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Case Study**To Rebuild or Not to Rebuild When Disaster Hits**Jada M. Thompson^a, Misti D. Sharp^b, and Jonathan C. Walton^c^aUniversity of Arkansas, ^bUniversity of Florida, ^cUniversity of Tennessee

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Abstract

The management decision process is often complex and multidimensional with various competing factors. The type of leadership, the approach for analysis, and a priori beliefs factor into decision making. This case provides an example of how multifaceted management decisions are in the context of profitability, risk, uncertainty, succession, and leadership frameworks using a comprehensive economic analysis for a fictional poultry operation. Students are asked to apply concepts in financial analysis, risks analysis, and critical thinking to provide a realistic management decision based on all these concepts. The issues in the case relate to natural disasters, farm succession planning, leadership frameworks, and farm survivability. The case provides flexibility in approach and concept rigor based on the course.

1 Introduction

Henrietta Bacon has lived in the hills of Madison County, Arkansas, for 60 years. Motivated by the rapidly growing poultry sector, Henrietta pursued a bachelor's degree in poultry science from the University of Arkansas. She fell in love with the production and innovation in farming. Post-graduation, she received a loan and invested in broiler houses on the farm where she grew up, naming it Chicken Holler Farms. Chicken Holler Farms has four 60-foot by 600-foot curtained sided houses on 20 acres. As a condition of her contract with a major poultry integrator, a company that owns multiple levels of production, and as a testament to her own passion for production technologies, she regularly (every 10–15 years) updates her facilities, making improvements in lighting, ventilation, cooling, and monitoring systems. For example, she was the first in the state to install cooling cells and better mister systems to combat the heat of Arkansas summers, which often reach temperatures above 100°F. This investment in the cooling system led to reductions in mortality and improvements in overall productivity, measured by the feed conversion ratio (FCR; the conversion of a pound of feed to a pound of weight), leading to greater profitability. Her integrator field technicians use her farm and management practices as a model for high production performance in the region.

Beyond the broiler houses, Henrietta and her husband, Chris Bacon, have a small cow-calf beef operation, running 30 head of brood cows on the acres surrounding the broiler houses. They invested in additional land surrounding the farm and have since inherited her parents' property, so that they have 150 total acres. They cut enough hay from their farm to support their cattle during the winter. Chris is a principal at the local high school but helps on the cattle enterprise on nights and weekends. In addition to poultry and cattle, Henrietta works part-time at her local church and has taken several short-term positions over the years. Henrietta wants to retire in five years and cut back on her other on-farm duties.

The Chicken Holler Farm is a multigenerational farm that has been the identity of Henrietta's family for generations. The idea of cutting back or retiring introduces the question of how the farm will be passed down or if it will. The Bacon's have two children. They both grew up helping on the farm and hope to see it continue. They have a son who is a successful lawyer but lives three hours away, and a daughter who is a freshman at the University of Arkansas majoring in poultry science that wants to take over the farm when she completes her degree. There is also concern to whether the daughter would be able to secure a loan to build new facilities or get a grower contract. If Henrietta rebuilds now, the

grower contract would be in place and remain with the farm, and her daughter would be grandfathered in, taking over the contract and making the loan payments for the farm. If they choose to not rebuild, there is no guarantee of a broiler contract in the future as her integrator is beginning to concentrate production in the next county.

To meet the labor needs of the farm, including broiler house clean out, hay cutting, and working cattle, Chicken Holler Farms hires hourly labor. Typically, these employees work at the local turkey processor. This labor is intermittent due to the seasonal nature of turkey processing, especially for this plant. Hiring labor for Chicken Holler Farms helps support local laborers with extra income and pours back into the local community. Without these extra hours, these workers would potentially have to move to a neighboring county to earn a livable wage throughout the year, and Henrietta would not have help on her farm.

As with all agricultural production, broiler farming comes with inherent risks, including weather such as natural disasters or erratic weather, production risks, and operational risks. Natural disasters such as ice storms, tornados, and floods are commonplace in northwest Arkansas where Chicken Holler Farms thrives (Figure 1). Over the last 40 years, Chicken Holler Farms has had to weather many disasters. In 2009, there was a particularly destructive ice storm that caved in the roof of broiler house #3. Additionally, Henrietta had to rebuild a roof as well as replace the cooling system on broiler house #2. Ten years ago, a tornado moved through Chicken Holler Farms destroying a hay field and wiping out two of the broiler houses. Henrietta decided to use the insurance money to rebuild those houses, upgrade the other houses, and expand the cattle enterprise. However, during the past storm season, another rare tornado moved through Madison County destroying all her broiler houses.

Henrietta now faces a decision about the future of Chicken Holler Farms. To rebuild all the houses, she would need to take out a substantial loan, with a 15-year repayment schedule, beyond the time she wanted to quit farming broilers. The most recent insurance payout will not cover 5 years of lost income. Her daughter has expressed interest in taking over a broiler farm, but this is uncertain and

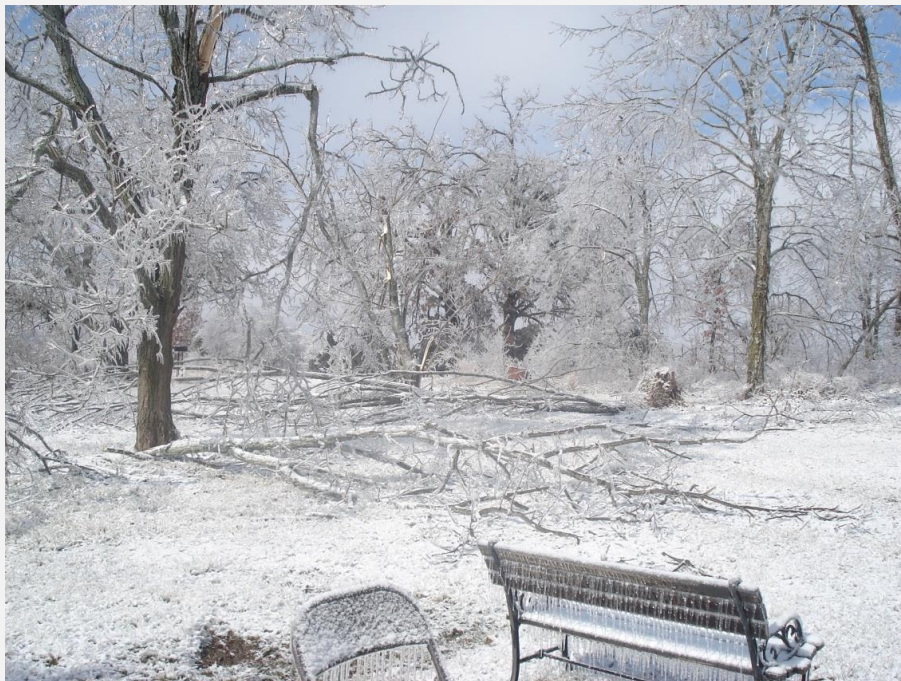


Figure 1: Tree Damage from the 2009 Ice Storm in Madison County, Arkansas

Source: Sharp, 2009.

would not happen until after her graduation, which raises the question of contracts and loan uncertainty. Henrietta must consider all the factors related to labor, succession, farm management, income streams, and a concern for possible future disasters when weighing the decision to rebuild or not rebuild.

2 Poultry Production in the United States

Poultry is the fastest growing animal protein in the world due to its relatively affordable production, efficient conversion of feed to gain, and increasing demand by a rising middle class (OECD/FAO 2020). Poultry benefits from economies of scale in production, especially in highly concentrated production regions such as Georgia or Arkansas, as shown in Figure 2 (U.S. Department of Agriculture 2022). With more than 42,000 broiler farms in the United States, the U.S. poultry industry is mainly characterized by production of broilers (i.e., meat type chickens), which account for 70 percent of total U.S. poultry production, with 16.4 percent destined for international markets (U.S. Department of Agriculture, National Agricultural Statistics Service 2019; U.S. Department of Agriculture 2021; U.S. Department of Agriculture, Office of the Chief Economist 2021).

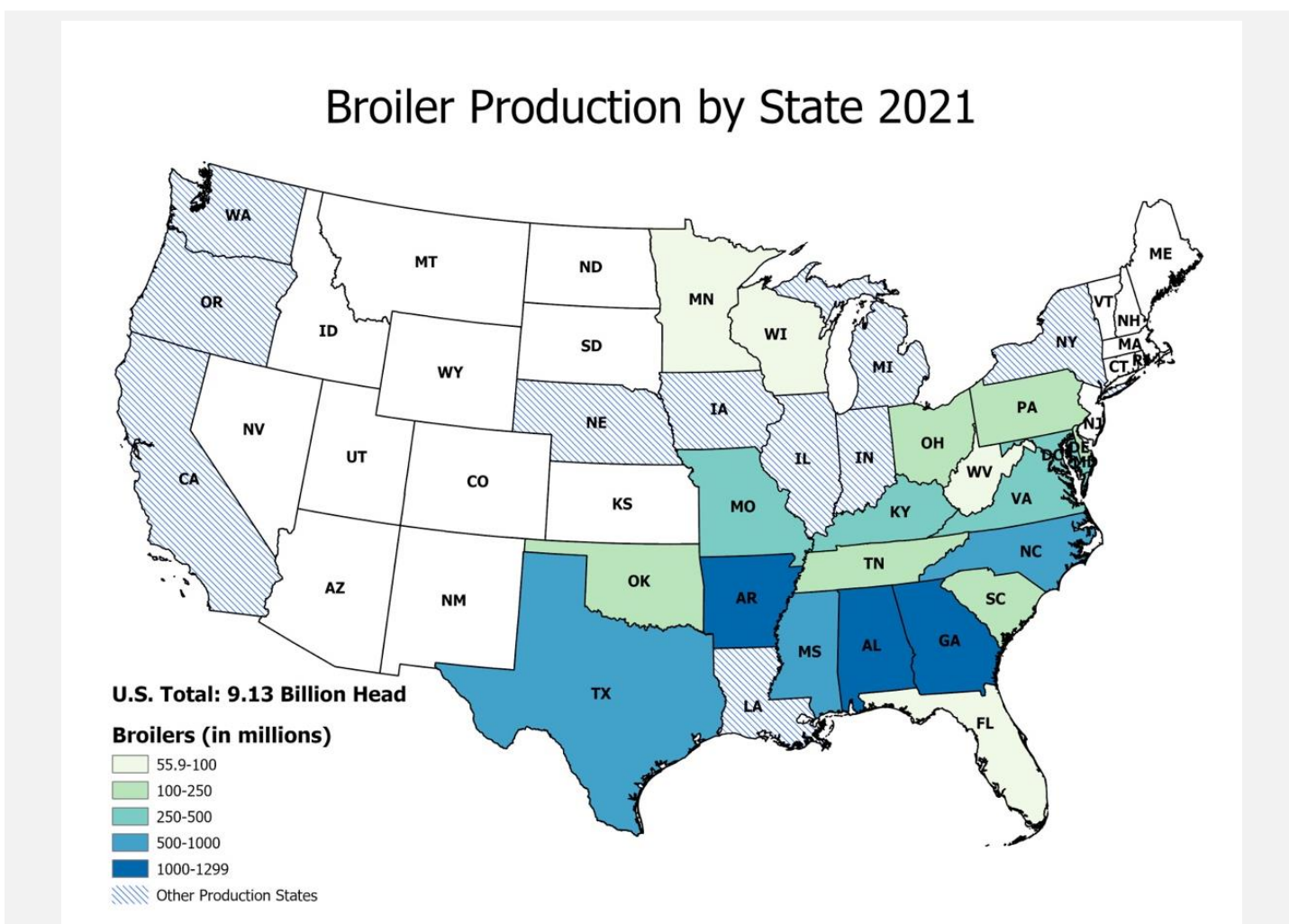


Figure 2: 2021 Broiler Chicken Production by State, Millions of Head

Source: Figure developed from U.S. Department of Agriculture, National Agricultural Statistics Service (2022) production data

Since the 1950s, through mergers, acquisitions, and development of internal capacity, the poultry industry has vertically integrated, where an integrator owns multiple levels of production including breeding, hatching, feed, production, processing, transportation, or distribution. Vertical integration allows for a reduction in transaction costs between stages of production to maximize profits. For instance, if a poultry integrator owns their own feed mill, they reduce the cost of purchasing feed, removing the profit margin of the mill, which reduces the cost of production, increasing the profits of the integrator. There are approximately 30 federally inspected integrators in the United States including Tyson Foods Incorporated, JBS US Holdings, Cargill Meat Solutions, Smithfield Foods, and Purdue Farms (National Chicken Council 2021). It is with one of these integrators that Chicken Holler Farms contracts with to grow birds.

2.1 Broiler Production Basics

Almost all (99 percent) of broiler production is carried out by contract with independent growers in the United States, such as Chicken Holler Farms. Growers agree to furnish land, facilities, management, biosecurity, and labor while the integrators supply birds, feed, medications, and technical assistance. The integrator retains ownership of broilers throughout the birds' lives. Growers are paid based on the weight of broilers at harvest with financial incentives for livability, feed conversion, and uniformity, which are all driven by grower management. Henrietta is often paid top incentives driven by her investments in innovative production technologies.

Broilers are raised in large growout houses, often with several houses on a farm. These houses have solid floors with bedding, typically rice hulls, straw, or other soft woods. The bedding is replaced between flocks to reduce ammonia buildup from urea and excrement and to maintain a healthy growing environment. Modern houses typically use solid walls controlled through tunnel ventilation to exchange air throughout the house and regulate temperature. The ends of the houses often have cooling pads that cool incoming air to regulate temperatures during warm periods. Alternatively, houses can be partially walled with curtains, which controls air flow and exchange in the house, though these make it harder to maintain optimal temperature and humidity levels. Henrietta's newest houses have solid side walls, but she previously used retrofitted ones that were curtained with updated mister systems. If she chooses to rebuild, she will build up to current production specifications and would build solid side-walled houses with a high-tech monitoring system, all of which requires capital to cover the needed investment.

2.2 Additional On-Farm Production

Many U.S. broiler growers also produce other livestock, including cattle, equine, or other small ruminants on their farms. Broiler production requires adequate land surrounding a poultry house to maintain a safe and healthy biosecurity border for broilers. While other poultry are not allowed on farms for biosecurity reasons, a grower may use the land for forage, crops, or hay production, or to graze livestock. As long as biosecurity, which includes foot baths at entry points, limiting traffic on farm, truck washes, and appropriate down time between flocks, can be upheld, these other enterprises are permitted on broiler farms.

3 Risks and Uncertainties

Farming is an inherently risky enterprise. Environmental conditions like temperature and rainfall can severely impact crop yield or animal performance. Natural disasters occur when extreme environmental conditions lead to loss of life, damage, or hardship (U.S. Environmental Protection Agency 2021). Natural disasters also have broader economic consequences because indirect impacts ripple through the economy (Wouter Botzen, Deschenes, and Sanders 2019). For example, a farmer who has experienced loss no longer buys feed from the local miller or may defer purchases extending the economic impact of natural disasters. Arkansas experienced 60 billion-dollar disasters between 1980 and 2017, amounting

to an average annual cost of \$10–\$20 billion dollars per year (NOAA National Centers for Environmental Information 2021). The costliest disasters to the state are tropical cyclones (tornados) and winter storms (see Table 1 and Figure 3), both of which have directly impacted Chicken Holler in the past.

Table 1: Billion-Dollar Events to Affect Arkansas from 1980 to 2017 (CPI-Adjusted)

Disaster Type	Events	Events/Year	Percent Frequency	Total Costs ^b	Percent of Total Costs
Drought	14	0.4	23.3%	\$5.0 B–\$10.0 B	41.9%
Flooding ^a	7	0.2	11.7%	\$2.0 B–\$5.0 B	20.6%
Freeze	2	0.1	3.3%	\$100 M–\$250 M	1.9%
Severe Storm	28	0.7	46.7%	\$2.0 B–\$5.0 B	29.3%
Tropical Cyclone	3	0.1	5.0%	\$250 M–\$500 M	2.5%
Winter Storm	6	0.2	10.0%	\$250 M–\$500 M	3.8%
All Disasters	60	1.6	100.0	\$10.0 B–\$20.0 B	100.0%

Source: NOAA National Centers for Environmental Information (2021)

^a Flooding events (river basin or urban flooding from excessive rainfall) are separate from inland flood damage caused by tropical cyclone events.

^b Monte Carlo simulations were used to produce upper and lower bounds for total costs (Smith and Matthews 2015).

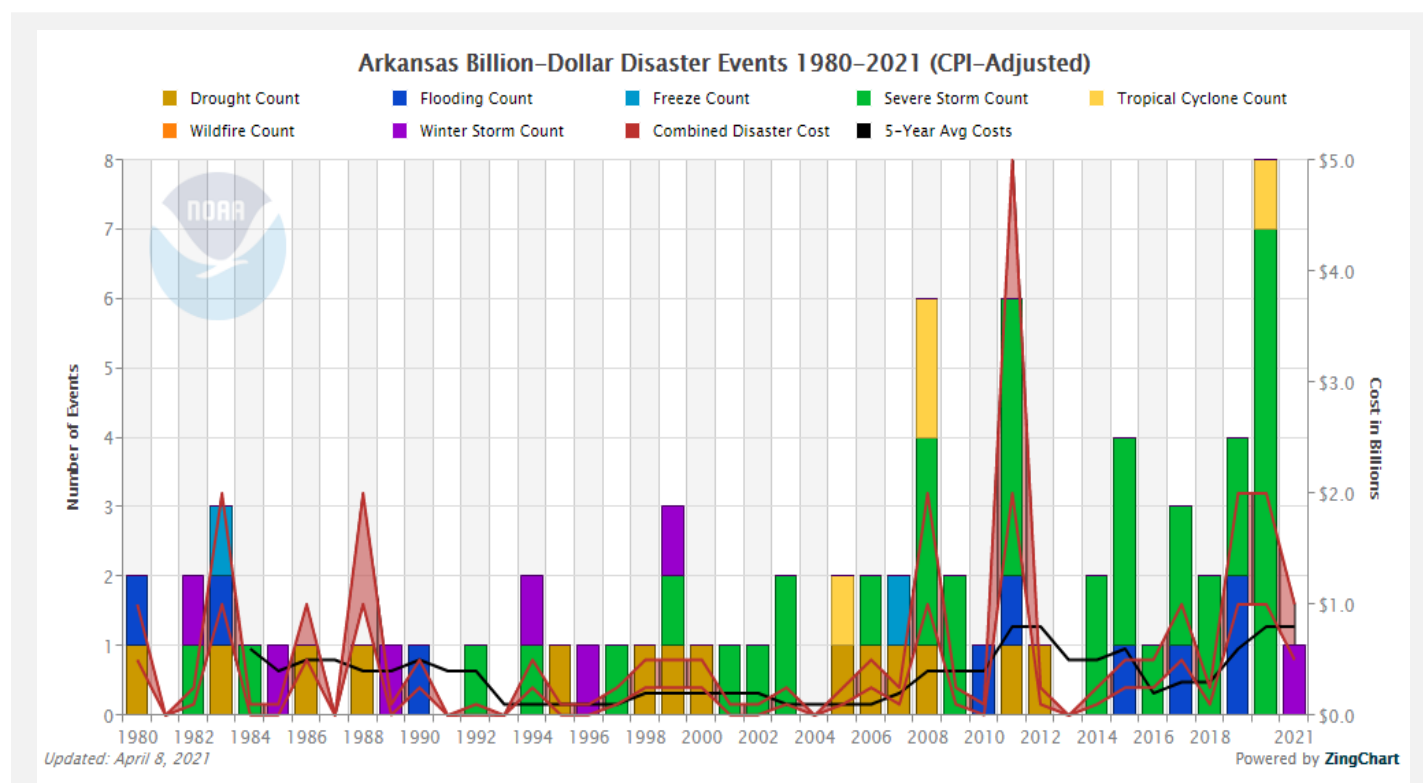


Figure 3: Arkansas Billion-Dollar Disaster Events 1980–2021 (CPI-Adjusted)

Source: NOAA National Centers for Environmental Information (2021)

The impacts from natural disasters can be catastrophic in the short and long term financially, psychologically, and physically for the grower and their community. Trauma is shared by the community related to stress due to loss of lives, livelihoods, animals, and material wealth (Walsh 2007). In communities where traumatic losses from natural disasters have occurred, “symptoms such as depression, anxiety, substance abuse, and relational conflict . . . are common” (Walsh 2007, p. 210).

These impacts are further exacerbated by stress related to dealing with insurance, which serves to compound the effects of the disaster making the social and mental impacts long-lasting. For Chicken Holler Farms, the insurance money has finally been released after months of paperwork, lost farm income, and cleanup efforts. Henrietta has come to terms with the loss of chickens, infrastructure, and a favorite oak tree by the river, and she feels able mentally and physically to rebuild, although she remains weary of another disaster in the future.

4 Leadership and Strategic Management

To gain and sustain a competitive advantage, an organization must be able to adapt and undergo organizational change (Hirlak and Kara 2018). The ability of an organization to adapt and the ways in which an organization sustainably changes, depends on the leader and leadership frame that dominates their decision making (Sowcik, Carter, and McKee 2017). A decision that may seem appropriate for one organization may not be appropriate for another. The use of leadership frames were developed by Bolman and Deal (2021) and help to understand how leadership perspectives drive organizational decision making. The four frames include structural, human resources, political, and symbolic. Within each of these leadership frames, decisions are motivated and based on different factors (Sowcik, Carter, and McKee 2017). In the structural frame, the organization is goal-oriented, and decisions are typically made in a top-down fashion. On the other hand, in the human resources frame, there is lateral coordination of goals, and it is recognized that organizations exist to serve human needs. In the political frame, power drives resource allocation based on competing coalitions. Finally, in the symbolic frame, decisions are legacy- and culture-driven where preservation of identity dominates. While all these frames may be present at some point in time for an organization, it is important to understand which one dominates and why that leadership frame is relevant to the given decision.

For Henrietta, her farm is a business, but it is also a family legacy. She is the owner and operator, but she also provides a valuable source of income and meaning to the workers who depend on her for seasonal income and provide valued expertise for Henrietta who never seems to have enough hands or time to complete all farm tasks that arise. She pays her workers well, and they use this income to pay for little league soccer, food, and vacations. She knows that prior to Thanksgiving, they are working overtime at the local turkey processor to get the turkeys ready for the holidays, while January and February are hard months for them as they are laid off due to a decreased demand for turkey processing. These are the months Henrietta relies on these workers to make upgrades to her houses, check on newborn calves, and contend with whatever strange weather Arkansas throws at her and her farming operation.

Henrietta also knows that her daughter has expressed interest in taking over the family farm. Her daughter, though young, is a hard worker and goal oriented. She will not likely change her mind about wanting to farm, but she may forgive Henrietta if she decides not to invest in the poultry operation. Thankfully, there are many jobs in Northwest Arkansas for a poultry science major. Henrietta knows that she will not be able to continue farming in the long term due to her age and own retirement goals. Henrietta wants to consider all these factors in her decision making about the future of Chicken Holler Farms. She is uncomfortable making a decision that could potentially harm her employees and her daughter's dream without adequate justification.

5 Financial Management

Finally, Henrietta does not want to make a poor financial decision that will have long-term implications. She currently makes \$100 per week with her off-farm work. She could take on a full-time position earning \$36,360 per year, which would limit her ability to volunteer in her community and manage the farm. After paying off all outstanding debt and renovations resulting from the previous natural disasters, Henrietta has \$10,536 in insurance funds to save for retirement. If she rebuilds, total costs will be

\$1,485,000 to build four new broiler houses. If she rebuilds, Henrietta's annual income after paying the loan payments and production expenses is \$50,068 per year. Each year, Chicken Holler Farms hires various farm laborers for about 400 hours per year at \$15 per hour. If they choose to not rebuild, then this labor will not be needed. The family also has existing financial obligations including \$1,900 per year in education expenses for their daughter and upcoming fence repair costs of \$3,000. The cow-calf operation earns \$10,230 per year. If the poultry houses are not rebuilt, the property will be repurposed for cow-calf grazing, and the herd size will increase as will the costs for hay, minerals, medicine, and so on, leading to a net income from the cow-calf enterprise of \$20,460 per year.

6 Decision Making—What Should Chicken Holler Farms Do?

Henrietta has a big decision to make but must consider all information to make the best choice:

- (1) To rebuild Chicken Holler Farms taking on a new loan and all the potential risks associated with farming; or
- (2) To not rebuild the poultry houses and instead work off-farm and expand the existing cattle operation.

To make the best decision, it is best to break down the intricacies of poultry farming, natural disasters, and social dynamics for decision making. Next, a financial analysis is relevant to determine the optimal financial decision. Finally, you should consider all components of relevance to the case, using a comprehensive view of the economic and noneconomic considerations simultaneously, to make a final decision.

7 Discussion Questions

Given what you have read about Chicken Holler Farms, consider the following questions and how they impact your final decision:

1. What will the farm look like if Henrietta rebuilds or if she does not rebuild?
2. Consider the risks associated with poultry farming. How might those risks affect profits and the future of her farm? What nonfinancial risks are important to consider? (Hint: Consider natural disaster risks, financial risks, farm succession, and leadership risks.)
3. Who will be impacted by Henrietta's decision? What stake do they have in the decision? Do you think they would make the same decision as Henrietta? Is there one solution that increases the welfare of all involved stakeholders?
4. What kind of leadership frame seems to dominate in the case of Chicken Holler Farms? Based on this leadership frame, how do you think Henrietta typically makes decisions related to her farm?
5. What factors outside of those discussed in the case might influence the decision for Chicken Holler Farms?
6. What decision should Chicken Holler Farms make?

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