

Complete Report of the Pilot Survey of the Farmer's Mental Well-Being Project

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About the Georgia Rural Health Innovation Center

In 2018, Georgia lawmakers dedicated special funds to establish a new Rural Health Innovation Center tasked with confronting the complex health care challenges and wellness disparities facing rural communities. Mercer University School of Medicine (MUSM) was awarded the grant funds in 2019 and formally established the Georgia Rural Health Innovation Center on its Macon campus. MUSM boasts a longstanding commitment to serving rural Georgia's health needs, with a mission to educate physicians dedicated to tackling the health challenges in rural Georgia. The Rural Health Innovation Center serves as a critical resource to rural communities to improve access and effectiveness of health care by offering research, collaboration, and training opportunities.

About the Georgia Foundation for Agriculture

The Georgia Foundation for Agriculture is a 501c3 non-profit organization. They are developing a pipeline for Georgia's next generation of farmers and agricultural leaders. Through early exposure to agriculture, classroom learning, higher education, farm-based mentorship, and professional learning, their programs provide a structured path that fosters growth and sparks passion in agriculture during one's educational journey.

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ABSTRACT

The Georgia Foundation for Agriculture partnered with the Georgia Rural Health Innovation Center at Mercer University to inventory the mental well-being, stressors, and coping mechanisms for farm owners, farm workers, farm managers, and their spouses. The pilot survey ran from May 2021 through June 2021 to test the measures in advance of rolling out a state-wide survey. Here, the term “farmers” indicates farm owners, farm managers, and farm workers.

Participants (N=536) were asked about their demographics, household composition, work descriptors, and healthcare access. They were also asked a series of questions focused on mental well-being, including stressors, coping mechanisms, and affect. The survey was available in English and Spanish and took an average of 11 minutes to complete. People that own farms in 135 counties completed the survey. Farm workers reported working in at least 86 counties across the state.

This report describes the stressors farmers perceive, how much time they spend worrying, how much stress, negative emotions, and anxiety they experience, health issues they have, and the coping mechanisms they turn to to alleviate stress.

Methodological notes: All differences mentioned in the report were significant and tested using the appropriate statistical tests. The abbreviation "AVG" denotes an average, and the symbol "±" denotes a standard deviation. Rounding to one decimal may have led to a total of more or less than 100%.

BACKGROUND

Agricultural business is the leading industry in Georgia and includes over 41,000 farm operations within the state (USDA, 2020). Agribusiness impacts the lives of many Georgians, with one in seven working in agriculture, forestry, or related fields (GDA, 2021). Many agribusiness occupations are known for being strenuous and stressful (Ellis & Gordon, 1991). Research has proven that high levels of stress are associated with mental health issues (Yazd et al., 2019). Out of 130 different occupations in the US, farming had the highest rate of death caused by stress-related conditions and psychiatric disorders, as well as the third-highest suicide rate of all occupations (Yazd et al., 2019; CDC, 2018).

In the state of Georgia, the suicide rate among farm workers is 50.7 per 100,000 compared to 14.9 per 100,000 for the overall population of workers. Although there is research literature published on the mental and physical health of farmers and farmworkers in rural Georgia, it is limited because most of it is focused on farmer suicide. In order to develop solutions to address mental health and overall well-being to prevent mental health crises, there is a need for additional research on Georgia-specific farm-related stressors. Due to the potential exacerbation of farm-related mental health issues caused by the global pandemic and challenges associated with climate change, the need for this research is particularly urgent.

This project is based on the concept of farmer mental well-being. Mental well-being is a term that conveys a more holistic view of mental health and has been found to resonate with rural residents in the Southeastern United States (Crowe, 2019). Farmer is a term used to refer to all types of agricultural workers, including ranchers. In general, mental health is defined as “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (World Health Organization, 2020). More specifically, the term “good” mental health has been defined as “a state of well-being that allows an individual to cope with the normal stressors of everyday life and remain productive (Fusar-Poli et al., 2020).

Healthcare Access

The lack of access to mental health services is a significant barrier to farmers and farmworkers seeking professional mental health support. Many farms are located in isolated or rural areas, where accessing a mental health facility can be especially difficult due to long distances to the nearest facility or the lack of a facility altogether (Bjornestead et al., 2019). There are rural Georgia counties without mental health facilities and counties that rely on distant facilities for care. For many, traveling long distances to seek support may be inconvenient or impossible, ultimately deterring mental health support seeking behaviors.

According to a study in a rural area in North Carolina, the most commonly reported barrier to accessing mental health services was the personal belief “I should not need help” (Brenes et al., 2015). Additional barriers impacting individuals’ access to mental health services include mistrust of providers, stigma, embarrassment, cost, and distance (Brenes et al., 2015).

A unique barrier to access for many farmworkers is their undocumented immigration status. In 2016, the National Agricultural Workers Survey found that 50.1% of US farmworkers were foreign-born or undocumented immigrants (DOL, 2016). Moreover, the 2018 American Community Survey found that 57% of US farmworkers were Hispanic and of Mexican origin. In addition to immigration status being a possible barrier, 48% of US farmworkers did not have a high school diploma or GED equivalent (Census Bureau, 2018). Those factors are associated with low health literacy, language barriers, and fear of deportation. When compounded it is challenging for farmers to seek professional mental health support.

Stressors and Mental Health

Common stressors impacting the lives of farmers and farmworkers include unpredictable weather, the threat of physical injury, long working hours, crop diseases, isolation, and financial uncertainty (Ellis & Gordon, 1991). Furthermore, research suggests additional stressors such as interpersonal conflict, health issues, and substance use contribute to the high suicide rate among farmworkers (Scheyett et al., 2019).

Exposure to high stress over long periods of time negatively impacts physical and mental health, which can lead to the development of stress-related diseases and disorders (Kubo et al., 2015). Farming is a stressful occupation that is associated with increased levels of anxiety and depression (Sanne et al., 2004). Farmers had a higher prevalence of depression when compared to non-farmers, with male farmers having higher levels of anxiety (Sanne et al., 2004).

To avoid increased levels of anxiety and depression, preventative measures, such as the provision of mental health services, mental health educational programs, practical support, and screening, are essential (Sanne et al., 2004). Regarding educational programs, educating farmers on healthy coping mechanisms for stress could also prove essential. Coping mechanisms are defined as “deliberate, conscious efforts to control and adapt to stressors” (Gavin et al., n.d.).

Based on the literature, we devised an inventory of the issues at hand in the agribusiness of Georgia, USA, by developing a survey of demographics, stressors, current health issues, coping mechanisms, mental health, and healthcare access.

DEMOGRAPHICS

The following section will describe the sample’s demographics (roles, gender, age, education, household income, marital status, family size, and immigration status). We will then compare the key demographics with the latest demographics obtained from the Agricultural Census. Then, we will go into the demographics of farm workers and farm owners separately.

Demographics of the Sample

The sample consisted of 536 farmers and spouses of farmers. The largest proportions of the participants were farm owners (N=247; 46%) and farm workers (N=220; 41%). Spouses make up only 10% of the entire sample, leading us to focus mainly on farm owners and farm workers as the largest groups for analysis.

Role of the participants	Count	Percent
Farm owners	247	46.0
Farm managers	8	1.5
Farm workers	220	41.0
Spouse of farm owners	44	8.2
Spouse of farm workers	15	2.8
Other	3	0.6
Total	535	100%

There was a larger proportion of males (N=414; 77%) compared to females. Three participants identified as gender diverse. Farm owners had a larger proportion of men (90%) than farm workers (74%). The average age of the participants was 40 (± 8.2) years old. Farm owners (AVG=41 years old) were on average older than farm workers (AVG=38 years old).

Most participants (54%) had completed an education of vocational certificate/trade school or higher. The most common educational category was "some college, no degree" (25%).

Education level	Count	Percent
None	4	0.7
Primary school: 1st - 6th grade	5	0.9
Secondary school: 7th - 11th grade	19	3.5
High school graduate	88	16.4
Some college, no degree	136	25.4
Vocational Certificate / Technical / Trade School	68	12.7
Associate degree	87	16.2
Professional degree	38	7.1
Bachelor's degree	68	12.7
Master's degree	19	3.5
Doctoral degree or equivalent	4	0.7
Total	536	100

The majority (92%) of the sample was married or living with a partner.

Marriage status	Count	Percent
Single, never married	30	5.6
Married	463	86.7
Divorced	11	2.1
Widowed	2	0.4
Living with partner	28	5.2
Total	534	100

About three quarters (77%) had children living in the household, with the majority having one or two children (82%).

Children in household	Count	Percent
1	135	33.1
2	199	48.8
3	61	15.0
4	13	3.2
Total	408	100.0

The median household income for Georgia in 2019 was \$58,700 per year (Census, 2020). About half (45%) of the participants in this survey made less than that median. Survey participants made slightly more than the state median.

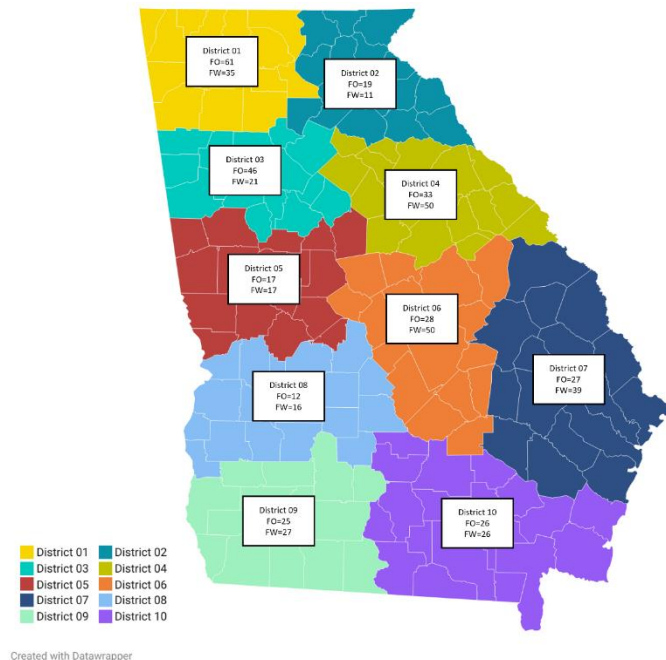
Household income per year	Count	Percent
<\$15,000	3	0.6
\$15,000-\$19,999	4	0.7
\$20,000-\$24,999	8	1.5
\$25,000-\$34,999	29	5.4
\$35,000-\$44,999	101	18.9
\$45,000-\$59,999	97	18.1
\$60,000-\$79,999	74	13.8
\$80,000-\$99,999	87	16.3
\$100,000-\$149,999	72	13.5
\$150,000+	60	11.2
Total	535	100

Most farmers were US citizens (78%), and another 18% were legal permanent residents.

Immigration status	Count	Percent
US citizen	419	78.3
Legal permanent resident ("green card," immigrant visa, permanent worker visa)	94	17.6
Temporary worker (temporary nonimmigrant work visa)	10	1.9
Temporary student or exchange visitor (student visa, exchange student or J visa)	10	1.9
Refugee	2	0.4
Total	535	100.0

Geographic location of participants

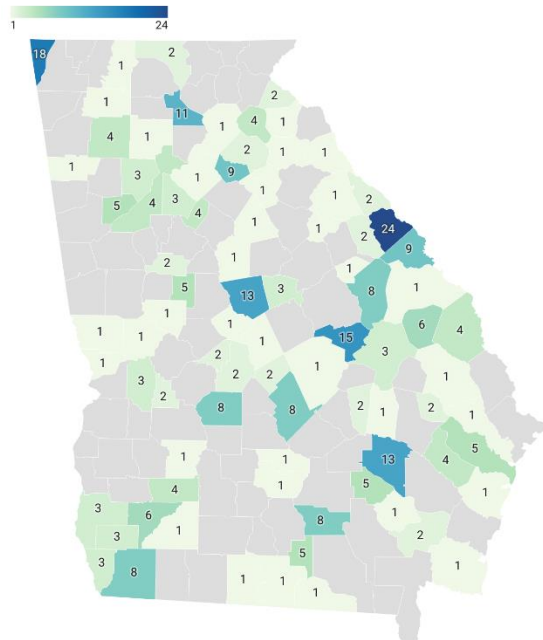
The participants of our survey were spread out throughout Georgia across each Farm Bureau region. Future interventions will utilize the regional structure already in place through Farm Bureau. By identifying regional differences interventions can be more highly tailored.



Farm workers were clustered in East Georgia, with the top three counties being Columbia, Dade, and Johnson. Farm owners are mostly clustered in Northwest Georgia with the top three counties being Dade, Dawson, and Columbia.

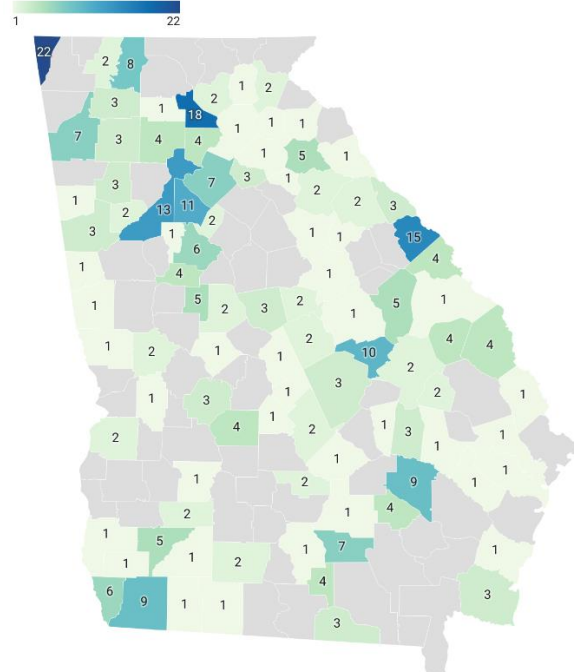
About a third (31%) were urban farmers.

Farmworker by County



Created with Datawrapper

Farm Owners by County



Created with Datawrapper

Comparison with the Agricultural Census

The demographics of the surveyed farmers are slightly different from the farming population in Georgia according to the Agricultural Census (or Ag Census). The average age of our sample is younger, and we had slightly more males than the Ag Census count. Overall, however, it is a good approximation for a pilot study.

Demographic variable	Survey sample	Ag census
Age: AVG (SD)	39.7 ±8.2	57.9
Gender: %Male	77.5%	65.9 %
Race: %Black	11.4%	8.1%
Ethnicity	4.3%	1.4%

Demographics by Role

In the next section, we will compare demographics between farm owners and farm workers. There is a larger proportion of men (9 men for every 1 woman) being farm owners compared to farm workers (7 men for every 3 women).

Farm owners (AVG=41±9.2) are on average slightly older than farm workers (AVG=38±6.3). When asked about being a first-generation farmer or farm owner, most (63-67%) indicated they were indeed a first-generation farmer.

First-generation farmer	Farm owners (N=247)	Farm workers (N=220)
Yes, N (%)	153 (63.0%)	151 (67.4%)
No, N (%)	90 (37.0%)	73 (32.6%)

Comparing household compositions, farm workers seem to be more likely to be single than farm owners. Farm owners and farm workers had an equal number of children on average (AVG=2±0.8).

Farm owners and farm workers have a similar immigration status.

Immigration status	Farm owners (N=247)	Farm workers (N=220)
US citizen, N(%)	201 (81.7%)	170 (77.6%)
Legal permanent resident ("green card," immigrant visa, permanent worker visa), N(%)	39 (15.9%)	42 (19.2 %)
Temporary worker (temporary nonimmigrant work visa), N(%)	2 (0.8%)	4 (1.8%)
Temporary student or exchange visitor (student visa, exchange student or J visa), N (%)	3 (1.2%)	2 (0.9%)
Refugee, N (%)	1 (0.4%)	1 (0.5%)

Farm owners have a higher household income per year (median=80-99K) than farm workers (median=60-79K). This might be related to the fact that, in this sample, a person with a graduate degree is more likely to be a farm owner.

FARM WORK DESCRIPTORS

In the following section, we zoom into the work characteristics of farm owners and farm workers.

Commodities

Commodity type means the type of goods produced on a farm. When we look at the commodity differences between farm workers and farm owners, farm owners work less on arable farms (fruits and vegetables, timber, sugar, etc.) and cotton and wool farms, and more on pastoral (aquaculture, cattle, etc.) farms.

Commodity type	Total Sample (N=467)	Farm workers (N=220)	Farm owners (N=247)	p-value
Arable: N (%)	291 (62.3%)	150 (68.2%)	141 (57.1%)	.014
Pastoral: N(%)	236 (50.5%)	95 (43.2%)	141 (57.1%)	.003
Cotton & Wool: N(%)	128 (27.4%)	71 (32.3%)	57 (23.1%)	.026

When asked about the type(s) of farm they own, the farm owners (N=254) most often reported cattle and beef (96 times), fruits and vegetables (78 times), wheat, corn, etc. (58 times), and cotton and wool (58 times). Note that multiple selections were possible due to 44.1% of the farm owners producing diverse farm products.

Farm type	Count
Aquaculture	18
Cattle and beef	96
Cotton and wool	58
Dairy	33
Fruits and vegetables	78
Nursery, sod, & floriculture	22
Peanuts, pecans, other nuts	36
Pigs	13
Poultry and eggs	33
Sugar & sweeteners	2
Timber/pulpwood	3

Farm type	Count
Wheat, corn, & other grains	58
Other livestock	6
Other	4

When asked about the type of farm they work on, most farm workers indicated fruits and vegetables (82 times), cotton and wool (73 times), and cattle and beef (49 times). This seems to indicate that the farms that produce fruits and vegetables might employ a larger ratio of farmworkers than cattle and beef farms do.

Farm type	Count
Fruits and vegetables	82
Cotton and wool	73
Cattle and beef	49
Wheat, corn, & other grains	47
Dairy	45
Nursery, sod, & floriculture	39
Peanuts, pecans, other nuts	39
Poultry and eggs	31
Pigs	18
Aquaculture	14
Sugar & sweeteners	11
Timber/pulpwood	11
Other livestock	0
Other	0

Demographics by commodities

Average age was not different across the commodities, nor was there a different gender representation between the commodities.

Experience

Most farm owners (84%) have been farm owners longer than 5 years. About two-thirds (63%) of the farm owners are first-generation farmers. For 65% of farm owner households, farming was the only source of income.

Years of experience	Count	Percent
Less than 1 year	4	1.6
1 to 5 years	36	14.2
5 to 10 years	118	46.5
10 to 20 years	76	29.9
21 years or more	20	7.9
Total	254	100.0

Most farm workers (77%) had more than five years of experience, which shows a similar tendency in the farm owners group. Most farmworkers were first-generation (67%). Farm workers generally worked on the same farm the entire year (89%). The remaining farm workers indicated that they worked two and three farms in a typical year. Two farm workers indicated they worked respectively four and five farms a year.

Years of experience	Count	Percent
Less than 1 year	1	0.4
1 to 5 years	50	22.3
5 to 10 years	130	58.0
10 to 20 years	42	18.8
21 years or more	1	0.4
Total	224	100.0

Farming Operation Characteristics

When asked how many diverse farms they oversee, most farm owners said they oversee one (56%), while a fifth oversee two different types of farms.

Diverse farms	Count	Percent
1	142	55.9
2	51	20.1
3	36	14.2
4	17	6.7
5	2	0.8
6	3	1.2
7	3	1.2
Total	254	100.0

A third of the farm owners (33%) had a farming operation size of more than 300 acres. Household income generally went up as the farming operation size increased.

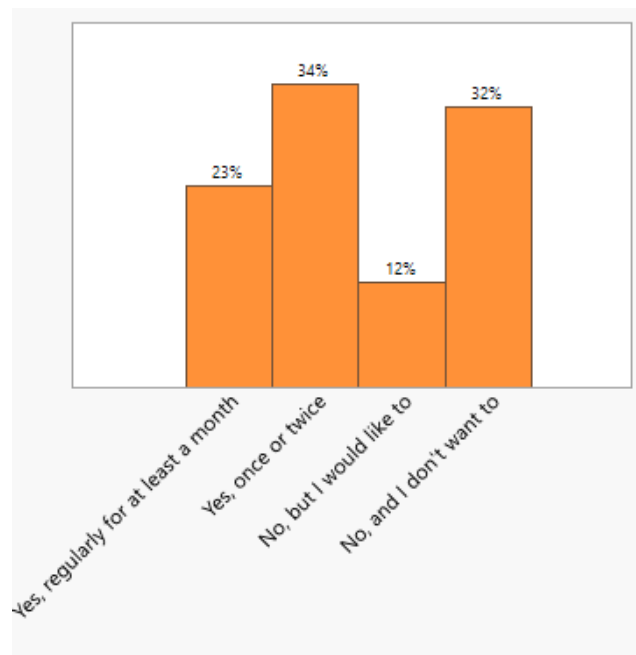
Farming operation size	Count	Percent
Less than 10 acres	11	4.3
10 - 50 acres	9	3.6
51 - 100 acres	28	11.1
101 - 200 acres	78	30.8
201 - 300 acres	43	17.0
301 - 400 acres	16	6.3
401 - 500 acres	26	10.3
501 - 750 acres	30	11.9
751 - 1000 acres	9	3.6
1000 acres or more	3	1.2
Total	253	100.0

HEALTHCARE ACCESS

The goal of this section was to measure which health-related services the participants had access to. The least accessible healthcare options in the sample were telephone access to a psychologist (89%), telephone access for routine medical care (80%), and in-office visits to a psychologist (78%). Farm workers had significantly less telephone access to a psychologist than farm owners, with barely 6% having access.

Does not have access to	Entire sample	Farm owners	Farm workers	p-value
Telephone access to a psychologist	480 (89.4%)	216 (87.5%)	208 (94.6%)	.008
Telephone access for routine medical care	431 (80.3%)	199 (80.6%)	182 (82.7%)	.548
In-office visit to a psychologist	416 (77.5%)	194 (78.5%)	178 (80.9%)	.526
Online access to a psychologist	405 (75.4%)	191 (77.3%)	168 (76.4%)	.805
Online access to routine medical care	372 (69.3%)	173 (70.0%)	158 (71.8%)	.673
Recreational activities	348 (64.8%)	164 (66.4%)	149 (67.7%)	.760
In-office routine medical care	332 (61.8%)	150 (60.7%)	149 (67.7%)	.116
Emergency medical care	315 (58.7%)	140 (56.7%)	141 (64.1%)	.103
Basic personal care	281 (52.4%)	130 (52.6%)	129 (58.6%)	.193
Food/groceries	194 (36.1%)	98 (39.7%)	79 (35.9%)	.402

To the question “Have you ever visited a mental health professional or counselor?”, about half (57%) said yes, with 23% visiting one regularly for a month or longer. Another 12% would like to visit a mental health professional but has not done so yet, and almost a third (32%) of the farmers do not want to visit a healthcare professional and have not done so in the past.



MENTAL WELL-BEING OUTCOMES

The following section presents initial outcomes about mental well-being: its stressors, health issues, anxiety, negative emotions, perceived stress, time spent worrying, stressors, and coping mechanisms.

Job Satisfaction

We asked each group if they feel unhappy about being a farmer, or spouse of a farmer. Most farm owners (63%) indicated that they hardly ever (never to a few times a year) feel unhappy about being a farm owner. For spouses of farm owners, this was 41%. For farm workers, this was 37%; for the spouses of farm workers, it was 47%. This seems to indicate that spouses of farm owners feel unhappy more often than the farm owner themselves. Overall, it also shows more unhappiness in farm workers. Keep in mind, spouses are underrepresented (10%) so these figures may not be representative of farming spouses in Georgia.

Frequency feeling unhappy with own role	Farm owner		Farm owner spouse	
	Count	Percent	Count	Percent
Never	97	38.2	8	18.2
One to four times per year	64	25.2	10	22.7
At least once per month	37	14.6	12	27.3
At least once per week	52	20.5	11	25.0
Daily	4	1.6	3	6.8
Total	254	100.0	44	100.0

Frequency feeling unhappy with own role	Farm worker		Farm worker spouse	
	Count	Percent	Count	Percent
Never	51	21.0	4	23.5
One to four times per year	88	36.2	4	23.5
At least once per month	65	26.7	6	35.3
At least once per week	33	13.6	2	11.8
Daily	6	2.5	1	5.9
Total	243	100.0	17	100.0

Health Issues

Participants were asked to indicate whether or not they had any of a list of possible health issues and were reminded once again about the anonymity of the survey. Farm owners report a much higher percentage of diabetes, hypertension, and heart disease. Farm owners also report a higher proportion of bipolar disorder and schizophrenia.

With health issues	Total sample	Farm owner	Farm worker	p-value
Arthritis	27.6%	24.3%	25.0%	.859
Anxiety	27.0%	29.6%	24.1%	.184
Depression	15.6%	17.4%	13.6%	.263
Hypertension	10.5%	17.4%	2.7%	<.001
Bipolar disorder	9.4%	12.6%	5.9%	.014
Diabetes	7.0%	11.7%	2.7%	<.001
OCD	7.5%	8.9%	5.9%	.219
Heart disease	6.9%	9.3%	4.1%	.026
Other joint or muscle disease	6.9%	8.9%	4.6%	.063
Anorexia	6.6%	8.5%	4.6%	.087
Bulimia	5.8%	5.3%	6.4%	.611
Stomach ulcers	4.5%	5.3%	3.6%	.397
Panic disorder	3.9%	4.1%	3.6%	.817
Other mood disorder	3.4%	4.6%	2.3%	.196
Cancer	3.2%	3.6%	2.7%	.575
Lung disease	3.2%	4.5%	1.8%	.107
PTSD	2.8%	3.6%	1.8%	.231
Other eating disorder	2.8%	3.6%	1.8%	.231
Other medical disorder	2.4%	3.2%	1.4%	.182
Prefer not to answer	2.4%	3.2%	1.4%	.182
Other anxiety disorder	2.1%	2.0%	2.3%	.853
Schizophrenia	1.7%	2.8%	0.5%	.048
Substance Use Disorder	1.7%	2.4%	0.9%	.206
Other psychiatric disorder	1.7%	2.0%	1.4%	.583

Anxiety

The survey inquired about anxiety by asking how often they fear something will happen. Farm owners feared losing their farm or a large amount of farming income at least once a month or more frequently in 38% of the cases. About half of the farmers (46%) were fearful of losing their job more than once a month. The non-US-citizens were asked if they feared being forced to leave the country. Almost half of them (45%) experienced anxiety about it more than once a month.

Frequency anxiety about	Losing farm/income		Losing job		Forced to leave the country	
	Count	Percent	Count	Percent	Count	Percent
Never	68	26.8	46	17.6	40	34.2
One to four times per year	91	35.8	94	36.0	24	20.5
At least once per month	49	19.3	58	22.2	27	23.1
At least once per week	39	15.4	51	19.5	19	16.2
Daily	7	2.8	12	4.6	7	6.0
Total	254	100.0	261	100.0	117	100.0

The farmers were asked if they worried about a variety of things. Farmers seemed to worry about all the issues we put in front of them. First, we asked about their future and their livelihood. About 80% worried at least a little bit about not being able to provide for their family and about succession planning. More than 90% worried about saving up for retirement.

Worry about	You cannot provide for your family		Succession planning		Saving for retirement	
	Count	Percent	Count	Percent	Count	Percent
Not at all or none	100	18.7	108	20.3	45	8.0
A little bit	123	23.1	145	27.2	141	26.4
Moderately	153	28.7	122	22.9	142	26.6
A lot	108	20.3	93	17.4	134	25.1
Extremely	40	7.0	41	7.0	60	11.2
N/A	8.0	1.0	12	4.0	11	2.0
Total	532	100.0	532	100.0	533	100.0

About half (52%) worried about the future in general more than once per month.

Worry about the future	Count	Percent
Never	106	20.3
One to four times per year	167	32.0
At least once per month	131	25.1
At least once per week	83	15.9
Daily	35	6.7
Total	522	100.0

We included questions about COVID-19. It became apparent that the great majority of farmers (90%) worried about getting the virus, and about the pandemic's effect on their farm work.

Worry about	Catching Coronavirus		The pandemic's effect on the farm	
	Count	Percent	Count	Percent
Not at all or none	53	9.9	55	10.3
A little bit	117	22.0	125	23.4
Moderately	159	29.8	145	27.1
A lot	122	22.9	143	26.7
Extremely	68	12.8	53	9.9
N/A	14	2.6	14	2.6
Total	533	100.0	535	100.0

When we asked about anxiety surrounding racism, more than three quarters (72%) worried about experiencing racism themselves, and 74% worried about racism in their community.

Worry about	Experiencing racism		Racism in my community	
	Count	Percent	Count	Percent
Not at all or none	151	28.2	139	26.0
A little bit	112	20.9	111	20.8
Moderately	130	24.3	135	25.3
A lot	96	17.9	105	19.7
Extremely	32	5.9	27	5.0
N/A	13	2.4	16	3.0
Total	534	100.0	533	100.0

There was also some anxiety about possible changes to farming and agricultural laws and policies, with 89% worrying at least a little bit. Farm owners were also worried about the

difficulty in hiring or managing employees: 81% worried at least a little bit. Finally, about nine out of ten farmers worried about unexpected financial burdens potentially coming their way.

Frequency worry about	Possible changes to farming/agricultural laws or policies		Difficulty hiring or managing employees		Unexpected financial burdens	
	Count	Percent	Count	Percent	Count	Percent
Not at all or none	60	11.2	102	19.0	76	14.2
A little bit	143	26.8	119	22.2	129	24.1
Moderately	155	29.1	131	24.4	165	30.8
A lot	127	23.8	100	18.6	109	20.3
Extremely	36	6.7	61	11.4	51	9.5
N/A	11	2.0	22	4.0	5	<1
Total	532	100.0	535	100.0	117	100.0

Farmers were also worrying about health issues and illness (79%), their alcohol use (81%), and balancing home and work life (91%).

Worry about illness or health issues	Count	Percent
Not at all or none	114	21.4
A little bit	172	32.3
Moderately	109	20.5
A lot	89	16.7
Extremely	39	7.3
N/A	10	1.9
Total	533	100.0

Worry about alcohol use	Count	Percent
Not at all or none	103	19.3
A little bit	182	34.1
Moderately	146	27.3
A lot	62	11.6
Extremely	31	5.8
N/A	10	1.9
Total	534	100.0

Worried about home-work-balance	Count	Percent
Not at all or none	48	9.0
A little bit	139	26.2
Moderately	166	31.3
A lot	97	18.3
Extremely	69	13.0
N/A	12	2.3
Total	531	100.0

Negative Emotions

Another section inquired about the Positive And Negative Affect Schedule or PANAS. The PANAS lists words that describe feelings and emotions and asks participants how often they experience the feeling or emotion. The PANAS consists of two scales: positive and negative affect. Feelings of loneliness were experienced by about half of the farmers (48%), sadness or depression by 49%, and feelings of hopelessness by 32%.

Frequency feelings about	Lonely		Sad or depressed		Hopeless	
	Count	Percent	Count	Percent	Count	Percent
Never	149	28.0	119	22.7	230	42.9
One to four times per year	126	23.7	147	28.1	137	25.6
At least once per month	135	25.4	131	25.0	98	18.3
At least once per week	93	17.5	92	17.6	55	10.3
Daily	29	5.5	35	6.7	16	3.0
Total	532	100.0	524	100.0	536	100.0

When asked if they had suicidal ideation, 32% of farmer thought about it at least once in the past year, with 12% of farmers thinking about it more than once a month, 8% at least weekly, and 2% daily.

Thoughts of wanting to die by suicide	Count	Percent
Never	364	67.9
One to four times per year	55	10.3
At least once per month	63	11.8
At least once per week	45	8.4
Daily	9	1.7
Total	536	100.0

Perceived Stress

The Perceived Stress Scale (PSS) is a self-report measure intended to capture the degree to which persons perceive situations in their life as excessively stressful relative to their ability to cope (Taylor, 2015). It is one of the most commonly and widely used measures of perceived stress (Ingram et al., 2016). The PSS was intended to be adapted broadly to numerous uses because item content on the scale is not bound to any specific situation or event (2016). Based on these factors, we believe the PSS is the best scale to evaluate the stress measures of farmers.

First, we show the average PSS scores for farm owners and farm workers per district in Georgia. The districts refer to the Georgia Farm Bureau Regions. Most of the scores are similar, with farm workers scoring barely higher than farm owners on average.

Farm Bureau district	Number of farm owners in district	Farm owners AVG	Number of farm workers in district	Farm workers AVG
District 1	61	2.8 ±0.4	35	3.0 ±0.3
District 2	19	2.9 ±0.4	11	3.0 ±0.2
District 3	46	2.5 ±0.6	21	2.9 ±0.4
District 4	33	2.6 ±0.5	50	2.8 ±0.5
District 5	17	2.8 ±0.4	14	3.1 ±0.2
District 6	28	2.9 ±0.8	50	3.0 ±0.3
District 7	27	2.8 ±0.3	39	3.0 ±0.3
District 8	12	2.8 ±0.3	16	3.0 ±0.4
District 9	25	2.9 ±0.4	27	2.9 ±0.3
District 10	26	2.7 ±0.5	26	3.0 ±0.2

PSS by healthcare access

Participants who did not have access to emergency medical care, telephone or in-office routine medical care, or telephone access to a psychologist, all had significantly higher PSS scores.

Access to ...	PSS score for NO ACCESS AVG	PSS score for HAS ACCESS AVG	p-value
Emergency medical care	2.9±0.4	2.7±0.5	.001
In-office routine medical care	2.9±0.4	2.7±0.5	<.001
Basic personal care	2.8±0.4	2.8±0.5	.237
Food/groceries	2.8±0.4	2.8±0.5	.122
In-office visit to a psychologist	2.8±0.4	2.8±0.5	.769
Online access to routine medical care	2.8±0.4	2.8±0.5	.063
Online access to a psychologist	2.8±0.4	2.8±0.5	.612
Recreational activities	2.8±0.4	2.8±0.5	.186
Telephone access for routine medical care	2.8±0.4	2.7±0.5	<.001
Telephone access to a psychologist	2.8±0.4	2.6±0.5	.006

PSS by immigration status

The PSS score of the participants with an immigration status of temporary student/exchange visitor is higher than any of the other immigration statuses, $p=.045$.

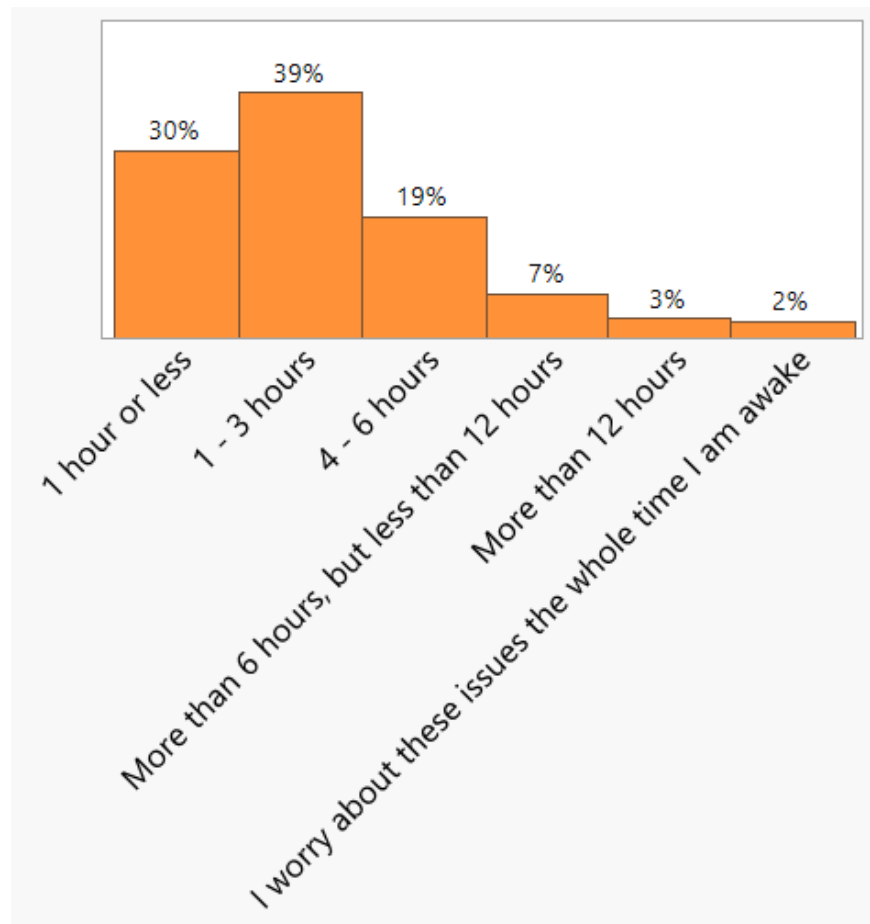
PSS by First-Generation Farmer

The PSS score was equally high whether they were a first-generation farmer or not.

Time Spent Worrying

Most people (39%) spent one to three hours of their day worrying about a multitude of things. About a tenth (12%) of the participants spent more than six hours worrying a day.

Level	Count	%
1 hour or less	158	30.8
1 - 3 hours	208	39.2
4 - 6 hours	102	19.2
More than 6 hours, but less than 12 hours	36	6.8
More than 12 hours	15	2.8
I worry about these issues the whole time I am awake	11	2.1
Total	530	1.00000



Time spent worrying by role

Farm owners worry less than farm workers, with over a third (38%) worrying an hour or less about a variety of things, compared to 20.2% of the farm workers. About half the farm workers (43%) spend more than four hours per day worrying about a variety of things.

Role	1 hour or less	1-3 hours	4-6 hours	More than 6 hours, less than 12	More than 12 hours	"I worry about these issues the whole time I'm awake"
Farm owner	37.6%	42.0%	14.3%	2.5%	1.6%	2.0%
Farm worker	20.2%	37.7%	23.9%	13.3%	4.6%	0.9%

Time spent worrying by PSS

Those who spent more time worrying, have a higher PSS score, $p < .0001$.

Time spent worrying	Number	AVG	Std Dev
1 hour or less	158	2.7	±0.5
1 - 3 hours	208	2.8	±0.5
4 - 6 hours	102	3.0	±0.4
More than 6 hours, but less than 12 hours	36	3.0	±0.3
More than 12 hours	15	3.0	±0.3
I worry about these issues the whole time I am awake	11	3.0	±0.5

Stressors

The participants were asked to rate different stressors and to which extent they worried about the stressor (not at all, a little, moderately, a lot, extremely). We recoded the categories to three categories: not at all/a little; moderately; a lot/extremely. The most common stressors across the entire sample were the weather and its effects on the farm work (40% worried a lot about this), COVID-19's effects on income (38%), and fear of catching COVID-19 (36%).

Stressor	Entire sample		
	Not at all, a little	Moderately	A lot, extremely
The weather and its effects on your earm/farm you work on	29 (6.4%)	240 (53.5%)	179 (39.9%)
The coronavirus pandemic's effects on income from your farm/farm working	42 (9.2%)	239 (52.8%)	171 (37.8%)
Fear of catching COVID-19	42 (9.3%)	244 (54.2%)	164 (36.4%)
Saving for retirement	37 (8.1%)	252 (55.6%)	164 (36.2%)
Possible changes to farming/agricultural laws or policies	51 (11.2%)	263 (58.1%)	138 (30.5%)
Difficulty in hiring or managing employees	91 (20.2%)	223 (49.6%)	135 (30.0%)
Balancing home and work life	41 (9.1%)	275 (61.1%)	134 (29.7%)
Unexpected financial burdens	66 (14.3%)	260 (56.5%)	134 (29.1%)
Obtaining necessary training or employment certificates	65 (14.4%)	253 (56.0%)	133 (29.4%)
You perceive there is a lack of opportunities for "people like you"	102 (22.7%)	214 (47.7%)	132 (29.4%)
Stress due to obtaining certain operation certifications	68 (15.0%)	260 (57.5%)	124 (27.4%)
Problems parenting	92 (20.9%)	225 (51.1%)	123 (27.9%)
Worried that you cannot provide for your family or community	86 (18.9%)	246 (54.0%)	123 (27.0%)
Non-farmer neighbors	75 (16.5%)	260 (57.2%)	119 (26.2%)
Stress thinking about who will take over the farm when you are ready to retire	87 (19.5%)	243 (54.6%)	115 (25.8%)
Sexual issues	129 (28.6%)	206 (45.7%)	115 (25.5%)
Directly experienced racism	126 (27.8%)	213 (47.1%)	113 (25.0%)
Racism in my community	118 (26.2%)	220 (48.9%)	111 (24.7%)
Lack of role models sharing your background (e.g., race, gender identity, or sexual identity)	111 (24.3%)	233 (51.2%)	111 (24.3%)
Problems with friends	127 (28.1%)	221 (49.0%)	103 (22.8%)
Problems with your partner or spouse	146 (32.5%)	200 (44.6%)	102 (22.7%)
Working environment or on the job injuries	73 (16.0%)	287 (63.2%)	94 (20.7%)
Microaggressions	122 (26.9%)	238 (52.6%)	92 (20.3%)
Problems managing your debt or the debt of a family member	66 (14.5%)	298 (65.6%)	90 (19.8%)
Community discrimination	110 (24.2%)	257 (56.7%)	86 (18.9%)
Alcohol use	82 (17.9%)	296 (64.9%)	78 (17.1%)

Stressors by role

The main stressors for farm owners were the weather and its effects on the farm, COVID-19s impact on the farm income, and possible changes to farming laws and policies. For farm workers, the largest stressors were saving for retirement, fear of catching COVID-19, and COVID-19s impact on farm income.

Worry About	Farm Owner (N=247)			Farm Worker (N=220)			p-value
	Not at all, a little bit	Moderately	A lot, extremely	Not at all, a little bit	Moderately	A lot, extremely	
Health issue or illness	46 (18.9%)	147 (60.5%)	50 (20.6%)	55 (26.0%)	100 (47.4%)	56 (26.5%)	.020
Alcohol use	46 (19.0%)	163 (67.6%)	32 (13.3%)	36 (7.9%)	133 (61.9%)	46 (21.4%)	.070
Problems parenting	65 (27.7%)	112 (47.7%)	58 (24.7%)	27 (13.2%)	113 (55.1%)	65 (31.7%)	.001
Sexual issues	86 (35.7%)	100 (41.5%)	55 (22.3%)	43 (20.6%)	106 (50.7%)	60 (28.7%)	.002
Problems with Partner	90 (37.5%)	94 (39.1%)	56 (23.3%)	56 (26.9%)	106 (50.9%)	46 (22.1%)	.025
Problems with Friends	83 (33.7%)	114 (46.3%)	49 (19.9%)	44 (21.4%)	107 (52.2%)	54 (26.3%)	.012
Fear of Catching COVID-19	31 (12.7%)	136 (55.5%)	78 (31.8%)	11 (5.4%)	108 (52.7%)	86 (42.0%)	.008
COVID-19s impact on farm income	25 (10.3%)	131 (54.1%)	86 (35.5%)	17 (8.1%)	108 (51.4%)	85 (40.5%)	.476
Community discrimination	74 (30.5%)	114 (46.9%)	55 (22.6%)	36 (17.1%)	143 (68.1%)	31 (14.8%)	<.001
Possible Changes to farming laws & policies	24 (9.8%)	143 (58.1%)	79 (32.1%)	27 (13.1%)	120 (58.3%)	59 (28.6%)	.459
Obtaining training or employment certificates	45 (18.6%)	130 (53.7%)	67 (27.7%)	20 (9.6%)	123 (58.9%)	66 (31.6%)	.024
Directly experienced racism	87 (36.0%)	98 (40.5%)	57 (23.6%)	39 (18.6%)	115 (54.8%)	56 (26.7%)	<.001
Working environment or job injuries	44 (18.7%)	147 (60.0%)	54 (22.0%)	29 (13.9%)	140 (67.0%)	40 (19.1%)	.287
Thinking about who will take over the farm when you retire	38 (15.8%)	145 (60.1%)	58 (24.0%)	49 (24.0%)	98 (48.0%)	57 (27.9%)	.024
Obtaining certain operation certifications	52 (21.9%)	143 (59.3%)	46 (19.0%)	16 (7.9%)	117 (55.5%)	78 (37.0%)	<.001

Continued Worry about	Farm Owner (N=247)			Farm Worker (N=220)			p-value
	Not at all, a little bit	Moderately	A lot, extremely	Not at all, a little bit	Moderately	A lot, extremely	
Problems managing debt or the debt of a family member	41 (16.73%)	157 (64.0%)	47 (19.1%)	25 (12.0%)	141 (67.4%)	43 (20.6%)	.355
Racism in my community	79 (32.3%)	108 (44.3%)	57 (23.4%)	39 (19.0%)	112 (54.6%)	54 (26.3%)	.006
Lack of role models sharing your background	117 (48.4%)	58 (24.0%)	67 (27.7%)	116 (54.5%)	53 (25.0%)	44 (20.7%)	.206
Microaggressions	132 (55.0%)	58 (24.2%)	50 (20.8%)	110 (51.9%)	60 (28.3%)	42 (19.8%)	.607
Providing for family or community	57 (23.1%)	135 (55.0%)	54 (22.0%)	29 (14.0%)	111 (53.1%)	69 (33.0%)	.006
The weather and its effect on the farm	12 (5.0%)	130 (54.1%)	98 (41.0%)	17 (8.1%)	110 (53.0%)	81 (39.0%)	.393
Saving for retirement	17 (7.0%)	154 (63.4%)	72 (29.6%)	20 (9.5%)	98 (46.7%)	92 (43.8%)	.002
Balancing home and work life	24 (10.0%)	146 (60.6%)	71 (29.5%)	17 (8.1%)	129 (61.2%)	63 (30.1%)	.798
Non-farmer neighbors	45 (18.7%)	135 (56.0%)	61 (23.3%)	30 (14.1%)	125 (58.7%)	58 (27.2%)	.419
Lack of opportunities for "people like you"	61 (25.3%)	117 (48.6%)	63 (26.1%)	41 (19.8%)	97 (46.9%)	69 (33.3%)	.174
Unexpected financial burdens	40 (16.4%)	139 (57.0%)	65 (26.6%)	26 (12.0%)	121 (56.0%)	69 (32.0%)	.267
Difficulty in hiring or managing employees	43 (17.8%)	127 (52.5%)	72 (29.8%)	48 (23.1%)	96 (46.4%)	63 (30.4%)	.291

Stressors by commodities

We hypothesized that stressors could be different across commodities. However, as one farmer could indicate they worked with two commodities, no statistical inferences could be made. When looking at only those who worry a lot, we can see the following trends: Arable had more worries about saving for retirement (41%), and balancing work and home life (34%). Pastoral farmers had more worries about problems with partners (26%), community discrimination (22%), providing for family or community (30%), and unexpected financial burdens (35%). Cotton and wool farmers were more worried about health issues or illnesses (31%), problems with friends (29%), fear of catching COVID-19 (43%), possible changes to farming laws and policies (44%), obtaining training or employment certificates (37%), the weather effects on the farm income (52%), and difficulty in hiring employees (38%). Pastoral and cotton and wool farmers were more worried compared to arable farmers when it comes to lack of role models sharing their background (29-30%), and micro-aggressions (21-22%).

Worry about	Arable, N(%)			Pastoral, N(%)			Cotton/Wool, N(%)		
	Not at all, a little bit	Mode- rately	A lot, extrem- ely	Not at all, a little bit	Mode- rately	A lot, extrem- ely	Not at all, a little bit	Mode- rately	A lot, extrem- ely
Health issue or illness	171 (59.0)	55 (19.0)	64 (22.1)	138 (57.3)	47 (19.5)	56 (23.2)	57 (45.2)	30 (23.8)	39 (31.0)
Alcohol use	178 (61.2)	65 (22.3)	48 (16.5)	119 (49.4)	81 (33.6)	41 (17.0)	66 (51.6)	41 (32.0)	21 (16.4)
Problems parenting	120 (42.7)	88 (31.3)	73 (26.0)	76 (32.2)	96 (40.7)	64 (27.1)	43 (35.0)	44 (35.8)	36 (29.3)
Sexual issues	160 (55.9)	61 (21.3)	65 (22.7)	104 (43.9)	64 (27.0)	69 (29.1)	58 (64.0)	35 (27.8)	33 (26.2)
Problems with partner	178 (62.2)	55 (19.2)	53 (18.5)	107 (45.3)	68 (28.8)	61 (25.9)	63 (51.2)	34 (27.6)	26 (21.1)
Problems with friends	174 (60.2)	56 (19.4)	59 (20.4)	103 (43.3)	74 (31.1)	61 (25.6)	55 (44.4)	33 (26.6)	36 (29.0)
Fear of catching COVID-19	97 (33.8)	79 (27.5)	111 (38.7)	73 (30.2)	79 (32.6)	90 (37.2)	31 (24.6)	41 (32.5)	54 (42.9)
COVID-19's impact on farm income	91 (31.2)	88 (30.1)	113 (38.7)	96 (40.2)	60 (25.1)	83 (34.7)	40 (32.0)	37 (29.6)	48 (38.4)

Worry about	Arable, N(%)			Pastoral, N(%)			Cotton/Wool, N(%)		
	Not at all, a little bit	Moderately	A lot, extremely	Not at all, a little bit	Moderately	A lot, extremely	Not at all, a little bit	Moderately	A lot, extremely
Community discrimination	178 (61.8)	62 (21.5)	48 (16.7)	118 (49.2)	70 (29.2)	52 (21.7)	65 (51.2)	43 (33.9)	19 (15.0)
Possible changes to farming laws & policies	132 (45.8)	75 (26.0)	81 (28.1)	85 (35.3)	82 (34.0)	74 (30.7)	39 (31.0)	32 (25.4)	55 (43.7)
Obtaining training or employment certificates	136 (46.9)	80 (27.6)	74 (25.5)	95 (39.9)	66 (27.7)	77 (32.4)	49 (38.9)	31 (24.6)	46 (36.5)
Directly experienced racism	171 (59.4)	54 (18.8)	63 (21.9)	108 (45.2)	66 (27.6)	65 (27.2)	68 (54.0)	28 (22.2)	30 (23.8)
Working environment or job injuries	163 (56.6)	78 (27.1)	47 (16.3)	107 (44.4)	78 (32.4)	56 (23.2)	53 (41.7)	47 (37.0)	27 (21.3)
Thinking about who will take over the farm when you retire	168 (59.0)	57 (20.0)	60 (21.1)	101 (42.8)	67 (28.4)	68 (28.8)	58 (46.0)	33 (26.2)	35 (27.8)
Obtaining certain operation certifications	138 (47.6)	71 (24.5)	81 (27.9)	113 (47.9)	63 (26.7)	60 (25.4)	43 (34.1)	38 (30.2)	45 (35.7)
Problems managing debt or the debt of a family member	157 (54.1)	84 (29.0)	49 (16.9)	112 (46.3)	77 (31.8)	53 (21.9)	59 (46.1)	41 (32.0)	28 (21.9)
Racism in my community	163 (56.2)	56 (19.3)	71 (24.5)	99 (41.4)	75 (31.4)	65 (27.2)	57 (44.9)	39 (30.7)	31 (24.4)
Lack of role models sharing your background	170 (57.2)	61 (20.5)	59 (19.9)	97 (39.8)	72 (29.5)	71 (29.1)	51 (39.2)	37 (28.5)	39 (30.0)
Micro-aggressions	175 (60.3)	68 (23.5)	47 (16.2)	126 (52.9)	60 (25.2)	52 (21.9)	63 (49.6)	38 (29.9)	26 (20.5)
Providing for family or community	149 (51.0)	71 (24.3)	72 (24.7)	92 (37.9)	78 (32.1)	73 (30.0)	57 (44.9)	40 (31.5)	30 (23.6)
The weather and its effect on the farm	68 (23.7)	94 (32.8)	125 (43.6)	65 (27.7)	80 (34.0)	90 (38.3)	29 (23.0)	31 (24.6)	66 (52.4)
Saving for retirement	97 (33.6)	74 (25.6)	118 (40.8)	97 (39.9)	75 (30.9)	71 (29.2)	43 (33.3)	40 (31.0)	46 (35.7)
Balancing home and work life	123 (42.6)	68 (23.5)	98 (33.9)	83 (34.6)	87 (36.3)	70 (29.2)	53 (41.7)	45 (35.4)	29 (22.8)
Non-farmer neighbors	148 (50.2)	73 (24.8)	74 (25.1)	102 (43.0)	69 (29.1)	66 (27.9)	59 (46.8)	36 (28.6)	31 (24.6)
Lack of opportunities for “people like you”	155 (54.6)	51 (18.0)	78 (27.5)	94 (39.5)	77 (32.4)	67 (28.2)	45 (35.7)	40 (31.8)	41 (32.5)
Unexpected financial burdens	133 (44.9)	80 (27.0)	83 (28.0)	84 (34.6)	75 (30.9)	84 (34.6)	48 (37.2)	44 (34.1)	37 (28.7)
Difficulty in hiring or managing employees	145 (50.4)	65 (22.6)	78 (27.1)	95 (39.9)	65 (27.3)	78 (32.8)	44 (35.2)	33 (26.4)	48 (38.4)

Coping Mechanisms

In order to cope with stress and anxiety, people generally have a few outlets, also called coping mechanisms. We asked our participants what they enjoy doing when they are feeling stressed, anxious, or depressed. The top answers were drinking alcohol (42%), exercising (38%), and engaging in a hobby (33%). The least popular choices were over-the-counter drugs, other illicit drugs, and writing in a journal. Farm owners are more likely to drink alcohol and to write in a journal to cope with stress than farm workers. Farm workers tend to hit or injure themselves more often than farm owners, as well as hit or kick things and use cannabis.

Coping mechanism	Entire sample (N=537)	Farm owners (N=247)	Farm workers (N=220)	p-value
Drink alcohol	225 (41.9%)	116 (47.0%)	82 (37.3%)	.034
Exercise/walk	205 (38.2%)	89 (36.0%)	87 (39.5%)	.434
Engage in a hobby	176 (32.8%)	85 (34.4%)	58 (26.4%)	.060
Sleep	153 (28.5%)	74 (30.0%)	51 (23.2%)	.099
Talk to family or friends	144 (26.8%)	68 (27.5%)	47 (21.4%)	.123
Watch TV	118 (22.0%)	55 (22.3%)	42 (19.1%)	.398
Spend time with pets	105 (19.6%)	43 (17.4%)	39 (17.7%)	.928
Pray or other religious	95 (17.7%)	41 (16.6%)	34 (15.5%)	.737
Draw or paint	89 (16.6%)	43 (17.4%)	30 (13.6%)	.263
Spend time alone	83 (15.5%)	35 (14.2%)	21 (9.5%)	.125
Hit or injure myself	64 (11.9%)	20 (8.1%)	42 (19.1%)	<.001
Meditate	63 (11.7%)	23 (9.3%)	32 (14.5%)	.080
Hit or kick things	57 (10.6%)	20 (8.1%)	33 (15.0%)	.019
Talk to counselor	42 (7.8%)	17 (6.9%)	18 (8.1%)	.595
Cannabis	40 (7.5%)	9 (3.6%)	24 (10.9%)	.002
Write in Journal	36 (6.7%)	20 (8.1%)	7 (3.2%)	.023
Other Illicit drugs	26 (4.8%)	12 (4.9%)	13 (5.9%)	.615
OTC drugs	21 (3.9%)	9 (3.6%)	11 (5.0%)	.470

Time spent worrying per coping mechanism

Time spent worrying per coping mechanism	Does not do activity	Does activity	p-value
Draw or paint	2.2 ±1.2	2.1 ±1.1	.636
Drink alcohol	2.3 ±1.2	2.0 ±1.1	.002
Engage in a hobby	2.2 ±1.2	2.2 ±1.0	.914
Exercise/walk	2.2 ±1.1	2.2 ±1.2	.828
Hit or injure myself	2.1 ±1.1	3.1 ±1.1	<.001
Hit or kick things	2.1 ±1.1	2.9 ±1.3	<.001
Cannabis	2.1 ±1.1	2.9 ±1.2	.001
Meditate	2.2 ±1.1	2.2 ±1.2	.956
Other Illicit drugs	2.2 ±1.1	2.8 ±1.2	.023
Pray or other religious	2.2 ±1.1	2.3 ±1.3	.266
Sleep	2.3 ±1.1	2.0 ±1.2	.005
Spend time alone	2.2 ±1.1	2.1 ±1.3	.609
Spend time with pets	2.2 ±1.1	2.3 ±1.4	.386
Talk to family or friends	2.2 ±1.1	2.2 ±1.3	.709
Talk to counselor	2.1 ±1.1	2.9 ±1.3	.001
OTC drugs	2.2 ±1.1	2.7 ±1.0	.043
Watch TV	2.2 ±1.2	2.1 ±1.1	.410
Write in Journal	2.2 ±1.1	2.5 ±1.5	.186

Note: 2 = 1-3 hours spent worrying per day; 3 = 4-6 hours spent worrying per day.

PSS by coping mechanisms

The top four coping mechanisms are unhealthy and have the highest PSS score. That means that those who use these coping mechanisms experience more stress

Coping Mechanism	PSS score of those who use coping mechanism	PSS score of those who do not use coping mechanism	p-value
Hit or injure myself	3.1±0.3	2.8±0.5	<.001
Over the counter drugs	3.1±0.3	2.8±0.5	<.001
Hit or kick things	3.0±0.3	2.8±0.5	<.001
Other Illicit drugs	3.0±0.3	2.8±0.5	.006
Draw or paint	2.9±0.4	2.8±0.5	.004
Meditate	2.9±0.4	2.8±0.5	.010
Talk to counselor	2.9±0.4	2.8±0.5	.017
Cannabis	2.9±0.3	2.8±0.5	.001
Drink alcohol	2.8±0.5	2.9±0.4	.017
Pray or other religious	2.8±0.5	2.8±0.4	.188
Spend time alone	2.8±0.5	2.8±0.4	.600
Exercise/walk	2.7±0.5	2.9±0.4	<.001
Engage in a hobby	2.7±0.5	2.9±0.4	<.001
Sleep	2.7±0.5	2.8±0.4	.008
Talk to family or friends	2.7±0.5	2.9±0.4	<.001
Watch TV	2.7±0.5	2.9±0.4	<.001
Spend time with pets	2.7±0.5	2.8±0.4	.018
Write in Journal	2.6 ±0.6	2.8±0.4	.071

DISCUSSION

Farming is a stressful occupation that is associated with increased levels of anxiety and depression (Sanne et al., 2004). Exposure to high stress over long periods of time negatively impacts physical and mental health, which can lead to the development of stress-related diseases and disorders (Kubo et al., 2015). In this report we confirmed that although half of the farmers are happy with their occupation, they do experience a lot of stress from different sources. Most farmers worry at least one to three hours per day, and about half felt loneliness, sadness, or depression, with a third feeling hopeless. A third (31%) had suicidal ideation at least once in the past year. Less than a quarter of the participants had access to a psychologist. About 12% said they would like to visit a mental health professional but has not done so yet.

The effects of COVID-19 were among the top stressors for both farm owners and farm workers. Farm workers were predominantly worried about retirement savings, while farm owners were focused on the effect of the weather on their income. That farmers are stressed about their income is not surprising as 65% of the farmers relied on farm income to sustain their household. Succession planning is another difficulty, with almost half of the participants worrying about it moderately to extremely often.

When it comes to health issues, farm owners have a much higher percentage of diabetes, hypertension, and heart disease than farm workers. Farm owners also had a higher proportion of bipolar disorder and schizophrenia. It is unclear why this is the case.

Farmers who do not have access to emergency medical care, in-office routine medical care, telephone access for routine medical care, or telephone access to a psychologist had significantly higher PSS scores. Farmers who experienced the highest PSS scores, were also more likely to use unhealthy coping mechanisms, such as hitting or injuring themselves, hitting or kicking things, and using over-the-counter and illicit drugs.

A generally healthy coping mechanism is participating in recreational activities, but our sample showed that two thirds of our participants did not have access to these activities. It is worrisome that the most popular coping mechanism to deal with stress or anxiety is to drink alcohol. Alcohol use problems may be the result. Hitting or injuring themselves and hitting or kicking things were used by 12% and 11% of farmers, respectively, as a coping mechanism. For a minority of survey participants, using over-the-counter drugs or using illicit drugs, including cannabis were a coping mechanism.

Two-thirds of our sample consisted of first-generation farmers. Although our sample approximated the Georgia Ag Census, our state-wide study could benefit from a larger proportion of female farmers, spouses, and older farmers.

Our study amongst farmers illustrates a critical need for research and interventions related to farmer mental health. There is increased attention on mental health by policy-makers both national and state. Additional data from research studies like this would help target initiatives to maximize the impact of mental health services for farmers.

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