Farming: Expert Perspective Analysis

Conducted for the Food Narrative Project

Background: What is an expert perspective analysis, and what role does it play in reframing?

Strategic Frame Analysis® is, in its essence, a science translation approach. Translation, in turn, requires something to translate. A strategic frame analysis therefore begins by clarifying the key concepts that communicators want to get through to the public and policymakers—a limited set of fundamental principles and points that need to be translated for the public so that they are more informed, less susceptible to misinformation, and better equipped to engage productively in public conversations and democratic processes. These concepts are the content that, in later stages, researchers will seek to frame effectively.

This sort of analysis is not intended to replace literature reviews or white papers that exhaustively detail the state of the art of farming practices. Nor is it a set of messages, or even themes that will necessarily be emphasized at the point that messages are created. Rather, it serves the critical function of surfacing and organizing the assumptions and principles that undergird expert understanding of an issue. FrameWorks often finds that basic concepts that experts take for granted are lacking or are misunderstood by the public. Clarifying basic issues early on—like the definition of a topic—helps guide later analysis of the gaps in public thinking.

A high-level summary of the field's shared understandings and assumptions also serves an important function in gaining the field's trust and enthusiasm for the reframing strategy, as it clearly demonstrates that the recommendations were built with their perspective in mind and are designed to bring research-based views to a wider audience. A third function of the expert story is to unify the field; FrameWorks' experience has shown that without a concrete way of demonstrating common cause, the pull of competing communications tactics and topics can be difficult to overcome.

Methods

To arrive at an "untranslated expert story" for the Food Narrative Project, FrameWorks researchers distilled the key themes that surfaced from a close analysis of 12, one-hour phone interviews with leading experts in the field of farming, including academic researchers, policy experts, extension specialists, and farmers and growers. Interviews focused specifically on the area of crop farming—the commercial production of plants for human use, such as for "food, feed, and fiber," as well as for landscaping and aesthetic purposes (e.g., for grass, flowers, etc.) and for fuel. Issues related to animal agriculture were purposefully excluded in the interest of narrowing the scope of inquiry to a manageable set of topics.

Arriving at these key concepts is not a trivial endeavor. Academic researchers are more accustomed to talking to peers than to the public, and experts are more likely to make fine-grained distinctions than to articulate where their assumptions overlap with others working on their topic. To tightly condense the field's underlying assumptions and points of agreement, FrameWorks organizes points as answers to a sequence of questions that establish the fundamental contours of the topic: What's the definition of the issue? Why does this issue matter? How does it work, and what prevents it from working? What can society do to improve the situation?

The untranslated story of farming is therefore organized around the following questions:

1. What is farming?
2. Why is farming important?
3. What are the challenges involved in farming?
4. How are farmers effectively meeting these challenges, including sustainability?
5. What should society do to help meet the challenges of farming?

1. What is farming?

When asked how they would define and characterize the production of crops in the United States, experts emphasized the following key points:

- **Farming is a primary source of food for humans.** Although crops are grown for a variety of purposes, experts noted food provision as a central purpose. Fruits, vegetables, nuts, and grains are grown and sold to either be directly consumed as food or indirectly consumed as ingredients for processed foods.

- **Farming is a business.** Every expert identified economics as essential to farming. Regardless of their type or the methods involved in their production, crops are grown to be sold and provide a livelihood for farmers. Thus, farming involves growing crops in a cost-effective manner, and distributing and marketing crops that are aesthetically acceptable and affordable to consumers

across a broad economic range. This requires economic resources and savvy, as well as management skills.

- **Farming is diverse in both scale and practice.** Experts described US farmland as varying greatly in size from small plots of land to 1,000-acre farms. Although some is owned and run by large companies, the majority of farmland in the United States remains owned and managed by families. The work of farming also relies on an array of methods and labor. Farming relies on both human labor and machines, and includes various biological, chemical, mechanical, and cultural methods. Depending upon the biology of a crop, and the philosophy and practical needs of a farmer, some combination of these tactics is used.

- **Farming involves complex decision-making and risk management.** Farmers must make difficult choices about growing, handling, and packing, and then selling and marketing their crops. They must balance many different and often contradictory factors when making decisions, such as the biology of a crop, local climactic and weather conditions, the kinds and abundance of pests, the availability of water and nutrients, regional and international labor and market conditions, contractual obligations with processors and distributors that often require adherence to specified management practices, and government policy and regulations. Because most of these factors are constantly changing, farmers must often make decisions about growing a crop well before they know its market value. Thus, farming necessarily involves a great deal of economic uncertainty and risk.

- **Farmers are applied scientists, mechanics, and managers who have a diverse and unique set of skills and knowledge.** Farming is a profession that demands a great deal of unique expertise and commitment. To be successful and make a living over the long term, farmers must not only have a firm understanding of technology, biology, chemistry, ecology, economics, and business management, among other things, but also the ability to apply this knowledge to an unstable environment.

2. Why is farming important?

Experts explained that farming shapes several key aspects of human life and society:

- **Farming is an integral part of human culture.** Until recently, most humans practiced or directly engaged with farming. Thus, experts described it as an important source of culture that has shaped people's lifestyle and values for centuries. In addition, though most people are increasingly disconnected from crop farming, farming remains an important cultural and educational resource for the public. Activities like agro-tourism (e.g., pick-your-own fruit and vegetables) school gardens, and farm-to-table restaurants, as well as heroic portrayals of farmers in movies, children's literature, and advertising contribute to a recognition that farmers are members of our communities and that there is cultural value embedded in food production and preparation.

- **Farming is an important part of the economy that impacts the livelihoods of many people.** Farming not only remains a direct source of employment and economic security for many people in the United States, but is also a primary source of food, textiles, landscaping, and fuel. Although fewer than 2 percent of the US populace is directly involved in farming, it contributes to the employment and economic wellbeing of millions of people working on farms and in closely related and dependent industries such as food processing and transportation. The economic success of farmers also affects the economic wellbeing of their local communities, especially where farming is a major industry. Crops represent a large portion of the products traded in the national and international economy. Additionally, the US federal, state, and local governments invest in and support crop farming research and extension programs, as well as subsidize the production of certain kinds of crops. Thus, all US taxpayers have an economic stake in crop farming and its success.

- **Human survival and health depend on farming.** Because crops are a primary source of food for humans, crop farming enables human existence. Experts also noted that human health is affected by crop farming both through the types of crops produced and how they are grown. Practices that remove harmful pathogens and diseases from crops serve to enhance the nutritional value and safety of crops and, in turn, reduce chronic illness and disease. Crop farming directly affects the health of farmers and farm workers and indirectly affects human health through its impacts on soil, water, and air. For example, practices that promote healthy soil prevent erosion and runoff, which, in turn, mitigate the movement of materials that are toxic for humans into streams, lakes, and, ultimately, our drinking water.

- **Farming affects the health and quality of our natural environment.** Using land to produce crops positively affects the environment by maintaining green space and providing a habitat for wildlife that is not possible with most other types of land use. However, producing crops necessarily involves altering and extracting resources from the environment so that it will produce something it otherwise would not. In addition, some natural resources can be difficult, if not impossible, to restore.

- **Farming practices can either enhance or degrade the health of soil, water, and air.** Outright mismanagement of pesticides and fertilizers can pollute water bodies and the atmosphere, including drift from one farm to a neighboring farm. In some instances, the effects can be felt far from the source of pollution. In contrast, scientifically informed use of the materials needed to produce and transport crops, such as pesticides, fertilizers, and machinery, can help reduce the emission of gases that contribute to climate change. Or, for example, practices that enhance soil health can prevent potential inputs needed for growing crops from leaching into natural bodies of water, which could otherwise harm the health of both humans and animals.

3. What are the challenges involved in farming?

Experts noted several challenges and complexities in farming that require a great deal of expertise to manage:

- **Pests and diseases threaten crop growth and health**. Crops inevitably attract pests, which are defined as any organism that feeds on or attacks plants. These include insects and other animals (e.g., birds, rodents), other plants (i.e., weeds), and disease pathogens. Experts also explained that pests can change and evolve with changes in their local ecosystem. This means that all crop farmers must carefully and continuously monitor pests and develop numerous methods and tools to manage them to preserve the marketability and profitability of a crop.

- **Soils must be closely supervised and managed to produce crops.** Experts highlighted the health and condition of soil as central to producing crops. Crops need the right type of healthy soil, which allows plants to effectively absorb the nutrients and water they need to grow, and prevents and reduces the erosion and runoff of materials into bodies of water, as described above. However, growing crops necessarily extracts essential nutrients from soil. As 45 percent of soil nutrients are derived from minerals that are broken down (over millennia) into forms that plants can use, managing soil and enhancing soil health is critical to success.

- **Weather and climactic conditions significantly affect crops but are unstable and impossible to control.** Weather and climate are challenging to manage and predict. Factors like temperature and rainfall can vary considerably across time and space. For example, temperatures can drop much earlier than expected, or rainfall can be much larger in some years than others. Additionally, extreme and unseasonal weather events, such as freezing temperatures, hail storms, and droughts, are becoming more common and more dramatic due to changes in the Earth's climate. This creates enormous risk in the successful production of crops, which is borne largely by farmers. An early freeze or untimely violent storm can result in catastrophic loss of income. Thus, farmers must constantly monitor local weather and climactic conditions.

- **Market and regulatory demands can be difficult to meet.** To be successful, crop farmers must be attuned to the particular crops that consumers, retailers, and other buyers want, how much they are willing to pay for them, and the legal regulations and standards governing things like pesticide use. Not only can these factors change, but they can also come into conflict with the practical realities of farming. For example, the market insists that many fruits and vegetables be visually perfect and safe to consume. But meeting these standards is very challenging, often motivating a farmer to apply a pesticide sooner and more frequently than she or he would if the decision rested on farm ecology alone.

- **Adopting practices that benefit the environment and society can be financially costly.** Farmers must be certain that adopting or switching to a new tool or method will not make it too costly for them to produce a crop. However, practices that strive to mitigate harm to the environment and society often require more time, education, and resources to adopt and implement and come with additional restrictions that have direct economic impacts on a farmer's ability to earn a living. While financial incentives exist for adopting certain practices, experts noted that farmers are not sufficiently rewarded or reimbursed for the economic risk they assume when adopting the practices that are aimed toward benefitting society.

- **Producing crops can involve serious health and safety risks.** As with most human endeavors, some of the practices that are required to produce crops can be dangerous. These can cause farmers and farm workers to develop physical injuries or chronic illnesses or diseases. Many regulations and practices are in place to mitigate health and safety risks.

4. How are farmers effectively meeting these challenges, including sustainability?

Experts noted that farmers have developed a range of strategies to deal with the diversity of challenges that farming involves. Experts highlighted the following strategies:

- **Evaluating and using practices based on multiple dimensions of *sustainability*.** Experts noted that farmers are increasingly taking into account the sustainability—the long-term consequences—of the practices they employ. Evaluating the sustainability of practices along various dimensions helps farmers by accounting for the multiple factors and challenges they face. Experts identified the following dimensions of sustainability as central to meeting challenges:

    - *Environmental sustainability:* More sustainable practices are less harmful to and/or enhance the health of the environment.

    - *Economic sustainability:* Practices that allow crop farmers and workers to maintain a decent standard of living are sustainable; it should not be costlier for farmers to produce crops than to sell them.

    - *Social sustainability:* Sustainable practices maintain or improve humans' quality of life. This means they take into account the health and wellbeing of all those involved in the production and consumption of crops, which includes everyone from farm workers to consumers.

- **There are many approaches to sustainability.** On the farm, and in practice, different approaches to sustainability blend together as they are employed to address long- or short-term problems. In the marketplace, different approaches to sustainability are identified and held separate as they are employed as part of a certification or a promotion to differentiate a product or verify a standard. Some approaches are based on allowable or prohibited materials; some are based on best or required practices; some use aspects of both. Experts mentioned the following approaches and practices:

- **Integrated Pest Management (IPM).** Experts described IPM as a decision-making process, or a set of principles—involving farm ecology, scientific measurement, and risk assessment—that guides farmers in the sustainable management of pests. Over 50 years, a global community of scientists and farmers has established a framework that can be used effectively on a wide variety of crops and locations.

- **Organic farming.** Experts described organic farming as a philosophical approach that highly values environmental sustainability. Organic farmers seek to produce crops by means that maintain and enhance the biology of farming systems, especially soil quality. In practice, the distinguishing characteristic of organic certification is the restriction of material inputs (e.g., fertilizers or pesticides) to those that are derived from naturally occurring sources. Certified organic farmers by definition avoid the use of material inputs that are manufactured synthetically. The Organic Materials Review Institute (OMRI) manages a list of 5,000 acceptable materials. Experts noted that the existence, visibility, and market-based promotion of organic certification has shaped public awareness and understanding of what it means for farming to be "sustainable," but also acknowledged that organic farming faces its own unique sustainability issues (e.g., yields, costs of production, shelf price, to name a few). They added that organic was not the only sustainable approach available. Many organic farms also employ IPM practices and strategies in managing pests, including the judicious use of pesticides.

- **Environmental sustainability:** Many basic principles and practices of sustainable farming that are typically identified as unique to IPM or organic farming are relevant and useful, if not essential, to many kinds of sustainable farming. Here are some examples:

    - **Pests should be managed, not eliminated.** Farms are human-created ecosystems, and pests are inevitable. Experts noted that their total elimination is neither feasible nor necessarily desirable. An explicit goal of IPM is to manage pests to an acceptable level that can be managed and measured.

    - **Pest management should be scientifically informed.** Effectively managing pests requires gaining and applying deep knowledge of the biology of local pests, the effects of weather on their development, and of the technologies and methods that can be used to manage

them. It also demands a firm understanding of the environmental and economic conditions that minimize environmental, social, and economic risks.

- **Pests should be managed only when, and only to a level at which, economic viability is threatened.** Experts explained that the damage that pests may inflict and that can be tolerated varies considerably. For example, some pests directly feed on the marketed product, so very little damage can be tolerated due to strict consumer and market demands. In contrast, other pests feed on the plant that produces the product, so considerable damage can be tolerated before it becomes cost-effective to intervene and reduce pest density. In other cases, pests may damage trees, soil, or future crops, allowing almost no room for tolerance. Thus, actions to manage a pest should depend on what is financially tolerable and taken only when and to the extent that it becomes costlier for a farmer not to do so. This is a fine balancing act that shifts from year to year, and from farm to farm, and is heavily impacted by consumer expectations.

- **Methods to manage pests should be selected and used based on their efficacy, cost, and sustainability.** Experts stressed that IPM includes a variety of tools and methods, including both synthetic and biologically based pesticides. Importantly, however, they explained that under IPM, regardless of what specific method or tools may be used, pesticides are selected and used in a way that poses the fewest risks to the health of the environment, workers, and consumers, and allows farmers to earn a living. Certified organic growers must select materials from the OMRI list, and they must choose pest management methods allowed by the national organic standards.

- **Planting cover crops and rotating and diversifying crops.** Experts explained that certain crops, called cover crops, can be planted to restore nutrients to soil, to disrupt the build-up of pest populations, and/or to increase soil organic matter. Adding organic matter improves the functioning of beneficial microorganisms for improved airflow and enhances the soil's ability to absorb and retain water. Another strategy is planting a trap crop specifically to attract pests so they don't attack cash crops.

- **Reducing or eliminating tillage.** Experts explained that tillage, defined as the use of tools and machines to dig up soil, can either enhance or undermine environmental sustainability. Tillage removes weeds and some pests, which reduces the need for pesticide use—but it also disrupts and can decrease overall soil health. In some cases, it facilitates the build-up of some soil pests. Some farmers see tillage as a serious threat to the successful production of crops and, therefore, aim to reduce its use or avoid it entirely.

- **Social sustainability: farmworkers.** Farmers often do similar kinds of work as those who work on their farms and face similar risks on the job, especially on small and mid-size farms. However, on most farms, the critical work of harvesting, grading, packing, and, in some cases, planting, would not be possible were it not for a dependable force of skilled farmworkers. Farmworkers—paid sufficiently, and given safe, healthy working conditions—are necessary for a sustainable operation.

- **Economic sustainability: the cost/price squeeze and farm viability.** There is a dynamic tension between (1) the basic costs of production that farmers pay for equipment, inputs, and labor, and (2) the price that farmers earn in the marketplace. Experts note that the two are not directly related. Economists call this a "squeeze" because costs, averaged over time, have risen faster than the price farmers recoup. Farmers are squeezed to pay their bills when they invest to make their operations more sustainable, as when, for example, they are under pressure to pay farmworkers a living wage, hire only US citizens, and maintain ecosystem services to enhance the landscape, soil, air, and water. They rarely receive acknowledgement from society in the form of a higher price from the marketplace. Furthermore, social and political conditions and policies, at times, act as disincentives to farmers, keeping them from investing more in the direction of sustainability.

- **Economic sustainability: affordable food**. Everything that causes the price of food to go up makes it harder for consumers to afford healthy fresh food like fruits and vegetables. And so there exists a dynamic tension between farm viability and the widespread availability of affordable fresh food. Sometimes, they are at odds with one another.

- **Economic sustainability: locally grown**. Farms of all sizes add economic and social value to their local communities. They do this through their taxes, employment, spending, involvement with local businesses and activities; by marketing directly to consumers; or by adapting wholesale marketing to satisfy demand for locally grown crops with farm-identified packaging, labeling, and promotion.

5. What should society do to help meet the challenges of farming?

Experts suggested the following solutions to improve society's and farmers' ability to manage and overcome the challenges of farming:

- **Adopt an approach to sustainability in public evaluations and policy-making that recognizes the complexity in which farming and food production operate—at the nexus where ecology and nature meet the marketplace and politics.** Sustainability must be approached in an informed and balanced manner that is ***sensitive to context***. For example, some practices that have a clear positive environmental impact may be more feasible and pose fewer economic costs when used for some crops and in some climates than in others. All farming practices and policies

require trade-offs. The choices made in the advance toward a more sustainable system must balance potential gains and potential consequences.

- **Increase public knowledge of farming.** Most members of the public are very unaware of what farming involves or how food is produced. This fosters misunderstanding and miscommunication between farmers and the public. Strengthening public understanding of farming is critical so that people can positively contribute to policy decisions, make more informed choices as consumers, and act from knowledge in advocating for a system that ensures farmers can meet both the challenges of farming and the needs of consumers. This likely requires engaging children at the earliest possible years in agricultural education, hands-on gardening, food preparation, and farm visits—potentially powerful educational experiences that create lifelong curiosity toward food and food production.

- **Promote locally grown food,** including the concept in general, the farms and the landscape, the farmers and their role in communities, the products and their contribution to health and the economy.

- **Better engage farmers as a resource for research and policy-making.** Experts widely agreed that farmers' experiences and perspectives are unique. However, farmers don't have enough opportunities to be involved in the development of research and policy. Experts recommended that land grant colleges, extension programs, and public officials rely more heavily on the insights and experience of farmers in the design and implementation of research and policies.

- **Conduct more research to identify what works.** Experts noted that there remains a great deal to be learned about farming practices. They suggested increasing agricultural research and extension for sustainable practices. Experts cited the need for more research on topics including: the effects of soil health on crop production, how to enhance soil health, how to produce fruits and vegetables more efficiently, how to manage new and invasive pests and diseases, and the economic costs and benefits to farmers of adopting certain practices.