College of Tropical Agriculture and Human Resources
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Rates of Stress, Depression, and Suicide

Among Hawai'i Agricultural Producers & Allied Professionals

At a Glance

This report aims to provide some initial baseline mental health indicators collected from a stress and mental health needs assessment from November 2021 to March 2022.

Introduction

Agriculture is a recognized high-stress enterprise with lots of risks and uncertainties, including volatile markets, fluctuating weather and climate conditions, invasive species and pests, demanding regulation compliance, and other stressors that agriculture (ag) producers must contend with on a daily and seasonal basis. Despite limited research on mental health among U.S. agricultural producers (Bjornestad et al., 2021), attention has recently increased due to support in funding and studies in this area. For instance, among 172 farmers across five Midwest states, Bjornestad et al. (2019) found that 8.7% reported experiencing mild, moderate, or moderately severe depression, while previous studies conducted in the Midwest revealed estimates ranging from 7-35% (Onwuamese, 2013). Reed et al. (2020) found that individuals in the agriculture, forestry or fishing industries have one of the highest suicide rates as compared to the general population in a systematic literature review. This is consistent with a recent 2020 Centers for Disease Control and Prevention (CDC) report that found as an industry, male ag producers have higher suicide rate than those in retail trade, education, healthcare, and the general population (Peterson et al., 2020).

The COVID-19 pandemic that started in 2020 provided additional challenges and especially to farmers/ranchers as they contend with supply chain issues, labor shortage and inflation, among other known stressors. Recovery is ongoing with uncertainty still high on the horizon. Unfortunately, no comprehensive study and therefore no data currently exist that provides possible insight into Hawai'i ag producers' stress and wellbeing.

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We aim in this report to provide some initial baseline mental health indicators collected from a stress and mental health needs assessment study between November 2021-March 2022 through the Farm Ranch and Stress Network -State Departments of Agriculture (FRSAN-SDA 2021) grant that was funded by the USDA-NIFA and in collaboration with the Hawai'i Department of Agriculture (HDOA).

Methods

Sample & Procedure. The needs assessment employed a cross-sectional convenience sample, asking ag producers and allied professionals to complete a survey. The University of Hawai'i's Institutional Review Board provided approval for the needs assessment study, and all data were collected anonymously and confidentially. The survey was available online, programmed in Qualtrics, and offered in eight different languages (English, Chinese, Chuukese, Hawaiian, Ilokano, Spanish, Thai, and Vietnamese).

Regional and county agricultural organizations and commodity groups were asked to share and disseminate information about the survey and survey link to their members via emails, newsletters, listservs, social media channels, etc. All self-identified farmers, ranchers, and allied professionals in Hawai'i over the age of 18 years who were able to read and write in English and/or one of the other seven available languages were eligible to participate in the study. In addition, with assistance from the Hawai'i Farm Bureau (HFB) and Hawai'i Farm Union United (HFUU), 1,800 hardcopies of the survey were distributed to their members.

Measures. Demographic items included gender, age, ethnicity, county of residence/zip code, education level, marital status, health insurance status, role on the farm (could select more than one option), commodity group (could select more than one option), acreage of farm, revenue range attributed to ag production, and percent income from ag production. Stress was measured by one item that asked respondents to rate their current stress level on a scale: 1 = no stress, 3 = stressed, 5 = extremely stressed. Depression was assessed using the Patient Health Questionnaire (PHQ-9), a nine-item questionnaire that has good internal validity and reliability (Cronbach's alpha =0.92) (Kroenke et al., 2001).

Participants responded to nine statements that asked about the frequency of depressive symptoms within the past two weeks, with the following options: 0 = not at all, 1 = several days, 2 = over half the days, 3 = nearly every day. The items were aggregated, with the score ranging between 0-27. The cut points and severity classification were: 0-4 = none/minimal; 5-9 = mild; 10-14 = moderate; 15-21= moderately severe, 21-27 = severe depression (Kroenke et al., 2001). One item on the scale asked about suicidal ideation ("thoughts that you would be better off dead, or thoughts of hurting yourself in some way").

Results

General Demographics. A total of 345 ag producers provided responses to the survey, with 38% completing the survey online and 62% preferring the pen-pencil paper format; 98% completed it in English and about eighty-six percent completed the entire survey. The sample was 54% male, 41% female, and 5% Other, with an average age of 55 years old (range: 18-93 years old). With respect to ethnicity (respondents could select more than one), the majority identified as White (40%), followed by East Asian (22%), Southeast Asian (14%), Portuguese or Hispanic (9%), Other (7%), and Native Hawaiian/Pacific Islander (5%). Most participants were married or cohabitating (66%), followed by single (10%) or widowed/divorced (9%). All counties were represented, with Hawai'i County (aka the Big Island) making up 37% of the total sample population, followed by Honolulu County (aka O'ahu) (26%), Maui (20%), and Kaua'i (17%). The sample was educated, with 19% having some college education, 42% a bachelor's degree, and 15% a doctoral/terminal degree. The majority (93%) had health insurance, with the largest percentage from their employer (34%), followed by Medicare, MedQuest, spouse's employer, or military. Six percent were self-insured or had no insurance.

Agricultural Demographics. The average number of years in agriculture was 20.5 (range: 0-70 years). A third (34%) identified as being an ag owner, followed by manager (17%), marketing (11%), and laborer (7%); Other (food safety, auditor/QA, govt, consultant) constituted 30%. In terms of producer category, 36% were field crops & trees, 14% were nursery, 14% were tourism and value added, 5% livestock, 5% seed, and 25% as Other. With respect to average revenue from ag production in the past year, 30% reported $10K or less; 20% between 10K-50K, and 25% more than 50K (missing or NA accounted for 25%).

Mental Health. Only 14% reported experiencing no stress and 34% somewhat stressed, while 50% indicated feeling stressed to extremely stressed. On the PHQ-9 depression scale, 35% reported experiencing mild to severe depression, and 27 (8%) had thoughts of suicide in the past two weeks.

Stress & Depression by Categories. The following two figures (Figures 1 and 2) reveal the rates of self-reported stress and depression, based on the general and agricultural demographic categories. Figure 1 shows those who reported experiencing lower levels of stress as compared to those experiencing higher levels of stress. Likewise, Figure 2 highlights patterns of respondents' report of depression within the categories and as compared to the average of the sample at 35%. While certain categories revealed interesting trends, such as those engaging in livestock or seed production reporting much higher depression as compared to other commodities, only acreage, county, and age were statistically significant different at the p=.05 level. These statistically significant

results showed that agricultural producers living in Honolulu County (X^2 = 8.12, p<.05), participants who were 18-45 years old (X^2 = 9.89, p<.05), and those who owned, leased, or operated greater than 50 acres (X^2 = 9.85, p<.05) had higher rates of depression compared to those in Hawai'i, Kaua'i, or Maui County, participants who were 46 or older, or those with smaller acreage.

higher rates, such as those operating larger than 50 acres (56%) and younger farmers/ranchers (52%). These statistics are notably higher than those reported in the general population, even among health care workers.

As the foremost source of U.S. statistics on health and wellbeing for decades, the National Center for Health Statistics in partnership with U.S. Census instituted a pulse

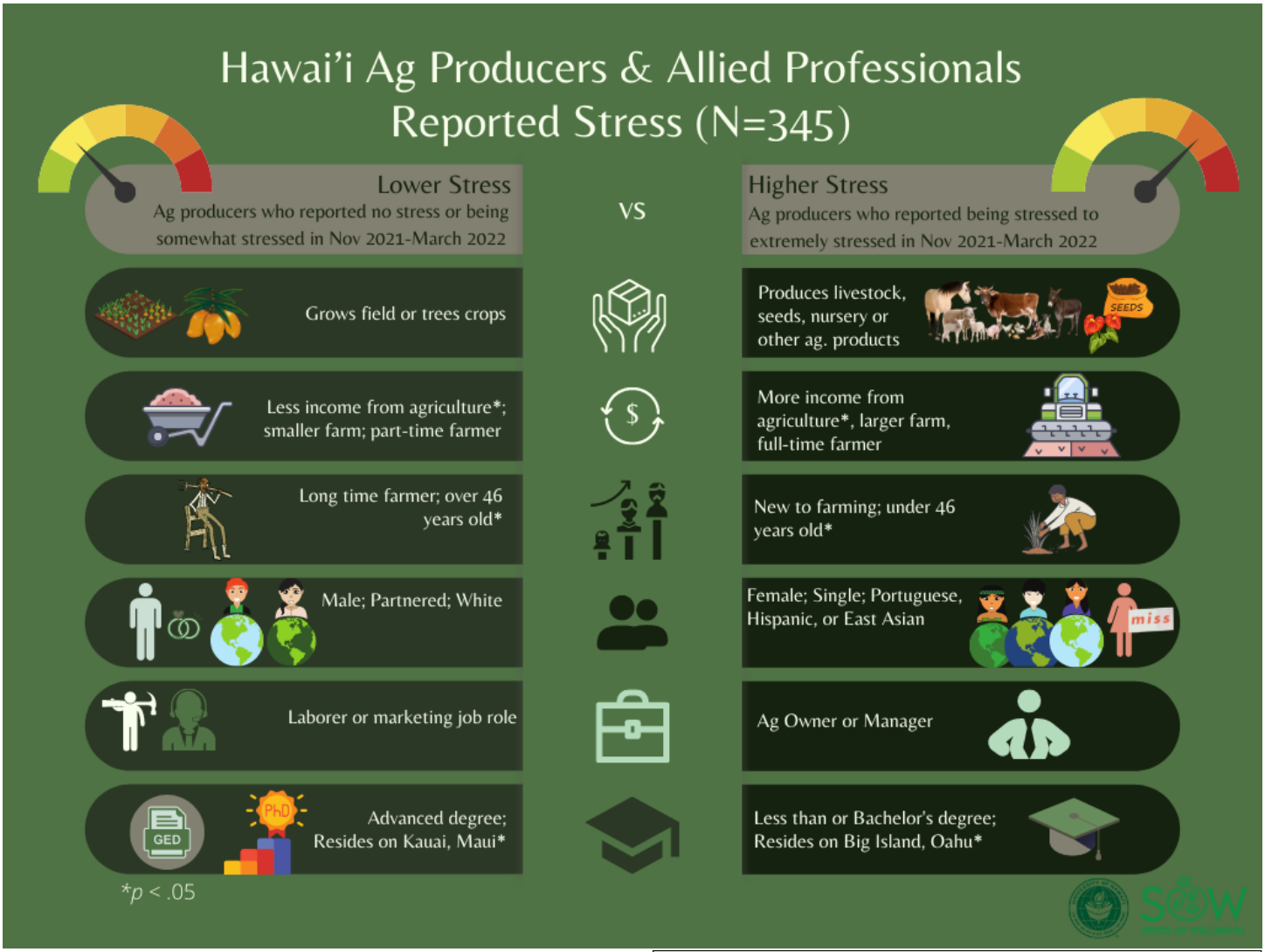

Figure 1. Reported Stress

Discussion

Evidence shows the need to address mental health concerns among ag producers. Among this nonprobability sample of 345 ag producers and allied professionals in Hawai'i, approximately 35% experienced symptoms of depression that are highly associated with diagnosable depression in the two weeks preceding the survey, with 8% reporting suicidal ideations. When considered by categories, it is noticeable that certain groups reported even

survey to quickly capture information on health, economic, and social trends during the pandemic (CDC, 2022). Using two items of the PHQ-9 in a reformatted timeframe (7 days vs. 2 weeks) – the same indicator used in this study – survey data between September 2021 and March 2022 revealed responses associated with symptoms of major

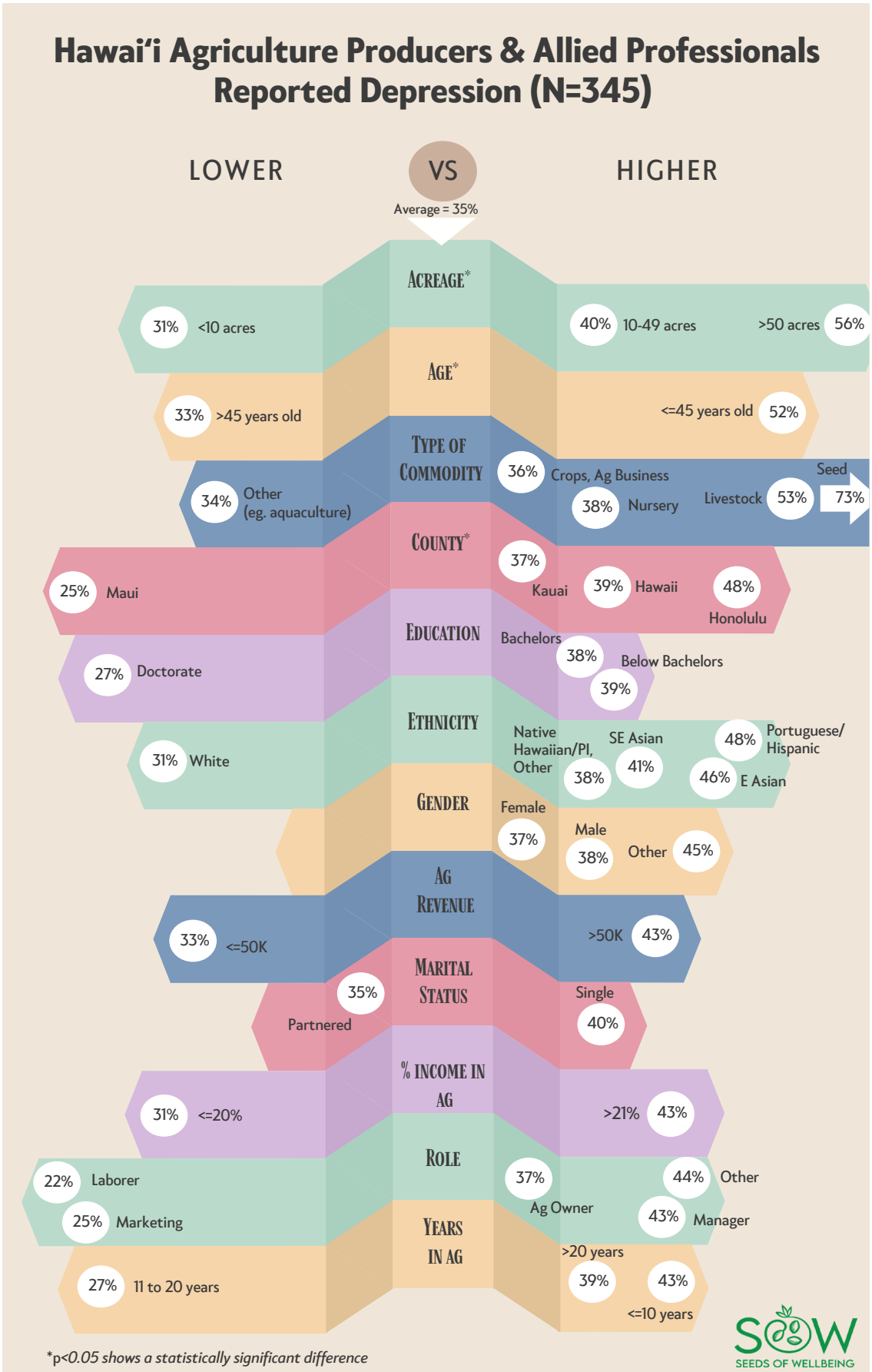

Figure 2.
Reported Depression

depressive disorder in the general US and Hawai'i population at 22% (CDC, 2022). This is at least three times higher than pre-pandemic levels of 6.5% in 2019 (Terlizzi, 2021). Similarly, a CDC study of 26,174 health care workers in March-April 2021 using the same PHQ-9 measure reported 30.8% for depression and 8.4% for suicidal ideation (Bryant-Genevier, Rao, & Lopes-Cardozo, et al., 2021). Thus, our sample of ag producers here in Hawai'i appears to be revealing rates that is a cause for concern and further investigation.

On top of commonly known stressors for ag producers, new and young farmers also have the additional challenges of gaining access to land, water, and capital, in addition to learning how to manage time for family or recreational activities. The higher rates among younger farmers in Hawai'i are consistent with the few available studies elsewhere. Rudolphi et al (2020), in a sample of 170 young farmers (mean age of 29 years old), reported that 53% met criteria for major depressive disorder (PHQ-9>5), with financial challenges and time pressures being of greatest concern. Similarly, in the U.K., 88% of farmers under 40 years old ranked poor mental health as their greatest challenge (Jouavel, 2021).

Mental health challenges among ag producers/allied professionals can result in poor physical health, lower decision making and problem-solving skills, and lower morale among other cascading effects, which can lead the individual to leave the ag industry. Indeed, the effects of adverse mental health are non-negligible and can undermine Hawai'i's ability to create an ag workforce needed to ensure Hawai'i's food security and sustainability. Greater efforts are needed around mental health literacy and awareness around this important issue, as well as prevention and strengthening efforts. Promoting the wellbeing of ag producers in Hawai'i subsequently affects how all of us are nourished and thriving, too.

Limitations

The findings need to be tempered by at least two considerations. First, the study is a cross-sectional, non-probabilistic, convenience sample and therefore not representative of the entire state's ag population. Yet, Hawai'i is currently the largest sample within the Western Regional Agricultural Stress Assistance Program (https://farmstress.us/wrasap-baseline-data-collection/). For example, California reported 231 respondents while Colorado reported 50 respondents. It is well known that response rate is very challenging among this industry, as survey exhaustion is a real phenomenon. Second, mental health is considered a stigma within the culture of agrarianism, which emphasizes endurance, achievement, strong will, individualism, and tradition (Rossman, 2010; Weingarten, 2018). Underreporting is a common outcome of this stigma, which is alarming considering the high rates among those willing to complete the survey in Hawai'i. Thus, it is likely that depression and suicide rates could be higher than reported here.

Summary

This is the first study on the rate of mental health challenges among ag producers and allied professionals in Hawai'i. This study revealed that among 345 respondents, 35% experienced symptoms of depression and 8% had thoughts of suicide. The findings are consistent with the literature, but also revealed patterns unique to Hawai'i. We need to support early prevention and intervention efforts to reduce, mitigate, and manage factors associated with ag producers' challenges with mental health.

We also need to examine and acknowledge the contextual and larger systemic factors and circumstances that aggravate stress and depression among ag producers in Hawai'i, including but not limited to: high cost of living and conducting business, high cost of land, access to land and water, access to consistent and dependable skilled labor, and high transportation costs, as well as availability of healthcare and mental health coverage. A better, more comprehensive understanding of these underlying factors that negatively affect agricultural production and success in Hawai'i will be imperative for implementing solutions to support and promote Hawai'i's ag producers' health and wellbeing, and consequently their thriving agricultural operations.

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