The human side of farming: Building emotional, economic, and environmental resilience

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Executive summary

In some regions, a farmer commits suicide every hour… The heavy weight of that statistic is what drives the passion behind this report, and the urgent need for effective solutions.

During my Nuffield travels, I attended the Lincolnshire Farm Conference in the UK, where the keynote speaker asked the audience to stand, and then to sit down if they knew someone who had committed suicide: One by one, seats were occupied, until the entire room was seated. The silence that followed carried a heavy truth: in the UK, every single week a farmer dies by suicide. In India, that number is as devastating as one farmer every hour. Across the world, the scale of this crisis remains under-recognised, hidden beneath the soil that feeds us all. This devastating realisation sparked my study and the desperate need for resilience in agriculture.

Farmers globally are facing mounting pressures from market volatility, social isolation, the encroachment of large corporate interests, and ineffective policies. These external challenges, combined with the inherent demands of farming, climate change, and compounding financial and personal stresses, place farmers under extraordinary strain. This report aims to identify the underlying problems farmers are confronted with and presents possible pathways toward meaningful solutions.

Through field visits and interviews conducted across multiple countries, combined with an extensive literature review, a clear pattern emerged: professionals in agriculture are disproportionately affected by mental health challenges, resulting in alarming suicide rates compared to other industries. Farmers are also on the frontlines of climate-related crises such as soil degradation, extreme weather, and water scarcity, all while facing the unpredictability of global markets and fluctuating commodity prices.

Despite the geographical and cultural diversity of the locations studied, one unifying message emerged: the urgent need to strengthen resilience in farming systems. Resilience, as explored in this study, is a multifaceted concept, encompassing three interconnected aspects: 1. Environmental, 2. Economic, 3. Mental health, which has been under-recognised in global agricultural discussions.

Mental health emerged as the most critical area of concern. Agricultural workers expressed reluctance to seek help, held back by cultural stigmas and the perception that seeking help is weakness. This isolation, combined with heavy economic burdens and climate-related crises, fuels a cycle of stress, burnout, and despair.

Breaking this cycle demands an integrated approach: introducing practical business skills, accessible mental health support, sustainable farming practices, and effective risk management to reduce the immense pressures faced by farmers. Farmers and agricultural professionals require clearer guidance from government, stronger support networks, and more comprehensive policies that empower them to face the evolving challenges of modern agriculture with confidence and adaptability. most importantly, it requires us to change the narrative, especially surrounding mental health. Seeking help must no longer be seen as failure, but as an act of resilience.

Keywords: Resilience, mental health, economic pressures, climate crises, farmer suicides

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Foreword

Having been born in Zimbabwe, a country that faced considerable economic and political challenges, I find myself drawing a lot of inspiration from the people who survived such hardships. I have spent almost 20 years in the agricultural sector, navigating the complexities of farming in a country that has faced torrid challenges. I believe my determination to overcome these difficulties has come from my deep commitment to my country, my dedication to my two sons, and a desire to build something meaningful for the future.

I am a passionate advocate for self-development and leadership, having completed an ACS Distance Learning Diploma in Pig Production, an Acumen for Business Leaders course, and authored two fiction books. My current role as General Manager of the farming sector at Colcom Zimbabwe is marked by a commitment to innovation, sustainability, and growth in an industry that is crucial to Zimbabwe's food security and economy. These achievements reflect my commitment to continuous learning and desire to make a positive impact on both my industry and community. At the culmination of my Nuffield International Farming Scholar's journey, being officially recognised as a Nuffield Scholar will further enhance my ability to drive change and share experiences on the global stage and create a legacy of hope and resilience for future generations.

The scholarship I received through the Nuffield Zimbabwe Committee was an open scholarship, so in as much as I started the journey with a set study topic in mind, I had the flexibility to evolve not only as a person but to also identify a real global need. Having attended the contemporary scholars conference (CSC), I realised that my intended study topic was too insular and that I needed to contribute in a more meaningful way. My individual travel took me back to the United Kingdom (UK) and Canada**.** During both trips, including the initial trip to UK on the CSC, one message came across too loud and too strong to ignore and that was around the mental health challenges facing farmers across the globe. This message redirected my focus, and I felt that Zimbabwean farmers could be seen as being at the forefront of resilience in global agriculture due to their ability to adapt and thrive in the face of extreme challenges. Despite experiencing economic instability, land reform disruptions, and climatic stress such as frequent droughts and unpredictable rainfall patterns, Zimbabwe's farmers have developed innovative coping mechanisms. Many Zimbabweans have embraced sustainable agricultural practices that conserve water, improve soil health and increase productivity with minimal external inputs. Their

experiences offer valuable lessons on how communities can survive and even thrive under adverse conditions, contributing to the global push for more sustainable and resilient agricultural systems, sharing stories of hope against all odds. It was then that I knew that the study topic that could benefit a global audience, would be a study topic focused on **resilience**, and the multitude of benefits that addressing such a topic has to offer.

Table 1. Travel itinerary

Travel date	Location	Visits/contacts
March 7 – 15	United Kingdom: London Norwich	CSC Conference Norwich Research Park Anglia Producers The Goat Shed Houghton Hall Estate Greencoat Capital Tomatoes Colemans Mustard Honingham Thorpe Farms
July and August 2022	Zimbabwe: Victoria Falls Harare Marondera Kariba	Allan Savory Institute Padenga Crocodiles Doonside Farm (Tobacco/cattle) Imire Lake Harvest Charara Banana Farm
February 2023	United Kingdom: London Oxford Torquay Bath Southam	Ledbury Lincolnshire farm conference Cereal farms Dairy farms Sheep farms Piggeries - liquid feeding systems
July 2023	Canada: Alberta Saskatchewan Ontario	South West Vets Cronin Family Farms Hypor Piggery Nucleus University of Saskatchewan Canola research facilities

		Beef ranching with dogs Nuffield Canada networking Black Fox Farm 9 Mile Legacy Brewing
June 3 – 6 2024	Indonesia: Sumatra Lampung	Fish and Prawn farms Beef feedlots Crab processing Great Giant Foods Spice farms and processing Rubber farms and processing Palm oil farms and layers
June 8 – 15 2024	France: Normandy	Cooperative models Free range chicken farming UniLaSalle Agricultural Research biogas Dairy farms, bakery potato farms Alfalfa, hemp and flax farms Pig grower farm to processing
June 16-23 2024	Denmark: Copenhagen Horsens	Danish agriculture and Food council Cherry farming - cherry wine Mushrooms, organic pig farming, Danish Crown pig abattoir Farm Druid - automation Hardi, wind farms Solar and agriculture integration research Dairy and trout farms, rape seed farming
June 25-30 2024	USA: California Fresno Sacramento	Onion, walnut and peach farming and processing. Nuveen Investment Fresno County Water Bureau Flood irrigation

		Superior Farms sheep abattoir Employee-owned business 100-year-old grape farms and winery

Acknowledgments

It is with huge gratitude that I wish to acknowledge and thank everyone who has been a part of my Nuffield Journey. I am fortunate to say that this gratitude extends globally and to everyone that has been involved in this – thank you for showing me another way.

First and foremost, I want to thank my boys, Adon and Keegan, who have willingly given me the space to focus entirely on Nuffield over the last two years. It has come at the cost of family time and holidays together and their understanding and support to me in this has meant the world.

To the Nuffield Zimbabwe committee, namely Doug Bruce, Rob Fisher, Helen Goodwin and Trevor Gifford who have supported my journey, provided counsel and given me the space that I needed to grow and to evolve with full understanding and realisation of the need for change.

To Richard Thornycroft and Caroline Mitchell who have been a part of the journey both in person and by assisting the initial application process that gave me the recognition needed to be awarded the scholarship, and Dr. Amanda L Adlam for an edit that went beyond expectations, and most of all, for believing in me.

To Sabre business world for making me believe that I can, and for showing me the way.

My own personal, global Nuffield family and the NAT group (you all know who you are!) – you have all made my Nuffield experience unique and in turn have completely changed the trajectory of my life and the type of person I want to be.

Ken Coles and Olivia Champion – for getting into the trenches with me. I have no words.

And to my sponsors – Thank you for allowing me this opportunity. For providing Zimbabwe with a space to re-enter the Nuffield network and to know that you really are making a difference!

Abbreviations

APA – American Phycological Association
BCPs – Business continuity plans
CASA – Canadian Agricultural Safety Association
CDC – Centre for Disease Control
CSC – Contemporary Scholar's Conference
EM – Effective microorganism
EU – European Union
EU-OSHA – European Agency for Safety and Health at Work
FAO – Food and Agriculture Organization
FCN – Farming Community Network
FCP – Farming and Countryside Programme
GFP – Global Focus Programme
IPCC – Intergovernmental Panel on Climate Change
ISO – International Organization for Standardization
MP – Member of parliament
ONS – Office for National Statistics
RABI – Royal Agricultural Benevolent Institute
SDG's – Sustainable development goals
UK – United Kingdom
UN – United Nations
UNDP – The United Nations Development Programme
USA – The United States of America
USDA – The United States Department of Agriculture
WHO – World Health Organization

Objectives

- Leverage Nuffield global travel opportunities to identify a unifying issue within the agricultural sector.
- Investigate global mental health problems, economic pressures and environmental issues within the agricultural industry.
- Define and distinguish between three dimensions of resilience: mental, economic and natural resilience.
- Identify and present recommendations to increase resilience in agriculture.
- Categorise recommendations in terms of the type of resilience they address.

Introduction

Agriculture, the backbone of global food production, is facing unprecedented challenges that threaten not only the livelihoods of farmers but also the mental and physical wellbeing of those who sustain our food systems. This is becoming a rapidly growing topic of interest as the United Nations (UN) calls for zero hunger in their Sustainable Development Goals (SDGs). In my travels across diverse agricultural regions, from the vast farmlands of the United States and Canada to the rice paddies of Indonesia, the vineyards of France, the fields of Denmark, and back to my home country, Zimbabwe, I have witnessed a troubling and common trend: the resilience of farmers is being tested in ways that are unsustainable. While the specific issues differ in each country – whether it is economic pressure, climate change, or market volatility – the result is the same: farmers are under serious strain.

Figure 1. The United Nations (UN) Sustainable Development Goals (SDGs). Goal 2 is seen as Zero hunger.

One of the most pressing yet often overlooked issues is the mental health crisis plaguing the agricultural community. High suicide rates, depression, and anxiety are endemic across farming populations. Isolation, financial stress, and the constant pressure to deliver amid uncertain conditions are driving many to breaking point. This is an issue that requires urgent attention and a shift in narrative. Resilience in agriculture cannot solely be defined by a farmer's ability to endure external pressures; it must also include a focus on their mental and emotional wellbeing, which has often been neglected in traditional agricultural policy discussions.

However, mental health is just one aspect of the broader resilience challenge facing the agricultural sector. Economic resilience, the ability to withstand and adapt to financial shocks, market fluctuations, and changing trade dynamics, is equally critical. Farmers are constantly at the mercy of unpredictable global markets, fluctuating

commodity prices, and the rising costs of inputs. This financial strain often compounds the mental and emotional burden, creating a vicious cycle that further undermines resilience.

In parallel, the physical resilience of our agricultural systems must also be addressed. Soil degradation, water scarcity, and the impacts of climate change are threatening the long-term viability of farming practices worldwide. The challenge is not just about producing more food, but about ensuring that the land, soil, and ecosystems that support agriculture remain healthy and productive for future generations.

As this report will highlight in more detail, addressing resilience in agriculture requires a multifaceted approach. It's about building habits and systems that not only help farmers survive but thrive – economically, mentally, and environmentally. In the following sections, we will explore both measurable and holistic approaches to strengthening resilience across three key domains: mental health and wellbeing, economic and business stability, and sustainable farming practices. The goal is not only to identify the problems but to propose actionable solutions that empower farmers and transform the way we think about resilience in agriculture.

Ultimately, the agricultural sector's resilience is tied not just to the individual farmer, but to the communities, industries, and ecosystems that depend on them. **It is time to reframe the narrative and create an environment where resilience in agriculture is supported in every aspect of a farmer's life – financial, emotional, and ecological.**

Case studies

The United Kingdom

I travelled to the UK twice on Nuffield travel – as an individual, and for the CSC. It was in the UK that I conceptualised my topic and realised the need for resilience. At the time, I was researching more sustainable methods on feeding swine without having to compete with human food sources. I found that farmers who had already implemented strategies to feed pigs by-products were regretful, due to the cost of infrastructure for this change and the price of feed being more expensive than standard feed commodities due to supply and demand. Farmers trying to find more sustainable methods to farm were met with resistance from both supply and market. And there is a general lack of understanding that sustainable does not always mean cheaper, which places producers on the back foot. While being hosted by various farmers and scholars on my travels, I started to notice the levels of fatigue and stress, due to a high workload that so many farmers were encountering. It was a different work environment from Zimbabwe, where we are economically poor but staff rich. The UK farmers seemed to have opportunity taken away from them by being forced to work in their business rather than on their business. They also have become very dependent on government subsidies to make their farms successful. I would caution being reliant on government subsidies, as it is not a sustainable or resilient business model. Currently, the UK produces 60% of the food it consumes, which is a decrease from 75% in the 1980s. This downward trend is a result of poor governance and policies that mount pressures on farmers. The “band aid” in the form of subsidies to combat this is not sustainable. Although this topic is complex, it needs to be addressed by all stakeholders involved, including the government that needs to realise the importance of agriculture.

Initiatives and outcomes

Within the farming community, suicide rates and the occurrence of depression are up to three times more than the national average (Linder, 2025). Initiatives to relieve farmers of mental and economic crises are underway – these include the Addington Fund, Farming Community Network (FCN), Mind, Royal Agricultural Benevolent Institute (RABI), Samaritans and Yellow Wellies (Defra’s Farming and Countryside Programme (FCP), 2025). However, farmers are still struggling with the stigma and cultural barriers that prevent them from seeking help, and as such, only about 35% of

farmers experiencing mental health problems make use of the help provided (Linder, 2025).

Figure 2. UK farm visits to (left) a dairy in Oxford, (right) a piggery in Southam.

Canada

My individual Nuffield travel took me to Canada where I visited three provinces, which included Alberta, Toronto and Saskatchewan. Most of the trip involved driving long distances and visiting multiple farms and businesses. It occurred to me during our long drives that corporates are buying up farmland and this brought a real issue to the forefront, namely that the farmers who remain are put under incredible economic pressure trying to compete against them, while having the added mental strain of farming in isolation.

It is evident that the younger generations in Canada are finding that there is no future in farming. The proportion of older farmers (over 55) has been growing, while the number of younger farmers (under 35) has declined significantly. In 2021, about 30% of Canadian farmers were 65 years or older, a significant increase compared to earlier decades. This aging trend poses a challenge for the future of Canadian agriculture, as it raises concerns about succession planning, and the long-term sustainability of the farming industry.

Initiatives and outcomes

Throughout Canada, farmers are experiencing depression and anxiety at over ten times that of other industries, with 25% experiencing suicidal thoughts and 3.5 times

more likely to commit suicide (Canadian Agricultural Safety Association (CASA), 2025; Defra's Farming and Countryside Programme (FCP)., 2025). In response, there are efforts to aid farmers with the mental health crisis such as Agriculture Well Ontario, National Farmer Mental Health Alliance, Canadian Centre for Agricultural Wellbeing and National Farmer Crisis Line, which provide counselling and crisis support for agricultural professionals (Canadian Agricultural Safety Association (CASA), 2025). However, these initiatives only focus on individual mental health and do not address the issues that cause this problem, such as economic and climatic instability (Mendly-Zambo, 2023). There is also the stigma surrounding getting help, and due to small farming communities, a lack of anonymity, leading to embarrassment (Leonard, 2024).

Figure 3. Black Fox Farm (left) and 9-mile Legacy Brewing (right), both owned by Nuffield Scholars.

Indonesia

Despite the large population in Indonesia, it was surprising to learn that only 20% of the people live in what is regarded as poverty. However, 20% equates to 56 million people. Despite this statistic, it must be noted that the average family earning USD100 per month is not regarded as poor, and 70% of the population only eat 200 g of beef per year. It relies heavily on imports in the agricultural sector; 90% wheat, 80% soybeans, and 15% of its rice requirements are imported. This country is also facing a mental health crisis in the agricultural sector as there are over four million families struggling, with at least one family member facing clinical depression in a country that only has 1,000 psychiatrists and 2,000 registered clinical phycologists.

Figure 4. Enjoying the local cuisine and produce (left) and Great Giant Foods, the world's largest pineapple farm (right).

Initiatives and outcomes

A 2023 census showed there were about 29.36 million farmers in Indonesia and it was found that about 30.5% are at risk of mental health problems, and that there was a huge demand for psychological education (72%) and therapy (81%) (Dewi *et al*., 2025). Very few initiatives have been implemented in Indonesia to aid in this problem. Agronursing programmes, an approach that combines nursing principles and agricultural sciences, have been introduced into rural farming communities to help farmers with mental wellbeing (Dewi *et al.*, 2025; Dewi Novi Maharani *et al.*, 2025). However, there is a huge deficit in professional help and a lack of proper training and initiatives in Indonesia.

France

The agricultural systems in France are very strong on using cooperatives and seldom did we see a farm that did not have the latest equipment, often shared between various farmers. We visited various cooperatives, and immediately I realised that this model may become counterproductive over time as cooperatives are now competing against each other to entice farmers, and for market share.

In an effort to reduce carbon footprints and policies placed on beef farming, France went from being 100% self-sufficient to only producing 60% of their country's beef requirement. However, the consumption of beef has increased over the same period. This leaves a demand for beef, which is therefore imported, and is in all likelihood detrimental to the global carbon footprint, putting strain on farmers becoming more

efficient, and reducing the turnover of French farmers. Furthermore, farm sizes are decreasing due to French succession laws, which prioritise equal distribution of assets among all family members, leading to fragmented landholdings and increased agricultural inefficiency. Currently, the average farm size is 45 hectares, which is held by an aging population (over 55), and these factors have made farming economically unviable. The logical suggestion now is that agricultural policies need to be informed so as to build resilience in the farming sector.

Initiatives and outcomes

France is said to be the largest agricultural producer in the European Union; however, farmers are suffering with their mental health, shown by suicide rates more than 43% higher than the rest of the population. One report has shown that a farmer dies by suicide every two days in France (Bullens, 2025). Additionally, these suicides are often by violent means, namely hanging (Priour *et al*., 2024). Isolation, long working hours, reliance on subsidies, debt and overwhelming amounts of paperwork have been identified as reasons (Bullens, 2025; Priour *et al.*, 2024). French farmers have staged mass protests over low incomes, product pricing and trade agreements (Bullens, 2025). Solutions such as the *Mutualité Sociale Agricole* (MSA) and *Solidarité Paysans* to provide support to farmers have, however, been insufficient in alleviating this epidemic (Bullens, 2025).

Figure 5. Global Focus Programme group (left) and a flax field day in Normandy (right)

Denmark

Denmark yielded memorable farms and business visits. A notable encounter was a free-range pig farmer who had resorted to Agri-tourism to make the free-range business viable. He indicated that it cost over four times more to produce free-range pigs than commercial pigs, however, there was a general perception that free-range should also be cheaper and he was, therefore, struggling with the market rejecting his selling price. His innovative approach was to educate people and open his farm up to visitors. However, this exposes him to bio-security risks. A visit to a dairy farm in Denmark showed a similar trend to that seen in France, where government policies regarding carbon footprints are forcing a reduction in cattle herd sizes, which forces the need for animals to produce over 60 litres of milk per day to enable them to be profitable with reduced herd sizes. While this increase in efficacy is a success, there appears to be no end to the legislation imposed on farmers, which culminates in fewer people willing to work on farms, forcing farmers to handle all operations. This then leads to mental stress and burnout, which again underlines the need for resilience in the agricultural industry worldwide.

Initiatives and outcomes

As part of the EU, farmers in Denmark face concerns such as climate change, tariffs, water shortages, trade barriers, stigma and a lack of access to mental health support (Farmers Assistance Resources for Mental Health (FARMRes), 2025). Job satisfaction among farmers is particularly low at 40%, leading to depression, stress, addiction and suicide (FARMRes, 2025). Famers have nearly double the suicide rate than that of other jobs, and there is an urgency to create more investment in mental health initiatives in the country, especially in the rural regions (Verhagen, 2022).

Figure 6. Visiting the Hardi factory in Denmark.

The United States of America (California)

The innovation and size of agriculture in California, where they have managed to take a desert land and turn it into an agricultural powerhouse, is impressive. A notable example is that they produce 70% of the world's almonds and walnuts. However, due to major water restrictions and dependence on a decreasing snow melt from the Sierra Nevada Mountain range, farmers are planting fewer cereals and more water-wise crops. This results in replacing a crop that is consumed more by the average person with crops that only get onto the plates of people seemingly higher up the consumer triangle. Another concerning observation is that corporations are in investing in agricultural land, and the volume harvested, and infrastructure invested back into these farms make it impossible for smaller-scale farmers to compete. This puts a huge strain on farmers and the negative effects link to the already mentioned statistics around the mental health of these farmers. The major issue is that food security for the USA and the world is being placed in the hands of fewer people, while increasing strain on more farmers who cannot find a space to compete.

Initiatives and outcomes

Mental health challenges are also found in the USA: In 2016 about 43.2 farmer/ rancher manager men per 100K died by suicide compared to 27.4 men per 100K for all other occupations (Becot *et al.*, 2025). Financial problems, economy, markets, isolation, mental health stigma, and availability of care are some of the challenges encountered by agricultural workers (Becot *et al.*, 2025). Initiatives such as the Farm Ranch and Stress Assistance Network (FRSAN) have been installed to help with this crisis; however, the efficacy and sustainability of such programmes are unknown.

Figure 7. Farmland visits in California (left) and fellow 2022 Nuffield Scholar, Tom Merwin (right).

Problem identification

Global mental health in agriculture

According to the Centre for Disease Control (CDC), 85 out of 100,000 people involved in agriculture take their lives each year. This is against other industries which average around 14 out of 100,000 people.

- CDC (2016): This report highlights that farmers in the U.S. experience significantly higher suicide rates than the national average, noting that financial instability and high-stress environments contribute to this crisis (Peterson *et al.*, 2020).
- Australian farmers: An article was published focusing on the mental health challenges faced by Australian farmers, indicating that they are at a higher risk of suicide due to stressors such as financial pressures and isolation *(*Kunde *et al.*, 2017).
- English farmers: An analysis published by the Office for National Statistics (ONS) presents data showing that farmers in the UK have one of the highest suicide rates among occupational groups, emphasising the mental health risks in agriculture (Windsor-Shellard, 2017).
- World Health Organization (WHO) (2019): The WHO report outlines the global imperative to address mental health issues, specifically calling attention to the high rates of suicide in agricultural sectors due to various socio-economic stressors (WHO, 2014).
- European Agency for Safety and Health at Work (EU-OSHA): They reported on the mental health challenges in agriculture and the need for European Union (EU) policies to support mental wellbeing in rural communities *(*Donohoe *et al.*, 2024).

Figure 8. Various headlines across the globe regarding suicide in the agricultural industry.

Global economic pressures on agriculture

Rising input costs:

- Fuel and energy prices: Global fuel and energy price surges significantly increase farming costs, including machinery and transportation. For example, in 2022, fuel prices spiked following the Russia-Ukraine conflict, raising operating costs for farmers worldwide.
- Fertiliser prices: Fertiliser costs increased dramatically due to disruptions in global supply chains, partly caused by the war in Ukraine and rising natural gas prices. Fertiliser costs in the USA rose by over 30% in 2022.
- Labour costs: Labour shortages and rising wages are common, especially in the UK, Australia, and most of Europe.

Trade and market volatility:

- Global commodity price fluctuations: Commodity prices are highly volatile due to shifts in global supply and demand. For instance, the 2018 US-China trade war caused significant decreases in agricultural exports, particularly for soybeans.
- Brexit impact on UK farmers: Post-Brexit, UK farmers face higher trade barriers with the EU, including customs checks and food safety standards, leading to increased export costs and delays.
- Tariffs and trade wars: The US-China trade war and other protectionist policies have disrupted global agricultural trade, impacting farmers' profitability, especially in the US and Australia.

Government policy and subsidies:

- Subsidy cuts and policy shifts: In Europe, agricultural subsidies are becoming increasingly tied to sustainability goals, impacting farmers' revenue streams. The US and Australia also face policy shifts that may reduce traditional support or promote more sustainable practices.
- Environmental regulations: Stricter environmental policies in Europe, such as the EU Green Deal, are reshaping farming practices, but they come with additional costs and uncertainties.

Access to capital and debt:

- Debt levels: Rising farm debt in the US, where agricultural debt hit a record high in 2023, puts additional financial pressure on farmers, especially with high operational costs.

- Access to financing: Farmers in Australia and the US are struggling to secure affordable credit as interest rates rise, exacerbating financial pressure (ABARES, 2023).

Consumer demand and sustainability pressures:

- Shifting consumer preferences: Consumer demand for organic and ethically produced food is growing, creating both opportunities and challenges. European farmers, for example, are responding by investing in more sustainable farming practices, but these often come with higher production costs (European Commission, 2023). For example, a Danish organic pig farm confirmed that the cost of organic pig production was four times that of a commercial piggery. However, the consumer often believes organic must be cheaper. As a result, the Danish pig farmer has opened his farm up to Agri-tourism to assist him on his marketing journey to get market acceptance, not only of his product, but of his process.
- Supply chain disruptions: Global supply chain disruptions, especially after COVID-19, have affected farmers' access to inputs and their ability to get products to market (FAO, 2020).

Global natural pressures on agriculture

Soil degradation:

- Erosion: Soil erosion caused by poor land management practices, deforestation, and intensive farming is one of the most severe threats to soil health. According to the Food and Agriculture Organization (FAO), around 33% of global soils are degraded due to erosion, compaction, and loss of fertility, which directly impacts food production. The issues surrounding topsoil available to farm in the UK is a good example of this.
- Impact on Food Security: Soil erosion leads to the loss of nutrient-rich topsoil, reducing the land's ability to support crops (FAO, IFAD, UNICEF, WFP, WHO, 2022).

Nutrient depletion:

- Over-reliance on chemical inputs: Monoculture farming and the extensive use of synthetic fertilisers without replenishing soil organic matter leads to nutrient depletion. In many areas, soils are becoming less fertile, which reduces crop productivity over time.

- Impact on food security: As soil nutrients are depleted, crops become less resilient to pests, diseases, and droughts, which undermines the stability of food production and increases the risk of food insecurity.

Soil salinisation:

- Excessive irrigation: In many arid and semi-arid regions, excessive irrigation has caused soil salinisation, where water evaporation leaves salts in the soil. This process reduces soil fertility and is a major cause of land degradation.
- Impact on Food Security: Salinisation affects the productivity of farmland, making it difficult to grow crops that are vital for local and global food systems. This is particularly concerning for countries reliant on irrigated agriculture, such as parts of India, Australia, and the Middle East (FAO, IFAD, UNICEF, WFP, WHO, 2022).

Loss of arable land:

- Urbanisation and land conversion: Rapid urbanisation, industrialisation, and infrastructure development are causing the conversion of valuable agricultural land into urban areas or commercial zones. The World Bank reports that millions of hectares of farmland are lost annually to urbanisation.
- Impact on food security: The reduction of arable land limits the global agricultural capacity to meet the growing demand for food, exacerbating food insecurity, particularly in high-population regions. The loss of productive land is a significant barrier to achieving global food security (World Bank, 2022).

Soil compaction:

- Tillage and heavy machinery: Intensive farming practices, especially excessive tillage and the use of heavy machinery, cause soil compaction, which disrupts the structure and drainage of soil. This reduces its ability to store water and nutrients, thus impacting plant growth.
- Impact on food security: Compacted soils reduce crop yields, especially under drought conditions, by hindering root growth and water infiltration. This undermines food production, particularly in regions where water scarcity and climate change already pose significant risks to agriculture.

Climate change and extreme weather events:

- Droughts and flooding: Increasingly frequent and severe droughts and floods, caused by climate change, are negatively affecting agricultural productivity.

- Impact on food security: The Midwest of the USA and parts of Europe have suffered crop losses from droughts in recent years (European Environmental Agency (EEA), 2024).

Climate change and water:

- Water scarcity: The USA, Australia, and parts of Europe are experiencing significant water stress, with regions such as California and the Murray-Darling Basin facing critical water shortages for irrigation (ABARES, 2023).
- Impact on food security: Water shortages are being faced worldwide and affect irrigation and can lead to crop and livestock death.

Climate change and the effect on soil:

- Increased extreme weather: Climate change is intensifying extreme weather events that negatively affect soil health. For example, drought leads to soil desiccation, while heavy rains can cause erosion and leach vital nutrients.
- Impact on food security: As soils become more vulnerable to extreme weather, agricultural productivity is at risk. Climate-induced soil degradation threatens food security by reducing the ability of the soil to support stable, productive farming systems, particularly in vulnerable areas like sub-Saharan Africa and south Asia (Douglas *et al.*, 2008; Gutiérrez *et al.*, 2021; Intergovernemntal Panel on Climate Change (IPCC), 2021).

Climate change and increase in pathogens:

- Pests and pathogens: Climate change is expanding the range of pests and diseases, which introduce plant diseases into new areas. There is also an increased risk of outbreaks as pathogens evolve, and new strains are emerging.
- Impact on food security: Plant disease outbreaks result in loss of crops, putting natural plants and food supply at risk (Singh *et al.*, 2023).

Loss of biodiversity in the soil:

- Chemical use and monoculture: The use of pesticides, herbicides, and synthetic fertilisers, along with monoculture farming, severely reduce soil biodiversity, including microbes, fungi, and other organisms that are essential for soil health and fertility.
- Impact on food security: Biodiversity loss in soil ecosystems weakens natural processes like nutrient cycling, pest control, and soil structure formation. This

makes agricultural systems less resilient to disease, pests, and climate change, directly threatening food security (FAO, 2020).

Summary of problem identification

The above research demonstrates that there is a need for multifaceted resilience as there is an overwhelming plethora of issues that face the agricultural industry. Although the studies referenced above only represent a subset of countries, it is evident that this is global issue and there is a deficit of data in many countries. This study topic will mainly focus on resilience in mental health with reference to economic and business resilience as well as natural resilience. The goal of this is to keep our farmers farming and to do this one needs to acknowledge that resilience is a broad topic and changes need to be implemented in many areas of our life to increase resilience.

Resilience

Following the identification of global challenges in agriculture; mental health crises, economic instability, and environmental degradation, it becomes clear that resilience is a necessary foundation for the future of farming. Resilience offers a pathway forward, enabling individuals, businesses, and ecosystems to adapt, recover, and thrive amid adversity. This section explores the concept of resilience as a solution to the multifaceted pressures facing agriculture today. It breaks down resilience into three interconnected domains: mental and emotional, economic and business, and soil and natural resilience. Each aspect is essential to building a sustainable and supportive agricultural system that can withstand future shocks and uncertainties.

Definition of resilience

Resilience is often defined as the ability to recover quickly from difficulties or setbacks; it refers to the capacity to withstand stress and adapt to challenging circumstances. In psychological terms, it encompasses the mental and emotional processes that enable individuals to cope with adversity. A commonly cited source for this definition is the American Psychological Association (APA), which describes resilience as "the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress." In the agricultural sector, resilience refers to the capacity of farming systems, communities, and agricultural practices to withstand, adapt and recover from challenges such as climate change, economic fluctuations, pests and diseases, and other shocks while maintaining productivity and sustainability over time.

Mental and emotional resilience

Mental and emotional resilience is crucial for navigating challenges effectively, maintaining good mental health, and fostering personal growth. They enhance our ability to manage stress, overcome setbacks, and maintain wellbeing, both individually and in our relationships. Resilience is not innate, but a set of skills that can be developed and strengthened over time. The importance of resilience lies not only in surviving tough times but in **thriving** in the face of adversity, ultimately leading to greater success, happiness, and long-term health.

Economic and business resilience

For economies, resilience ensures stability, growth, and the ability to adapt to change, while for businesses, resilience means survival and long-term success. This is integral to navigating an increasingly complex and uncertain world. In a rapidly changing global landscape, both businesses and economies must be prepared to encounter challenges, embrace change, and innovate to thrive. By focusing on building resilience through diversification, financial stability, risk management, and adaptability, both can overcome crises, seize new opportunities, and continue to drive prosperity and stability.

Soil and natural resilience

This is essential to the sustainability of agriculture in the face of numerous global challenges, including climate change, economic instability, soil degradation, and food security concerns. Healthy, resilient soils provide the foundation for productive farming systems, while resilient farming practices help ensure that these systems can withstand disruptions and continue to provide food, job security, and ecosystem services. By prioritising soil health, adopting climate-smart farming practices, and diversifying agricultural systems, we can help ensure that farming remains viable, sustainable, and capable of meeting the needs of a growing global population. The importance of soil and farming resilience cannot be overstated – it is the key to a sustainable, food-secure future for all.

Summary of resilience

Resilience, as defined above, is the ability to recover quickly from setbacks or difficulties. Resilience builds strength in an individual, which translates to strength in a company, and strength in an economy. Every individual has the ability to learn to be resilient, and to apply that to the many facets of life that are challenging, be it mental wellbeing, economic setbacks, and natural phenomena.

“Resilience is not about overcoming, it’s about becoming.”

– Sheryl Sandberg

Conclusion

Key points from the report

Mental health is a global crisis in agriculture:

- Suicide rates among farmers are alarmingly high across all countries studied: UK, Canada, France, Denmark, Indonesia, USA.
- Cultural stigma, isolation, and lack of access to mental health support are common barriers.
- Mental health is often overlooked in agricultural policy and support systems.

Resilience is multifaceted:

- Resilience is not just about enduring hardship, it includes mental, economic, and environmental dimensions.
- Mental resilience involves emotional agility, purpose, and support networks.
- Economic resilience requires diversification, financial planning, and strategic partnerships.
- Environmental resilience depends on sustainable practices, soil health, and climate adaptation.

Zimbabwean farmers embody resilience:

- Despite economic instability and climate stress, Zimbabwean farmers have developed innovative coping mechanisms.
- Their experience offers valuable lessons in sustainability and adaptability for global agriculture.

Corporate encroachment and policy failures are undermining farmers:

- In Canada and the USA, corporate land ownership is pushing out small-scale farmers.
- In the UK and France, reliance on subsidies and poor governance is eroding food sovereignty.
- Farmers are often forced to work *in* their business rather than *on* it, limiting strategic growth.

Youth disengagement threatens agricultural continuity:

- Aging farmer populations and lack of succession planning are evident in Canada and France.
- Young people see farming as economically unviable and mentally taxing.

Climate change is intensifying agricultural vulnerability:

- Soil degradation, water scarcity, and extreme weather events are common across all regions.
- Climate change is expanding pest and pathogen ranges, threatening food security.

Existing support systems are inadequate:

- While mental health initiatives, uptake is low due to stigma and lack of systemic support.
- Most programs focus on individual wellbeing without addressing root causes like economic and environmental stress.

In examining the theme of resilience across various sectors; mental, emotional, business, economic, and agricultural, this study highlights a pressing global challenge. The need for stronger adaptive capacity in the face of continuous disruptions. Through source documents and first-hand visits to several countries including Canada, the UK, the USA, France, Denmark, and Indonesia, it became evident that resilience is not only critical for individual wellbeing but also for farmers worldwide who are often at the mercy of unpredictable weather patterns and volatile markets, and who have been highlighted as the most vulnerable with extremely high suicide rates noticed globally in this sector, and the highest in comparison to any other sector.

The study also identifies several key resilience-building strategies across all sectors, while the importance of building mental and emotional resilience emerged as a key theme. Developing mental and emotional resilience in agriculture involves practical, actionable solutions such as cultivating a sense of purpose, prioritising self-care, building strong social networks, and setting clear goals. By implementing these strategies and exploring the additional resources provided, agricultural workers can enhance their resilience, improving their ability to face challenges and achieve success in the field. It is also important to note that further research, seeking professional help, and harbouring a safe space for others, are necessary in creating a mentally and emotionally healthy community. From individual coping mechanisms to organisational frameworks, strengthening the human element in resilience strategies is essential for long-term sustainability. As a native of Zimbabwe, I feel that we can draw a connection between the lessons learned abroad and the unique challenges faced in my home country. Zimbabwe, with its rich agricultural history and experience navigating periods of economic and political instability, has much to offer in terms of resilience.

This study underscores the importance of learning from global experiences while recognising the potential for countries like Zimbabwe to contribute meaningfully to the global resilience discourse. The Zimbabwean spirit of adaptation, survival, and

communal effort can serve as a model for fostering resilience in agriculture, business, and beyond. Moving forward, it is imperative for global communities to not only adopt resilient practices but to collaborate more deeply, recognising that in an interconnected world, the challenges of one nation are often shared by others. By fostering resilience on multiple levels – mental, emotional, business, economic, and agricultural – we can create more sustainable, thriving communities that are better equipped to face the uncertainties of the future.

Let us ask, how do we keep our farmers farming? What narratives need to change, in what areas do we need to advocate more effectively, and what roles do we need to play in our communities?

Let’s keep our farmers farming.

Recommendations

This report identified stressors in the agricultural industry and categorised them into mental wellbeing, economic setbacks and natural phenomena. Therefore, the three types of resilience required to overcome these problems are mental, economic, and environmental. In this section, approaches and solutions for gaining resilience in these facets are presented.

Summary of recommendations

A summary table of approaches and solutions and the facet of resilience they represent is given below, followed by more in-depth explanations of each approach.

Table 2. Recommendations to increase mental, economic, and environmental resilience. The facet of resilience with which each approach is associated is shown in the third column.

Recommendation	Outcome	Resilience
Resilience-based courses	Promote personal and professional resilience.	Mental, economic and environmental
Simon Sinek approach	Reflect on your personal or professional "why".	Mental
Strong social networks	Cultivate relationships with individuals who inspire, support, and challenge you.	Mental
Managing and adapting social media algorithms	Avoid toxic, distracting and stress-inducing content.	Mental
Lifestyle changes	Incorporate exercise into your daily routine and make better dietary and lifestyle decisions.	Mental
Developing emotional agility	Learn to manage emotions and thoughts effectively.	Mental
Developing a growth mindset	Cultivate a growth mindset by framing challenges as	Mental and economic

	opportunities for learning and improvement.	
Time management	Organise your tasks and set boundaries for work hours, ensuring you make time for rest and relaxation.	Mental
Documenting a roadmap to success	Creating goals leads to better planning and accountability.	Mental and economic
Risk assessment and management	Identify, assess, and mitigate risks associated with economic and natural stressors.	Economic and environmental
Diversify revenue streams	Expand products, services or locations.	Economic
Financial planning and management	Plan for financial instability or economic crises by using cash reserves, controlling expenses, and managing debt.	Economic
Supply chain management	Diversify supply chain and harbour good relationships with suppliers while managing inventory.	Economic
Building a strong workforce	Training and upskilling of workforce along with implementing flexible working conditions and employee wellbeing programmes.	Mental and economic
Crisis management and contingency planning	Develop crisis response plans, Business Continuity Plans (BCPs) and effective communication strategies.	Economic and environmental
Strategic partnerships and alliances	Increase collaborations	Economic

Alternative pest and pathogen management	Crop diversification, use of natural pest control, and modelling future outbreaks.	Environmental
Climate-resilient agriculture	Adopt strategies that aid in preparing, adapting, and recovering from the effects of climate change	Environmental
Effective microorganisms	Integrate the use of effective microorganisms in agricultural practices.	Environmental
Sustainable farming practices	Use practices that limit the impact agriculture has on the environment and soil.	Environmental

In-depth analysis: Breaking down the recommendations

The table above provides an overview of the key solutions aimed at strengthening resilience across agricultural, mental, social, and economic dimensions. While it offers a concise summary of each approach, the following sections explore these solutions in greater depth; examining how they can be implemented, the challenges involved, and the potential long-term benefits they offer to individuals, communities, and the agricultural sector as a whole.

Resilience-based courses

A revolutionary new step in gaining personal and professional resilience and applying this in all aspects of resilience discussed is Unstoppable World, who offer courses that help guide individuals on a journey of improved mental health, leadership, offer sustainable solutions, community outreach, harbour global connectivity, and support conservation efforts. These courses are immersive and provide opportunities for individuals to connect with nature and create a global network of friends and colleagues along with a complete set of resilience skills. Unstoppable World, having

been a Nuffield journey inspired initiative, started by a global network gives initiatives such as this a huge platform to launch from if ever the need arose.

Recommendation: Invest in your personal and professional growth by embarking on Unstoppable World tours that promote and workshop resilience. Link to website: www.unstoppablenow.world

The power of your why – Simon Sinek's approach

The work of Simon Sinek (Sinek, 2009) provides an approach for individuals to understand their "why", which brings about a deeper sense of purpose and can provide emotional strength and resilience during difficult times. His approach outlines that a clear sense of purpose helps individuals remain focused and motivated, even in the face of setbacks. Sinek's research (2009) reveals that people who identify their "why" experience greater motivation and resilience in their personal and professional lives because they have a deeper sense of purpose guiding them through challenges.

Recommendation: Reflect on your personal or professional "why". Identifying the core reasons behind your commitment to agriculture, such as improving sustainability, serving your community or your commitment to your family's generational success can provide lasting motivation. Apart from his published book, he has an online course available, which helps you uncover your deeper purpose, navigate challenges and foster resilience. Link to Course: https://simonsinek.com/product/find-your-why-with-simon/

Strong social networks

The people you surround yourself with have a significant impact on your mental and emotional resilience. Being part of a supportive network provides encouragement and practical advice during difficult times. Ensuring you spend time with individuals who are mentally healthy, motivated, positive, ambitious or successful in some regard adds value to your life. Studies by Cohen & Wills (1985) confirm that strong social support networks reduce stress and increase resilience by offering emotional and practical resources during times of adversity.

Recommendation: Cultivate relationships with individuals who inspire, support, and challenge you. Building a strong support network within agriculture, such as fellow farmers or industry peers, will help you face challenges with greater emotional strength. A book that emphasises the importance of surrounding yourself with positive influences to build resilience is *The Power of Positive Leadership: how and why*

positive leaders transform teams and organizations and change the world by Jon Gordon (2017). Link to book: https://www.amazon.com/Power-Positive-Leadership-Transform-Organizations/dp/1119351979

Managing and adapting social media algorithms

Social media can either support or hinder resilience. By curating your social media feeds to focus on positive and productive content, you can foster a more resilient mindset and avoid the negative effects of toxic or distracting content. We absorb a lot of information from our devices, and we need to steer the algorithms to more healthy, informative, and positive content. Research by Primack *et al*. (2017) shows that exposure to negative content on social media increases stress and decreases mental wellbeing, while positive content can enhance emotional health and resilience.

Recommendation: Regularly audit your social media accounts to ensure you are engaging with content that is inspiring, informative, or supportive. Unfollow accounts that promote negativity or stress-inducing content. A book that offers strategies for managing your relationship with technology and creating a healthier social media experience is *Digital Minimalism: Choosing a focused life in a noisy world* by Cal Newport (2019). Link to book: https://www.amazon.com/Digital-Minimalism-Choosing-Focused-Noisy/dp/0525536515

Lifestyle changes

Regular exercise and balanced nutrition play a key role in emotional resilience. Physical activity releases endorphins, reduces stress hormones, and boosts energy levels, which collectively enhance mental health. Measurable impacts on your mind will be almost immediate and longer term on your body. Developing better lifestyle habits may take time but has an overall impact on mental and physical health and resilience (Ratey & Hagerman, 2013). Hoffman (2006) shows that regular physical activity reduces anxiety, depression, and stress, leading to improved resilience.

Recommendation: Incorporate exercise into your daily routine and make better dietary and lifestyle decisions.

Developing emotional agility

Emotional agility involves the ability to identify, label, and manage emotions effectively, allowing individuals to adapt to difficult situations without being overwhelmed by

negative emotions. This can be done by training yourself to catch your thoughts and your emotions and to respond to them with enlightenment. Research by David & Conger (2007) shows that individuals who practice emotional agility are better able to cope with stress and bounce back from setbacks.

Recommendation: Develop emotional agility by regularly checking in with your emotions, labelling them without judgment, and choosing how to respond in a way that aligns with your values and goals. A book to help achieve this would be *Emotional agility: Get unstuck, embrace change, and thrive in work and life* by Susan David (2016). Link to book: https://www.amazon.com/Emotional-Agility-Unstuck-Embrace-Change/dp/1592409490

Developing a growth mindset

A growth mindset, which is the belief that abilities and intelligence can be developed through effort and learning, is essential for resilience. People with a growth mindset embrace challenges as opportunities for growth. It is critical to make this a priority in life alongside daily tasks and workload. Dweck's (2006) book shows that individuals with a growth mindset are more likely to persist in the face of failure, learn from mistakes, and develop resilience.

Recommendation: Cultivate a growth mindset by framing challenges as opportunities for learning and improvement. Celebrate progress and development, not just outcomes. Carol Dweck's *Mindset: The new psychology of success* is a good book to help begin this process. Link to book: https://www.goodreads.com/book/show/40745.Mindset

Time management and boundaries

Effective time management helps reduce stress and burnout by ensuring that you have time for both work and personal life. Setting boundaries allows for better focus and energy conservation. A good work-life balance is often thought of as unachievable in the farming industry. If you cannot attain a good balance between work, family, sleep and time for yourself, then better structures need to be implemented in your life and work. Research by Macan (Macan, 1994) shows that time management improves stress management and resilience, leading to better performance and work-life balance.

Recommendation: Use time management tools like planners or apps to organise your tasks and set boundaries for work hours, ensuring you make time for rest and

relaxation. A course offered by David Allen called *Getting Things Done* is a good tool for practical time management skills. Link to the course: https://gettingthingsdone.com/

Documenting your ambition and roadmap to success

Having a clear roadmap for your personal or professional goals can help you stay focused, motivated, and resilient when challenges arise. Documenting your ambition and the steps required to reach your goals provides direction and clarity. This can be a challenging call-to-action, however, creating a vision of the future can help track progress and foster accountability. Research indicates that writing down goals and having a structured plan significantly increases the likelihood of achieving them, as it provides a tangible sense of progress and accountability (Locke & Latham, 2002).

Recommendation: Create a roadmap that outlines your goals, the steps required to achieve them, and milestones along the way. Regularly review your progress and adjust the plan as necessary to stay on track. A resource that explains how to break down large goals into small, achievable habits and document your progress for continuous success is *Atomic habits: An easy & proven way to build good habits & break bad ones* by James Clear (2018). Link to book: https://www.amazon.com/Atomic-Habits-Proven-Build-Break/dp/0735211299

Risk assessment and management

Using pre-emptive risk identification to regularly assess risks (financial, operational, legal, and environmental) through audits, and market trend analysis. Identification of risks can then be used for risk mitigation plans to develop strategies to minimise the likelihood or impact of identified risks (e.g. diversifying supply chains, cybersecurity measures). And then for scenario planning to create different business scenarios (best case, worst case, and middle ground) and prepare responses for each. ISO (International Organization for Standardization) 31000 is an international standard that provides a comprehensive framework and process for managing risks in an organisation. It covers the principles of risk management, a structured approach to identifying, assessing, and treating risks, and guidelines for establishing a risk management culture (ISO, 2023).

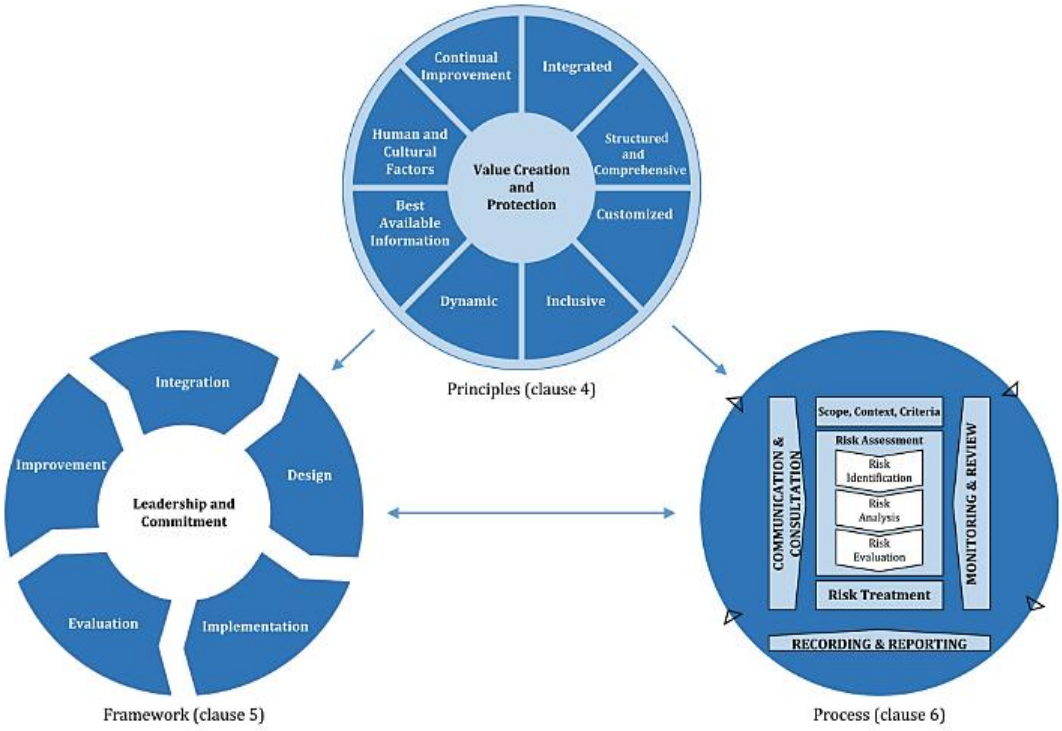

Figure 9. Principles, framework, and process outlined by the ISO 31000.

Recommendation: Identify, assess and mitigate risks associated with economic and natural stressors

Diversify revenue streams

Increase revenue streams by diversifying products and/or services, which reduces the reliance on a single product or service. Expanding into new markets by geographic diversification to protect against local downturns or economic instability (World Economic Magazine, 2024).

Recommendation: Expanding products, services and/or localities to not rely on a single revenue stream.

Financial planning and management

Planning for economic stressors is vital for long-term stability, and solutions include cash reserves, cost control and debt management (Johnson, 2023). This can be achieved by building emergency funds or working capital reserves to ensure liquidity in times of crisis and continuously monitoring and cutting non-essential expenses. It is vital to be cautious with debt, ensuring manageable levels that do not overburden the

business during economic downturns. And, when possible, paying back any debtors as soon as possible.

Recommendation: Plan for financial instability or economic crises by use of cash reserves, controlling expenses and managing debt.

Supply chain resilience

Avoid over-reliance on single suppliers or regions, adopt emergency inventory strategies, such as holding safety stock and develop stronger, transparent relationships with suppliers (Kilpatrick *et al.*, 2024).

Recommendation: Diversify supply chain and harbour good relationships with suppliers while managing inventory.

Building workforce strength

Invest in ongoing employee development to adapt to changing business needs and technologies. This strategy should be adopted by yourself as well. Implement flexible working conditions (e.g. remote work, part-time options) to ensure operations can continue in case of unexpected disruptions. Invest in mental and physical health initiatives to keep employees resilient during crises (Generation, 2024).

Recommendation: Training and upskilling of the workforce along with implementing flexible working conditions and employee wellbeing programmes.

Crisis management and contingency planning

Develop comprehensive plans for dealing with business disruptions (natural disasters, pandemics, cyberattacks, etc.) and rehearse them. Prepare for continued operation in the face of disruptions by identifying essential functions, processes, and recovery strategies (Business Contingency Group, 2024). Maintain transparent communication with employees, customers, and stakeholders during crises to maintain trust and stability.

Recommendation: Develop crisis response plans, Business Continuity Plans (BCPs) and effective communication strategies.

Strategic partnerships and alliances

Form alliances with other businesses, trade groups, and government organisations to share resources, knowledge, and mitigate risks. Be a part of your community and invest in being a team player (B2BNN Newsdesk, 2024).

Recommendation: Increase collaborations and networking.

Alternative pest and pathogen management

Climate change and the use of monocultures in agriculture is increasing pest, pathogen, and disease ranges and outbreak risk. Cultivating various plant species can increase product range and reduce pest numbers. Natural pest control can be used instead of toxic and hazardous pesticides (Sawicka, 2020). And modelling future outbreaks of pests and diseases for mitigation measures (Singh *et al*., 2023) is worthwhile.

Recommendation: Crop diversification, use of natural pest control and modelling future outbreaks.

Climate resilient agriculture

Climate resilient agriculture (CRA) are strategies aimed at improving soil health, water management, and food security (Sawicka, 2020). Strategies include the use of biogas, composting, alternative feeding systems, adaptive calendar for crops, organic farming, agroforestry, use of stress-tolerant cultivars, rainwater use, and integrated crop management (Prasad *et al*., 2020; Sawicka, 2020).

Recommendation: Adopt strategies that aid in preparing, adapting, and recovering from the effects of climate change such as extreme weather events.

Effective microorganisms

Use of effective microorganisms (EMs) in agriculture improves soil health and plant production by increasing uptake of nutrients and photosynthesis (Sawicka, 2020). EMs can be used for production of biofuel plants, impact soil microbial communities, and photosynthetic microorganisms. For example, *Trichoderma* species are widely used as modifiers for biocontrol and biofertilisation (Sawicka, 2020). They can be used to produce bioenergy, and help plants adapt to the negative effects of climate change.

Recommendation: Integrate the use of effective microorganisms in agricultural practices.

Sustainable farming practices

Sustainable farming practices can be applied to both commercial and subsistence agriculture. These approaches are to limit the impact agriculture has on the environment, especially the soil. For example, in the Soloman Islands, severe weather events associated with climate change had negative effects on subsistence and smallholding farmers (Jansen *et al.*, 2006). The United Nations Development Programme (UNDP) helped the farming community implement resilient farming systems, such as alley cropping and contour farming, as well as resilient farming practices and techniques, such as mulching, crop rotations, cover cropping, composting, crop diversification, and fruit tree planting as a buffer (Jansen *et al.*, 2006).
Recommendation: Use practices that limit the impact agriculture has on the environment and soil.

Final reflection on recommendations

The recommendations outlined in this report are not merely theoretical, they are grounded in global observations and personal experiences across diverse agricultural landscapes. Building resilience is no longer optional; it is essential for the survival and wellbeing of farmers and the sustainability of agriculture itself. By embracing mental, economic, and environmental resilience as interconnected pillars, we can empower farmers to not only withstand adversity but to thrive in the face of it. These strategies offer a roadmap for change; one that begins with the individual and extends to communities, industries, and nations. The time to act is now. Let us commit to keeping our farmers farming, not just through policy or innovation, but through compassion, collaboration, and resilience.

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