022).

Research on agricultural stress (henceforth stress) has expanded considerably, generating substantial evidence on its relationships with farmer satisfaction and well-being (Yazd et al., 2019; Rudolphi et al., 2020). These studies consistently show that multiple dimensions of stress, including economic, environmental, social, household, and regulatory pressures, are associated with poorer well-being outcomes among farmers (Heo et al., 2020; King et al., 2023; Linder et al., 2025; Niles and Stahlmann-Brown, 2025). However, comparatively fewer studies have examined how stress relates to farmers' commitment to

farming or their adaptive livelihood responses, and these outcomes have generally been investigated within separate bodies of literature. As a result, it remains unclear whether these responses are associated with stress in similar or distinct ways.

Existing research has yielded mixed findings regarding the relationship between stress and commitment to farming. The occupational literature consistently suggests that lower well-being and job satisfaction are associated with weaker occupational commitment and greater intentions to exit work roles (Čulibrk et al., 2018; Meyer and Maltin, 2010), leading to the expectation that stress should similarly undermine commitment to farming (Gorgievski et al., 2010). Agricultural research likewise often associates stress and poorer well-being with disengagement from farming activities and higher intentions to exit agriculture (Hansen, 2022; Peel et al., 2016). At the same time, empirical evidence also shows that many farmers continue to farm despite prolonged hardship (Garrett-Wright et al., 2023; Jones et al., 2024). This apparent tension is reflected in the difficulty quantitative studies have faced in consistently explaining why some farmers persist while others consider leaving agriculture (Ferjani et al., 2015; Hansen, 2022).

Stress may also prompt farmers to adjust their livelihoods. Although the farm stress literature has often emphasized coping as an individual or psychological response, a growing body of research suggests that farmers also respond through material and strategic livelihood

^{*} Corresponding author.

E-mail addresses: jef0071@auburn.edu (J.R. Francois), kjr0041@auburn.edu (K.J. Russell), mrt0055@auburn.edu (M.R. Taylor).

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adjustments (Garrett-Wright et al., 2023; Grocke-Dewey et al., 2023; Le and Brown, 2024; Paskewitz et al., 2023; Proctor and Hopkins, 2023). These studies document a wide range of adaptive and maladaptive responses, including alcohol and substance use, postponing investments, restructuring labor arrangements, modifying production strategies, or relying on social and family support. However, research offers limited insight into the relationships between different dimensions of stress and these livelihood adjustments.

This study addresses these gaps by examining how multiple dimensions of stress relate to farmer satisfaction, commitment to farming, and livelihood adjustments (Fig. 1). Specifically, we aim to examine (1) how economic, production, policy, and social stressors are associated with farmer satisfaction and commitment to farming and (2) the farm- and household-level adjustments farmers make in response to stress.

We drew on survey data from Alabama, where growing attention to farm stress through extension programming and public initiatives¹ has outpaced empirical research on how stress links to farmer satisfaction, long-term engagement in agriculture, and livelihood adjustments. Prior exploratory research in the state and broader region (see, for example, Gilliland, 2022; Hudon, 2022) has largely emphasized mental health outcomes and service provision, offering less insight into how farmers navigate stressful conditions while remaining engaged in agriculture. The remainder of the paper is organized as follows. Section 2 describes the methods, including data collection, variable measurement, and analytical approach. Section 3 presents the results, followed by a discussion in Section 4. Section 5 concludes the paper.

2. Methods

2.1. Data

We used pilot data from the Alabama Farm Poll, a newly launched statewide survey of Alabama farm operators and farm household members. Developed by Alabama Extension and the Auburn University Rural Partnership Institute, the poll is a long-term biannual survey designed to systematically monitor farmers' perspectives on stress,

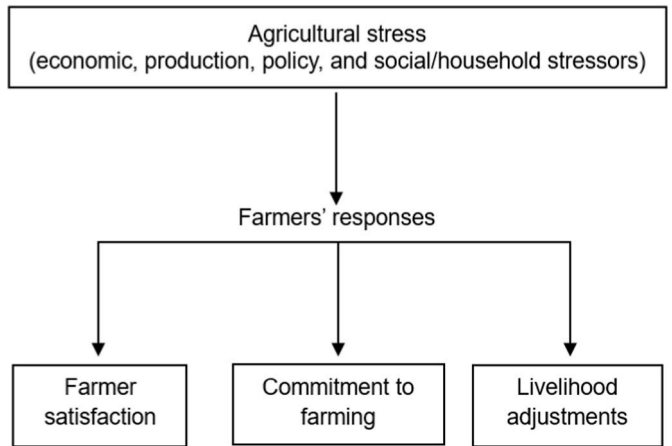


Fig. 1. Conceptual framework illustrating stress and the three responses examined in this study.

¹ See, for example, Alabama Cooperative Extension System (ACES) outreach and educational materials that frame farm stress and farmer mental health as growing concerns for producers, alongside statewide initiatives such as the Alabama Department of Agriculture and Industries' A Healthy You, A Healthy Farm program, which aims to increase awareness of stress, mental health challenges, and available support resources within Alabama's agricultural communities.

resilience, decision-making, and well-being in the context of Alabama agriculture. The 2025 survey represents the pilot implementation of this initiative. The team adapted established farm poll instruments that had been implemented in other regions of the United States (Arbuckle, 2024; Jackson-Smith et al., 2021). The questionnaire included measures of economic, production, environmental, policy, and social stressors, as well as indicators of farmer satisfaction, commitment to farming, and adaptive responses at both the farm and household levels.

The sample consisted of 5000 randomly selected Alabama farms drawn from a commercial database (DTN) compiled from USDA Farm Service Agency records. Data collection followed a modified tailored design method, offering respondents the option to complete the survey online or return a paper questionnaire by mail (Dillman et al., 2014). We received 576 responses and excluded individuals who indicated they were no longer farming in Alabama, resulting in a final analytic sample of 321 respondents.

We assessed potential non-response bias using Armstrong and Overton's (1977) extrapolation method by comparing early and late survey respondents across key variables used in the analysis. We found no statistically significant differences between early and late respondents (SI Table 1), although other forms of nonresponse bias related to unobserved characteristics cannot be ruled out (Groves, 2006). We also compared the sample with official state-level statistics (Table 1). The pilot sample includes a higher proportion of older and male respondents and reflects greater-than-average farming experience and farm size relative to 2022 Census of Agriculture estimates for Alabama. As a pilot survey with a relatively low response rate, the findings should therefore be interpreted as exploratory rather than fully representative of all Alabama farmers.

2.2. Variable measurement

We measured commitment to farming by averaging responses from two items reflecting respondents' willingness and attachment toward continuing in agriculture (Table 2). Specifically, respondents were asked whether they would still choose farming if given the opportunity to do it again and whether they would continue farming even if they no longer depended on farming for regular household income. Responses were recorded on a five-point scale ranging from definitely not to definitely yes. The scale has a reliability coefficient of 0.82.

Farmer satisfaction was measured using three items reflecting respondents' subjective evaluations of occupational, operational, and overall life circumstances, such as satisfaction with being a farmer, satisfaction with the farm operation, and satisfaction with overall quality of life (Table 2). Responses were recorded on a five-point scale ranging from very dissatisfied to very satisfied. The farmer satisfaction scale has a Cronbach's alpha of 0.80 and we computed the score by

Table 1
Comparison of Alabama Farm Poll pilot data with 2022 Census of Agriculture.

Sample characteristics	Alabama Farm Poll	2022 Census of Agriculture (Alabama)
Age (%)		
18-34	1.6	8.0
34-54	18.2	28.1
55-64	14.2	24.7
65 or older	66.0	39.3
Gender (%)		
Man	89.1	64.9
Woman	10.9	35.1
Education (%)		
High school or less	36.9	42.7
Above high school	63.1	57.3
Experience		
Mean/SD	38.5/18.9	22.5/2.01
Farm size (acre)		
Mean/SD	621	231

Table 2

Descriptive statistics for commitment to farming, farmer satisfaction, and stress measures (values represent scale means and standard deviations).

Variable name	Item	Mean (Std Dev)	Cronbach's α
Commitment to farming		4.04 (0.91)	0.82
	If you had to do it all over again, would you still choose to farm?		
	Would you still choose to farm anyway, even if you didn't need to farm for regular family income?		
Farmer satisfaction		3.75 (0.73)	0.80
	How satisfied are you with your overall farm operation?		
	How often do you feel satisfied with your job as a farmer?		
	How satisfied are you with your overall quality of life?		
Economic stressors		3.21 (0.98)	0.82
	Market prices for crops/livestock		
	Cost of farm inputs		
	Cost of farmland		
	Healthcare costs (direct costs and/or insurance)		
	Concern over the future of the farm		
Production stressors		2.93 (0.87)	0.68
	Unfavorable weather (inadequate/too much rain, wind, hail)		
	Livestock/crop problems (disease weeds, pests)		
Policy stressors		2.63 (0.94)	0.72
	Farm/ranch accidents and injuries		
	Government trade policies		
	Environmental regulations		
Social stressors		2.22 (0.90)	0.70
	Nonfarm neighbors		
	Negotiating with family members about the farm		
	Balancing farm work and home life		
	Loss of farmland to development		
Composite stress	Average of all stress dimensions	2.74 (0.90)	0.87

Notes. [SI Table 2](#) provides detailed response distributions for individual items.

averaging responses from the three items.

Stress was initially measured using a set of items capturing multiple forms of pressures experienced by farmers ([Table 2](#)). Because many of these stress-related items were conceptually related, we used principal component analysis (PCA) as an exploratory tool to identify underlying dimensions of stress within the scale. The analysis identified four interpretable dimensions representing economic, production, policy, and social stressors.

Economic stressors included concerns related to market prices, production costs, farmland costs, healthcare expenses, and the future of the farm. Production stressors captured challenges associated with weather conditions, crop or livestock problems, and pests or diseases. Policy stressors reflected concerns related to government trade policies and environmental regulations, while social stressors included tensions associated with nonfarm neighbors, family negotiations, balancing farm and home life, and farmland loss to development. Responses were recorded on a five-point scale ranging from not stressful to very stressful. Rather than using PCA factor scores in subsequent analyses, we created stress indices by averaging the original survey items associated with each identified dimension. The resulting stress dimensions indicated acceptable internal consistency, with Cronbach's alpha values ranging from 0.68 to 0.82 ([Table 2](#)). We also computed a composite stress score by averaging all stress dimensions to assess whether accumulations of stress exhibited similar associations with farmer satisfaction, commitment to farming, and adaptive livelihood adjustments.

Finally, we selected two survey questions provided as checklists that asked farmers to indicate all changes made to their farm operations or

households during the year preceding the survey ([SI Table 3](#)). Reported adjustments included operational responses such as reducing farm input expenditures, postponing major farm purchases, and delaying expansion plans. Respondents also reported household-level adjustments, including using savings to meet expenses, purchasing more items on credit, changing grocery shopping patterns, and increasing off-farm work. Although these checklist-style measures do not capture the full complexity of farm household decision-making, they provide insight into the types of livelihood adjustments respondents reported in response to stressful conditions. We used the R programming language ([R Core Team, 2024](#)) to implement the analyses.

2.3. Data analysis

The primary goal of this study was to examine relationships between stress, farmer satisfaction, commitment to farming, and adaptive livelihood adjustments in Alabama. Data analysis included descriptive statistics, group comparisons, regression analysis, and exploratory analyses of farm and household livelihood adjustments. We used the Kruskal–Wallis test for ordinal or non-normally distributed variables and the Chi-square test for categorical variables. We estimated linear regression models in which farmer satisfaction and commitment to farming were the dependent variables, with stress dimensions as the primary independent variables. We estimated separate models for each stress dimension. Supplementary models also examined a composite stress score that represents the average across the economic, production, policy, and social stress dimensions.

We included farm scale² (coded as small or medium/large) and primary commodity type (coded as crop farmers versus non-crop farmers) as farm operation characteristics, alongside socioeconomic controls, including age (continuous), gender (coded as man or woman), education (coded as high school or less versus above high school), farming experience (continuous), household income (coded as low, middle, or high income), and income sources (coded as mixed income or all income from farming). The general model structure was:

$$Y_i = \beta_0 + \beta_1 \text{Stress}_i + \beta_2 \text{Controls}_i + \varepsilon_i$$

where Y_i represents farmer satisfaction or commitment to farming, Stress_i represents the stress dimensions, and Controls_i represents farm operation characteristics and socioeconomic variables included in the analyses. All continuous predictors, including stress dimension scores and other numeric variables, were standardized prior to regression analyses. Farmer satisfaction and commitment to farming were retained in their original scales. Accordingly, the reported coefficients for the standardized continuous predictors reflect the expected change in the outcome associated with a one-standard-deviation change in the predictor, holding all other variables constant.

We derived model estimates using robust standard errors since preliminary diagnostic tests indicated heteroskedasticity in the error terms ([Griffiths, 2003](#); [Hayes and Cai, 2007](#); [Zeileis and Hothorn, 2002](#)). Additional robustness analyses using individual satisfaction and commitment items separately produced substantively similar patterns to the composite measures. Multicollinearity diagnostics indicated acceptable variance inflation factor values across models ([Akinwande et al., 2015](#)). We ran the models on cases with complete information on all the variables included in the analysis.

To examine adaptive responses, we analyzed farm- and household-level adjustment items descriptively and across stress tertiles. First, we treated adaptive strategy items as multiple-response variables and

² Farms were initially classified as small, midsize, and large using USDA farm typology standards ([USDA/NASS, 2024](#)). Because midsize and large farms showed similar patterns across the primary study variables and included relatively small sample sizes ($n = 39$ and $n = 16$, respectively), they were combined into a single medium/large category for analysis.

calculated the percentage of farmers selecting each strategy to identify the most commonly used form of adaptation. Second, we converted adaptive response items into binary indicators and employed chi-square analyses to assess whether commonly reported livelihood adjustments varied across levels of stress dimensions. These analyses were intended to provide exploratory insights into material and strategic livelihood adjustments adopted under stress, rather than fully capturing the complexity of farmers' decision-making processes.

3. Results

Respondents reported moderate levels of farmer satisfaction and comparatively high levels of commitment to farming despite exposure to multiple forms of stress (Table 2). Economic stressors exhibited the highest average stress levels among respondents, followed by production and policy stressors, whereas social stressors were comparatively lower. Detailed descriptive statistics for individual items are available as supplementary material (SI Table 2). The analyses that follow examine how these stress dimensions were associated with farmer satisfaction, commitment to farming, and livelihood adjustments across farming households in Alabama.

3.1. Stress and farmer satisfaction

Higher stress levels were consistently associated with lower levels of farmer satisfaction across all models (Table 3). Economic stress exhibited a negative association with farmer satisfaction ($B = -0.25$, $p < 0.001$), suggesting that concerns related to market conditions, production costs, healthcare expenses, and uncertainty about the future of the farm were associated with lower levels of satisfaction of farmers with their farming operations, their work as farmers, and overall quality of life. Similar negative associations were observed for production stress ($B = -0.28$, $p < 0.001$), policy stress ($B = -0.27$, $p < 0.001$), and social stress ($B = -0.29$, $p < 0.001$). The model using the composite stress score showed a negative association with farmer satisfaction ($B = -0.46$, $p < 0.001$). These findings indicate that farmer satisfaction was broadly sensitive to multiple forms of stress rather than being tied to a single stress dimension. Across the stress-satisfaction models, the composite stress model exhibited the highest explanatory power (adjusted $R^2 = 0.345$) and the largest standardized coefficient.

Farm operation characteristics showed comparatively limited relationships with farmer satisfaction once socioeconomic conditions were considered. Non-crop farmers reported slightly higher satisfaction levels under the production stress model ($B = 0.29$, $p < 0.05$), although farm scale was not significantly associated with farmer satisfaction across models. In contrast, household income showed a more consistent relationship with farmer satisfaction. Respondents in middle- and high-

income households reported significantly higher levels of farmer satisfaction across all stress models compared to lower-income respondents.

3.2. Stress and commitment to farming

In contrast to farmer satisfaction, commitment to farming exhibited a more selective relationship with stress dimensions (Table 4). After accounting for farm operation characteristics and socioeconomic variables, economic and policy stressors were no longer significantly associated with commitment to farming. By comparison, production stress remained negatively associated with commitment ($B = -0.31$, $p < 0.001$), suggesting that disruptions tied more directly to agricultural production conditions, including weather variability and crop or livestock diseases, were more closely related to reduced intentions to remain in farming. Social stress also remained negatively associated with commitment ($B = -0.24$, $p < 0.05$), suggesting that interpersonal and social pressures surrounding farming livelihoods may also be associated with lower commitment to continuing in agriculture.

The model with the composite stress score also showed a negative association between overall stress exposure and commitment ($B = -0.34$, $p = 0.004$). However, both the magnitude of this relationship and the explanatory power of the model (adjusted $R^2 = 0.147$) were notably weaker than those observed for farmer satisfaction outcomes. In fact, the production stress model explained more variation in commitment than the other stress-dimension models. In addition, the commitment models also appeared more sensitive to household income. Respondents in middle- and high-income households consistently reported higher levels of commitment to farming than lower-income respondents across stress models, whereas farm scale and commodity type generally showed no significant associations with commitment.

3.3. Stress and livelihood adjustments

Farmers reported a wide range of farm- and household-level livelihood adjustments (Figs. 2 and 3). At the farm-operation level, the most prevalent responses included reducing expenditures on farm inputs such as fertilizer or feed (43.0%) and postponing major farm purchases (35.5%). Nearly one-quarter of farmers reported postponing plans to expand their farm operations (23.1%). Investment in major new machinery or buildings remained relatively common (22.7%), suggesting that some farmers continued to make selective reinvestments despite stressful conditions. Decisions related to succession planning were also affected: 18.4% postponed plans to retire or transfer the farm, while smaller shares accelerated these plans (7.8%). More structural changes, such as selling farmland (3.4%) or reducing the number of farm enterprises (6.5%), were relatively rare.

Household-level adjustments primarily involved reductions in

Table 3
Regression models examining associations between stress and farmer satisfaction.

Predictors	Economic	Production	Policy	Social	Composite
Stress dimension	-0.25*** (0.06)	-0.28*** (0.08)	-0.27*** (0.07)	-0.29*** (0.07)	-0.46*** (0.11)
Non-small farm	-0.19 (0.15)	-0.15 (0.16)	-0.23 (0.15)	-0.21 (0.15)	-0.19 (0.15)
Non-crop farm	0.23 (0.13)	0.29* (0.14)	0.21 (0.13)	0.23 (0.13)	0.2 (0.12)
Age	0.002 (0.006)	0.006 (0.005)	0.008 (0.005)	0.001 (0.006)	0.001 (0.005)
Experience	0.0004 (0.005)	-0.0007 (0.004)	-0.0002 (0.004)	0.003 (0.004)	0.001 (0.004)
Education > high school	0.06 (0.12)	0.13 (0.12)	0.053 (0.12)	0.09 (0.11)	0.1 (0.11)
Woman	0.08 (0.14)	0.24 (0.14)	0.066 (0.13)	0.027 (0.13)	0.06 (0.14)
Middle-income household	0.47** (0.17)	0.55** (0.17)	0.46** (0.16)	0.48** (0.16)	0.39* (0.15)
High-income household	0.44** (0.17)	0.45** (0.166)	0.45** (0.17)	0.45** (0.16)	0.38** (0.16)
Mixed-income household	0.11 (0.18)	0.04 (0.19)	0.11 (0.18)	0.16 (0.17)	0.05 (0.18)
Num. Obs.	152	152	152	152	152
R2/R2 adjusted	0.308/0.259	0.318/0.270	0.322/0.274	0.337/0.290	0.389/0.345

Notes. Each model includes the stress dimension indicated in the column heading. Composite is the model with the composite stress score. Mixed farm income refers to households reporting both farm and nonfarm income sources. Reference categories are small farm for farm scale, crop farm for primary commodity type, high school or less for education, man for gender, low-income household for household income, and farm-only income household for income sources. Coefficients for standardized continuous variables and categorical variables should not be compared directly in magnitude. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4

Regression models examining associations between stress and commitment to farming.

Predictors	Economic	Production	Policy	Social	Composite
Stress dimension	−0.13 (0.08)	−0.31** (0.09)	−0.14 (0.09)	−0.24* (0.09)	−0.34** (0.12)
Non-small farm	0.27 (0.2)	0.33 (0.19)	0.25 (0.19)	0.26 (0.19)	0.27 (0.19)
Non-crop farm	0.21 (0.18)	0.24 (0.17)	0.20 (0.18)	0.19 (0.18)	0.18 (0.17)
Age	0.005 (0.01)	0.005 (0.007)	0.008 (0.007)	0.002 (0.008)	0.003 (0.007)
Experience	0.004 (0.006)	0.003 (0.006)	0.004 (0.006)	0.006 (0.006)	0.005 (0.006)
Education > high school	−0.31 (0.16)	−0.22 (0.15)	−0.31 (0.16)	−0.28 (0.16)	−0.27 (0.158)
Woman	0.0006 (0.2)	0.13 (0.21)	−0.007 (0.2)	−0.07 (0.19)	−0.03 (0.19)
Middle-income household	0.55* (0.27)	0.54* (0.26)	0.54* (0.26)	0.51 (0.26)	0.45 (0.25)
High-income household	0.70** (0.26)	0.66** (0.24)	0.71** (0.25)	0.68** (0.25)	0.64** (0.24)
Mixed-income household	0.36 (0.28)	0.24 (0.31)	0.36 (0.28)	0.38 (0.28)	0.29 (0.29)
Num. Obs.	152	152	152	152	152
R2/R2 adjusted	0.160/0.101	0.220/0.164	0.163/0.104	0.195/0.138	0.204/0.147

Notes. Each model includes the stress dimension indicated in the column heading. Composite is the model with the composite stress score. Mixed income refers to households reporting both farm and nonfarm income sources. Reference categories are small farm for farm scale, crop farm for primary commodity type, high school or less for education, man for gender, low-income household for household income, and farm-only income household for income sources. Coefficients for standardized continuous variables and categorical variables should not be compared directly in magnitude. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

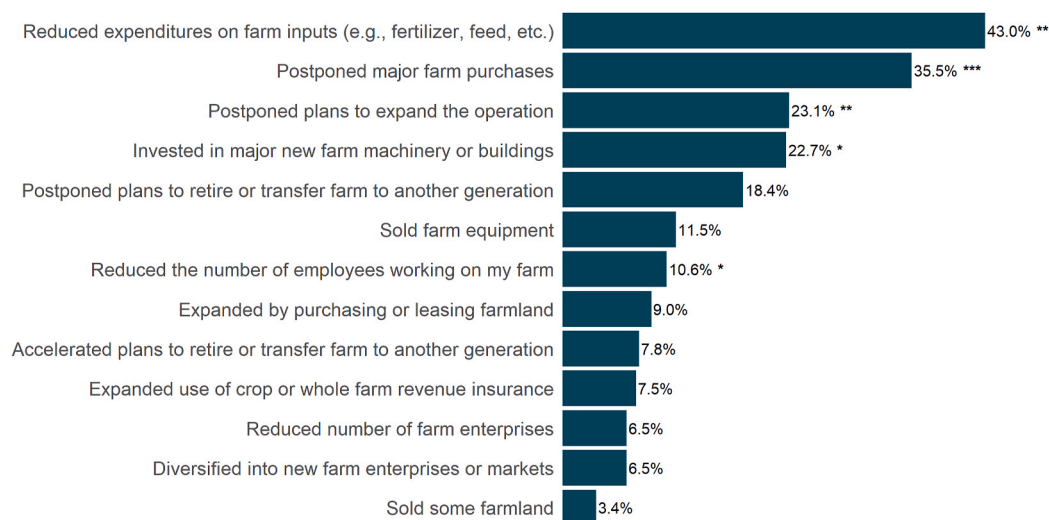


Fig. 2. Farm-level adjustments reported by farmers. Significance markers reflect chi-square tests across composite stress tertiles (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

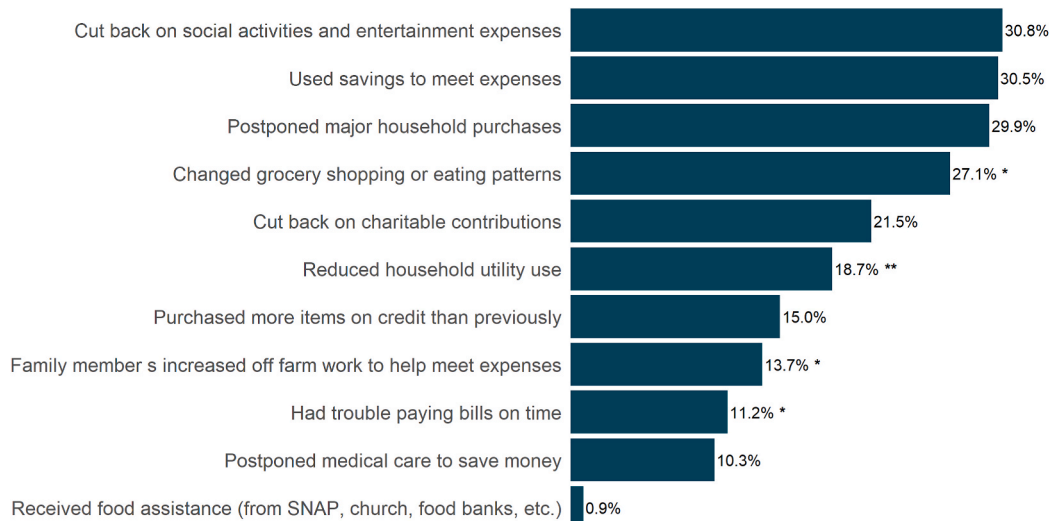


Fig. 3. Household-level adjustments reported by farmers. Significance markers reflect chi-square tests across composite stress tertiles (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

discretionary spending and reliance on existing financial buffers. Common responses included cutting back on social activities and entertainment expenses (30.8%), using personal savings to meet expenses (30.5%), postponing major household purchases (29.9%), and changing grocery shopping or eating patterns (27.1%). A smaller but notable share of respondents reduced charitable contributions (21.5%) or household utility use (18.7%). While financial strain was widespread, only a minority of households reached crisis-level coping strategies. More severe responses, such as difficulty paying bills on time (11.2%), postponing medical care (10.3%), or relying on food assistance (0.9%), were less common.

Bivariate analyses across tertiles of the composite stress score indicated that farmers experiencing higher stress levels were significantly more likely to report postponing major farm purchases, reducing expenditures on farm inputs, postponing plans to expand operations, reducing household utility use, reducing employees, changing grocery shopping or eating patterns, increasing off-farm work among household members, and experiencing difficulty paying bills on time (Figs. 2 and 3, SI Table 4). Higher overall stress levels were also associated with postponed household purchases and investments in major machinery or buildings, suggesting that stress is associated with both farm operational decisions and household financial management.

By comparison, several more structurally transformative responses, including diversification into new farm enterprises, reductions in farm enterprises, farmland expansion, equipment sales, and retirement-transfer decisions, were generally not associated with stress tertiles. Overall, these findings suggest that stress is linked more to incremental livelihood adjustment and expenditure management strategies than to major restructuring of farming operations or household livelihoods.

Additional analyses by individual stress dimensions revealed broadly similar but more selective patterns (SI Table 4). Economic stress exhibited the widest range of associations with livelihood adjustments, whereas production, policy, and social stressors showed narrower relationships concentrated around delayed purchases, expenditure reductions, and household financial adjustments.

4. Discussion

Despite increasing attention to stress and well-being within agricultural communities (Garner et al., 2025; Grocke-Dewey et al., 2023), important gaps remain in understanding how multiple forms of agricultural stress are associated with distinct farmer responses, including farmer satisfaction, commitment to farming, and livelihood adjustments. A central contribution of this study is that declines in farmer satisfaction amid economic, production, policy, and social pressures were not proportionally accompanied by reduced commitment to remain in agriculture. Consistent with previous research (Coughenour, 1995; Hansen, 2022), these findings suggest that farmer satisfaction and commitment to farming represent distinct responses to stress. While satisfaction reflects farmers' evaluations of their current farming and life circumstances, commitment reflects a broader attachment to farming that may persist despite declining satisfaction (Azima and Mundler, 2022; Coughenour, 1995; Gao and Arbuckle, 2024).

In this paper, as throughout the literature (Linder et al., 2025; Niles and Stahlmann-Brown, 2025), stress is consistently associated with lower levels of farmer satisfaction. Social pressures exhibited the most consistent associations across our models, whereas economic pressures showed comparatively weaker relationships. In particular, tensions with non-farm neighbors, negotiations within family life, and difficulties balancing farm work and household responsibilities appeared especially burdensome for farmers in our sample. In line with prior studies (Becot et al., 2025; Rissing et al., 2021), these findings suggest that less visible and often underrecognized challenges within everyday farm and household life may play an important role in farmer satisfaction. More broadly, social stressors have frequently been linked to subjective well-being and quality-of-life outcomes (Contzen and Häberli, 2021;

Deegan and Dunne, 2022), although economic pressures are also recognized as important stressors among farmers (Jones-Bitton et al., 2019).

At the same time, consistent with prior discussions (Croom et al., 2024), results from the composite stress model suggest that farmers may experience stress as interconnected conditions rather than isolated challenges. Braun's (2019) distinction between ordinary and extraordinary farm stressors provides useful insight into this pattern by emphasizing how everyday responsibilities, family dynamics, financial uncertainty, and external pressures accumulate within farming households. Thus, interventions that focus on individual stressors in isolation may underestimate the cumulative pressures experienced by farm families.

Commitment to farming exhibited weaker and more selective relationships with stress, suggesting that commitment may be comparatively less sensitive to stress than farmer satisfaction. This distinction is important because prior research suggests that stress and declining well-being may contribute to disengagement from farming and greater intentions to exit agriculture (Hansen, 2022). Our findings indicate that this relationship may be more nuanced. Notably, stressors directly affecting day-to-day farm operations, such as production and social stressors, may be more relevant for understanding commitment to farming than economic and policy stressors. This finding extends prior research linking socioeconomic and environmental pressures to farm stress and exit considerations (Waldman et al., 2021) by suggesting that different dimensions of stress may have distinct implications for farmer satisfaction and commitment to farming.

These findings also raise questions regarding the processes through which commitment to farming is maintained under stressful conditions. Although our analysis considered satisfaction and commitment as separate responses to stress, the results suggest that commitment may instead be more connected to farmers' overall evaluations of farming and life conditions than to stress itself. Supporting this interpretation and in line with Hansen (2022), additional exploratory analyses with our data showed that farmer satisfaction remained more consistently associated with commitment when both farmer satisfaction and stress were considered simultaneously, whereas neither individual stress dimensions nor the composite stress score remained statistically significant in these models (SI Table 5). This pattern is consistent with previous research suggesting that commitment to farming reflects broader processes, including occupational attachment, identity, autonomy, and a sense of purpose, which may be less tied to farmers' immediate experiences of stress (Abdulai et al., 2022; Coughenour, 1995; Garrett-Wright et al., 2023).

The adjustment patterns observed further suggest that livelihood responses may help explain how commitment to farming persists despite declining satisfaction. Many of the responses reported by farmers reflected attempts to preserve farm continuity and household stability while navigating difficult economic, production, and social conditions. These findings reinforce prior work showing that farm viability and family well-being are inseparable components of integrated farm-household livelihood strategies (Becot et al., 2024; Bruce et al., 2025; Burchfield et al., 2022). Rather than immediately disengaging from agriculture, households may absorb pressures through delayed investments, reduced household spending, and incremental operational adjustments. However, such strategies may support short-term continuity while leaving the underlying pressures farmers face unresolved (Darnhofer, 2014).

We note, however, an important preliminary pattern emerging from exploratory analyses of livelihood adjustments. Specifically, stress appeared to be associated more with household-level adjustments than with farm-level operational changes. This finding suggests that farming households may initially absorb pressures through accommodations within household life before implementing more substantial operational changes on the farm itself. While these analyses remain exploratory and extend beyond the primary scope of the present study, they point to

potentially important distinctions in how farming households distribute adaptation across farm and household spheres. Further research should examine how these different forms of adaptation shape household well-being, commitment, and the long-term continuity of agricultural livelihoods.

While these findings provide important insights, several limitations should be acknowledged. First, the analysis relies on cross-sectional pilot survey data, which limits our ability to draw causal inferences or assess how stress, farmer satisfaction, commitment, and adaptation evolve over time. Second, because the study is based on farmers in Alabama, the generalizability of these findings to other agricultural contexts may be limited. Third, our sample composition suggests that findings may be more reflective of the experiences of established, larger-scale operators than of younger, smaller-scale, or female farmers. Fourth, the study relies on self-reported perceptions, which may be influenced by subjective interpretation and reporting tendencies. Finally, the adaptation measures capture whether farmers made specific adjustments but do not assess their effectiveness or long-term consequences.

5. Conclusion

This study shows that agricultural stress is associated with farmer satisfaction, commitment to farming, and livelihood adjustments in distinct ways. Although stress was consistently associated with lower levels of farmer satisfaction, commitment to farming appeared comparatively less sensitive to stress, suggesting that declines in farmer satisfaction do not necessarily correspond to proportional declines in commitment to remain in agriculture. The findings further indicate that farmers often respond to stress through livelihood adjustments intended to maintain farm operations and household stability.

These findings have important implications for agricultural support systems and rural well-being initiatives. Policies addressing financial volatility, input costs, market uncertainty, and production risk management remain important, but the prominence of social stressors also suggests that stress extends beyond production and economic concerns to encompass household and relational dimensions of farm life. Therefore, efforts to support farmer satisfaction and well-being may benefit from approaches that address both farm- and household-level pressures rather than focusing narrowly on profitability or production outcomes. Overall, continued engagement in farming should not be interpreted as evidence that farmers are coping well. Greater recognition of stress within farming households may help sustain agricultural livelihoods and, as previous research suggests (e.g., Croom et al., 2024), reduce the risk that prolonged stressful conditions escalate into more serious mental health challenges.

Future longitudinal and mixed-methods research is needed to examine how farmer satisfaction, commitment to farming, and adaptive livelihood responses evolve over time. Such work could clarify whether declining farmer satisfaction eventually undermines persistence in agriculture or whether commitment shapes how farmers adapt to prolonged stress. Additional attention should also be given to the household-level consequences of persistence, including how ongoing adaptation affects family relationships, health, succession planning, or long-term livelihood stability. This paper reinforces growing calls to better understand the farm household–farm operation interface when examining stress and persistence, particularly how farm households manage financial and operational pressures alongside household responsibilities (Becot et al., 2024).

CRedit authorship contribution statement

Jean R. Francois: Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis, Data curation, Conceptualization. **Kelli J. Russell:** Writing – review & editing, Writing – original draft, Visualization, Project administration, Methodology,

Investigation, Funding acquisition. **Mykel R. Taylor:** Writing – review & editing, Writing – original draft, Visualization, Project administration, Methodology, Investigation, Funding acquisition.

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Relationships

There are no additional relationships to disclose.

Patents or intellectual property

There are no patents to disclose.

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There are no additional activities to disclose.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jrurstud.2026.104415>.

Data availability

Data may be available on a case-by-case basis for research purposes; please contact the corresponding author with inquiries.

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